Vol. 110 · No. 5 *November 1951*

ARCHITECTURAL RECORD

Architectural Record (combined with American Architect and Architecture) is published monthly by F. W. Dodge Corporation, 10 Ferry St., Concord, N. H., with Editorial and Executive Offices at 119 West 40th Street, New York, N. Y. Western Editorial Office, 2813 Channing Way, Berkeley, Calif. Thomas S. Holden, Pres.; Howard J. Barringer Vice-Pres. and Treas.; Irving W. Hadsell, Vice-Pres.; Chauncey L. Williams, Vice-Pres.; Sanford D. Stockton, Jr., Secy.; Walter F. De Saix, Asst. Treas.; Edwin H. Freed, Asst. Treas.; Irving B. Satin, Asst. Treas. Member Audit Bureau of Circulation and Associated Business Papers Inc. Architectural Record is indexed in Reader's Guide, Art Index, Industrial Arts Index and Engineering Index. Subscription rates: United States and Possessions, Canada, Cuba, Mexico, Central and South America, and Spain, $4.50 the year, $7.50 for two years, $9 for three years; elsewhere, $6.50 the year, $11.50 for two years, $15 for three years. Single copy $2. Circulation Manager: Marshall T. Ginn. Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or damage. Other Dodge Services: Real Estate Record & Builders' Guide, Sweet's Files, Home Owners' Catalogs, Dodge Reports & Dodge Statistical Research Service.

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Photograph by Richard Shirk

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A.I.A. SPARKS INDUSTRY EFFORT TO CLARIFY CMP; DPA ADVISER ON BUILDING POLICY MAY BE SOUGHT

Washington Round Table Called by Directors October 14–15 Debates Joint Proposals; Chamber Group Meets November 2

THE American Institute of Architects took the lead last month in an intensive drive by all segments of the construction industry to "straighten out CMP."

Representatives of eight leading organizations in the building field held a round table in Washington October 14–15 at the invitation of the Institute's Board of Directors. There was a thorough airing of the confusions and inequities felt in all areas of building construction under the present operation of controls and agreement on the usefulness of joint representations to the office of Defense Chief Charles Wilson.

The meetings adjourned without issuing any formal recommendations; but discussions were to be continued at the November 2 meeting of the advisory committee of the Construction and Civic Development Department of the U.S. Chamber of Commerce. Most of the representatives at the A.I.A-sponsored sessions are also members of the Chamber committee. Meanwhile, talks were planned by smaller groups.

Seek Equitable Allocations

The central problem — getting a more even break for building in allocation of critical materials — may be approached by a request for appointment of a policy adviser either in Mr. Wilson's office or in the office of DPA-NPA Administrator Manly Fleischmann. A.I.A. Executive Director Edmund Purves has been asked to prepare a statement outlining proposed functions for such an adviser. Frank R. Creedon, assistant administrator of the National Production Authority in charge of facilities and construction, can represent the industry in implementing stated policies; but the complaint is that there has been no representative for construction at the policy-making level.

Dissatisfaction with DPA and NPA methods of allocating controlled materials has stemmed from many aspects of the complicated operation. The home builders have been particularly vocal. They have said, for example, that minimum allowances for self-certification may be fair enough, but the imbalance appears in the allotments for Class B product manufacture. One industry source has referred to these allocations as "ridiculously low," providing metal for not more than 40 to 50 per cent of required products. Some have wondered if criteria for the division actually are related to building materials.

The large number of claimant agencies that get allotments from DPA for portioning out to their separate building programs is another aspect of controls operation that has been singled out for criticism as contributing to "confusion more pronounced" (one rueful nickname for CMP). There has also been considerable feeling that people without sufficient experience in construction are handling too much of the program.

The decision to spearhead a concerted effort for revision of present government policies was made at the semi-annual meeting of the Board of Directors of the A.I.A., held Sept. 30–Oct. 2 at Portland. The Board adopted a formal resolution to hold the two-day round table and endorsed the resolutions passed at the June meeting of the Middle Atlantic District and the New Jersey Chapter. These resolutions deplored the confusion caused in building by existing controls and urged national A.I.A. action to bring about clarification of the construction outlook.

Many Groups Take Part

The number and diversity of the industry groups which accepted the invitation to the A.I.A. round table provided testimony to the widespread protest against the unworkability of controls in their present form. Besides the A.I.A., these organizations were represented: American Society of Civil Engineers, Associated General Contractors of America, U.S. Chamber of Commerce, National Association of Home Builders, National Retail Lumber Dealers' Association, National Society of Professional Engineers and the Producers' Council.

JOSEPH B. MASON

JOINS RECORD STAFF AS EXECUTIVE EDITOR

JOSEPH B. MASON, for more than 20 years an active editor in the areas of building, architecture and engineering, has been named executive editor of ARCHITECTURAL RECORD.

Mr. Mason, a former editor-in-chief of *American Builder and Building Age*, has been a senior editor of *Good Housekeeping* Magazine and director of its Building Forum since 1945. His work for *Good Housekeeping* has included editing of special technical books on building.

Early experience of Mr. Mason included a stint for the Associated Press in Chicago and extensive writing for architectural publications for the Portland Cement Association. Before it was merged with *American Builder*, he was first technical editor and then — at the age of 26 — editor of *Building Age*. He subsequently became managing editor of the merged publication prior to his appointment as editor-in-chief.

Mr. Mason is a 1926 graduate of the University of Wisconsin, where he majored in engineering and journalism. He is a member of Sigma Delta Chi, honorary professional journalistic fraternity; the Architectural League of New York; the Columbia University Club; and the Columbia Faculty Club. He has lectured at Teachers College, Columbia, on architecture, engineering and the economics of housing.

"Joe," as he is known by his friends and acquaintances among architects and builders, assumed his new post on November 1.

"SHOPPERS' WORLD" AT FRAMINGHAM APPLIES NEW IDEAS

THE $6,000,000 SHOPPING CENTER opened last month at Framingham, Mass., by Suburban Centers Trust of Boston may become a milestone in the evolution of a building type.

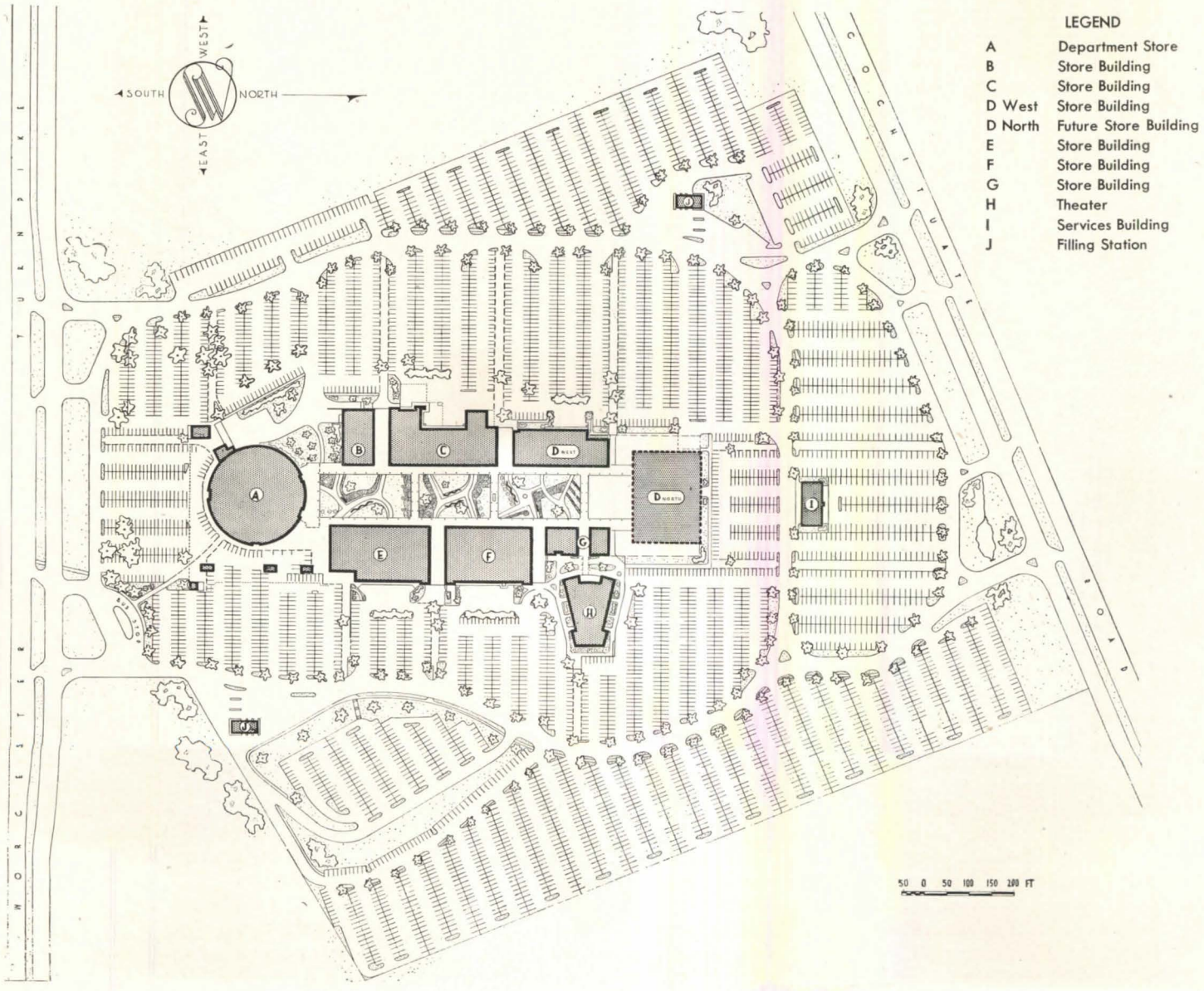
Location of the center, handling of the site and building design all were determined by the most advanced concepts of the function of the regional shopping center in an era of increasing decentralization (see ARCHITECTURAL RECORD, March 1951, pages 120–143).

"Shoppers' World," first of a series projected by Suburban Centers, has been built on a 70-acre site between two busy highways in a fast-growing community halfway between Boston and Worcester. It contains 44 shops (six more to come), sandwiched on two levels to cut walking distance, all under one roof, and all surrounding a 675 by 100 ft central mall. Covered walkways lead from a 6000-car parking area to the stores, and covered walkways also connect all units of the center. Three pedestrian bridges span the mall at the upper level. Within the shops ramps lead from one level to the other. Both levels are equally accessible from the parking area, which is midway between them.

Market researchers, site planners and traffic engineers helped pick the site — on the most convenient side of the turnpike at the center of the third largest retail trading area within a 40-mile radius of any city in America. The purchasing power of families within a 29-minute driving distance of the center was analyzed to determine the number of stores such an area could support. The capacity of the parking area was fixed at 3.5 times the amount of interior selling space, a ratio arrived at in terms of peak December needs. To cut shoppers' steps, the parking area surrounds the center; average walk from car to rampway is 100 ft.

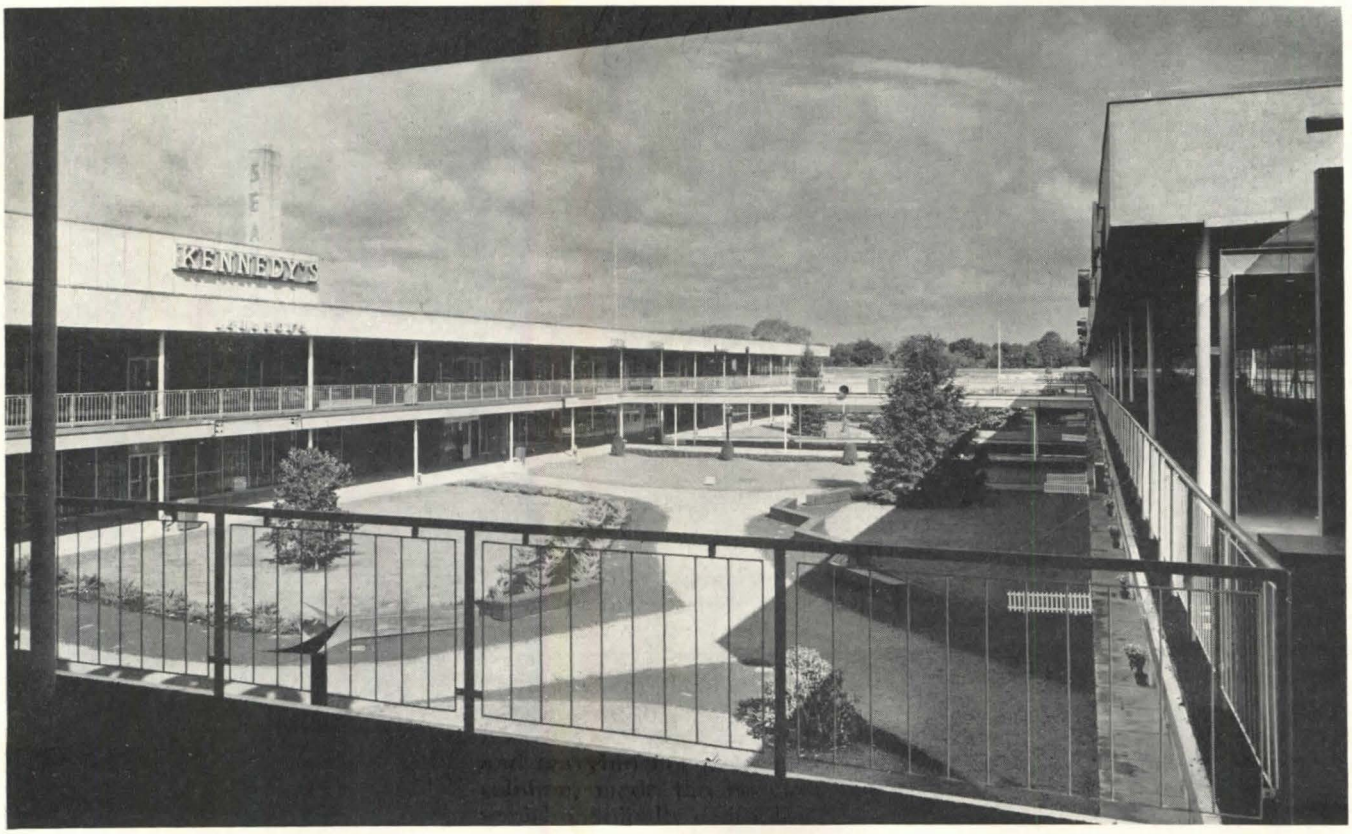
Construction is steel and concrete, with exteriors of asbestos siding and — facing the mall — glass storefronts. All electrical, heating and plumbing services are centered in basement areas, for ease and cheapness of maintenance.

Ketchum, Gina and Sharp were the principal architects. Their collaborators in developing the design included Architect Kenneth C. Welch, Grand Rapids; Frederick J. Adams and John T. Howard, Boston; Anderson and Beckwith, Architects, Cambridge; and Arthur and Sidney Shurcliff, Landscape Architects, Boston. Severud, Kruger and Elsted were structural engineers.



Joseph W. Molitor Photos

Jordan Marsh Department Store has 175,000 sq ft, most of selling space beneath dome 227 ft wide, 54 ft high, world's largest of steel arched beam construction, biggest in U.S. without interior supports. Its ceiling is suspended on steel cables; walls are glass. Inside, four selling levels; no partitions. Theater (above) is planned to seat 1500



Central mall, one story below level of parking area, has been elaborately landscaped, given paths as well as walkways. Shoppers will find benches to relax on, outdoor art shows provided by Boston Institute of Contemporary Art to look at

Photo: Herman Ahrens, Pacifc Buiilder and Engineer

Far Left: A.I.A. Chapter Presidents Clarence Wick, Portland; Paul Thiry, Seattle; Benjamin Ruehl, Spokane. Left: Dr. Clifford Barrett, Scripps College, presents first Valentine Kirby Fine Arts Award to Architect Ernest Born. Donald Kirby, who commissioned the award in memory of his father, and Mrs. Kirby are at right in photo

ATTENTION CENTERED ON PROSPECTS FOR BUILDING AT ARCHITECTS' CONFERENCES ACROSS THE NATION

PROSPECTS FOR BUILDING under the current system of government controls made a common denominator for discussions, both on and off the agenda, at the many architects' meetings across the country last month.

One seminar of the Northwest Regional Conference of the American Institute of Architects heard Lee M. Cannon of the National Production Authority's Seattle office; James M. Follin, chairman of the Defense Production Administration's Conservation Division subcommittee on building construction, addressed the annual convention of the California Council of Architects, held jointly with a meeting of the Sierra Nevada Region of the A.I.A.; and the need for united action by architects to persuade the government to revise the present controls setup was a major theme for National A.I.A. President Glenn Stanton in his address before the annual convention of the New York State Association of Architects at Buffalo.

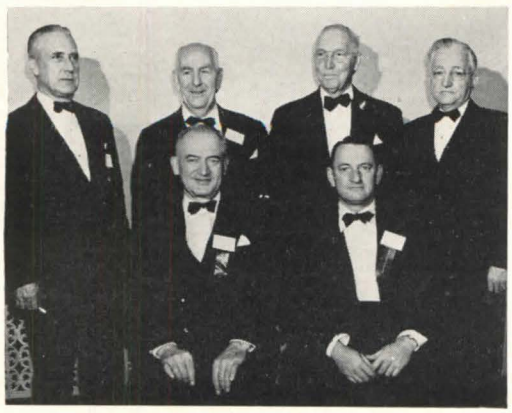
Highlight of the Northwest conference was the decision of the delegates to organize a regional council and appointment of a committee of the chapter presidents to study ways and means.

Architectural exhibits and awards were a major center of interest at the New York State meeting. Top award winners in their divisions were: Isadore Rosenfield, New York — North Shore Hospital, Manhasset, L. I.; Reisner & Urbahn, New York — Long Beach, L. I., junior High School; Cary & Curtis King, Sargent, Webster, Crenshaw & Folley, Syracuse — Pitcher Hill Elementary School, North Syracuse; Al & Dick's Restaurant, New York — George Nemeny & A. W. Geller, New York. Honorable Mentions were given to Moore & Hutchins, New York — Garden City, L. I., Village Hall; Kelly & Gruzen, New York — Signal Corps Barracks, Fort Monmouth, N. J.; Daniel Schwartzman, New York — Baltimore residence; Voorhees, Walker, Foley & Smith, New York — Charles Hayden Memorial Library, Massachusetts Institute of Technology.

Donald Q. Faragher, Rochester, was elected president of the Association. Other officers elected are Adolph Goldberg, New York, first vice president; G. Morton Wolfe, Buffalo, second vice president; Harry Prince, New York, third vice president; John W. Briggs, Rochester, secretary; and Maxwell A. Cantor, Brooklyn, treasurer.

New officers were elected by Vermont A.I.A. Chapter at its annual meeting October 7. Above: William W. Freeman, Burlington, secretary; Preston M. Cole, Woodstock, president; Payson Rex Webber, Rutland, vice president. Below: President Cole is congratulated by the outgoing president, Kenneth Reid, Dorset

Marschall Photos



At Buffalo: (far left) James W. Kideney, Buffalo, the Association's first president; Henry V. Murphy, Brooklyn, retiring president; C. Storrs Barrows, Rochester; Charles Rockwell Ellis, Syracuse; (seated) Matthew W. Del Gaudio, New York; Donald Faragher, Rochester, new Association head. (Left) Ontario Architects' president Earl Sheppard; Glenn Stanton, A.I.A. president; and Mr. Murphy

NEWS FROM WASHINGTON *by Ernest Mickel*

First Quarter 1952 Allotments Allow More Critical Materials For Industrial Construction, Less for Other Civilian Building; Crisis in School Building Looms; 41 "Critical Areas" Named; $4 Billions Appropriated for Military Construction Program

As the construction industry prepared for a major effort to get a more equitable portion of the available supply of controlled materials for building construction (see page 11), the Defense Production Administration was painting a far from rosy picture of the immediate future.

DPA Administrator Manly Fleischmann, announcing first quarter 1952 allotments of steel, copper and aluminum to 20 claimant agencies outside the National Production Authority and 36 within it, said that first quarter direct military demands for steel are 408,000 tons more than in the fourth quarter 1951. The direct military demand for copper is 81,000,000 pounds more than in the fourth quarter, and for aluminum 80,000,000 pounds more.

In the individual breakdown, DPA allows the U. S. Office of Education 96,296 tons of steel, 3,897,000 pounds of copper and copper base alloy, and 10,000 pounds of aluminum for first quarter operations next year. This compares with 94,614 tons of steel — plus an additional allocation of 10,000 tons of structural steel — 2,881,000 pounds of copper and 15,000 pounds of aluminum allowed schools for the fourth quarter this year.

The cut in the school allotment was less than in the steel allowance for hospitals. Where the U. S. Public Health Service got 71,299 tons of steel for the current quarter for hospital construction, it is given only 64,123 tons for the first quarter of 1952. Hospitals receive as a claimant agency 2583 pounds of copper and 400,000 pounds of aluminum in first quarter 1952 compared with 2,190,000 pounds of copper and 500,000 pounds of aluminum in the final quarter this year.

Building materials as a category in the Controlled Materials Plan operation of DPA will receive nearly 100,000 tons more of steel in the first quarter of 1952 than they did for operations during the fourth quarter of this year. The additional amount was allowed to provide products needed in construction, DPA said.

Building materials took a cut in aluminum, however, from 50,000,000 pounds in fourth quarter 1951 to 45,300,000 pounds in first quarter 1952. The story on copper followed the trend of the steel allocation, up from 45,900,000 pounds in the current quarter to an allotment of 51,850,000 pounds for the first quarter of next year.

In other allotments, General Services received 24,014 tons of steel, 640,000 pounds of copper and 100,000 pounds of aluminum; Housing & Home Finance Agency, 83,700 tons of steel, 5,978,000 pounds of copper and 250,000 pounds of aluminum. Allotments to NPA divisions included: construction machinery, 487,654 tons of steel, 7,220,000 pounds of copper, and 2,400,000 pounds of aluminum; and electrical equipment, 586,710 tons of steel, 147,169,000 pounds of copper and 24,250,000 pounds of aluminum.

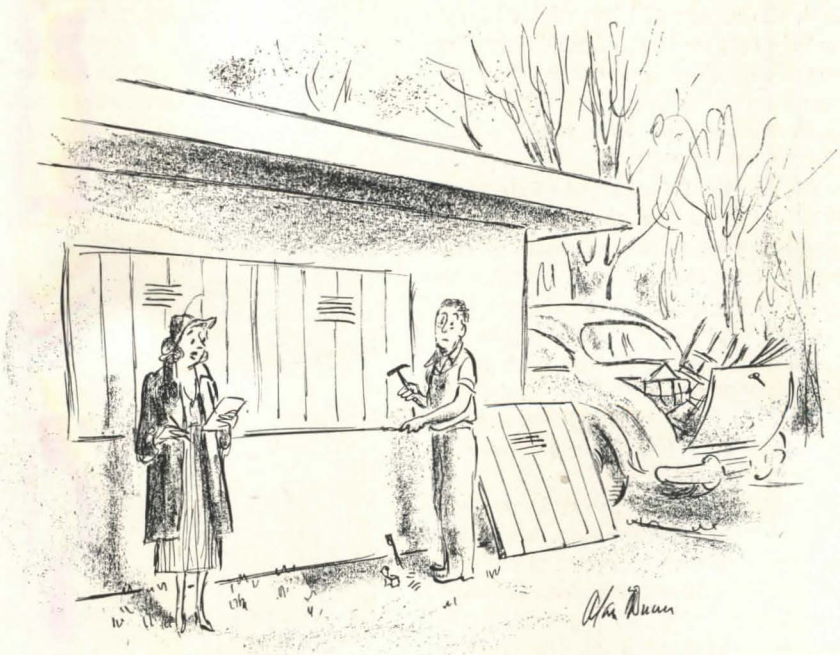
Mr. Fleischmann said more materials will be directed into the industrial expansion program in the first quarter of 1952 "in order to increase this nation's productive capacity so that present controls may be relaxed as soon as possible."

About 50,000 tons more structural steel has been authorized for this expansion in the first quarter than was provided in the fourth quarter, and Mr. Fleischmann noted that "this will force a slowing down in less-essential civilian building." An increase in supply of structural steel shapes of about 100,000 tons is expected in the first quarter.

Conservation Efforts Praised

Some compliments to architects and engineers were implied in the third quarterly report of Defense Mobilization Director Charles E. Wilson. The construction industry was cited in the report as showing probably the greatest amount of progress so far as conservation of critical materials is concerned. New designs are helping to eliminate waste of materials and to encourage the use of substitutes in essential uses. By the redesigning of certain types of structures, it has been shown that as much as 50 per cent of the steel ordinarily used can be saved. It has been shown that the

(*Continued on page 18*)



—Drawn for the RECORD by Alan Dunn

"Now drain the plumbing—then drain the pool—after that drain the water-cooled roof . . ."

WASHINGTON

(*Continued from page 17*)

use of structural steel in some instances has been eliminated altogether by substituting masonry, reinforced concrete, and even heavy timber.

The Wilson message had this to say on the point:

"Federal design and construction practices are now being surveyed from the standpoint of conservation. Building officials' organizations have offered their support to proposals that city councils authorize alternate designs and processes required by the national emergency, which will save copper as well as steel.

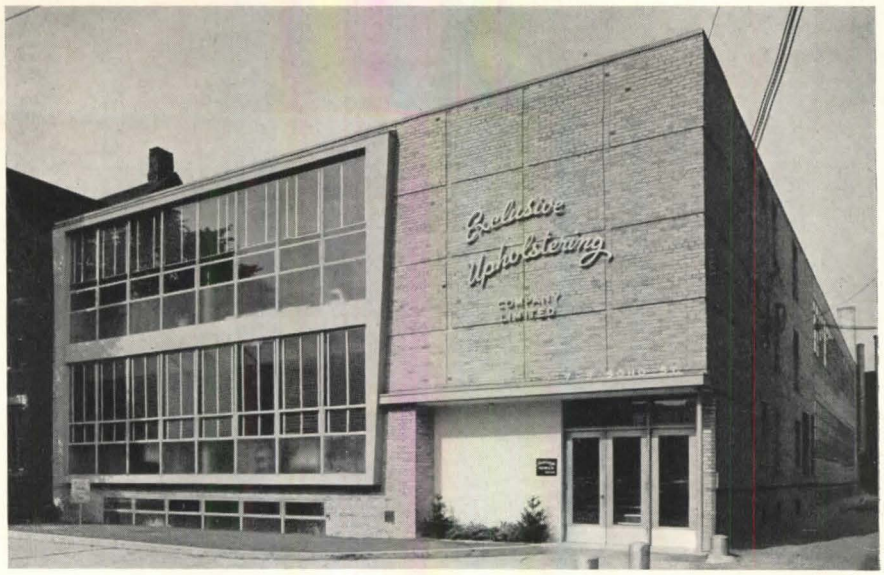
"In many instances during World War II, substitution and conservation were the only things that kept some industries and many companies going. The ingenuity displayed then will have to be shown again in order to meet our military needs and still keep the civilian economy well supplied with essential goods that can only be made in volume by using substitutes."

Mr. Wilson held that the extension of CMP to all new construction would be particularly useful since it would make it possible to direct the flow of structural steel shapes, especially tight, to the more essential projects. Thus, he said, the means will be provided for an orderly cutting back of nondefense construction. Fourth quarter structural shape requests (already conforming to NPA restrictions) were nearly double the expected supply.

Almost the full amount of structural steel required for the aluminum expansion program was granted, the ODM report continued. The ferro-alloy expansion program received 82 per cent of its request. The steel expansion program was cut to 51 per cent of the requested amount of structurals, with most of it specified for basic capacity and blast furnaces rather than for finishing plants.

Much sharper cuts were in order for other types of construction. An average of some 26 per cent of requests was given for new facilities to produce industrial equipment, pulp and paper, and other commodities needed by the military and the civilian economy. That was the story on division of supplies for the fourth quarter.

(*Continued on page 22*)



Max Fleet Photo

Murray Sklar was architect for factory and office building for Exclusive Upholstering Co., Ltd., Toronto. Construction is steel frame, floors are laminated wood

NEWS FROM CANADA *by John Caulfield Smith*

Steel Supply Is Critical Despite Production Boost

BAD NEWS FOR ARCHITECTS and builders not engaged in defense work was contained in a recent address before the Toronto Builders' Exchange by D. C. Beam, chief of the Construction Section Steel Division, Department of Defense Production.

Mr. Beam said that the steel supply is not adequate for construction demands in spite of a five to ten per cent rise in Canadian production and a 30 per cent boost in imports. The situation will be worse before it is better, he said, and alleviation of the shortage of plates and structurals is not likely until "after 1952."

What steel there is must be channeled to essential uses, Mr. Beam declared. Essential construction is classified as: 1. direct defense work; 2. expansion of basic industries; 3. expansion of defense-related industries.

There was no suggestion that present restrictions on steel usage would be extended, however; and Mr. Beam expressed the hope that it soon would be possible to give an essential rating to school and hospital buildings.

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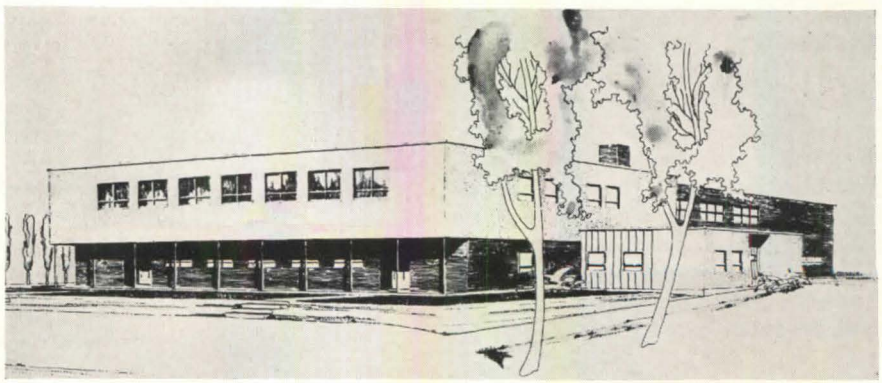

National Defense Photo

Rendering shows medium size drill hall, one of standard design being duplicated across Canada. W. E. Fancott, chief architect for Quartermaster-General Branch, Department of National Defense, is the architect. Much of current military construction is being assigned to private firms to design under supervision of Defense Construction Ltd.

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WASHINGTON (*Cont. from p. 18*)

Types of construction deemed less essential and more postponable, said Mr. Wilson, were cut back even more sharply. For example, commercial, social, and recreational construction received 12,000 tons of structural steel, only 11 per cent of stated requirements.

In other construction — public roads, schools, hospitals, food distribution plants — Mr. Wilson noted that criteria of priority have been established to insure that limited quantities of structural steel move to the most essential needs. It was added that subject to conservation restrictions, materials for these purposes may be purchased without application to the government. Approximately 35,000 tons of structural steel were set aside for these purposes in the fourth quarter, this section of the report concluded.

Still Needed: More Schools

The accumulating backlog of need for new school housing is worrying the U. S. Office of Education and the National Education Association of the U. S. alike. Officials in these organizations were hoping to see the construction industry make inroads on the tremendous backed-up requirements following World War II. The picture was beginning to clear when Korea came along and threw all previous schedules into a cocked hat.

The annual report of the education profession, just published by N.E.A. and entitled "Schools for Our Times," reiterates the basic problem: increasing enrollments call for additional space and facilities over and above the normal replacements required due to obsolescence and deterioration; the normal replacement needed is estimated at 15,000 classrooms per year and the increase in enrollment for the school year 1950–1951 created a need for 27,000 additional classrooms over replacements.

The chief worry in view of the materials shortages now stems from the prospect that mounting enrollments will continue during the next 10 years. N.E.A. estimates the increase in school population will require altogether the addition of 270,000 new classrooms to the current inventory.

Even now the accumulated need is placed by N.E.A. at 250,000 classrooms. Why has the backlog developed? N.E.A. lists several factors that have affected the situation for the past 20 years. The big depression retarded schoolhouse construction during the 1930's. In the World War II period, construction practically stopped because of the shortage of materials and labor. Immediately after the war, people waited for costs to go down.

Willard E. Givens, executive secretary of the N.E.A., author of the report, emphasized that school buildings must be regarded as more than mere shelter: "The school plant is a reflection of the educational desires, purposes, and ideals of the community in which it is located. It is a complex educational facility. Its design is the result of the combined thinking of parents, teachers, school board members, and an architect who has specialized in schoolhouse planning."

He listed six features of modern school building construction:

(*Continued on page 26*)

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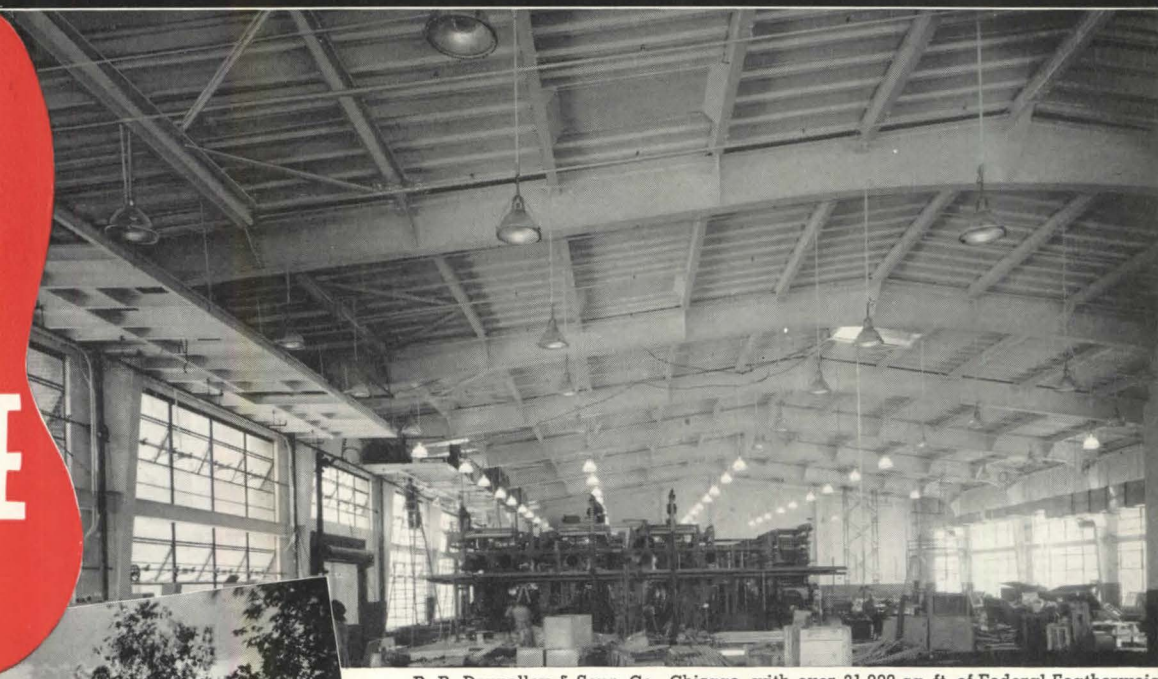

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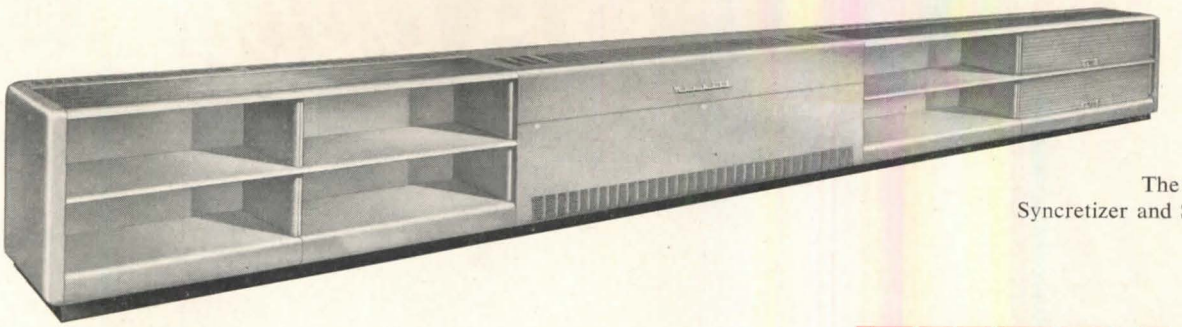
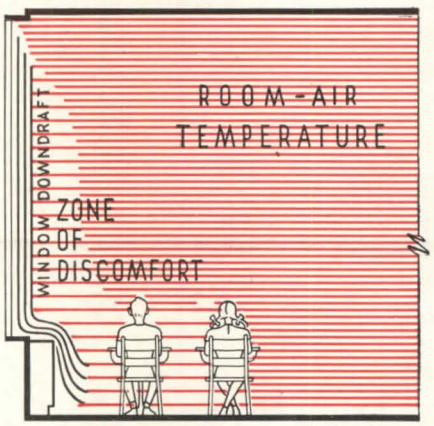
SALES OFFICES IN PRINCIPAL CITIES

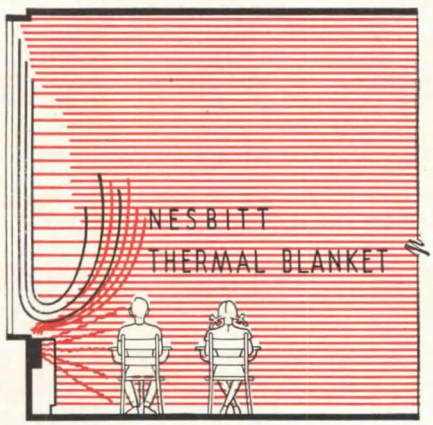


The Nesbitt Package
Syncretizer and Storage Cabinets

The Story of THERMAL



With room-air temperature evenly maintained, downdraft from large cold windows may remain the robber of comfort.



Nesbitt Syncretizer and Wind-o-line temper the downdraft, raise it out of impression range, and improve thermal balance.

THE POSITIVE ANSWER TO WINDOW DOWNDRAFT

Nesbitt

SYNCRETIZER with WIND-O-LINE

THE STORY of classroom heating and ventilating began many years ago with the need for artificial heat in a one-room schoolhouse. A potbellied stove provided the heat.

With multi-room schools came central heat and hot-air, then steam-radiator distribution. Schoolrooms soon became so hot that the need for regular ventilation was recognized.

NESBITT became a character in the story in 1917 with a schoolroom unit that introduced outdoor air and heated air on the bypass principle.

The story progressed as knowledge increased. The *heating* effect of room occupants, electric lights, and the sun's rays became better known. The need for *cooling* during a large part of the classroom day hastened the development of heating and ventilating units.

Room-air temperature was the recognized index of comfort. But the widely divergent temperatures of the unit ventilator's air stream created conflict—*drafts*. NESBITT brought the air stream under separate control—syncretized, or harmonized, its temperature within draftless limits to that of the room air. Syncretized Air, a new standard of thermal comfort, was created—but air temperature remained its popular index.

Comfort Can Now Be "Seen"

Today thermal comfort has another dimension. Besides *air temperature*, we consider the *radiant temperature differential* of the surrounding walls and surfaces of the classroom. The temperature especially of large windows in cold weather is so far below the room-air temperature that it soaks up the body heat of pupils sitting near it and, to a degree, of all others whose bodies can "see" it (are exposed to it). This explains why the comfort *impression* of some pupils is poor even when the air temperature is good—according to the room thermostat.

The Nesbitt Comfort Control

Within the Nesbitt Syncretizer heating and ventilating unit is the Comfort Control which "sees" and "feels" the outdoor air temperature at all times. This control automatically adjusts the temperature of the unit's continuous air stream so as to impose a protective thermal blanket — warm enough to shield room occupants from the chilling effect of cold windows, and cool enough to prevent overheating of the room air.

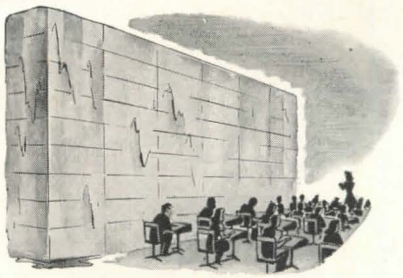
Wind-o-line Radiation

For conditions of large glass area and extremely cold outdoor air—which accelerate the problem of window downdraft, Nesbitt provides Wind-o-line Radiation for integration with the Syncretizer. Wind-o-line consists of fin-and-tube radiation in a grilled wall-hung casing to extend from both ends of the ventilating unit for the full length of the windows, at the sill line—and continued, if required, along cold outside walls. (Or it may be had as a component of the storage cabinets in installations of The Nesbitt Package.)

Unlike the attempts to draw off window downdraft as recirculated air—which are easily proved to be ineffective

Like all good stories
this one has *conflict . . . solution . . .*
and a *happy ending*

(READING TIME: Four minutes—and worth it.)



In very cold weather large window areas become a "wall-of-ice" in the classroom.

COMFORT in the Schoolroom

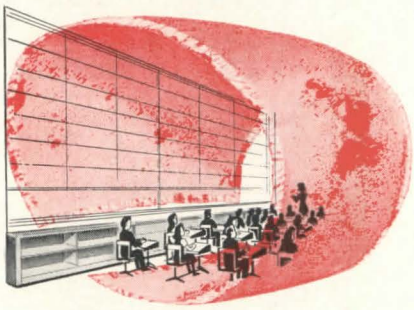
—Nesbitt Wind-o-line solves the problem of *heat loss* logically with a *heat gain* where and when needed. Convected currents of warm air from the grille temper the cold downdraft and divert its flow upward and above the heads of the room occupants. Radiation from the casing or cabinet helps to balance the radiant temperature differential.

"Happily ever after"

For school officials, architects and engineers who have a personal interest in Thermal Comfort the story turns out well: NESBITT SYNCRETIZED AIR—with Wind-o-line Radiation where desired—a *symmetrical* environment in which room-air and surface temperatures are better related to bodily heat exchange for a classroom comfort unequalled by any other system.

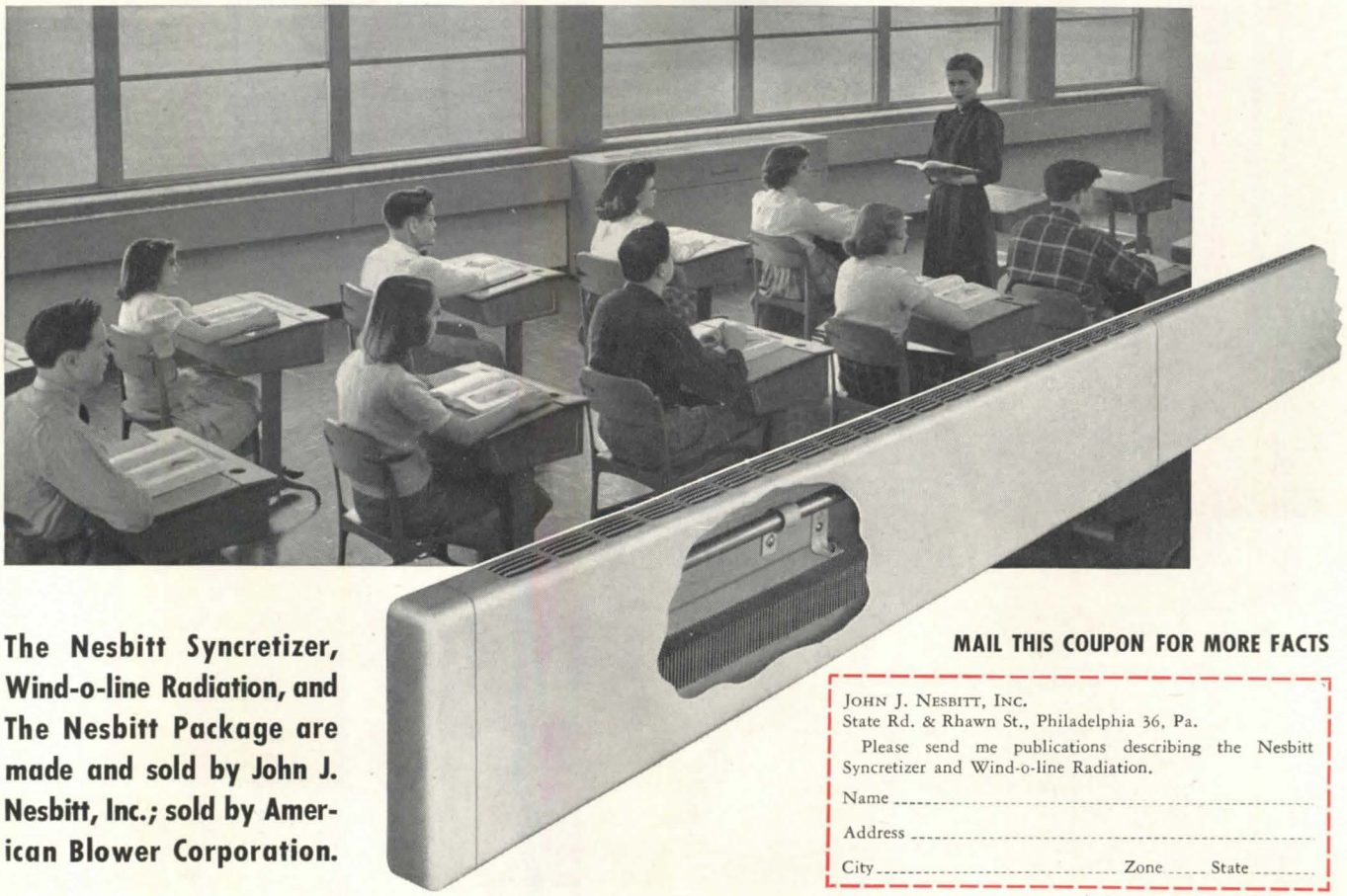
This is the story up to now. If it is ever to have a sequel, NESBITT expects to write it!

JOHN J. NESBITT, INC., STATE ROAD & RHAWN STREET, PHILADELPHIA 36, PA.



The Nesbitt "thermal blanket" protects pupils from the cold window downdraft.

A cut-away view of Wind-o-line Radiation, and photograph of a typical installation.



The Nesbitt Syncretizer, Wind-o-line Radiation, and The Nesbitt Package are made and sold by John J. Nesbitt, Inc.; sold by American Blower Corporation.

MAIL THIS COUPON FOR MORE FACTS

JOHN J. NESBITT, INC.
State Rd. & Rhawn St., Philadelphia 36, Pa.

Please send me publications describing the Nesbitt Syncretizer and Wind-o-line Radiation.

Name _____

Address _____

City _____ Zone ____ State _____

1. Classrooms are larger. Larger sites provide more outside play area.

2. Classrooms have become more homelike and livable. Furniture is movable. Plastic floor covering and colorful paints have brightened the floors and walls.

3. Buildings are more flexible. Many interior walls can be moved without difficulty.

4. The use of glass brick, larger windows and bilateral lighting admits more light.

5. Buildings are designed for adult use and as community educational centers.

6. One story buildings are most common. Multi-story buildings are seldom constructed except in densely populated communities where space is limited.

WASHINGTON (*Cont. from p. 22*)

N.E.A. estimates that the half million new elementary and secondary school classrooms needed during the 1950's would cost in the neighborhood of $13.5 billion. The total estimated school outlay for 1950–1951 is placed at $6 billion, a sum which will bring only $3 billion worth of service and supplies in prewar money. In 1949, total expenditures for public schools, including current expenses and new buildings, were approximately $5 billion.

N.E.A. contends the nation can build and pay for better schools if it wants to. These figures are cited: in 1939, we spent $2289 million for all the costs of the public schools. In the same year we spent $1821.4 million for tobacco; $3425 million for alcoholic beverages; and $821.5 million for admissions to amusements. In other words, for the luxuries we spent more than two and one half times as much as we spent for public schools.

Mr. Givens comments: "A people who expend for three luxury items in one year nearly three times the cost of schools are not straining themselves to support education."

41 Areas Listed as "Critical"

Early last month the Office of Defense Mobilization and the Housing and Home Finance Agency set up their criteria for handling the designation of critical areas under the Defense Production Act as amended and under the new housing and community facilities law. This was important, particularly in regard to the defense housing application, because it opened the door to the several government aid stimulants furnished in the defense housing measure. These included, in addition to the relaxation of credit restrictions on new housing, the liberalized mortgage insurance for programmed defense housing, aid to the communities in provision of essential community facilities and services, and a limited amount of federally-constructed housing to supplement the local shelter supply.

At the time the new plans were announced, 41 areas were determined to be critical defense housing areas to which Public Law 139, the new defense housing and community facilities act, would apply. The list included 33 previously designated by HHFA and the Federal Reserve System for relaxation of credit restrictions.

Wherever housing already had been programmed, the benefits of the new

(*Continued on page 29*)

WASHINGTON

(*Continued from page 26*)

law with regard to prior commitments by the Federal National Mortgage Association became immediately available. It would be applied in additional critical areas as soon as housing was programmed there. FNMA can make prior commitments to the extent authorized by Congress for purchase of mortgages on dwellings already programmed by the HHFA.

The full list of areas designated for both relaxation of credit restrictions and for such aids as will be available under the Defense Housing and Community Facilities and Services Act is as follows:

AEC, Savannah River Installation, S. C. and Ga.; Paducah, Ky.; Arco, Blackfoot, Idaho Falls, Idaho; San Diego and Oceanside, Calif.; Davenport, Ia., and Rock Island, E. Moline, and Moline, Ill.; Brazoria County, Texas; Colorado Springs, Col.; Fort Leonard Wood, Rolla, Mo.; Las Cruces, N. M.; Wright-Patterson Air Force Base, Dayton, Ohio; Solano County, Calif.; Starlake, N. Y.; Lone Star, Texas; Norfolk-Portsmouth, Va.; Borger, Texas; Wichita, Kansas; Camp Cooke-Camp Roberts, Calif.; Tooele, Utah; Dover, Del.; Imperial County, Calif.

Also Bremerton, Wash.; Camp LeJeune, N. C.; Sampson Air Force Base, N. Y.; Mineral Wells-Weatherford, Texas; Barstow, Calif.; Alamagordo, N. M.; Hanford-Kennewick-Pasco, Wash.; Patuxent, Md.; Valdosta, Ga.; Columbus, Ind.; Florence-Killeen, Texas; Huntsville, Ala.; Lancaster, Calif.; Indianapolis, Ind.; Sidney, Neb.; Wichita Falls, Texas; Bucks County, Pa.; Sanford, Fla.; Kingsville, Texas; Presque Isle-Limestone, Maine; Newport News, Va.

The agencies determine critical defense housing areas only if:

1. A new defense plant or installation has been or is to be provided, or an existing one reactivated or its operation substantially expanded.

2. Substantial in-migration of defense workers or military personnel is required to carry out activities at such defense plants or installations.

3. A substantial shortage of housing for such defense workers or military personnel exists or impends which impedes

(*Continued on page 30*)

THE RECORD REPORTS

WASHINGTON

(*Continued from page 29*)

or threatens to impede activities at such plant or installation, or community facilities or services required for such defense workers or military personnel are not available or are insufficient, or both.

What Makes a Critical Area?

Before his resignation as chairman of the Critical Areas Committee of the Defense Production Administration, Ralph R. Kaul explained the major steps taken in determining whether communities meet criteria set by the defense housing law.

Step 1 — The Critical Areas Committee asks the DPA, National Production Authority, Atomic Energy Commission, or other agencies concerned with activities in a community, to present findings on expected manpower requirements.

Step 2 — The Labor Department then investigates these manpower requirements to determine what part can be met by using more women workers, by making improvements in working conditions, or by other measures for increasing the labor supply needed in the area.

Step 3 — The agencies concerned with housing and rental situations, community facilities and services, then appraise the need for additional housing, rent control and community resources required for an expanded population.

The results are reviewed by the committee and if it decides that all criteria for designation as a critical defense area have been met, it so certifies to the Defense Production Administrator. If he, in turn, concurs, he formally notifies the Secretary of Defense and the Defense Mobilization Director. If they concur, the area then is designated as critical and is subject to provisions of both the Defense Production Act as to rent control and relaxation of credit curbs, and of the defense housing law as to housing and community facilities.

B. T. Fitzpatrick, deputy administrator and general counsel for the HHFA, recently estimated that under the new housing law approximately 800 localities would come under consideration for designation as defense areas. About 600 of these actually would be given serious study, he indicated, and some 400 of them certified. The military alone had a list of 326 individual cities.

(*Continued on page 32*)

Exceptional freedom in the development of flooring effects is provided by Armstrong's Linoleum. There are six distinct types—Plain, Jaspé, Marbelle®, Embossed, Spatter, and Straight Line Inlaid. No other flooring material offers such a variety of beautiful design and style effects, such a complete range of colors.

Entrance Lobby
Hutchinson Public Library, Hutchinson, Kansas
English, Miller & Hockett, Architects and Engineers

ARMSTRONG'S LINOLEUM

ARMSTRONG CORK COMPANY • LANCASTER, PENNSYLVANIA

WASHINGTON (*Cont. from p. 30*)

Of the 326 localities recommended by the Defense Department for certification, 92 at the time had insurance in force on housing mortgages under terms of the Wherry Housing Act, or had commitments under it outstanding, appraisals or eligibility statements in order, or requests in process.

The following exchange during hearings on the second supplemental appropriations bill for fiscal 1952 gives an indication that the federal housing officials have not changed their sights for the calendar year 1952 regarding housing volume:

Rep. Albert Thomas (Tex.), chairman: How many starts and completions did the industry make in 1951? What is your best estimate?

Mr. Fitzpatrick: I think the indications at this point are, Mr. Chairman, that the rate of construction for 1951 will exceed the 850,000 which it was indicated earlier in the year we hoped to hold to. There is substantial prospect that it might reach as high as one million.

Mr. Thomas: I saw some article to that effect . . . and it seems that it was quite surprising to all the home builders as well as FHA. What was that figure for 1950? That was the peak year of construction.

FHA Commissioner Franklin D. Richards: One million three hundred and fifty thousand, approximately.

Mr. Thomas: And your plan for 1951 was in the neighborhood of 800,000 to 850,000; is that correct?

Mr. Richards: Yes, sir.

Mr. Thomas: As far as you can tell from a material basis, manpower and credit regulation, the industry will turn out that same number, between 800,000 and 850,000, during the calendar year 1952. Is that a correct summary of it?

Mr. Richards: That is right.

$4,128,000,000 for Building

The Congress was not too severe with the military in handling its requests for public works construction funds. The cuts began in the House Appropriations Committee where the original asking for $4,555,594,158 was trimmed to $4,198,523,208, a reduction of $357,070,950. The Air Force took the brunt of this recommended slash, suffering a cutback of $291,327,450 from its original estimate of $2,403,500,000. But it could well afford this, having been put down for the lion's share in both the authorization and appropriation measures. The House group recommended $927,024,460 for the Navy, and $1,159,326,198 for the Army's military construction program.

In the end the Congress appropriated $4,128,000,000 for the military construction program — the measure was one of the money bills passed in the last hectic hours before final adjournment of the first session of the 82nd Congress on October 20. The session ended nearly three weeks after the original adjournment target date of October 1.

The legislation authorizing the huge military construction program of the three services, the largest single package of its kind in history, was enacted earlier. This called for some $6.8 billion worth of construction all over the world. It was estimated about $1 billion would be spent in establishing overseas airfields.

(*Continued on page 238*)

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offers up to 3 times the fire resistance of conventional gypsum wallboard

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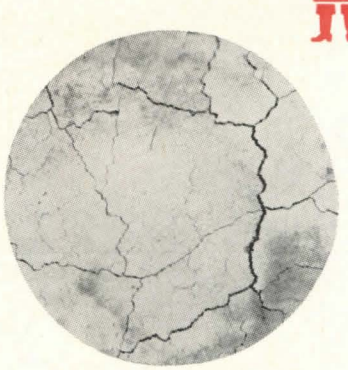
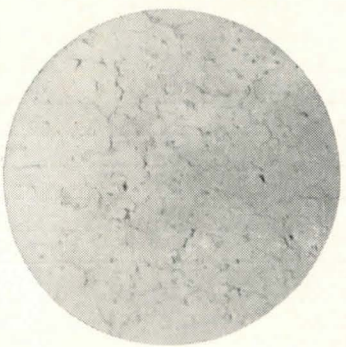


Unretouched photo showing a section of ordinary gypsum wallboard after it has been subjected to a fire temperature of 1,700°F. for 1 hour. Note the shrinkage cracks, characteristic of ordinary gypsum exposed to heat.



Under the same conditions, FIRESTOP BEST-WALL shows no appreciable cracking, because its core is stabilized with incombustible fibers and unexpanded vermiculite, through an exclusive Certain-teed process.

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CONSTRUCTION COST INDEXES

Labor and Materials

United States average 1926–1929 = 100

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

NEW YORK

Period	Residential		Apts., Hotels Office Bldgs.	Commercial and Factory Bldgs.	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1925	121.5	122.8	111.4	113.3	110.3
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1940	126.3	125.1	132.2	135.1	131.4
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
1948	250.1	251.6	239.4	242.2	235.6
1949	243.7	240.8	242.8	246.4	240.0
1950	256.2	254.5	249.5	251.5	248.0
June 1951	272.9	270.9	264.6	266.3	262.9
July 1951	272.3	269.8	264.5	266.3	263.2
Aug. 1951	272.3	269.8	264.5	266.3	263.2
	% increase over 1939				
Aug. 1951	**120.5**	**120.4**	**102.4**	**99.6**	**102.3**

ATLANTA

Period	Residential		Apts., Hotels Office Bldgs.	Commercial and Factory Bldgs.	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1925	86.4	85.0	88.6	92.5	83.4
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1940	91.0	89.0	96.9	98.5	97.5
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
1948	199.2	202.5	178.8	178.8	178.8
1949	189.3	189.9	180.6	180.8	177.5
1950	194.3	196.2	185.4	183.7	185.0
June 1951	212.3	213.9	204.4	203.2	204.6
July 1951	211.9	213.4	204.8	203.6	206.6
Aug. 1951	212.6	214.3	204.9	203.7	206.8
	% increase over 1939				
Aug. 1951	**146.3**	**157.9**	**115.5**	**109.1**	**118.4**

ST. LOUIS

1925	118.6	118.4	116.3	118.1	114.4
1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1940	112.6	110.1	119.3	120.3	119.4
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
1948	227.9	231.2	207.7	210.0	208.1
1949	221.4	220.7	212.8	215.7	213.6
1950	232.8	230.7	221.9	225.3	222.8
June 1951	252.1	248.0	240.4	242.4	240.2
July 1951	251.6	247.3	240.3	243.2	240.7
Aug. 1951	251.3	246.9	240.2	243.2	240.6
	% increase over 1939				
Aug. 1951	**128.0**	**130.7**	**102.4**	**103.0**	**102.2**

SAN FRANCISCO

1925	91.0	86.5	99.5	102.1	98.0
1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1940	106.4	101.2	116.3	120.1	115.5
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
1948	218.9	216.6	208.3	214.7	211.1
1949	213.0	207.1	214.0	219.8	216.1
1950	227.0	223.1	222.4	224.5	222.6
June 1951	245.7	241.5	240.5	244.2	244.5
July 1951	245.7	240.2	240.3	244.1	244.2
Aug. 1951	245.7	240.2	240.3	244.1	244.2
	% increase over 1939				
Aug. 1951	**132.7**	**141.9**	**104.7**	**100.2**	**109.6**

The index numbers shown are for *combined* material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

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

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

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

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

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

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

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

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

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

These index numbers will appear regularly on this page.

it's Wheeling Lath!

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• *Diamond Lath and Expansion Corner Bead, both Wheeling products, make a good team for lathers to work with.*

BUILDING MATERIAL DIVISION

NEW YORK PHILADELPHIA RICHMOND ST. LOUIS

• *Here a lather "ties in" a length of Wheeling Expansion Corner Bead—turns the corner on another good lathing job.*

REQUIRED READING

DESIGN OF INSULATED BUILDINGS

Design of Insulated Buildings for Various Climates. By Tyler Stewart Rogers. F. W. Dodge Corp. (119 West 40th St., New York 18, N. Y.), 1951. 9 by 12 in. 119 pp., illus. $5.50.

REVIEWED BY LEONARD G. HAEGER *

This is a splendid book. Not only is its technology sound and up-to-date, but it presents a complex technical subject to the architect and engineer in a completely understandable manner. Never before have the results of research in the construction industry been presented to the designer in the way this book does. Everyone who picks up this book will agree that it should form the pattern for other writers on other technical subjects on which research has been done but never published in a way intelligible to the average architect and engineer who, in the end, want to know not only what the problem is, but how you solve it, what you use and some idea of the relative costs involved.

Most technical publications are understandable to only those few who have a specialized training in the particular research area being discussed. In this book the author, who has been interpreting technical facts of construction research in a practical manner for the past thirty years, exceeds his own previous high standard of writing.

The first half of the book contains a series of basic statements outlining the principles necessary for an understanding of climate, heat control, vapor control and ventilation. While these principles have oftentimes been stated, they are given here with a minimum of technical jargon, which results in a maximum of reader understanding. The very significant material on vapor control is handled in such a way as to remove completely the mysteries of condensation and condensation control.

Everybody talks about the weather, but here is shown a method for analyzing climate, an understanding of which is the basis for doing something about the weather.

The chapter on heat control discusses comfort and the mechanics of movement of heat through building materials, and tells how the various insulating materials work.

The chapter on vapor control is a real contribution to the construction industry. Here the mysteries and vagaries of vapor and its behavior, as well as its control, are discussed in a practical manner.

Following the statements of principles the author provides in the latter half of the book a simple and concise method for putting the stated principles to practical use in terms of comfort, economy and safety from condensation.

The book is beautifully designed and well illustrated with many photographs and drawings.

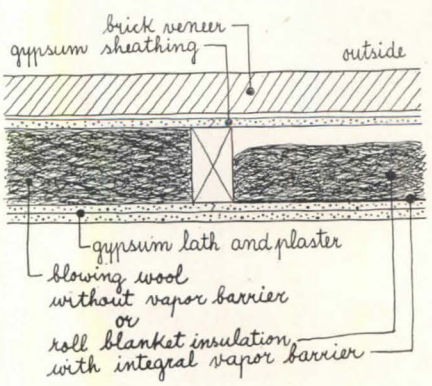
Occupancy of a building determines the amount of water vapor present. Confectioner's store, right, shows high humidity level compared to hardware store, left

(*Reviews continued on page 46*)

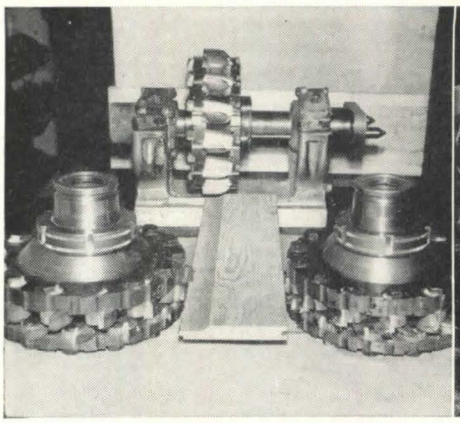
* *Building Materials Expediter, N.A.H.B. See* ARCHITECTURAL RECORD, *May 1951, p. 14.*

INSULATION THICKNESS, Inches	none	1	2	3	3⅝
CONDUCTANCE "C"		0.27	0.14	0.090	0.075
ALL ZONES					
HEAT TRANSMISSION "U"	0.35	0.15	0.097	0.072	0.065
% OF HEAT STOPPED by Insulation		56%	72%	79%	81%
ZONE I					
COMFORT RATING winter	51.2°	61.7°	64.7°	66.1°	66.5°
COMFORT RATING summer	90.7°	81.9°	79.4°	78.3°	78.0°
ECONOMY RATING		$41.70	$53.40	$58.80	$60.60
OCCUPANCY-MOISTURE RATING	8%*	61%	73%	79%	**

brick veneer on gypsum sheathing

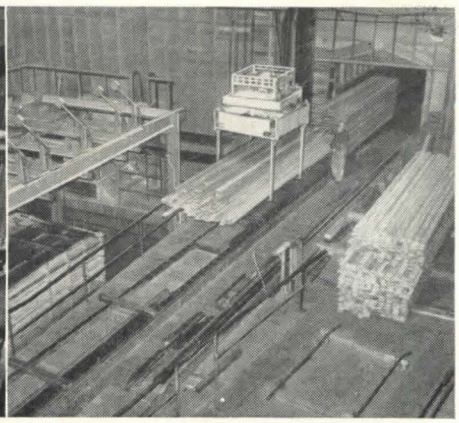


Analyses of particular types of construction in terms of comfort rating, economy rating and occupancy rating—data for brick veneer on gypsum sheathing. Illustrations from DESIGN OF INSULATED BUILDINGS



THREE CUTTER HEADS, used in planing mill, arranged to show how they shape drop siding. Whirling at 3,250 r.p.m., they cut tongue, groove and channel simultaneously.

GANG SAW (seen from feeding end) cuts big cants into lumber of wanted thickness. Multiple-blade saws quickly transform these huge cants into many lumber items.



LUMBER is carried in units by crane to chain transfer systems leading to rough dry sheds or planing mills for further fabrication. Here lumber is entering the unstacker.

GOOD LUMBER...*through* Efficiency in Manufacture

When you are in the market for the "best buy" in lumber, look to the producer who can convert good logs into fine lumber most efficiently.

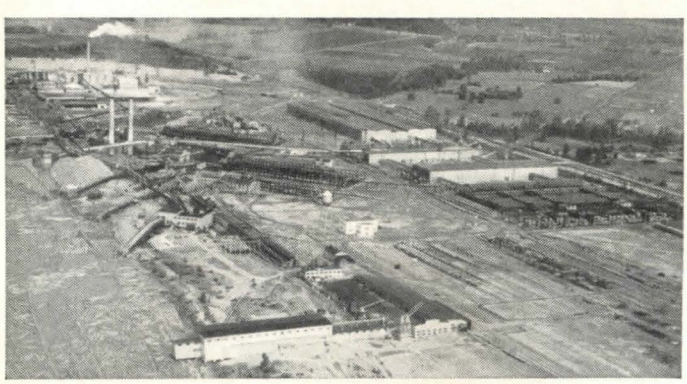
On that test, one famous line of lumber products stands out above all others. It is the one branded . . . "Weyerhaeuser 4-Square".

If you could follow the flow of lumber through a Weyerhaeuser mill, you would see a series of sawing, sorting, kiln-drying and finishing operations demonstrating mass production at its best. Slow and costly hand operations have been virtually eliminated. Belts, rollers and conveyors, rail cars, cranes and straddle buggies move the lumber along swiftly. An amazingly efficient arrangement of every type of saw, trimmer, surfacer, shaper and mechanical device for manufacturing lumber . . . many designed by Weyerhaeuser engineers . . . get the maximum footage of good, usable lumber from every log.

These great mills are ingenious in design and efficient in layout. And for every dollar invested in safer, more pleasant and efficient plants; in finer, faster saws; more efficient conveyors, and more precise control equipment, Weyerhaeuser has been able to deliver better lumber value to the consumer.

When you need good lumber, in a wide selection of species and grades, see your Weyerhaeuser 4-Square Lumber Dealer.

One of a series of advertisements defining the important factors contributing to the production of good lumber.



The Longview, Washington, Mills

At mills located on the West Coast and Inland Empire, Weyerhaeuser 4-Square Lumber is produced in a range of products from Douglas Fir, Idaho White Pine, Ponderosa Pine, West Coast Hemlock, Western Red Cedar and related species.

Weyerhaeuser 4-Square Lumber and Services

WEYERHAEUSER SALES COMPANY • ST. PAUL 1, MINNESOTA

REQUIRED READING

(*Reviews continued from page 42*)

ENGLAND AGAIN

The Buildings of England. Nottinghamshire. By Nikolaus Pevsner. Penguin Books, Inc. (3300 Clipper Mill Road, Baltimore, Md.), 1951. 7⅛ by 4⅜ in., 248 pp., illus. 85 cents.

The second of a series which will include all the counties of England, this book in very thorough fashion treats the buildings of Nottinghamshire. An alphabetical arrangement of descriptions of the buildings makes up the major portion of the book. The extras include a map of the county, placing each name mentioned; an introduction of background material; a glossary; and indexes of plates, artists and places.

The emphasis is aesthetic appreciation; the historic range, from prehistoric times to the present day; the subject matter, all architectural features of buildings of interest. A 64-page center section of photographs adds to both the interest and the value of the work.

Nineteenth Century Architecture in Britain. By Reginald Turnor. The British Book Center, Inc. (122 East 55th Street, New York 22, N. Y.), 1951. 6 by 9 in. 118 pp., illus. $4.75.

"Our subject is the nineteenth-century transition from classicism, through the Gothic Revival, to decay, death, and the signs of new life; and the progress of the Romantic Movement, which paradoxically ended by killing the romance of architecture among other arts." So the author defines the province of his work, to be concerned with the middle of three architectural revolutions which have occurred in England during the past three and a half centuries — the first being the Renaissance, an esthetic revolution; the third, having to do with the use of materials and still going on, a materialistic revolution.

This middle revolution Mr. Turnor characterizes as "moral" — a Battle of the Styles, the overthrow of established Renaissance tradition by, among other lesser forces, the Gothic Revival. In this hundred-year span the author traces the decline of the building arts from "the order and decency of traditional Georgian design to a tastelessness and anarchy which reached its lowest point about the time of the Great Exhibition." The decline, the state of "tastelessness and

(*Continued on page 50*)

"EXCEEDINGLY SATISFIED WITH THEM"

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RUSCO Hot-Dipped Galvanized Prime Window

REPORT BIG SAVINGS ON INSTALLATION, LABOR AND MAINTENANCE WITH REVOLUTIONARY PRE-ASSEMBLED UNIT

INSTALLED IN MINUTES in many types of construction—because it is a *complete* window unit. Comes finished painted, fully-assembled with glass, screen, built-in weather-stripping, insulating sash (optional) and wood or metal casing—all ready to place in the window opening!

LOW INITIAL COST, plus savings on installation and minimum maintenance make the Rusco Prime Window that rarest of all combinations—a top quality specification that actually reduces building cost!

THE EXCLUSIVE FEATURES of the Rusco Prime Window offer many other conveniences and advantages. For example, the glass and screen panels are easily removable from the inside. Thus, materials can be passed through the full window opening with breakage minimized. Filtered screen ventilation control permits *regulated* ventilation and full protection for drying plaster. And many others.

For catalog of data and specifications, see your local Rusco Prime Window distributor, or mail coupon below.

STATE-AIDED HOUSING PROJECT, EVERETT, MASS.

Rusco Prime Windows are used throughout on these attractive multiple-dwelling units. Used as flankers on the fixed picture window units, they permit controlled, filtered-screen ventilation.

ARCHITECTS: Drummey & Duffill, *Boston, Mass.*
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GLASS AND SCREEN INSERTS EASILY REMOVED FROM INSIDE FOR CONVENIENCE IN CLEANING. The Rusco removable sash feature has tremendous appeal as a convenience and safety feature.

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

REQUIRED READING

(*Continued from page 46*)

anarchy" the author attributes to a Victorian practice: the application of moral standards to esthetic and practical questions.

Interestingly and authoritatively written, Mr. Turnor's study of nineteenth century architecture in Britain will find a place not only among students of the subject, but also among those for whom Regency and Victorian times are of interest. One hundred twenty-seven photographs amplify the text.

The City of London. A Record of Destruction and Survival. The Architectural Press (9–13 Queen Anne's Gate, London, S.W.1), 1951. 9½ by 7¼ in.; 352 pp.; 360 photographs, engravings and maps, 40 in color. 25 shillings net.

With something more than civic pride — maybe with affection — is told the story of the City of London. From the time the Romans built a wall 17 centuries ago to the present reconstruction period, these pages proclaim in unwritten statement that, come great fires, come blitzes, come what may — the City of London will stand. And not only will it stand, but it will stand *uniquely* among cities.

The book is divided into five parts: (1) a description of the aims of the reconstruction proposals of 1947 and how they relate to the city's life and activities; (2) a brief account of the City's growth and development; (3) a record of war damage; (4) supplement to Part 1, with mention of rebuilding in progress at the end of 1950; (5) the full text of the consultants' (Dr. C. H. Holden and Professor W. G. Holford) final report on reconstruction to the Common Council.

As a pictorial account alone, the book is noteworthy. Here is the first known picture of London, made in A.D. 296. Here is a series of hitherto unpublished photographs of the bomb damage from 1940–1945, and a series of drawings by Gordon Cullen visualizes the City after reconstruction is completed. But it is not the pictorial element so much as it is the delightfully written text which flavors this book pleasingly English.

The text, pictures, drawings, numerous maps, Consultants' Report, and chronological table of the City's total history add up to the story of a great city — told with something more than civic pride, with affection.

(*Reviews continued on page 52*)

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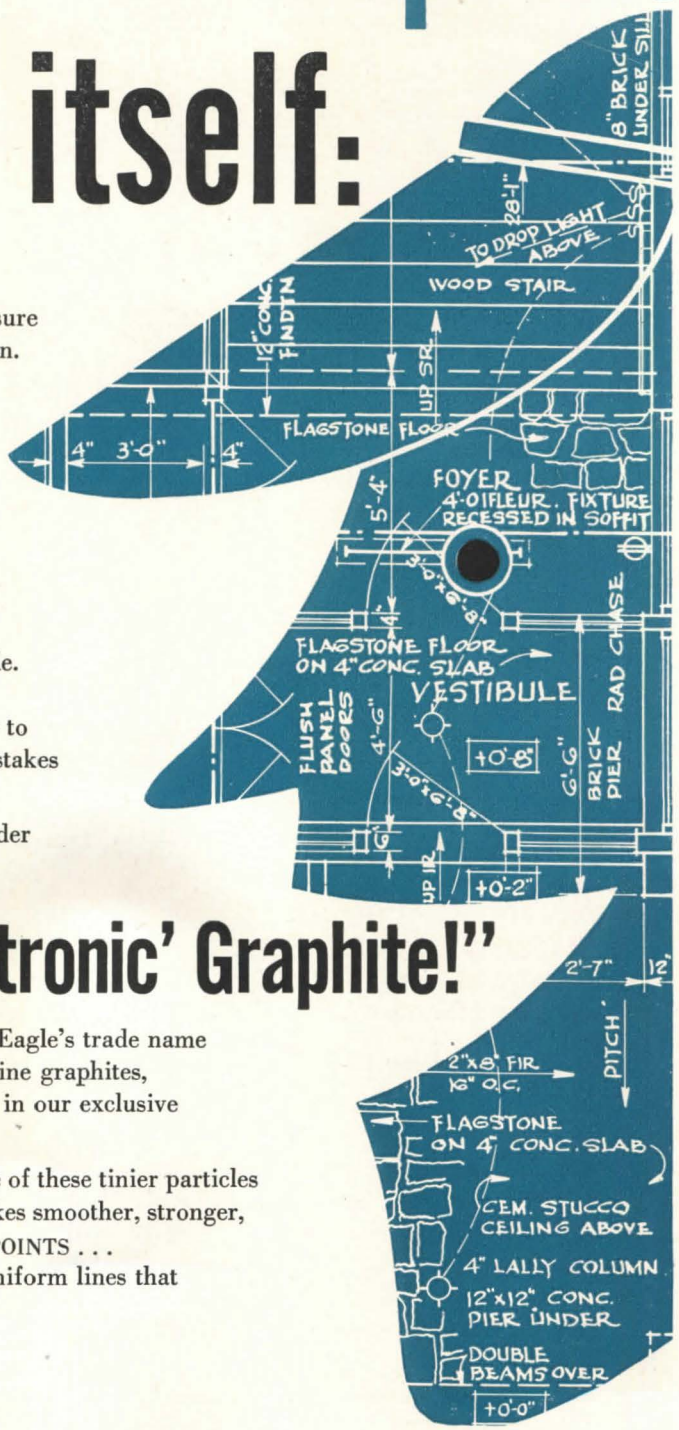
"No wonder I say . . . no wonder everyone is saying . . .



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REQUIRED READING

(Reviews continued from page 50)

BOOKS RECEIVED

History of Religious Architecture, A. By Ernest Short. W. W. Norton & Co., Inc. (Scranton, Pa.) — A history dealing with buildings representing many religions from all parts of the world; "an attempt," according to the author, "to trace the age-long effort to enclose and cover a space which would enshrine the idea of Godhead."

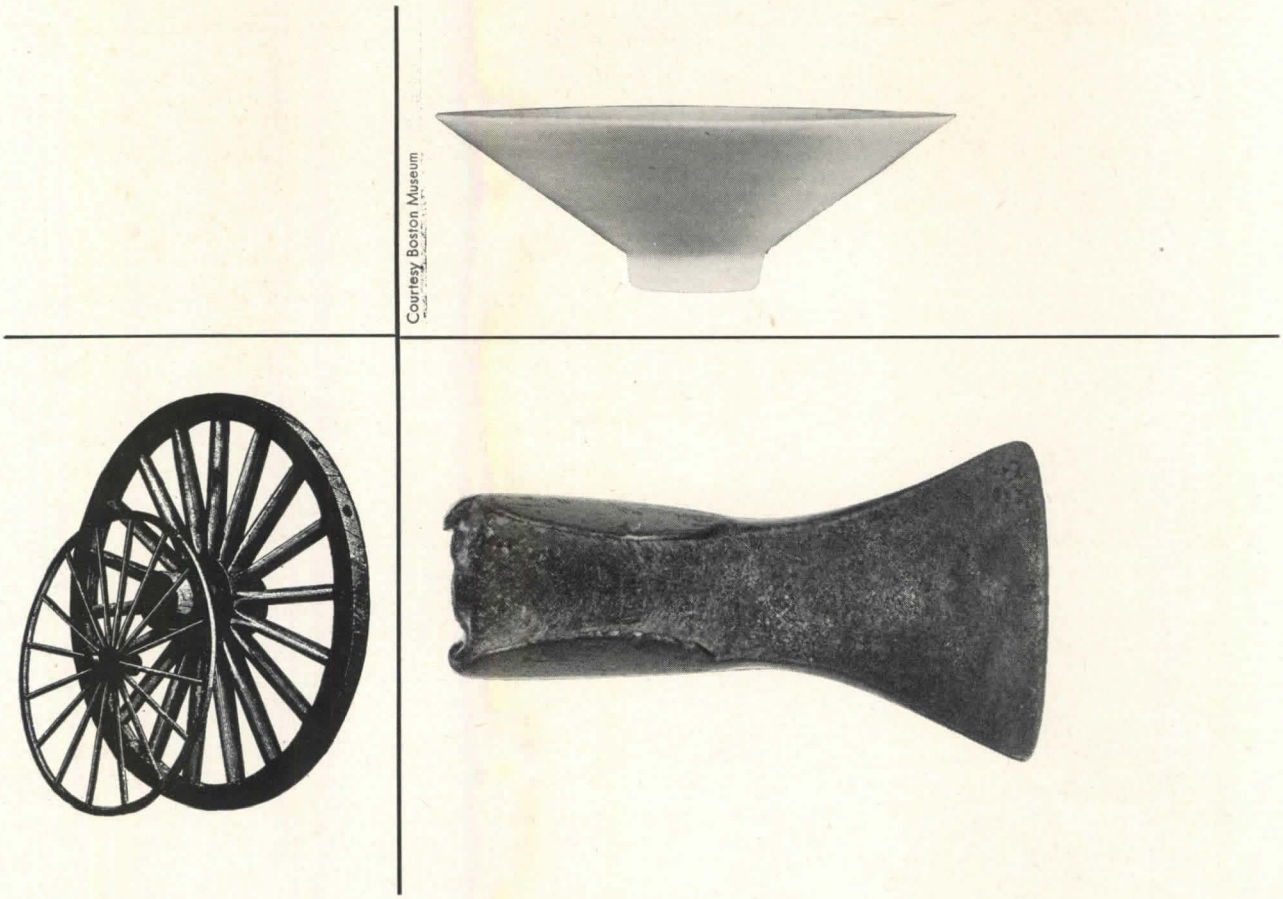
Country Buildings. How to Appreciate Them and How to Sketch Them. By William R. Finch. The British Book Centre, Inc. (New York) — Lessons in drawing and cursory details of construction, with many sketches of English cottages and outbuildings to demonstrate the drawing techniques described in the text.

The Fabric of Modern Buildings. By E. O. Warland. The British Book Centre, Inc. (New York) — "A practical book for architects, builders and students, who are seeking detailed information upon the employment of modern material and methods in building construction."

Maryland Builds. Report of the Department of Public Improvements and the State of Maryland. For the Period January 1, 1950 to January 8, 1951. Department of Public Works (Baltimore) — A year's construction progress and achievement record; with reports on hospitals, training schools, educational facilities, various other public buildings, complete or under construction.

Light, Photometry, & Illuminating Engineering. By William E. Barrows. McGraw-Hill Book Co. (New York) 3rd ed. — Revised text for electrical engineering students.

Reference Handbook for Construction Engineers, Architects, Builders, Superintendents of Construction, and Building Foremen. By H. G. Richey. H. G. Richey (New Orleans) — Intended as a working tool, and containing much useful construction data in tabular form to facilitate reference in the field.



DESIGN FOR TOMORROW

AN AX HEAD of the Bronze Age, wagon wheels, a Chinese bowl of the Sung dynasty, are reminders that design occasionally achieves an ageless quality.

In architecture, today, is there anything comparable?

The fact is that architecture is being seriously questioned. It is said to be overbalanced with technology, missing something of the artistry of the objects above. It is said to be too intellectual for general human response. Questioning of this kind, once considered romantic nonsense, has now reached the inner circles of architecture.

RECORD editors have long been conscious of a widespread hunger for discussion, and have been preparing a series of articles with the general theme of humanism in architecture. John Burchard's great convention address (July issue of the RECORD) was an appetizer not to be missed. Henry-Russell Hitchcock (August) carried it a bit farther with his discussion of the International Style. In this issue Lewis Mumford adds a heavier item, in his own well-known style. Other famous authors and practicing architects are busy on further articles, many with unpredictable incisiveness.

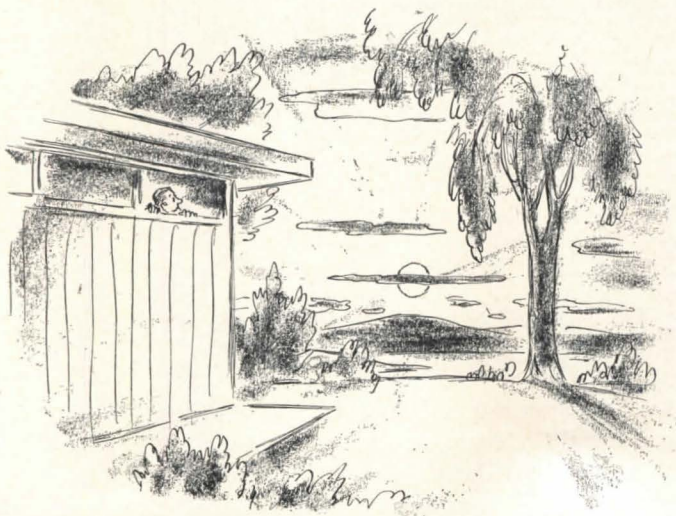
We do not promise that every single item will be palatable to every reader. We do offer full discussion on both sides of any arguments that develop. There will also be opportunity for open discussion; readers are invited to join in whenever they feel moved to comment.

It is our hope that the RECORD's series (programmed to continue indefinitely) will help not only to clarify philosophical aims, but also to translate those into design achievements.

The Editors — E. G.

FUNCTION AND EXPRESSION IN ARCHITECTURE

By Lewis Mumford



"We, today, know that the machine represents only a fragment of the human spirit"

ONCE UPON A TIME a great motion picture palace was opened; and an array of notable New Yorkers was invited to the first night. For at least ten minutes, but for what seemed the better part of an hour, the audience was treated to a succession of lighting effects, to the raising and lowering of the orchestra platform, and to the manifold ways in which the curtain could be lifted and parted. For a while, the audience was delighted by the technical virtuosity displayed: but when nothing further seemed about to happen, they were bored: they were waiting for the real performance to begin.

Modern architecture is now in a state similar to that of the Radio City Music Hall on the opening night. Our best architects are full of technical facility and calculated competence; but from the standpoint of the audience, they are still only going through the mechanical motions. The audience is still waiting for the performance to begin.

Now, in all systems of architecture, both function and expression have a place. Every building performs work, if it is only to keep off the rain or to remain upright against the wind. At the same time, even the simplest structure produces a visual impression upon those who use it or look at it: unconsciously or by design, it says something to the beholder and modifies, in some slight degree at least, even his bodily reactions. Functions permanently invisible, like those performed by the foundations or the heating apparatus, may remain outside the architectural picture; but every function that is visible contributes in some degree to expression. In simple monuments, like obelisks, or even in more complex structures like temples, the function of the building is subordinate to the human purpose it embodies: if such structures do not delight the eye and inform the mind, no technical audacity can save them from becoming meaningless. Indeed, ideological obsolescence is more fatal than technical obsolescence to a work of architecture. As soon as a building becomes meaningless, it disappears.

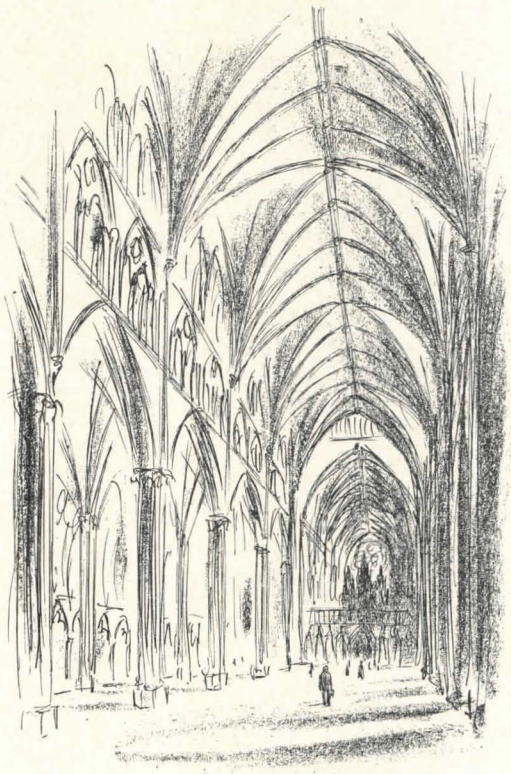
Modern architecture crystallized at the moment that people realized that the older modes of symbolism no longer spoke to modern man; and that, on the contrary, the new functions brought in by the machine had something special to say to him. Unfortunately, in the act

of realizing these new truths, mechanical function has tended to absorb expression, or in more fanatical minds, to do away with the need for it. As a result, the architectural imagination has, within the last twenty years, become impoverished: so much so that the recent prize-winning design for a great memorial, produced by one of the most accomplished and able of the younger architects, was simply a gigantic parabolic arch. If technics could not, by itself, tell the story of the pioneer, moving through the gateway of the continent, the story could not, in the architectural terms of our own day, be told. This failure to do justice to the symbolic and expressive functions of architecture perhaps reached its climax in the design of the United Nations Headquarters, where an office building has been treated as a monument, and where one of the three great structures has been placed so as to be lost to view by most of the approaches to the site.

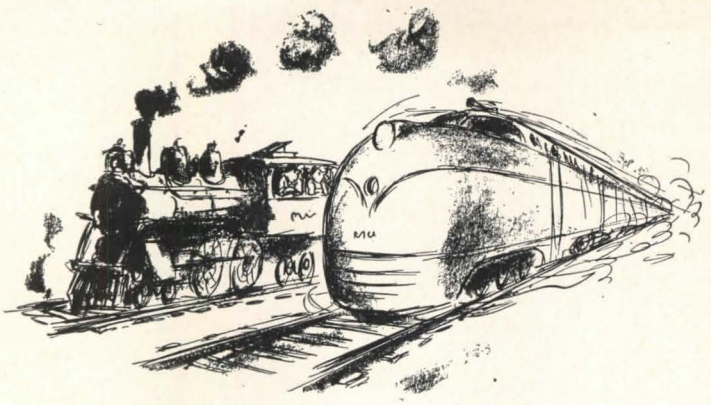
By now, many architects have become aware of a self-imposed poverty: in absorbing the lessons of the machine and in learning to master new forms of construction, they have, they begin to see, neglected the valid claims of the human personality. In properly rejecting antiquated symbols, they have also rejected human needs, interests, sentiments, values, that must be given full play in every complete structure. This does not mean, as some critics have hastily asserted, that functionalism is doomed: it means rather that the time has come to integrate objective functions with subjective functions: to balance off mechanical facilities with biological needs, social commitments, and personal values. And to understand the new prospects that open before architecture, we must first do justice to functionalism and to see how it came about in our time that the mechanical part or the even more abstract spatial form was taken for the whole.

As so often happens, functionalism came into the world as a fact long before it was appraised as an idea. The fact was that for three centuries engineering had been making extraordinary advances in every department except architecture: a passion for economy, a methodical concentration upon productive work, a growing concern with practical needs, had given authority to mechanical methods, rational calculations, repetitive processes; and had opened up new resources and energies. Even before the machine began to exert its special discipline, functional needs had tended to produce strong geometric or organic forms in building: a barn, a haystack, or a silo, a castle, a bridge, a seaworthy sailing vessel — all these are functional forms whose cleanness of line and rightness of shape spring, like the shape of a sea-gull, from the work to be performed.

By and large, people do not consciously enjoy such structures until they have ceased to use them, or at least until they pause long enough to take in the meaning of what they have done. But these structures have at least the quality of all organic creations: they identify themselves and express the functions they serve. When a steam locomotive is fully developed, for example, so that all its excrescences and technological leftovers are absorbed in the final shape — streamlined as we now say — that locomotive not merely *is* more speedy than the primitive form, but it unmistakably says speed, too. These fresh mechanical interests had a vital message for modern architects, for they reopened a vista of constructive possibilities that had been closed in the Renaissance by a deliberate sacrifice of function to expression, and of expression itself, once the baroque impulse died, to mere correctness and archaeological refinement. What Durham Cathedral says, by reason of its massive stone columns and free space, could not be said with bamboo poles and thatched roofs. By the varied means modern engineering had placed at the architects' disposal, the architects' imagination should have been effectively expanded, if human purposes in other departments of

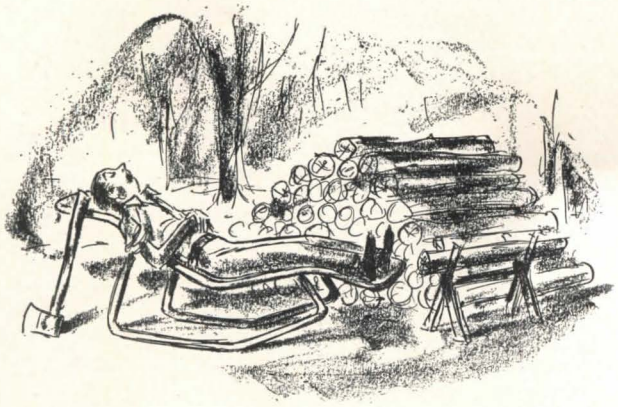


"In the cathedrals of the Middle Ages, economy, comfort and good acoustic properties were all cheerfully sacrificed to the magnification of glory and mystery, in a fashion designed to overwhelm the worshipper"



". . . that locomotive not merely is *more speedy . . . but it unmistakably says speed"*

". . . functional forms whose cleanness of line spring, like the shape of a sea-gull, from the work to be performed"



life had kept pace with modern man's technical aptitudes.

One of the first people to understand the implications of functionalism as a criterion of good form was the American sculptor, Horatio Greenough. In the middle of the nineteenth century, at the end of his all-too-brief life, he published a series of papers that for the first time formulated the new esthetic of the machine and widened its applications to all forms of beauty. Greenough, a student of current biology as well as of sculpture, carried further the great theorem of Lamarck: Form follows function. He saw that this generalization applies to all organic forms, even man-created ones.

Greenough recognized that the effective works of art in his own day, the primitives of a new era, were not the derivative symbols of eclectic painting and architecture, but the strong virile forms, without any historic attachment than to their own age, of the new tools and machines and engineering structures that met the needs of modern life. The American ax, the American clock, the clipper ship — in every line of these utilities and machines necessity or function played a determining part. They were without ornament or decorative device of any kind, except perhaps for a surviving ship's figurehead: like the naked body, when harmoniously developed, they needed no further ornament or costume to achieve beauty. For what was beauty? "The promise of function."

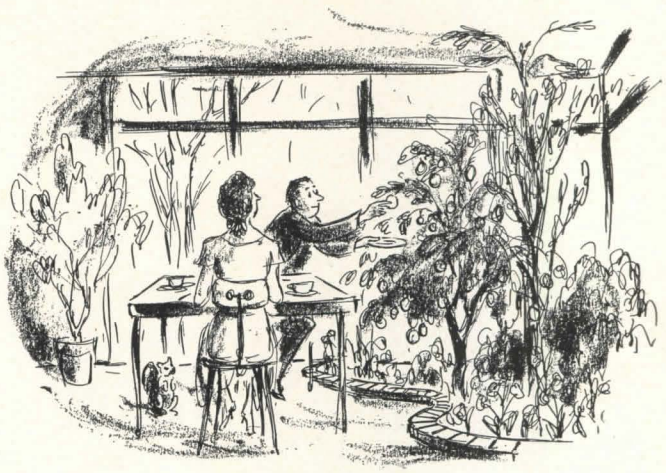
As formulated by Greenough, that was a breathtaking, a spine-tingling thought; and in the minds of Greenough's successors, such as Louis Sullivan, who may have breathed in Greenough's ideas with his native New England air, this doctrine provided a genuine starting point for the new architecture. No building could hope to do justice to the values of our age that did not, by design, follow the lines dictated by effective function: the beautiful, as Emerson put it, must rest on the foundations of the necessary.

But while Greenough's doctrine was a salutary one, it was incomplete; for it failed to do justice to those specifically human values that are derived, not from the object and the work, but from the subject and the equality of life the architect seeks to enhance. Even mechanical function itself rests on human values: the desire for order, for security, for power; but to presume that these values are, in every instance, all-prevailing ones, which do away with the need for any other qualities, is to limit the nature of man himself to just those functions that serve the machine. One may therefore profitably contrast Greenough's doctrine with that advanced by his contemporary, John Ruskin, in The Seven Lamps of Architecture.

Contrary to popular misinterpretation, Ruskin had a very healthy respect for the utilitarian triumphs of the Victorian age: he said that a British ship-of-the-line, that early triumph of standardization and pre-fabrication, was one of the chief reasons for admiring his period. But Ruskin insisted that building was one thing and architecture was another: on his theory, a building became a work of architecture only when the bare structure was embellished with original works of sculpture and painting. In the form that Ruskin put it, this theory, which made architecture dependent upon the non-architectural arts, was glaringly false. Followed to its end, it would lead to the conclusion Geoffrey Scott reached in The Architecture of Humanism: a doctrine that would readily mask the organic anatomy of a building beneath a contradictory costume, designed by a painter, a decorator, or an "industrial designer."

But Ruskin's notion, that architecture is more than mere building, was in fact sound: it becomes acceptable as soon as one re-states it, so as to derive the specifically architectural element, not from painting and sculpture, but from the architect's treatment of the whole building as an image and a plastic form, in order to express, by his modification of pure functional needs, the meanings and values that are integrally related to the structure: underlining the relevant human purposes and values, designing an office-building so that it will make the workers in it feel more efficient and business-like, a university so that the students will be prompted to habits of study and intellectual intercourse, a church so that its communicants will feel more indrawn and exalted. To apply to all the diverse activities and needs of a community, the standards that are appropriate to a factory is clearly a case of irrelevant symbolism. Those qualities that differentiate architecture from building cannot be derived from the mechanical requirements of the structure: they spring from the character and purpose of the user, as these are interpreted and remolded by the architect.

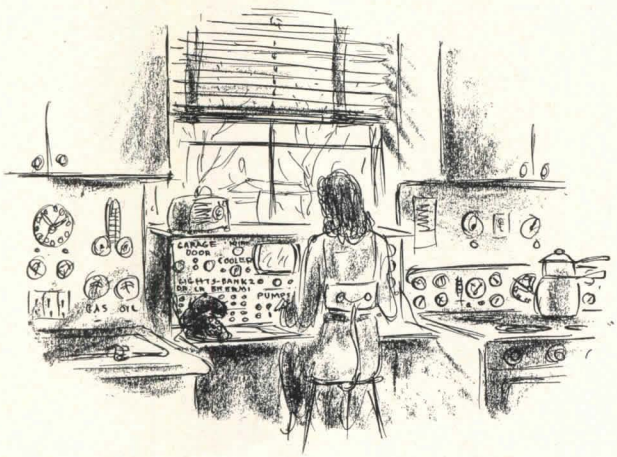
There are doubtless moments when the architect needs the painter and the sculptor, just as he may have need for other handicrafts. But when an architect uses all the resources of his art, the building itself becomes a multi-dimensional image, a whole series of pictures that change in quality with every hour of the day, and with every change in position by the observer. So, too, it becomes a highly complex plastic form, whose interior space and openings are as significant as the mass, since in a building the possibility of movement through space provides the architect with resources that are not at the disposal of the sculptor. By his choice of materials and textures and colors, by the contrasting play of light and shade, by the advance and recession of planes, by the clarification and organization of the plan in relation to the elevation, the architect produces a highly complex symbol of human purposes and values, emotions, feelings, and sentiments.



"It was the desire to embrace nature that led to the introduction of the garden into the interior"

Our age properly renounced the use of antiquated symbols in its architecture; and at that moment, many architects thought it was possible to renounce every manner of symbolism as well. But the actual effect of the contemporary effort to strip architecture down to building was to make the machine — the dynamic instrument of this change — itself an object of veneration. Feelings and emotions that had hitherto attached themselves to organisms and persons, to political institutions or religious ideals, were now canalized into the machine. Like the hero of an almost forgotten play by Eugene O'Neill, the modern architect made a god of the Dynamo, as if the sole meaning of life for modern man lay in his control of matter and energy, or in his further transposition of austere machine-forms into depersonalized abstractions, such as the Cubists and the later abstractionists gave form to in their paintings. As a result, symbolism, driven out the front door by the doctrine that form follows function, came in at the rear. Much of what was masked as strict functionalism or as austere rationalism during the last generation in architecture was in fact a sort of fetichism: an overvaluation of the machine — or of the abstract shadow the machine cast on the mind — as an object of love.

Now as a symbol, the machine might properly have represented the crude industrial culture of the mid-nineteenth century: an age overconfident of the benefits of mechanical progress, brutally negligent of the many inhumanities that accompanied this process. Indeed, even at its starkest and barest, the machine represented



"To presume that the desire for order, for security, for power do away with the need for any other qualities is to limit the nature of man"

something higher than the debased humanism of Victorian ornament, with its sordid, ill-proportioned, mechanical forms, its beery sentimentality. But we today know in 1951, as people could not know in 1851, that the machine, even in its highest developments, represents only a fragment of the human spirit: the very power that it has placed at man's disposal may, so far from ushering in an era of peace and plenty, reduce mankind to the utter barbarism of a war of radioactive extermination. Fortunately, ours is not just the age of Faraday, Clerk-Maxwell, and Einstein, of Watt, Bessemer, and Taylor: it is also the age of Darwin and Bergson and Haldane, of Freud and Geddes and Toynbee, of Kropotkin and Howard and Schweitzer. In short, ours is an age of deep psychological exploration and heightened social responsibility. Thanks to advances in biology, sociology, and psychology, we begin to understand the whole man; and it is high time for the architects to demonstrate that understanding in other terms than economy, efficiency, and abstract mechanical form.

In the multi-dimensional world of modern man, subjective interests and values, emotions and feelings, play as large a part as the objective environment: the nurture of life becomes more important than the multiplication of power and standardized goods, considered as ends in themselves. The Machine can no more adequately symbolize our culture than can a Greek Temple or a Renaissance Palace. On the contrary, we know that our almost compulsive preoccupation with the rigid order of the machine is itself a symptom of weakness: of emotional insecurity, of repressed feelings, or of a general withdrawal from the demands of life. To persist in the religious cult of the machine, at this late day and date, is to betray an inability to interpret the challenges and dangers of our age. In this sense, Le Corbusier's polemical writings, beginning with his publication of Towards a New Architecture, were in no small measure reactionary influence: retrospective rather than prophetic.

Now all this is not to say that the doctrine that form follows function was a misleading one. What was false and meretricious were the narrow applications that were made of this formula. Actually, functionalism is subject to two main modifications. The first is that we must not take function solely in a mechanical sense, as applying only to the physical functions of the building. Certainly new technical facilities and mechanical functions required new forms; but so, likewise, did new social purposes and new psychological insights. There are many elements in a building, besides its physical elements, that affect the health, comfort, and pleasure of the user. When the whole personality is taken into account, expression or symbolism becomes one of the dominant concerns of architecture; and the more complex the functions to be served, the more varied and subtle will the form be. In other words — and this is the second modification — expression itself is one of the primary functions of architecture.

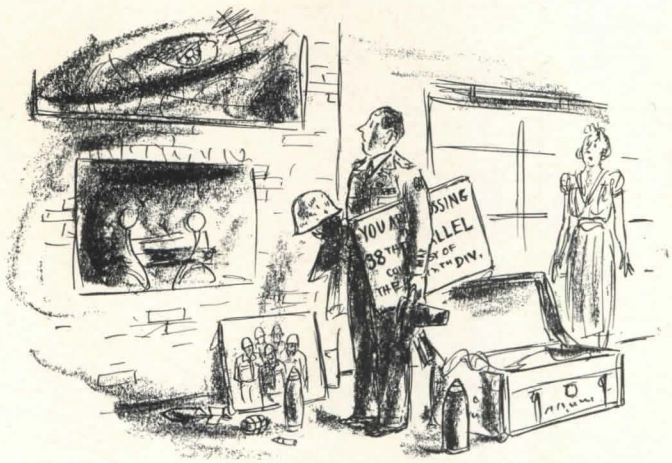
On hygienic grounds, for example, the architect may calculate the number of cubic feet of space necessary to provide air for a thousand people in a public hall; and with the aid of the exact science of acoustics — plus a little luck — he may design a hall which will enable every person to hear with a maximum of clarity every sound that is made for the benefit of the audience. But after the architect has made all these calculations, he has still to weigh them with other considerations that have to do with the effect of space and form on the human soul. In the cathedrals of the Middle Ages economy,

comfort, and good acoustic properties were all cheerfully sacrificed to the magnification of glory and mystery, in a fashion designed to overwhelm the worshipper. In terms of medieval culture, that was both effective symbolism and true functionalism. In the strictly graded aristocratic society of the Renaissance, in which music itself was subservient to the ostentatious parade of upper class families, seeking to impress each other and the populace, the Palladian horseshoe form of opera house, with poor acoustic properties but excellent visibility for the boxholders, likewise did justice to the functions of the building in the order of their social importance, within that culture.

In other words, every building is conditioned by culture and personal aims as well as by physical and mechanical needs. An organic functionalism, accordingly, cannot stop short with a mechanical or a physiological solution. So in the re-building of the House of Commons, Mr. Winston Churchill wisely insisted that the seating space should be considerably smaller than the actual membership, in order to preserve the closeness and intimacy of debate in the House, under normal conditions of attendance. That decision was as wise as the medieval decoration that went with it was inept and meretricious; though an original modern architect might have found a means of echoing, in works of original sculpture, the traditional ceremonies and symbols so assiduously preserved in the British Parliament, beginning with that medieval relic, the Speaker's mace.

The architecture of Frank Lloyd Wright was subjected to a considerable amount of arbitrary critical disparagement during the twenties when mechanization and Cubist depersonalization were regarded, with Le Corbusier, as the all-sufficient ingredients of contemporary form. But this disparagement was based on the very qualities that made Wright's architecture superior to the work of Le Corbusier's school. In Wright's work, the subjective and symbolic elements were as important as the mechanical requirements. From his earliest prairie houses onward, both the plan and the elevations of Wright's buildings were informed by human ideals, and by a sense of what is due to the person whose varied needs and interests must be reflected in the building. It was the idea of the organic itself, the desire to embrace nature, that led to the introduction of the garden into the interior; it was the idea of horizontality as an expression of the prairie that led Wright to emphasize horizontal lines in his early regional houses. So, too, in Wright's later work, a geometrical figure, a circle or a hexagon or a spiral, the expression of a subjective human preference, supplies the ground pattern for the whole building. In such instances, as the late Matthew Nowicki pointed out, the old formula is reversed — function follows form.

Now, when subjective expression is overplayed the results are not always happy — any more than was the case in Renascence buildings, where the ideal of axial balance and symmetry determined both plan and elevation. But to say this is only to admit that, if mechanical functions, taken alone, do not fulfill all human needs, so subjective expressions, if divorced from practical considerations, may become wilful, capricious, defiant of common sense. Accordingly, the more sensitive the architect is to expression, the more capable he is of transforming "building" into "architecture," the greater the need for his own self-knowledge, self-control, self-discipline: above all, for subordinating his own inner wilfulness to the character and purposes of his client.



"Every building is conditioned by culture and personal aims as well as by physical and mechanical needs"

"Now, when subjective expression is overplayed the results are not always happy"

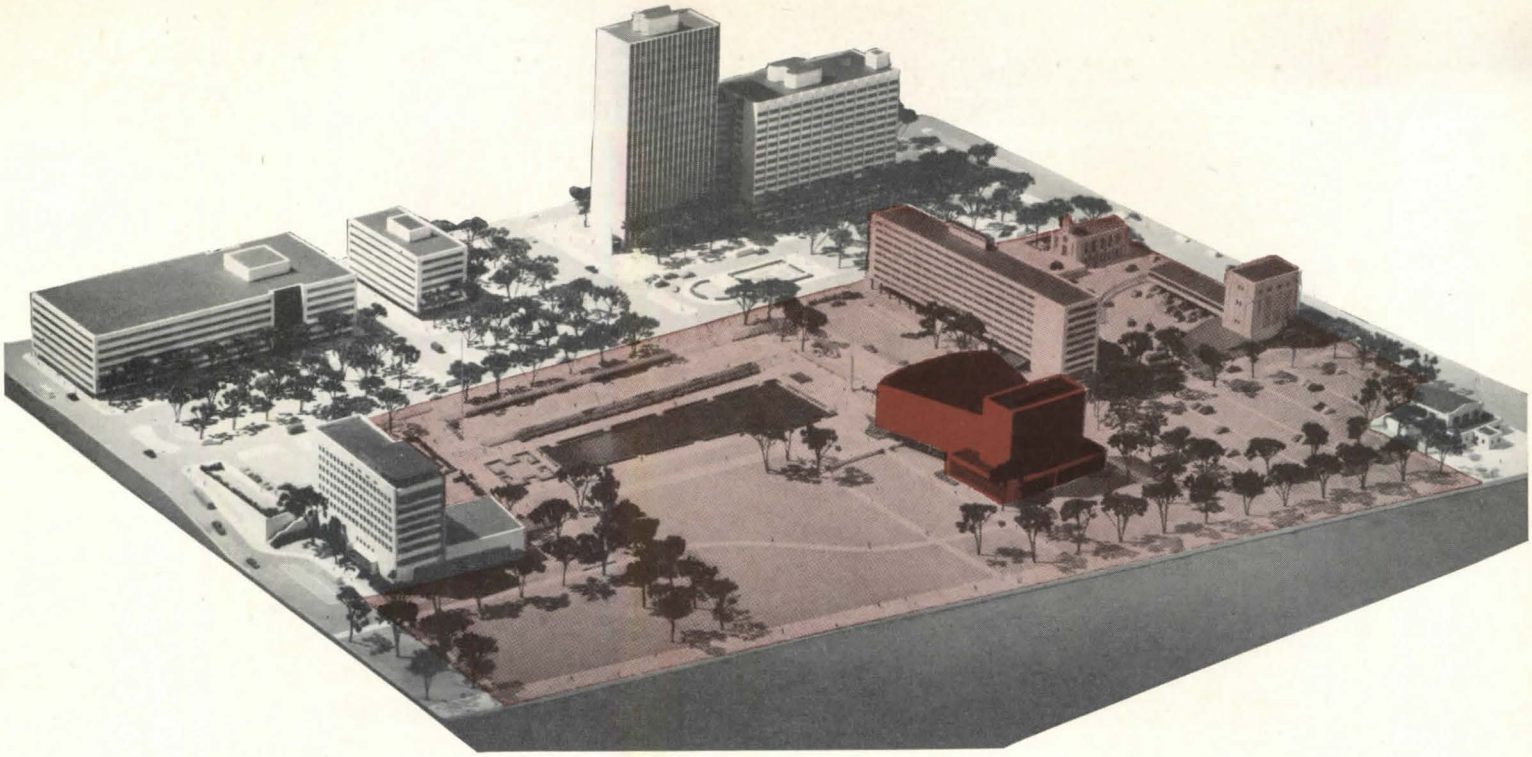
"Like the naked body, when harmoniously developed, they needed no further ornament or costume to achieve beauty"

On this latter score, Frank Lloyd Wright's work is sometimes not impeccable; for all too rarely has he been faced with a client sufficiently strong in his own right to stand up to Wright's overbearing genius, in a way *that* will do justice to every dimension of the problem. The architect who perhaps came closest among our contemporaries, to resolving function and expression, was the late Matthew Nowicki, he whose early death in an airplane accident in 1950 was a loss comparable to that architecture sustained when John Wellborn Root died at an equally early age. In the course of some forty intense years of life, Nowicki had passed through the various phases of modern architecture represented by Cubism, by mechanical functionalism and *Sachlichkeit*, by Le Corbusier's "International Style." Firmly rooted in our own age, he regarded the standard unit, the module, as an essential discipline for the modern architect: the minimum ingredient for form. In such designs as that for the great amphitheater in the State Fair Grounds at Raleigh, North Carolina, now under construction, he used that typical modern form, the parabolic arch, to enclose the suspended facing ranks of the grandstand: an acrobatic feat of great audacity and beauty, appropriate to the functions it served.

But Nowicki knew that all buildings speak a language, and that this language must be understood by the people who use it. When he worked on the preliminary designs for the library and the museum that were to be erected near the State House in Raleigh, he took into account the love and affection the people of North Carolina feel toward that sober piece of provincial classicism. For the sake of meeting their sentiment half way, he was ready to utilize artificial lighting throughout the new buildings in order to create a solid masonry structure which, in its own modern way, would carry on the theme of the beloved older building. That tact, that understanding, that human sympathy stands in full contrast to Le Corbusier's constant demand for people cut to the measure of his own architecture: like old Procrustes, he would amputate the human leg or stretch the human soul to fit the form he has arbitrarily provided for it.

So, again, when Matthew Nowicki went to India to work on the design of a new capitol for the East Punjab (with Mayer and Whittlesey), he brought with him no ready-made stereotypes from the West, but absorbed, with his marvelous sensitivity and intuitive grasp, the Hindu way of life, sympathetic even to the fathomless richness and complexity that expressed itself traditionally in ornament. In the intimate plans for housing and neighborhood units, above all in one of the sketches for the Capitol itself, Nowicki translated this richness into patterns and plans that were wholly in the vernacular of modern building, yet were native to the scene and in resonance with the Hindu personality and with Hindu family life.

Rigorous in its mechanical and spatial foundations, his architecture rose above them to the plane of the social and the personal. Through his human sympathy, through his reverence for all genuine expressions of life, he was equipped as no other architect of his generation perhaps was to effect a fuller reconciliation of the organic and the mechanical, the regional and the universal, the abstract-rational and the personal. Along the path that he began to blaze, modern architecture, if it is to develop and grow, must follow, creating forms that will unite every aspect of the human organism, body and spirit.



THE HENRY & EDSEL FORD AUDITORIUM

CIVIC CENTER, DETROIT, MICHIGAN

Crane Kiehler & Kellogg

O'Dell, Hewlett & Luckenbach

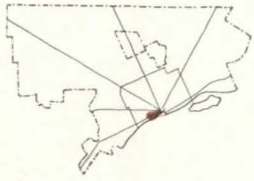
Architects

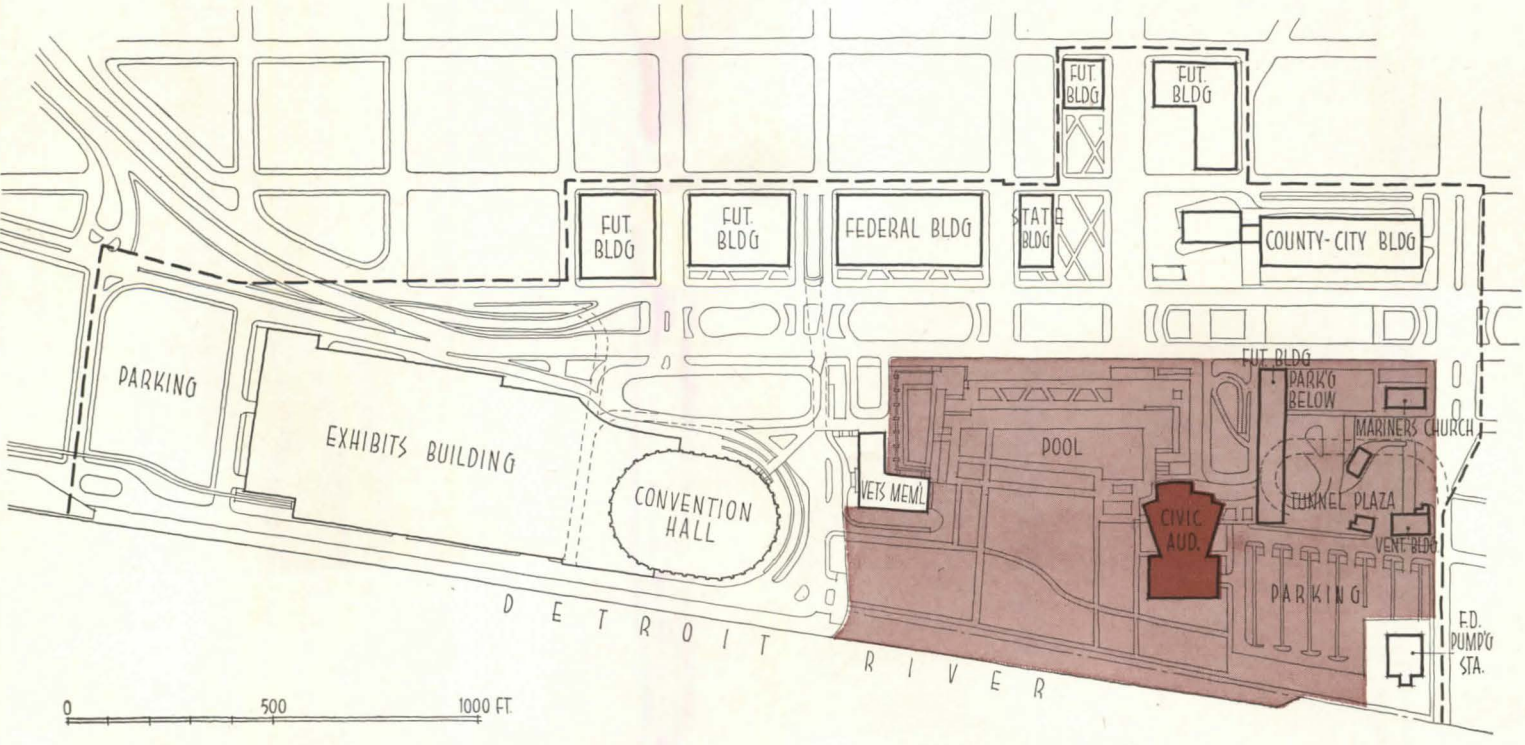
Mayor

Albert E. Cobo

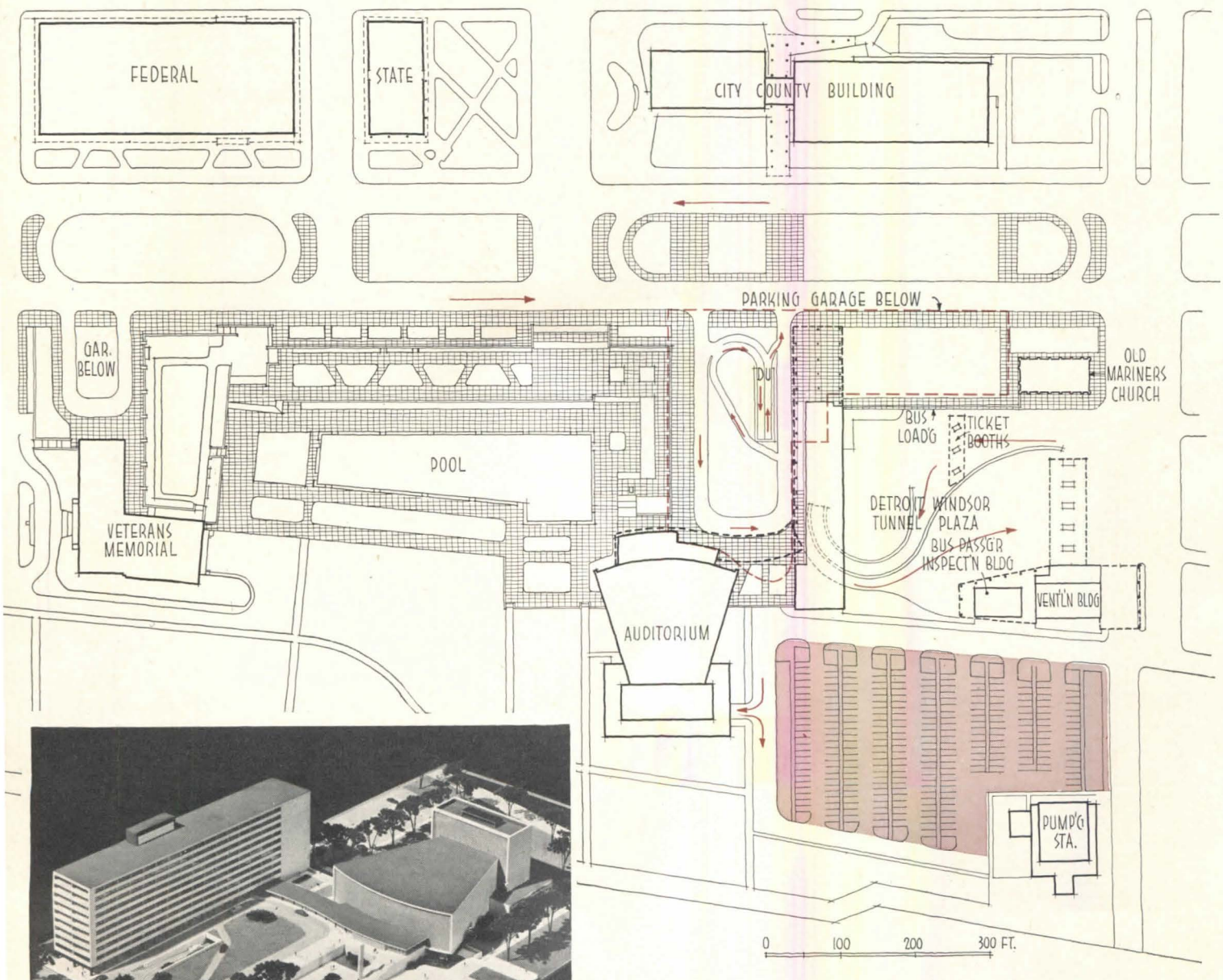
Memorial Hall Commission

J. E. Frawley, President
Frank G. Schemanske, Vice-President
Weld S. Maybee, Secretary
W. B. Waldrip
John W. Libcke, Director





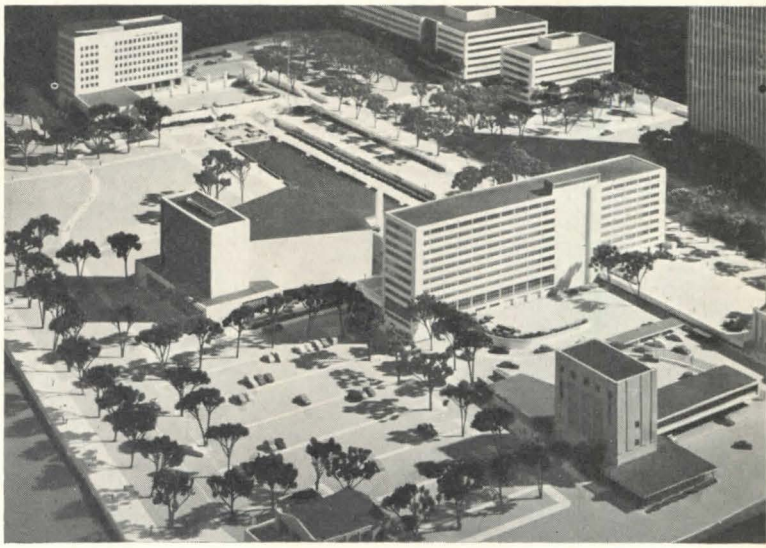
DETROIT CIVIC CENTER — *Traffic Flow and Parking*

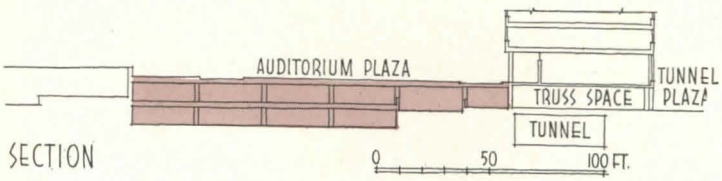


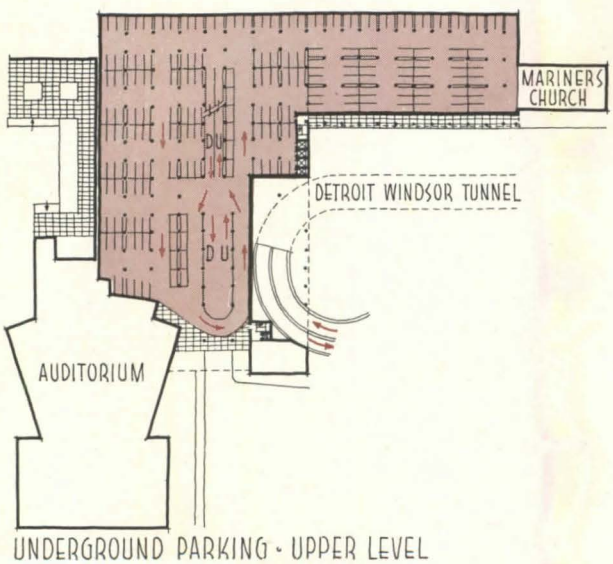
In June of 1950 the Veterans' Memorial Building, first unit in Detroit's new Civic Center to be completed (Architectural Record, January 1951, pp. 100–107), was formally dedicated and opened to the public. The ceremonies marked the end of more than half a century of planning for the ambitious river-side development.

The Henry and Edsel Ford Memorial Auditorium, second part of the project to get under way, is closely integrated with the impressive Civic Plaza which it faces. Its architects very wisely were made responsible for the development of the Plaza as well, and tied the two together not only harmoniously but very efficiently. The Plaza plan originally was worked out by Saarinen, Saarinen and Associates, but had to be changed somewhat following a thorough study of underground facilities such as sewers.

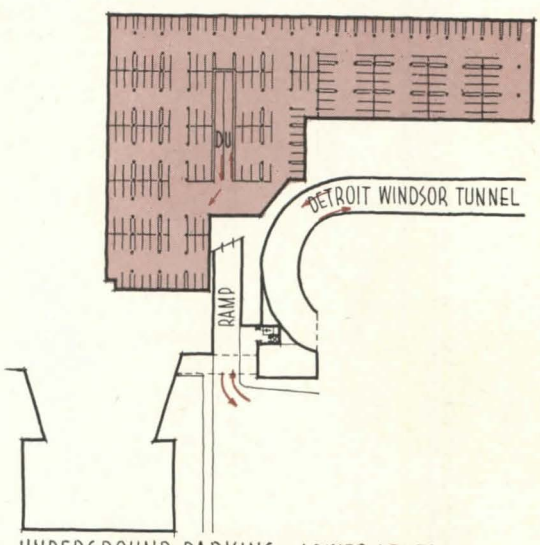
Since Detroit is a city of automobiles, provisions for parking had to be as generous as possible, and the flow of traffic had to be carefully controlled. The Veterans' Memorial has its own limited parking facilities, which already are heavily taxed since the building is in constant use day and night. Convention Hall, directly to the west of the Veterans' Memorial, and one of the few buildings not fronting on the Plaza, also will have its own parking areas. To meet the needs of the rest of the Center — and to take care of the overflow from surrounding buildings as well — a two-level underground garage and a large open parking area to the right rear of the Auditorium are to be provided.





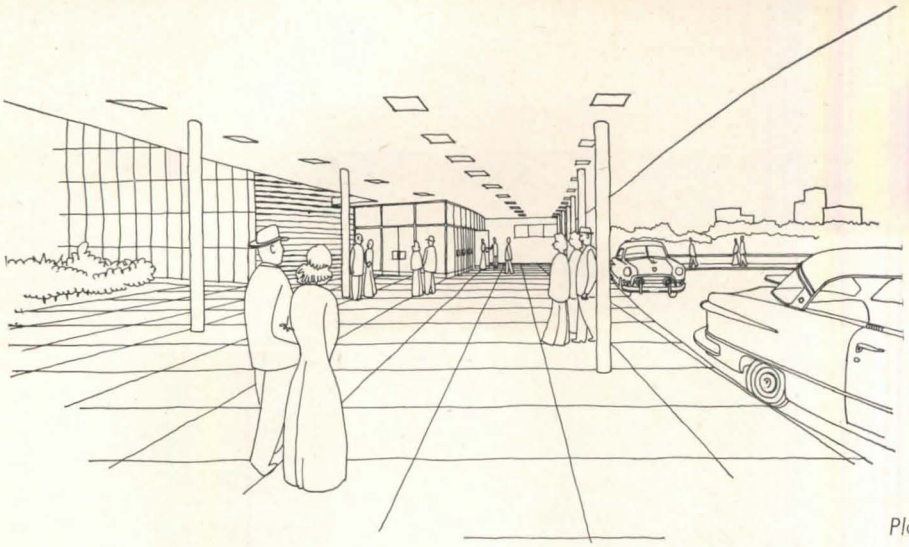


UNDERGROUND PARKING · UPPER LEVEL



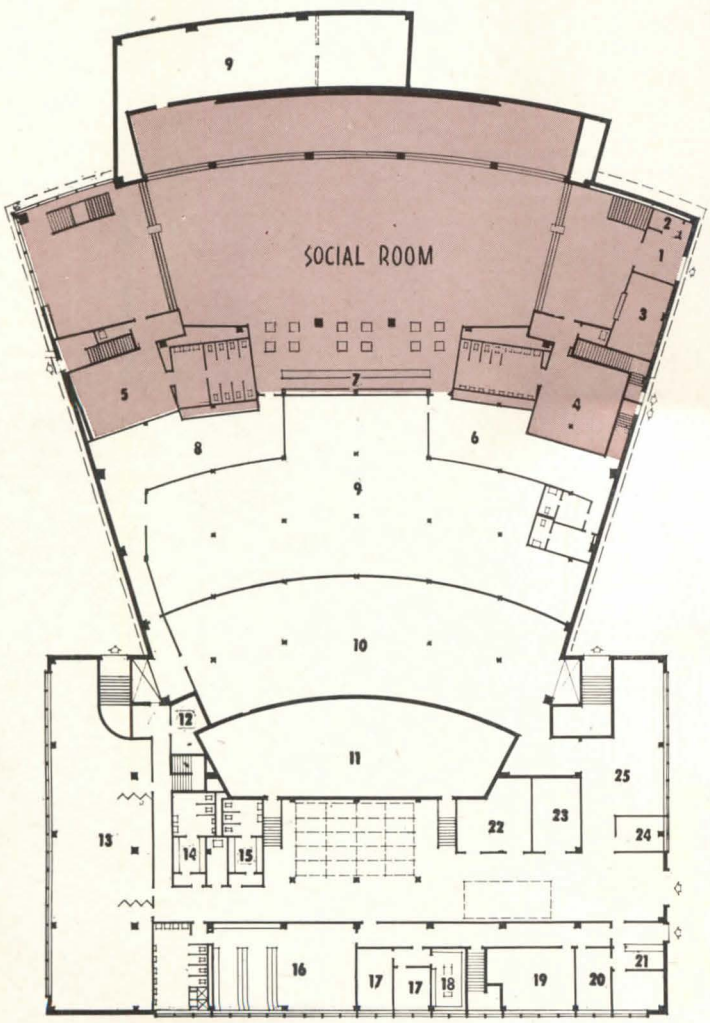
UNDERGROUND PARKING · LOWER LEVEL

Traffic flow and ramp system are ingeniously worked out as arrows above and opposite show. Cars arriving from the Detroit side of the river may go directly down to garage, or to parking area at right rear. Cars coming from Ontario through the tunnel may proceed directly into the garage or may go from the Tunnel Plaza around to the open parking area. From the garage, car passengers will go up to the Plaza either by elevator or by stairs, both leading into the building at the eastern end of the Plaza, connected by covered passage with the Auditorium. The exact nature of this easternmost building has not as yet been determined but a structure of the general shape indicated on the plan is considered essential to terminate the mall



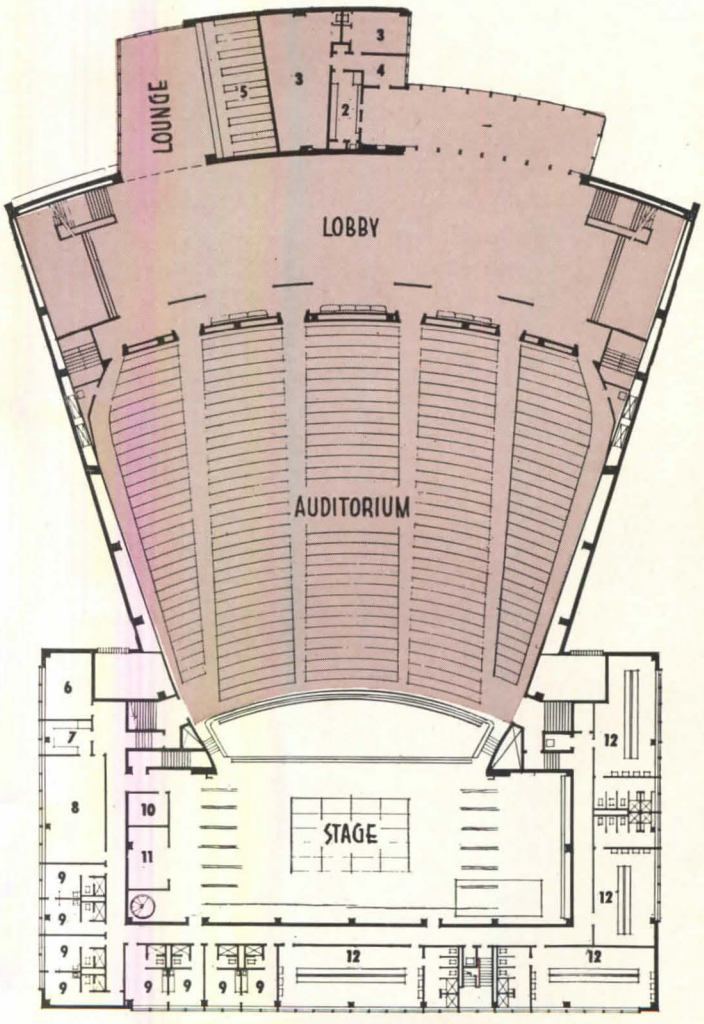
Plaza entrance to Auditorium

DETROIT CIVIC CENTER — *Auditorium*



GROUND FLOOR PLAN

1. Entrance
2. Ticket Office
3. Check Room
4. Men's Lounge
5. Women's Lounge
6. Service Kitchen
7. Refreshments
8. Chair Storage
9. Storage
10. Mechanical Room
11. Orchestra Pit
12. Engineer's Office
13. Rehearsal Rooms
14. Male Help
15. Female Help
16. Musicians' Room
17. Office
18. Music Library
19. Unassigned
20. Instrument Room
21. Stage Office
22. Property Storage
23. Electricians' Room
24. Receiving Room
25. Carpentry Shop



MAIN FLOOR PLAN

MAIN FLOOR

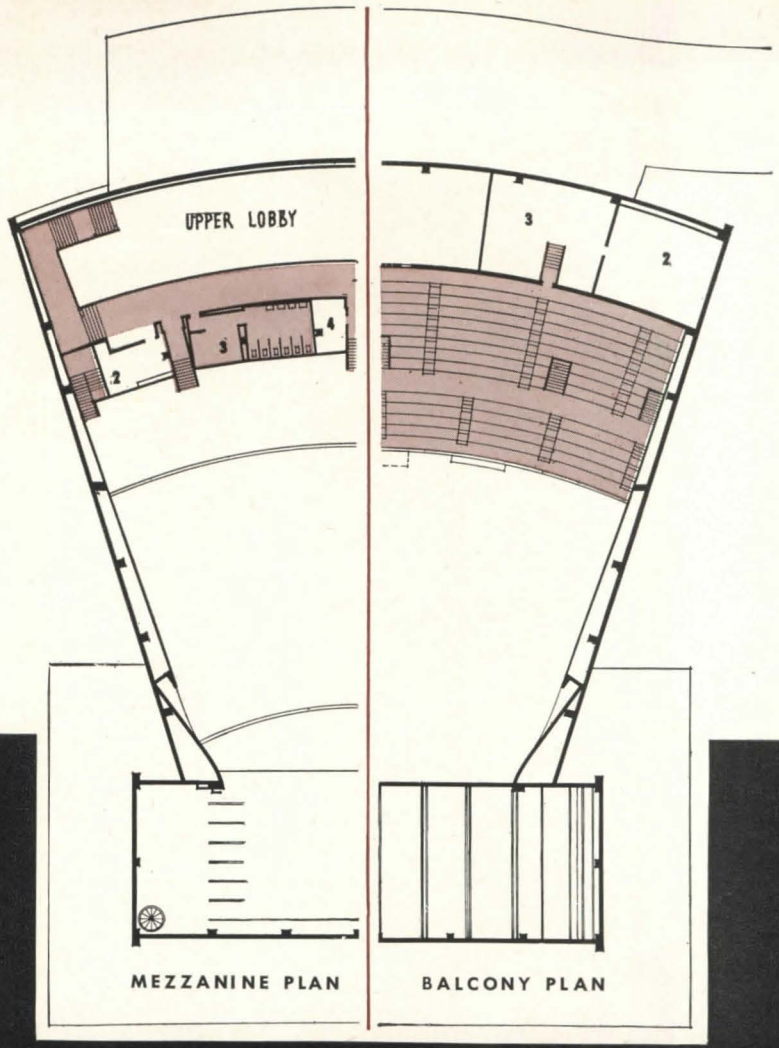
1. Vestibule
2. Ticket Office
3. Manager's Office
4. Manager's Reception Room
5. Check Room
6. Reception Room
7. Kitchenette
8. Green Room
9. Private Dressing Rooms
10. Quick Change Room
11. Property Room
12. Chorus Rooms

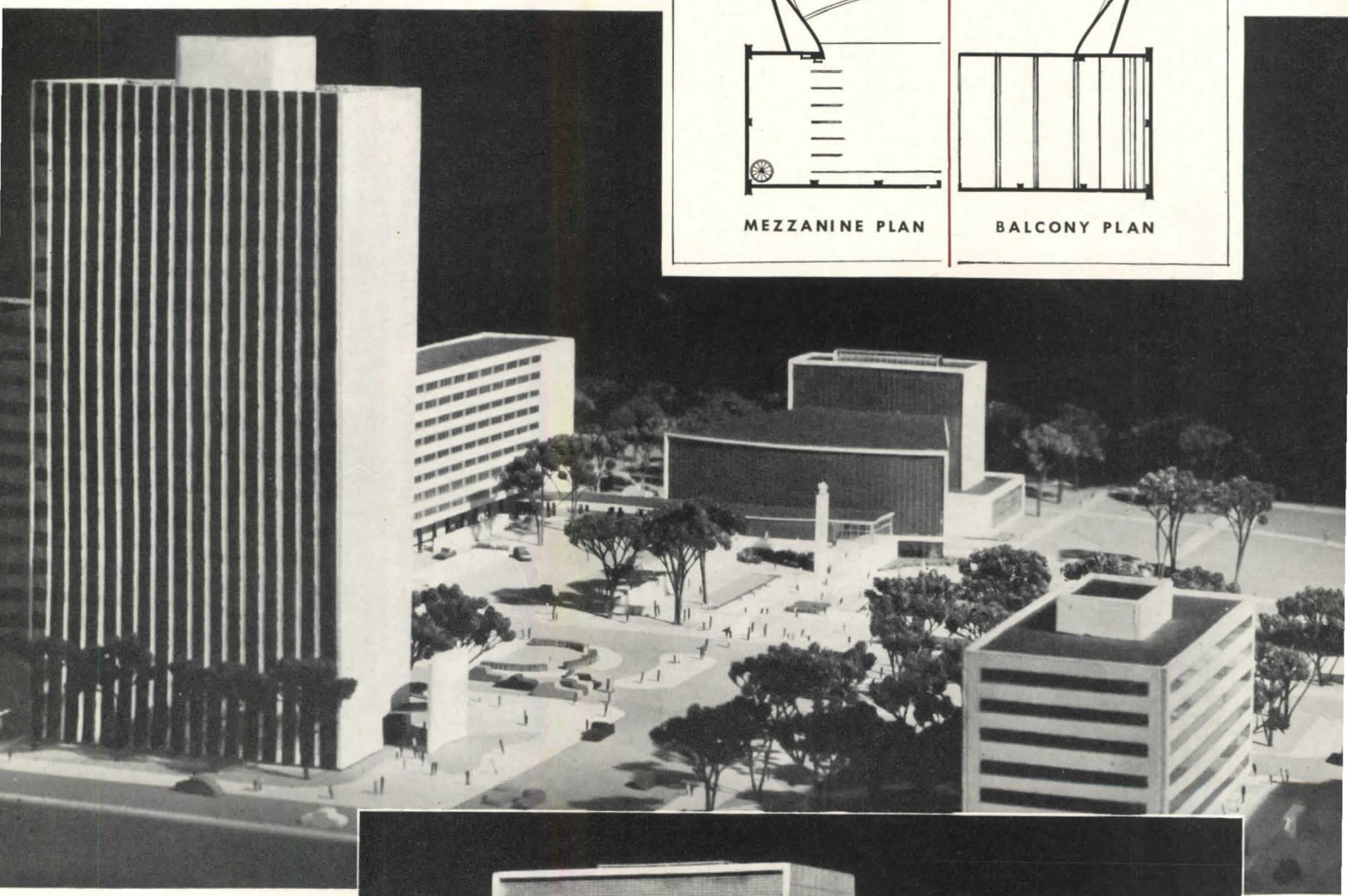
MEZZANINE

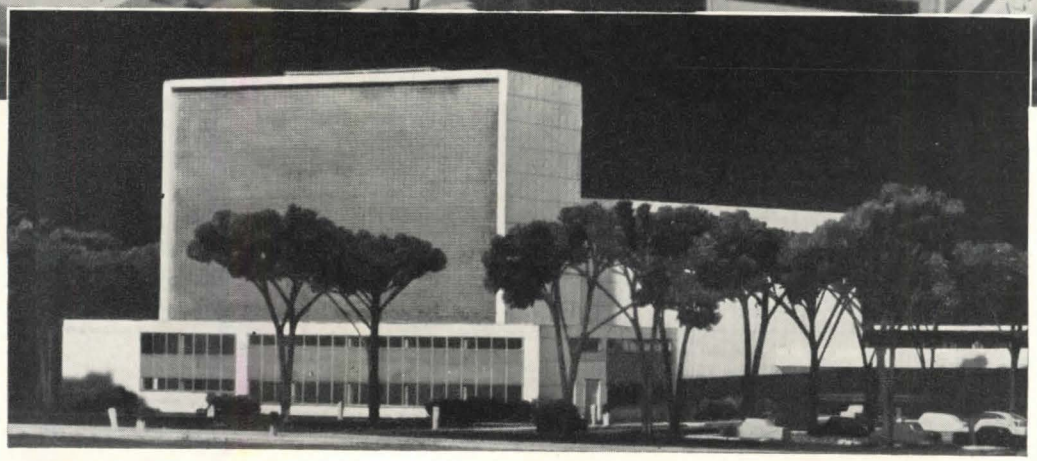
1. Mezzanine
2. Women Ushers
3. Women's Lounge
4. Storage
5. Men's Lounge
6. Men Ushers

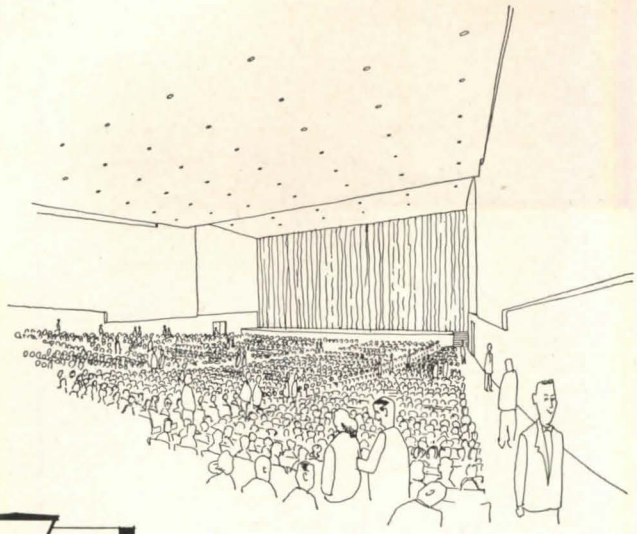
BALCONY

1. Projection Room
2 Unassigned Space
3. Storage
4. Echo Organ
5. Generator Room



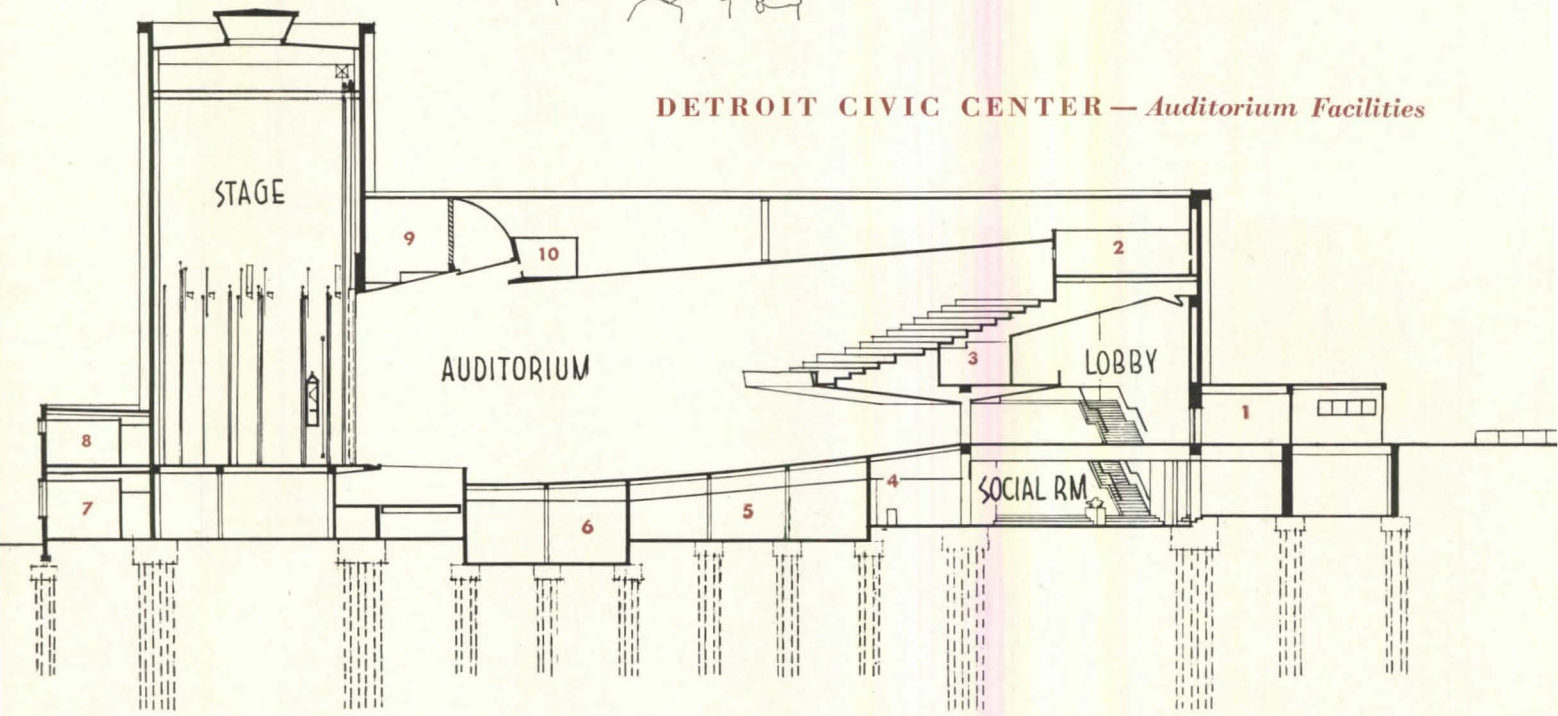






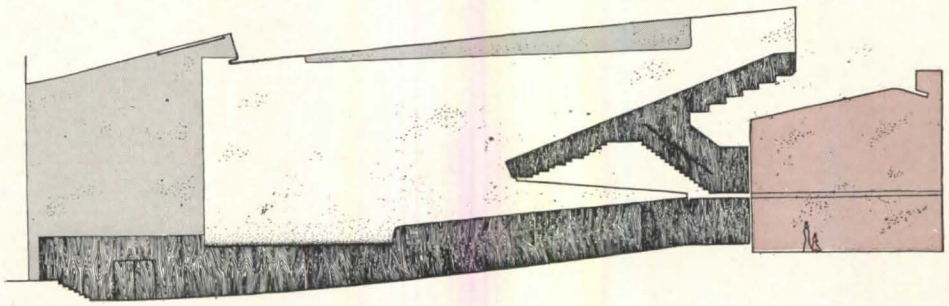
Auditorium

DETROIT CIVIC CENTER — *Auditorium Facilities*



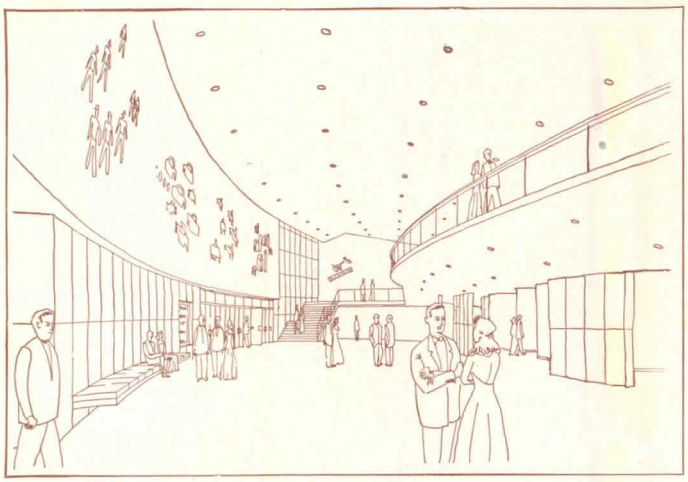
LONGITUDINAL SECTION

1. Vestibule
2. Projection Room
3. Toilets
4. Refreshments
5. Storage
6. Machine Room
7. Office
8. Chorus Room
9. Organ Chamber
10. Spotlight Room

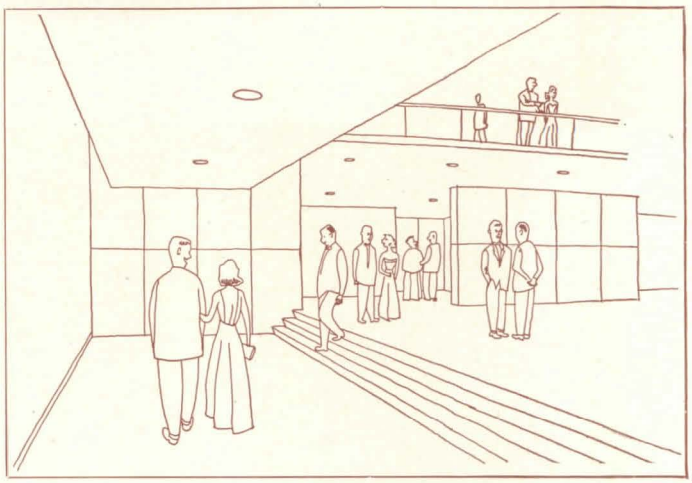


Since this is a civic auditorium it had to be planned to accommodate both large spectacles such as operas and small intimate performances such as recitals and lectures. Its seating capacity was fixed at 2900 (1850 on the main floor, 1050 in the balcony), but the sightlines and acoustics have been worked out so that conditions will be excellent regardless of the size of the audience.

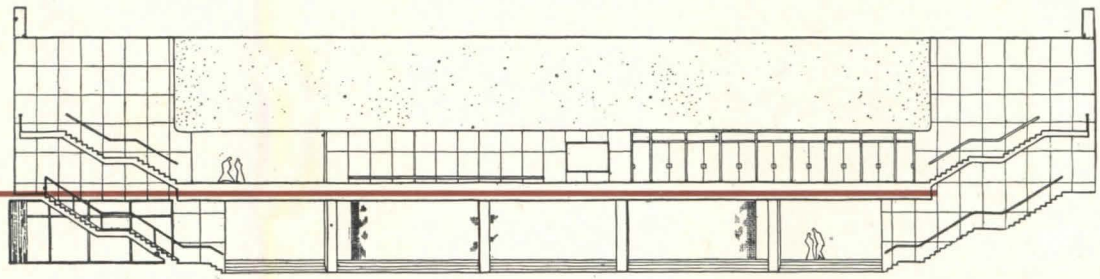
The entire stage house is unusually well organized (plans, page 116). Performers' dressing rooms are located on the main floor surrounding the stage; the corridor connecting them can be used for chorus line-ups. Scenery and props can be taken directly from the truck entrance on ground floor to scene shops, or by a lift to the stage level. Storage, shops and rehearsal rooms are on the ground floor, the green room and kitchen on the main.



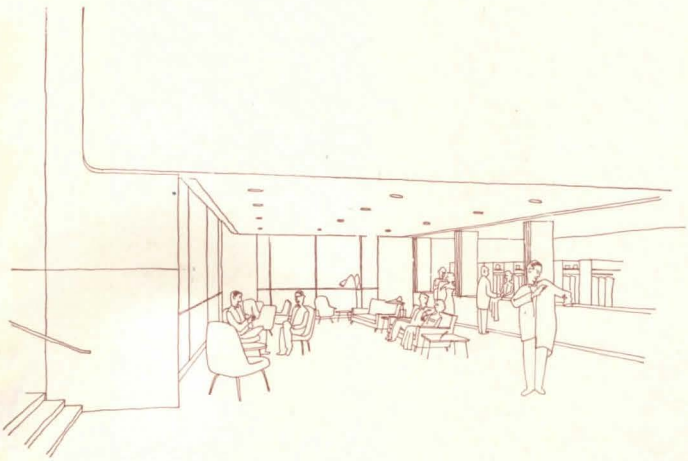
Lobby, mural at left, balcony at right



Lobby, balcony and doors to auditorium



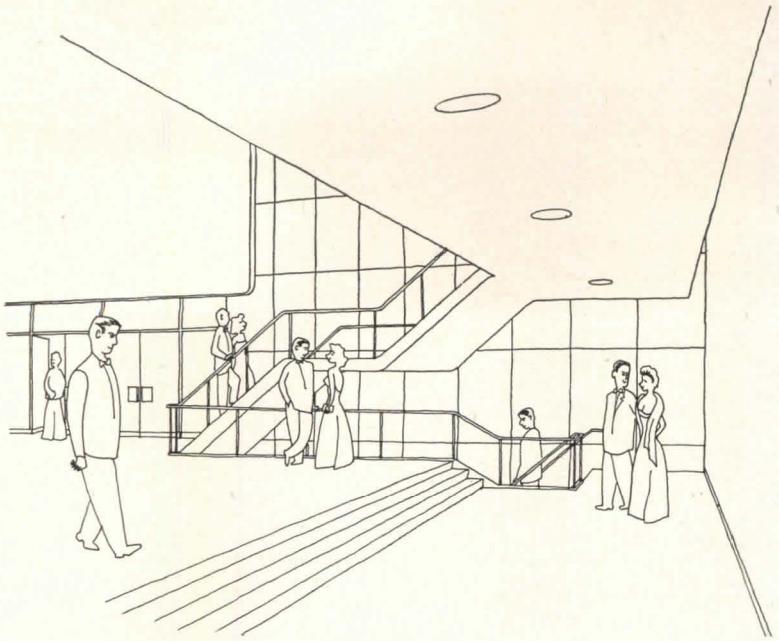
Lobby will have marble floor, blue granite and decorated plastered walls, acoustical ceilings. Over entrance doors (top left) will be a commemorative sculptured panel in polished aluminum dedicated to Henry and Edsel Ford. Stairs at each end of lobby lead up to balcony and down to social room (next page)



Lounge and checkroom

The stage will be provided with traps and disappearing footlights. The orchestra pit will have a movable floor which can be raised to the stage level.

Foundations of the building will be of reinforced concrete on piles driven to rock or firm soil; framework will be of structural steel encased in concrete. The auditorium will have a terrazzo floor with carpeted aisles, plaster and wood walls with acoustical treatment, and plastered ceilings. The stage and auditorium lighting system will consist of a preselective electronic tube type of control, with sidewall coves and ceiling cut in the auditorium. The building will have organ chambers for the future installation of organ (note position of organ loft on plan), a complete projection booth, a complete spotlighting system, and provision for television and telecasting.

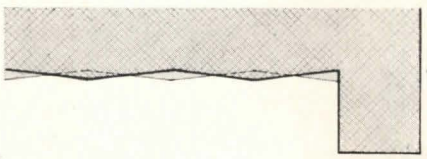


DETROIT CIVIC CENTER — *Auditorium*

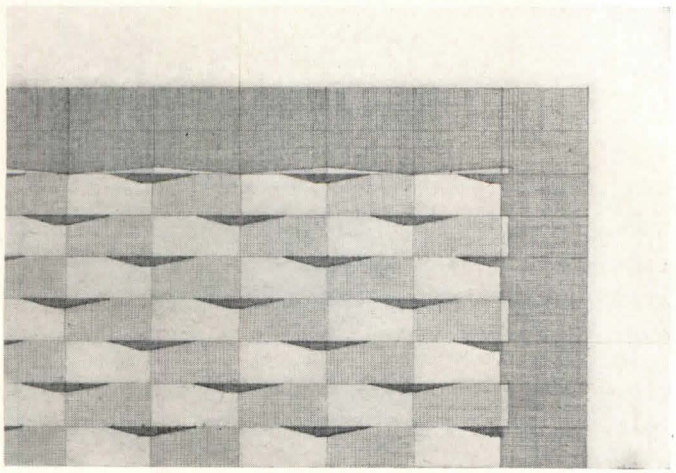
The building will be used for civic functions of various kinds, hence the large social room (right) on the ground floor. The room is just downstairs from main entrance, and could be used separately without the auditorium proper. Floor will be marble, walls plastered; lighting will be indirect

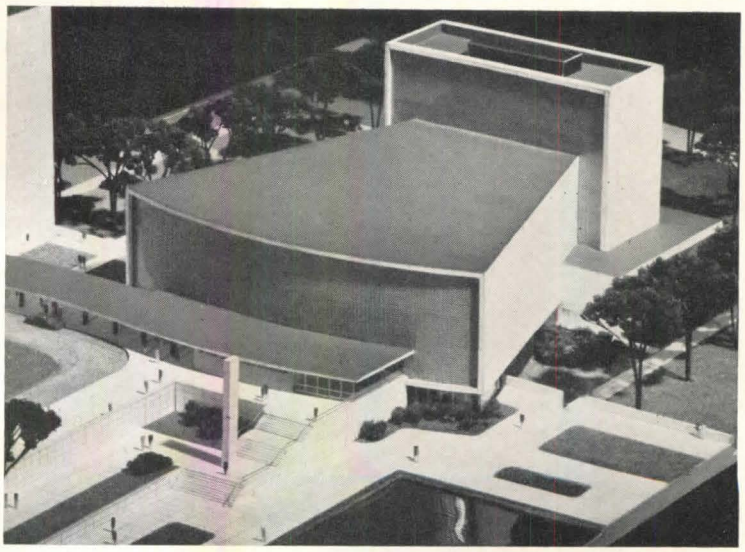
Wall Treatment

Right, part plan

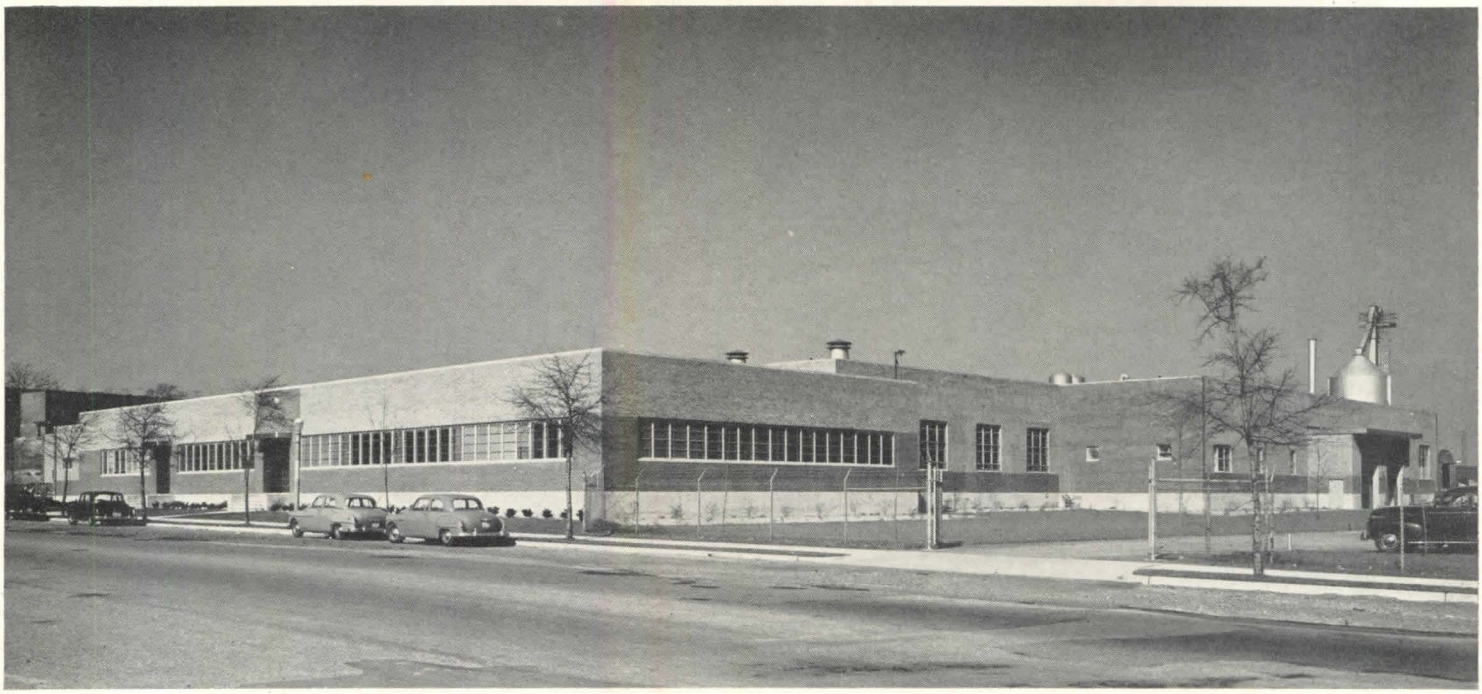


Below, part elevation





Circular front wall and upper part of long walls of stage enclosure will be mica-flecked blue granite panels, faceted as shown in drawings at left to take advantage of the nature of the material and enhance its brilliance. White marble will be used on upper side walls to blend with the Veterans Memorial and other buildings



PLANT DESIGNED FOR EMPLOYEES' WELFARE

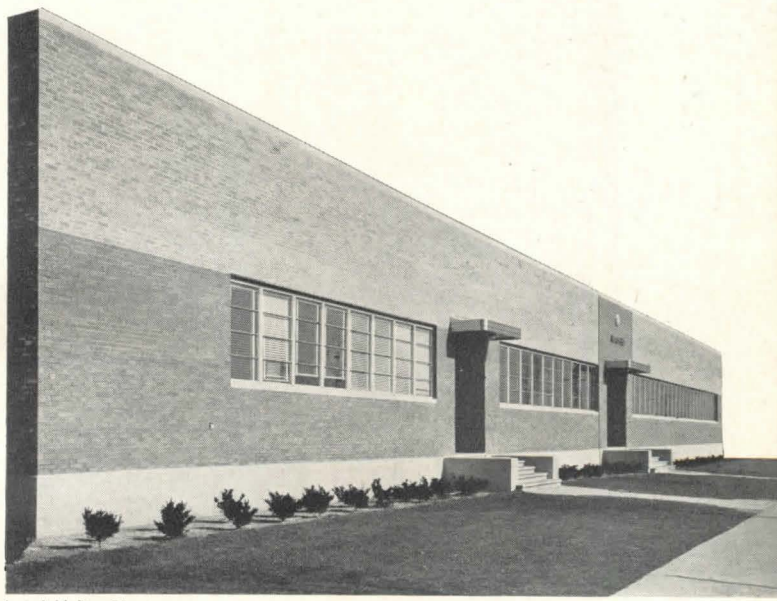
Asten-Hill Manufacturing Co.

Philadelphia, Penn.

The Ballinger Co., Architects and Engineers

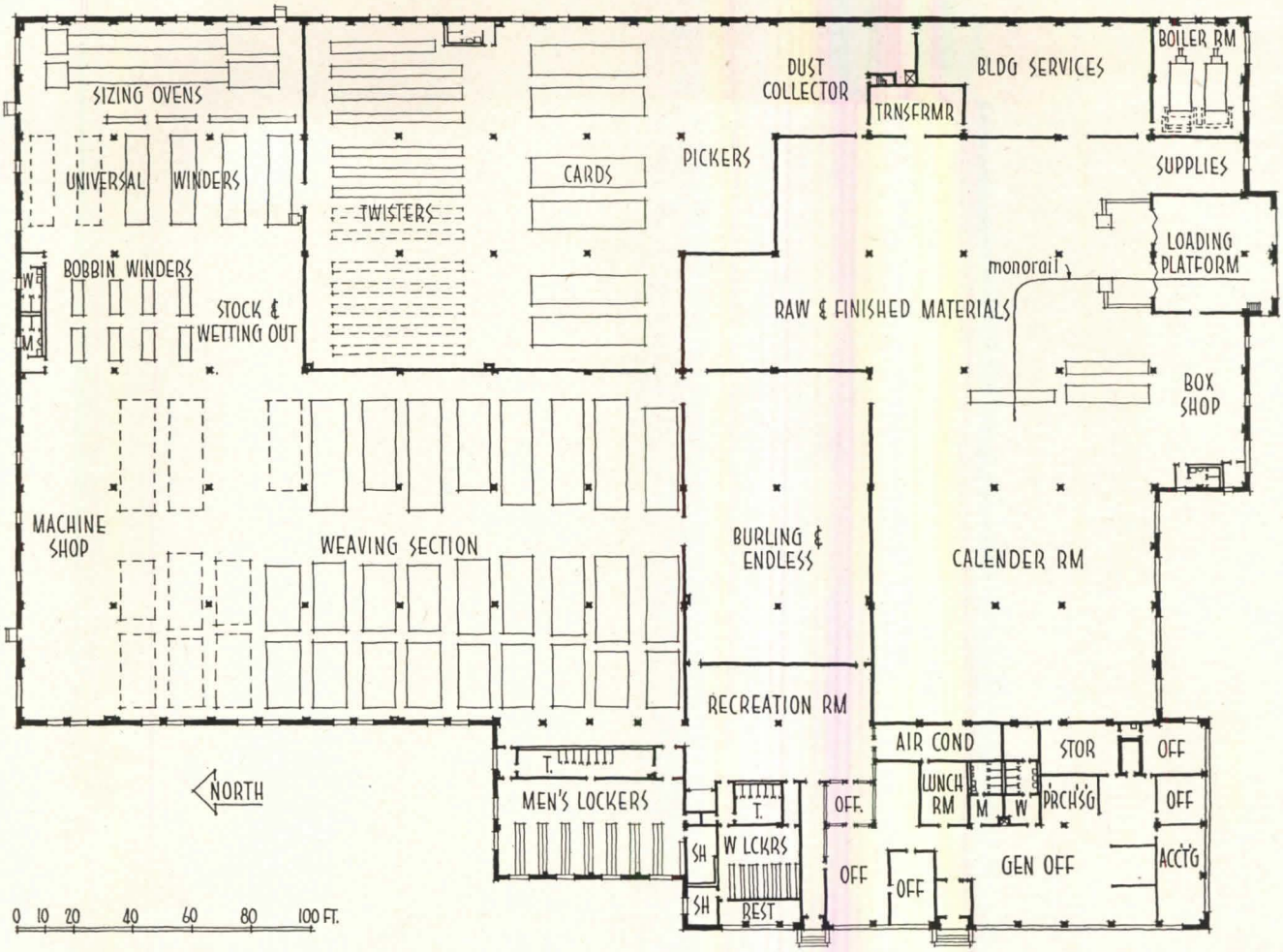
APART FROM THE USUAL CONSIDERATIONS for efficient processing layouts, the designers of this asbestos dryer felt plant were faced with a major problem of controlling asbestos dust. Uncontrolled, the dust accumulates on all projections and rough surfaces in process areas, and presents a silicosis-like health hazard to employees. Dependable control of temperature and humidity is also vital in manufacturing the felts. The goal of the owners was to construct a plant which would combine production efficiency and product control with pleasant and healthy working conditions.

The resulting design succeeds in providing good solutions to these problems within a neat, attractive structure. Especial attention was given to the employees' welfare, even to selection of a site near the workers' homes, although it was known that the deeply filled ground would require pilings. Other provisions include a parking area, pleasant locker, shower and toilet rooms, good lighting, and a general purpose room for lunch and recreation. Asbestos dust is removed from segregated process areas by a carefully planned system of hoods, ducts and fans, together with tunnels under the floor. The dust is then conveyed to electro-static filters and to a cyclone tower where it is salvaged for other use. A portion of the air is reconditioned for recirculation. Separate comfort air conditioning is provided in the office areas.

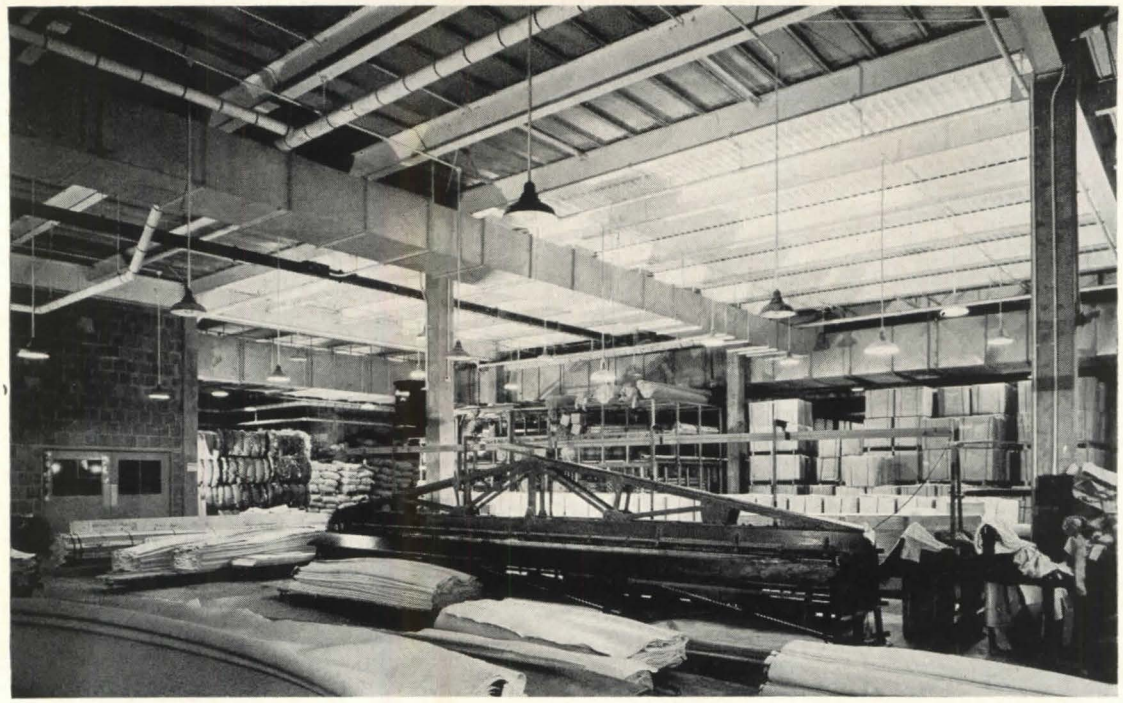


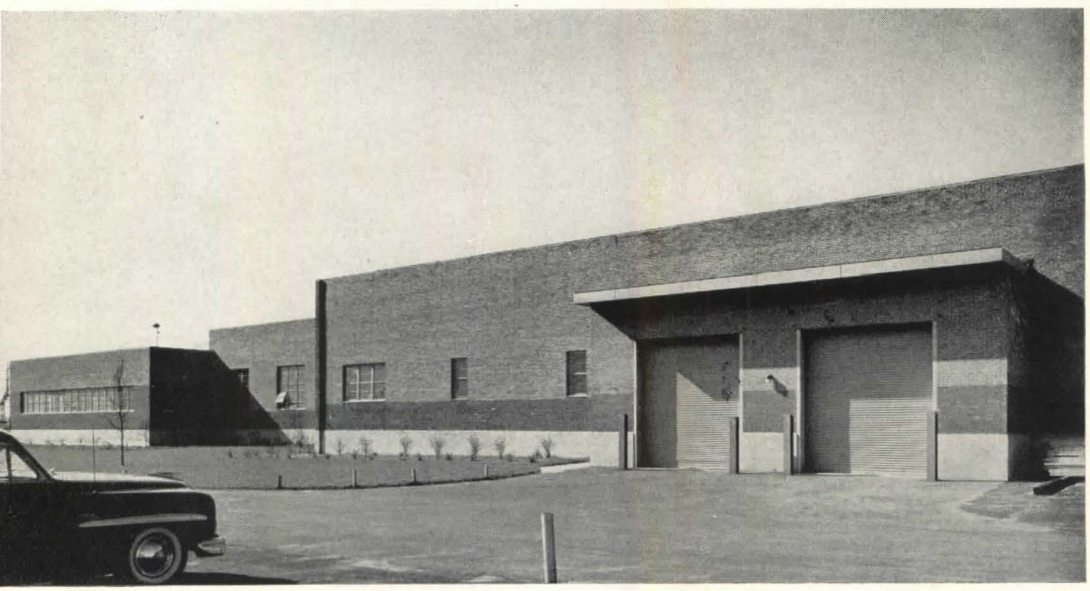
Joseph Molitor Photos

The one story plant is surfaced with bands of light and dark brick, limestone trim, polychrome terracotta at main door. Flat roof employs special regulated drainage discharge system



Provision of clean, comfortable working areas has considerably improved employees' morale, with resultant increased efficiency. The well-lighted, air conditioned weaving section (left) is typical of these areas. The steel frame structure is designed around a continuous materials flow line, passing successively through the blending, carding, twisting, spooling, spinning, weaving and calendering departments. Expansion space for additional equipment (dotted lines on plan) is provided in each section. Glazed tile walls and hung plaster ceilings in these areas help minimize dust problem. Ceilings are left exposed in such other rooms as the raw and finished materials section (top right). Offices (bottom right) have plaster walls, acoustic ceilings, asphalt tile floors





SIX EAST AND WEST COAST HOUSES

A Presentation Prepared by John Hancock Callender, A.I.A.

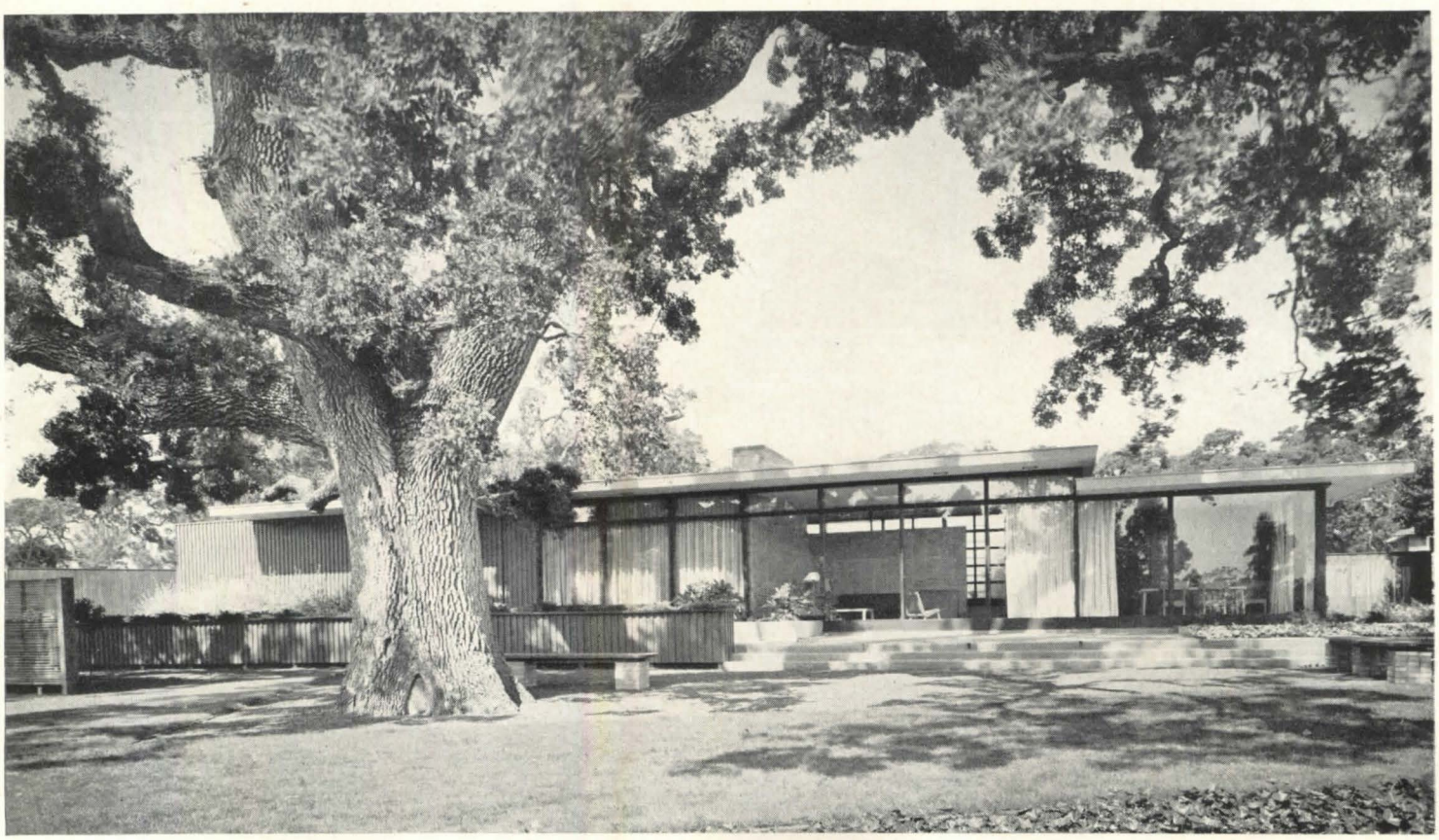
WEST COAST — ATHERTON, CALIFORNIA

Residence of Mr. & Mrs. Kurt E. Appert
Joseph Allen Stein, Architect
Eckbo, Royston & Williams, Landscape Architects

Ernest Braun Photos

BEARING NO TRACES of "Bay Regionalism," this house nevertheless could hardly have been built anywhere else. The beneficent climate and a beautiful site were obviously basic conditions of the design.

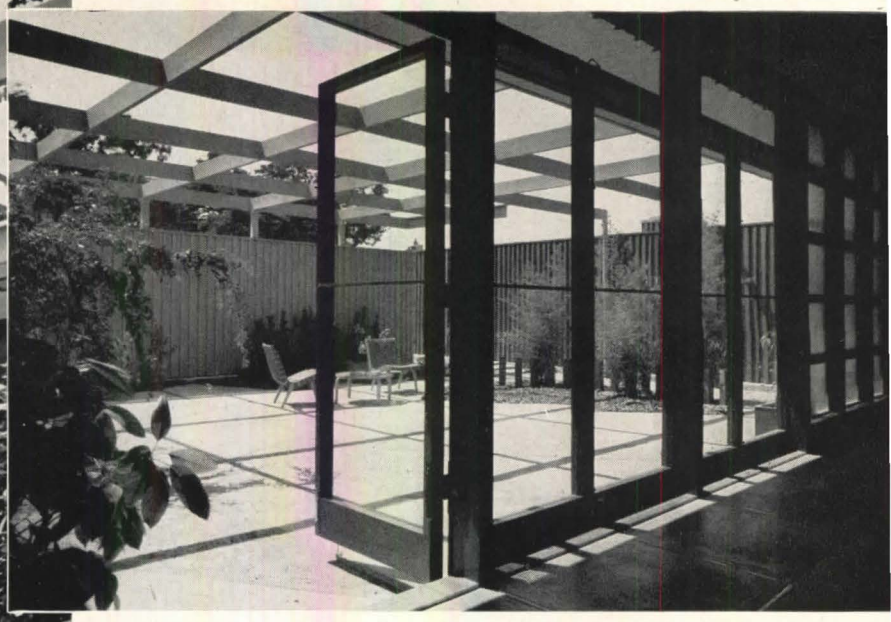
To say merely that the location of the house on the site was determined by the existence of several splendid oaks, would be to miss the essential element in this design, which is the complete integration of building and site. In the illustration shown below it is apparent that house, tree, and terrace are esthetically and functionally integral parts of a single composition. The crisp lines of the house, its lightness and its geometrical precision, are beautifully contrasted with the magnificently rugged oak. Shade from the tree, in turn, softens the severe lines of the house and makes the adjacent paved terrace one of the pleasantest "rooms" in the house.



The house proper — that is, the enclosed area — is not very large. Rooms are of modest size and the only small extravagance in the use of space is the pleasant entrance loggia. Yet this house provides a degree of luxurious living that is generally associated with much more elaborate establishments. The reason, of course, is that the usable space extends far beyond the walls of the house. Each room has its own terrace extension and the total paved outdoor area is actually greater than the floor area of the house. Because of the favorable climate and the shaded site, these outdoor living areas are usable almost all of the time. The patio, protected on three sides by the house and on the fourth by a fence, can be used when the weather is too cool for outdoor comfort elsewhere.

The main entrance is from the motor court, through the patio (screened by planting from the private area) and into the loggia which gives access to all rooms. From the entrance there is a striking view through the living room to the terraces and gardens beyond. The loggia is nothing more than the conventional entry and bedroom corridor which have been skilfully combined and slightly expanded to form one of the principal features of the plan. In that portion of the loggia which serves as entry, the privacy of the occupants is protected by means of a solid door and fixed obscure glass. Elsewhere the loggia opens freely to the patio and incidentally provides cross ventilation for the bedrooms and the living room.

The San Francisco area is justly famous for the quality of its residential architecture and the original work of its landscape architects. Less generally appreciated is the high degree of collaboration that has been attained between these two professions. The happy results of such a collaboration is exceptionally noticeable in this house, where it is difficult to find the line that separates the work of architect and landscapist.

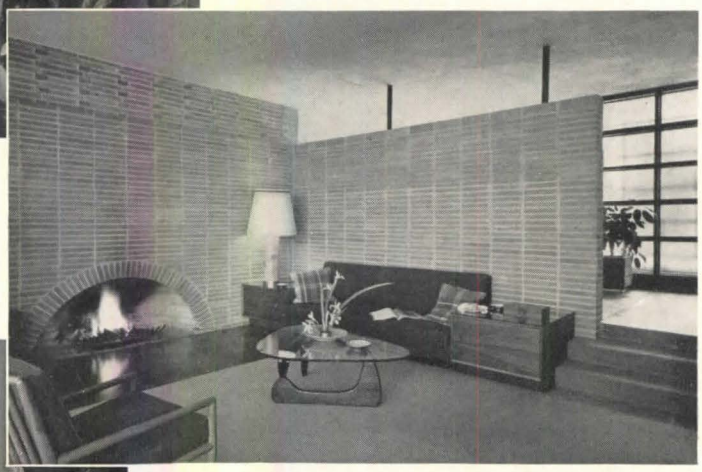


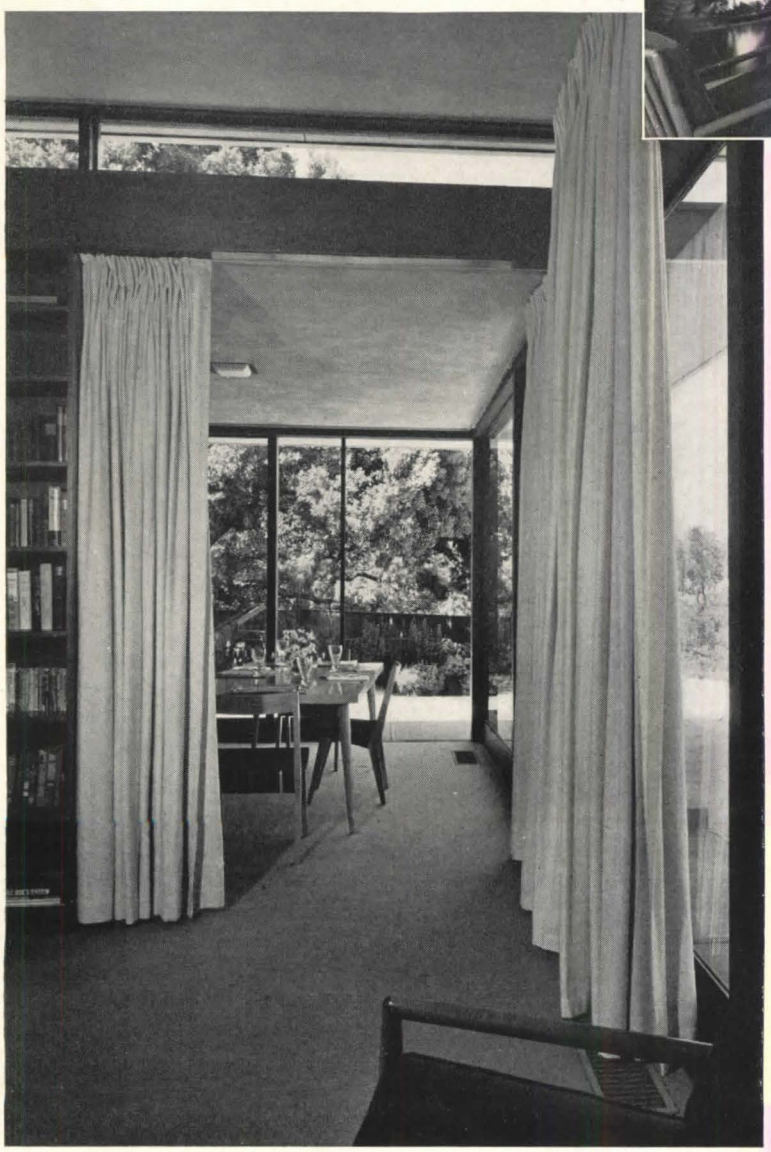
Ernest Braun Photos

Left: main entrance. Above: looking from loggia into patio; entrance walk is behind plant screen at right. Below right: children's bedrooms face south and have their own terraces and playground. On the north side of the house, there is another play area which can be supervised from the kitchen. Note on plan opposite that all baths are windowless with vents

Sand
CHILDRENS PLAY
DRYING
MAID
LAUND.
KITCH'N
BKFT
DINING
TERRACE
LIVING
LOGGIA
MBR
MOTOR COURT
GARAGE
WORK
CHILD
CHILD
TER.
POOL
Bench
FILTER R
Bench
0 5 10 20 30 40 50 FT.

Ernest Braun Photos





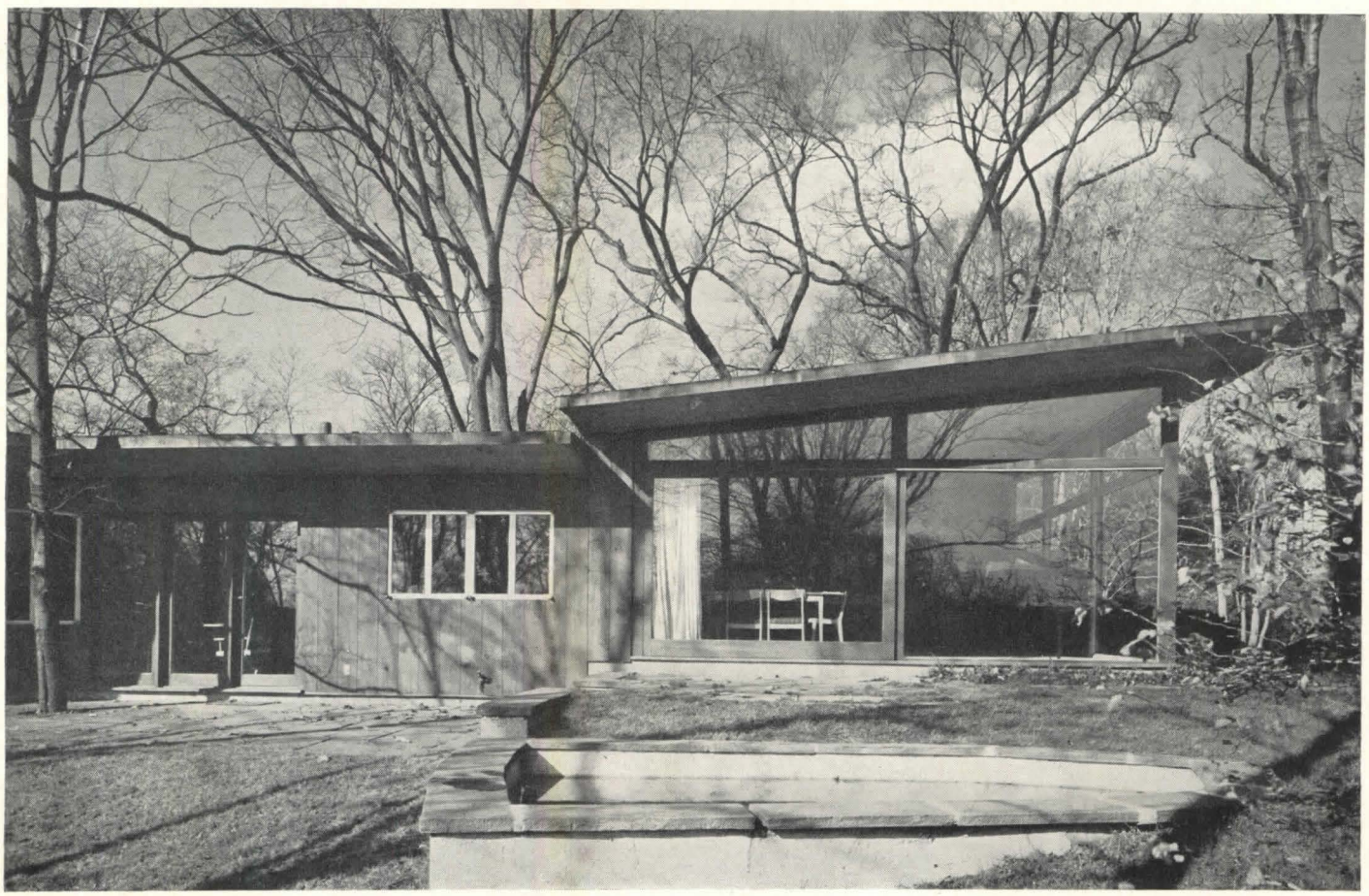
Above left: effective contrast of masonry, glass, and plant materials. Note that the big oak is also an important element in the interior design. Masonry walls on two sides of the living room serve to anchor the airy structure to the ground and give a feeling of security. Left: looking from living room into dining room and beyond to dining terrace. Skilful use of the change in levels permits the living room to have a high ceiling and clerestory windows. Bookshelves form the only separation between living and dining rooms. Glass wall is continuous across dining room, living room and master bedroom. Large sliding glass doors open all of these rooms to the terraces

OLD GREENWICH, CONNECTICUT — EAST COAST

Residence of Mr. and Mrs. Walther Prokosch

Walther Prokosch, Architect

Joseph Molitor Photo

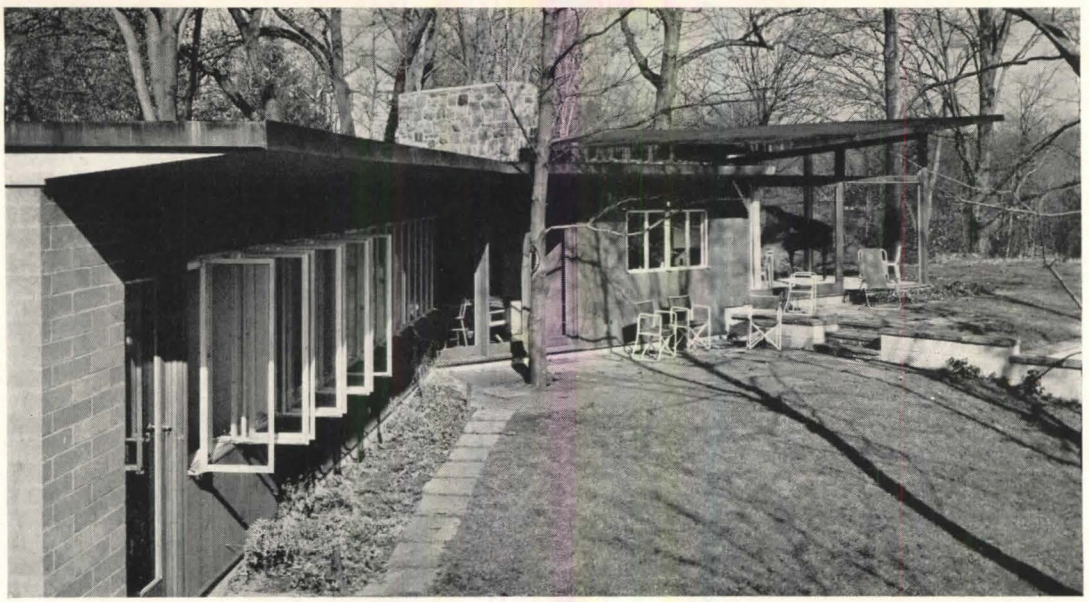


THE COMPLETE INFORMALITY of this house and the important place that children have in it are immediately apparent upon entering the large entrance hall. This room with its pleasant view through to the terrace and the small valley beyond, is also used for informal dining and as a children's playroom. A folding partition to cut off the playroom was originally intended but never installed. Both indoor and outdoor play areas are conveniently supervised from the kitchen.

The house stretches along the crown of a wooded knoll, with all rooms facing away from the road toward the south and the view. By fitting the car shelter inconspicuously into the hillside with informal stone steps leading up to the house, the natural beauty of the rugged site has been preserved.

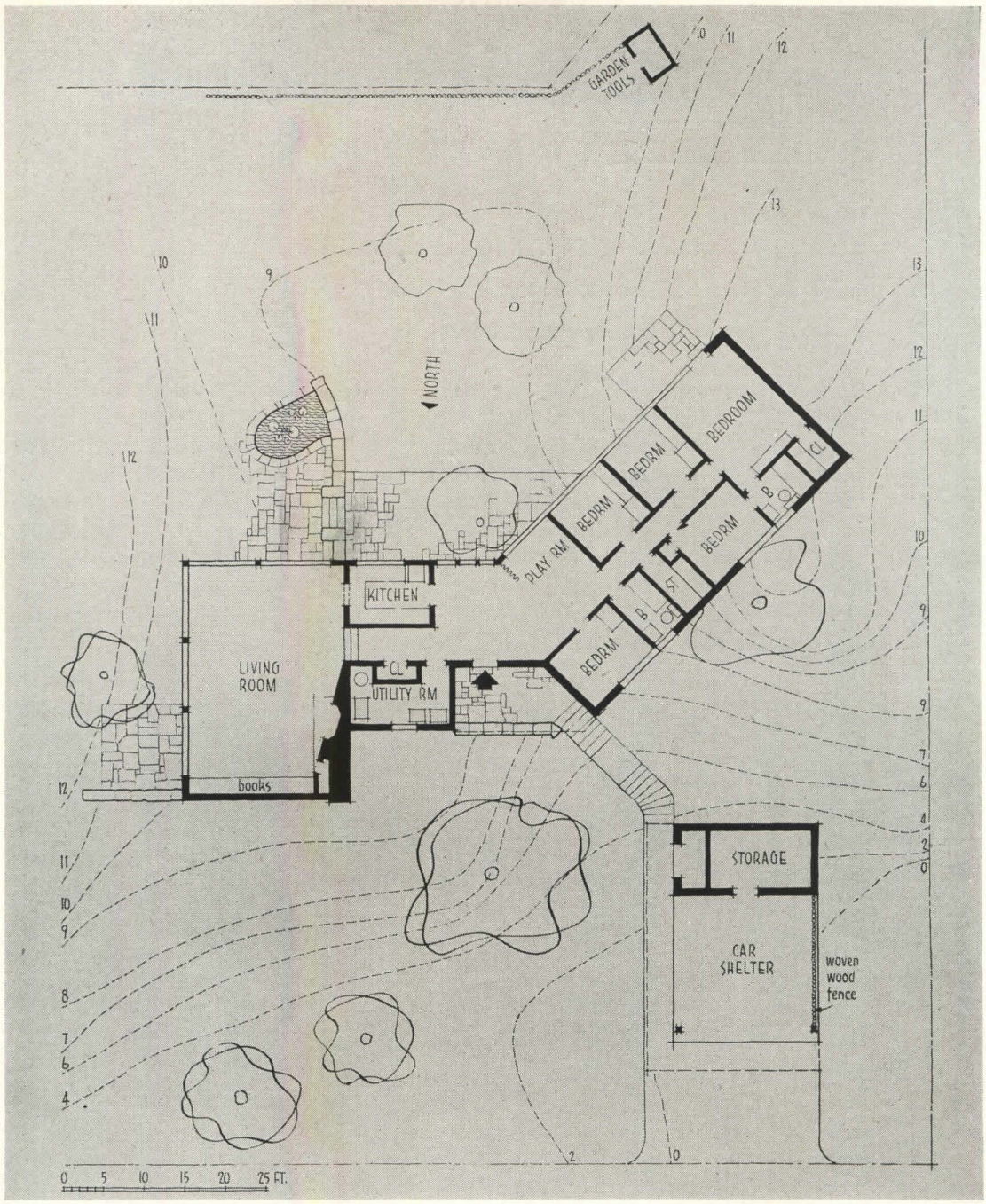
To compensate for four very small bedrooms, the living room is huge, taking with ease a grand piano, dining table, sofa and several lounge chairs. Further spaciousness results from the high sloping ceiling and the two glass walls with their big sliding doors opening onto terraces.

Masonry walls are cavity type, 4 by 4 by 16 in. concrete block, plastered or painted inside. Pine siding is used on frame walls and also for ceilings of major rooms. Heating is by wrought iron pipe in 3-in. concrete slab over 3-in. vermiculite concrete on 10-in. gravel.



Above: glass doors to entry-playroom are behind the tree which helps the overhanging roof to shade the terrace in the summer. Kitchen windows overlook play terrace. Living room and terrace are at higher level. Plan: polite dining in the living room is facilitated by a serving hatch from the kitchen. Equipment includes electric water heater, dishwasher, laundry and dryer

Joseph Molitor Photos


GARDEN TOOLS
NORTH
BEDROOM
BEDRM
BEDRM
BEDRM
BEDRM
CL.
B.
PLAY RM.
KITCHEN
LIVING ROOM
CL.
UTILITY RM.
books
STORAGE
CAR SHELTER
woven wood fence
0 5 10 15 20 25 FT.

WEST COAST — APTOS, CALIFORNIA

Beach Residence of Mr. & Mrs. Charles O. Martin

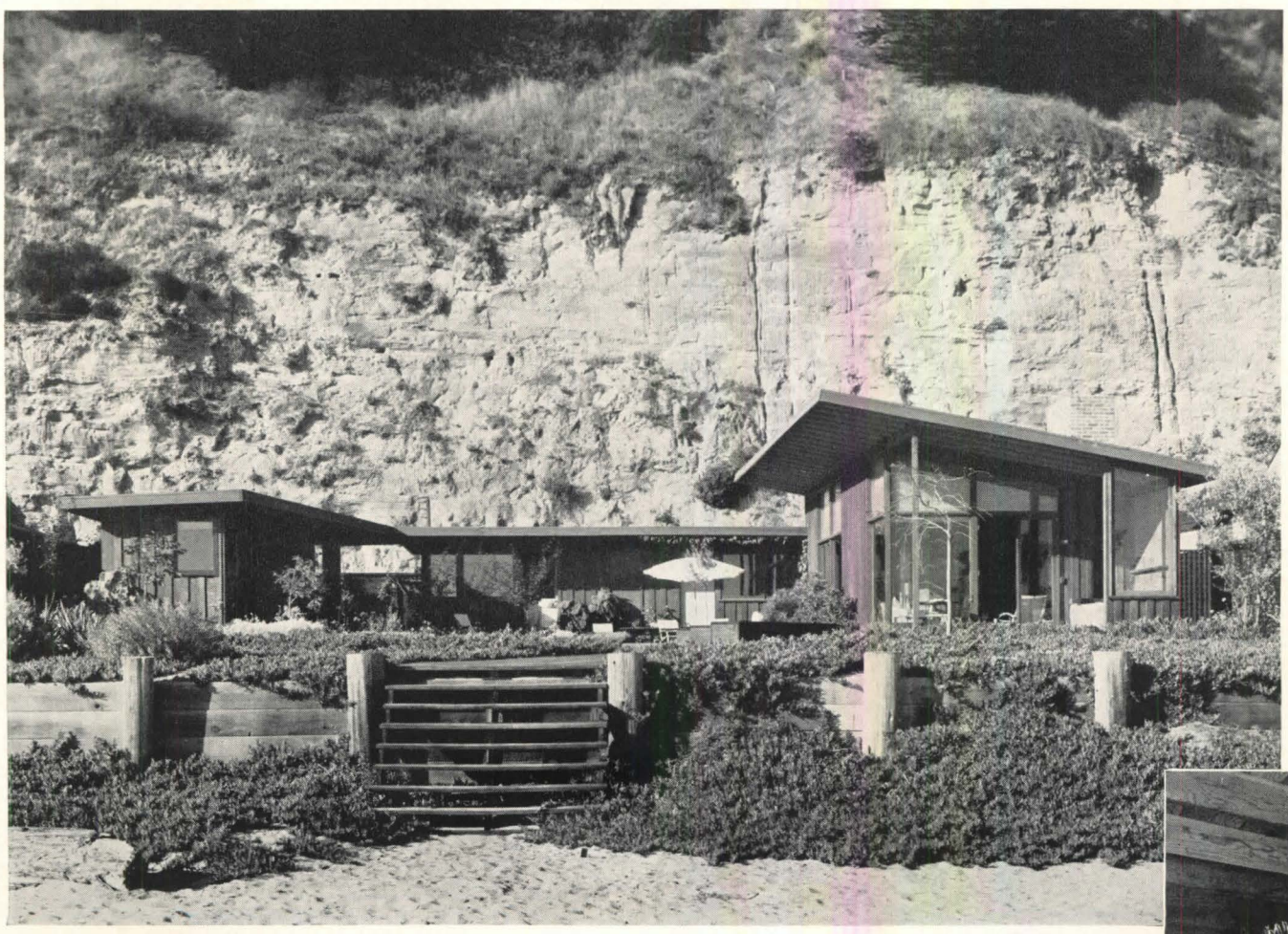
Hervey Parke Clark & John F. Beuttler, Architects

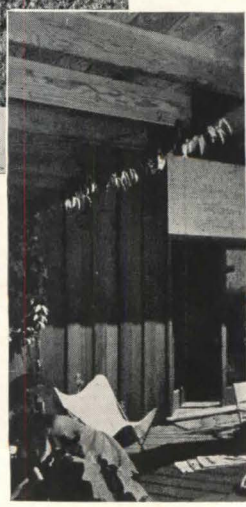
Thomas D. Church, Landscape Architect

MANY CONTEMPORARY HOUSES provide for outdoor living as an important auxiliary to the house. In a beach house the reverse is true, the house is merely an auxiliary to outdoor living. It is simply a cabana expanded to provide full facilities for comfortable outdoor life. The heart of the house, the real "living room," is not indoors but out. The design of this outdoor room lies in the province of the landscape architect.

The high quality of the landscaping and the sophisticated simplicity of the architecture mark the beach house shown here as a product of the San Francisco area. The most important element in the design is the patio, which is designed primarily for use, secondarily for appearance. The house serves the patio by providing privacy and protection from occasional cold winds as well as furnishing all practical facilities.

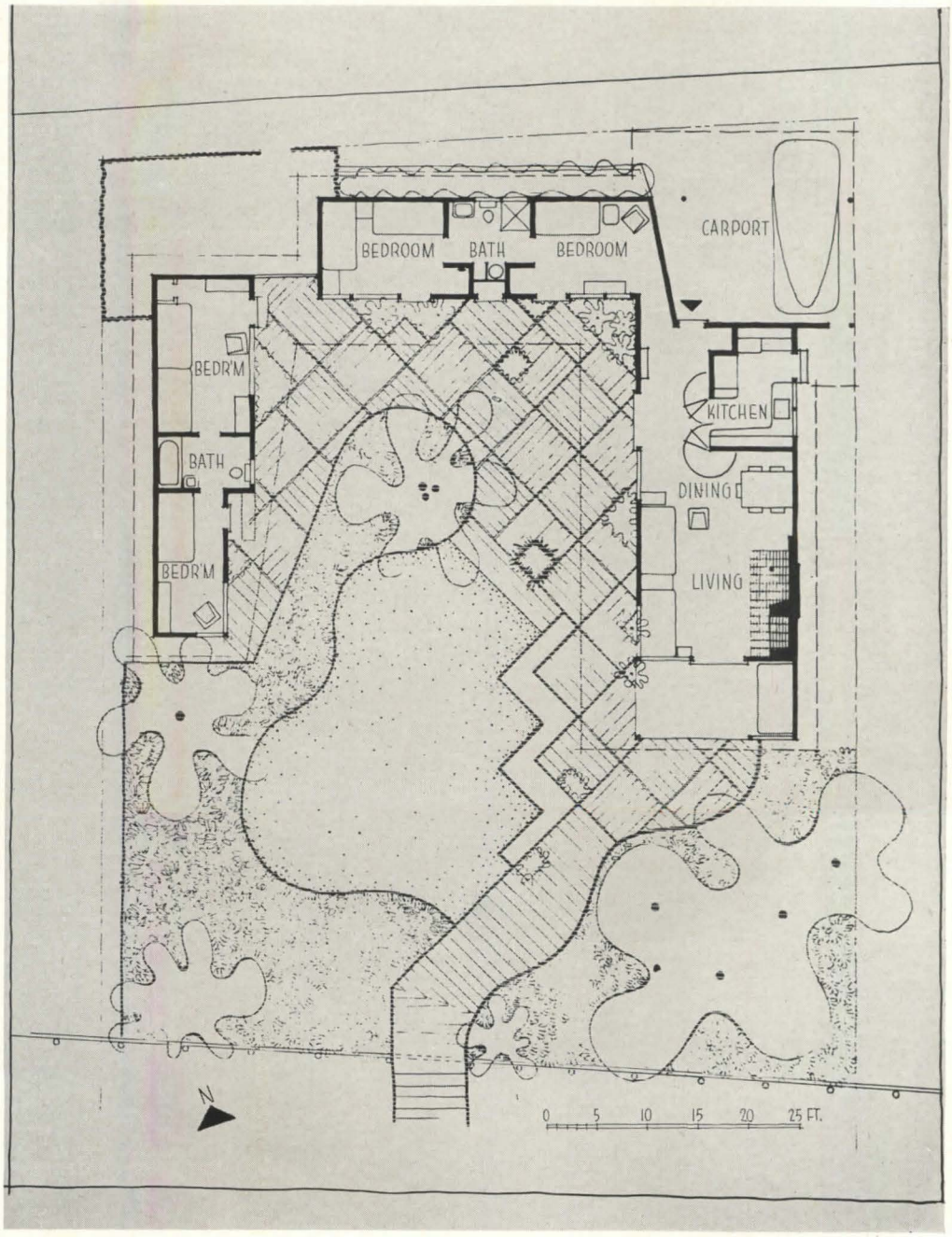
The site permits ideal orientation: the house faces the sun, the sea, and the summer breeze and is protected on the north by a cliff, which also makes a dramatic backdrop for the house as seen from the beach.





Roger Sturtevant Photos

Maximum privacy on the small lot has been achieved by means of the U-shaped plan with its enclosed patio. All rooms open on the patio which is used for circulation as well as for outdoor living. Provision has been made for the owners and their two grown daughters and several week-end guests. The west bedroom wing was an existing building which was adapted to the overall scheme



Roger Sturtevant Photos

Construction is of the simplest: exposed framing of 4 by 4 in. redwood posts 4 ft 0 in. o.c. and single wall of 1 by 12 in. redwood boards with 1 by 6 in. battens. Joists and roof sheathing are of fir, painted. Wiring is exposed. Concrete floor slab over membrane waterproofing forms the finished floor. Roof is topped with white marble chips for reflection of sun heat. Gutters and leaders are copper. Heat is furnished by fireplace and electric wall heaters

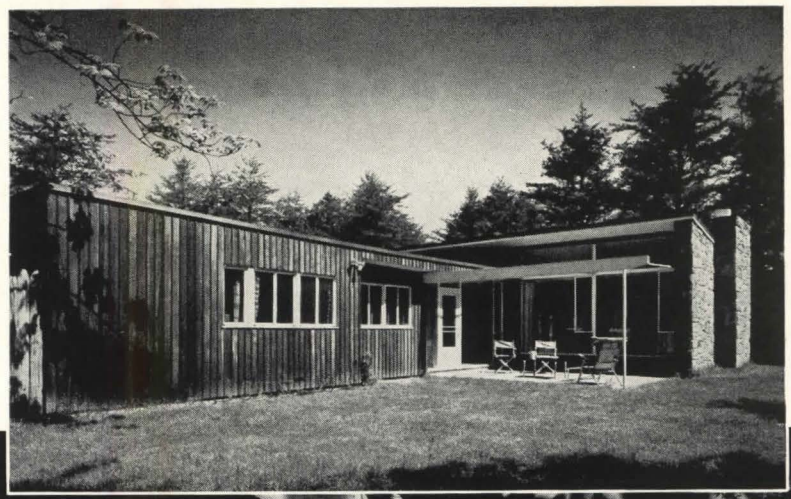
Residence of Harry N. Hirshberg, Jr.

Arthur H. Keyes & Basil Yurchenko, Architects

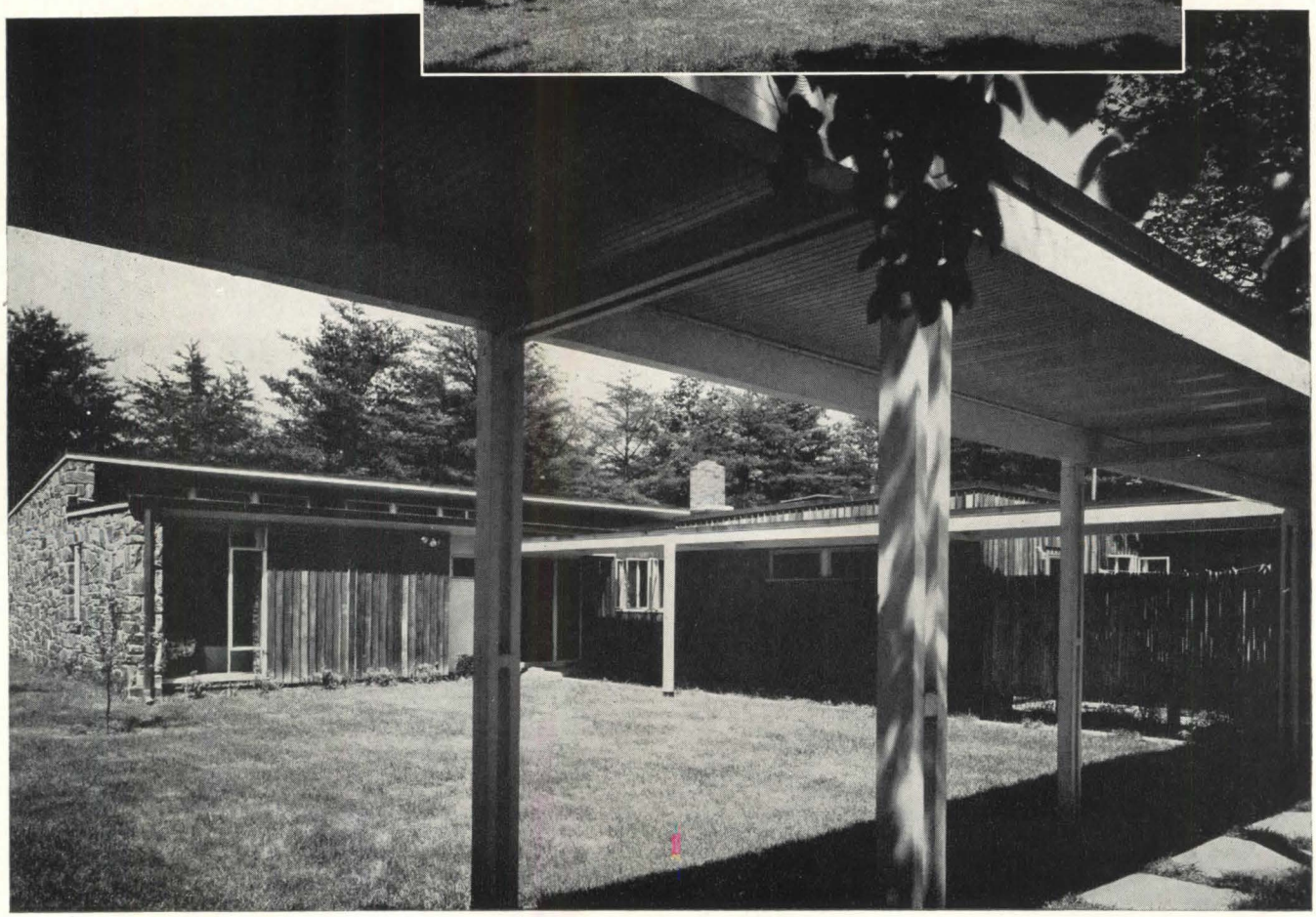
THE ARCHITECTS were presented with the always difficult problem of designing a house for a site on the north side of the street. Their solution was to place the main living areas as far from the street as possible. Planting protects the privacy of the dining terrace and the living room with its glass wall facing the street. Privacy from the approach side is provided by the projecting service wing. The dining room and kitchen face the side lot line and the master bedroom and study are on the rear (north), where privacy is not a problem.

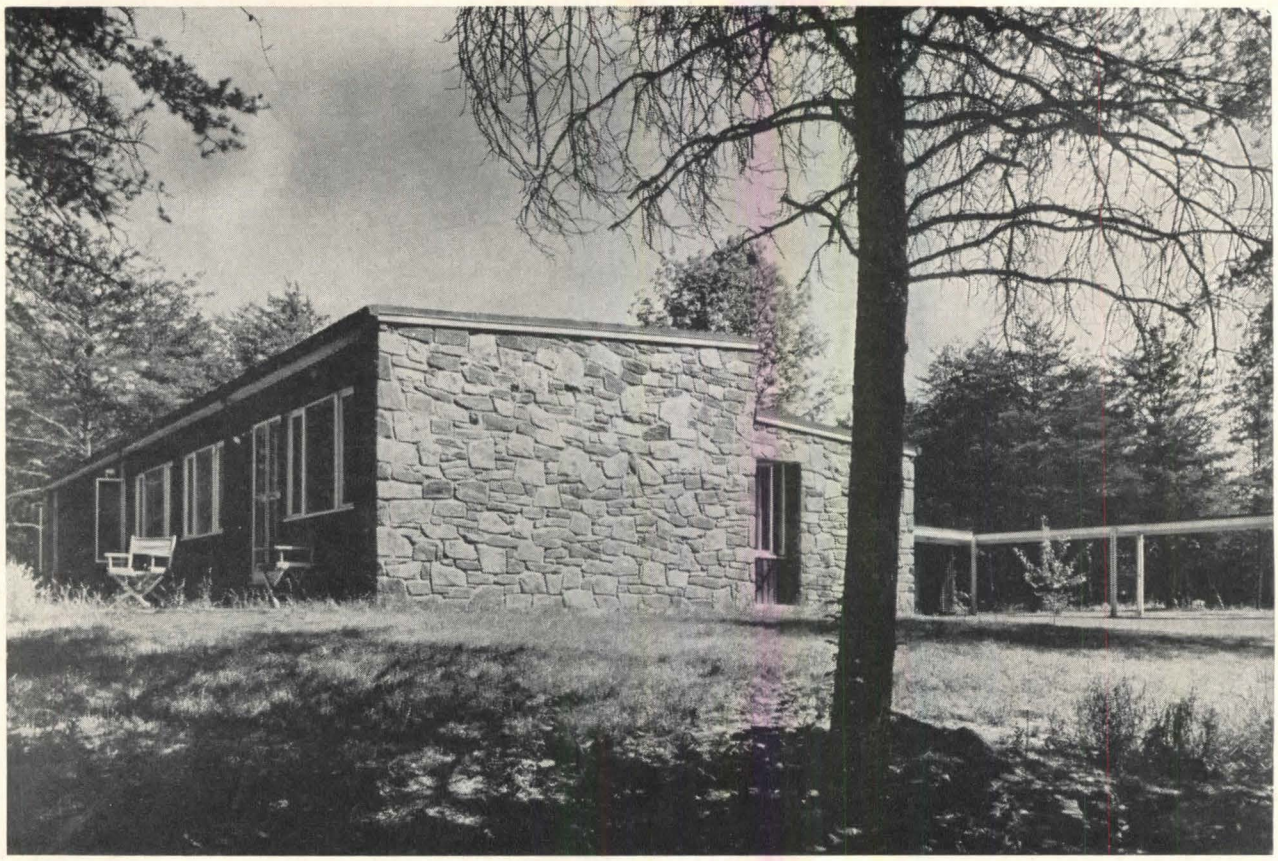
The house is designed for the future addition of two more bedrooms and a bath, which will be reached by a corridor through the present guest room.

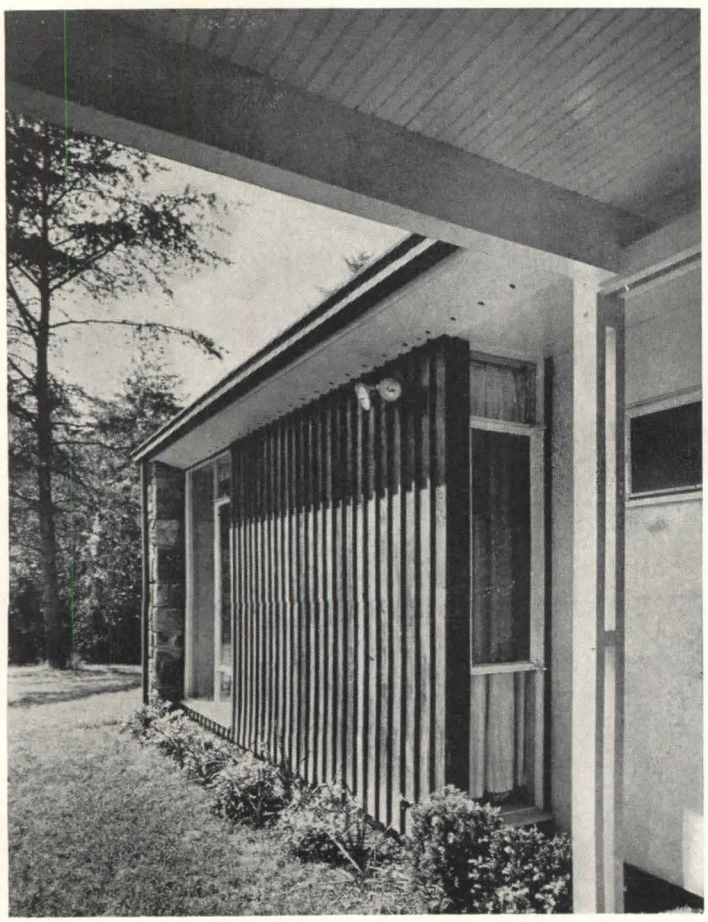
The isolated garage and the covered walks add to the apparent size of the house and serve to make an interesting spatial composition. The relation of garage to house will be more apparent after the expansion of the bedroom wing.



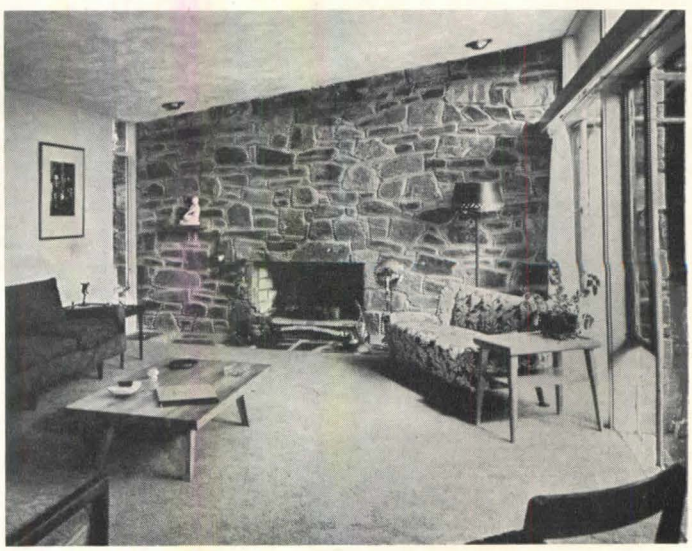
Robert Lautman Photos

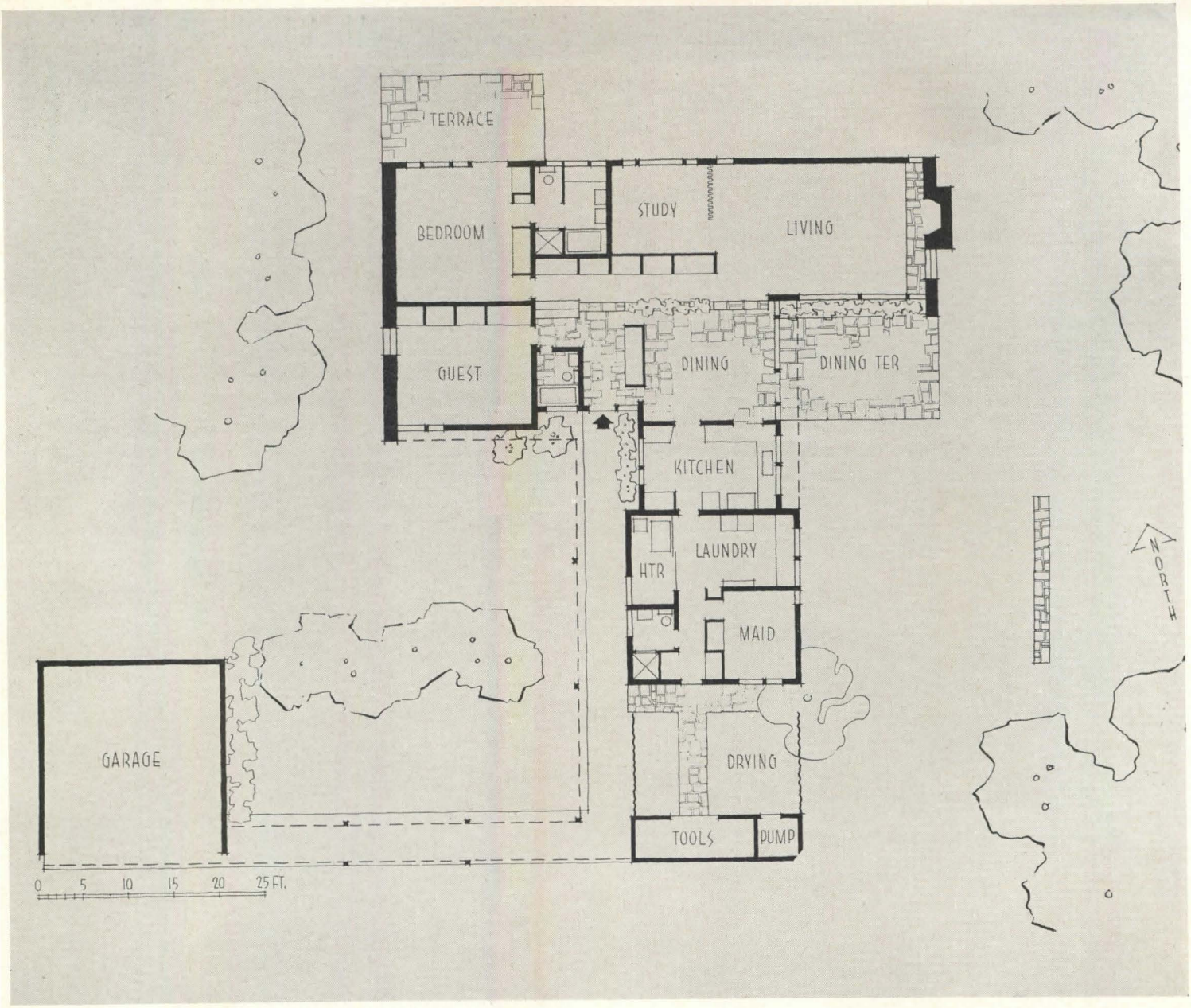


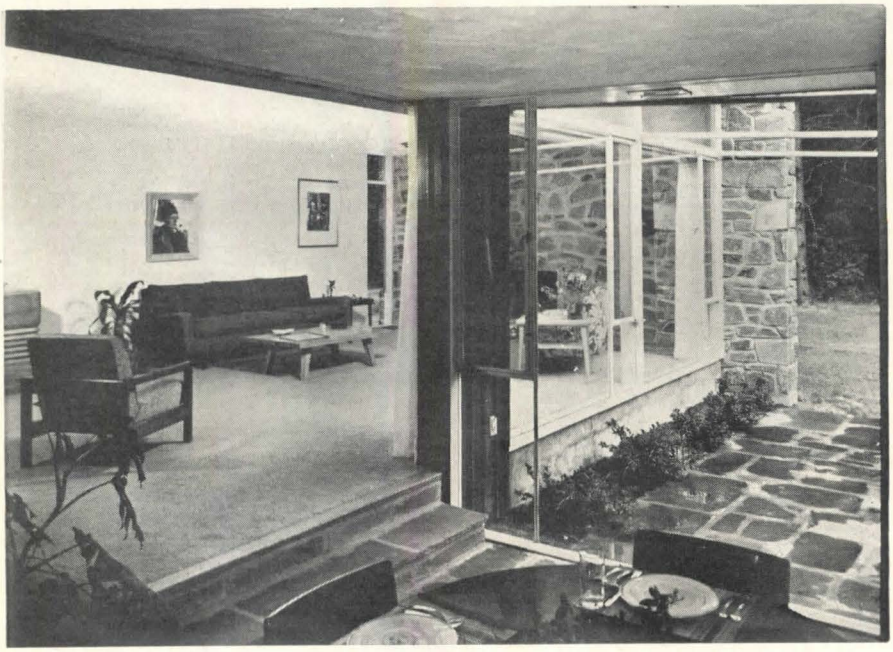




Clerestory windows give cross-ventilation to the master bedroom and also admit winter sunlight into that room and into the cabinet-lined corridor leading to the living room. All rooms have cross-ventilation and an attic fan removes excess heat from the kitchen, laundry, and heater room. Window shown on plan next to fireplace was omitted in actual construction (below)




TERRACE
BEDROOM
STUDY
LIVING
GUEST
DINING
DINING TER
KITCHEN
LAUNDRY
HTR
MAID
GARAGE
DRYING
TOOLS
PUMP
NORTH
0 5 10 15 20 25 FT.



EAST COAST — CROMPOND, NEW YORK

Residence of Mrs. Benjamin Halprin

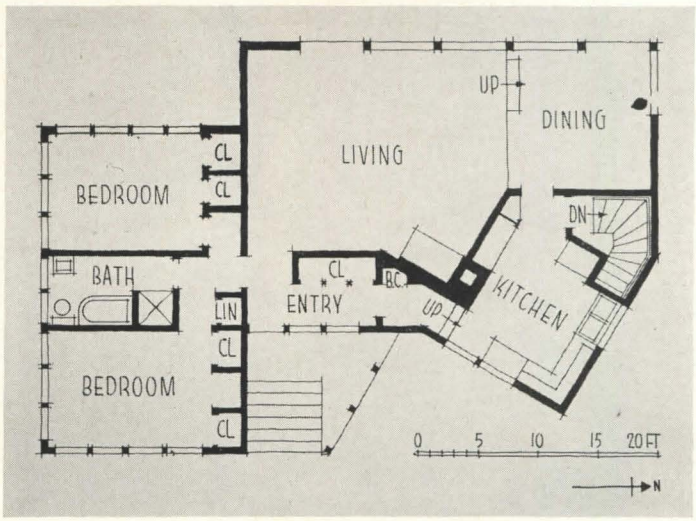
Stanhope Blunt Ficke, Architect

THE PARTI FOR THIS PLAN was established by the owner's desire to have maximum sun in the bedrooms and morning sun in the kitchen, and her requirement that indoor and outdoor living areas should overlook the view to the west, over a small lake to distant hills. The owner does considerable informal entertaining and requested spacious living and dining areas, as well as direct access from the kitchen to the front door.

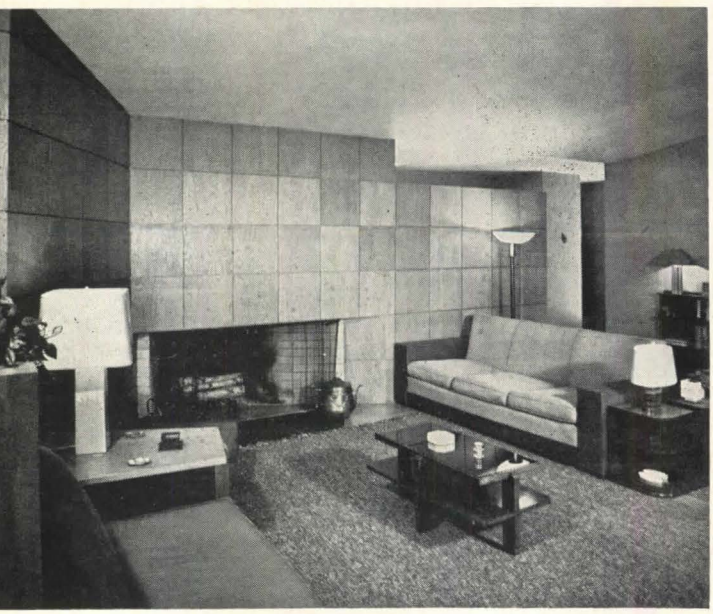
The original design included a drive-through carport along the east side of the entrance and bedroom, and a third bedroom and bath to the west of the present bedrooms. In the architect's opinion these additions, which were omitted for reasons of economy, would undoubtedly enhance the appearance of the house.

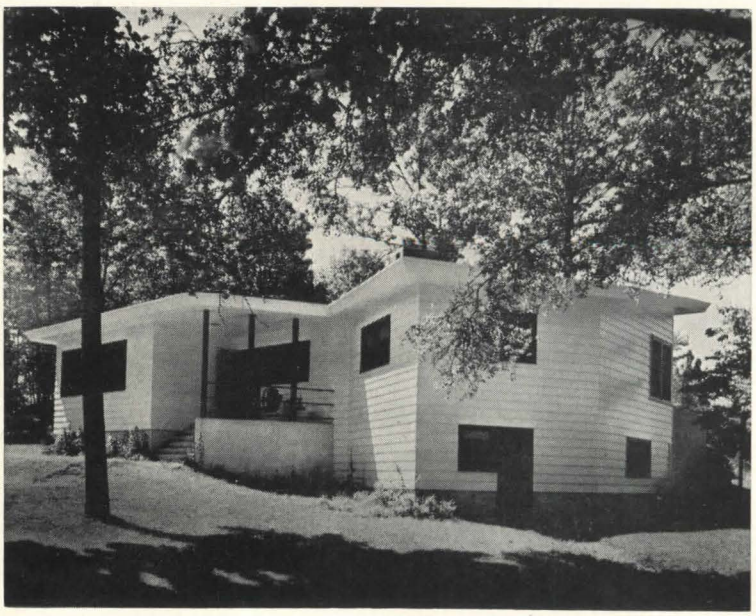
The steeply sloping site required a high stoop at the entrance, but had the advantage of permitting a partial basement to be placed under the kitchen. The basement, which has an outside door at grade level, provides space for the heater, laundry, shop, and storage for garden tools and terrace furniture.

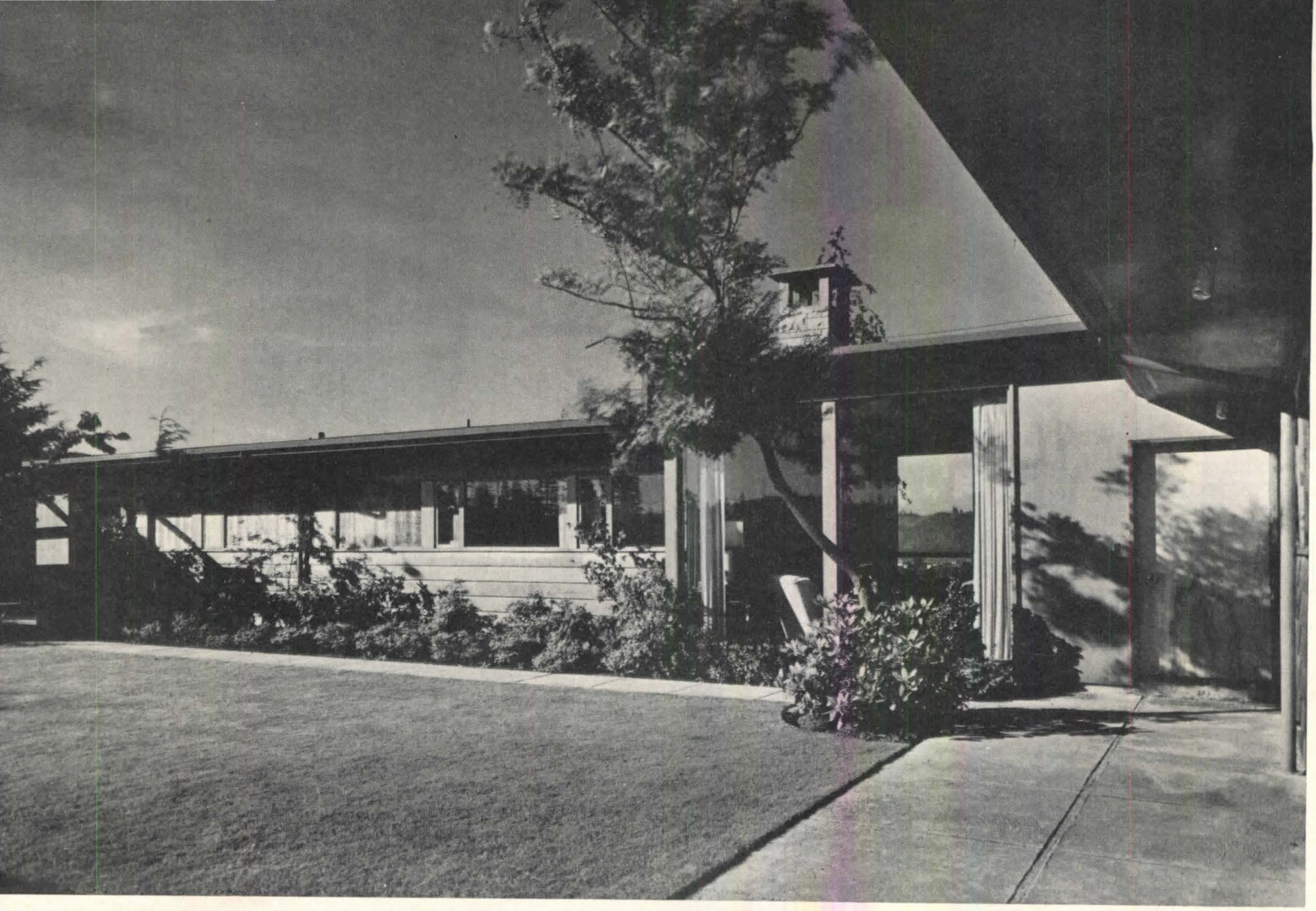
Bill Maris: Photo

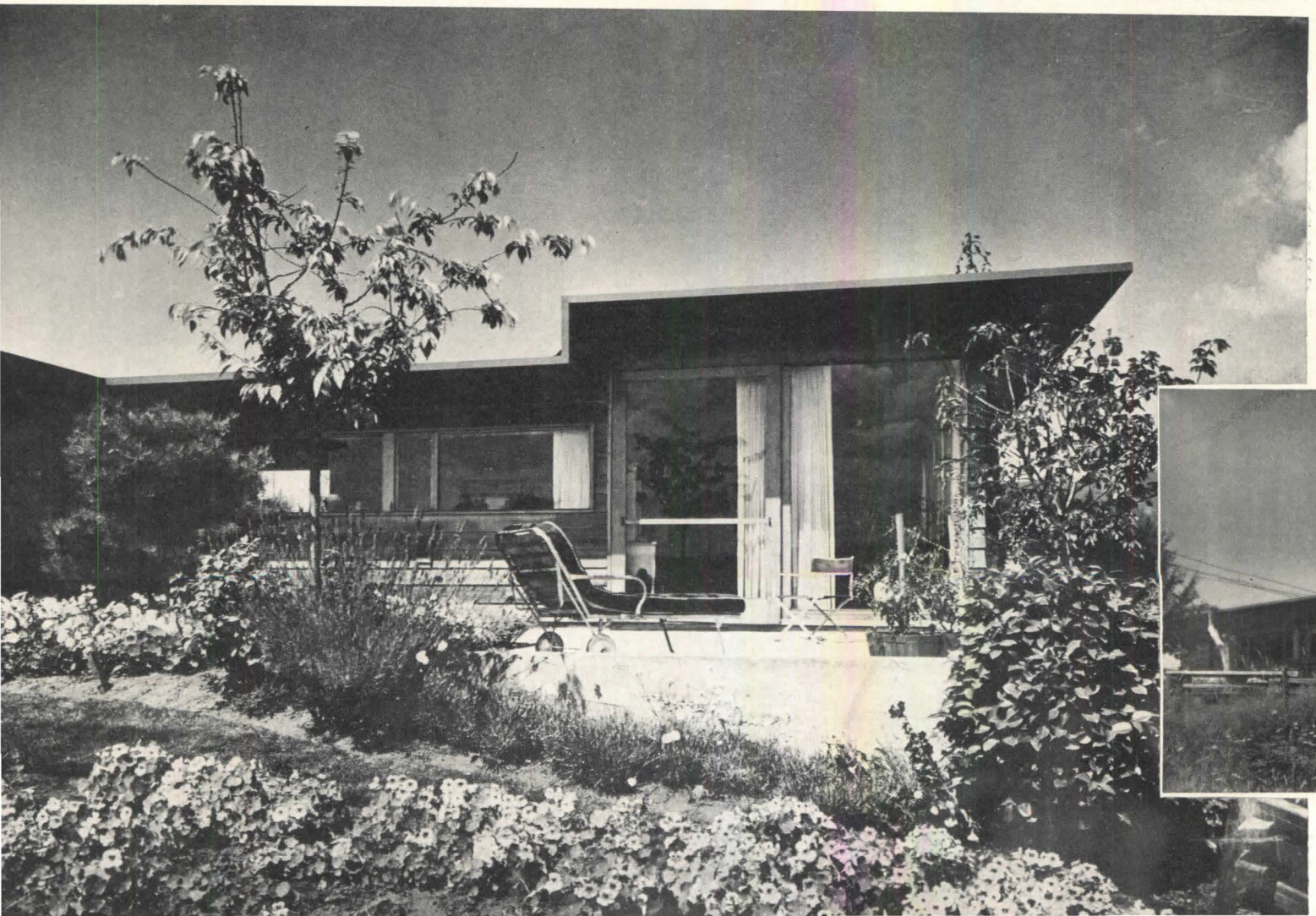


Kitchen and dining room are on a slightly higher level than the other rooms. All rooms have cross-ventilation. Corridor to future bedroom will utilize space now occupied by closets; new closets will be built between the two rooms. The view above gives an idea of the difficulties encountered because of the steep site









RAYMOND, WASHINGTON — WEST COAST

Residence of David M. Fisher

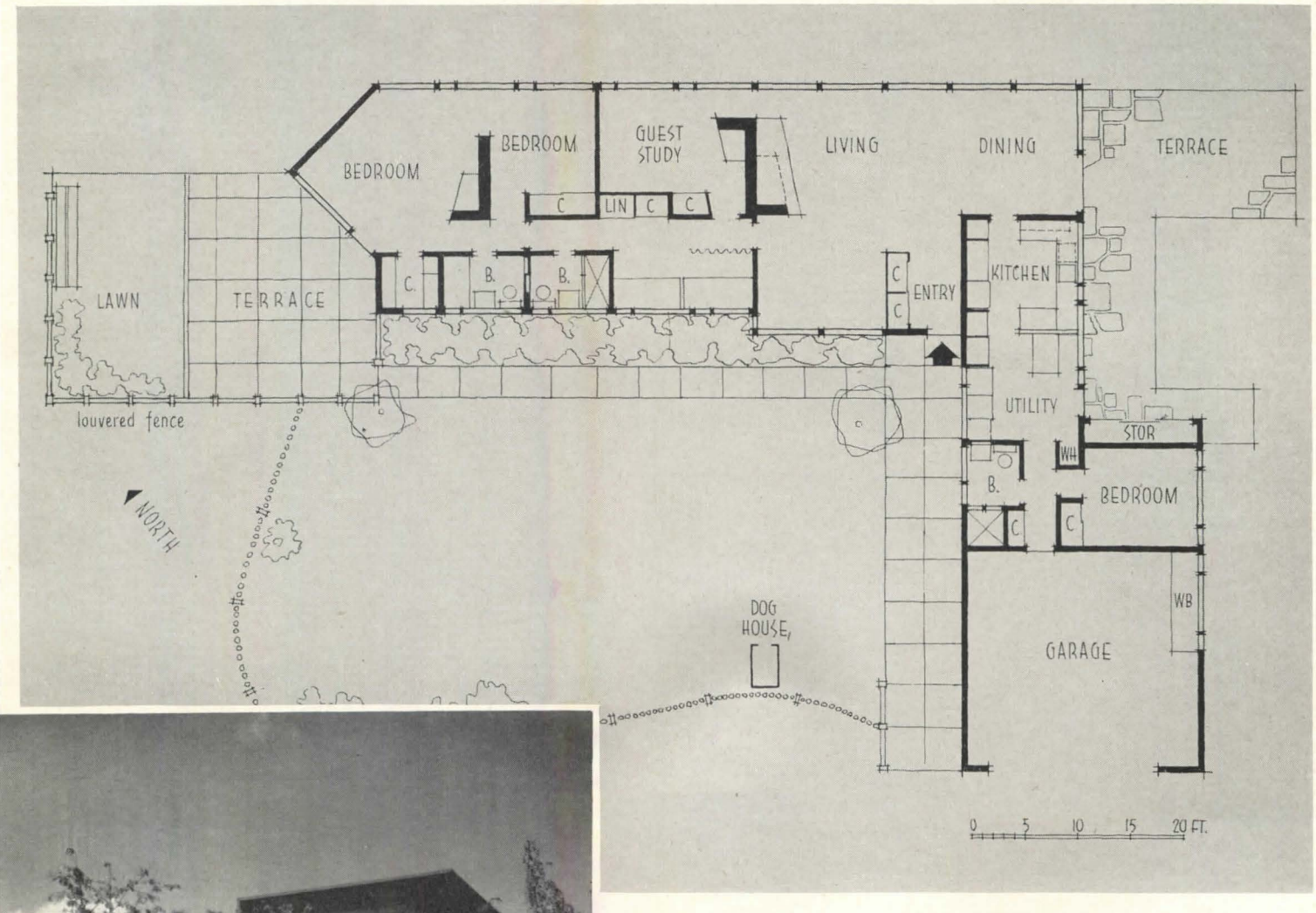
Paul Thiry, Architect

L. N. Roberson, Heating Engineer

THIS ALL-WOOD HOUSE for a lumberman is located in the heart of the Douglas fir country. The site is on a hill overlooking the town, the Willapa River, the harbor, and the lumber mills which, according to the architect, "add their smoke to the colorful haze at sundown." All major rooms face this view.

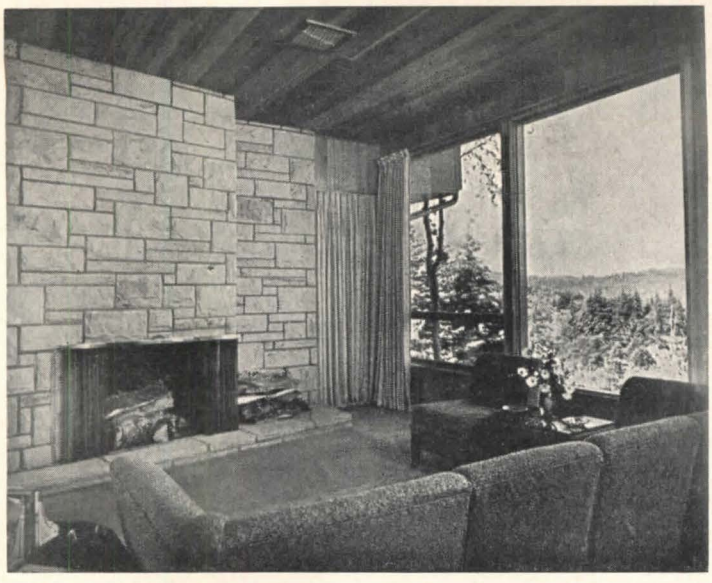
Southwest storms with abundant rain and overcast skies are frequent. These conditions are said to be ideal for growing Douglas fir, but they do not favor extensive outdoor living. However, terraces have been provided on the southeast adjacent to the dining room, and west of the master bedroom.

The owners are frequently visited by their children and grandchildren. Overflow guest accommodations are provided in the alcove off the bedroom corridor, which can be closed off when desired by a folding partition.

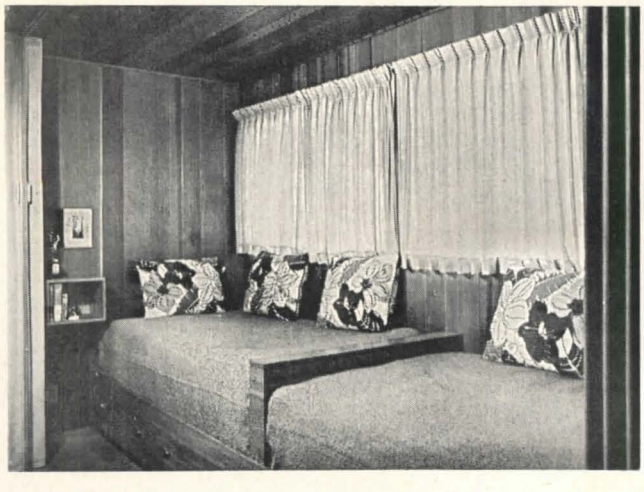


Charles R. Pearson Photos

Master suite consists of two bedrooms separated by free-standing fireplace, dressing room, bath, and private terrace enclosed by louvered fence. There are also fireplaces in living room and study

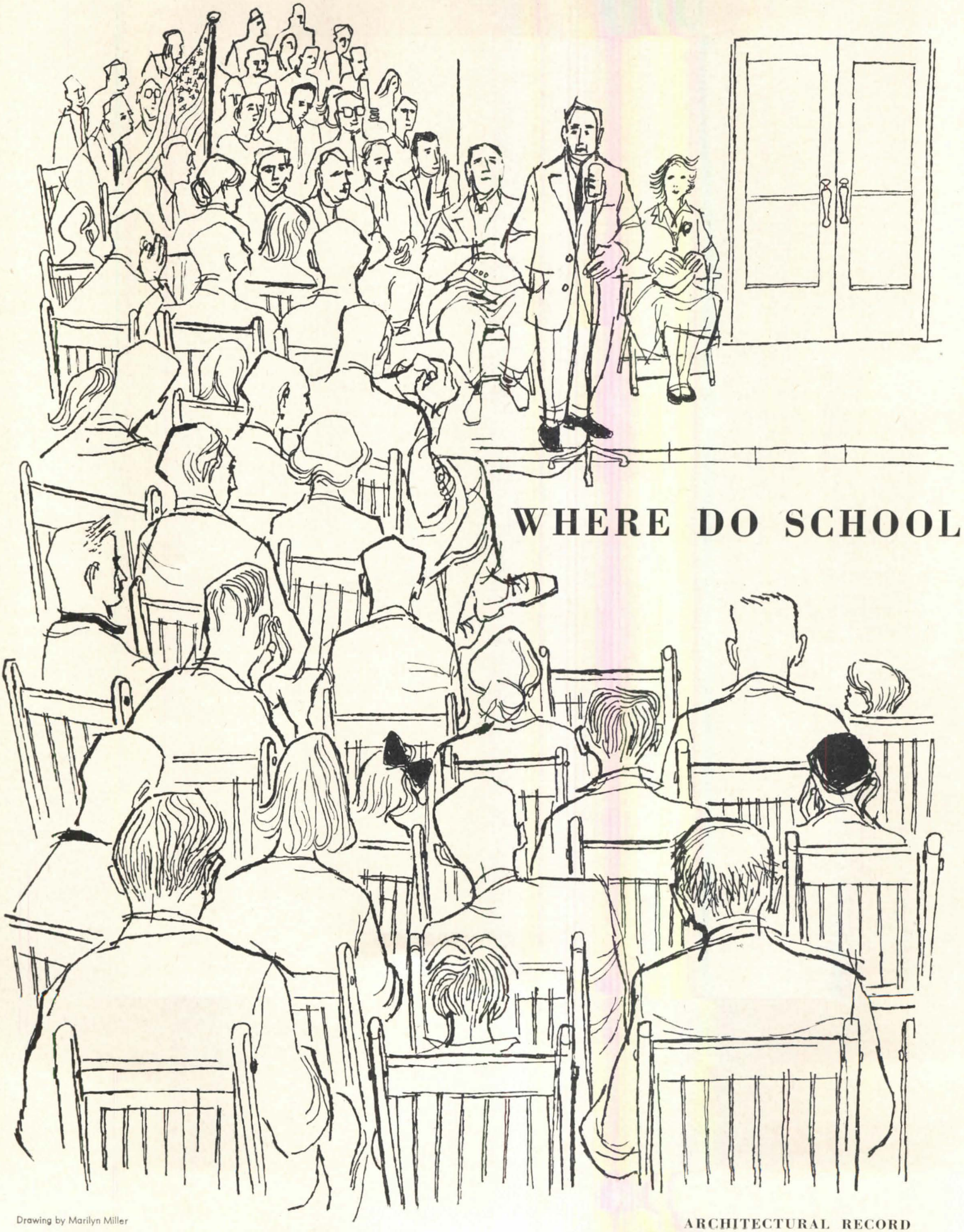


Living room, dining room, and entry are in effect one big room with a floor area of almost 600 sq ft. Higher ceiling over this portion of the house results in pleasing proportions and adds considerable interest to the elevations



Exterior finish is 1 by 10 in. bevel cedar siding, untreated. Interior walls and ceilings are 1 by 6 in. t. & g. spruce or cedar. Casement sash are Douglas fir. Roof is 5-ply with copper flashing and 3-in. rockwool insulation. Heating is by electric cable in concrete floor slab

Charles R. Pearson Photos



WHERE DO SCHOOL

Drawing by Marilyn Miller

DESIGN SPECIALISTS FIT?

By Paul W. Seagers *

Newspapers and magazines are full of articles and reports on school construction problems. The shortage of steel, to whatever degree it may be actual or artificial at points of supply, is a very real factor in design and construction of schools. A committee of the American Institute of Architects has, as this is written just about reached conclusions as to how much of various metals a school building can be expected to consume; and government officials are being hounded to release enough to ensure a substantial school construction program for the country. Whatever the immediate outcome of this activity, all signs point to an eventual release of some critical materials for this purpose. Meanwhile, we must continue to work ahead so that next month, or next year, we'll be all set to proceed with construction. We must make the best possible use of the public and of consultants, educators, architects, and administrators to produce schools which, as Mr. Seagers phrases it, have been designed in terms of the people who use them: pupils, teachers and staff.

OUR AMERICAN CIVILIZATION is in a state of flux. The days of "let the buyer beware" are rapidly passing. For the proper growth of our commercial and industrial economy it is now desirable to have a well informed purchasing public. On the other hand, in our political life we have galloped away from the old town meeting, where each man had opportunity to voice his opinion, into an age of bossism, money politics and interests regional, occupational and industrial. Centralized power, minority pressures and the emergence of authoritarian technical, economic and political specialists have brought about a reign of non-elected bureaucrats; and yet, at the same time there is much searching to determine the responsibilities of the public in all phases of American life. One can predict, almost certainly, that public officials — elected, appointed or just hired — not only will be held responsible for their acts but also will be assisted in formulating policies and determining the scope of their work. The office holder and the specialist, which in the field of education includes the teacher, the architect and several others, will have to discard the dictatorial attitude and work with the public. Who is the public? How does it become articulate and vocal? How, when, and where do the great many specialists function? With whom rests the final legal responsibility for making decisions? How and by whom is the project or study initiated? These questions must be answered if we are to proceed intelligently in planning public school buildings.

The Power of the Public

The term *the public* conjures up a nebulous form in the average mind. We know it is real because we have had many dealings with it. Its composition is always Mr. and Mrs. Citizen but its leadership and interests frequently change. It is seldom aroused, but when it is it may get violent. In the past it has felt secure in its power of accountability. "Throw the rascals out" has often been its battle cry. Its protest power has been great and very effective under some conditions (those without great patronage), as witnessed by the number of school bond referendums lost or the number of remonstrances filed. We have thought we could lull the public into an inactive status — or, even better, into sheep-like following — by intensive doses of information and propaganda. This we have called public relations. It has worked very well in many regions. However, it has lacked something: it was undependable; the public was not sure that it was not being hoodwinked; explosive elements were always too close at hand; it reeked with bureaucratic tendencies. In attempting to uncover a potential dynamic power of the public amazing discoveries have been made.

In most cases it was found that the public was *thinking*, and would take a stand far in advance of its leaders. School people and architects actually were conservative when compared with an organized public. The big problem was how to get the public organized without catering to special interests, so that its tremendous power could be released and directed into creative rather than protest channels. It was discovered that the dynamic power of the public was not the sum of the power of the individuals nor the emotional release of a mob. It embodied the blueprint of a well planned campaign, the financial generosity of a war bond drive or a catastrophic emergency, the coordinating action and enthusiasm of an old-fashioned barn raising and the flood of continuing interest which no mental or physical levees can keep within bounds.

Recently, techniques for releasing and directing this dynamic power have been worked out and used successfully. They include selection of the nucleus of participants on a socio-economic, geographical and organizational basis; fusion of highly diversified interests and age groups into functional committees; development within the individuals of loyalty to the project at hand rather than to organizational interests; definition of the legal and moral scope of their work; and determination of the place of the specialist in the study. In such ways we can bring back something of American grass-roots democracy. The public must now have a place at the planning table where it can help avoid mistakes and assume its share of responsibility. It cannot replace the specialists and experts, architectural, engineering or educational. However, the public can be organized to become articulate, to present its needs, and to check developments in terms of those needs. Many architects are aware of this trend and are adjusting to it. Others will soon find themselves unable to produce a set of

* *Associate Professor of Education; School Building Consultant; School of Education, Indiana University.*

drawings based upon no exact educational specifications for superficial approval by uninformed school officials. We must have more specialists trained in group dynamics and in tapping community resources.

Responsibility to the User

In planning public school buildings, the user is frequently forgotten, or at best becomes a statistic, a standard or an area. We cannot much longer justify fees for custom-designed school buildings when those buildings are really a slight rearrangement of standard units wrapped in a style of architecture which types the architect. If that is all we want, let's buy pre-fabs. Yes, I know the architect is not wholly to blame. The public is anxious. The school authorities know neither their needs nor their wants. Nevertheless, the average architect is to blame in that he does not encourage extended study, which costs him money. I know a few who will even discourage any reasonable study by school officials once their contracts are signed. This type of action by a few is unfair to the entire architectural profession. It is time for each school architect to demand from the school officials a set of educational specifications or a study of the needs based upon the projected use of the plant.

Will the plant enhance, physically, mentally and emotionally, the pupil's growth? Will the physical and psychological impact of the proposed environment retard or enhance development of the individual pupil? Is the elementary plant designed on an adult scale embodying an adult's idea of monumental architecture, or is it simple, with plenty of interest centers and a bright harmonious ensemble of color? Do the special rooms in the high school resemble anything pupils will come in contact with in adult life? Have the functions of each area been thought out well? Have teachers and custodians been consulted? Frequently they can add many ideas; likewise many will have no constructive ideas. If the building is to be used for community or other functions, these also must be taken into consideration. Many other questions can be added; the important question is, *Has the building been planned from the inside out in terms of the people using it, namely pupils, teachers and operational staff?*

Responsibility to the One Who Pays the Bill

That the one who pays the bill can call the tune is seldom true in school building planning. The public as we commonly think of it may pay only a fraction of the bill. Long-term bonds frequently force the users, the pupils now in school, to pay; absentee owners and corporations often pay the lion's share. State and federal school support forces still other noninterested people to share the burden. We do not debate the right or wrong of this situation; it is here and we must face it. Like most governmental employees, school authorities are spending the funds of many people who cannot hold them directly responsible. This trust makes it all the more necessary to plan school buildings which will operate efficiently, economically and safely. Expensive architectural license cannot be condoned. In this connection it might be discovered that a thorough re-evaluation of building codes in light of recent research could materially reduce the cost of school plant construction.

Responsibility of the Elected or Appointed School Official

In most places the board of education, board of school trustees or township trustees, all composed of duly elected or appointed officials, is responsible for construction, maintenance and operation of the school plant. In some localities construction comes under a different board or commission. These boards of school officials are primarily concerned with determining policy, although they must legally approve and authorize the signing of contracts. Even though they hire an administrative officer, they cannot shirk their responsibility as the board of final authority except for legal appeals to the state government. Outside of large cities, few board members ever go through more than one school building program. Not many have the experience to direct a construction program. They do not know how to identify their problems. The application of known principles to the solution of those problems is beyond their command, and a reasonable method for selecting an architect is unknown to them. They have been at the mercy of pressure groups, salesmen-architects and perhaps uninformed school administrators. The honest, public-spirited citizens who serve their communities on boards of education certainly have my sympathy. For the most part they want the public's help, but fear organized opposition. The National School Boards Association and various state school board associations are now coming to the aid of the board member, informing him of his responsibilities and rights and recommending methods of procedure. Many boards are now able to hire trained administrative officers and educational consultants.

Many universities and private organizations can assist with surveys and studies; and state departments of public instruction, although not staffed for extensive service, can direct the boards to other sources. Selecting the architect is one of the most important tasks the board has to perform. Unfortunately for the profession, there are a few so-called architects, job-chasers or salesmen-architects, who use unscrupulous methods for obtaining contracts, a practice which reputable architects do not approve. Interestingly enough I have never heard a board member criticize the work of an architect he has helped hire. Either he has to justify his action, or the new plant is so much better than the old that he cannot conceive that, like too many buildings today, it has been planned poorly on an expedient basis.

Responsibility of the Administrative Officer

The administrative officer in most school corporations is the superintendent of schools; in others it is the district or supervising principal. The administrator has a threefold function. He provides educational leadership to his area. He is an adviser to the board, and he acts as the executive officer in carrying out board policies and state laws in the operation of the schools. He is directly responsible to his board of education. A good administrative officer can help the board study its problems, promote real public relations by bringing the public into planning, recommend the services of specialists, provide educational specifications for the architect and provide the board with background from which it can draw logical conclusions and make reasonable decisions.

Although he has no legal responsibility for making decisions, his influence should be felt throughout the entire planning process.

The State Office

The responsibility of a state office in school plant planning ranges from complete authority in some states to none in others. Even in those states which give it complete authority, lack of state staff precludes much service except inspection and approval of plans with superficial inspection of the completed plant. Probably the greatest service that a state office can perform for a school corporation is to provide leadership and some assistance in helping that corporation study and solve its own problems locally. Certainly educational leadership and the application of recent research to planning is much more desirable for state offices of education than the dictatorial administration of codes. Code influence on design should be kept at the very minimum necessary for comfort, health, safety, and educational development of the child.

The Architect

The architect is a specialist who takes ideas and from them evolves a design whose instruments, the drawings and specifications, enable the builder to erect the tangible structure. The architect must be an artist, an economist, a dreamer and yet a realist. He must have a sense of color and design and be practical in selecting materials. His artistry must further — it cannot be permitted to conflict with — the fulfillment of function. His work is judged by the people who use his creations, by those who just admire the architecture and by the numerous others who pay the bill. The people affected most by his work, the pupils, have little to say and are not aware that his work has an effect upon their lives, that, in fact, the architects of the past have had a profound influence upon the educational programs of today. In other words, many existing educational programs have been conditioned, not always beneficially, by architects rather than educators. The architect is not wholly to blame for this. Many educators have failed to provide architects with statements of their educational needs or educational specifications. On the other hand, some architectural firms, even well-known ones, once they have received a contract have disregarded the educator and taken full responsibility for planning. Remarkably enough, some did some excellent jobs for their period. Such a procedure, however, cannot be approved today.

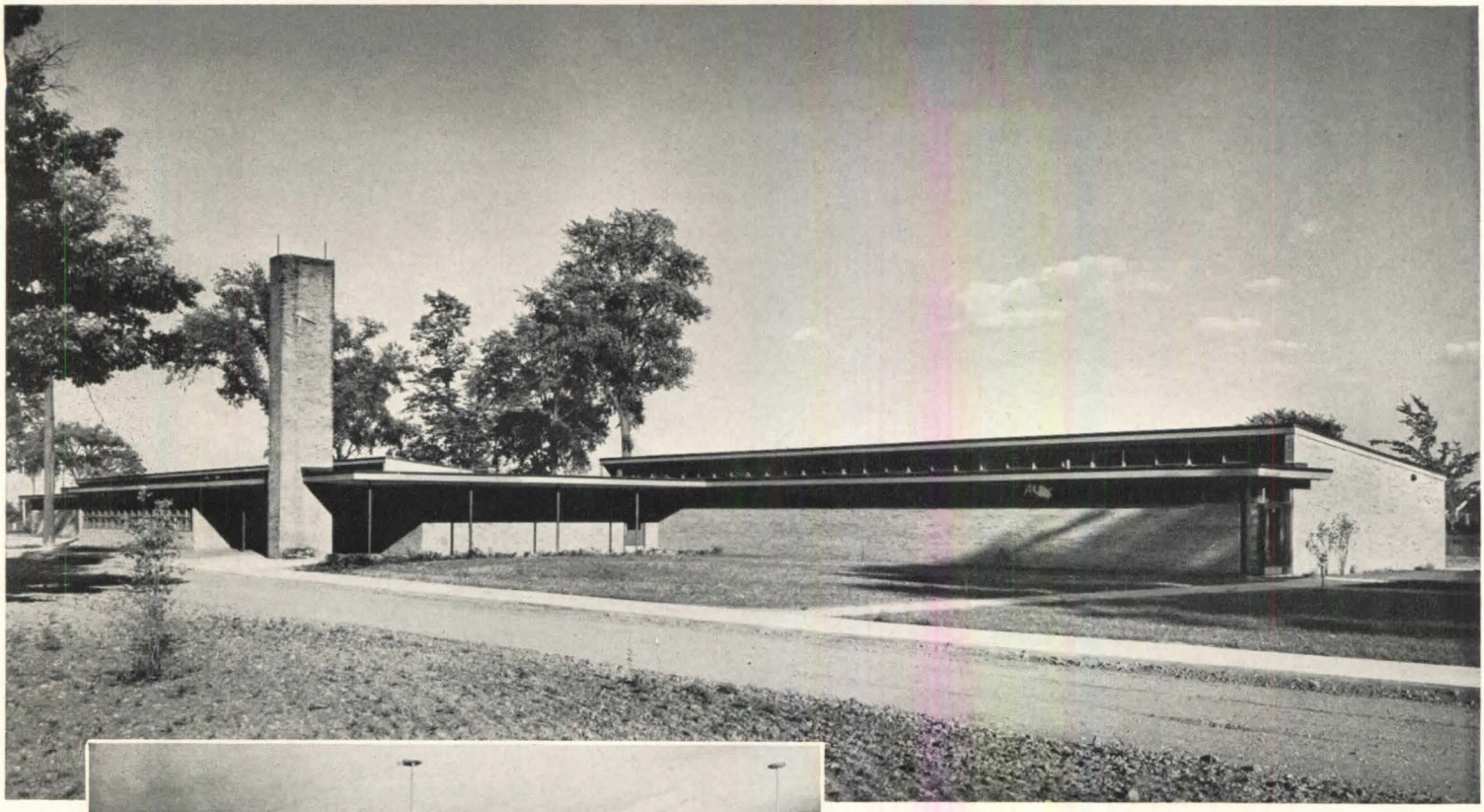
We must recognize that the architect is not an educator; he needs the help of the educator in planning an educational building. I once heard an architect say that if he were planning a house he would want to live with the proposed occupants for several weeks to study their habits. How much more difficult must it be to study the functions and uses of educational areas before planning a building! Yet the architect requires this information in addition to other pertinent facts. The architect, an important man, is a member of a team each of whom has his own function to perform in coordination with the others. The educator must be in the picture before the architect, and he certainly is there long after the architect's work is finished. This is not to belittle the work of the architect, but just to place it in normal sequence and recognize it as a specialization infrequently required by the average school corporation, whatever its importance.

The Educational Consultant

The educational consultant or school building planning consultant is indigenous to the educational soil. His is a new profession growing out of the need for a specialist trained and experienced in education to help the busy superintendent and board of education with their school building planning problems. He needs to have had experience as a classroom teacher to give him the "classroom feel" quite necessary in understanding the problems of the teacher. Experience as an administrator will acquaint him with the many administrative problems, including budgeting. In addition he should be well grounded in modern educational philosophy and methods. He should understand how the child grows and learns, and the nature of the impact of environment upon the child both physically and psychologically. He should be mature in judgment and should have had some practical construction experience such as inspector or clerk of the works. It is not necessary for him to be an engineer or an architect; in fact it is desirable that he be neither. He should think in terms of children, not formulas or codes. If he is primarily a school man, the administrator is likely to go to him first. He can help the administrator survey his community. If he is informed and experienced in real public relations and group dynamics, he can help school authorities set up a program for bringing the public into the survey and planning process. The educational specifications can be developed under his guidance. He can suggest methods for interviewing and selecting architects. He can interpret the educational specifications to the architect, and in many other ways act as liaison between the architect and school officials with the object of saving both parties time and energy.

It must be said here that his services are only advisory and consultative, and he must not at any time assume authority for making decisions. He should check plans and specifications during progress to see that they meet educational requirements. His thorough knowledge of the background of the corporation, coupled with his predictions of growth in both size and direction, and of likely changes in school organization, will assist the architect materially. Other information such as community use, dual use of space, relationship to city playground, recreation and park commissions, relationship of this unit to other school units, and expansion possibilities all can be provided by the educational consultant. He will in no way hamper or detract from the work of the architect. He is more likely to stimulate and contribute to improvement of his work.

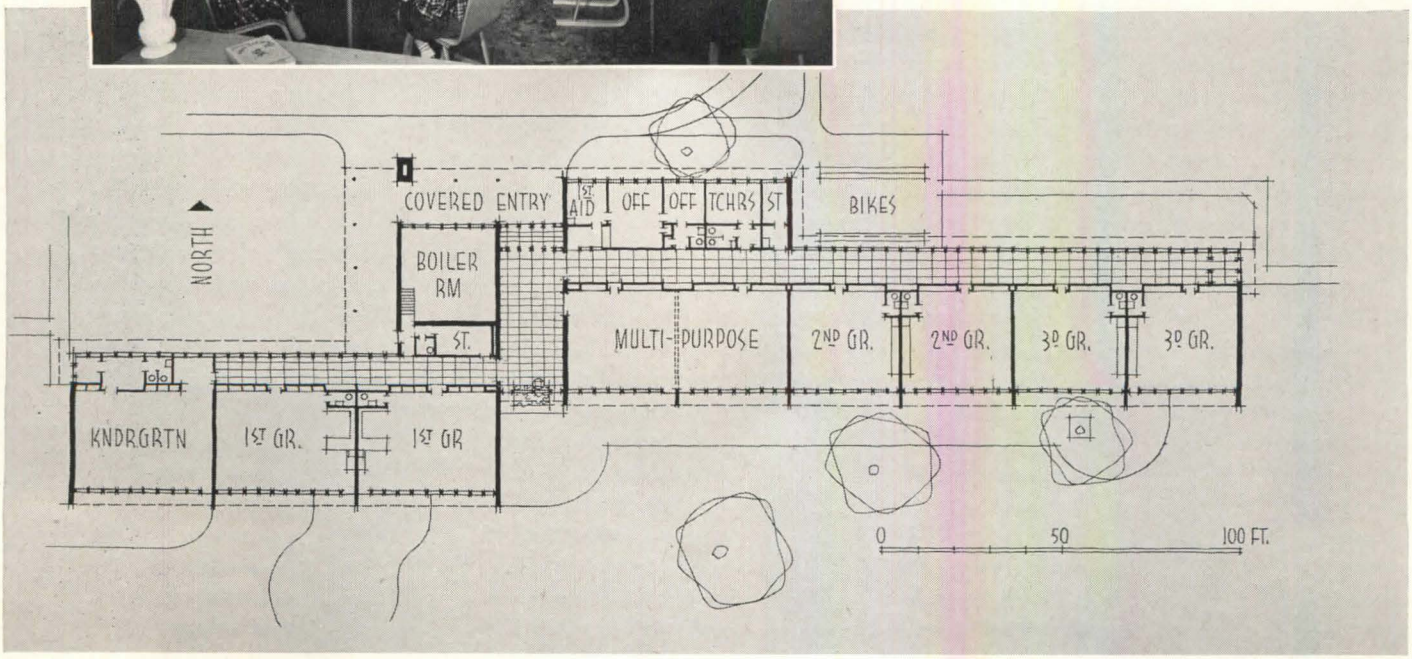
Where do we fit? In this complicated life of today we had better fit together. We must work as a team, from the public through school officials, architects, and educational consultants. Let us recognize the power of the public, the professional status of the specialists, the responsibilities of the executive officers and the legal rights and obligations of the boards of education to make final decisions. Only as we do this can we hope to provide good educational environment for children.

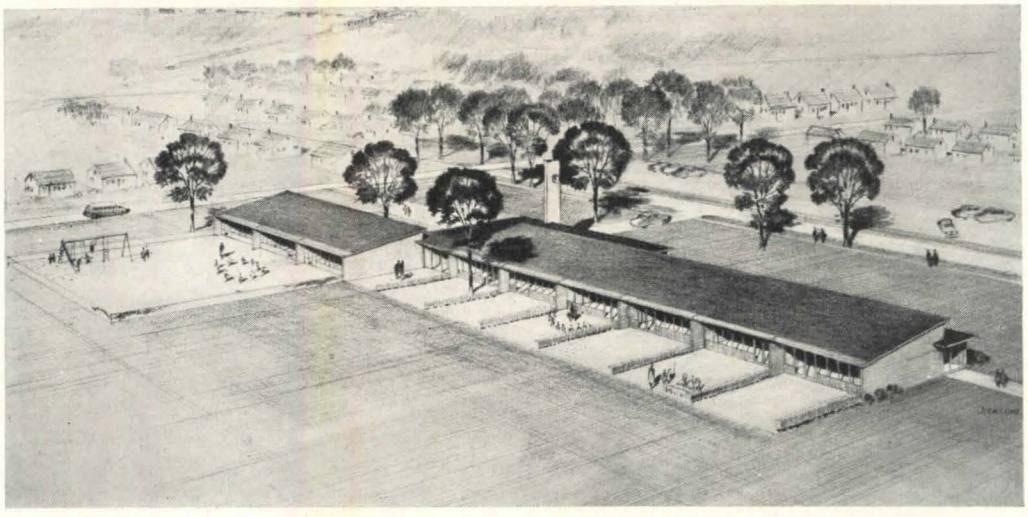


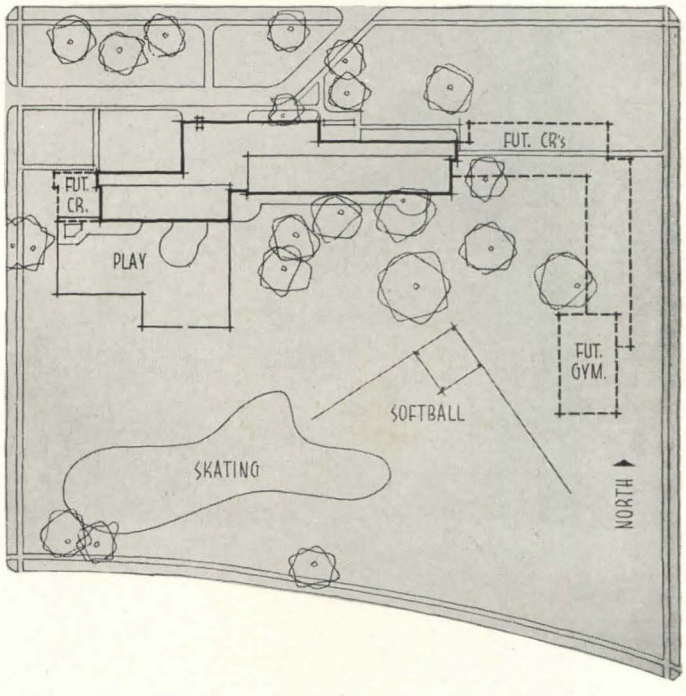
Richard Shirk Photos

TORRY

Swanson Associates, Architects







Paul S. Calkins, Structural Engineer

Hyde & Bobbio, Mechanical Engineers

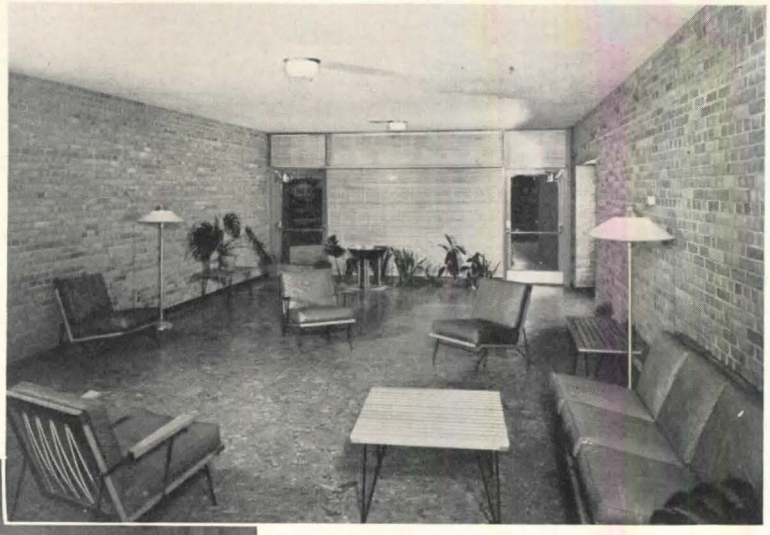
Wilcox & Laird, Landscape Architects

ELEMENTARY SCHOOL, BIRMINGHAM, MICH.

GIVEN AN AWARD OF MERIT by the American Association of School Administrators at its 1951 convention, Torry Elementary School has now entered a second year of use in a rapidly expanding section of Birmingham. The building, for elementary school children, was required to be in scale and character with its excellent residential neighborhood. The eight-acre site is level and has several fine large trees. Classrooms were conceived as self-contained units with individual toilets and work spaces, and each with direct access to the playground. The building had also to be designed to permit future addition of one more kindergarten, four more classrooms, gymnasium, library and expanded health facilities. Ultimately the building is thus to have two classrooms for each grade, kindergarten through sixth.

Above all, the present building (kindergarten through third grade) was designed to ease the child's transition from home to school. As far as a school can be made homelike, this one has been, by careful proportioning of spaces; by selection of equipment, furniture and furnishings, under the control and supervision of the architects; and by the delightful use of color as shown in the color photograph on the cover of this issue. Visitors thoroughly familiar with schools here and abroad have called Torry one of the best elementary schools built in the past year.

The school has a steel frame; concrete floor slab on grade, asphalt tiled, with radiant panel heating; poured gypsum roof slab; brick exterior walls, partitions between classrooms and along north wall corridors. Fir paneling is extensively used; doors and trim are birch; ceilings are mineral acoustical tile. Lighting is incandescent throughout. In addition to a toilet, each classroom has an enameled sink and a drinking fountain.



Richard Shirk Photos

Above, entrance lobby, furnished like a living room. Left, corridor; fir-sheathed wall can serve as display space. Below, typical classroom. Total cost, not including site work, furnishings, equipment, or fees, was approximately $217,400. For 210 pupils, this amounts to $1035 per pupil; at 16,195 sq ft, to $13.42 per sq ft; or 200,887 cu ft at $1.08. In these figures are included $11,307 for electrical work, $27,253 for heating, $15,166 for plumbing

MILL PLAIN SCHOOL, FAIRFIELD, CONN.

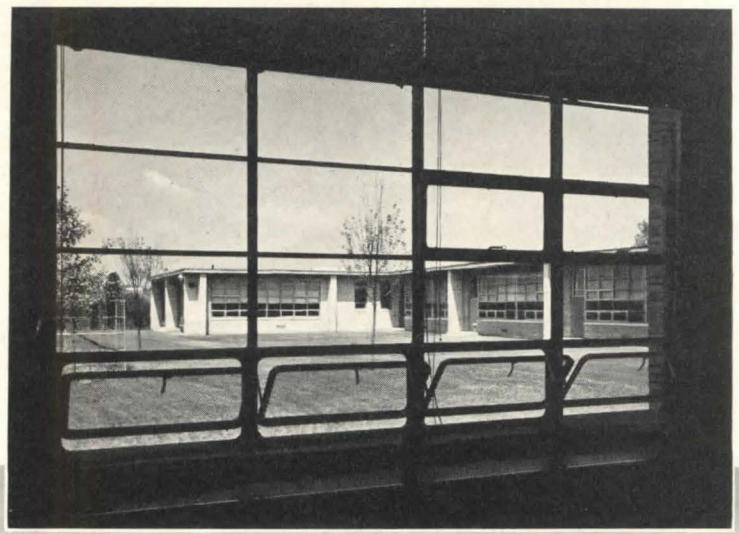
Lyons & Mather, Architects

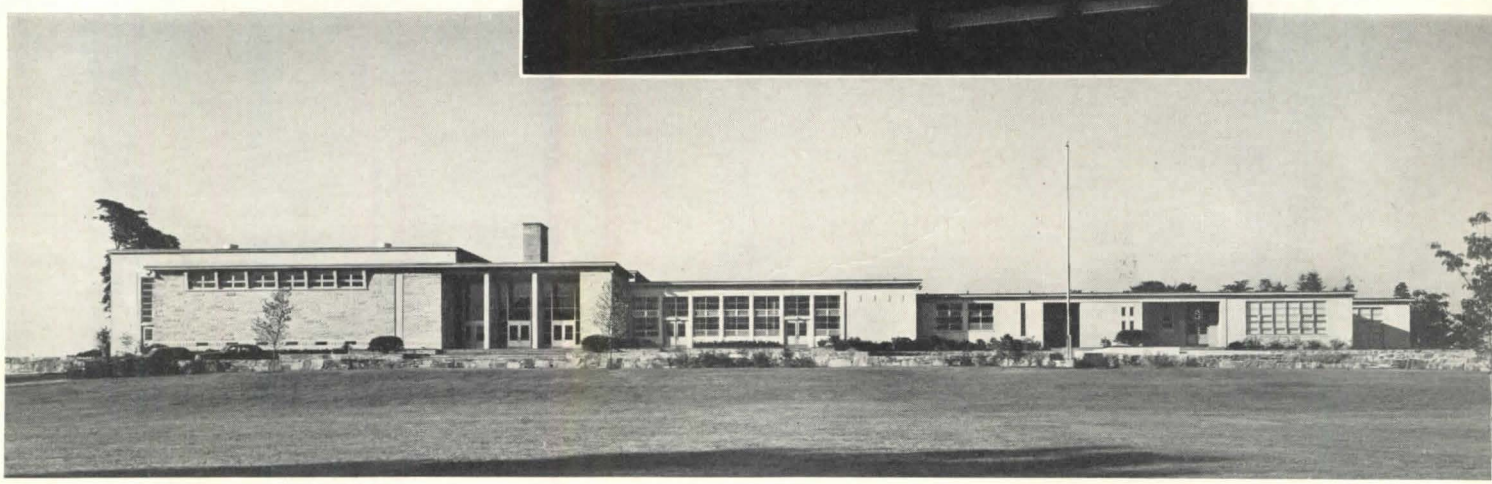
Ernest D. Mortenson, Structural Engineer

Hoffman Associates, Mechanical Engineers

Howard Harper, Electrical Engineer

Evan Harding, Landscape Architect





Joseph Molitor Photos

MILL PLAIN SCHOOL, for children from kindergarten through eighth grade, provides a clear instance of the coordinated functioning of three distinct entities: educational authorities, citizen groups, and architects. Fairfield is a growing Connecticut town with a substantial number of businesses and industries of its own and yet a preponderance of commuter families whose livelihood comes from nearby Bridgeport and more distant New York City. Its large population increase during the recent postwar building boom overcrowded its existing schools. The result was an unsatisfactory series of double sessions just at the time when a new school administration, under Carlyle G. Hoyt, Superintendent of Schools, took office.

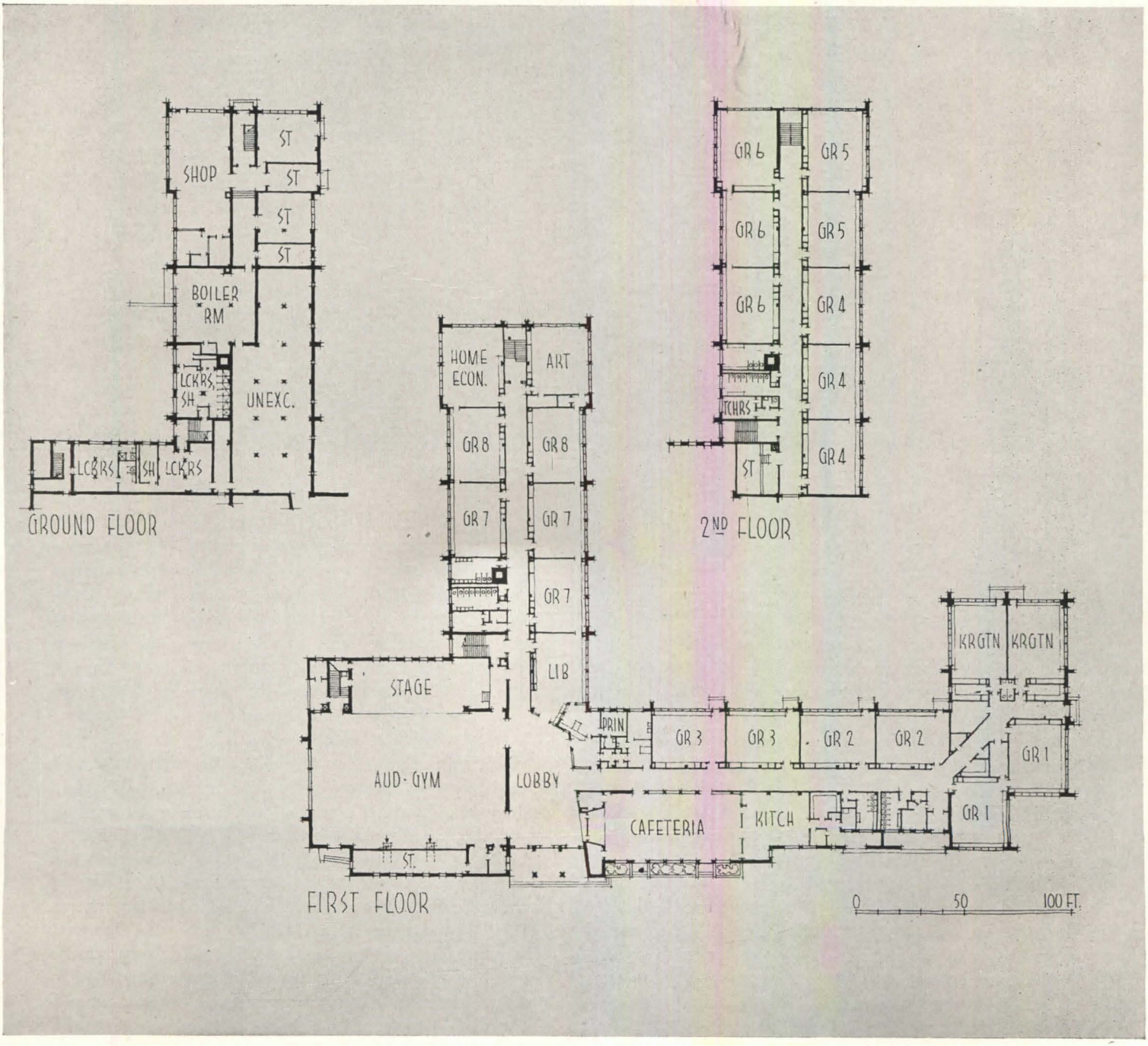
The new administration instituted a comprehensive study of anticipated needs which indicated a yearly increase of about 10 per cent. Because there existed a number of undeveloped yet potentially desirable residential areas, this rate of increase was expected to continue for an indefinite period. In determining the most desirable location for a new school the administration consulted local realtors, prepared pupil population maps designed to show changes both in advance and as they occurred, began the chore of redistricting the community, and thus determined the geographical area of greatest immediate need, one in which a school to accommodate a large ultimate pupil load could for the time being take seventh- and eighth-graders from three surrounding districts, which would temporarily relieve three overloaded schools.

This procedure began to define the educational and building program by requiring such facilities as physical education, shop and homemaking for older students on a semi-departmental basis, as well as an elementary curriculum for younger pupils. Details of the program were developed with the assistance of a number of teacher committees on primary, intermediate, upper, special education, administration and maintenance. Townspeople were consulted to determine what provision should be made for community use of the school. So reasonably and thoroughly was this, the educational specialists' phase of the work, conducted that there

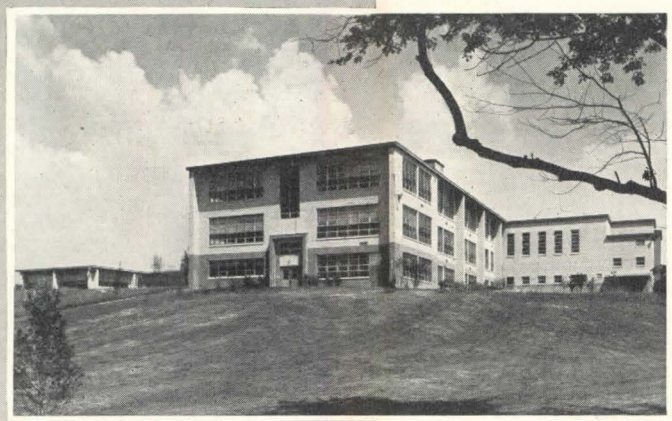
was little or no public opposition when the time came to ask the town to appropriate nearly $1,200,000 for the new building and its site.

Meanwhile, as required by state law, the Fairfield Town Meeting Representatives had appointed an eight-member Mill Plain School Building Committee, of which Mr. E. H. Staber was chairman. The Committee's first task was to review the Board of Education's recommendation, based on the school administration's findings. The Building Committee decided that the school needed four more classrooms than had been asked for; its decision was approved in Town Meeting and the new school has 22 classrooms. Also on the Committee's advice, a 20-acre site was selected and bought, and the architects were commissioned. The Committee was extremely active in investigating materials, equipment and types of construction, and in overseeing the progress of the work. To facilitate their job the Committee distributed among its members several "job assignments": structural, mechanical, equipment, landscaping, administrative, etc.; a procedure which effectively increased each member's interest and responsibility.

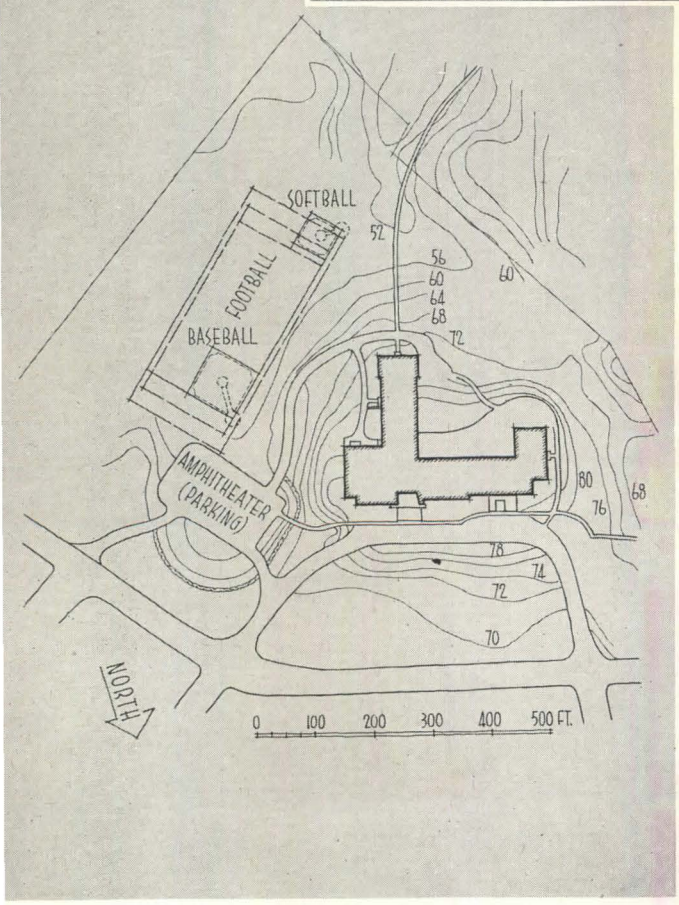
While the program was thus formulated by the town's educational authorities and given direction and substance by its lay citizens, "Lyons and Mather," says Superintendent Hoyt, "are solely responsible for design." He adds that cooperation of all bodies concerned was excellent, and that the architects worked so closely with various committees and the administration that it would be impossible, speaking in terms of function, to say where many ideas originated.



Joseph Molitor Photos



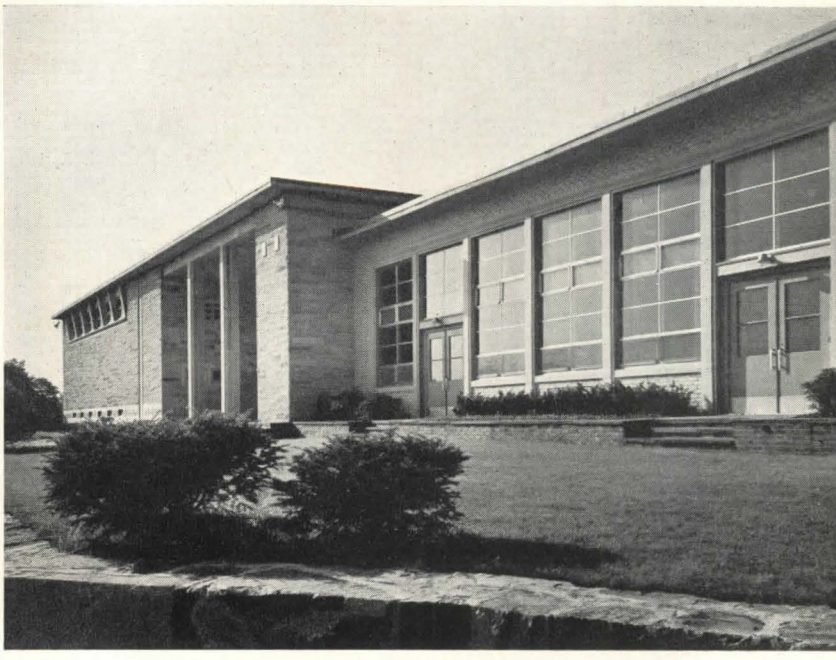
Plan, taking advantage of hilltop site adjoining a small park, effectively separates kindergarten, lower elementary and upper grades, permits closing off publicly used areas. Amphitheater-parking area serves also as hard-surfaced play space

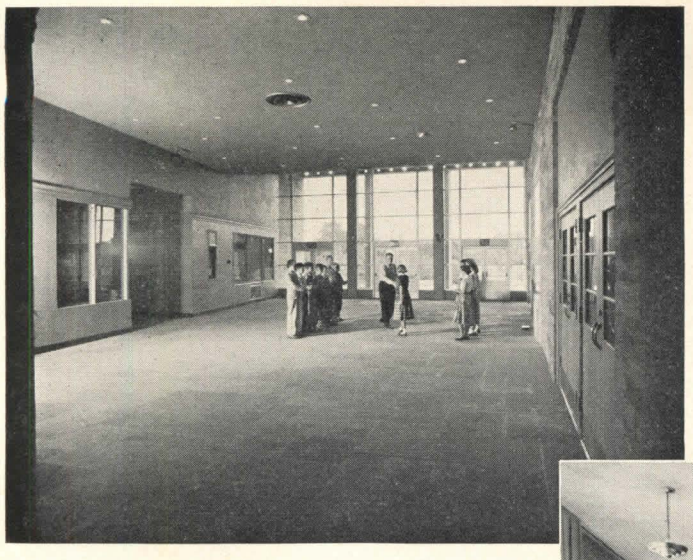


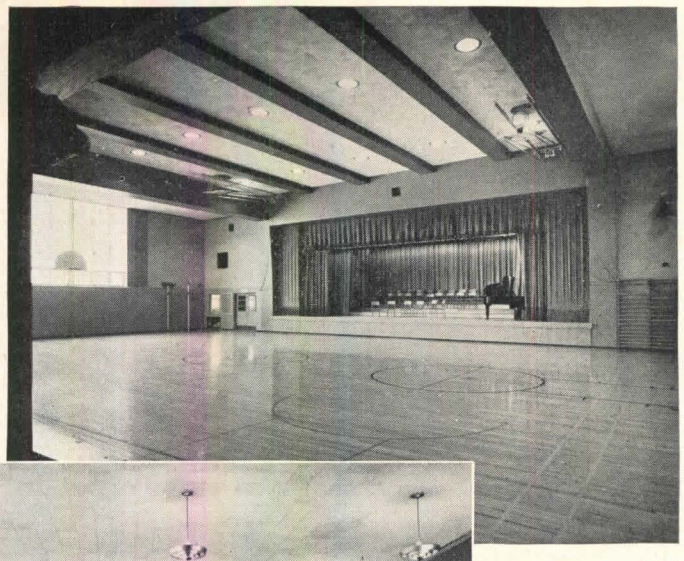
COST DATA

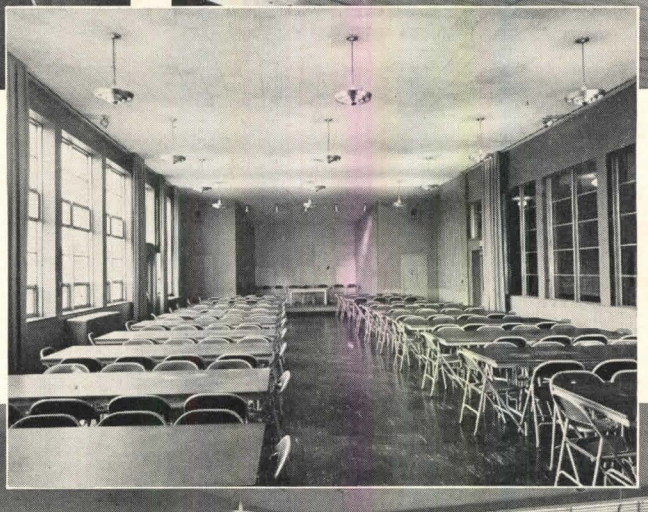
General Construction (incl. mechanical, electrical, built-in equipment)	$ 860,000	No. sq ft	62,500
Site acquisition	30,000	Cost per sq ft (based on General Construction)	$13.70
Site improvement	68,000		
Equipment, Furnishings	85,000	Present enrollment	600
Fees, Miscellaneous	97,000		
Total	$1,140,000*	Cost per pupil	$1433

** Design and construction economies made it possible to return to the Town of Fairfield approximately $50,000 of the nearly $1,200,000 appropriated.*



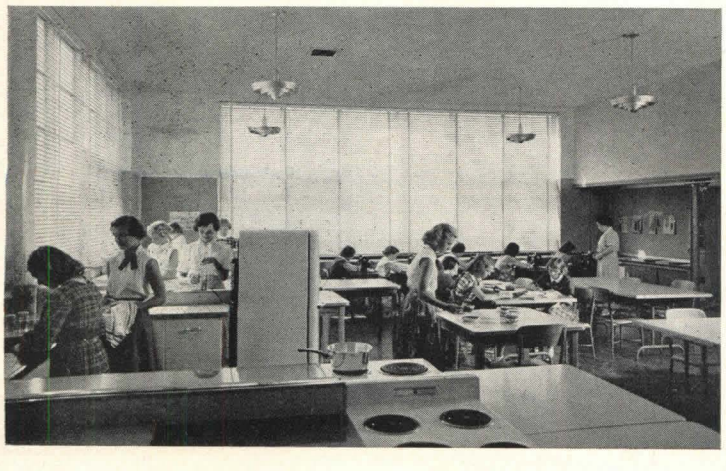


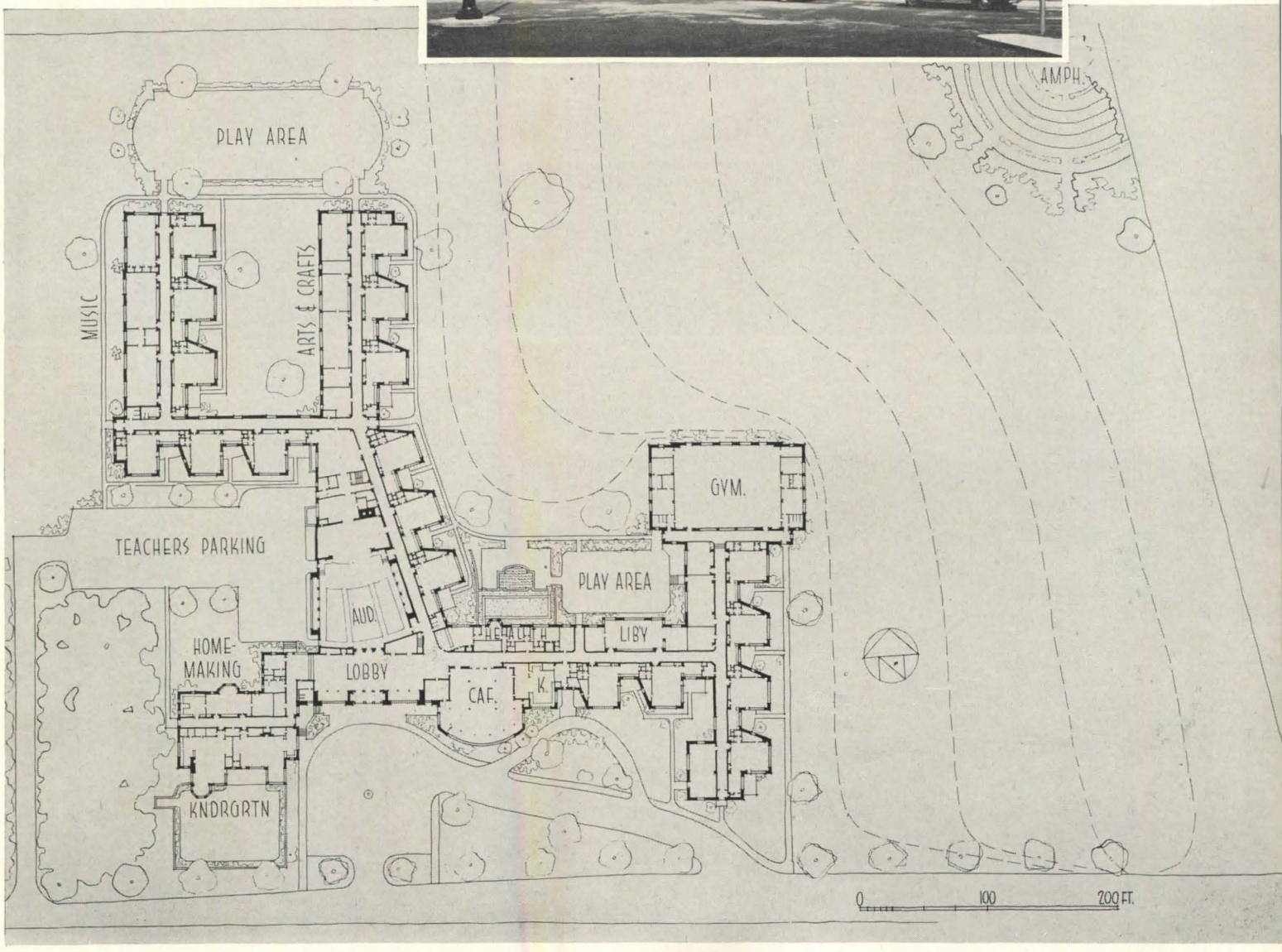




Upper left, lobby, used for bad-weather play, etc. Upper right, gymnasium-auditorium, with stage designed for curtaining off for band practice. Right, cafeteria with small stage. Three views at bottom, typical classroom, home-making, shop

Joseph Molitor Photos





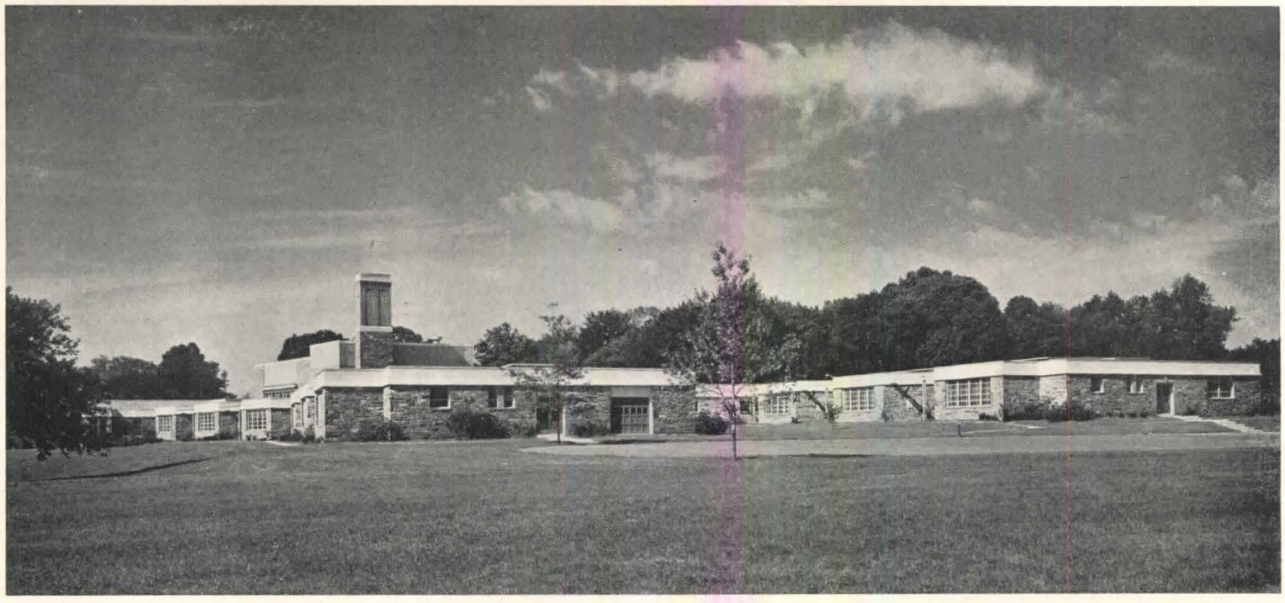
PENN VALLEY SCHOOL, LOWER MERION, PENN.

Walter T. Karcher & Livingston Smith, Architects

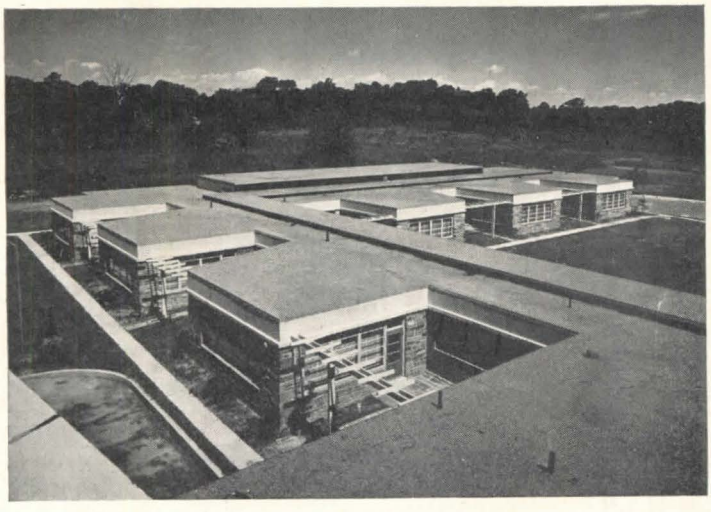
JUST OPENED, Penn Valley is an elementary school in which kindergarten, grades 1–3, and grades 4–6 are grouped, each with its hard-surfaced outdoor play area, so that there is little cross-traffic between age groups. The School Board presented the architects with a full program, detailing requirements to meet a high standard educationally and in consonance with the standards of its well-to-do community. The Board asked that all classrooms be self-contained, with individual toilets, cloakrooms, work alcoves, warm floors especially in lower grades, and above all east, south, and southwest exposure; and, though this goal was not quite reached, wanted classrooms about 30 by 35 ft in size. As to general character, the Board stated: "In securing standards that do not violate community standards we would like to have a school that has warmth, individuality and special appeal to little children, as far as this can be realized within reasonable costs."

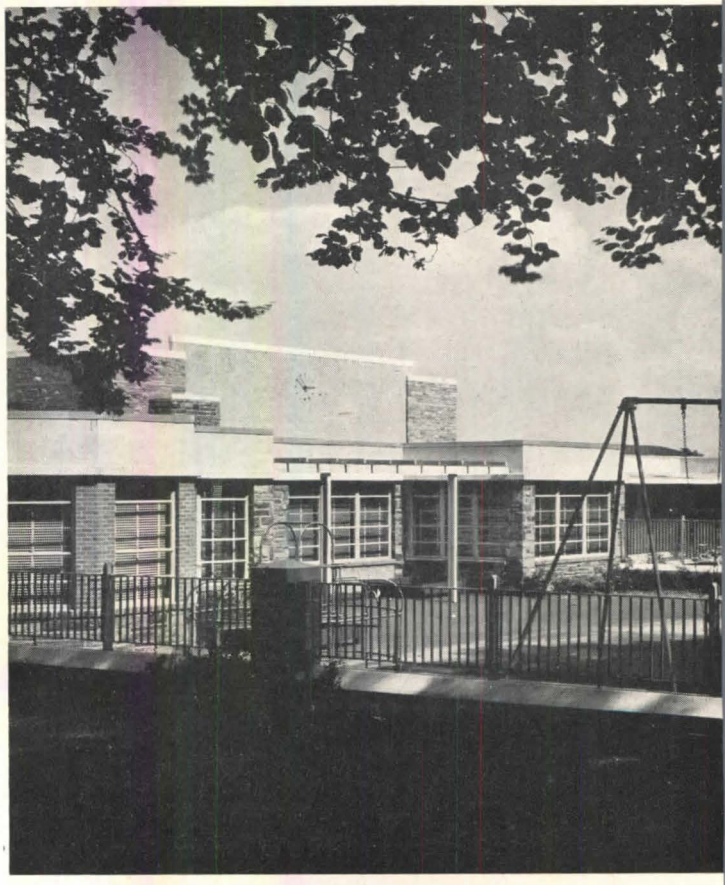
Gravell & Duncan, Structural Engineers

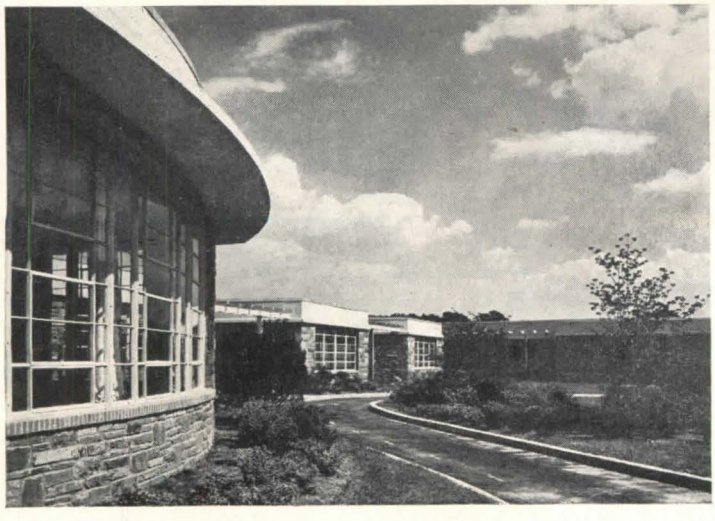
A. Ernest D'Ambly, Mechanical Engineer



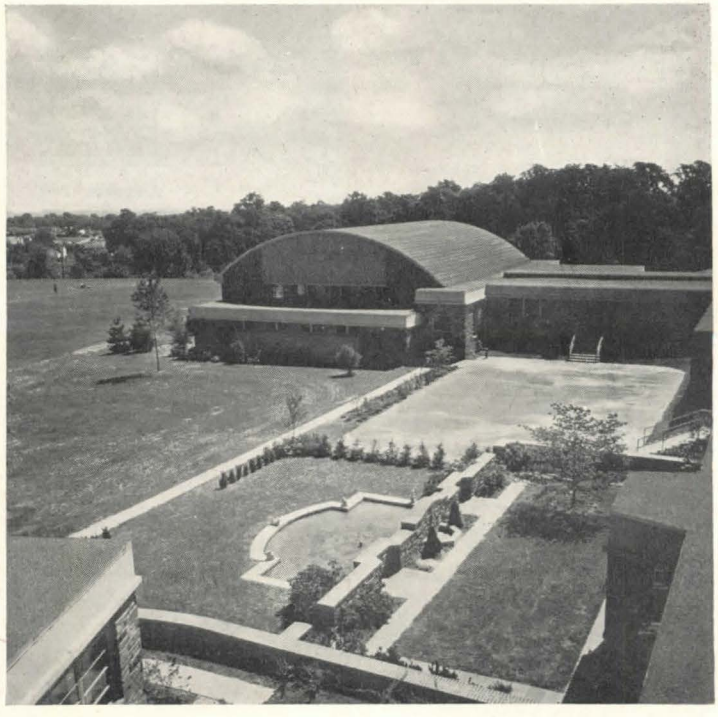
Joseph Molitor Photos



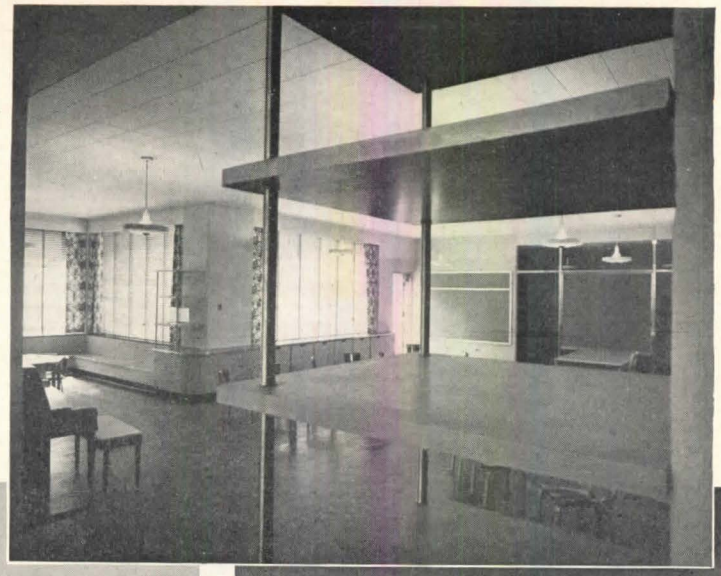


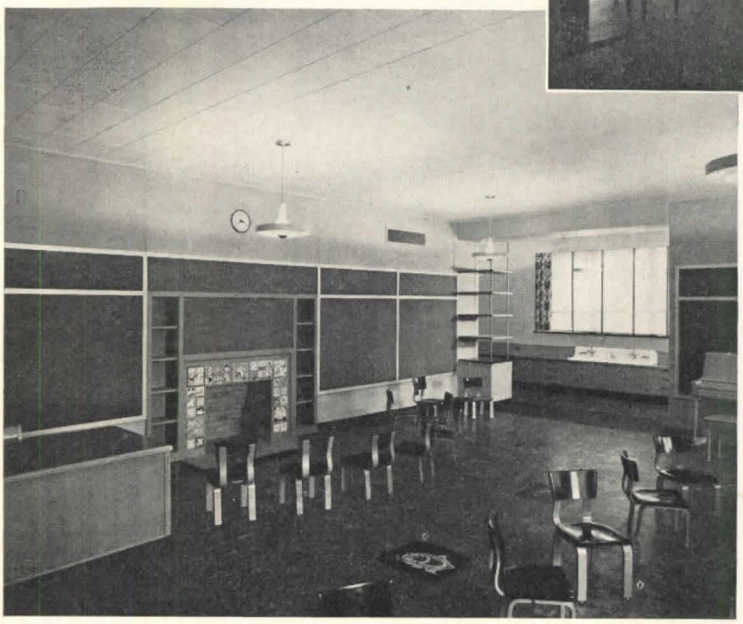


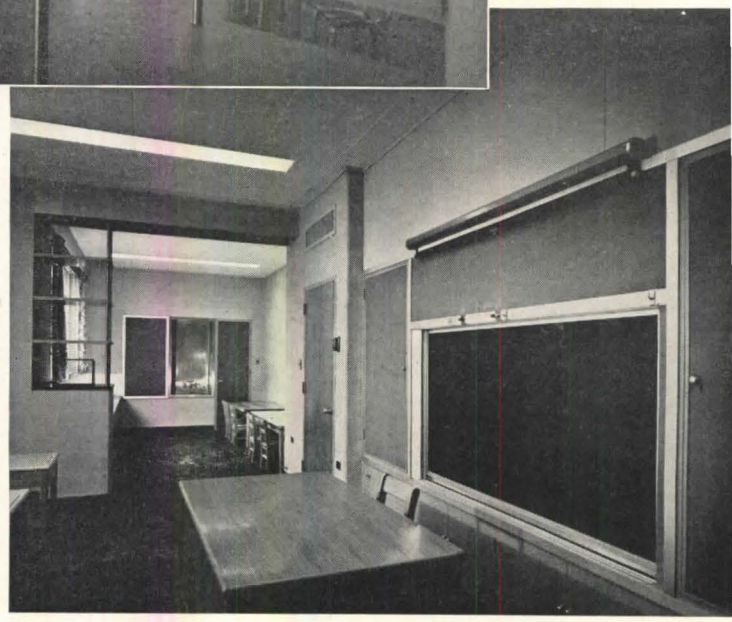
The architects are well aware of development of "finger" plans for schools elsewhere in the country; they have consciously tried to adapt this type of scheme to obtain harmony with local conditions. In plan, they have placed the auditorium and cafeteria centrally to reduce walking distances, and have arranged them and the gymnasium so they can be shut off from the rest of the school, with separate heating, ventilating and lighting systems, for community use. All rooms and corridors have asphalt tile floors on concrete slabs, with integral radiant heating except in auditorium, gymnasium and lobby. Ceilings are uniformly acoustic tile, with increased acoustic treatment in music rooms. Ducts for ventilating air are carried in corridor ceilings, which also carry the other utilities — water, steam, electricity — thus eliminating sub-floor trenches. Glass is extensively used, as photos show: bottom left, opposite page, cafeteria; below, kindergarten; right, auditorium and gymnasium. Not shown is the daylighted lobby, 31 by 104 ft, which has large glass areas on north and south sides.



Three photos at right and below show kindergartens. There are two of these, easily accessible from main entrance drive yet protected from traffic



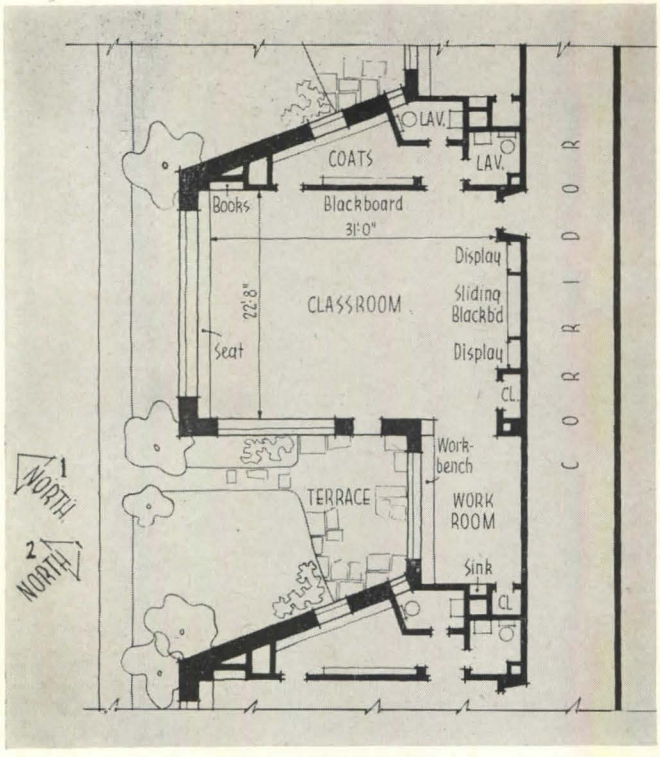


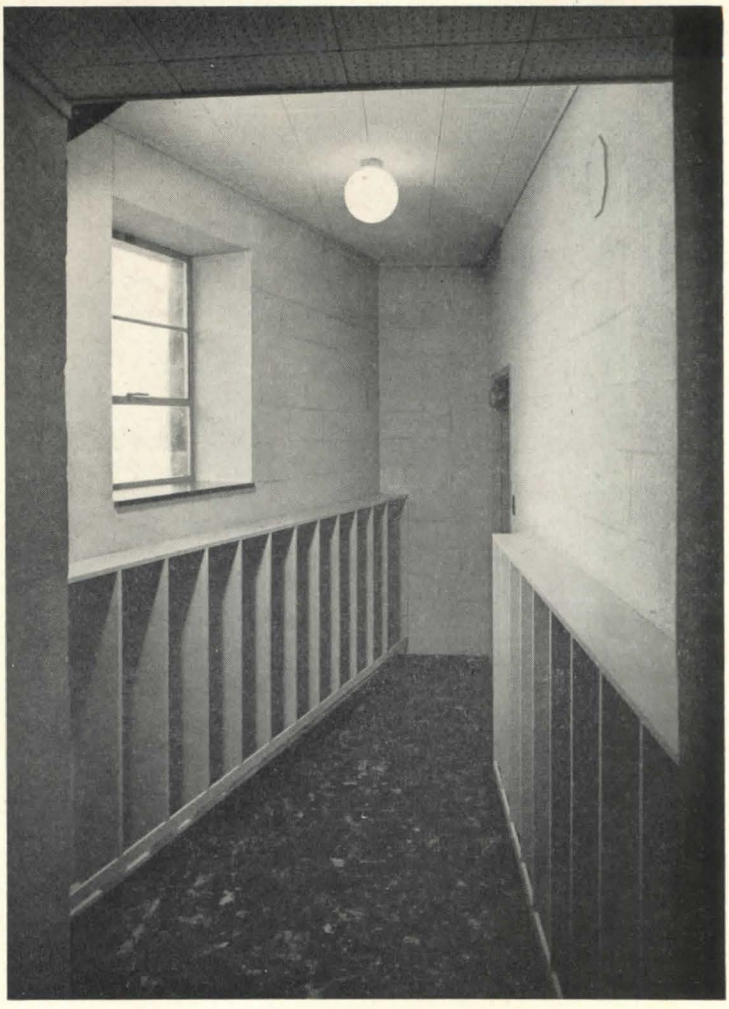


A variety of color in six pastel schemes is used in Penn Valley classrooms, with no two adjacent classrooms alike. A very conscious effort has been made to design the school attractively for children. There is a small pool, deep enough only for sailing toy boats, which receives water from a goose-adorned spout and is surrounded by figures of rabbits and pixies. There is a series of panels, 18 by 24 in., some in leaded glass and some in colored tile set in walls of the small play yards, depicting scenes from Mother Goose, children's books, and historic incidents. These were executed from cartoons by Livingston Smith.

COST DATA

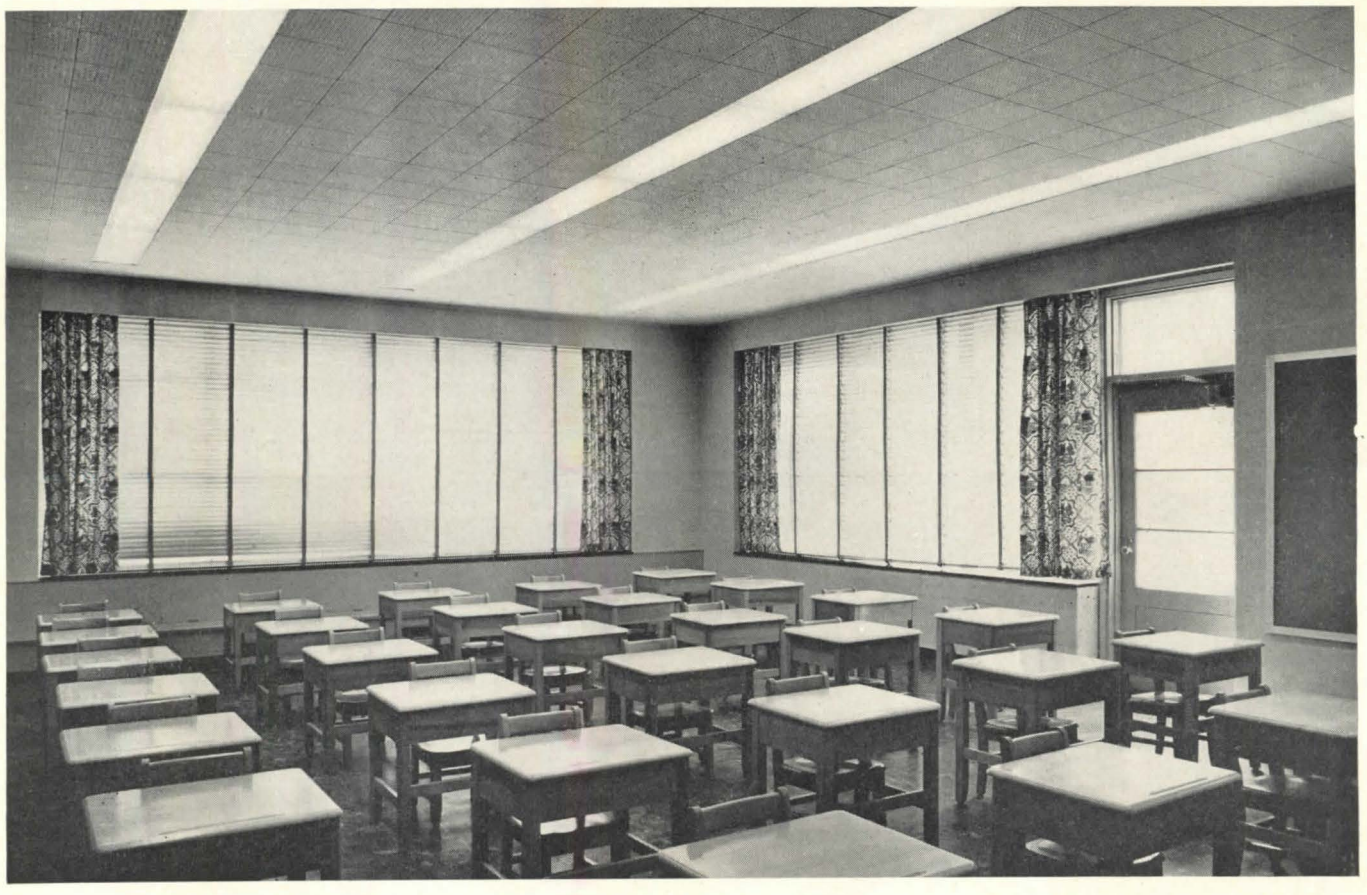
General Construction	$ 947,060	1,646,142 cu ft at $0.828 per cu ft	
Heating, Ventilating	137,360	83,696 sq ft at $16.28 per sq ft	
Electrical	155,875	550 students at $2,478.93 per student	
Plumbing	123,115	Furniture	$ 41,359
		Basketball Backstops	2,028
Total	$1,363,410	Curtains and Blinds	18,544

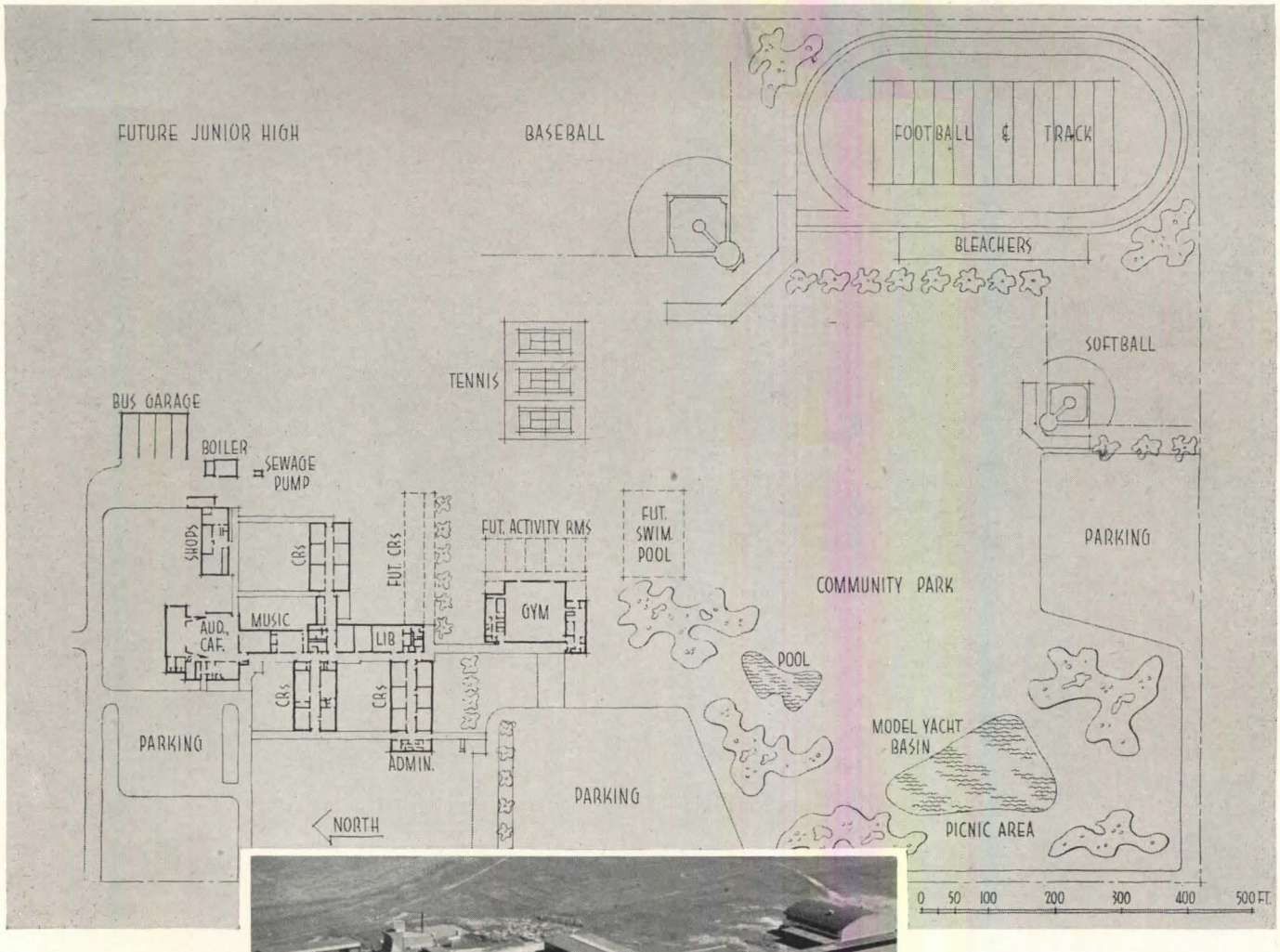


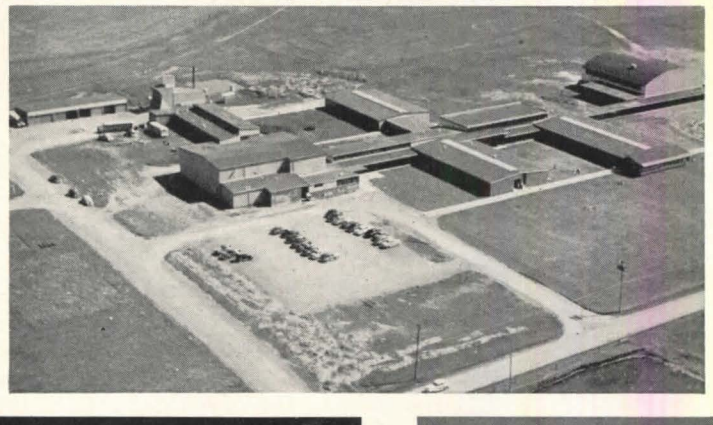


Plan and two photos, this page, show classroom and cloakroom. Essentially the same classroom is used throughout, part oriented with windows south and west, part southwest and southeast

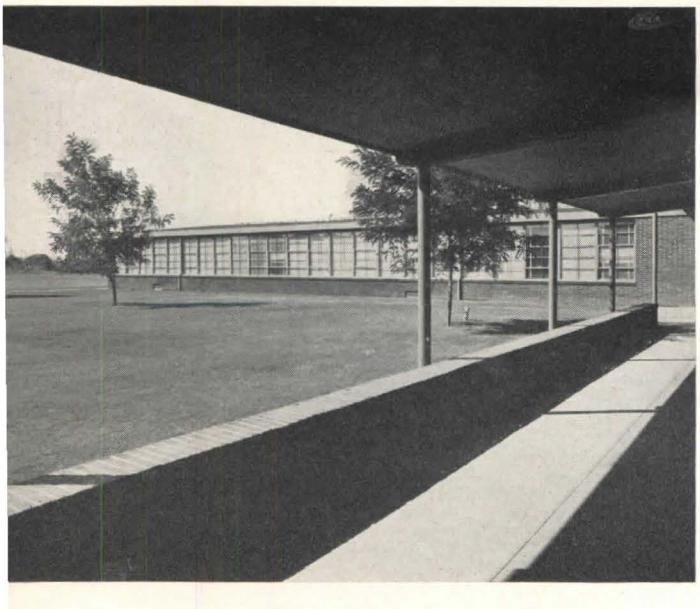
Joseph Molitor Photos

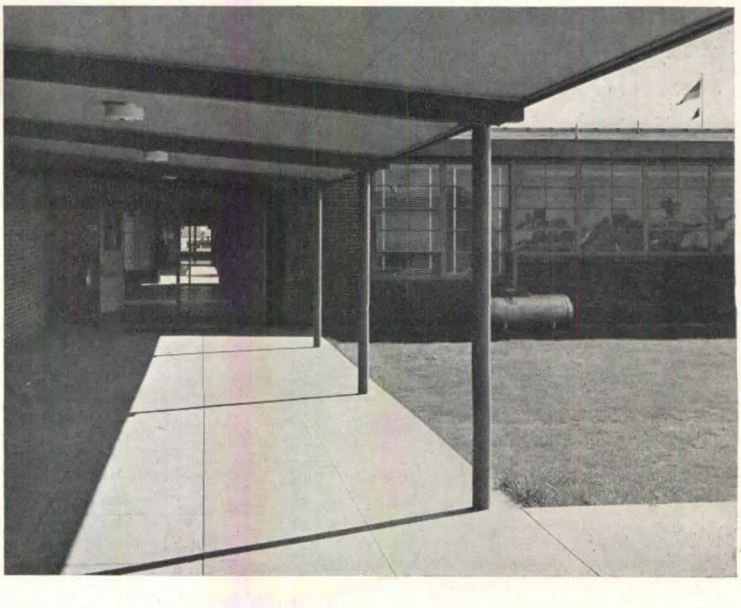




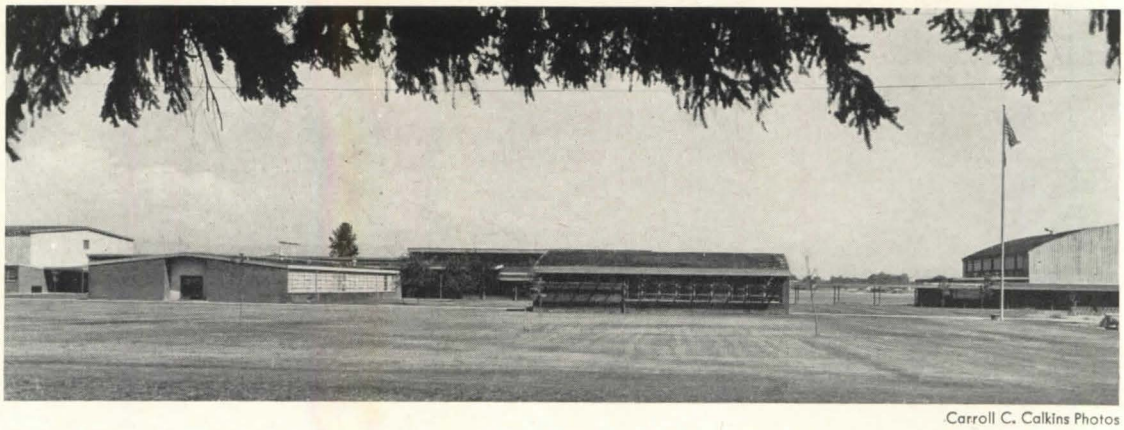


Willamette High School: photos below, left and right, views from library corridor; facing page, facade of library and corridor leading to gymnasium





WILLAMETTE HIGH SCHOOL, LANE COUNTY, OREGON



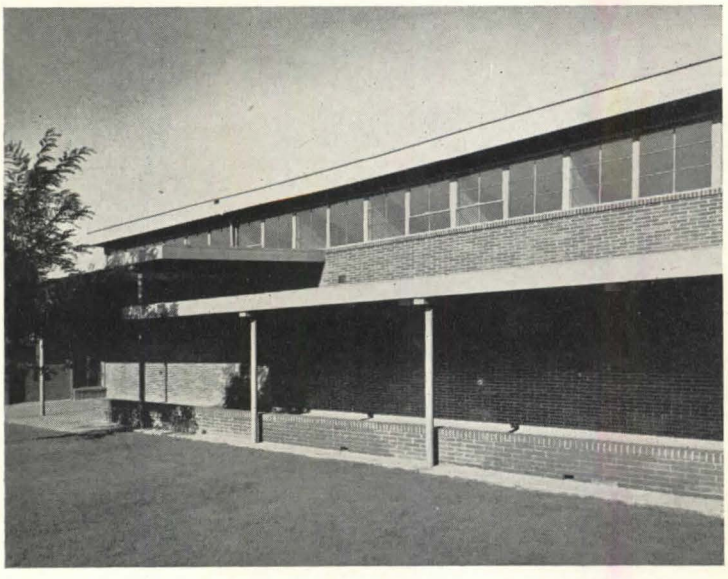
Carroll C. Calkins Photos

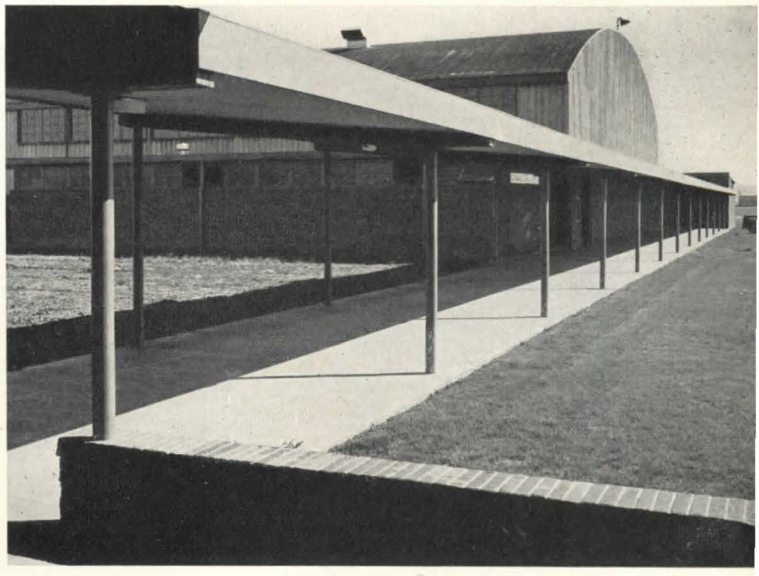
Wilmsen & Endicott, Architects

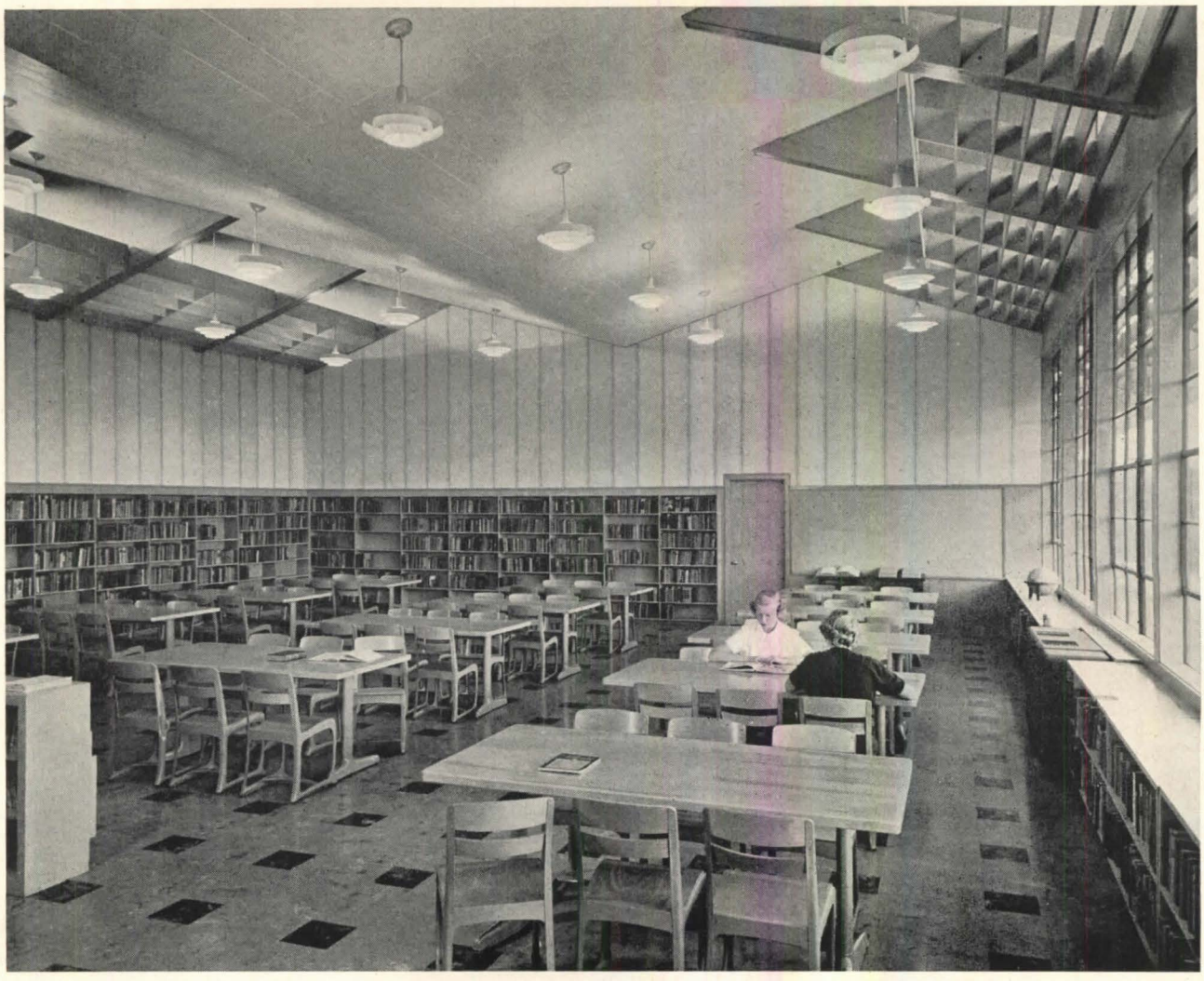
Myers & White, Mechanical, Electrical Engineers

George Jette, Landscape Architect

THE CONSOLIDATED DISTRICT which this school serves was formed in May 1948 for the express purpose of obtaining a local high school. Soon thereafter a bond issue of approximately $450,000 was voted, a 50-acre site was purchased, and a new Superintendent, Tom R. Powers, was hired. Mr. Powers says: "At that time the district was so in debt that it was necessary to build economically and at the same time functionally." This was a strict limitation; offsetting it somewhat, says the State Department of Education's School Building Consultant, James L. Turnbull, was the fact that, "being a new set-up, there were no existing facilities to be considered. . . . This was a distinct advantage." The architects, familiar with many schools, were fortunate, they state, in working with a board and superintendent who conceived a school just large enough to have adequate facilities yet small enough to make of each child an individual ("Too often," says Mr. Wilmsen, "schools are built on the premise that the biggest is the best."). The board recognized that a school is no better than its program and faculty; they recognized also that changes in equipment, teaching methods and surrounding residential areas made it wise to build for a lifetime of only 20 years; and they understood that their building, for children, should not be a monument. However, the grounds, auditorium and gymnasium were designed for use also by adults in the community; the auditorium seats 400, the gymnasium 1200.

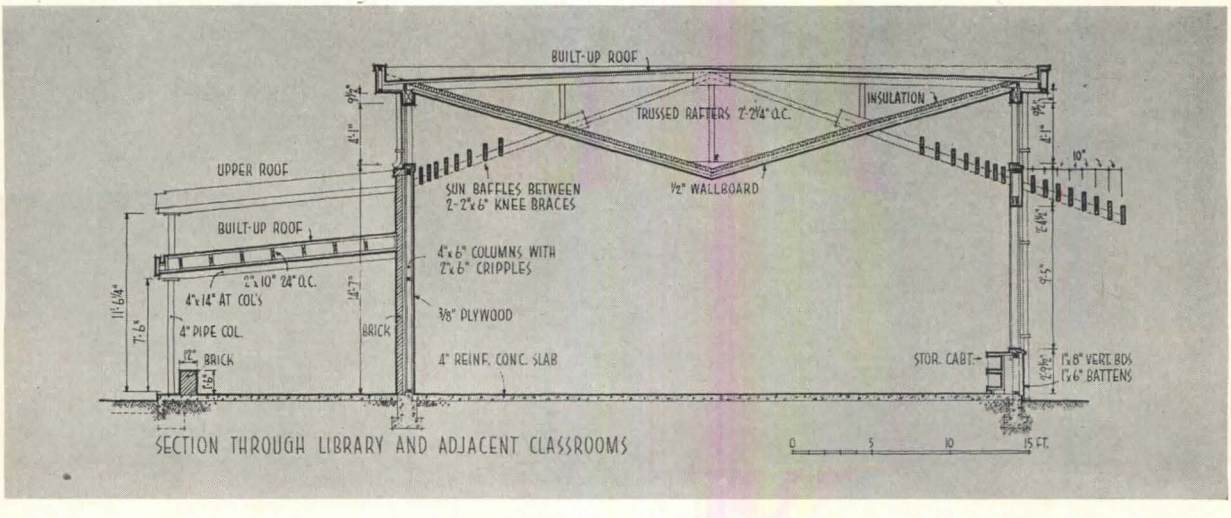




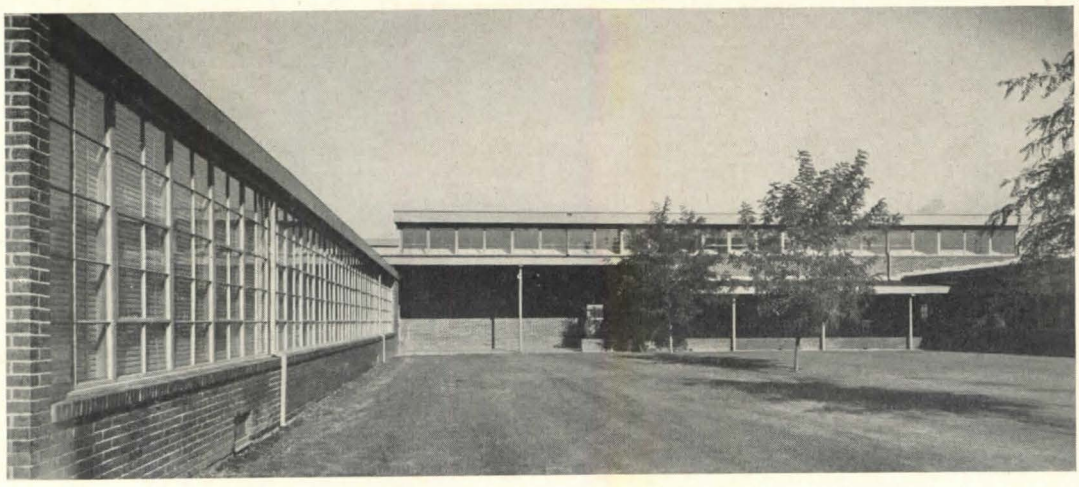


Carroll C. Calkins Photos

Photos and drawings on these two pages show the library unit. Buildings were designed for erection in successive stages; plan at right shows unit before auditorium-cafeteria was built; room labelled "Cafeteria" is now a classroom. Later, when another wing is added to the east, Library will be expanded by removing adjoining partitions. Section below shows inverted truss and light baffles used to distribute natural light evenly and control glare. Construction is wood throughout, with fir plywood and boards-and-battens extensively used, and some brick veneer. Though the site is flat, its high water table during rainy winter months made mandatory the slab floor set on grade. Roofs are built-up asbestos composition with blanket insulation between joists

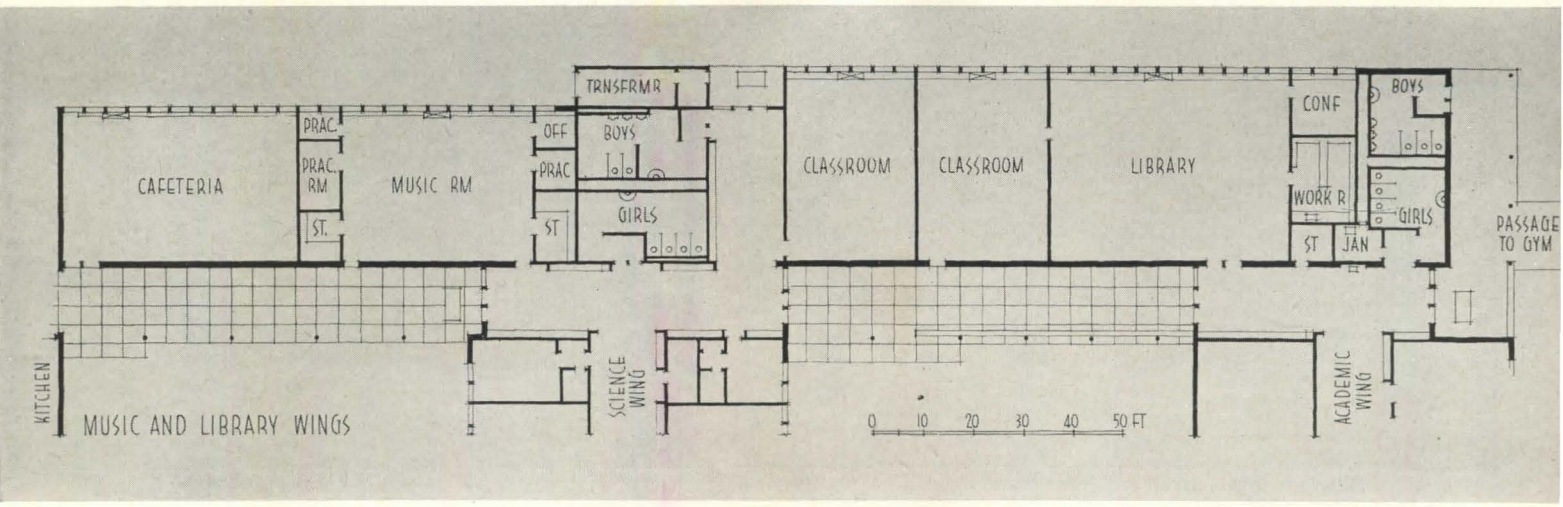


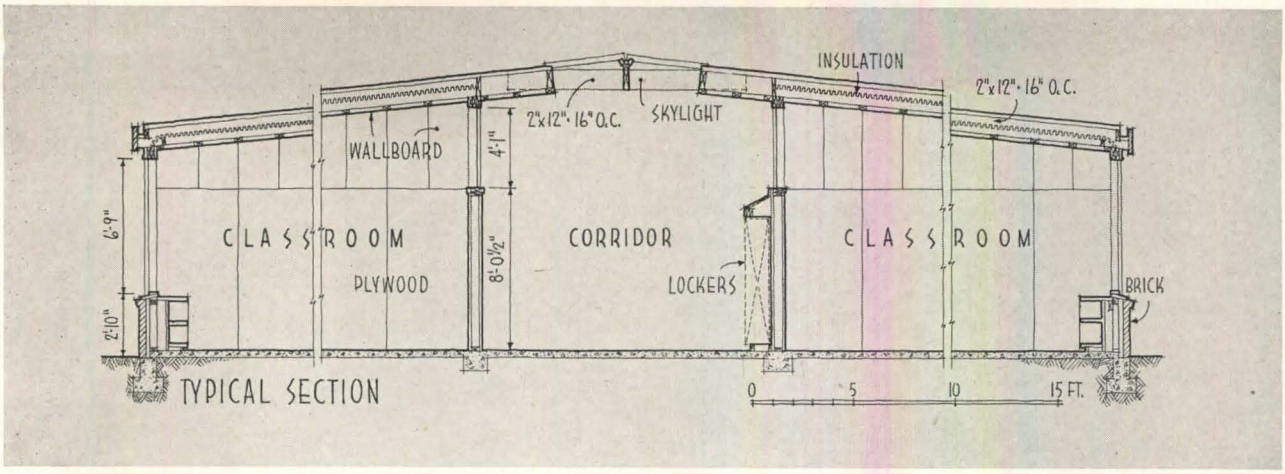
SECTION THROUGH LIBRARY AND ADJACENT CLASSROOMS

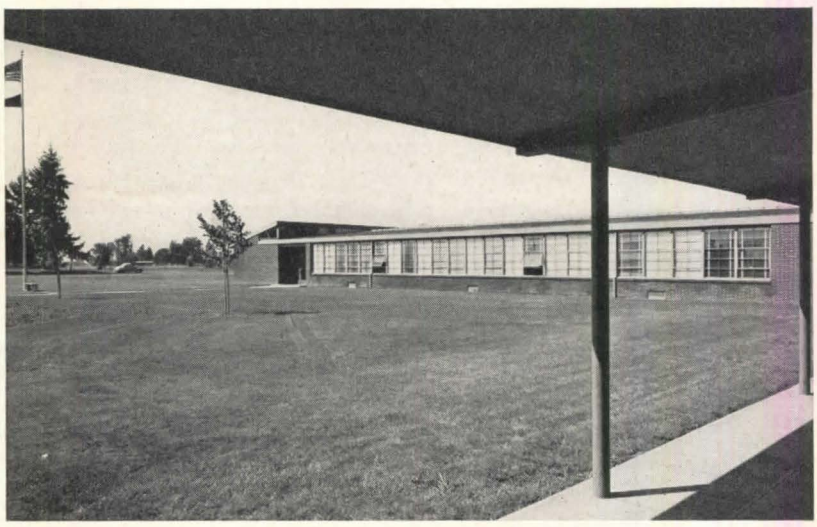


In secondary schools, Wilmsen and Endicott believe, high construction costs are common because classrooms are all "special" rooms; the student moves from specialty to specialty, creating circulation problems. At Willamette High, the campus plan's inside and outside corridors and spaces are designed to handle peak traffic loads yet to remain attractively in human scale when empty. Too, say the architects, a high school student is a lusty animal, a boisterous hot-rod boy who bangs doors, scuffles, scrapes, hangs, and so on. "After rehanging several wood doors during the first year we concluded that perhaps a high school *should* be built like a jail or asylum!"

This is a 4-year high school, with room on the site for a junior high building when population growth justifies shifting to a 6–3–3 system. It has been built in stages, with principal utilities installed to accommodate anticipated additions. Heating is low pressure steam, piped from a special sawdust-burning plant to all wings via underground pipe trenches. Total cost to date (including mechanical and electrical work but not land, fees or equipment) is $534,889. For 80,580 sq ft (outdoor covered areas at half area) this comes to the remarkably low figure of $6.63 per sq ft; for 450 pupils, to $1188.50 per pupil.

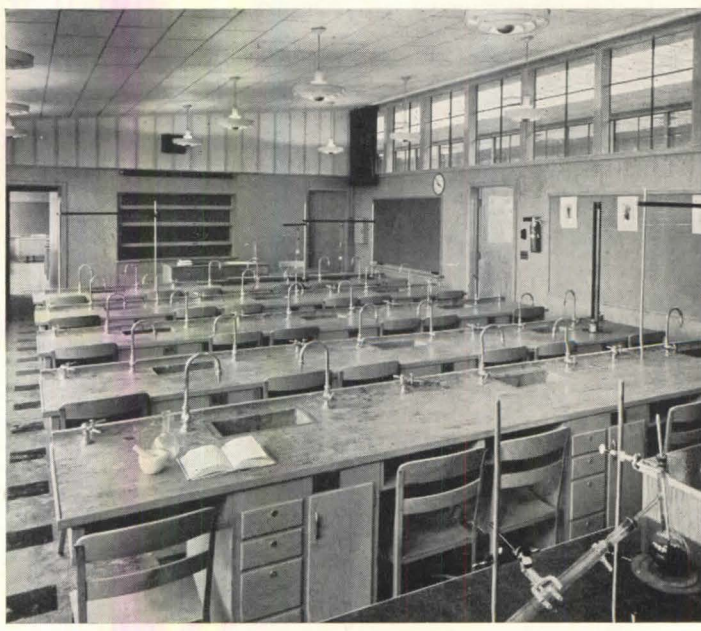


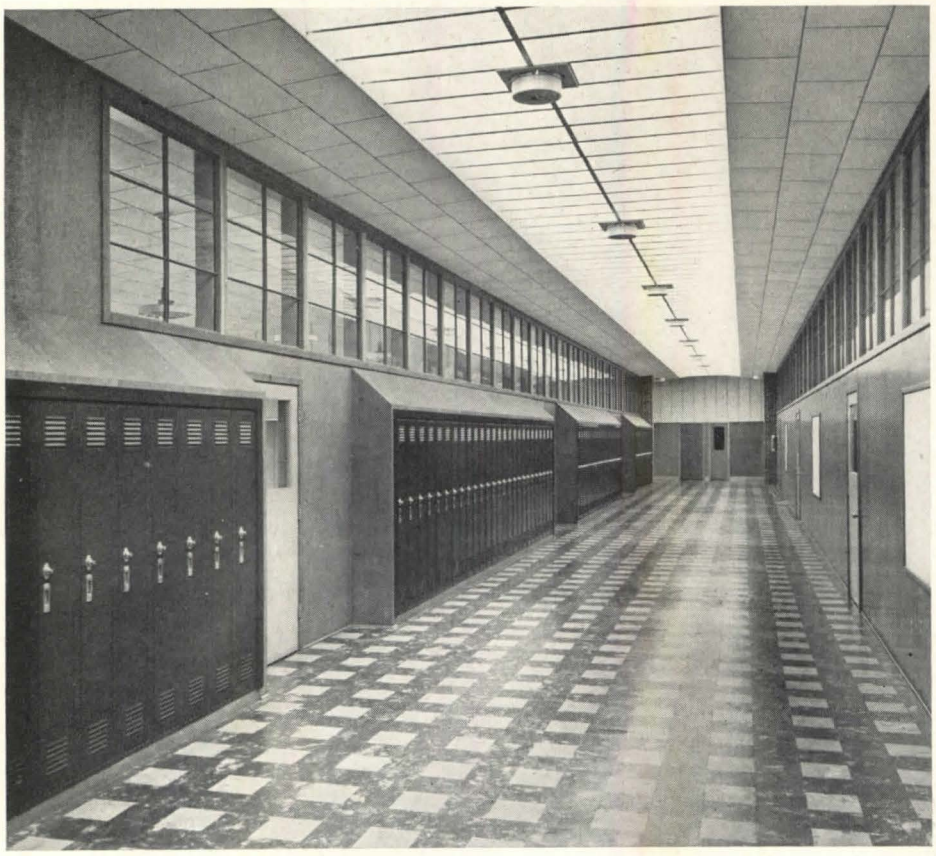


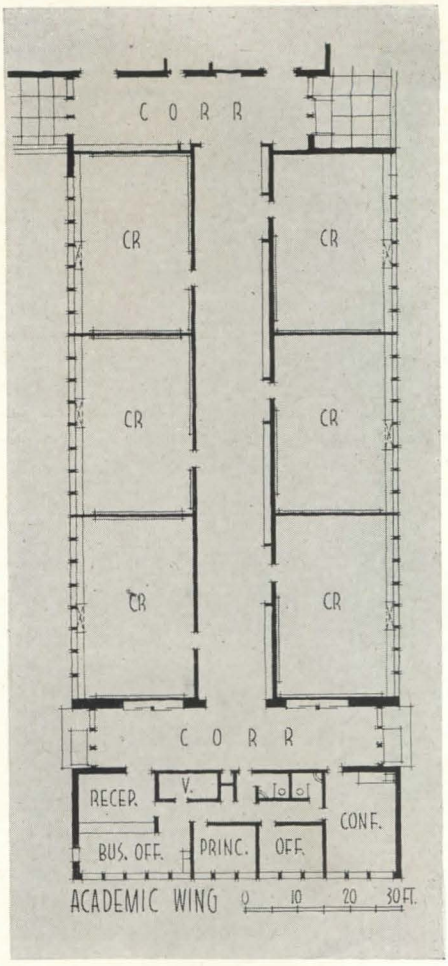


Section above, photos and plan at left and right, show academic wing with skylighted corridor and borrowed lights in classrooms for bilateral lighting, sloping ceilings to help distribute light. Windows are steel, fixed or commercial projected. Photos below, left, classroom in academic wing, lab in science wing; facing page, room in new east wing with music wing and auditorium seen through window. Noisy or active units (music, auditorium, gym, shops, garage) are isolated from quiet areas

Carroll C. Calkins Photos



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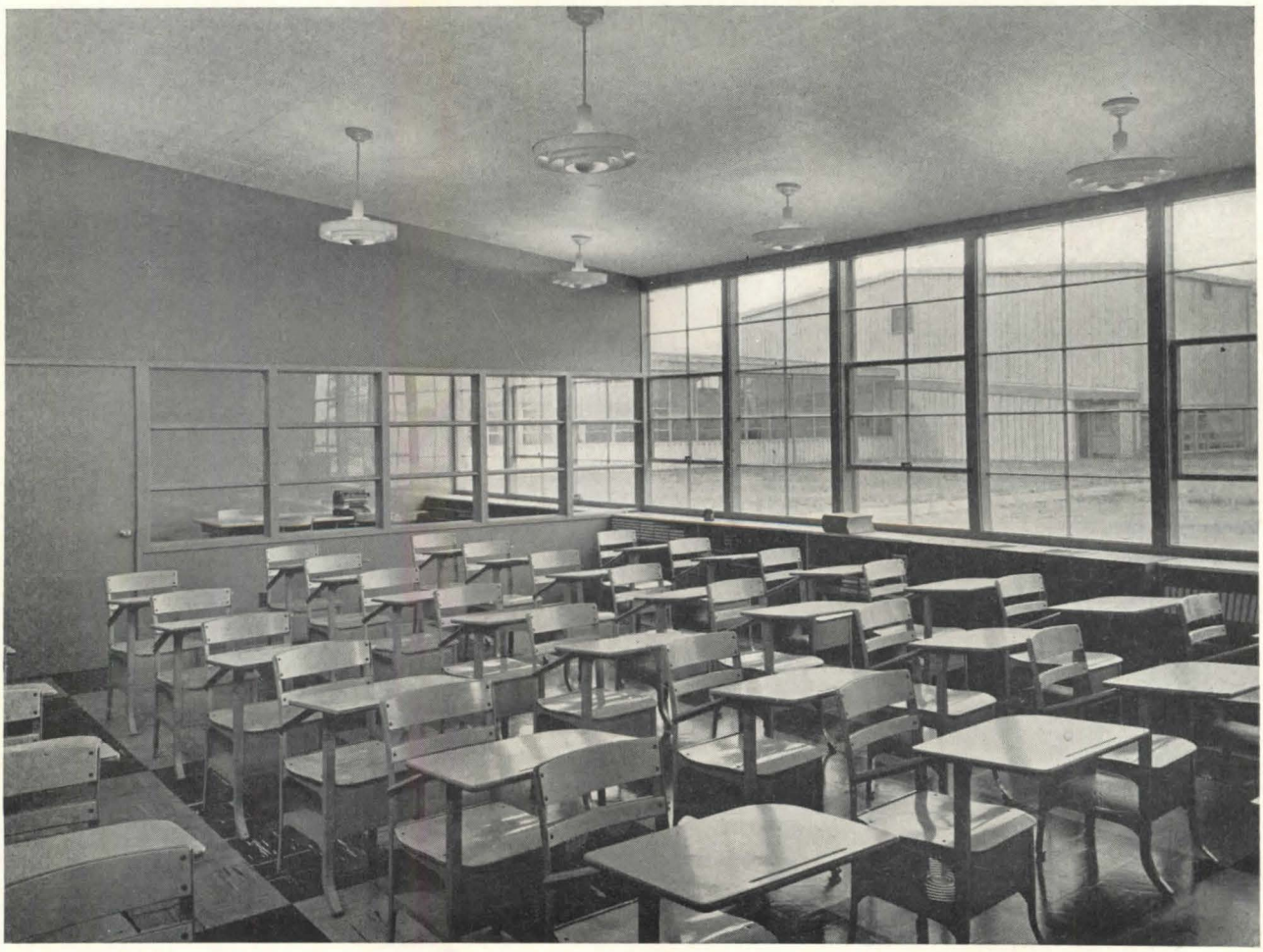
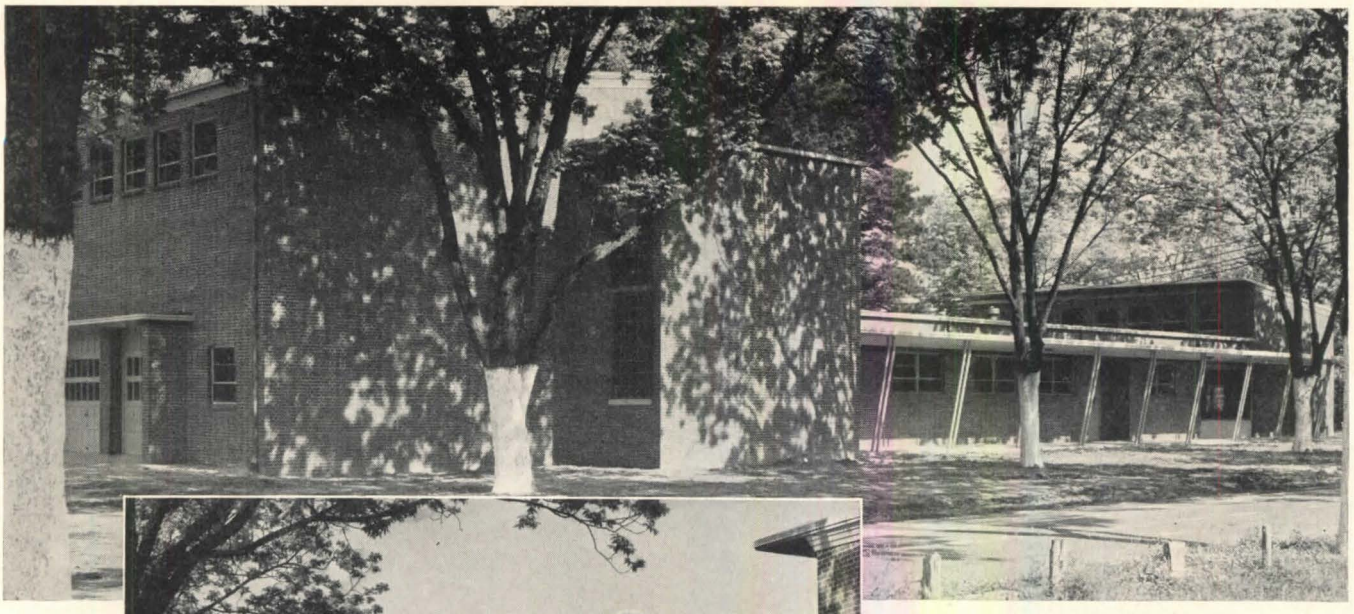
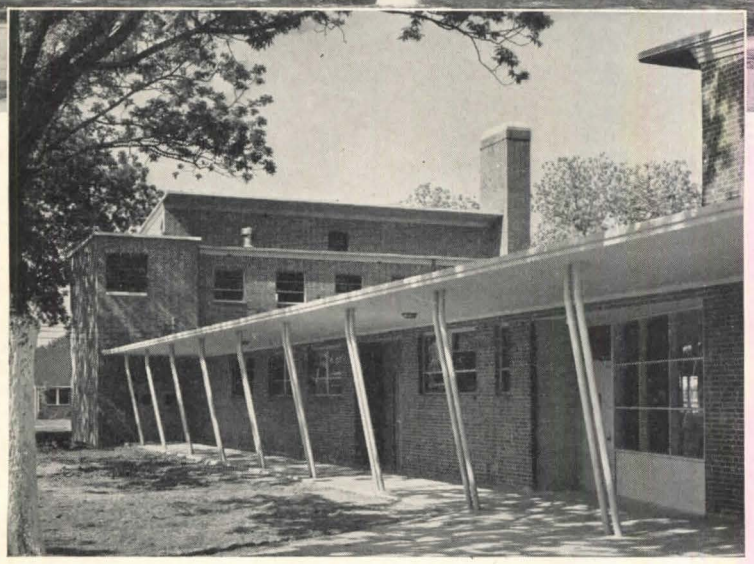
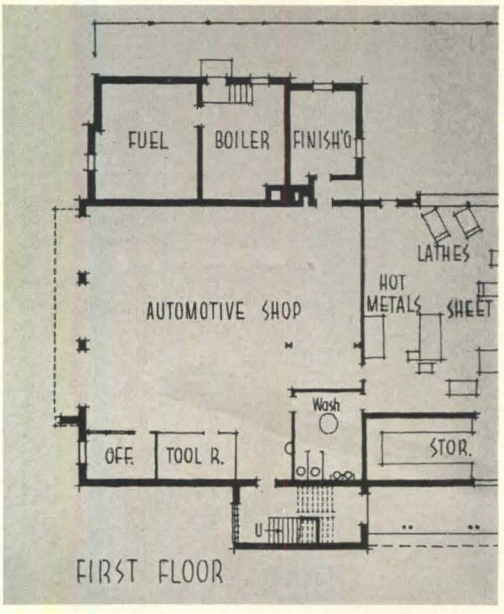








SHOP AND BAND BUILDING GRAINGER HIGH SCHOOL

Kinston, North Carolina

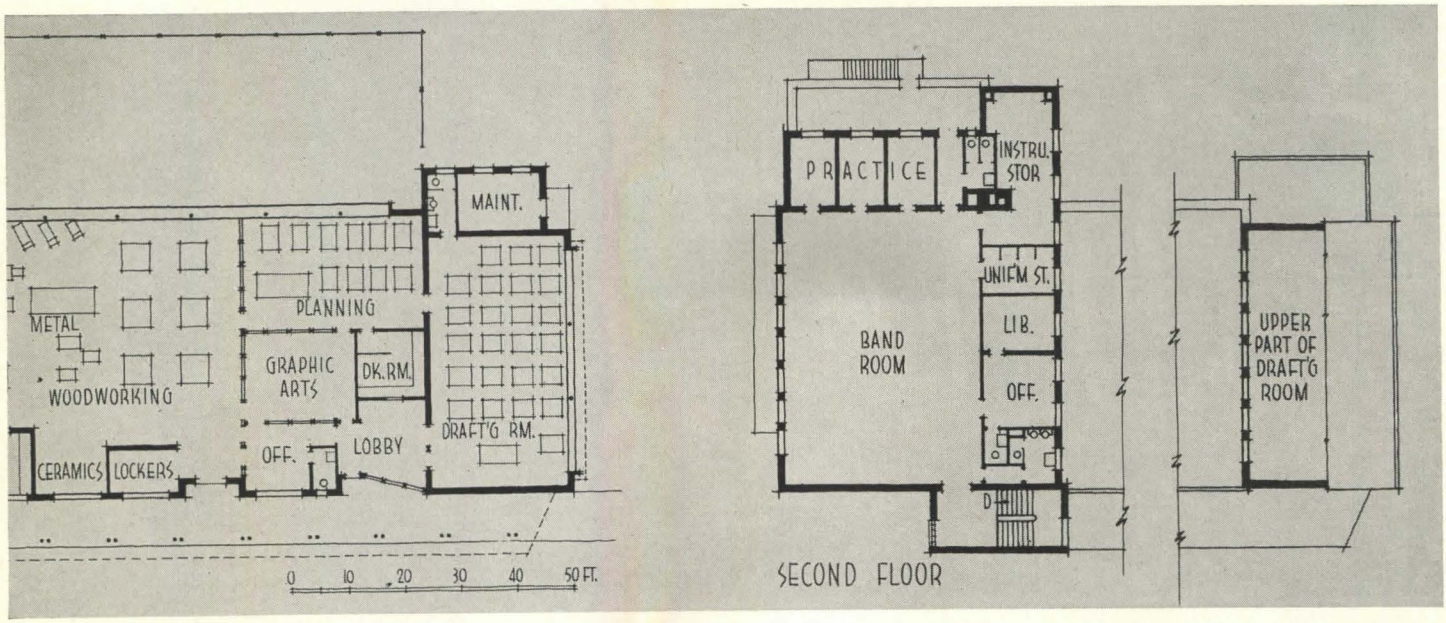
John J. Rowland, Architect
James M. Simpson, Associate

AT FIRST GLANCE it seems strange to find shop work and band practice in the same building. However, both are noisy and both have here been added long after buildings for the initial program were built. It is logical then, that both should be isolated from the quiet areas of the high school; and since the needs arose concurrently, combining them in one structure was logical and economical.

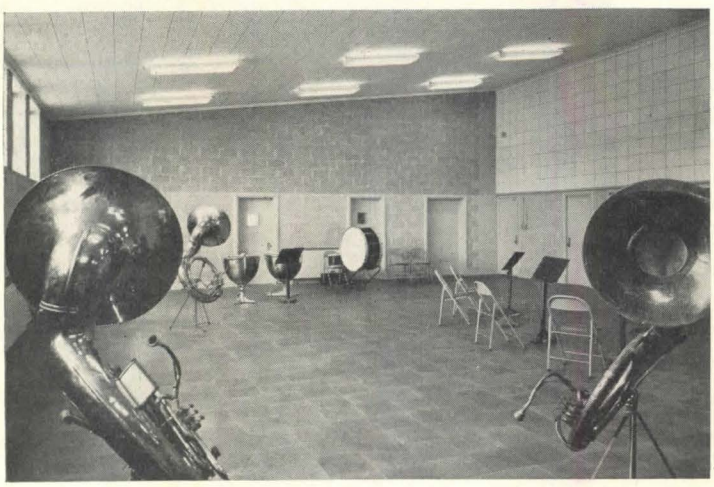
The building is wall-bearing, with concrete block walls (painted on the interior) having exterior surfaces of brick. The roof is of lightweight precast slabs. Windows are steel, of architectural projected type. To help reduce noise, all ceilings are acoustic tile and second-floor band rooms have additional acoustical treatment.

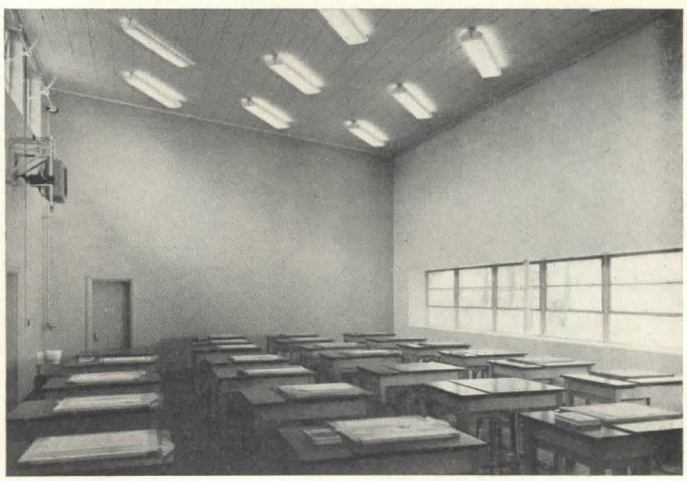
With the entire first floor devoted to shops and drafting room, it was possible to make the 50-ft-wide main portion a general shop, so laid out that parallel processes are physically closely related. In a shop of this kind, the student initiates a project in the planning room, makes working drawings in the drafting room, makes any forms, etc., which may be needed, and finally executes and finishes the work in an orderly manner, learning the part each type of activity plays in the whole process. Consultant for shop layout was Dr. J. R. Ludington, who has since become Specialist in Industrial Arts for the U. S. Office of Education.

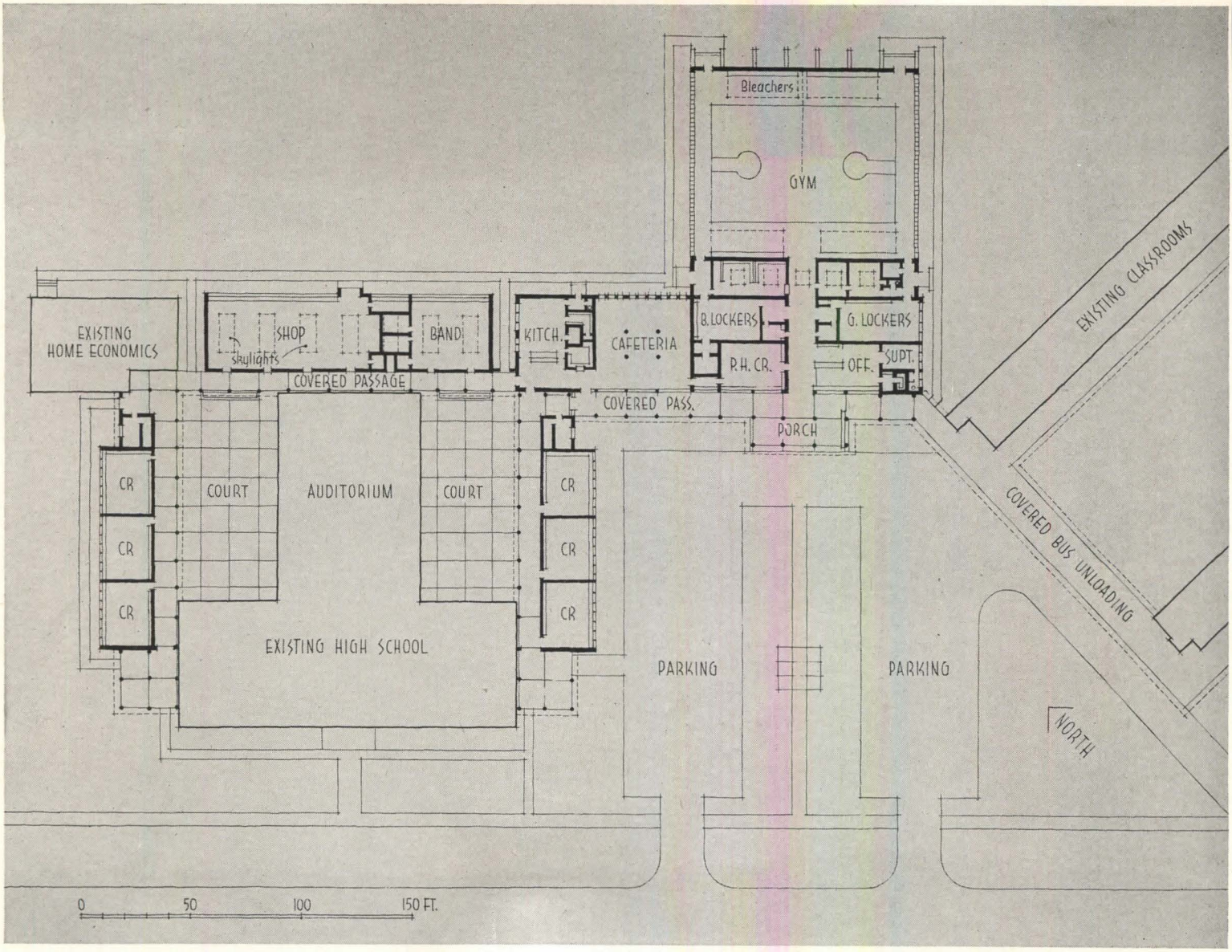
Joseph Molitor Photos



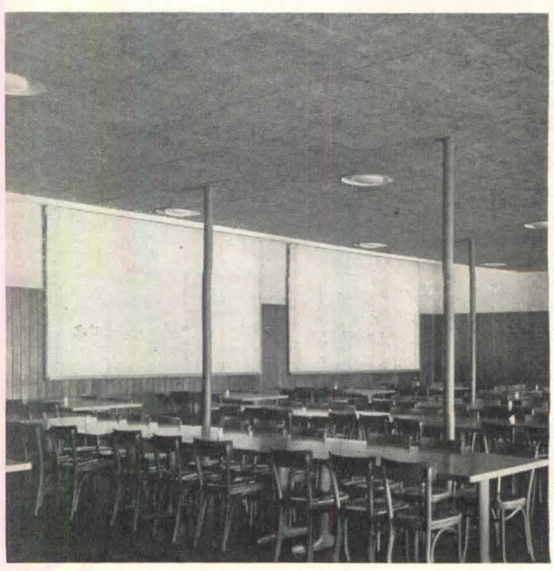
Below, left, Band Room; right, Drafting Room, bilaterally lighted with clerestory windows visible at left

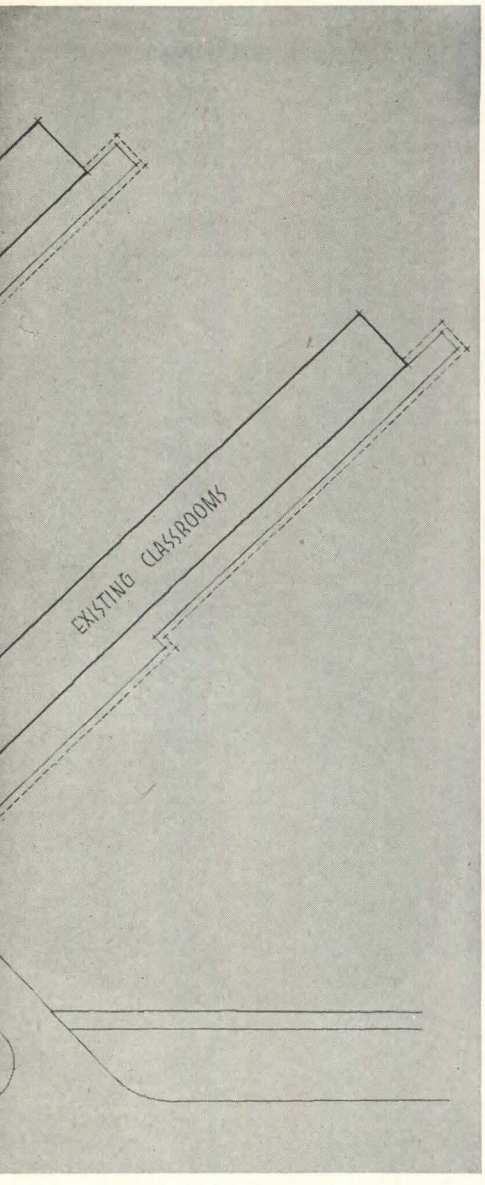






New portions of Sweeny High School, shown in heavy line, had to unify buildings designed by two previous architects, the earliest one built under the old PWA school program. Circulation between the uncoordinated existing buildings was formerly haphazard, often muddy underfoot. Photo below shows covered passage which now unites buildings; center, interior of cafeteria; right, new classroom. In 1950 the school won a regional A.I.A. award

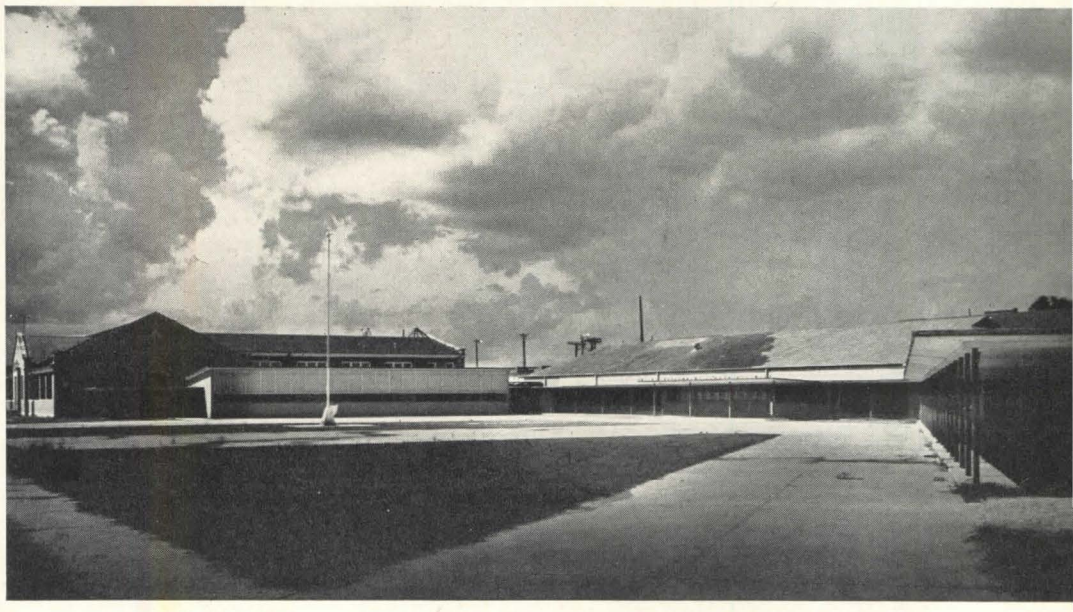




Donald Barthelme & Associates, Architects

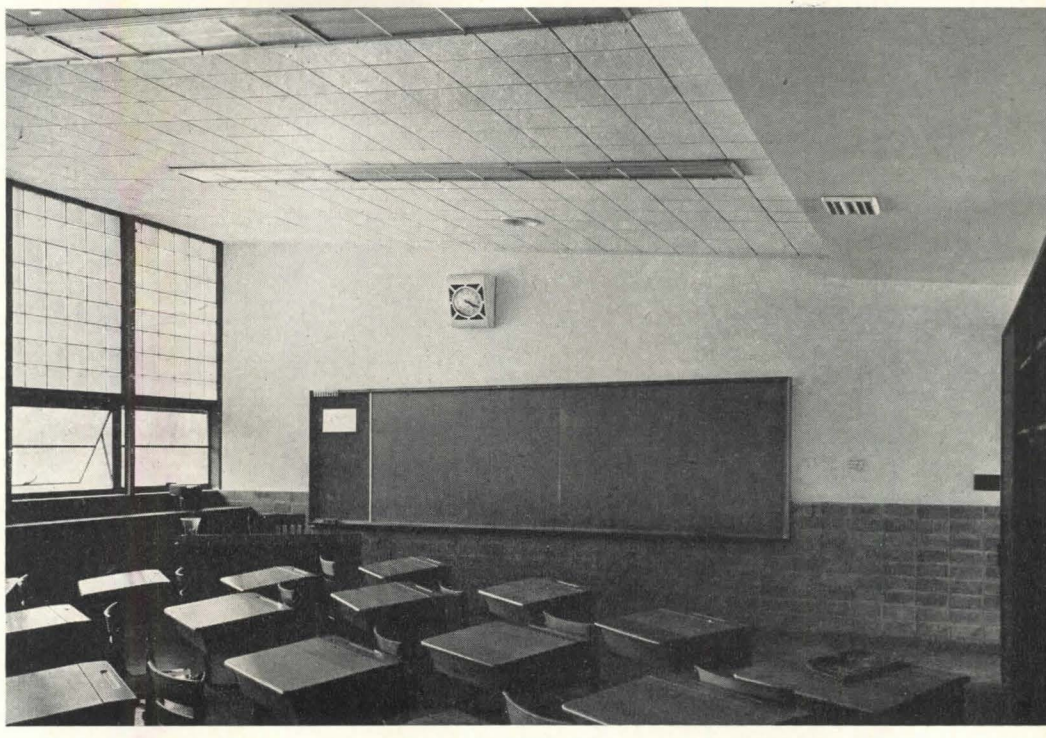
Walter P. Moore, Structural Engineer

Taylor Milton, Electrical and Mechanical Engineer



EXPANDED HIGH SCHOOL

SWEENY INDEPENDENT SCHOOL DISTRICT, TEXAS



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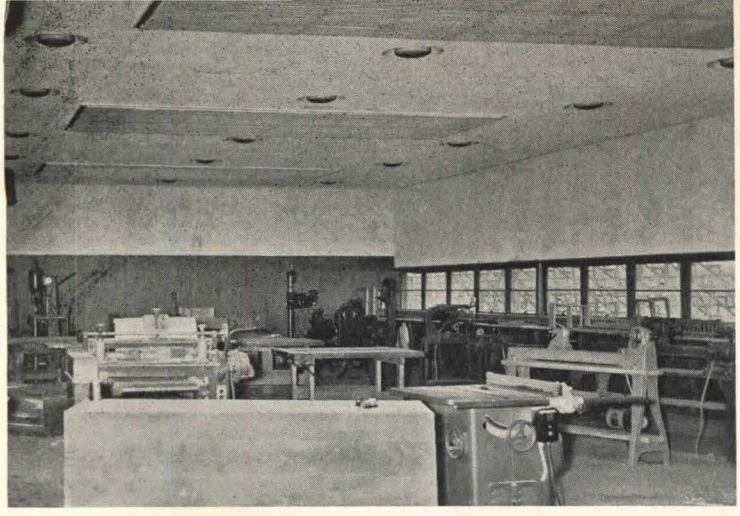
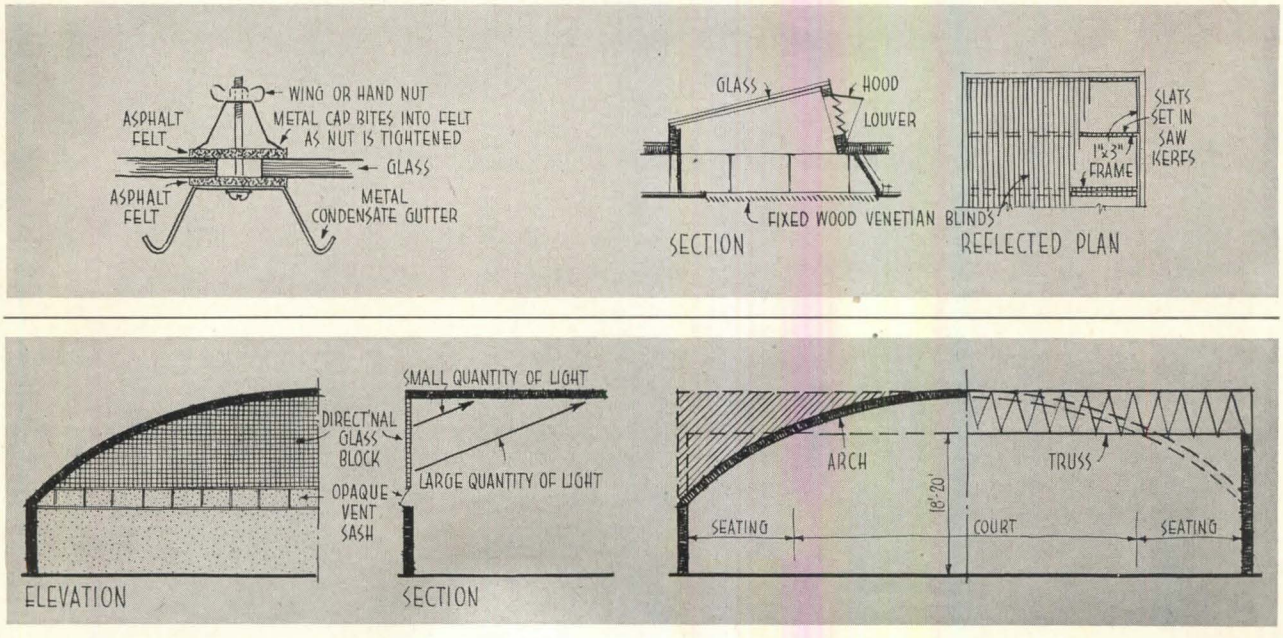


Photo and detail show method of skylighting used here by architects in shop and band wing, and applied also in other schools from their office. Slat louvers shown are mounted in a simple wood frame and so oriented that north light is not interrupted. Interior lighting is even, quite high level, has suited school authorities. Vent is needed to exhaust heated air at some seasons. Puttyless skylights are insisted upon; careful checking, supervision and inspection have resulted in no leaks over 7 years' use

SWEENY HIGH SCHOOL

The lack of overall planning visible in the disunified buildings existing when this expansion program was started (see plan, preceding page) has many counterparts among this country's school systems. In this case, at the time more space was needed it was also tacitly understood that the buildings needed unifying, and that the additions must at the same time capitalize on recent advances in school design yet not render obsolete the existing facilities. By 1950, 7th to 12th grade students have gained paved, covered passages and a large paved forecourt for bus loading; around this the buildings group naturally. Added classrooms were placed alongside the high school proper, creating paved courts which insure permanent natural lighting. The sunny, wind-protected play spaces are an extra dividend. The new shop and band building connects the new wings, locating these facilities where they may



Gymnasium construction: comparison at right shows reason for selecting arch form (reduced cubage with height concentrated where needed). Section and elevation at left show how directional glass block at ends are employed to distribute daylight deep into interior

be used in connection with the future auditorium. The old shop, now the cafeteria, fronts on the forecourt. Locating the gymnasium on axis of the forecourt provides parking for basketball games and for the public using the cafeteria and administrative facilities. These spaces separate somewhat the upper and lower high school ages, yet make available to both facilities used in common. Classrooms are lighted with directional glass block with high windows over room storage lockers on the opposite side for cross ventilation. Artificial lighting is from troffers recessed in acoustic tile ceilings. Shop and band building was designed for eventual division into several classrooms by inserting partitions. The gymnasium has a wood lamella arch roof which spans 85 ft with 2 by 12 in. members.

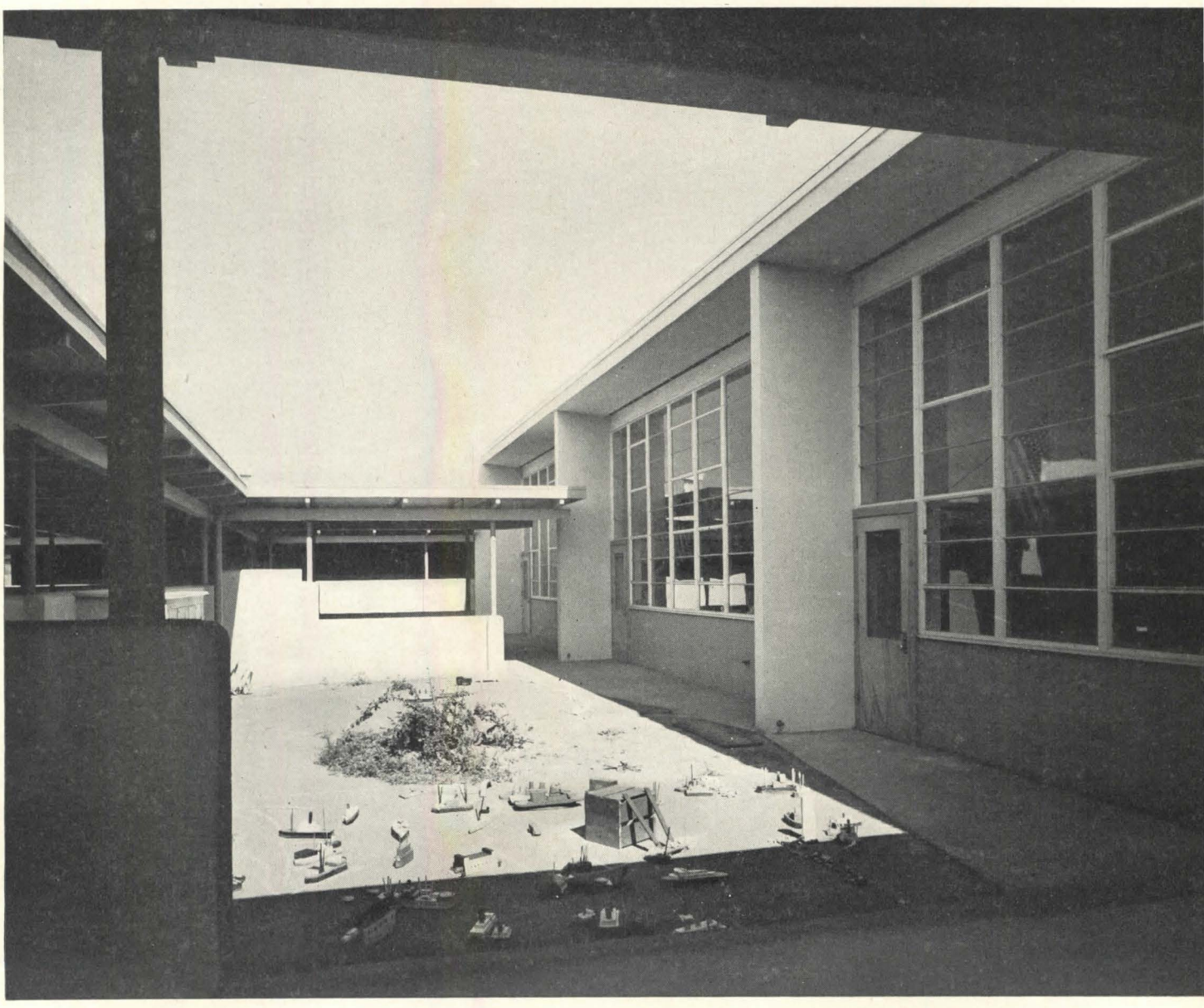
COMPLETE SCHOOL PLANT FOR CULVER CITY, CALIF.

Culver City Unified School District

Daniel, Mann, Johnson & Mendenhall, Architects

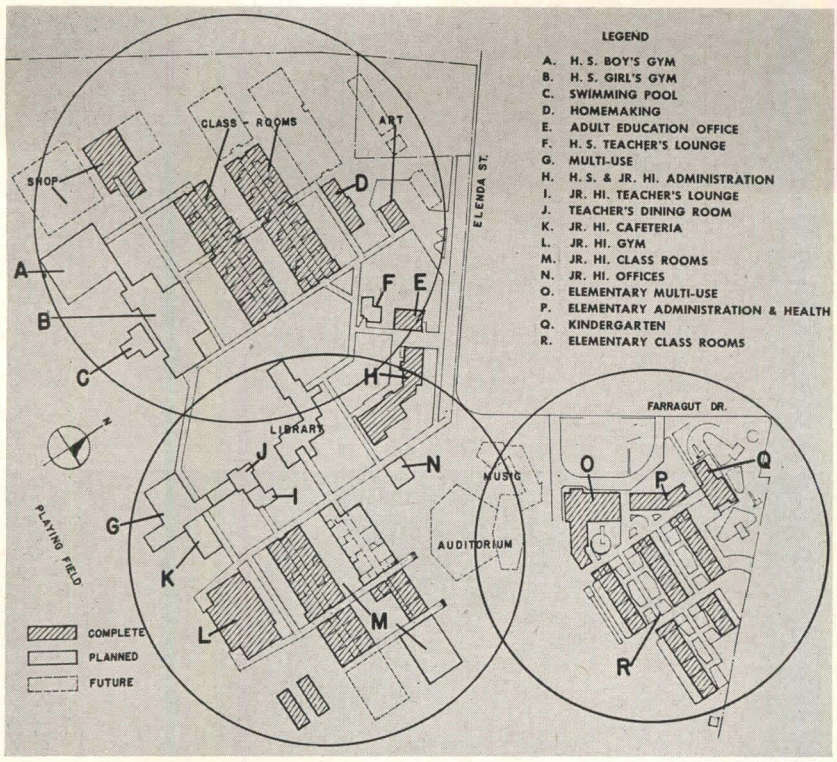
Foster Sampson, Electrical Engineer

Chester D. Walz, Mechanical Engineer



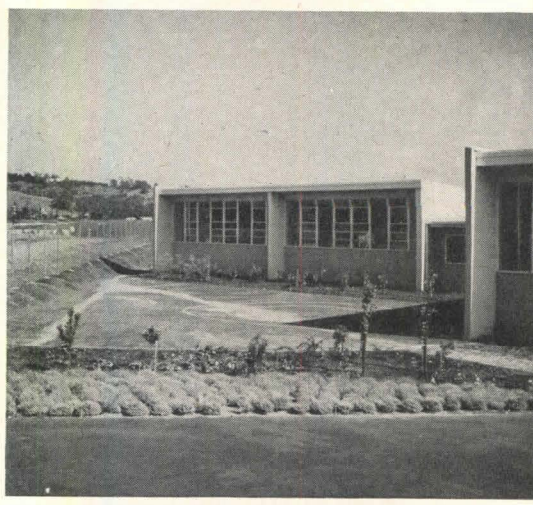
Donald J. Higgins Photo

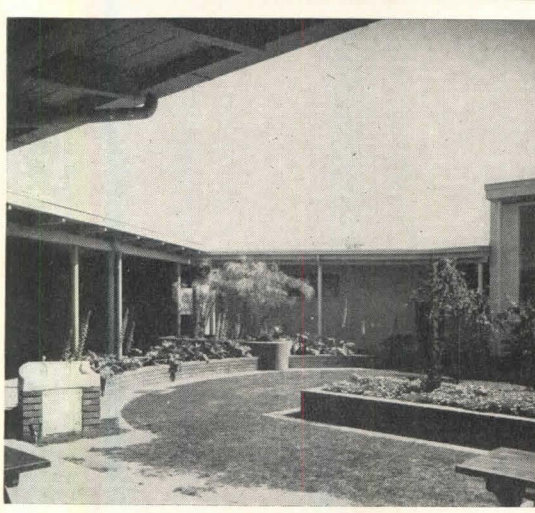
This complete school plant consists of the Farragut Drive Elementary School, a Junior High and a Senior High School. All are carefully organized on one large site so that there is a minimum of interference of age groups. A campus type of arrangement, with the necessarily extensive facilities broken down into small units, does its part in bringing the buildings into child-scale. Above is a much-used outdoor classroom in Farragut Elementary, set up to recreate facilities the children found on a visit to Los Angeles Harbor



Elementary buildings are generally smaller than Junior and Senior High buildings on the Culver City School campus; classroom buildings are one room deep with outside corridors. Typical room, nearly square, is shown in plan on facing page. Photos, top row, left to right: exterior, two elementary classroom wings; interior, administration reception office; typical classroom

Donald J. Higgins Photo





CULVER CITY SCHOOLS: FARRAGUT ELEMENTARY

THIS CULVER CITY SCHOOL PLANT provides, on one site, facilities for every grade from kindergarten through Senior High School. It could have been built — and would have, not so long ago — as one or two monstrous buildings; actually it has been designed as a series of small, one-story units placed campus-fashion to form three school groups: Farragut Elementary, Junior High and Senior High. It is still being expanded in accordance with the master development plan shown above. To avoid duplication of some facilities, buildings which can serve two of the schools are placed conveniently to both. In Farragut Elementary, construction is concrete and wood, with concrete slab floors surfaced with asphalt tile and containing radiant heating panels. Each classroom has its adjoining outdoor classroom, shown on the preceding page.

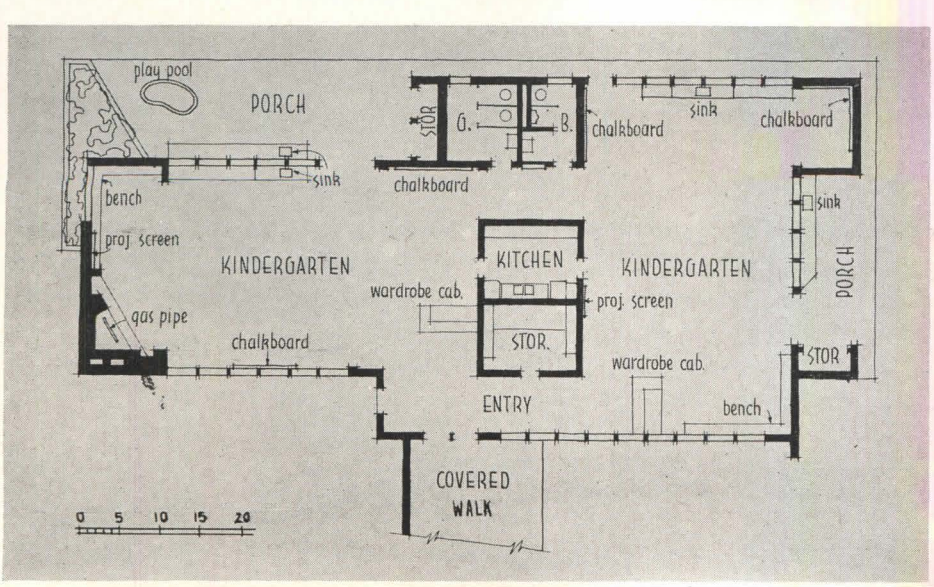
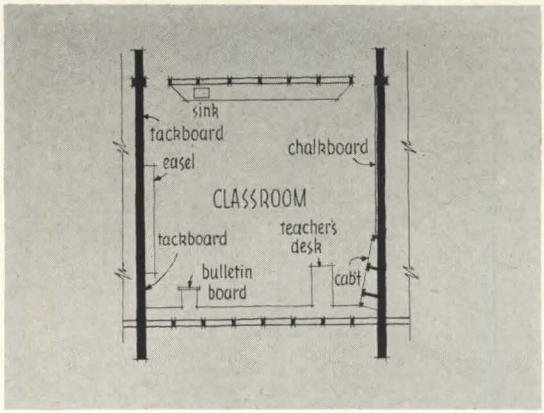
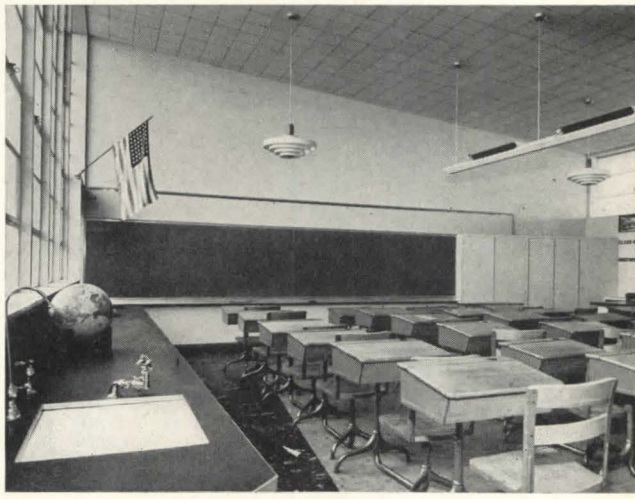
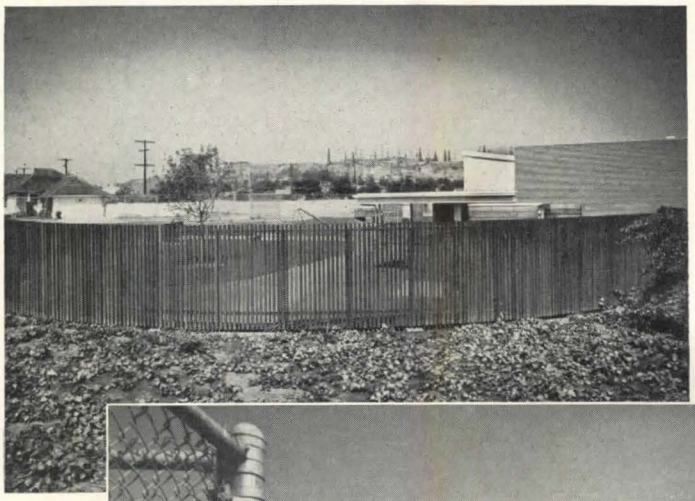


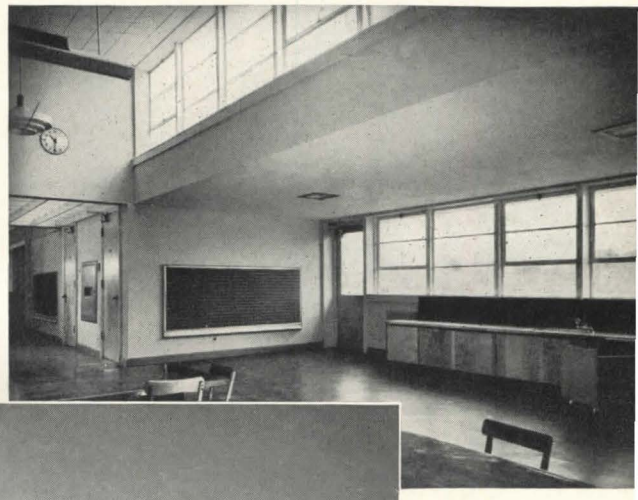
Photo above: outdoor luncheon area, kitchen in Multi-Purpose Building (see plot plan) at right; this building serves either as indoor cafeteria or auditorium. Plan at left and three photos at bottom of facing page show Kindergarten. Fence screens kindergarten playground; bottom photo shows "runaround house" on which small children can play imaginatively and let off steam. Note that kindergarten, with furnishings and building scaled down to child size, has roofed, open porches designed for active use

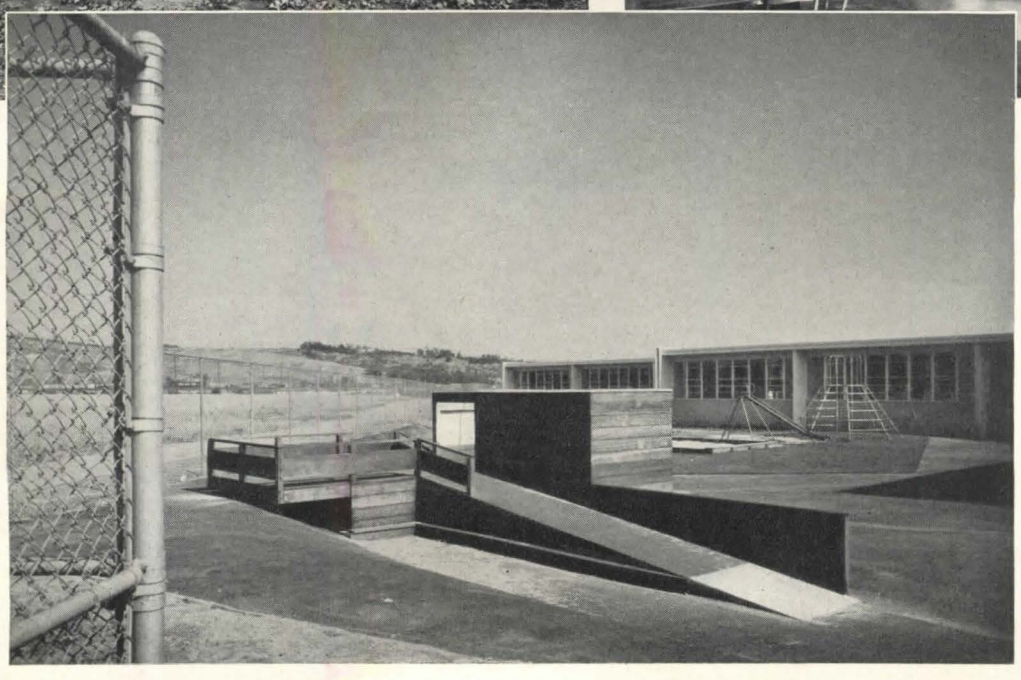


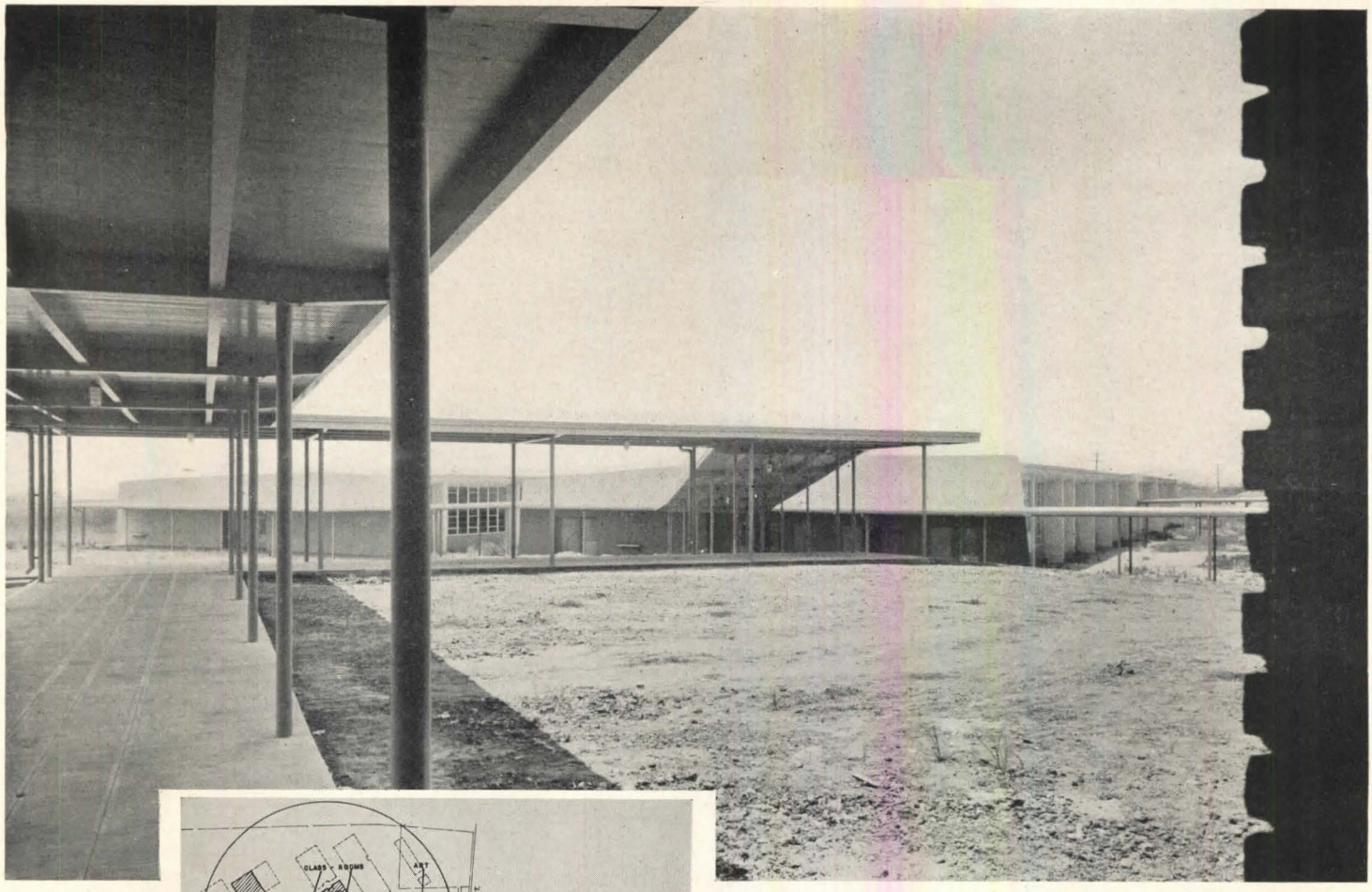
William H. Olson Photo

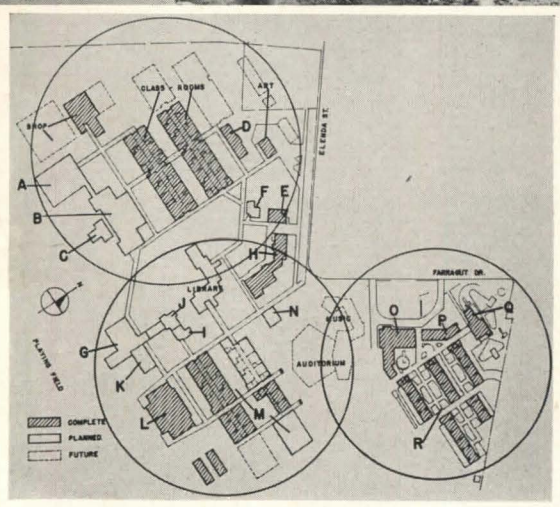




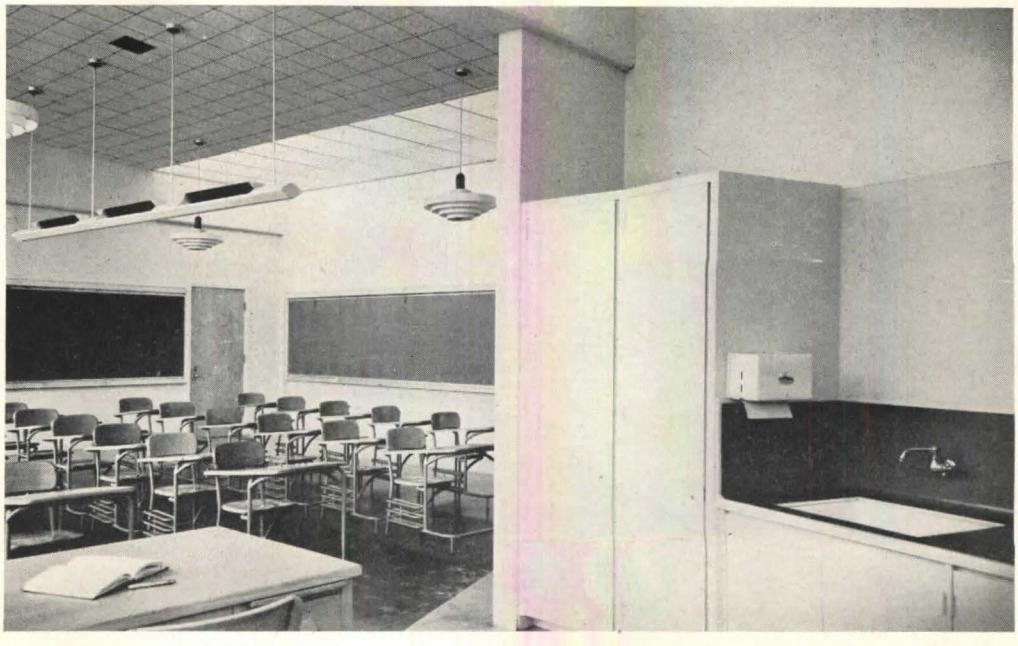


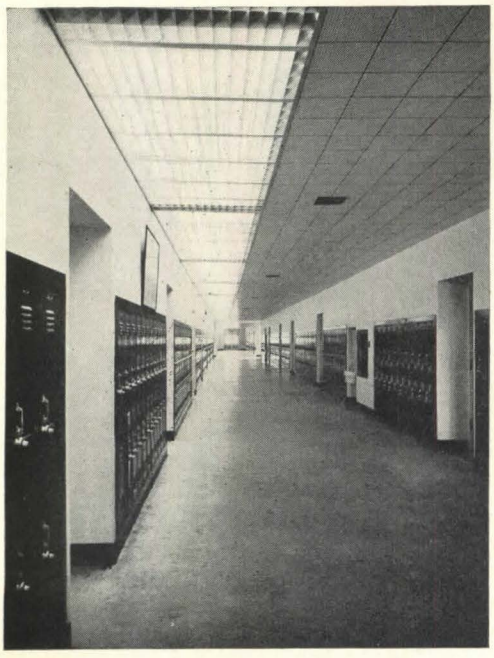


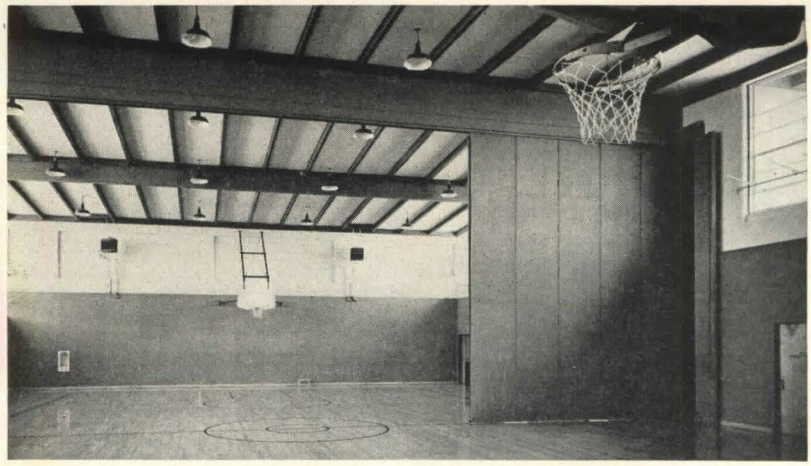




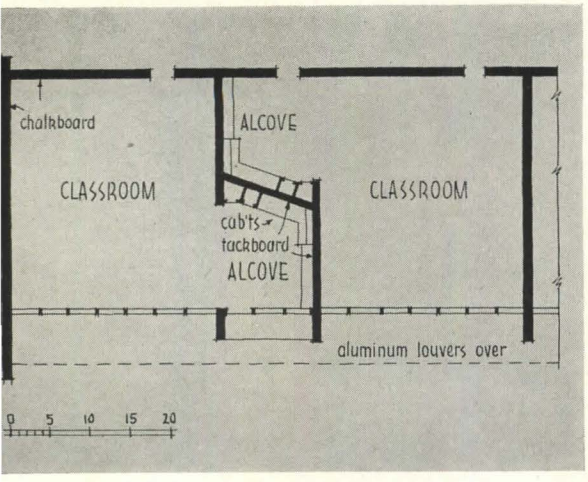
CULVER CITY UNIFIED SCHOOL DISTRICT: JUNIOR AND SENIOR HIGH SCHOOLS. *Above, looking from joint Administration Building (H on plot plan) toward Senior High Classroom Buildings. The concrete and steel-framed buildings, disposed on the site in a campus arrangement designed to maintain a human rather than a monumental scale, are connected by numerous covered walks. These help to unify the buildings, and with them define a number of variously proportioned courts which, when planting has had a chance to soften and blend them, ought to heighten the pleasant informality of the vast school. Below is a typical Junior High classroom, whose plan is on facing page. Details of skylighting, etc., are like those of Senior High rooms shown on following pages*

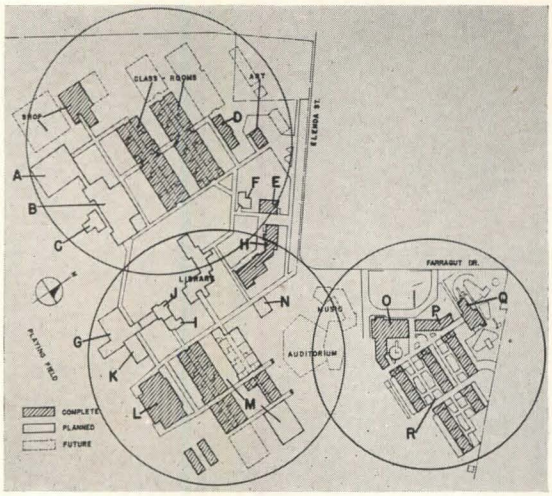


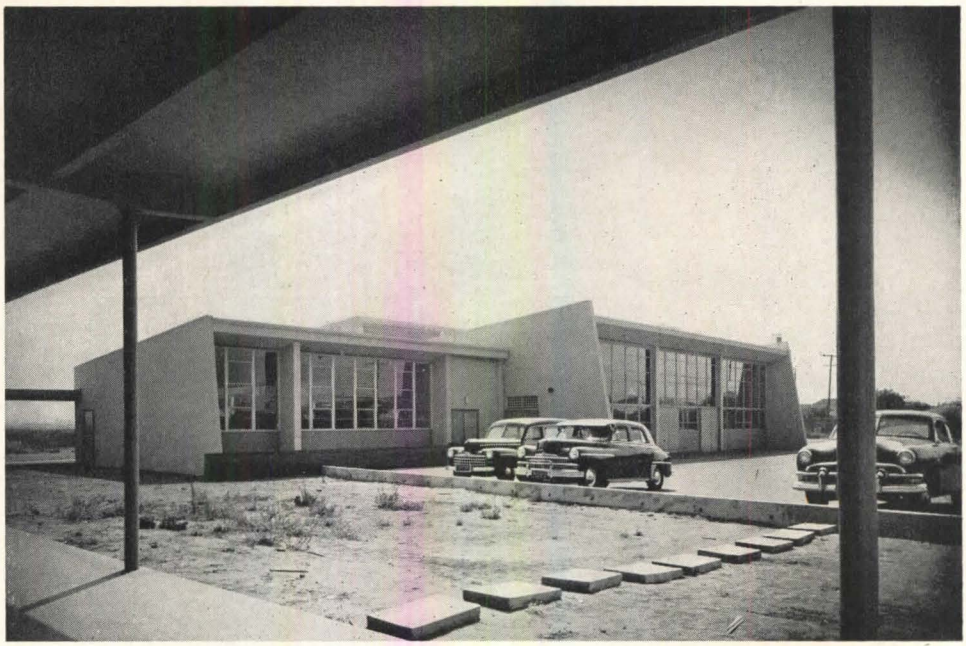




Above, corridor, Junior High, skylighted through a diffusing ceiling grid. Right, three Junior High facilities. Top to bottom: gymnasium with folding door to divide it into boys' and girls' areas; exterior of gymnasium showing hard-surfaced outdoor sports area; home economics classroom, fully equipped. Junior High requires rooms of two types; for certain studies, classrooms reminiscent of those in upper elementary grades; for others, specialized rooms which anticipate the more complete specialization of High School provisions. Thus the buildings facilitate the transition from an elementary to a secondary school

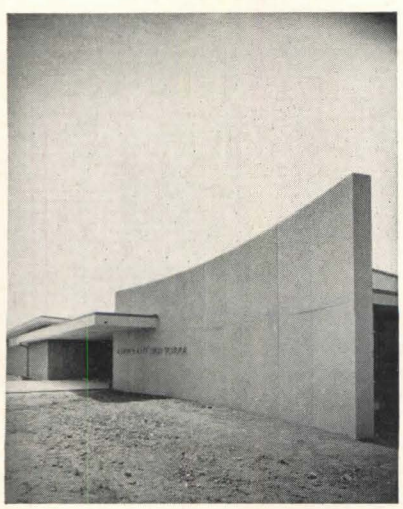


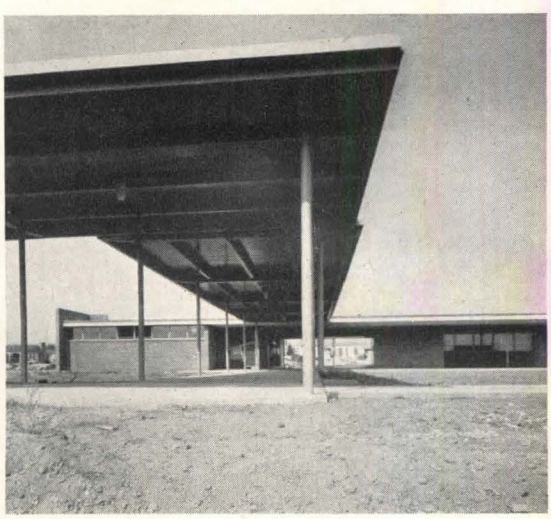




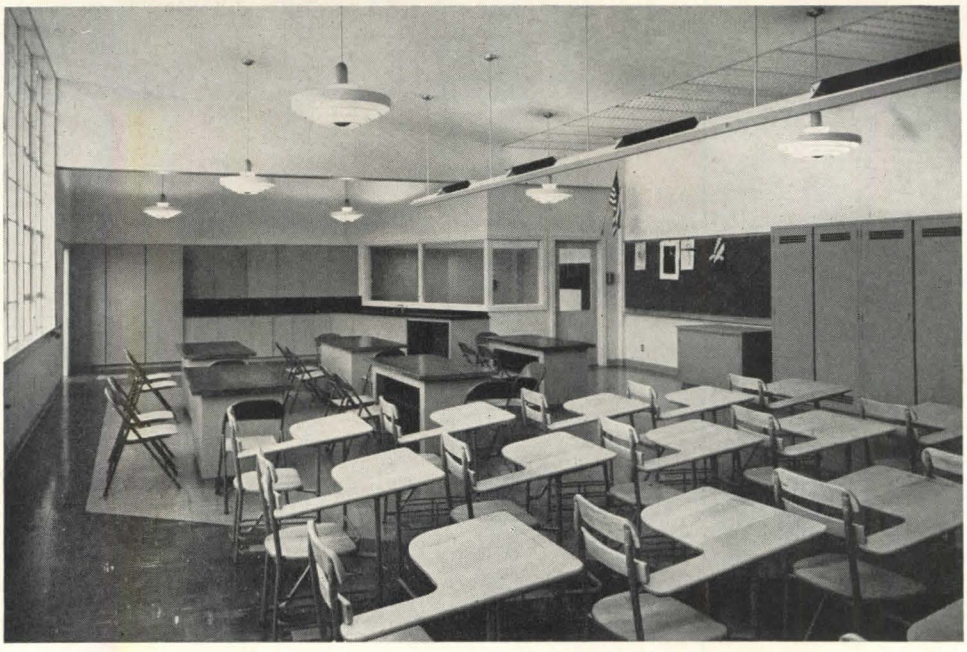
CULVER CITY UNIFIED SCHOOL: HIGH SCHOOL

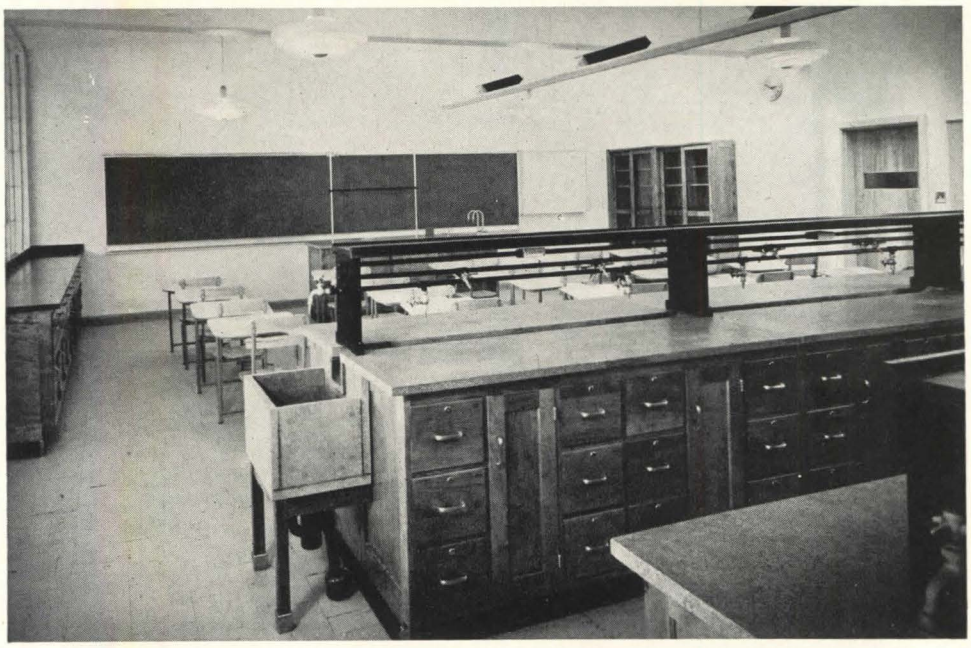
Above is the High School shop building; below are four views of the Administration Building which serves both Junior and Senior High Schools (building H on plot plan). From left to right: main entrance from Elenda St.; covered walkway connecting with Senior High classroom buildings; attendance office (one side for pupils from grades 7 through 9, the other, 10 through 12); and individual counseling rooms

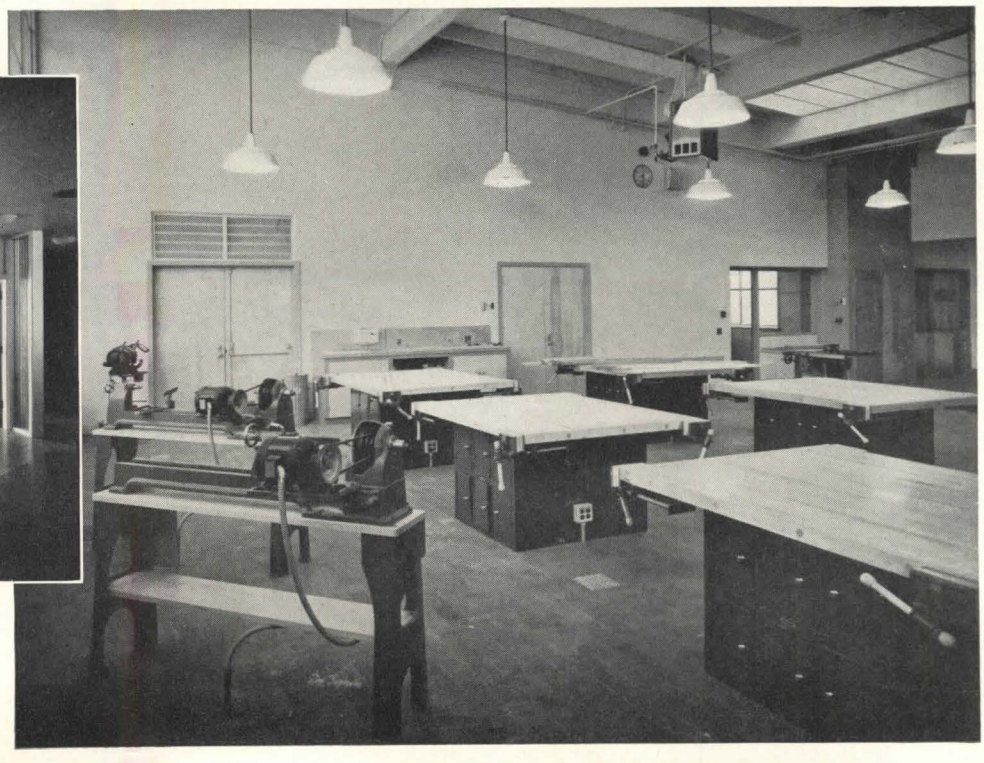




Three photos at right show classrooms in Culver City Senior High School, typical of the specialized provisions for an advanced secondary program. Top to bottom: arts and crafts room; laboratory classroom; shop. Construction is concrete and steel, with concrete exposed inside and out. Roof is built-up and has a reflective surface; interior partitions are plywood, plaster and redwood; floors are concrete slabs on grade with asphalt tile. Windows are steel, glass wool insulation is used, and heat is supplied by radiant floor panels. Note particularly the completeness of equipment in all rooms; the acoustic tile ceilings, incandescent lighting, and germicidal lamps. Classrooms, nearly square and flanking double-loaded corridors, have skylights to daylight interior areas; these, which also light corridors, are glazed with heat-absorbing glass and equipped with aluminum diffusing grids at ceiling

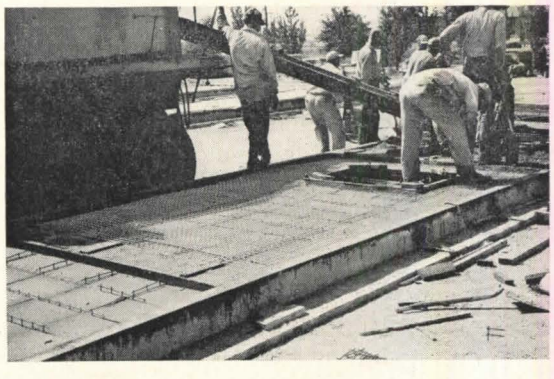






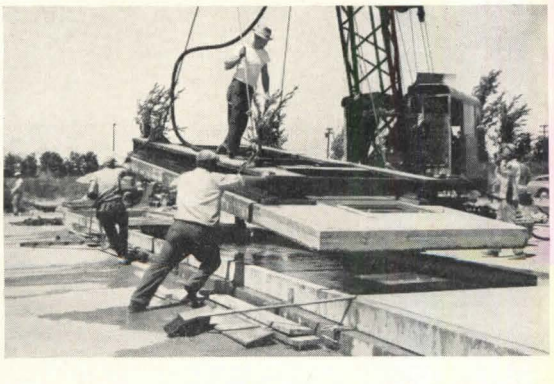
In the background workers are placing window sash and reinforcing mesh in casting beds before the first layer of concrete is poured. In the foreground a form is being mopped with a plastic to prevent sticking

After the first layer of concrete is poured and vibrated, workers screed it. Note lifting hooks, lower left

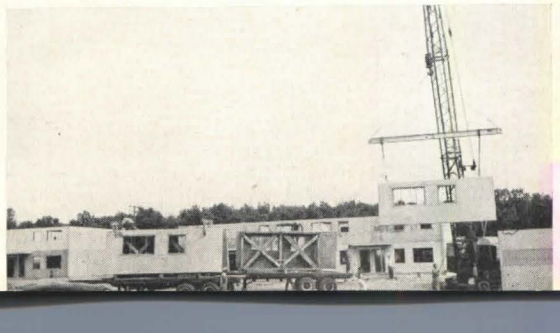


Blocks of cellular glass insulation and then wire mesh have been laid over the bottom thickness of concrete prior to pouring final layer. Wire shear ties show at left in left form

Exterior is brushed to give a texture in contrast to smooth, trowelled areas surrounding the steel sash



Lifting mat develops enough vacuum in 3 min. for the crane to pick up slab and place it on a truck



At the site a crane lifts the wall slab from the truck and sets it in place

MASS-PRODUCED

Shaw, Metz & Dolio, Architects

Corbetta-Price Company, Inc., Builders

ONE THOUSAND DWELLING units enclosed in the 318 one-, two-, and four-family buildings of precast concrete which will comprise Forrestal Village are being constructed along modern mass production lines. One of the outstanding features is the use of load-bearing, prefabricated concrete wall slabs having an insulating core of cellular glass.

Eight rows of casting beds 300 ft long mark the site where the wall units are fabricated. A visit to the site usually reveals: (a) four rows of beds where assembled wall units are curing for their standard two day period, (b) a row in which units are being assembled, (c) a row of beds where finished wall units are being lifted and hoisted on waiting trucks, and (d) a row where workmen are scraping the casting forms clean for use the following day. Some of the remaining casting beds are used in the fabrication of non-insulated concrete party walls which separate apartments in the dwelling units, while in other beds the formwork is being repaired.

Each bed is capable of being adapted to produce any one of ten different building types. Thus, on successive re-uses of the same row, there may be 17 wall units of one type of dwelling as against 26 units of another type. The maximum area which any two rows (one day's work) can accommodate is about 5700 sq ft, with the grand average being close to 4200 sq ft of walls per day.

The Casting Bed

The base of the casting bed is concrete with wood 2 by 4's imbedded for nailing strips. Sheets of finished plywood are laid over the concrete and nailed to the 2 by 4's. The plywood serves to give a smooth finish to the interior veneer of concrete. The edge forms of the casting beds are precast concrete members anchored to the base. The casting bed rows are 300 ft long and 10 ft wide. The wall units cast in one bed are enough to enclose the largest building being used in the housing project.

WALLS IN NAVY HOUSING

Forrestal Village

Great Lakes Naval Training Station

Upton, Illinois

The completed shell of this four-family unit consists of the prefabricated wall slabs and hollow core roof and floor slabs. Note ends of floor slabs where canopies will go

Casting The Wall Units

The 8-in. prefabricated wall slabs consist of a 2½ in. exterior veneer of reinforced concrete, a core of 1½ in. cellular glass insulation, and a 4 in. interior veneer of reinforced concrete. The interior face of the panel is smooth and can be painted to achieve a decorative effect. The exterior face of the panel is given a brush treatment which offers a rough texture, and designs are formed on certain panels with a relief mold. The core acts as both insulant and vapor barrier. The U value of the wall units is .198.

The first step in preparing a bed for casting is to scrape and sweep away any concrete left sticking to forms from the previous pour. The bed is then given a mop coating of a liquid parting agent, which prevents the concrete from sticking. Following this, the steel windows, door frames, kitchen fans, and welding plates, lifting hooks and precut sheets of reinforcing mesh are set in place. The welding plates are used to tie adjoining wall sections together and to tie wall sections to roof and floor slabs. The lifting hooks provide a means of lifting the wall sections by crane to set them in position at the building site.

Next, a layer of concrete is poured in the casting bed. This 4-in. thick layer of concrete forms the interior wall of the unit. The concrete is screeded and vibrated to facilitate placement of the rather stiff mix. Workers lay 12 by 18 in. blocks of cellular glass over the concrete. Between the rows of glass insulation, shear ties consisting of strips of welded wire mesh 4 in. wide and in convenient lengths are inserted in the fresh concrete in an upright position perpendicular to the long side of the wall units. Then another layer of reinforcing mesh is laid down over the insulation, resting on the shear ties which serve to tie together the two veneers of concrete. The exterior concrete is then poured over this assembly in a 2½ in. thickness. This last layer of concrete is vibrated to facilitate placement and to increase the density of the exterior veneer. The concrete surface is then screeded and "floated" and given a broom finish to create a ripple-like texture. After the surface is textured, the casting bed is covered with a sheet of waterproof paper, and the panels are allowed to cure for two days.

Construction process is apparent here. Tie bars support walls until lugs in wall slabs are welded together and also to lugs in the hollow core slabs. Joints are then caulked. Hollow cores in slabs serve as passages for warm air heating

Erecting The Wall Units

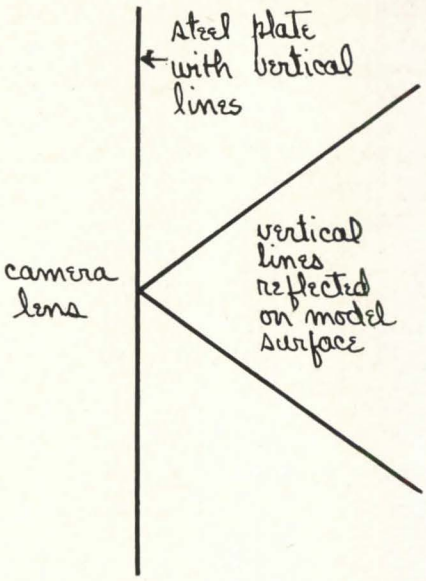
It takes about 11 minutes for two wall units to be lifted from the casting bed onto "A" racks on a truck, which hauls them about a quarter of a mile to the erection site. First a crane lowers a vacuum mat over a wall unit. When sufficient vacuum has been created and the mat has a firm grip on the panel, the crane raises it and tilts it in mid-air to a vertical position and lowers it in place on the truck. The same procedure is followed in lifting the adjacent wall unit, and the truck drives to the erection site with two wall sections that may enclose upwards of 400 sq ft.

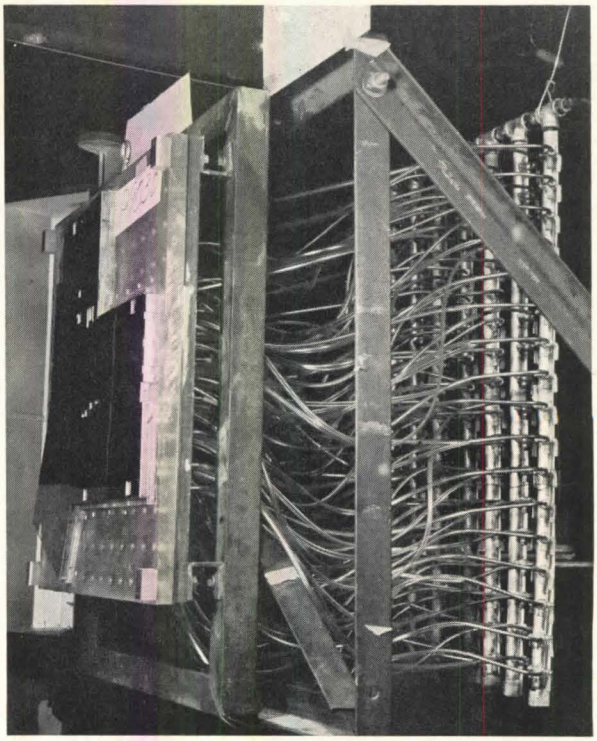
At the erection site, a large crane lowers its lifting beam, workmen secure hooks in the lifting hooks, and the unit is swung over the floor slabs. The panel is bolted temporarily in place with braces, which support it until the four walls of the dwelling have been welded together. The installation of the walls is completed with the caulking of all joints.

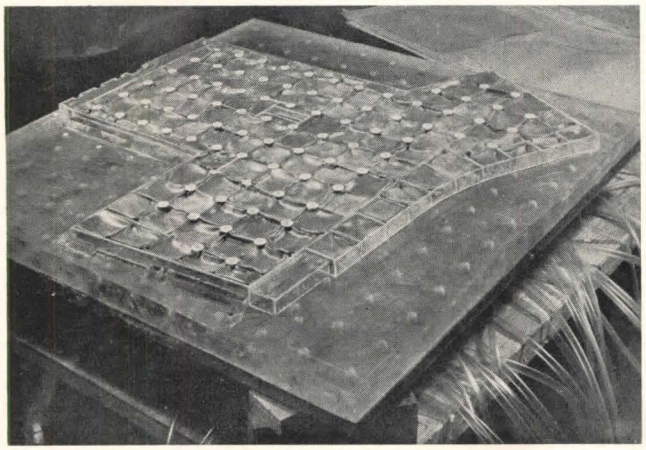
STRESS ANALYSIS METHOD FOR CONCRETE SLABS

Based on optic principles combined with photography, it determines bending of plastic models under load

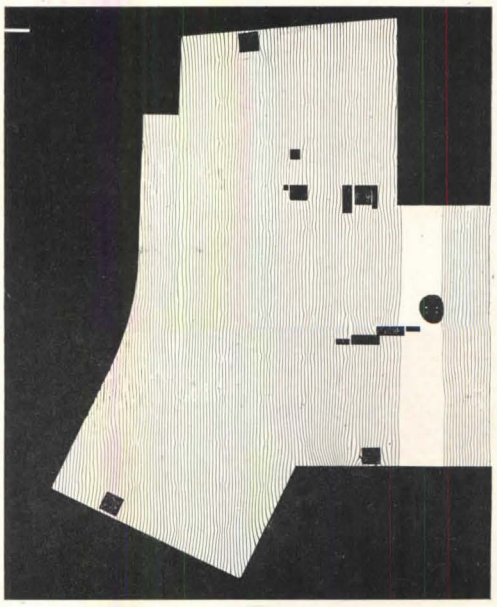
STAGE 1







1. A model is built of plastic to scale. Rubber bags are fitted to each bay and connected to an air manifold. The floor slab then is fastened to the model and given a mirrored finish. 2. The model is placed in a frame, facing a grid of vertical lines in the center of which is a camera. 3. The slab is loaded, and the photograph shows the lines distorted where bending has occurred, the model slab surface acting like a fun house mirror



Below: Bullock's Westwood department store in Los Angeles as finished. Savings in reinforcing alone were said to be $30,000

IN buildings framed with reinforced concrete, architects select flat slab construction * when they want to eliminate beams and girders or joists so as to give more headroom and to obtain minimum interference with layout.

But engineers run up against tough problems in analyzing the stresses which determine how much reinforcing steel is required. Mathematical analysis of flat slabs is tedious and complex, and generally is a practical impossibility when the column spacing is irregular.

So, until recently, engineers had to rely to a great extent on empirical formulas — based on tests, judgment and mathematics — which are acceptable to building codes. This meant that more reinforcing steel was used than absolutely necessary because designs based on these formulas are usually on the conservative side.

When the structural engineering firm of Bowen, Rule and Bowen was asked to do the structural design on the Parklabrea Housing Project in Los Angeles in 1948, they developed a new method of flat slab stress analysis out of necessity. The eighteen, 13-story apartment buildings, designed by Leonard Shultze, called for flat plate design with very irregular column spacing, the under side of the slab forming the ceiling of the room below. This project was so large, and the design so complicated, that it warranted investigation into the use of a test model on which loads could be simulated and their effect measured.

The engineers consulted with Professor R. R. Martel, head of structural engineering at California Institute of Technology, and then proceeded to develop a method called *Presan*, the name derived from the initial letters of the full name "Photo Reflective Stress Analysis." The method is based on the measurement by optics combined with photography of the surface curvatures of a plastic model under load. From these curvatures, bending stresses are determined.

Applications And Advantages

So far, Presan has been used to analyze flat plate and some other flat slab systems. It is a method which permits any column arrangement or location of openings without complicating the structural design or requiring expensive framing. Architects can place columns as desired for optimum space usage without the usual penalty of increased costs.

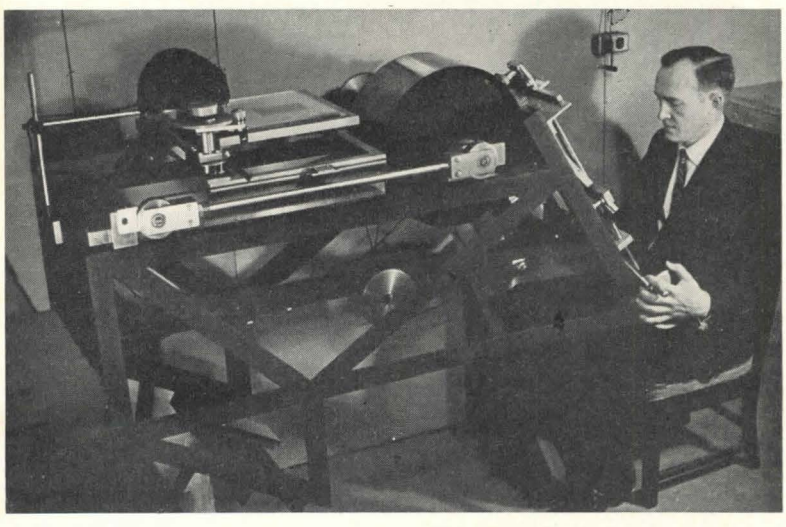
Following the Parklabrea job, the engineers sold their rights to the newly formed Presan Corporation, with Gerald Bowen as president and active member of the company, and to whom belongs the lion's share of the credit for developing the method. This company now performs the structural analyses for other engineers.

According to Bowen, a flat slab or flat plate floor system can be designed to use far less steel than any other floor system, excepting pan joist construction in a few isolated cases. The saving in steel over the closest type of competitive structure, using the same quantity of concrete, exceeds 30 per cent. Normally, it proves more economical to reduce concrete, maintaining steel at about the same weight per sq ft as in a conventional analysis. During the steel shortage, however, the structure can be designed to reduce steel tonnage as indicated above.

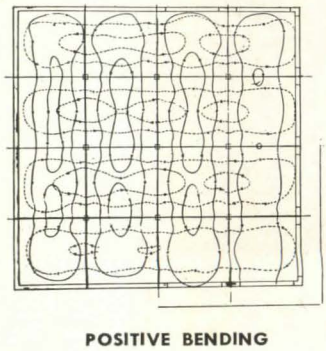
Further advantages are said to be (1) more than 30 per cent steel saving if bays are rectangular or irregular, (2) a further decrease in steel and concrete if "haunched slabs" are used (see photos, page 182), and (3) reduction in footing loads when haunched slabs are used.

** Flat slab construction means reinforced concrete floors which are self-supporting. Conventional flat slabs require capitals and drop panels, but in flat plate design the columns can be uniform in section from top to bottom.*

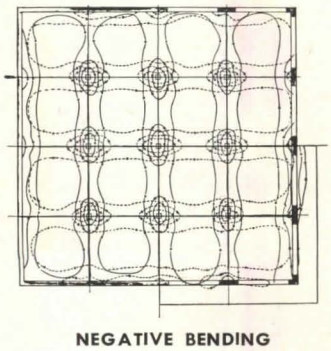
STAGE 2



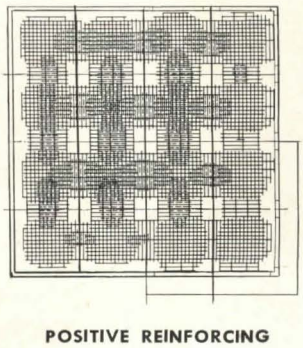
The photograph shows the degree of slab bending and whether it has bent up or down, but some means is needed to measure the distortion of the lines and translate this into bending moment values. The photo is placed in the machine at right and is scanned by the operator, who moves a pointer which controls a ruling pen. From the graph that is thus drawn, data can be taken to plot bending moment contour lines as shown below. These contours form the outline for the engineer to lay out the reinforcing steel



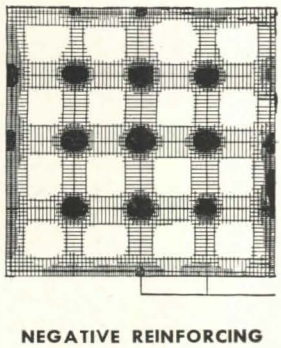
POSITIVE BENDING



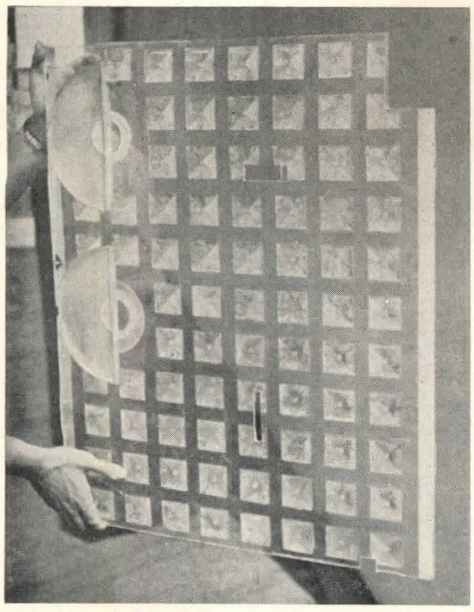
NEGATIVE BENDING



POSITIVE REINFORCING

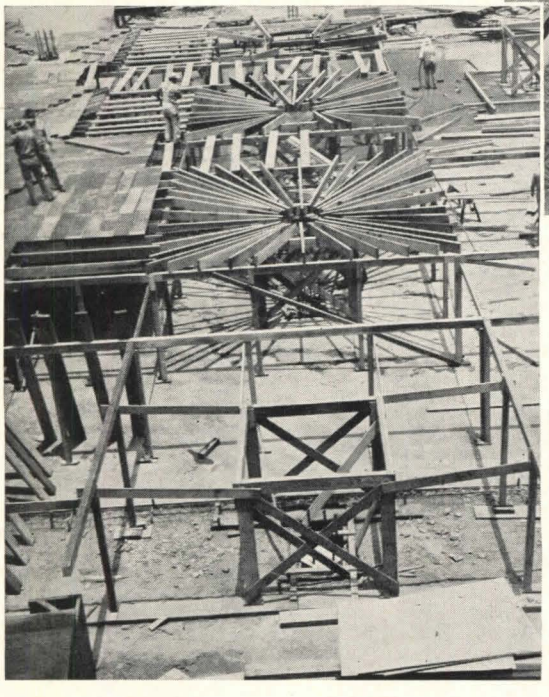


NEGATIVE REINFORCING



Garage model. Note sections through ramps

Another structure which has been designed with the new stress analysis method is the Pershing Square Garage in Los Angeles. Stiles Clements, Associated Architects and Engineers; City Park Garage, Inc., Builders. The garage utilizes a new floor shape called the "haunched slab." The slab tapers from 5½ in. at one-third of the slab to 16½ in. at the edge of the column



How Presan Works

First, a model is constructed of Lucite which is to scale in plan and to scale stiffness-wise in the relation of the floor slab to the supporting structure. Rubber air bags are modeled and fitted to each bay, and each bag is connected to an air manifold for selective loading. The floor slab is then mirrorized and secured to the sub-structure. Next, the model is placed in a frame facing a vertical grid of lines scribed on a steel plate in the center of which is a camera.

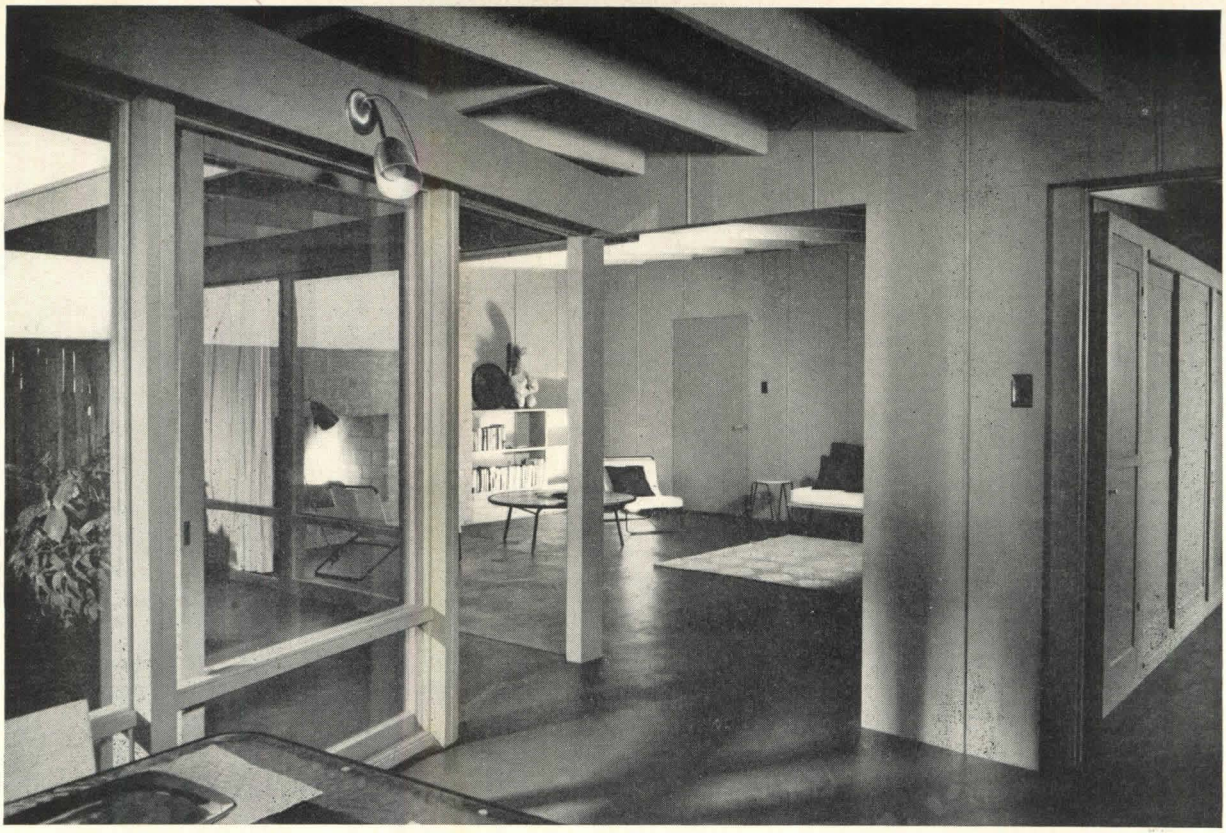
Since the grid used is of uniform spacing, a photograph of the unloaded model would show a reflection of uniformly spaced lines, provided the model surface were absolutely flat. Any distortion from a flat surface will distort the grid in the photograph. On page 180 is the distorted pattern of grid lines which resulted from photographing the model of a department store under uniform load. It is necessary to measure each grid space successively and very accurately, and to convert each measurement into a bending moment. To accomplish these measurements and corresponding calculations practically, a data reduction machine was developed, which simultaneously measures the line spacing, computes the reciprocal of the radius of curvature, and plots the results graphically. Contours of equal bending moment are then plotted. These contours, combined with a floor plan, can be used by the engineer for working drawings to delineate the reinforcing bars.

Recent Structures

Bullock's new department store in Westwood Village, California, by Welton Becket and Associates, is the first store to have utilized the method, with a claimed savings of $30,000 in reinforcing steel and framing costs. Murray Erick was the structural engineer.

Now under construction is the Pershing Square Garage in Los Angeles, Stiles Clements, Associated Architects and Engineers. This structure utilizes a new floor shape, which the Presan people say only can be designed practically by their method. This is known as the "haunched slab."

Gross savings over conventional flat slab design due to reduction in reinforcing steel, concrete, forming and excavation were estimated by Murray Erick, the consulting engineer, to be $43,000 less the analysis fee of $15,000 leaving a net saving of $28,000. Savings were computed only for six-tenths of the total slab area, since a comparative conventional design was made for a typical bay only, preventing comparison over the non-typical areas. This fact, plus the experience gained on this and other projects, leads Presan engineers to feel they could now triple the gross savings indicated above.



Julius Shulman Photo: Courtesy Douglas Fir Plywood Association

INTERIOR APPLICATIONS OF PLYWOOD

A technical discussion of plywood characteristics, installation and finishes. Reference data appears in the Time-Saver Standards beginning on page 187

By Frederick F. Wangaard

Associate Professor of Forest Products, Yale University

LONG before the term "plywood" came into being, 18th century European contemporaries of Thomas Sheraton were gluing up cabinet panels of three layers of wood "the middle pieces being laid with the grain across, and the other two lengthwise of the panel to prevent its warping."[1]* A United States patent issued to John Mayo in 1868 reveals a surprising comprehension of the properties of plywood.[2]

Many developments in the art of veneer cutting, in the formulation of adhesives, in the fabrication of plywood panels, and in the application of plywood to thousands of uses have occurred since John Mayo's description of plywood was written.

The following discussion is concerned specifically with the types and grades of softwood and hardwood plywood as currently manufactured to meet the requirements of Commercial Standards[3] for interior use.

Physical and Mechanical Properties

Shrinkage

Natural wood is characterized by generally favorable strength-to-weight ratios in the direction parallel to its grain, but is much less strong and stiff perpendicular to the grain. Similarly, wood is highly stable in dimension in the longitudinal direction when subjected to moisture content changes, whereas its frequently objectionable shrinkage and swelling across the grain are well known.

As a consequence of its cross-ply construction, plywood shrinks and swells far less in width than does solid wood. For the same reason, however, its lengthwise shrinkage and swelling are somewhat greater than for solid wood.

In many parts of the United States, the moisture content of interior woodwork fluctuates from 6 per cent in winter to 12 per cent in summer. Consequently, under such conditions, solid wood shrinks or swells approximately .04 per cent longitudinally, 2 per cent tangentially (parallel to the growth rings), and 1½ per cent radially (perpendicular to the growth rings). Specific values, of course, differ for individual kinds of wood. Shrinkage values for individual American woods are presented in several government bulletins and other publications.[4]

In terms of a 4 by 8-ft panel subjected to a seasonal variation in moisture content from 12 to 6 per cent, solid wood of a species having total shrinkage values of 7.2 per cent and 0.12 per cent, across and along the grain respectively, would shrink 0.82 in. in width and .03 in. in length.

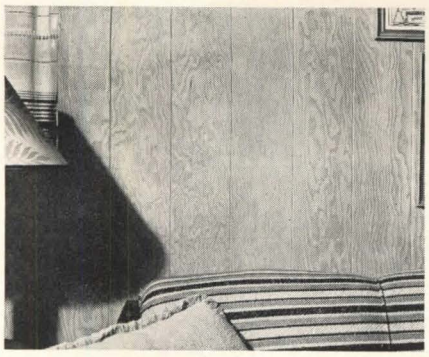
In contrast, a 3-ply plywood panel of uniform ply thickness would shrink only .08 in. in width, while its lengthwise shrinkage would be .10 in. Plywood is thus seen to shrink only 1/10 as much as solid wood in width.

The conventional odd-ply construction of plywood is necessary to obtain balanced construction to retain a warp-free panel under various moisture conditions. Balanced construction simply refers to symmetry of construction about the core ply so that corresponding plies on either side of the core are alike with respect to species, type of veneer (rotary-cut vs. quarter-sliced, etc.), direction of grain, thickness, and moisture content at the time of manufacture.

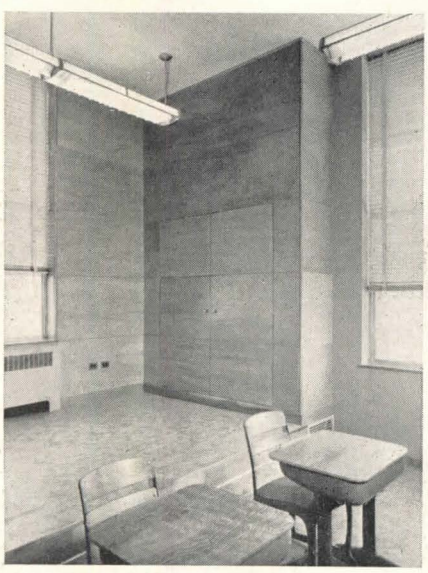
In practice, limited departures from these listed requirements of balanced construction are sometimes permitted, particularly with reference to a difference between species employed for face

* *Numbers refer to bibliography listings.*

Courtesy Douglas Fir Plywood Association



Above: grain in scored Douglas fir plywood panels has been softened with a wipe finish of white paint. Below: birch, an economical architectural plywood, was used by architect Emilio Di Rienzo in this music room



Ben Schnall Photo: Courtesy U. S. Plywood Association

and back plies in decorative panels, but the production of warp-free plywood requires recognition of the principle of balanced construction.

Strength

The importance of the distribution of strength properties afforded by the cross-plies is appreciated when it is understood that the tensile strength of solid wood is 25–60 times as great parallel to the grain as across the grain. In compression, solid wood is 3–10 times stronger parallel to the grain than it is perpendicular to the grain. Stiffness is 12–20 or more times as high in the grain direction as opposed to that in the transverse direction.

Furthermore, solid wood is characterized by relatively low resistance to shear parallel to the grain, and shear strength of plywood is considerably enhanced as a result of its cross-ply construction. The tendency of solid wood to split along the grain at mechanical fastenings placed close to edges or ends of a piece, or to check or split as a result of seasoning stresses, is also greatly reduced in plywood as a consequence of the resistance afforded by the firmly bonded cross plies. Page 187 of the Time-Saver Standards contains approximate methods of calculating strength and stiffness of plywood.

Types of Interior Plywood

Douglas Fir

Fir plywood grades are based upon the quality of veneer permitted in the face and back plies. All veneer is rotary-cut and displays the characteristic irregular grain pattern of flat-grain lumber.

Plywood grades are identified on the basis of the veneer grades employed in faces and backs. Four veneer grades are recognized, A, B, C and D (see page 193) that are adapted to interior use as wall coverings, ceilings, partitions, floors, and similar applications.

Of these, the A-D grade, known as Ply-panel, is most widely used for interior finishing where only one surface of the panel is exposed. This grade is suitable for painting, light stain glazing, and other fine finishing. It may also be used as a base for wallpaper.

Interior grade A-B plywood is a new grade and makes available a panel with finest appearance quality face and a moderate quality back. Cabinet doors in utility rooms, kitchens, and storage areas are among its uses.

Interior grade B-D plywood, known as Plybase, is an entirely new grade with face plies of the same paintable quality as the back in the A-B grade just described. Its tight solid face is intended to provide a backing for use under linoleum, but it may also prove suitable as a base for wallpaper or for canvassed and painted walls.

Softwoods other than Douglas fir which are available for many of the same uses include ponderosa pine, knotty western white pine, and Sitka spruce.

Hardwoods

Hardwood plywood for interior use is classed as Types II (Water resistant) and III (Dry bond). Unlike fir plywood, which is all veneer, hardwood plywood may be of all-veneer or of lumber-core construction. Its description is exceedingly more complex than that of Douglas fir plywood in that hundreds of woods, both domestic and imported, are available as face veneers, many of them characterized by wide variations in appearance both as a result of natural growth variations and of different methods of cutting.

In general, the straight grained, less highly figured woods are rotary-cut or flat-sliced to obtain plain face veneers, often of attractive color and texture, or cross-band and core stock. Woods characterized by interlocked or other irregular grain are usually quarter-sliced or back-cut on a staylog to reveal beautiful stripe, mottle, or flake figures. Hardwood plywood is specified as to species and grade of face and back veneer; grades of hardwood veneer are 1, 2, 3 & 4. (See page 193.)

Each of the hundreds of hardwoods employed as plywood faces is characterized by its individual combination of color, grain pattern, texture, and figure.

Interior Uses

Walls

Douglas fir plywood of the Plypanel grade is adapted to wall paneling which is to be painted, finished in natural color, given a light stain glaze, enameled, or covered with wallpaper. The Plybase grade approaches Plypanel in surface tightness and should be suitable as a wallpaper base or for canvassed and enameled walls. For better construction, panels $\frac{3}{8}$ in. thick are recommended over studs on 16-in. centers, but $\frac{1}{4}$-in. panels are often used for reasons of economy. The $\frac{1}{4}$-in. panels are completely satisfactory for application over old plaster walls.

Hardwood plywood is adapted to the same applications as Douglas fir and, in addition, affords an almost infinite variety of rich and luxurious effects, which are possible only through the use of fine figured hardwoods. In general, only the plainer woods, such as gum, are given any but a stained or natural finish. The 1–3 grade of $\frac{1}{4}$-in. thickness is commonly employed for most economical construction taking advantage of the natural beauty of the wood, although thicker panels are structurally advantageous when applied over studs on 16-in. centers.

The finest plywood available for use as wall paneling of the type usually employed in commercial and public buildings is the architectural grade of lumber-core panel, which is $1\frac{3}{16}$-to 1-in. thick with one decorative face of grade 1 veneer. Although 4 by 8-ft panels are widely used, the diversity of architectural effects which may be secured with

decorative hardwood plywoods applied either vertically or horizontally offers almost unlimited possibilities for smaller sizes, which are, incidentally, more economical. Panels longer than 8 ft are obtainable at some premium in cost, may sometimes be found advantageous in situations where a particular effect is desired.

Application of birch panels, shown in several photos, illustrates the beauty obtainable through the use of economy grade hardwoods. Plywoods of this type are the result of the recent development of mass production in the manufacture of hardwood plywood. As a result of manufacturing economies introduced in producing these lower priced hardwood panels, certain refinements in the selection and matching of veneers are lacking as compared with the grade 1 faces described in the Commercial Standard.

Ceilings

The opportunities for the use of plywood in ceilings are not so diverse as in the case of wall paneling. Nevertheless, many of the advantages of plywood paneling are applicable to ceilings, as it permits large, unbroken crack-free areas when joints are properly treated and the panels are painted or covered with paper. For this type of treatment, the Plypanel and Plybase grades of Douglas fir in panels $\frac{3}{8}$ or $\frac{1}{4}$-in. thick and comparable grades of plain economical hardwoods, usually of $\frac{1}{4}$-in. thickness, are generally employed. Panels that reveal the grain of the wood are frequently used as ceilings in recreation rooms and in "expansion room" remodeling, where they are usually given finishing treatments similar to those used on wall paneling.

Built-Ins

Plywood is ideally adapted to the fabrication of built-in cabinets, wardrobes, counters, and other of the dozens of conveniences that distinguish a well designed home. In employing Douglas fir, the Plypanel grade is usually selected when only one surface is to be exposed, as in facings, ends, linings, and drawer bottoms. The A-A grade, or sometimes the A-B grade, is preferred for doors and single thickness wall sections where both sides are visible. Hardwood plywood with one or two good faces is similarly adapted to the same uses. Exterior plywood should be specified for counters around kitchen sinks or built-in bathroom lavatories. Plywood of $\frac{3}{4}$-in. thickness is most commonly used for cabinet doors and shelves, although panels of $\frac{5}{8}$ and $\frac{1}{2}$ in. are also used.

Floors

Plywood finds application both as a sub-floor and finish flooring. Its most common use, however, is as sub-flooring or as a base for linoleum and other floor coverings.

The Plyscord (Sheathing) grade of Douglas fir plywood in $\frac{1}{2}$ and $\frac{5}{8}$-in. thickness is employed as sub-flooring with joists on 16 and 20-in. centers respectively when a finish strip flooring of wood is also used. Plybase fir plywood of $\frac{3}{8}$ or $\frac{1}{4}$ in. thickness is often used over sub-flooring as an underlay for linoleum, rubber, or asphalt tile, but when employed as a combination subfloor and base for these surfacing materials or for wall-to-wall carpeting, $\frac{1}{2}$-in. to $\frac{3}{4}$-in. panels should be used, depending upon joist spacing. The use of Plybase or Plypanel grades of fir plywood of $\frac{1}{4}$ or $\frac{3}{8}$-in. thicknesses is also popular over old, worn flooring in remodeling work, producing an ideal base for various surfacing treatments as discussed above.

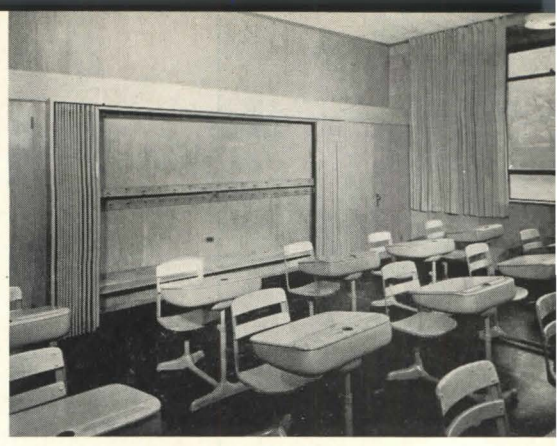
Application Methods

Proper wall panel arrangement is basic to the successful application of plywood both from the standpoint of appearance and economy of material. The discussion in the Time-Saver Standards is directed principally toward consideration of thinner plywoods and is not applicable to the architectural grade of lumber-core plywood.

Metal moldings faced with veneer to match paneling are available for a number of widely used species, and offer an attractive solution to the treatment of joints in $\frac{1}{4}$, $\frac{3}{4}$, and $\frac{3}{16}$-in. panels.

As a preliminary to actual installation of plywood paneling, the panels should be stored in stickered piles for a few days under conditions of the room where they are to be used. This period of conditioning serves to insure against problems arising from moisture pick-up or loss. In new construction it is desirable, and many building codes require, that 2 by 4-in. firestops be inserted between the studs about four feet from the floor. Such horizontal members, together with the studs, serve for the attachment of plywood panels.

Plywood panels may be nailed directly to the studs, which should first be plumbed or, in somewhat better practice, a $\frac{1}{4}$ by $2\frac{1}{2}$-in. plywood furring strip may be nailed along its center line to the stud and the panel attached through the furring to the stud. Panel

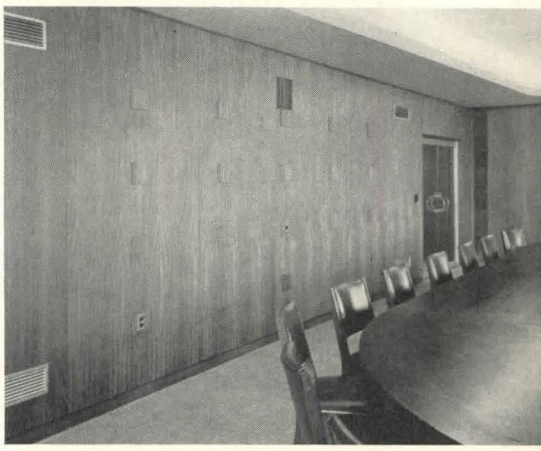


Ben Schnall

Above: oak plywood at back of classroom relieves concrete block walls in low-cost school, Robert A. Green, Architect

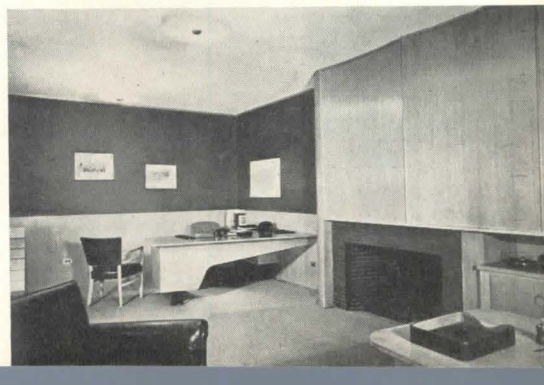
Ben Schnall

Above: red oak plywood on front and rear walls and covering beams adds warmth to church also designed by Robert Green



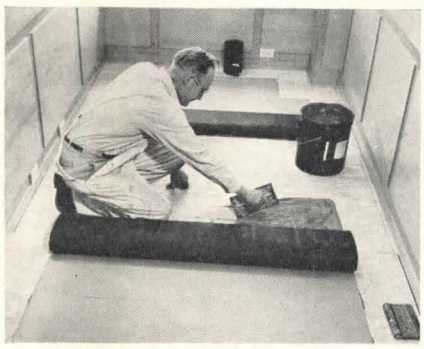
Courtesy Roddis Plywood Corp.

Above: rift-grain oak in this office demonstrates a striking application of decorative hardwood plywood. Below: broken-stripe, figured mahogany in executives' dining room. Cram and Ferguson, Architects



Courtesy U. S. Plywood Association

Above: striated plywood blocks form an interesting pattern for indirectly lighted ceiling. Below: fir plywood offers smooth, solid base for finish flooring. Workman is laying floor covering over ⅜-in. stock



joints are thus protected against the effects of possible shrinkage or settling. The use of 6d finish or casing nails spaced 6 in. apart at the outer edges of the panel and at 12-in. intervals on intermediate studs is recommended for plywood ⅜ and ½-in. thick. Four penny and 8d nails at the same spacing are similarly recommended for ¼ and ¾-in. thicknesses respectively. An alternative recommendation for ¼-in. hardwood panels is to use ¾-in. No. 19 brads, which make an even less conspicuous hole than the 4d finish nail. Most satisfactory, although not essential, is the attachment to the furring strips (or studs) by means of glue, which is applied immediately prior to nailing. Electronic heating methods have also been developed that permit the rapid cure of resin adhesives. Through the use of a portable "spot welder," rapid attachment of panels is possible without the use of nails.

In remodeling work, plywood is often applied over old plaster walls. Attachment may be provided through the use of ¼-in. plywood furring strips 2½-in. wide, which are nailed to the studs. Horizontal furring should be spaced so as to provide support at panel edges and about 2 ft apart, while vertical furring is used only at panel edges.

In applying plywood to masonry walls, 1 by 2-in. furring strips can be nailed or pegged to the masonry at 16-in. intervals. Six penny steel cut nails spaced at 12 in. are recommended. A ¼-in. air space at top and bottom of the panels for circulation may be desirable if moderate dampness is a problem. Additional protection against moisture can be secured by applying asphalt building paper to the face of the furring. Panels should also be back primed with a resin sealer before erection, although if condensation of moisture or seepage is severe, the interior types of plywood will not prove satisfactory.

Plywood ceiling installations are essentially the same as walls. Panels should always have backing at the edges as well as intermediate support at 4-ft intervals, which is provided by the joists and by cats which are inserted between the joists. Panels may be applied with the face grain either along or across the joists.

When, as in remodeling, ceiling panels are installed over plaster, ¼ by 2½-in. plywood or 1 by 2-in. wood furring strips should first be applied by nailing through the plaster to the joists. Furring strips that run across joists should be spaced about 2 ft apart, whereas in the direction parallel to the joists furring strips are needed only at panel edges. Recommendations previously given relative to nailing schedules for walls are equally applicable to ceiling installations. A number of plywood floor construction details are shown on page 195.

Finishing

Modern finishing treatments for plywood emphasize (1) the natural effect of the grain, color, and figure of the wood obtained through clear finishes, or (2) the light effects which may be achieved without losing the distinctive characteristics of texture, grain, and figure by subduing the normal grain contrast of the wood with pigmented sealers.

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[4] Markwardt, L. J., and Wilson, T. R. C. *Strength and Related Properties of Woods Grown in the United States.* U. S. Dept. of Agr. Tech. Bul. #479. 1935.

Wangaard, Frederick F. *Mechanical Properties of Wood.* John Wiley and Sons, New York. 1950.

Application of plywood in homes varies from the richly paneled living room of walnut at left to the functional and economical use of unselect birch for the walls and cabinets in the kitchen at right. The second photo illustrates the popular trend to built-in units of plywood. Architects: left, Daniel Schwartzman; right, R. Kilburn

INTERIOR PLYWOOD: 1—Simplified Design Method

By Frederick F. Wangaard

Associate Professor of Forest Products, Yale University

The following sheets form a compilation of technical information on plywood prepared by the author and assembled here for convenience. The suggested simplified methods of calculation apply reasonably well with usual plywood types under ordinary conditions of service, but they are not entirely valid for all types of plywood or constructions, or for all spans and span-depth ratios. They are not applicable to structures proportioned so plywood is in the buckling range: the results will be too high.

As shown in Table I, approximate methods of calculating plywood strength and stiffness neglect any contribution to tensile strength, compressive strength, or stiffness made by plies stressed across the grain. Only in the case of shear through the thickness of the panel is the full cross-sectional resistance of square-laid plywood considered.

Application of the methods outlined in Table 1 involves the use of unit stresses for solid wood of the quality employed in the various plies. Basic stress values for clear solid wood of a number of species commonly employed in plywood are given in Table 2. These values have already been adjusted for variation, long-time duration of stress, and include a factor of safety. Stress values for extreme fiber in bending, compression parallel to grain, and compression perpendicular to grain have also been increased 25 per cent over those originally published to adapt them to interior use applications. Such basic stress values, however, require modification by a reduction factor according to the weakening influence of any defects that may be present in order to determine the appropriate unit stress value. Once this is known for the particular plies involved, calculation of plywood strength is possible following the methods given in Table 1. Unit stresses have been prepared for the standard grades of Douglas fir plywood and are recommended for direct application according to the methods outlined in Table 1.*

** Technical data on plywood, section 2, rev. 1948. Douglas Fir Plywood Assn., Tacoma, Wash.*

TABLE 1. Design method and allowable stresses for plywood [1]

Property	Direction of stress wrt direction of face grain	Area to be considered	Unit stress to be used
Tension	Parallel or perpendicular	Parallel plies[2] only	Unit stress for extreme fiber in bending
	± 45°	Full cross-sectional area	One-sixth unit stress for extreme fiber in bending
Compression	Parallel or perpendicular	Parallel plies[2] only	Unit stress in compression parallel to grain
	± 45°	Full cross-sectional area	One-third unit stress in compression parallel to grain
Bearing at right angles to plane of plywood		Loaded area	Unit stress in compression perpendicular to grain
Load in bending	Parallel or pendicular	Bending moment M = KSI/c[3]	Unit stress for extreme fiber in bending
Deflection in bending	Parallel or perpendicular	Deflection may be calculated by the usual formula[4]	Unit value for modulus of elasticity
Deformation in tension or compression	Parallel or perpendicular	Parallel plies[2] only	Unit value for modulus of elasticity
Shear through thickness	Parallel or perpendicular	Full cross-sectional area	Double unit stress in horizontal shear
	± 45°	Full cross-sectional area	Four times unit stress in horizontal shear

[1] From Forest Products Laboratory Report R1630, rev., Madison, Wis. 1946.
[2] By "parallel plies" is meant those plies whose grain direction is parallel to the direction of principal stress.
[3] Where S = unit stress for extreme fiber in bending I = moment of inertia computed on basis of parallel plies only; c = distance from neutral axis to outer fiber of outermost ply having its grain in the direction of the span; K = 1.50 for three-ply plywood having the grain of the outer plies perpendicular to the span; K = 0.85 for all other plywood.
[4] Deflection may be calculated by the usual formulas, taking as the moment of inertia that of the parallel plies plus one-twentieth that of the perpendicular plies. (When face plies are parallel, the calculation may be simplified, with but little error, by taking the moment of inertia as that of the parallel plies only.)

TABLE 2. Basic stresses of clear wood to be used in calculating strength of plywood for interior service [1]

Species	Extreme fiber in bending	Horizontal shear	Compression grain	Compression grain	Modulus of elasticity
	psi	psi	psi	psi	1000 psi
Basswood	1550	100	150	1000	1100
Beech	2750	185	620	2000	1600
Birch, Yellow	2750	185	620	2000	1600
Elm, American	2000	150	310	1300	1200
Fir, Douglas	2750	130	400	1800	1600
Gum, Red or Black	2000	150	400	1300	1200
Mahogany, Central American	2500	185	540	1750	1300
Maple, Hard	2750	185	620	2000	1600
Oak, Red or White	2550	185	620	1700	1500
Pine, Ponderosa or Western White	1600	120	310	1250	1000
Poplar, Yellow	1600	120	280	1200	1100
Redwood	2200	100	310	1700	1200
Walnut, Black	2600	185	480	1950	1500

[1] Adapted for the most part from Forest Products Laboratory Report R1715, Recommendations for basic stresses. 1948.

INTERIOR PLYWOOD: 2—Panel Sizes and Weights

By Frederick F. Wangaard

Associate Professor of Forest Products, Yale University

One of the obvious advantages of plywood lies in its relatively large size and light weight panels. Stock panels of interior plywood are available in a variety of widths, lengths, and thicknesses as shown in Table 3. Table 3 indicates that the sizes in greatest demand are 36 and 48-in. widths in lengths of 72, 84, and 96 in. Panels of the shorter lengths shown in the table are often adapted to specific architectural uses and are advantageous from the standpoint of economy in comparison with the recutting of larger panels. Although not widely used, Douglas fir panels up to 4 by 12 ft are included among the standard sizes. Many hardwoods are also obtainable on special order in panel lengths up to 12 ft.

The light weight of plywood panels contributes to their ease of handling and application. Weights of plywood panels correspond to the density of the woods used in the various plies. Weights per sq ft for Douglas fir plywood of standard thickness are shown in Table 4. It is seen that a 4 by 8 ft, ¼-in. panel weighs approximately 25 lbs. Because of the various combinations of species employed in hardwood panels, it is not possible to present detailed tables of weights for each thickness, but in as much as the woods most commonly used as inner plies in hardwood panels are similar to fir in density, Douglas fir weights may serve also as rough approximations of hardwood plywood weights.

TABLE 3. Standard panel sizes of interior plywood

DOUGLAS FIR							
Lengths	Widths	Thickness (in.) and Number of Plies					
		3/16, 3 ply	¼, 3 ply	3/8, 3 ply	½, 5 ply	5/8, 5 ply	¾, 5 Ply
60	30	X	X	X	X	X	X
	36	X	X	X	X	X	X
	42	X	X	X	X	X	X
	48	X	X	X	X	X	X
72	30	X	X	X	X	X	X
	36	X	O	O	O	O	O
	42	X	X	X	X	X	X
	48	X	O	O	O	O	X
84	30	X	X	X	X	X	X
	36	X	O	O	O	O	X
	42	X	X	X	X	X	X
	48	X	O	O	O	O	X
96	30	X	X	X	X	X	X
	36	X	O	O	O	O	X
	42	X	X	X	X	X	X
	48	X	O	O	O	O	O
108	30	X	X	X	X	X	X
	36	X	O	O	O	O	X
	42	X	X	X	X	X	X
	48	X	O	O	O	O	X
120	30	X	X	X	X	X	X
	36	X	O	O	O	O	X
	42	X	X	X	X	X	X
	48	X	O	O	O	O	O
144	30	X	X	X	X	X	X
	36	X	X	X	X	X	X
	42	X	X	X	X	X	X
	48	X	X	X	X	X	X

HARDWOODS												
Lengths	Widths	Thickness (in.) and Number of Plies										
in.	in.	1/8, 3 ply	3/16, 3 ply	¼, 3 ply	5/16, 5 ply	3/8, 5 ply	½, 5 ply	5/8, 7 ply	¾, 7 ply	13/16, 5 ply lbr. core	7/8, 5 ply lbr. core	1, 5 ply lbr. core
48	24	X	X	O	X	X	X	X	X	X	X	X
	30	X	X	O	X	X	X	X	X	X	X	X
	36	X	X	O	X	X	X	X	X	X	X	X
	42	X	X	X	X	X	X	X	X	X	X	X
	48	O	X	O	X	O	X	X	O	O	O	X
60	24	X	X	O	X	X	X	X	X	X	X	X
	30	X	X	O	X	X	X	X	X	X	X	X
	36	O	X	O	X	X	X	X	X	X	X	X
	42	X	X	X	X	X	X	X	X	X	X	X
	48	O	X	O	X	O	X	X	O	O	O	X
72	24	X	X	O	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X	X	X	X
	36	O	X	O	X	O	O	X	X	O	O	X
	42	X	X	X	X	X	X	X	X	X	X	X
	48	O	X	O	X	O	O	X	O	O	O	X
84	24	X	X	O	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X	X	X	X
	36	O	X	O	X	O	O	X	X	O	O	X
	42	X	X	X	X	X	X	X	X	X	X	X
	48	O	X	O	X	O	O	X	O	O	O	X
96	24	X	X	O	X	X	X	X	X	X	X	X
	30	X	X	X	X	X	X	X	X	X	X	X
	36	O	X	O	X	O	O	X	X	O	O	X
	42	X	X	X	X	X	X	X	X	X	X	X
	48	O	X	O	X	O	O	X	O	O	O	O
120	24	—	—	—	—	—	—	—	—	—	—	—
	30	—	—	—	—	—	—	—	—	—	—	—
	36	—	—	—	—	—	—	—	—	—	—	—
	42	—	—	—	—	—	—	—	—	—	—	—
	48	—	—	O	—	—	—	—	—	O	O	—

x indicates standard size *o indicates sizes most commonly used*

TABLE 4.

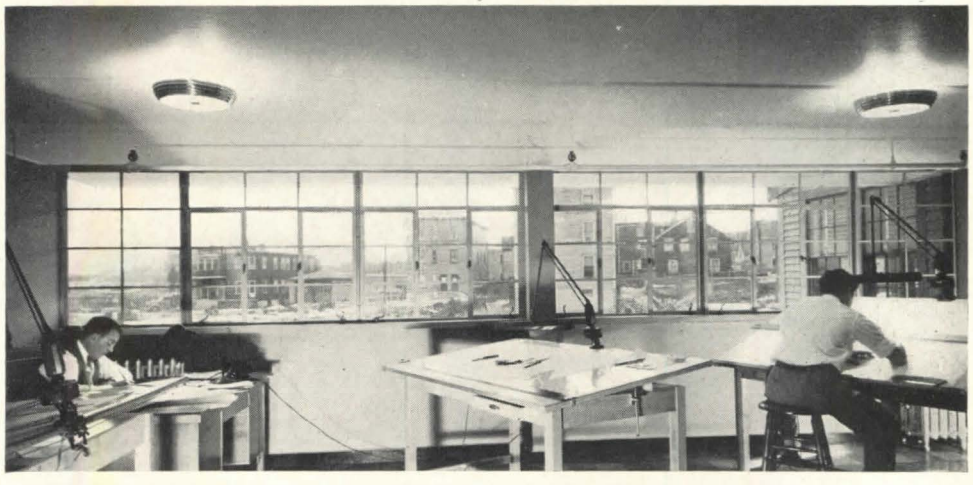
Weights of Douglas fir plywood

Thickness in.	Lb per sq ft
3/16	0.640
¼	0.790
3/8	1.125
½	1.525
5/8	1.825
¾	2.225

Curtain Walls for Industrial Construction

How to erect a wall quickly and economically has long been a challenge to architects, contractors and material manufacturers alike. What looks like a practical solution for industrial construction comes from the shops of R. P. Systems, engineering subsidiary of Leslie R. Porter Co., general contractor at Beverly, Mass. The development utilizes a concealed spline fastening and a comparatively new type of wall board, the *Kaylo C-A Panel*, to provide permanent walls that are said to withstand heavy loads. The parts also can be completely salvaged if desired; no nails, screws or bolts are involved.

Experimental work on the project was inspired by an objection to visible type of fastenings previously used with this type of panel, which consists of a 1⅝ in. thick incombustible core of hydrous calcium silicate laminated between ⅛ in. cement-asbestos boards. The new method of fastening is done as follows:



Curtain walls in Leslie R. Porter Co. office (top) are fastened by grooving laminated panel edges (above left) and inserting concealed splines (above right)

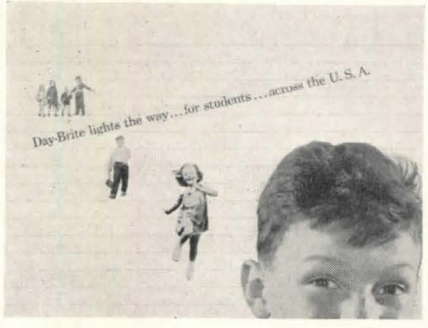
Slots, 1 in. deep, ¼ in. wide, are routed directly in the center of all four panel edges. The first panel is set horizontally with the bottom groove over one leg of an angle. A structural tee is slipped into the top groove, and its stem fastened to the building frame. The next panel is slipped over the other side of the tee, and the process repeated for the following panels. In the experimental project, splines of composition board, 2 in. wide and ¼ in. thick, were inserted in the vertical panel slots.

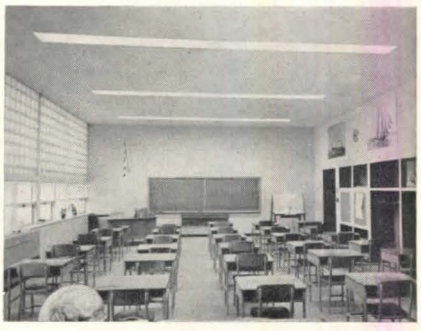
Distributed load tests showed that the panels withstood pressures up to 71.2 lb per sq ft before spline joints failed. Other tests showed strong impact resistance for panels and joints. The panels are further claimed to offer more insulating value than a 16-in. concrete wall, and to be incombustible and resistant to moisture and fungus. They can be worked with ordinary tools. Kaylo Div., Owens-Illinois Glass Co., Ohio Bldg., Toledo, Ohio.

(*Continued on page 200*)

Impact test (above left) and distributed load test (below left) approximate actual conditions, show panels and joints to be adequately strong

LITERATURE FOR THE OFFICE





New booklet on school lighting (left) presents methods used in a number of actual school and college classroom installations, as example shown at right

School Lighting

(1) *Day-Brite lights the way . . . for students . . . across the U.S.A.;* (2) *It happened in Denver's Schools . . . it can happen in yours.* The first of these booklets offers a series of actual examples of various school and college classrooms in which lighting problems were solved according to particular needs. There are full-page photographs to accompany each case history.

The second booklet recounts in detail the lighting story of the Denver Public School System — teachers' report of need, school board action, test cases, and completed project. (1) 24 pp., illus; (2) 16 pp., illus. School Lighting Division, Day-Brite Lighting Inc., 5450 Bulwer Ave., St. Louis 7, Mo.*

School Kitchens

Modern School Feeding Programs and Blodgett Ovens. Cases of specific schools with their cooking programs and facilities are cited in this booklet. Kitchen floor plans are included, with a check list of equipment. Examples (there are eight) tell how many persons are cooked for, basic menus prepared, and other items of interest peculiar to the situation. 8 pp., illus. The G. S. Blodgett Co., Inc., 50 Lakeside Ave., Burlington, Vt.

* *Other product information in Sweet's File, 1951.*

Window Shade Products

• *Inspirations for Interior Designers.* This booklet, in catalog style, discusses various materials and styles for use in the window shade line and also for use as walls, room dividers, and door closings. The materials listed include bambino, wood loom, bamboo and Tapestron, as well as the more conventional venetian blinds and window shade materials. 12 pp., illus. The Holland Shade Co., 999 Third Ave., New York 22, N. Y.

• *Guide for the Selection and Specification of Window Shades and Rollers.* Here is pertinent information about window shades and window shade fixtures, including rollers and brackets, for commercial buildings, schools, homes, and railway cars. There is a check list in the center of the book for use as a specifications guide in the selection of shades and rollers for various types of buildings. 16 pp., illus. Stewart Hartshorn Co., Empire State Bldg., New York 1, N. Y.

Predicting Interior Daylighting

PC Daylighting Nomograph. Developed at the Pittsburgh Corning Daylighting Research Center, this nomograph is said to make possible the prediction of daylighting levels in a room before the building is constructed. The information required for use with it in order to make a daylighting prediction can be obtained from the architect's plans and local weather bureau records. The amount of daylight which will be present at any point in a room and at any time of day any day in the year can be predicted with great accuracy, it is reported. Effects of building orientation and geographical location, fenestration area, sun altitude and azimuth, clouds, etc., are all accounted for, yet the chart is said to be simple enough for a high school student to manipulate. It is expected to be particularly useful in designing schools, offices, factories and other buildings where the occupants perform tasks which require a comfortable environment for efficient critical seeing. Pittsburgh Corning Corp., Public Relations Dept., 307 4th Ave., Pittsburgh 22, Pa.

Concrete Standards Specifications

A.C.I. Standards — 1951. A compilation of all current American Concrete Institute Standards except the Detailing Manual, available separately, this book includes the newly-revised Building Code and Specifications for Concrete Pavements and Bases, as well as a new standard on pneumatically-placed mortar. Other standards give authoritative useful information on application of portland cement paint, winter concreting methods, requirements for precast floor units, farm silos, design of concrete mixes, specifications for cast stone, metal supports for reinforcement, and measuring, mixing and placing concrete. *Material is* based on the Institute's research and is reprinted here from the following issues of its *Journal:* June, 1945; October, 1946; September, 1948; September, 1949; April, 1951 and May, 1951. Diagrams and charts are included. 222 pp. Price, $3.00. American Concrete Institute, 18263 McNichols Rd., Detroit 19, Mich.

(*Continued on page 234*)

INTERIOR PLYWOOD: 3—Grades

By Frederick F. Wangaard

Associate Professor of Forest Products, Yale University

Douglas Fir

Fir plywood grades are based upon the quality of veneer permitted in the face and back plies. All veneer is rotary-cut and displays the characteristic irregular grain pattern of flat-grain lumber. Four *veneer* grades are recognized.

Grade A (Sound) veneer is free from knots, splits, and other open defects, but streaks and discolorations, sapwood, and neatly made patches are accepted. When a face consists of more than one piece, it is reasonably matched for grain and color at the joints. It has a smooth surface suitable for painting.

Grade B (Solid) veneer presents a surface free from open defects, but, in addition to the defects permitted in Grade A veneer, this grade admits circular wood plugs or synthetic plugs having hard level surfaces, and sound tight knots up to 1 in. diam. Slightly rough, but not torn, grain and other minor sanding defects are permitted in this grade, which is paintable.

Grades C and D are used in backs and interior plies of panels in which appearance affects serviceability and permit such additional defects as knotholes, open pitch pockets, and splits of prescribed sizes.

Plywood grades are identified on the basis of the veneer grades employed in faces and backs. There are four grades of Douglas Fir plywood that are adapted to interior use as wall coverings, ceilings, partitions, floors, and similar applications. These grades are **A-A (Sound 2 Sides — Int.), A-B (Sound/Solid — Int.), A-D (Sound 1 Side — Int.); and B-D (Solid 1 Side — Int.).**

Of these, the **A-D grade**, known as Plypanel, is most widely used for interior finishing where only one surface of the panel is exposed. This grade is suitable for painting, light stain glazing, and other fine finishing either masking, subduing, or accentuating the natural grain contrast of the wood. It may also be used as a base for wallpaper.

Interior grade A-A plywood has two faces of top appearance quality and is intended for uses that require both sides to be finished. Such panels find application in cabinet doors, booth partitions, and store displays.

Interior grade A-B plywood is a new grade and makes available a panel with finest appearance quality face and a moderate quality back. Cabinet doors in utility rooms, kitchens, and storage areas are among its uses. The back of this grade is of paintable quality and, if minor defects are filled, it can be finished to virtually a defect-free appearance.

Interior grade B-D plywood, known as Plybase, is an entirely new grade with face plies of the same paintable quality as the back in the A-B grade just described. Its tight solid face is intended to provide a backing for use under linoleum, but it may also prove suitable as a base for wallpaper or for canvassed and painted walls.

Softwoods other than Douglas fir which are available for many of the same uses include ponderosa pine, knotty western white pine, and Sitka spruce.

Hardwoods

Hardwood plywood for interior use is classed as **Types II (Water resistant), and III (Dry bond)**, in Commercial Standard CS 35–49. Unlike fir plywood, which is all veneer, hardwood plywood may be of all veneer or of lumber-core construction (Table 3). Its description is exceedingly more complex than that of Douglas fir plywood in that hundreds of woods, both domestic and imported, are available as face veneers, many of them characterized by wide variations in appearance both as a result of natural growth variations and of different methods of cutting.

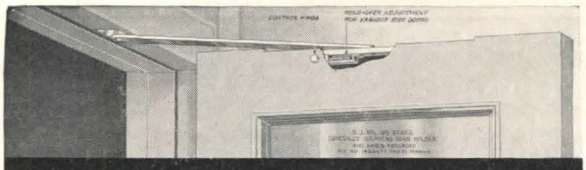
In general, the straight grained, less highly figured woods are rotary cut or flat-sliced to obtain plain face veneers, often of attractive color and texture, or cross-band and core stock. Woods characterized by interlocked or other irregular grain are usually quarter-sliced or back-cut on a staylog to reveal beautiful stripe, mottle or flake figures. It is with veneers of the latter type that "back-matching" or "slip-matching" of veneers from the same original flitch to produce panel faces of beautiful symmetry or remarkable uniformity is most successful.

Hardwood plywood is specified as to species and grade of face and back veneer. There are four grades of hardwood veneer: **Grade 1 (Good)** veneer specifications vary slightly from species to species, but may be illustrated by the requirements for comb-grain white oak: veneer may be sliced or sawn, each face matched for color and grain at the joints. A few small burls and pin knots (less than ¼ in. diam.), small mineral streaks, and inconspicuous small patches are permitted. Other defects such as knots other than pin knots, discolorations, worm holes, and splits are not permitted in Grade 1. Sapwood is excluded in the oak specification but is admitted in many species without limitation.

Grade 2 veneer covers all species. Matching for grain or color is not specified. The principal quality required is freedom from open defects and decay. Mineral streaks, stain discoloration, patches, and sapwood are not considered defects in this grade. This grade is the minimum adapted to exposed surfaces for interior construction.

Grade 3 permits sound tight knots and burls, knot holes, bark pockets, and splits or open joints of limited size, and **Grade 4 (Reject)** tolerates knot holes up to 1½ in. diam. and comparable open defects. Grades 2 and 3 are commonly employed in plywood as inner plies and backs, although Grade 4 veneer is sometimes used as backs.

Each hardwood is characterized by its combination of color, grain pattern, texture, and figure. In addition, many display a wide variation in veneer characteristics.



G-J 100
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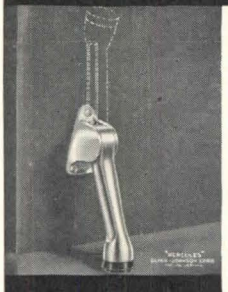
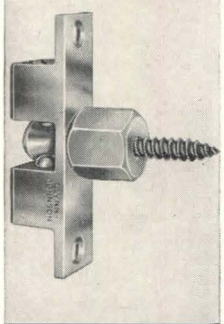
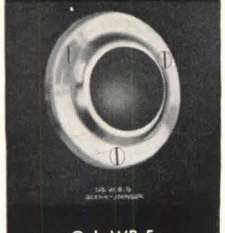


G-J No. 4
Hercules Door Holder



G-J 21
Flush Type
Door Holder



G-J WB-5
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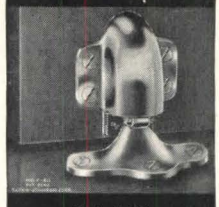
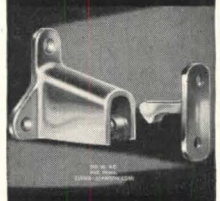


G-J F-40
Door Holder
and Bumper



G-J W-40
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INTERIOR PLYWOOD: 4—Species, Installation

By Frederick F. Wangaard

Associate Professor of Forest Products, Yale University

Some of the more important hardwood plywood species appear in the following tabulation which, although far from complete, may serve as a guide in the selection of plywood from the standpoint of architectural treatment of the material.

Light colored woods

Plain

Selected white gum
Yellow poplar

Variegated figure or grain pattern

Mild

Selected white birch
Selected white maple
Rotary-cut or plain-sliced oak
Duali
Magnolia (Ailon)

Pronounced

Curly maple
American elm

Stripe figure or grain pattern

Mild

Comb-grain oak
Korina (Limba)
Primavera
Bayott
Bosse
Iroko

Pronounced

Quartered Philippine mahogany (White lauan, Almon, Bagtikan)
Avodire
East Indian satinwood
Zebrawood

Dark colored woods

Plain

Selected red gum

Variegated figure or grain stain

Mild

Selected red birch
Plain-sliced mahogany (African or Central American)
Plain-sliced walnut

Pronounced

Figured walnut
Brazilian rosewood
Figured mahogany (African or Central American)
Brown ash
Kenya

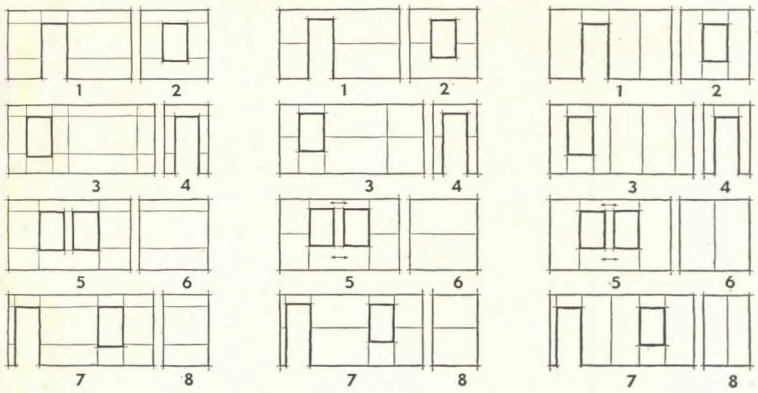
Stripe figure or grain pattern

Mild

Quartered walnut
Paldao

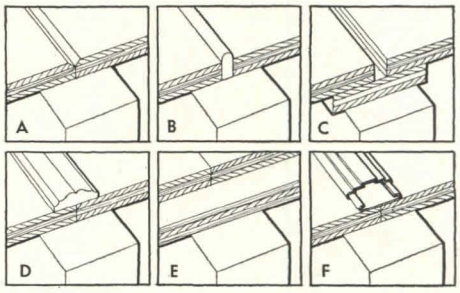
Pronounced

Quartered figured red gum
Quartered mahogany (African or Central American)
Quartered Philippine mahogany (Red lauan, Tanguile)
Bubinga
Orientalwood
East Indian rosewood
Sapele
Andiroba

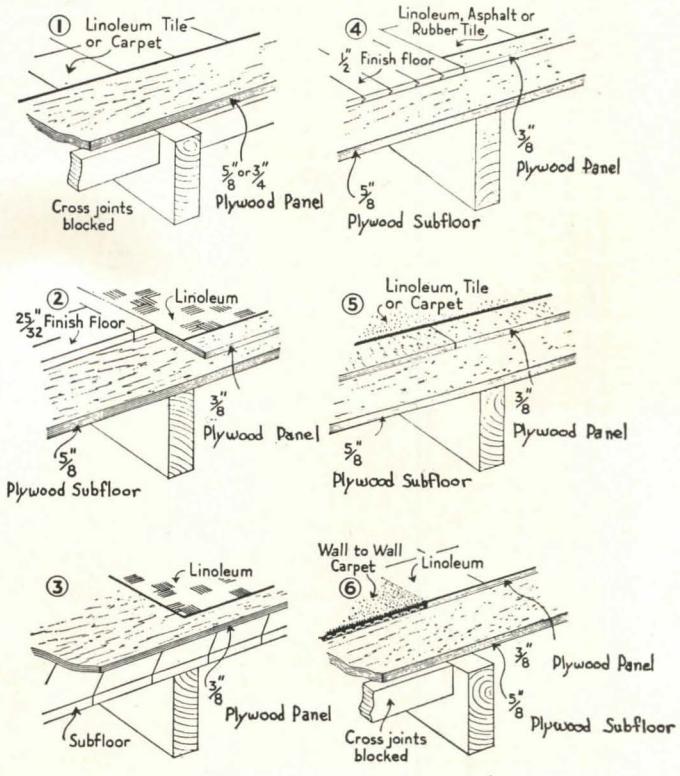


Variations for handling wall panels: right, vertical arrangement; center, two-panel horizontal arrangement; left, combination arrangement. Vertical joints are best placed at all openings, and wall spaces divided in orderly pattern. When width of opening exceeds 4 ft, panels are often placed horizontally

Suggested plywood joint treatments include: **A.** *"V" joint formed by beveling panel edges.* **B.** *Inset bullnosed molding for raised joint.* **C.** *Recessed joint.* **D.** *Standard wood molding over butt joint.* **E.** *Plywood sheathing used as nailing or gluing base.* **F.** *Snap-on metal molding.*



Plywood floor construction details include use of the Plypanel or Plybase grades of Douglas fir as combined subfloor and underlayment for linoleum, tile or carpeting (1); the use of the unsanded Plyscord grade as sub-flooring with wood strip finish flooring (2); and combinations of Plyscord subflooring and Plypanel or Plybase underlayment with various types of floor covering (3–6)



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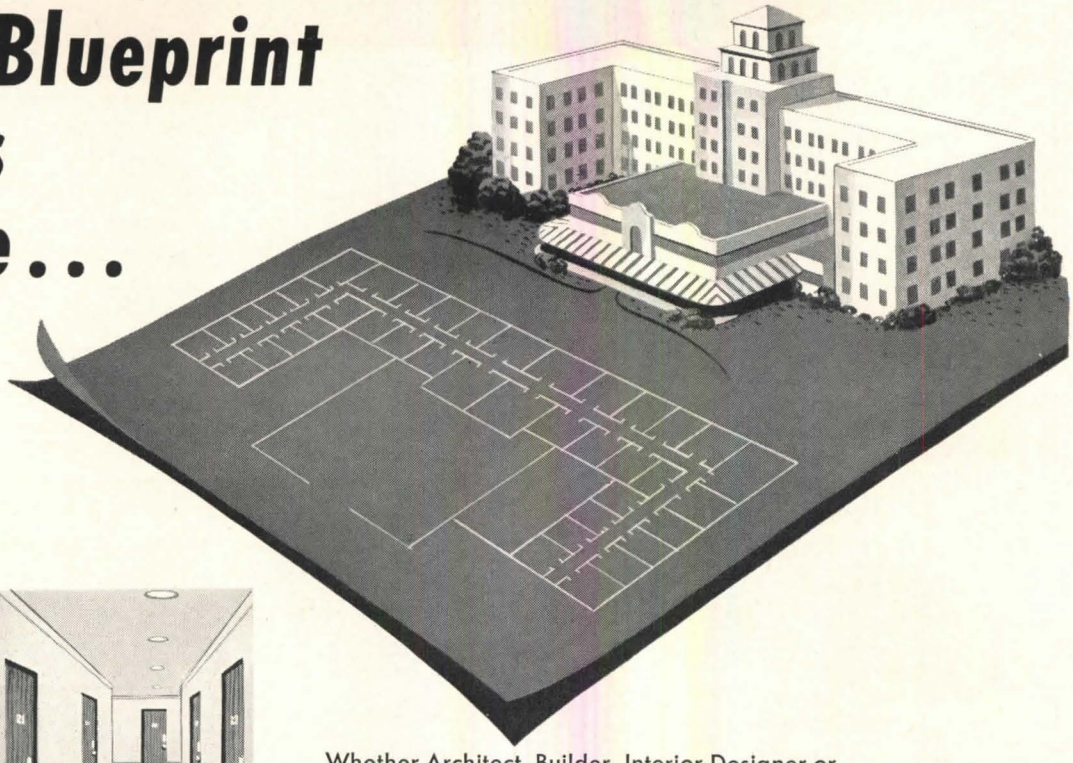

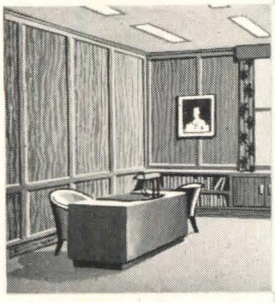

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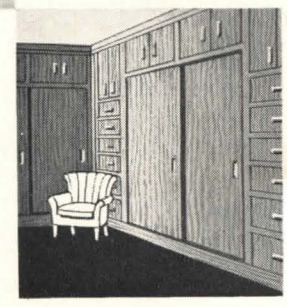

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INTERIOR PLYWOOD: 5—Finishes

By Frederick F. Wangaard

Associate Professor of Forest Products, Yale University

Plywood is adapted to a wide variety of finishing treatments including natural, stained, blonde, enameled, or painted finishes, or it may be covered with wallpaper. The most distinctive effects are, of course, obtainable only with finishes that permit the natural beauty of wood to be revealed.

Modern finishing treatments for plywood emphasize (1) the natural effect of the grain, color, and figure of the wood obtained through clear finishes or (2) the light effects which may be achieved without losing the distinctive characteristics of texture, grain, and figure by subduing the normal grain contrast of the wood with pigmented sealers. Prior to finishing, all nails should be countersunk and the holes filled with wood putty of matching color. The panel is then lightly sanded with 2/0 sandpaper and wiped clean.

Recommended finishing schedules vary with the species, but are illustrated by the following examples:

1. Walnut: Light natural finish. A coat of clear brushing lacquer is first applied. This coat should be steel wooled after drying (3–4 hours) and a second lacquer coat applied. This second coat is also rubbed with steel wool when dry and then rubbed with a good paste wax. A full finish, involving a third coat of lacquer, may be desired on trim or doors where heavy wear is anticipated.

2. Rift white oak: Blonde finish. Following preliminary sanding, a white pigmented resin sealer, which has been thinned 10–20 per cent with turpentine or mineral spirits, is brushed on the plywood. After setting for 3–5 minutes, it is rubbed into the pores of the wood, wiped clean, and allowed to dry for 24 hours. The surface is then lightly sanded with 2/0 sandpaper and finished with two coats of lacquer and wax as described for walnut.

Finishing recommendations for other hardwood species vary in certain details from the relatively simple treatments described here and are available through plywood dealers. It is advisable, in any case, to sample any prescribed finishing treatment on scrap pieces of plywood before starting the job.

Light stain-glaze finishes which subdue the normal grain contrast of the species are very popular and effective finishing treatments for Douglas fir plywood. Steps in the treatment include (1) Application of interior white undercoat paint thinned with turpentine in the ratio 1 part undercoat to 1 part thinner. Within 10–20 minutes excess undercoat is wiped off with a cloth following the grain to attain the desired show-through of grain. When the surface is dry, it is lightly sanded with fine sandpaper. (2) A coat of thinned white shellac or clear resin sealer, the surface is again lightly sanded when dry. (3) Application of a color coat which may be a tinted interior undercoat, thinned enamel, color in oil, or a light stain. Only a thin color coat is applied and wiped or dry-brushed to the desired appearance. The surface is again sanded lightly when dry. (4) A final coat of flat varnish is then applied, and after drying, it is buffed with 3/0 steel wool.

Variations of the foregoing method include substitution of a white pigmented sealer (applied as described for blonde white oak) for steps 1 and 2. Another possibility is the elimination of step 1 (the white undercoat), otherwise following the procedure outlined.

A simple one-step finishing treatment for Douglas fir consists of a coat of stain wax, which is applied with a cloth or brush. This is wiped down after a few minutes to the desired shade.

The basic procedure for obtaining a **"bleached" or blonde finish** with Douglas fir consists of the application of thinned white undercoat which is wiped down following the grain to the desired tone before it becomes tacky. After drying, the surface is lightly sanded and finished with a coat of clear shellac, flat varnish, or clear lacquer.

The only maintenance normally required for finishes of the types previously described is an occasional application of wax.

Highest quality enameled walls without visible joints are obtained by the following treatment of Douglas fir or gum plywood. For this type of finish, panels should be butted together closely and all nail holes, hammer marks, and joints filled with Swedish putty. The wood is next primed with thinned flat white oil paint followed by the application of inexpensive unbleached muslin (tobacco cloth grade). The muslin is applied similarly to wallpaper using ordinary wallpaper paste, which has been strained to remove lumps. After drying, a coat of glue size is brushed on. Any conventional enamel finishing system may be employed satisfactorily over this base. This type of treatment is especially desirable in kitchens and bathrooms.

Conventional wall and woodwork **paint finishes** are, of course, used successfully on plywood walls and built-ins. When water thinned paints are used, the plywood should first be sealed with a clear resin sealer, shellac, or a flat white paint to prevent raised grain.

Wallpapered walls require the close butting of plywood panels, which are commonly of Douglas fir, but may include some of the more economical hardwoods such as gum. Joints should be filled with Swedish putty and the surface primed with a thin flat white paint. The surface is next coated with wheat flour paste to which gelatin glue size has been added. Next is applied a layer of ¾-pound deadening or lining felt, which is treated with the same paste and size. After butting the felt neatly at the joints, and rolling it smooth, wallpaper may be hung in the usual manner, using ordinary wheat flour paste.

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BETTER CLASSROOM DAYLIGHTING—Well-illustrated, simply-written, 16-page guide based on two years of research by well-known Lighting Expert R. L. Biesele.

FENESTRA HOT-DIP GALVANIZING—Illustrated booklet showing how Fenestra Hot-Dip Galvanizing makes Fenestra Steel Windows *stay* new.

ngineered to cut the waste out of building

Detroit Steel Products Company
Dept. AR-11, 2252 E. Grand Boulevard
Detroit 11, Michigan

Please send me:

- ☐ Better Classroom Daylighting
- ☐ Fenestra Hot-Dip Galvanizing

Name_____

Address_____

PRODUCTS

(*Continued from page 189*)

Juvenile Furniture

A complete line of children's furniture called *Swing Line* is now being marketed. Designed by Henry P. Glass, it is reported to employ several features new in the field. These include bright colors, said to help educate children by color association to keep things neat; friction-free swinging drawer bins to allow the child to see and reach what he wants without the danger of drawers falling on his toes; modular design, permitting units to be stacked in a variety of ways;

Children's furniture line has bright colors, safety and sectional features

and bent corners to eliminate accidents caused by sharp edges. Drawers swing on wooden dowel hinges, construction is of tempered masonite with several coats of lacquer. All the units are scaled to children's size, tables, desks, chests, etc., being from 21 to 23 in. high. Units available include desk, wardrobe, table and stools, toy chest, bench, bed, and flexible bookcases. Fleetwood Furniture Corporation, Grand Haven, Mich.

New Flooring Material

Crystaltex Tile, a new and tested flooring material, gives an interesting effect in heavy gauge linoleum. Useful in either residential or commercial buildings, it can be obtained in fieldstone grey, clove brown, camel sand, granite white or alpine green. It has a speckled appearance and is claimed to have durability and low maintenance cost. Available in tile form measuring 9 by 9 in. and of $\frac{1}{8}$-in. thickness, its Neofelt back

(*Continued on page 206*)

FOR 2, 3, OR 4-STORY BUILDINGS • HEAVY-DUTY SERVICE

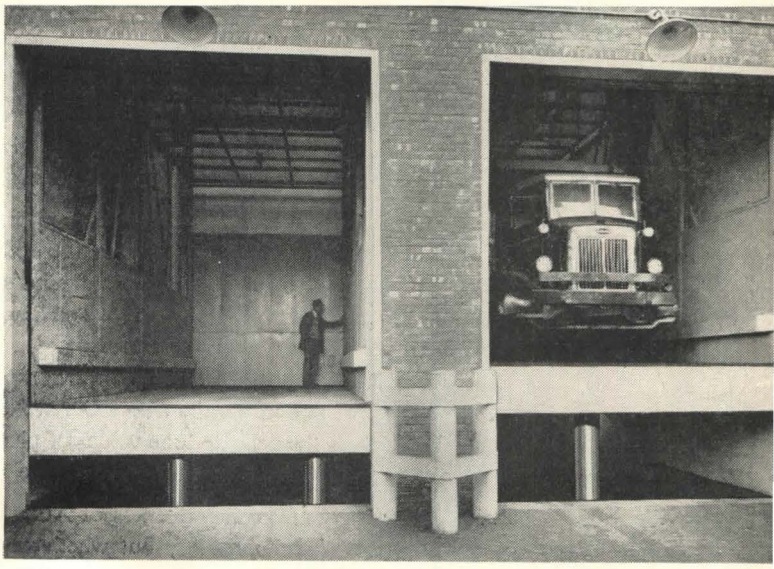
Oildraulic automatic floor leveling accurately positions the car to each landing. This is a "must" for power vehicle handling. Exact floor stops minimize shock during loading; there are none of the jolts caused when the elevator car is above or below the landing.

Rugged car construction is essential for freight service. Oildraulic freight elevator cars have deep-formed members, electrically welded. Bolsters, stiles and other parts are reinforced and braced to withstand stresses and strains. Every car is accurately engineered to do the job for which it is ordered, whether it be a small 1,000 lb. unit for packaged goods or a 50,000 lb. job to handle power vehicles with heavy loads. Manual or motorized car gates furnished as specified.

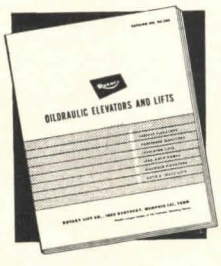
Rotary gives you the new Rota-Flow power system for smoother, quieter, lower-cost service

Rota-Flow, the revolutionary new hydraulic power transmission system, moves Rotary Oildraulic Elevators on a continuous, pulsation-free column of oil. Rota-Flow eliminates vibration and pumping noise, and operates with greater efficiency than any other hydraulic power unit.

Combined with the Rota-Flow power unit to give perfect operation is the Oildraulic Controller, an exclusive patented Rotary development. This remarkable device combines the functions of seven separate control valves and carries out the "instructions" of the electric control panel.



▪ Over 50,000 Rotary Oildraulic elevators and lifts are now serving major companies and building owners throughout the nation. Our coast-to-coast organization offers the most complete engineering and maintenance service in this field.



Write for A.I.A. File

See Section $\frac{33a}{Ro}$ in Sweet's Architectural File and write us for catalog and complete information on Rotary Oildraulic Elevators. Our Engineering Department will be glad to work with you on preliminary layouts and specifications. No obligation, of course.

ROTARY LIFT CO., *1007 Kentucky, Memphis 2, Tenn.*

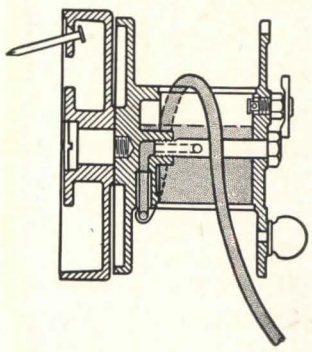
PRODUCTS

(*Continued from page 200*)

is said to enable easy installation or removal — eliminating the necessity of applying it over lining felt. Sloane-Blabon Corp., 295 Fifth Ave., New York 16, N. Y.

Leveling Instrument

Hydrolevel, a leveling instrument designed for use in the construction field, is said to be based on a new application of the principle that a liquid seeks its own level. The unit consists basically of a combination reservoir and reel to which is attached a tube terminating in a level sight and marker. The manufacturer describes the operation as follows: When the reservoir-reel is hung or placed, the liquid level is established, and when the gauge line is matched with this level, all inscribed marks, being related to the same liquid level, are level with each other. Transparent material



Gravity principle of liquid is used to operate new level device

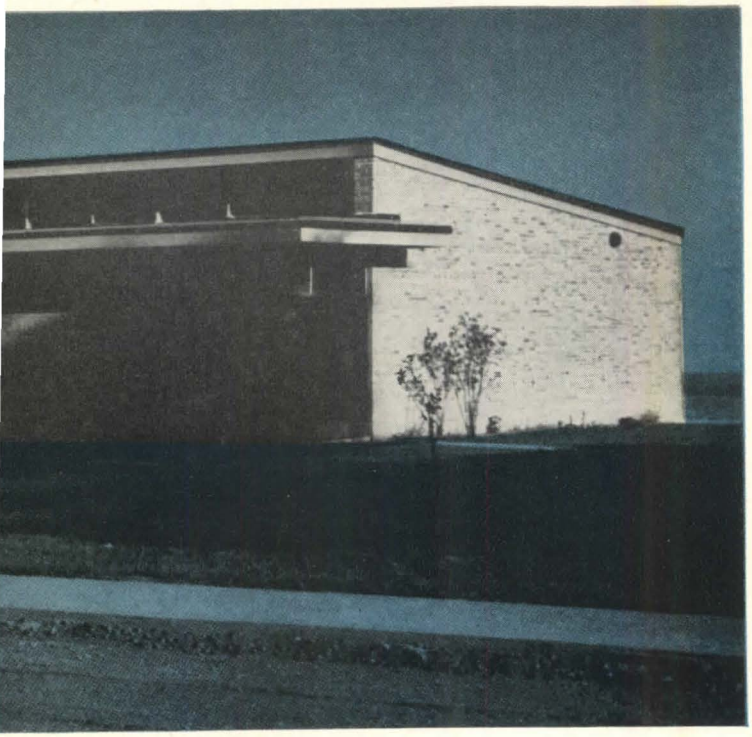
is used in the component parts so that the operator can see easily that enough liquid is in the reservoir, and that no large air bubbles are in the tube. With these precautions, and under normal conditions, level points are said to be quickly and accurately established. The device can be operated by one man, and since there are no sensitive parts or adjustments and no figures to be read, it is said to reduce to a minimum the chances for error. Construction is chiefly of aluminum alloy and plastics. Hydrolevel, 53 De Soto Ave., Ocean Springs, Miss.

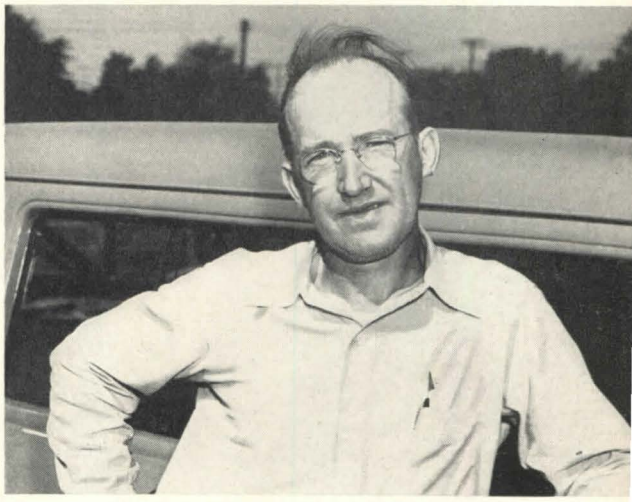
(*Continued on page 210*)

AND CONTRACTOR

tell how they use Sweet's File to select specify and buy

J. R. F. Swanson
Swanson Associates, Architects
Bloomfield Hills, Michigan





Paul Nielsen
J. C. Nielsen Company
Royal Oak, Michigan

"More installation data needed."

says Paul Nielsen

"Sweet's File is our building products Bible, and our first source of information on all the products we buy. Whenever we need product information, in the office or out in the field, we turn to Sweet's immediately. We know that we usually can find out what we need to know about specified materials, and the name of the local supplier.

"Ours is a small firm, relatively speaking, and we have neither the staff nor the space to maintain an up-to-date file of the catalogs and throw-away sheets that are mailed to us. With practically all reputable manufacturers' catalogs right at our finger-tips in Sweet's, there isn't any reason to.

"One thing we would like to see more of in the catalogs in Sweet's is installation data. We really need clear-cut dimensions, photographs and drawings which will help our field men coordinate the work of the various trades. A good catalog, that tells you all you want to know and is easy to find your way through, makes a good impression. Where we have a choice of products that will do a specific job, we naturally turn to the product that is the easiest to get the dope on and the easiest to buy."

Catalog Service

DIVISION OF F. W. DODGE CORPORATION
119 WEST 40TH STREET NEW YORK 18, N. Y.

PRODUCTS

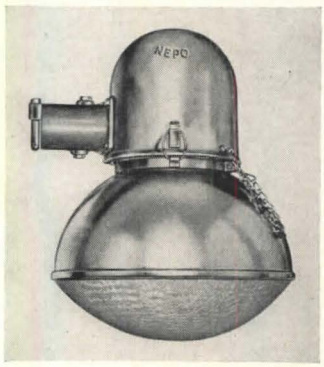
(*Continued from page 206*)

Plywood Wall Panel

Plankweld, pre-finished plywood wall panel which has been previously available only in birch and oak, is now being manufactured in Philippine mahogany and knotty pine. United States Plywood Corporation, 55 W. 44th St., New York 18, N. Y.

Mercury Vapor Floodlight

Designed for exterior use where concentrated high-intensity light is required, the *Nepo* mercury vapor floodlight is reported to incorporate design features which lead the manufacturer to recommend it for installations where such illumination has not been previously employed. Its successful applications cited include a variety of display and protective lighting installations as well as illumination of large areas and other such areas. The unit is available with a number of brackets and pole and clamp assemblies which are said to make



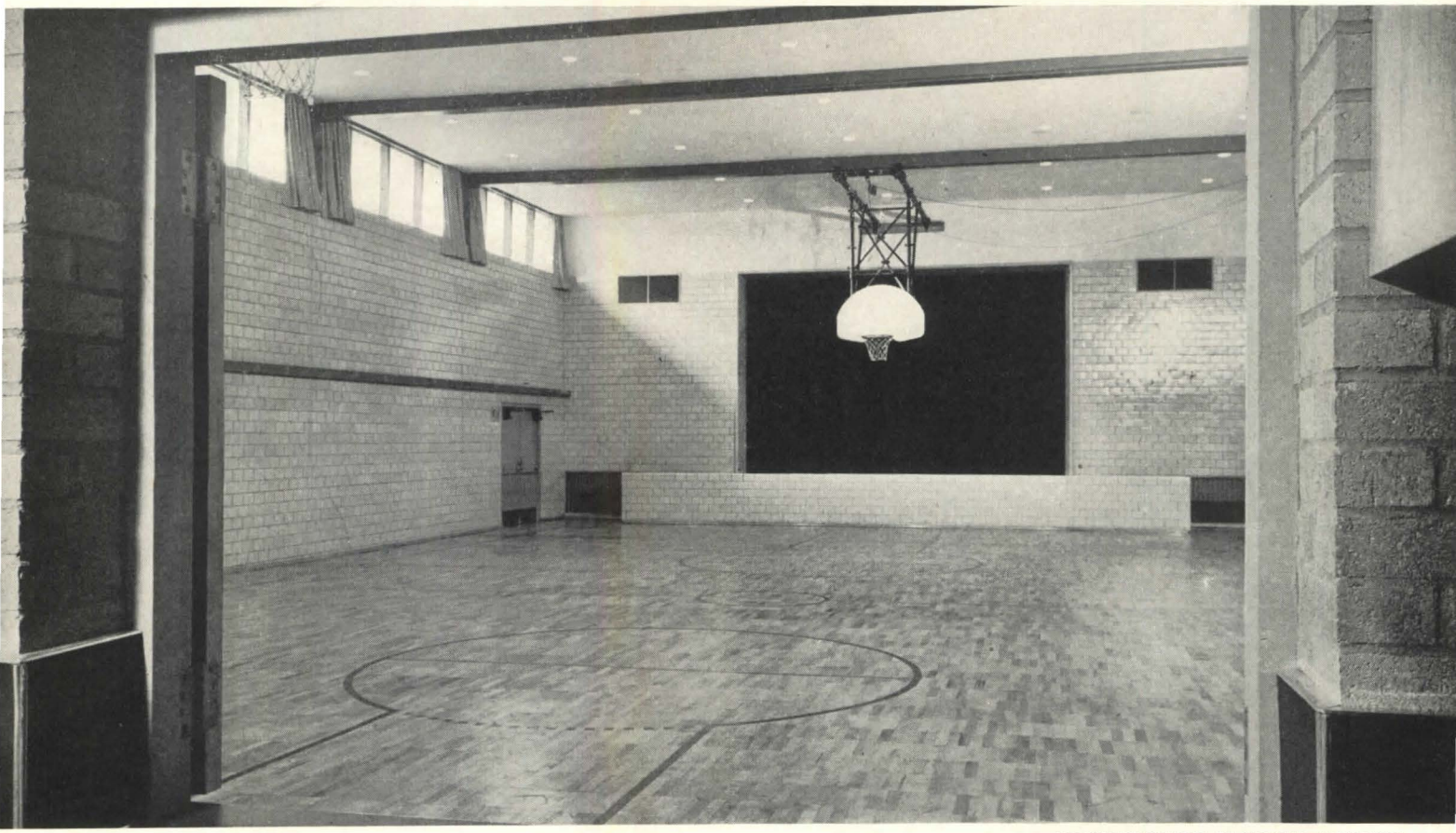
Mercury vapor floodlight is designed for high-intensity exterior use

it adaptable to a great many installations. It has a polished aluminum reflector spun over the glass bowl and permanently sealed to it, reportedly affording increased safety and cleanliness. The bowl is of outdoor crystal glass, the slipfitter and hood of cast aluminum. The unit is described as rustproof and weatherproof. It is designed for use with EH 1 and JH 1 color-corrected lamps, but when equipped with a special socket

(*Continued on page 212*)

FOR THE **GYM-AUDITORIUM** IN THIS RICHFIELD, MINNESOTA SCHOOL

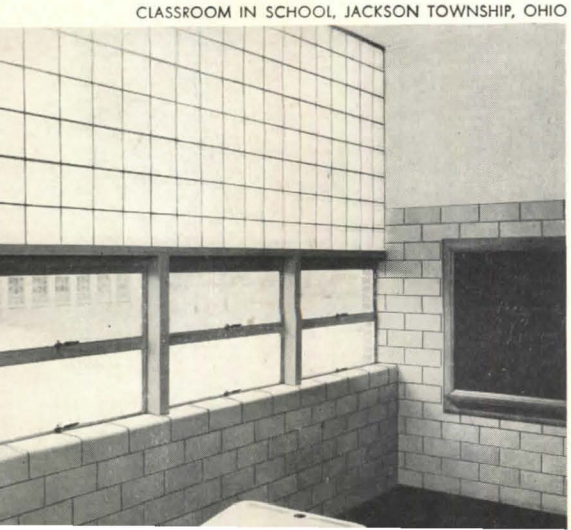
·Good Looks ·Durability ·Easy Maintenance



ELEMENTARY SCHOOL IN RICHFIELD, MINNESOTA

It's STARK GLAZED FACING TILE

CLASSROOM IN SCHOOL, JACKSON TOWNSHIP, OHIO



It *looks* like a gymnasium—and it is. But here, on any school day, you could see hundreds of youngsters at assembly, at play, at indoor lunch.

That means it's a multi-purpose interior that must take plenty of punishment, *and shrug it off!*

Architects have designed it to do just *that*. For example: the walls. They are Stark's Glazed Facing Tile—resistant to the roughest usage, easy to clean and *keep* clean, never needing painting or redecorating!

Produced in modular sizes, Stark's Facing Tile builds a *wall* and *finish at one time*—goes up fast—saves construction time and cost.

Permanently glazed, Stark's Facing Tile is adaptable to many uses. It is impervious to dirt and grease, is easily cleaned with soap and water, stands up under heavy school traffic, helps create ideal lighting conditions.

These same advantages of Stark's Glazed Facing Tile also make it the ideal material—both for new construction and remodeling—in industrial plants, hospitals, institutions, public and commercial buildings. See our Sweet's Catalog 4f-St.

OUR NEW BROCHURE on Modular Masonry is available to architects, engineers, contractors, building owners and administrators. It contains much valuable information, and will be sent free to you upon request. Write Dept. AR-11.

FTI

STARK CERAMICS, INC.

(formerly The Stark Brick Co.)

Canton 1, Ohio

14305 Livernois Avenue . . . . Detroit 4, Michigan

15 East 26th Street . . . . New York 10, N. Y.

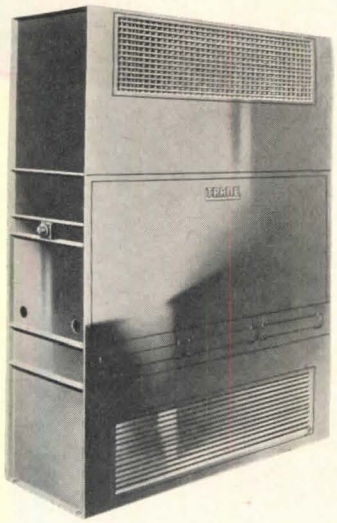
PRODUCTS

(*Continued from page 210*)

bracket may be used with the AH 1 lamp. Nepo Manufacturing Company, 527 So. Wells St., Chicago 7, Ill.

Volume Ventilator for Schools

The *Trane Volume Ventilator*, a large capacity heating and ventilating unit designed for use in auditoriums, gymnasiums and other large spaces requiring tempered ventilating because of high occupancy, is now available in three basic types — floor, wall, and horizontal ceiling models. The ventilator is reported to be able to introduce, filter, heat and distribute up to 13,500 cfm of outside air. Fan and coil, filter, mixing box and discharge plenum are separate sections designed and built for use together which may be combined variously. This plus the availability of a variety of optional equipment such as mixing boxes, wall intake boxes and outlet grills is said to make the unit adaptable to a wide variety of installations. Standard equipment includes the manufacturer's non-freeze steam heating coils which are said to guard against freeze-up and to provide even heating and rapid elimination of condensation. Trane Company, La Crosse, Wis.

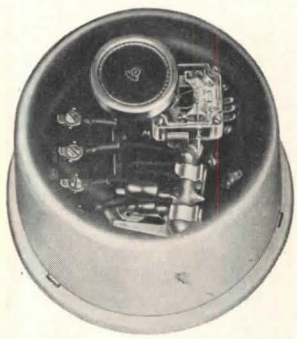


Volume ventilator is designed for large high-occupancy locations

Automatic Illumination Control

Described as being both weatherproof and simple, the *Model 1089 Weston* plug-in illumination control is now available. The unit is said to provide fully automatic "on-off" control of artificial lighting at predetermined light levels, eliminating the need for human judgment and arbitrary time schedules. It is recommended by the manufacturer for street, industrial and sign lighting, as well as for controlling lights on obstruction markers, airway beacons and air strips. Mounted in a standard weatherproof watt-hour meter glass case, the unit consists of a stable dry-disc type photocell, a sensitive relay which is

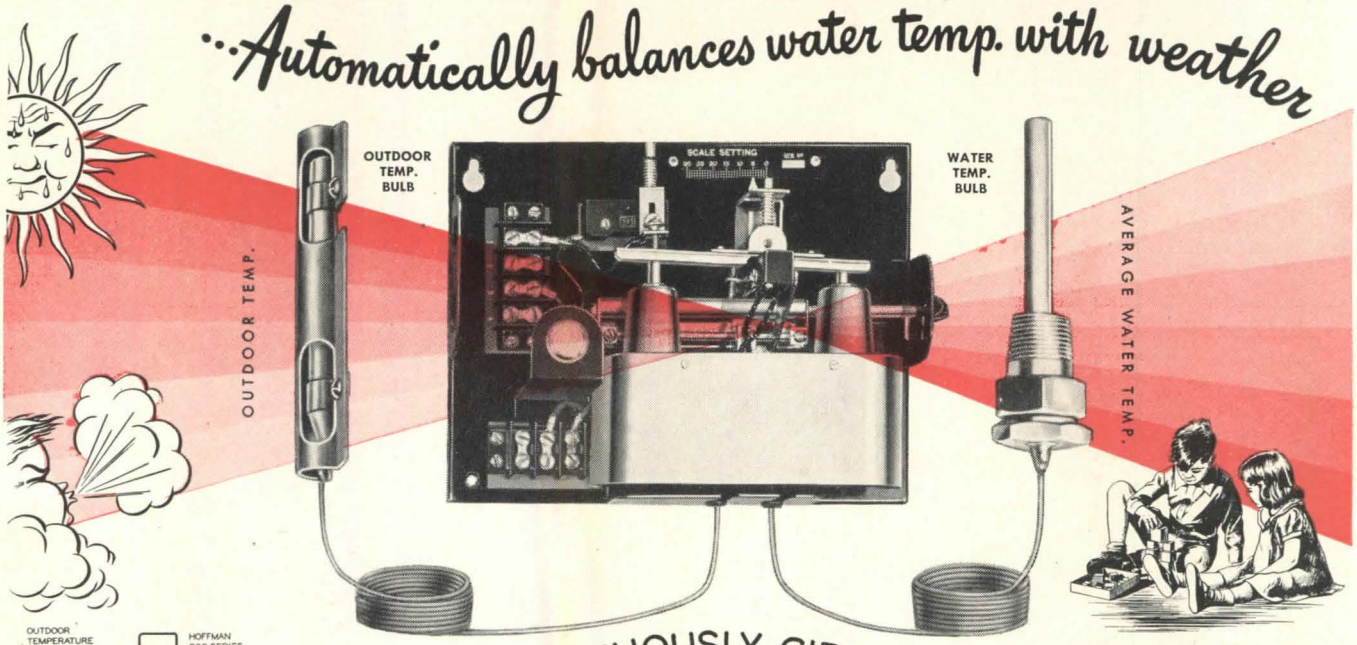
(**Continued on page 214**)

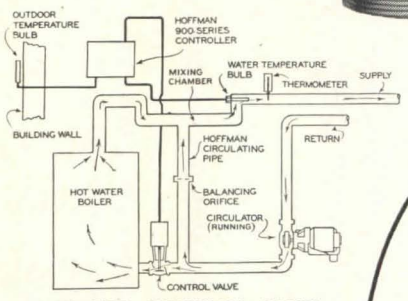


Plug-in control for light installations is completely automatic

PANELMATIC CONTROLLER

...Automatically balances water temp. with weather





HOW THE HOFFMAN PANELMATIC SYSTEM COMBINES CONTINUOUS CIRCULATION WITH WATER TEMPERATURE CONTROL

When the Control Valve is closed, continuously circulating water bypasses the boiler without withdrawing heat. When water has lost heat, as noted by the Water Temperature Bulb, the Panelmatic Controller slowly opens the Control Valve, permitting hot water from the boiler to enter the circulating stream. When sufficient hot water has been admitted to restore the proper temperature to the circulating water, the Valve is closed by the Controller. This cycle repeats automatically in balancing water temperature to weather changes.

CONTINUOUSLY CIRCULATED HOT WATER SYSTEM

Designed especially for AUTOMATIC HOT WATER

The Hoffman Panelmatic Controller is based on the fact that for every Outdoor Temperature there is a corresponding Supply-water Temperature, which must be *automatically maintained* in the heating units. The correct Supply-water Temperature, in the case of a panel heating system, or the output per sq. ft. EDR in the case of other forms of radiation, must be specified by the Architect or Engineer for *one Outdoor Temperature.* The Controller then *automatically* adjusts the Water Temperatures to balance any other outdoor conditions encountered. The following table illustrates several sets of conditions for a panel heating system.

Architect or Engineer to Specify			Factory Sets Controller		Controller Automatically Furnishes Supply Water at Temperatures Correct for Any Outdoor Temp. as Listed Below				
					Outdoor Temperature °F.				
Design Temp. °F.	Supply Water °F.	Room Temp. °F.	Scale No.	Supply Water °F. at Outdoor 32 °F.	−10	0	+10	+30	+50
					SUPPLY WATER TEMPERATURE °F.				
−10	150	70	11	108	150	140	130	110	90
0	150	70	13½	114	—	150	139	116	94
+10	140	70	14	115	—	—	140	117	94
−10	140	70	9	104	140	132	123	106	88
−10	160	70	13	113	160	147	137	115	92

When the outdoor temperature reaches 65°F., the Circulator automatically stops. The 65° factory setting was chosen because it is the basis for calculating degree days. If a different cut-out temperature is desired, it can be easily adjusted to individual requirements. Occasionally the actual heat loss differs from the calculated loss due perhaps to changes in construction. The Panelmatic Controller can be easily re-adjusted after installation according to simple, definite instructions furnished by the factory. Technical literature describing the Panelmatic System and sample specifications, gladly furnished on request.

HOFFMAN SPECIALTY COMPANY, Dept. AR-4
1001 York St., Indianapolis 7, Ind.

PIONEERED BY HOFFMAN

HOFFMAN PANELMATIC

Hot Water System Controls

PRODUCTS
(*Continued from page 212*)

operated directly by the photocell, a clock motor, mercury switch and limit switch. It has no phototubes, vacuum tubes, resistors or capacitors, and is said to require no stand-by power, drawing no current between on and off operations. Installation requires only plugging the unit into a standard watt-hour meter receptacle. It is reported to withstand adverse climatic conditions and to function at temperatures from 140 to −30 deg F. Weston Electrical Instrument Corp., 641 Frelinghuysen Ave., Newark 5, N. J.

Copying Machine

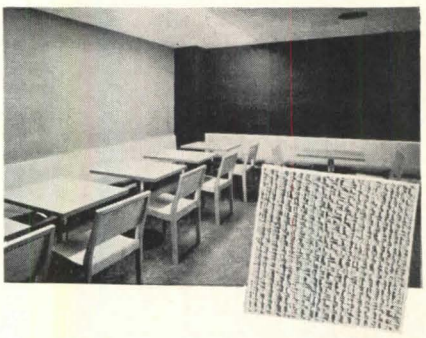
A new *Bruning Copyflex* copying machine features a wide printing width said to suit it especially for medium volume production of prints from tracings, engineering drawings, and other large-sized technical originals. The price is said to be lower than that of any other such

Copying machine features wide width to accommodate large drawings

machine in its volume range. It offers a 46 in. printing width with exposure speeds up to 95 in. per min. It requires no installation, and can be connected directly to a 60 cycle, 115 v AC line. 50 and 25 cycle machines are also available. The machine eliminates the need for special lighting, dark rooms, and extra ventilation or exhaust ducts. It reproduces directly from translucent originals. Charles Bruning Company, Inc., 100 Reade St., New York, N. Y.

Viny-Fused Fabrics

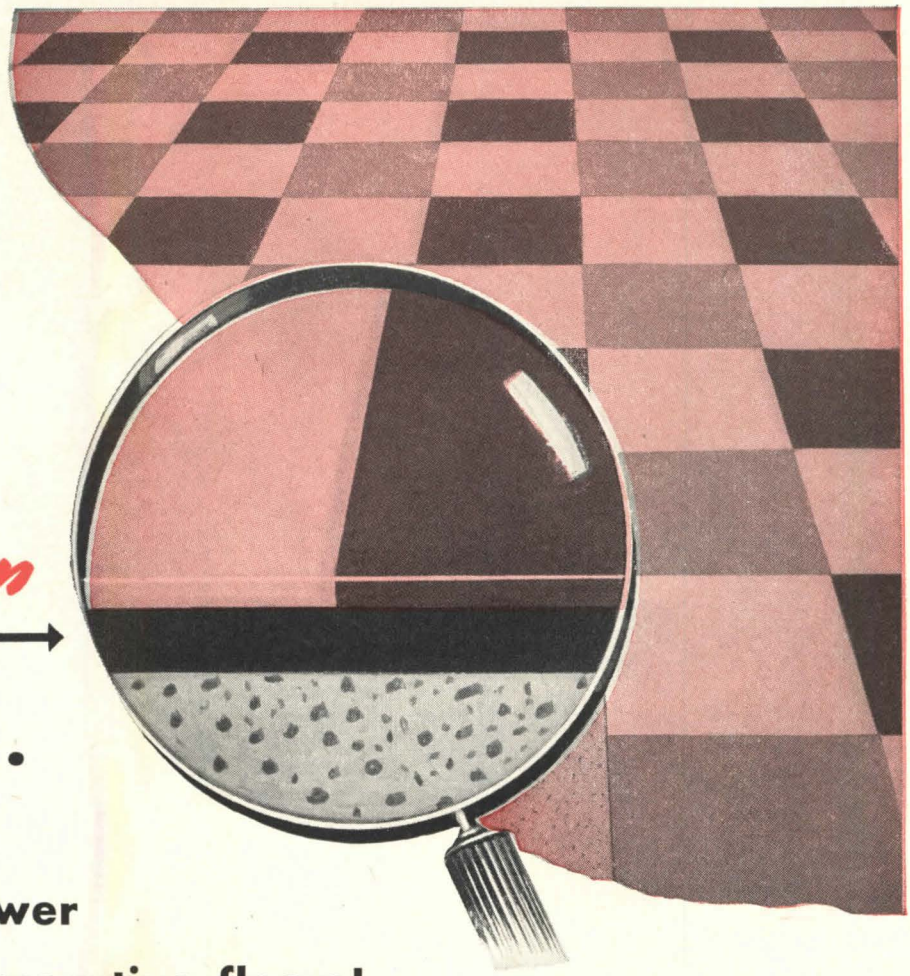
Fabrics that can be draped, pleated and folded, reportedly without cracking, but which have the wearing properties of plastic are now available. It is said of the fabrics that they will not scuff or fray and that they clean easily when



Plastic fabric (inset) is designed for use as wall covering

wiped with a damp cloth. Two patterns, *Madagaska* and *Bambu*, reproduce the texture of Madagascar straw and woven bamboo. Available in a variety of colors. L. E. Carpenter and Company, Inc., 130 W. 42nd St., New York 18, N. Y.

(*Continued on page 216*)



Look *Under* the surface...

...for the answer to better decorative floors!

Flintkote Mastic Flooring Underlayments will give you all the advantages you want

Under decorative floors—you want *resilience!*

You want a smooth, level base . . . resistance to shock . . . resistance to moisture.

You want effective *sound deadening.*

And you can get all of these advantages with flooring underlayments made with Flintkote Mastic Binders.

There are several different formulations of these mastics . . . asphalt- or rubber-bearing types.

These mastic underlayments can be laid in thick or thin sections. The ideal base or leveling course for old or new floors.

They're lightweight, resilient—quickly and easily troweled over almost any clean, firm surface.

(*For the HEAVY-DUTY requirements of work areas, be sure to get cold-laid Asphalt Mastic Floors made with Flintkote Flooring Emulsions.*)

We'll be glad to send you complete information about these quality flooring products. Simply write:

THE FLINTKOTE COMPANY, Industrial Products Division, 30 Rockefeller Plaza, New York 20, N. Y.

Atlanta • Boston • Chicago Heights • Detroit
Los Angeles • New Orleans • Washington

The Flintkote Company of Canada, Ltd.,
30th Street, Long Branch, Toronto, Canada.

FLINTKOTE *Products for Industry*

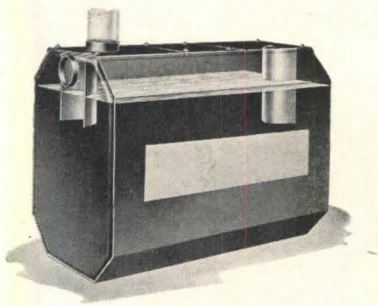
FLINTKOTE INDUSTRIAL PRODUCTS

PRODUCTS

(*Continued from page 214*)

Septic Tank

Said to meet all requirements of the new Commercial Standard CS 177–51 recently accepted by the U. S. Public Health Service, FHA, VA and many state and local health authorities, the model 1050 *San-Equip Master* septic tank is now available. Horizontal in



New horizontal design metal septic tank features ease of maintenance

design and made of heavy 14 gauge steel with electrically welded seams, the tank is designed with a length twice the width and with a 4 ft liquid depth. These are said to be the proportions considered most satisfactory for the thorough settling out and digestion of solids. Of 500 gal. capacity, it has an access opening at the top to facilitate inspection and permit pumping out without costly digging. Intake and outlet openings located at the ends are said to be baffled to reduce the possibility of clogging. Another feature conforming to the new standards is a bituminous emulsion coating on the inside, which is in addition to a heavy hot-dipped mineral asphalt coating applied both inside and out. San-Equip, Inc., East Brighton and Glen Aves., Syracuse 5, N. Y.

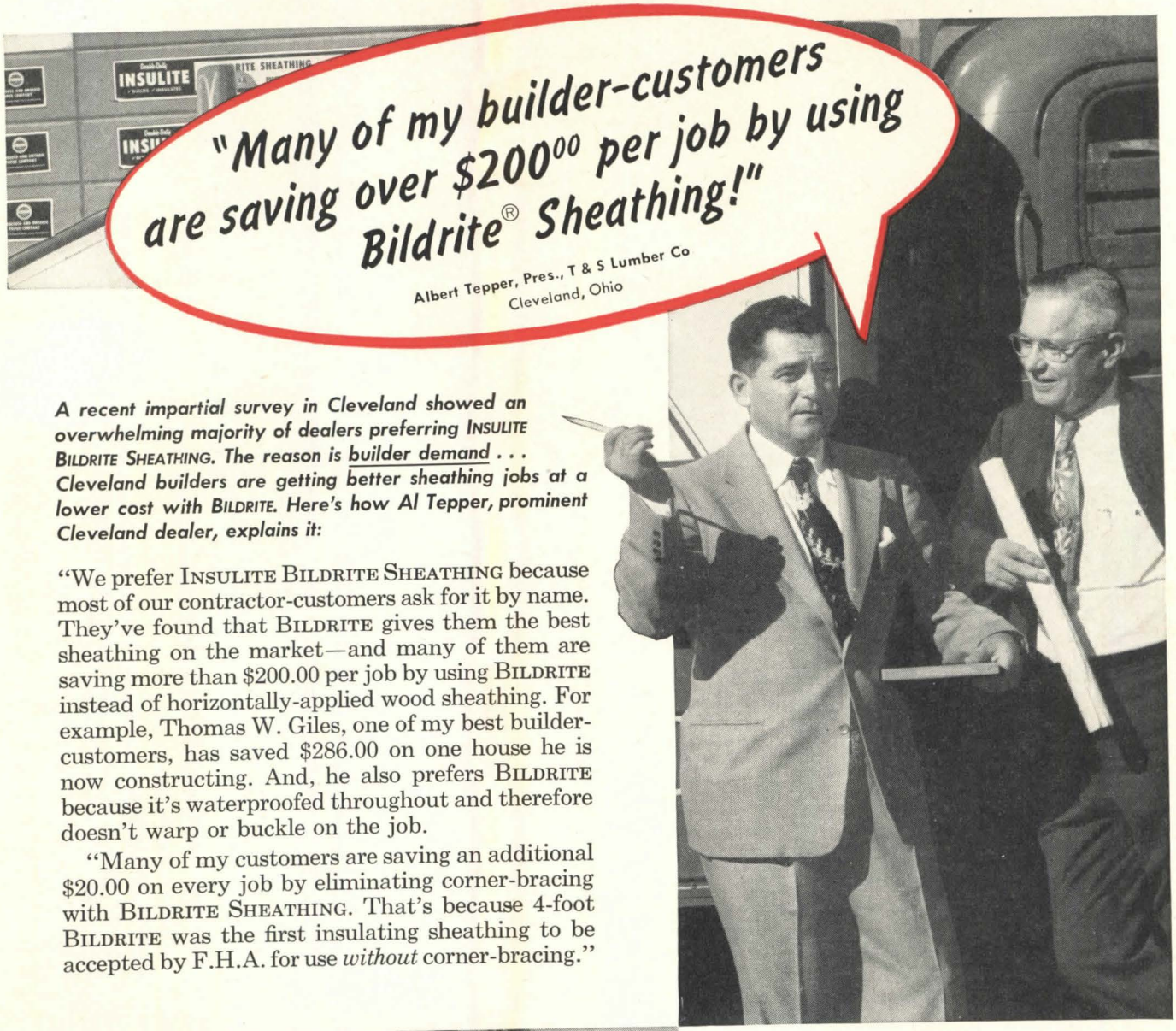
Hardwood Block Flooring

Medley Block, made of selected hardwood bonded to 30 lb asphalt-impregnated felt membrane, is said to be unusual in that it is flexible in both directions, which allows it to fit down firmly over minor imperfections in a subfloor. Designed primarily to be laid on con-

(*Continued on page 218*)

INSULITE® Leadership in Cleveland...

Survey shows DEALERS PREFER INSULITE 4 to 1 over next leading brand of insulating sheathing



A recent impartial survey in Cleveland showed an overwhelming majority of dealers preferring INSULITE BILDRITE SHEATHING. The reason is builder demand . . . Cleveland builders are getting better sheathing jobs at a lower cost with BILDRITE. Here's how Al Tepper, prominent Cleveland dealer, explains it:

"We prefer INSULITE BILDRITE SHEATHING because most of our contractor-customers ask for it by name. They've found that BILDRITE gives them the best sheathing on the market—and many of them are saving more than $200.00 per job by using BILDRITE instead of horizontally-applied wood sheathing. For example, Thomas W. Giles, one of my best builder-customers, has saved $286.00 on one house he is now constructing. And, he also prefers BILDRITE because it's waterproofed throughout and therefore doesn't warp or buckle on the job.

"Many of my customers are saving an additional $20.00 on every job by eliminating corner-bracing with BILDRITE SHEATHING. That's because 4-foot BILDRITE was the first insulating sheathing to be accepted by F.H.A. for use *without* corner-bracing."

More and more architects, everywhere, are passing INSULITE's savings and other advantages on to their clients by specifying BILDRITE SHEATHING. May we arrange to show you samples and give you complete information about BILDRITE and other quality INSULITE products? Just drop us a card at the address below.

Double-Duty INSULITE
✓ BUILDS ✓ INSULATES
Made of Hardy Northern Wood

INSULITE DIVISION • Minnesota and Ontario Paper Company
Minneapolis 2, Minnesota

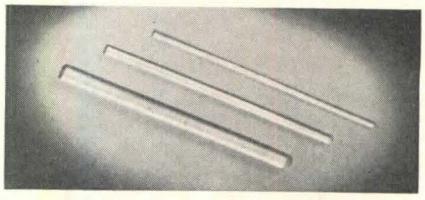
PRODUCTS

(*Continued from page 216*)

crete slab and plywood subfloors, it is applied in the conventional manner with cold mastic. The blocks are manufactured in two sizes, 10 by 10 by 5/16 in., and 9 by 9 by 13/16 in. H. G. MacDonald Co., Monrovia, Calif.

Plastic Rods

Dynakon-F, described as a high tensile strength material with above-average electrical and corrosion-resistant properties, is the material from which plastic



Plastic rods may be used as insulators or as structural members

rods in fractional sizes are now being manufactured. The rods are recommended for use as stand-off insulators, tension rods, supports in chemical equipment and structural members in corrosive atmospheres. They are said to be resistant to acid and mild alkalies as well as to salts and most organic solvents. Among electrical properties cited are arc resistance of 120 sec ASTM, dielectric strength of 280 v per mil, and power factor of 2.5. Dynakon Corporation, 5509 Hough Ave., Cleveland 3, Ohio.

Vaporizing-Type Oil Burner

A new development in vaporizing-type oil burners is announced by the Oran Company of Columbus, Ohio. Called the *Dual-Air*, the product is said to feature a new method of introducing air to the burner which reduces draft requirements as much as 20 per cent on natural draft and 67 per cent on forced draft. Approved by Underwriter's Laboratories, it is reported to be clean-burning, with almost total absence of soot. According to the manufacturer the new development combines the simplicity and low cost of vaporizing-type

(*Continued on page 220*)

Ford's new plant, at Hamburg, New York, is protected by a Koppers Built-Up Roof. The roof is over a million square feet in area, and is bonded for 20 years.

Architect: Albert Kahn Associates, Detroit, Mich.
General Contractor: Bryant & Ditwiler Co., Detroit, Mich.
Roofing Contractor: Arrow Sheet Metal Works, Inc., Buffalo, N. Y.

"BUY FOR THE FUTURE"—that's what the Ford Motor Company tells its customers. And Ford followed its own sound advice . . . bought a Koppers Roof for its new stamping plant at Hamburg, New York. Koppers has *guaranteed* the performance of the roofing materials in this huge roof for 20 years.

Koppers Roofs are famous for the way they last. And it's not surprising! For these roofs are built-up with layers of Koppers Approved Tarred Felt, cemented together with Koppers Old Style coal tar pitch, to form a continuous skin over the entire roof deck.

The felt imparts elasticity and tensile strength to the roof membrane. The pitch provides the element that enables Koppers Roofs to resist prolonged contact with water *without deteriorating*, and makes Koppers Roofs self-sealing if small breaks occur. Together, Koppers Old Style Pitch and Approved Tarred Felt make an unbeatable roofing combination.

Koppers Roofing Materials are available from coast-to-coast. Specify these materials, and your projects will have the best in built-up roofing. For full information and specifications, get in touch with us.

KOPPERS

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

DISTRICT OFFICES: BOSTON, CHICAGO, LOS ANGELES, NEW YORK, PITTSBURGH AND WOODWARD, ALABAMA

• SPECIFY KOPPERS FOR LONG-LIFE ROOFING •

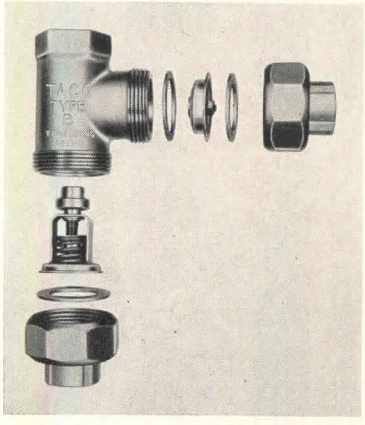
PRODUCTS

(*Continued from page 218*)

burners with advantages of more expensive types. Fuel savings of as much as 15 per cent are claimed, with improved pilot operation. The new burner will be incorporated in all the manufacturer's oil-fired floor furnaces and central heating systems, as well as in a new oil-fired conversion unit soon to be placed into production. Oran Company, 2222 So. Third St., Columbus 7, Ohio.

Tempering Valve

A new model *Taco Tempering Valve*, said to be an improved version of a previous model, is now available. Factory-set, the valve delivers water to faucets or plumbing fixtures at a temperature of approximately 140 deg F. It is supplied in two sizes, ½ and ¾ in., and is described as suitable for most residential as well as small commercial installations. It is recommended for



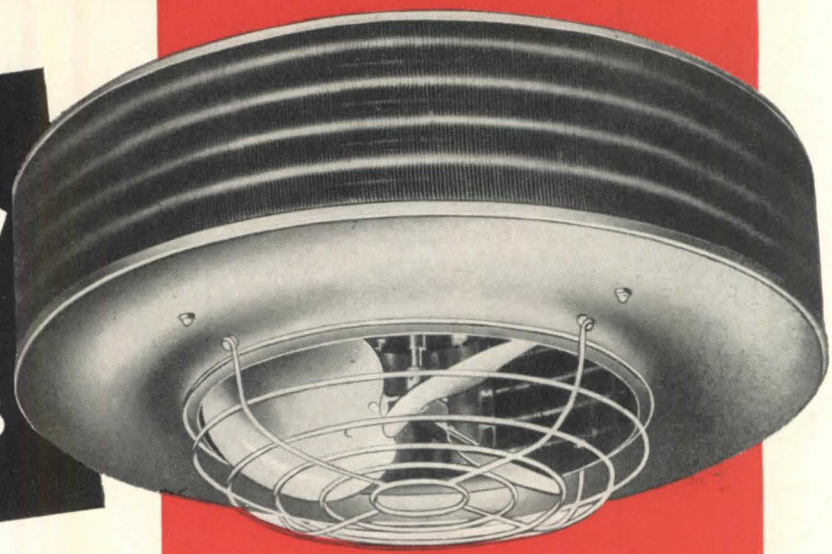
Tempering valve is factory set, delivers water to faucets at 140 deg F

dishwashing machines, since it is claimed to prevent high temperature from baking food particles on dishes. It employs a hermetically sealed thermostatic element which avoids the use of bi-metal, liquids and bellows, and is reported not to leak, corrode, tire or fatigue under normal service. The one-piece element is said to be easily replaced in a matter of minutes. Taco Heaters, Inc., 137 South St., Providence 3, R. I.

(*Continued on page 222*)

SAVE THE HOT AIR!

McQuay DOWN FLOW UNIT HEATERS



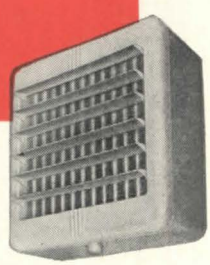
PROVED AND PREFERRED FEATURES!

- RIPPLE-FIN CONSTRUCTION
- DISTINCTIVE STYLING
- NON-FERROUS COIL
- STEAM OR WATER
- CERTIFIED RATINGS
- EFFICIENT PERFORMANCE
- MAXIMUM AIR THROW
- QUIETNESS RATINGS
- LONG LIFE

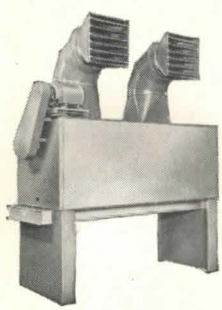
Save the hot air ordinarily wasted in buildings with high ceilings with a McQuay Down Flow Unit Heater. These vertical unit heaters have the famous Ripple-Fin Coils—providing peak heating efficiency—will lower your heating costs by circulating evenly and gently this normally wasted stratified air.

There are 22 Down Flow Units available to meet your exact requirements. Capacity range from 25,400 to 500,000 Btu per hour. Four styles of directional air diffusers are available to provide any desired air distribution.

Consult the McQuay representative in your city, or write McQuay, Inc., 1605 Broadway St. N.E., Minneapolis 13, Minnesota.



HORIZONTAL UNIT HEATERS



These unit heaters are offered for normal applications where horizontal air flow is desired. In 24 sizes with capacities ranging from 20,300 to 360,000 Btu per hour.

BLOWER TYPE UNIT HEATERS

For effective heat distribution over large open areas. Available in 8 sizes . . . in suspended and floor models, with one and two row coils; capacities from 20,600 to 1,600,000 Btu per hour.

McQuay INC.

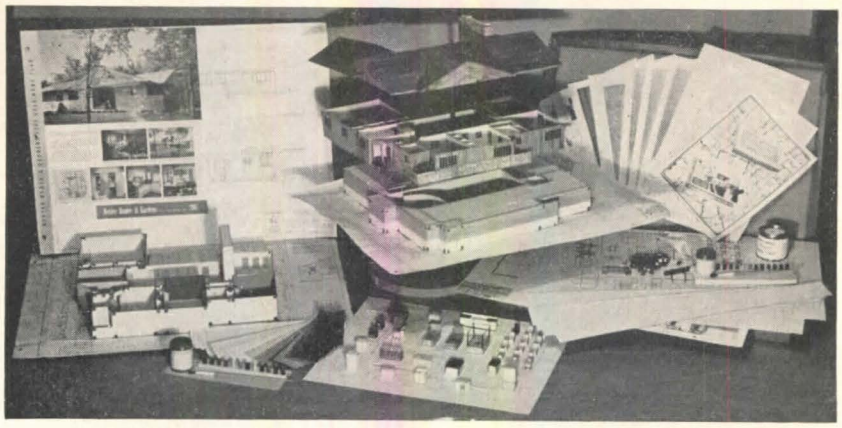
MAKE THE SEASONS COME TO YOU

HEATING • AIR CONDITIONING • REFRIGERATION

PRODUCTS
(*Continued from page 220*)

Architectural Scale Model Building Kit

An aid to architects, builders or prospective home owners is now available in the *Hoyt Rust Scale Model House Kit.* It is claimed that an accurate model of almost any style of building can be constructed on a blueprint or drawing,



New kit devised as means of building inexpensive architectural models

which may be set in the bottom of the box in which the kit comes. The model is scaled to ¼ in. equals 1 ft. Walls and partitions are made of ten-ply cardboard strips, cut to scale for an 8 ft ceiling. These are held in place by metal clips. Simulated doors and windows are provided, along with details of three roof pitches. Sheets of brick, stone masonry, siding and shingles are also included to finish the outside of the house. Simulated fireplaces, corner cupboards and shutters are also helpful, and there are 32 pieces of furniture plus bath and kitchen equipment to help in the placement of doors and windows. Hoyt Rust, 173 Marion St., Denver 3, Colo.

Glass in Construction

A new building designed by Lacy, Atherton and Davis, Architects, for the Port Allegany plant of the Pittsburgh Corning Corporation, employs some of the company's own glass products in its construction. Of special interest is the use of prefabricated cellular glass insulated sandwich wall units, consisting of two veneers of concrete with a core of *PC Foamglas*, a cellular glass insulation which is also being used alone for the insulation of the roof. These units will be cast in-the-flat on the building site and erected on the building's steel skeleton in various sizes, generally 12 by 4 ft sections. Some units are being cast with glass block panels in place. This construction method is expected to reduce cost, shorten construction time, and effect space savings within the structure. The building houses the company's Research and Development Division, Engineering Department, storage facilities and a machine shop. Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa.

(*Continued on page 224*)

Kentile walls provide important long-range economies

A. I. A. File #23-D

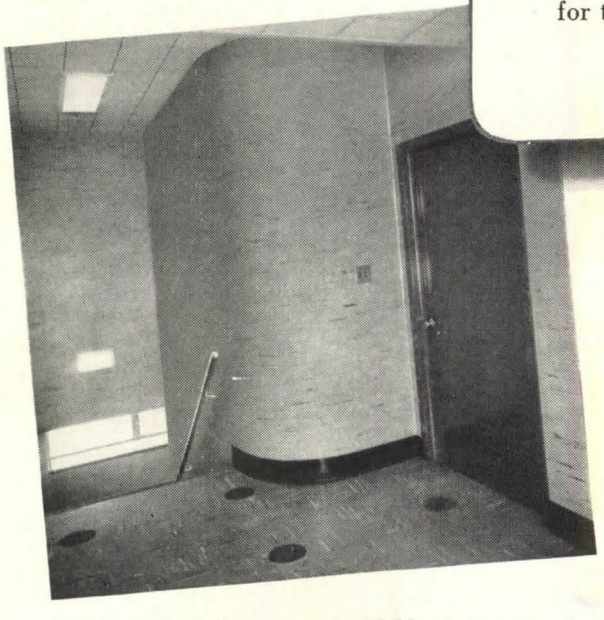
All of the well known advantages of colorful Kentile can be brought to Walls as well as Floors. Long life, permanent colors, ease and economy of installation and maintenance are some of the advantages that are making Kentile Walls favorites for residential and commercial installations everywhere.

RESIDENTIAL: The 26 modern colors add beauty and interest to any room . . . resist dirt and stain . . . clean simply, quickly and economically. The low initial cost plus the long life and simple upkeep make Kentile Walls the wise choice as well as the modern one.

Kentile can be used on kitchen and bathroom walls . . . with the exception of enclosed shower areas where installation is not recommended.

COMMERCIAL: Kentile is the perfect wall covering for schools, hospitals, public buildings . . . stores, offices and corridors. No matter how hard the daily wear, Kentile retains its attractive new look . . . surface dirt cleans off easily and thoroughly with merely mild soap and water.

Kentile can be applied over any smooth, firm wall surface with the Wall Tile Adhesive made expressly for that purpose.



The following literature is available on request and is designed to aid in the specifying of floors and walls for residential, commercial or industrial building or remodeling.

- ☐ Architects Specifications
- ☐ 16 Page Catalog — includes 4-color photos of Kentile installations
- ☐ Color Line Folder
- ☐ Kentile in Schools
- ☐ Kentile in Hospitals
- ☐ Recommended and Not Recommended Uses for Kentile

Please write the Kentile, Inc. office nearest you.
In Canada — T. Eaton Co., Ltd.

And when it comes to floors . . .
SPECIFY KENTILE BY NAME . . . *because of its*

. . . **appearance** — a complete range of marbleized colors in Kentile and SPECIAL Kentile. Also, feature strips, decorative inserts, edging and cove base.

. . . **installability** — Kentile can be applied over any interior smooth wood, metal or concrete surface . . . even below finish grade over concrete on fill in direct contact with the earth.

. . . **availability** — Over 3,000 Kentile dealers throughout the country assure prompt attention to your needs.

. . . **service** — Nine conveniently located Kentile, Inc. offices and a nation-wide system of trained representatives plus a comprehensive selection of technical literature, are available to help solve any flooring problem.

. . . **low cost** — Installed prices are lower than those of practically any flooring material; varying with size and condition of floor; colors and thicknesses chosen and freight rates. Accurate estimates are available from any Kentile dealer—listed under FLOORS in your classified phone directory.

KENTILE®

The Asphalt Tile of Enduring Beauty

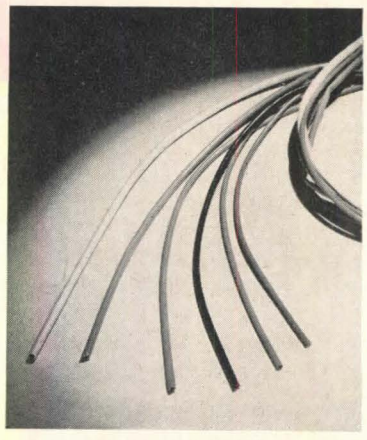
KENTILE, INC., 58 Second Avenue, Brooklyn 15, New York • 350 Fifth Avenue, New York 1, N. Y. • 705 Architects Building, 17th and Sansom Streets, Philadelphia 3, Pennsylvania • 1211 NBC Building, Cleveland 14, Ohio • 225 Moore Street, S.E., Atlanta 2, Georgia • 2020 Walnut Street, Kansas City 8, Missouri • 1440 11th Street, Denver 4, Colorado • 4532 South Kolin Avenue, Chicago 32, Illinois • 1113 Vine Street, Houston 1, Texas • 4501 Santa Fe Avenue, Los Angeles 58, California • 95 Market St., Oakland 4, Calif. • 452 Statler Building, Boston 16, Mass.

PRODUCTS
(*Continued from page 222*)

Plastic Wiring and Markers

Two products made of *Vinylite* plastic have recently been announced:

• Electrical insulating tubing and sleeving made of Vinylite resin plastisol and braided glass fibers, is said to provide sturdier insulation at the same price as cotton or rayon-base insulations. According to the manufacturer, the wire can be twisted and knotted without losing any of its electrical insulating properties. It can be cut cleanly, leaving no frayed ends, and does not support combustion. It is also reported to be resistant to abrasion, moisture, oil, grease and most chemicals. It is claimed to have endured high temperatures with practically no physical change or loss of dielectric strength. Tubing is available in grades A-1 and B-1; the C-1 and C-2 sleeving in sizes from No. 24 to 5/8 in.



Plastic tubing for electrical insulation cuts cleanly, can be knotted or twisted

Colors are black, yellow, green, blue, grey and brown. Bently, Harris Manufacturing Company, Conshohocken, Pa.

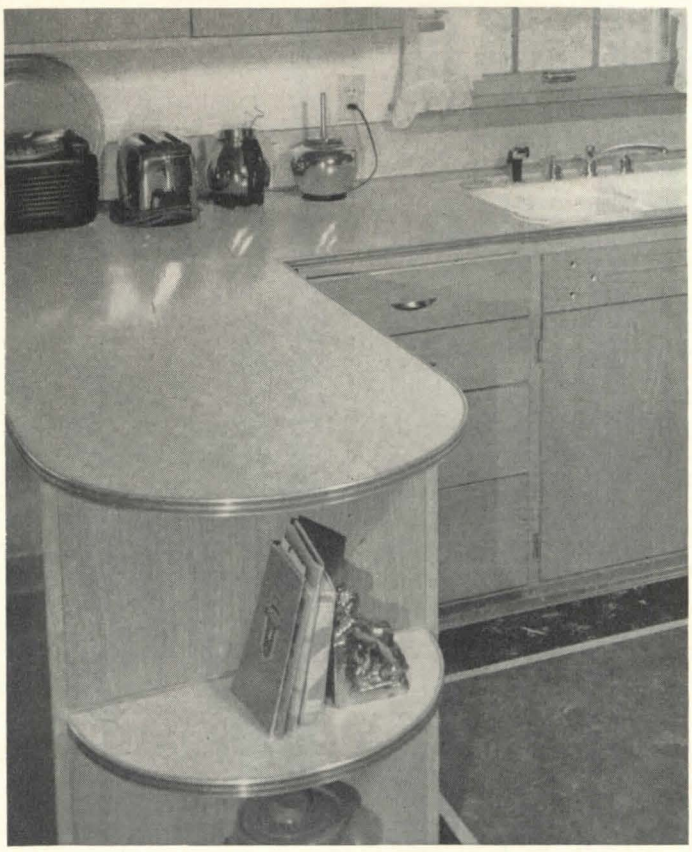
• Permanent wire and cable markers made of *Vinylite* plastic rigid sheet in either flat or sleeve type, with an overlay of clear Vinylite to protect the lettering. The new markers are said to be fungus- and vermin-proof and resistant to abrasion, water, oil, gasoline, alcohol and most acids. The sleeve-type markers, in sizes as small as 1/16 in. or as large as 3 in. diam, slip tightly over wire or cable of any shape in cross section. Any kind of identification as well as color banding can be printed on the marker.

Plastic markers in flat and sleeve types protect lettering with clear overlay

The flat-type markers are made in any size, shape or thickness, punched with any number of holes of any shape. Special tools for slipping sleeve-type markers on wire or cable are available,

(*Continued on page 226*)

what's the big idea?



Architects everywhere tell us that the kitchen is *the big idea* in the minds of their residential clients. Women, today, want kitchens that are *efficient*, *colorful*, and above all, *livable*—for here's where most of each day will be spent. As one prominent architect and editor recently put it, "In planning today's house, more client-interest is devoted to the kitchen than to the living room!"

Increased kitchen-interest no doubt accounts for part of the interest architects are showing in CONSOWELD Decorative Laminates. For CONSOWELD so completely embodies the qualities women want in their kitchens. *Color?* More than 40 handsome colors and patterns available, including lifelike new woodgrain patterns. *Efficiency?* No other surfacing material keeps sparkling clean and new-looking as easily as CONSOWELD—just wipe it with a damp cloth, no other cleaning is needed. *Livability?* CONSOWELD is wonderfully easy to live with—has an amazing resistance to any kind of wear—keeps its good looks year after year.

Residential applications—kitchens, baths, game rooms, etc.—are just one field in which CONSOWELD Decorative Laminates are growing in popularity. In factories, stores and offices . . . in schools, hospitals and civic buildings . . . wherever designs must *meet the public*, the long-wearing attractiveness of CONSOWELD is indicated. For design flexibility, ease of installation and years of "no-maintenance" service specify CONSOWELD—*good for a colorful lifetime!*

Commercial • Industrial • Institutional • Residential

All 4 call for **CONSOWELD**

CONSOWELD, Box 50, Wisconsin Rapids, Wisconsin
Please send me—

- ☐ CONSOWELD Color-Ring samples
- ☐ CONSOWELD Room Planning Guide
- ☐ CONSOWELD installation data

Name_____

Firm_____

Address_____

City_____ State_____ (6)

CONSOWELD
decorative
LAMINATES
surfaces of enduring beauty

Consolidated Water Power & Paper Company—manufacturers of CONSOWELD Laminates and *Consolidated* Enamel Papers, Wisconsin Rapids, Wisconsin

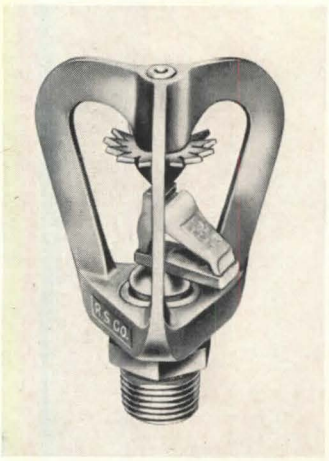
PRODUCTS

(*Continued from page 224*)

as is also a threading device for looping cord through holes in flat-type markers. Actioncraft Products, 8 Sagamore Hill Drive, Port Washington, N. Y.

New Sprinkler Head

A new type of fire extinguisher head, the *Rockwood T-Head*, has been recently developed by the Rockwood Sprinkler Company of Worcester, Mass. Engineered and designed for use in fixed piping systems, it has a directional wide angle, medium velocity discharge and is



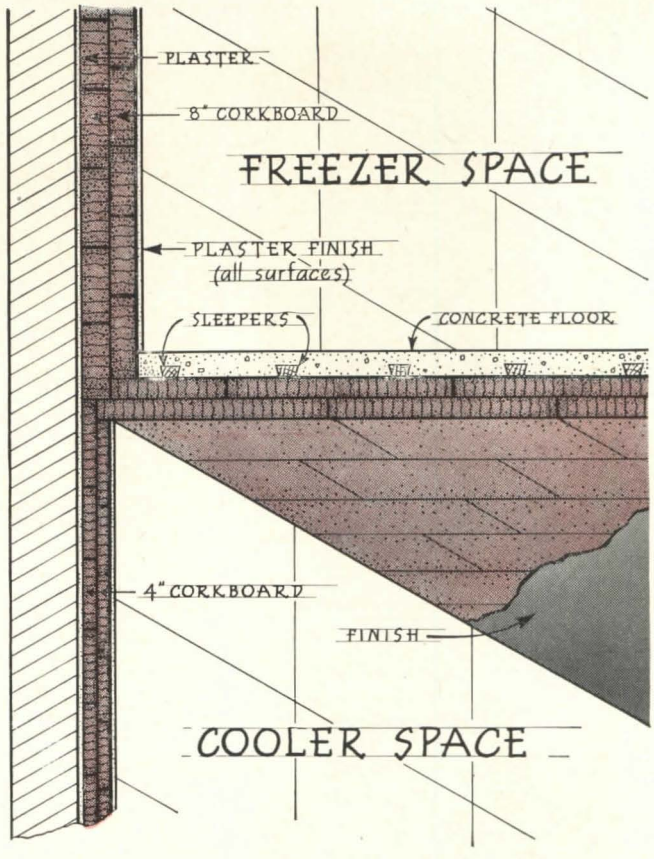
Fire extinguishing head has new wide angle discharge for greater coverage

installed in a pendant position. Recommended for both automatic and open deluge use, it can be used either as a sealed or open head. The design of the head is said to break up water into a fog pattern fine enough to completely fill the area from ceiling to floor and heavy enough to quickly reach any fire on the floor. No water is discharged directly onto the ceiling and as the coverage of each head overlaps the others, a complete barrier is set up between fire and ceiling. Because of this, it is claimed that fewer heads are necessary to control and extinguish fires. Rockwood Sprinkler Company, 38 Harlow Street, Worcester 5, Mass.

(*Continued on page 228*)

We have been asked:

"Why should freezer storage space be located over cooler space?"



"We plan to build a new warehouse containing both freezers and coolers," writes a wholesale food distributor. "We understand that freezer space should be built above rather than below cooler space. Is this correct? Please illustrate a good method for installing insulation in these rooms. The building will be of curtain wall construction."

To answer this question, we made the recommendation illustrated at right. Notice that the freezer is located *above* the cooler. This is sound practice whenever these areas are built one above the other. There are good reasons for this placement. If the cooler were built above the freezer, its floor might become so cold for a foot or more above the concrete floor that food placed on it for above-freezing storage would freeze and spoil. Another factor is economy. When freezers are on upper floors in multiple storage buildings, the tendency of cold air to settle makes it less expensive to refrigerate the higher temperature coolers below.

The insulation on the freezer walls is two layers of Armstrong's Corkboard, each 4" thick. Cooler insulation consists of two layers of corkboard, each 2" thick. All corkboard is applied in hot asphalt after the wall has been leveled with back plaster and primed with asphaltic paint.

The ceiling of the cooler is insulated with two layers of 3" Armstrong's Corkboard, with the first layer applied in hot asphalt and nailed to treated beveled wood strips placed on 18" centers in the forms when the floor was poured. The second layer then is applied in hot asphalt and additionally secured to it with oak skewers.

Helping you find the right answers to your various insulating problems is just one of the services of Armstrong's Contracting Organization. We can also supply you with top-quality insulating materials and the skilled workmen to apply them properly. Whenever you have an insulation job, it pays to contact Armstrong. The *complete* insulation service offered by Armstrong will save you time, money, and material.

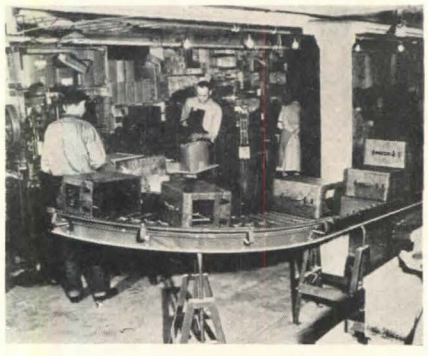
SEND US YOUR QUESTIONS. If you have any questions on the use of insulation or the construction of low-temperature installations, we'll do our best to help you with a practical answer to your particular problem. Just outline your problem on a post card or letter and address it to Armstrong Cork Company, 2411 Concord Street, Lancaster, Pennsylvania.

PRODUCTS

(*Continued from page 226*)

Three-Unit Conveyor System

Designed to help overcome difficult installation problems, a new conveyor for handling and transporting objects by gravity or hand propulsion employs only three basic units — straight sections, 90 deg curved sections and adjustable trestles. In the conveyor, balanced rollers



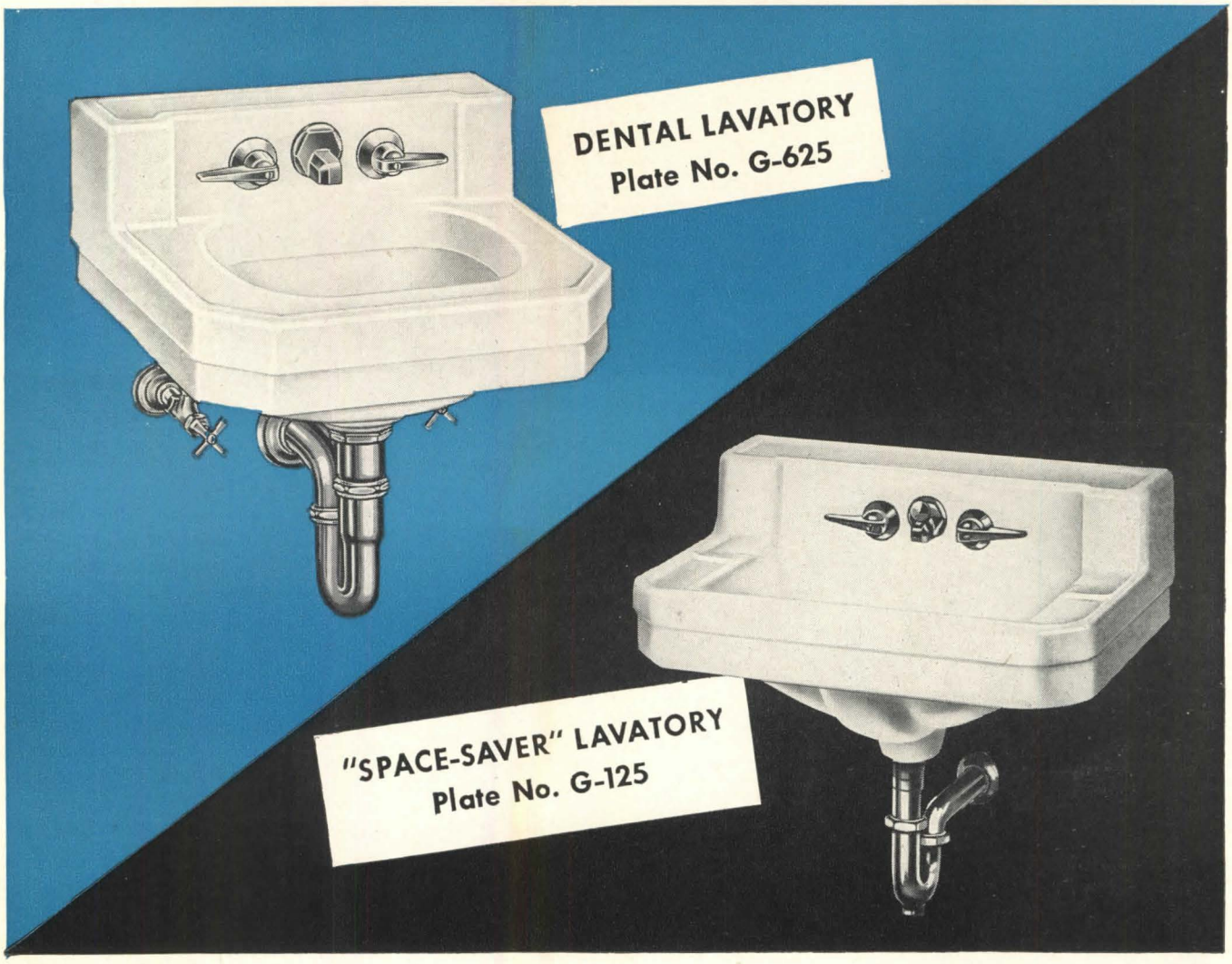
Conveyor adjusts to difficult locations

rotate on full length cold rolled steel shafts fitted with ball bearings. Cross channels are said to prevent the frame from spreading under heavy loads; shafts are reported to retain alignment. Rollers are spaced on 4 in. centers for full bearing surface and are raised ⅜ in. above the frame to accommodate packages wider than the conveyor. Lyon Metal Products, Inc., Aurora, Ill.

Color-Corrected Mirror Light

A cold cathode fluorescent lamp employing a formula of neon, argon and vaporized mercury is utilized in *Mira-Light*, a fixture designed for installation over mirrors in stores and homes, and which is described as giving a color-corrected, uniformly distributed shadowless light. It is especially recommended by the manufacturer for shop interiors where a natural light is desirable, and it can also be used with bathroom mirrors or vanity tables. It can be installed in existing structures or in new buildings, and installation is described as very simple, the entire fixture being mounted

(*Continued on page 230*)



2 new lavatories by RICHMOND

Here are two new, modern lavatories by Richmond ... typical of Richmond's quality standards in construction, styling and economy. Here are two more reasons why more Richmond enameled cast iron and vitreous china fixtures are used nation-wide!

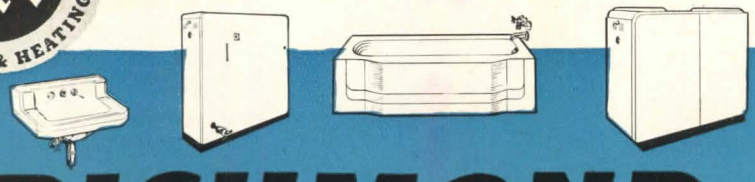
Here are two lavatories designed for specific use... for dental service in homes, dental offices, schools, hospitals and other institutions use the G-625 dental lavatory ... for any location where space is tight use the G-125 space saver.

Keep these quality features in mind:

The Richmond G-625—vitreous china dental lavatory—for service in homes, dental offices, schools, hospitals and other institutions ... 14" x 14" ... with flushing rim, shelf back, rear outlet, combination supply and drain fittings with vacuum breaker ... in "whiter-white," or choice of five rich, lustrous colors.

The Richmond G-125—Midal ... vitreous china "space-saver" lavatory for any location where space is at a premium. Just 14" deep by 20" wide with shelf back, two soap dishes, rear outlet, front overflow, combination supply and drain fitting ... in "whiter-white" or choice of the five popular Richmond colors.

RICHMOND PLUMBING & HEATING



RICHMOND

RICHMOND RADIATOR CO.—AFFILIATE OF REYNOLDS METALS CO.

See your wholesaler or Mail Coupon Today:

Richmond Radiator Company
19 East 47th Street
New York 17, New York

AR/11

Please send me information and literature on the new Richmond dental lavatory and the Richmond space-saver lavatory.

NAME.....

COMPANY.....

ADDRESS.....

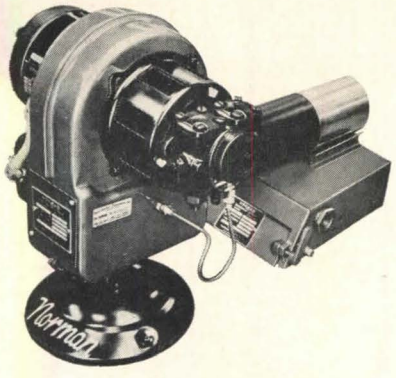
CITY.....ZONE....STATE.....

PRODUCTS
(*Continued from page 228*)

in place with four screws. The lamp is reported to have a useful life expectancy of at least 15,000 hr. A toggle switch and outlet for connecting appliances are embodied in the fixture, which will fit all mirrors up to 18 in. wide by 24 in. high, and which can be used also as a shelf. Mobeco, Inc., Watertown 72, Mass.

Gas-Oil Burner

Controlled by an outside thermostat set at the temperature point at which the local utility company expects service difficulties, the *TWINfuel* burner switches automatically from gas to oil and back. It is also said to be capable of changing automatically depending upon drops or rises in pressure of the gas line. Designed for industrial and commercial installation, the burner is described as of special value to plants, large multiple dwellings and institutions faced with the possibility of gas shortages and freezes. The manufacturer states that by permitting normal continuance of heating processes, regardless of weather conditions, the burner will enable industries to maintain production schedules without the expense of shutdowns. The burner is available in seven sizes, from 80,000 to 3,000,000 Btu capacity. Smaller sizes are of stainless steel construction, temperature refractory and heavy cast iron being used on larger models. All employ inshot-type gas-oil burners, except the Model POC, rated from 80,000 to 280,000 Btu, which utilizes an upshot burner. Norman Products Company, 1150 Chesapeake Ave., Columbus, Ohio.

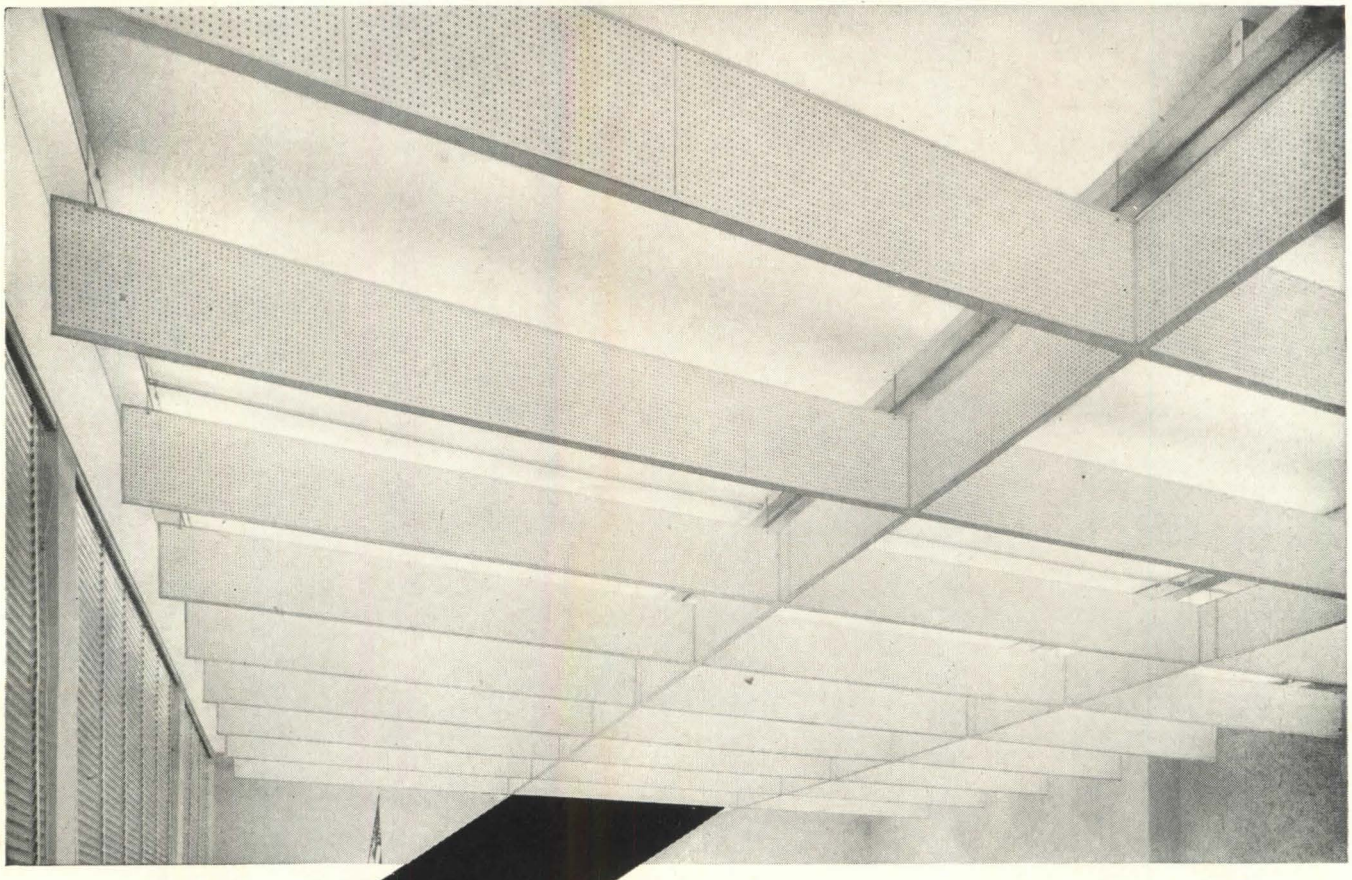


Gas-oil burner switches automatically from one fuel to the other as needed

Gas Air Conditioner

A new *Mueller Climatrol* gas-fired "lowboy" winter air conditioner is announced by the L. J. Mueller Furnace Company of Milwaukee. Known as the Type 112, the unit will be available in 90,000 and 110,000 Btu inputs. It is designed for low-cost basement installation in new and modernized homes, and is A.G.A. approved for natural, mixed, manufactured and propane gases, and for high altitude operation without derating. It is also available with dual-gas controls for automatic alternate operation of natural and LP gas. Among the features of the new unit cited by the manufacturer are compact size and ease of installation. Assembled on a solid steel base, it is reported to be easy to level and to require no grouting for installation. It employs a heavy, welded steel cylindrical heat exchanger with wrap around radiator. Both are reported easily accessible for cleaning. Available with self-generating, electric solenoid, motorized or diaphragm gas valves. L. J. Mueller Furnace Company, 20005 W. Oklahoma Ave., Milwaukee 15, Wis.

(*Continued on page 232*)



LIGHT

SOUND

controlled with one efficient system

CURTIS

LIGHT SOUND CONDITIONING

SYSTEM

The new Curtis Light and Sound Conditioning System offers an entirely new approach to LIGHTING and SOUND CONDITIONING problems. The system provides quality low-brightness illumination with acoustical treatment which eliminates excessive sound reflections and the annoyances and distractions which sound creates.

The Electrical System — Standard basic sections of the Underwriters' approved electrical portion of the Curtis System are supplied completely wired and packaged in 8″ x 12″ x 96″ cartons. Each basic section covers a ceiling area of 256 square feet. Combining the basic sections with extension and wing sections makes it possible to provide quality low-brightness illumination and effective sound treatment.

The Sound System—The vertical baffles are constructed of highest quality acoustical material with a flame retarding, high reflectance washable finish. The baffles are positioned between the 8 foot, T-12, single pin fluorescent lamps to provide both recommended shielding and sound conditioning.

Yes, the Curtis Light and Sound Conditioning System offers the finest in lighting and sound conditioning efficiency from the stand point of low initial cost, low installation cost, low operating cost and low maintenance cost.

A comprehensive bulletin, completely illustrated, will be available soon. Write Dept. K3-05 for your free copy.

CURTIS LIGHTING, INC.
Dept. K3-05, 6135 W. 65th Street, Chicago 38, Illinois

Name_____

Company_____

Address_____

City_____ State_____

PRODUCTS
(*Continued from page 230*)

Transparent Masonry Moisture Seal

An invisible, water-repellent coating of masonry pores which penetrates the surface up to $\frac{3}{8}$ in. with some materials is said to be afforded by *Silaseal*, a colorless silicone-base masonry seal. It is reported that the product remains after application until abrasion and natural erosion wear off the masonry surface. The transparency of the seal is cited as being of particular value for treatment of stone and brick where the natural beauty of the structure would suffer if color were added. The transparency of the product is also said to make it possible to treat only walls where moisture penetration is experienced, leaving adjacent walls which do not need it untreated. For new and recently cleaned buildings the product is said to have the further advantage of preventing dirt and soot from clinging to the surface, allowing it to be washed away with each rainfall. It may be applied summer and winter by either brush or spray. Surface Protection Company, 16802-A, Cleveland 12, Ohio.

Furniture Group

A new furniture group called the *Predictor Group* has been designed by Paul McCobb. It includes 19 furniture items and eight floor and table lamps. Woods are solid northern hard rock maple in two finishes, a waxed light tone called *Nutmeg* and a black-brown tone called *Chicory*. Construction is all-wood, em-

Adjustable breakfront forms part of new furniture group

ploying frames, stretchers, spindles, slats and legs in slender turned rounds, often tapered. Foam rubber is used on all upholstered pieces. Upholstery fabrics include Peruvian linens in a variety of shades, California woolens, homespun Cheyney textures and McCobb's own handprint, *Thatch*. The base grade muslin cover is in Konwiser *Congo Cloth*. Pieces include chairs, occasional tables, dining tables, a desk, a breakfront, and upholstered chairs, an ottoman, loveseat, sofa and sectional. Furniture is manufactured by O'Hearn Manufacturing Company, Gardner, Mass., lamps by Northcraft Lighting Company, Nyack, N. Y. Distributed by B. S. Mesberg, National Sales, 201 E. 57th St., N. Y., and Merchandise Mart, Chicago.

CORRECTION

The RECORD regrets that a new wall panel developed by E. F. Hauserman Co., was incorrectly called "Koroweld" on page 206 of the September 1951 issue. The correct name of the product is *Korweld*.

SCHLAGE® . . . first name in cylindrical locks

Schlage Monarch Design
used in this ultra-modern building

SCHLAGE®

SCHLAGE LOCK COMPANY · BAYSHORE BLVD., SAN FRANCISCO · EMPIRE STATE BLDG., NEW YORK

LITERATURE

(*Continued from page 190*)

Aluminum Lampholders

Steberlights. A Bulletin illustrating the manufacturer's cast aluminum lampholders for Par-38 and R-40 lamps. Also shown are cluster fittings, mounting flanges and accessories. Specifications are included. 4 pp., illus. Steber Mfg. Co., Broadview, Ill.

Porcelain Enamel and its Uses

Porcelain Enamel. First edition of a new periodical devoted to architecture and building, and published by the Porcelain Enamel Institute. The publication illustrates both new developments and typical applications of porcelain enamel in construction of new buildings and remodeling of existing structures. To be issued quarterly. 8 pp., illus. Porcelain Enamel Institute, Inc., 1010 Vermont Ave., N. W., Washington 5, D. C.

Hardwood Kitchen Units

Porta-Bilt Custom Hardwood Kitchens. Published for insertion in the A.G.A. "Reference Manual of Modern Gas Service," this data sheet illustrates a variety of wall, base and utility cabinets, sink fronts and special-purpose units. Specifications of most units are included. 4 pp., illus. Mutschler Bros. Co., Nappanee, Ind.

Tile Floors

Floors of Ceramic Mosaic Tile. Booklet presents colors, patterns, sizes and shapes available in a line of ceramic tiles. A variety of floor layout patterns are shown in full color, as is a section devoted to photographs of actual installations of the tiles. 16 pp., illus. The Mosaic Tile Co., Zanesville, Ohio.*

Air Distribution

Air Distribution for TV Studios (Pamphlet F-4712). Shows actual installations, and describes a variety of air distribution equipment suggested for solving the problem of introducing large volumes of air at low noise levels in television studios. 4 pp., illus. Barber-Colman Co., Rockford, Ill.*

Plastics

Extruded Plastics. Brochure describes applications of custom made thermoplastic extrusions. Data is also included on the facilities and range of extrusions available, applications of extrusions to particular products, and properties of thermoplastics. 8 pp., illus. Anchor Plastics Co., Inc., 533–5 Canal St., New York 13, N. Y.

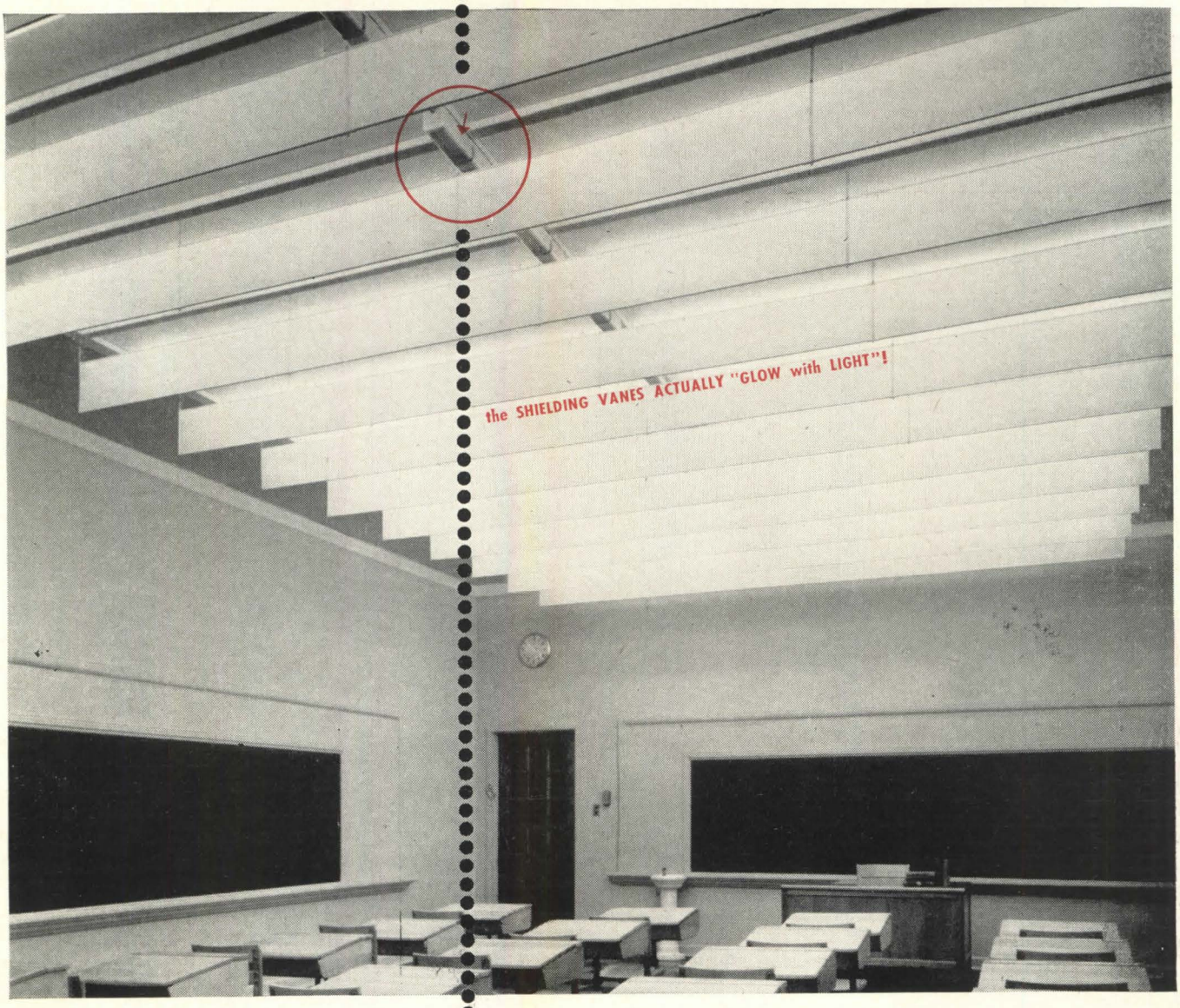
Acoustical Materials

Sound Absorption Coefficients of Architectural Acoustical Materials (Bulletin XIII–1951). Presents a series of tables giving results of tests on various acoustical materials manufactured by members of the Acoustical Materials Association. The test data was obtained under identical conditions to afford a basis of comparison of the different products. Each material is described as to type, thickness, mounting, size, weight and surface, and is rated for sound absorption and noise reduction coefficients, and for light reflection values. A short list of coefficients of general building materials and absorption coefficients of auditorium seats and audiences is also included. 17 pp., illus. Acoustical Materials Assoc., 59 E. 55th St., New York 22, N. Y.

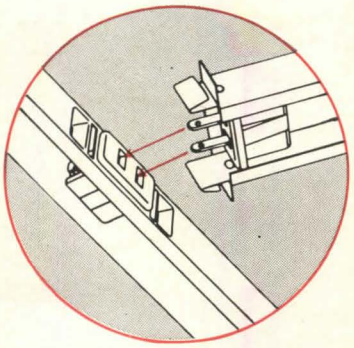
(*Continued on page 236*)

announcing new "Grid-Lite" SYSTEM

BENJAMIN



for
SCHOOLROOMS
CHAIN STORES
SUPER MARKETS
AUTO DISPLAY ROOMS
OFFICES, ETC.



Channels "plug-in" one to another as simple as toy railroad tracks. No channel couplings are needed!

Not just another lighting fixture but a completely new conception that literally converts the entire ceiling into a single light source...a new system that is ultramodern in results, yet is priced within the means of all.

Benjamin "Grid-Lite" Systems bring you these outstanding advancements...

1 cost less to buy... less to install
2 high system efficiency... diffused light
3 cuts maintenance time and labor

SEND FOR "GRID-LITE" DATA BULLETIN giving complete details and specifications for this newest Benjamin lighting system. Benjamin Electric Mfg. Co., Dept. Q-1, Des Plaines, Ill.

5|0 BENJAMIN FIFTY YEARS OF PROGRESS 1901 51

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LITERATURE

(*Continued from page 234*)

Drafting Room Lighting

Lighting Guide to Better Drafting (*LS-137*). Bulletin discusses and illustrates recommended types of lighting systems for drafting rooms, for use with straightedges and shiny surfaces, and on the proper positioning of drafting boards with regard to lighting. Features are described for each of the types of lighting presented. 8 pp., illus. Inquiry Bureau, General Electric Co., Nela Park, Cleveland 12, Ohio.*

Metal Cleaners

Deoxidine Selection Chart. Lists, in tabular form, several phosphoric acid metal cleaners and rust removers according to strength, temperature limits, rust and oil removal, etc. The chart also gives information on the sequence of operation and equipment required in each process. American Chemical Paint Co., Ambler, Pa.

Technical Renderings

Graphic Techniques To Simplify The Complex. Folder and a 10 pp. insert — *Technagraph for War Production* — tell of the firm's facilities for making technical bulletins, charts, graphic displays, reports, isometric and cutaway renderings, etc. Examples of their work are illustrated. 4 pp., illus. Technagraph Co., Division of Walther-Boland Assocs., 785 Market St., San Francisco 3, Calif.

Hand and Hair Dryers

Electric-Aire Modern Drying Equipment. Catalog contains informative and technical data on a line of electric hand dryers and institutional hair dryers, including specifications, installation procedures, and suggested uses. 8 pp., illus. Electric-Aire Engineering Corp., 209 W. Jackson Blvd., Chicago 6, Ill.*

Roof Cooling

Watco Roof Cooling Systems (*Bulletin No. 20*). Folder describes a water spray roof cooling system. Notes are included on features of the system, operation, installation, and specifications. Some of the equipment parts are illustrated. 4 pp., illus. Water Cooling Corp., 71 Nassau St., New York 38, N. Y.

Glass Store Fronts

How To Give Your Store The Look That Sells. Booklet illustrates a great variety of stores remodeled with open-vision glass fronts. Before and after photos are included of each building. Other portions of the booklet are devoted to modernization of store groups, store interiors, and to Pittsburgh products. 32 pp., illus. Pittsburgh Plate Glass Co., Glass Advertising Dept., 632 Duquesne Way, Pittsburgh 22, Pa.*

LITERATURE REQUESTED

The following individuals and firms request manufacturers' literature:

Josh C. Bennett, Jr., Architect, W. Dudley Hunt, Jr., Associate, 122 East 10th Street, Anniston, Alabama.

Frank A. Buckland, Architects' Superintendent of Construction, Care of M. L. Scott, 1031 Sibley Tower Building, 25 North Street, Rochester 4, New York.

Nashaat Morsy, Architect Consultant to the Courts, P. O. Box 1185, Cairo, Egypt.

Stanley Nerdum, Architect, Division of Architecture, State of Wisconsin, State Capitol, Madison 2, Wisconsin.

WASHINGTON (*Cont. from p. 32*)

The authorizing measure called for construction in 44 of the 48 states including all manner of military installation. A great deal of troop housing and officer unit home construction was covered.

Under prior arrangements permitted in special dispensation from Congress the services had gone ahead with arranging for architectural and engineering contracts on some of the work even before funds for payment were voted. This permitted an earlier start on large-scale projects requiring months just for the planning effort.

Fannie Mae Money Available

Raymond M. Foley, administrator of HHFA, made an additional $200 million of uncommitted funds available on October 2 for the purchases of mortgages covering housing programmed by his agency for critical defense housing areas and for military housing financed under the Wherry Act. This additional set-aside was for mortgage purchases on housing programmed on or after September 1, 1951, but before November 1, 1951. As to Title VIII, the Wherry Act, the application was to housing on which Federal Housing Administration commitments to insure had been issued on or after September 1, 1951, but prior to November 1, 1951.

At the same time, Mr. Foley said that mortgages for which these funds are available would not be subject to the two-month waiting period. The $200 million fund came in addition to an earlier set-aside of $350 million for mortgage purchases covering housing programmed in critical defense housing areas before September 1, 1951, and Wherry Act construction on which commitments were issued on or after March 1, 1951, but prior to September 1, 1951.

The administrator estimated that mortgages covering defense housing programmed prior to the September 1 date aggregated $215 million. Mortgages covering Title VIII military housing for which commitments to insure were issued on or after March 1 totalled $126 million, according to HHFA estimates. This came to but $341 million for the two types, leading HHFA to announce that the $350 million set aside earlier was more than enough to cover such mortgage purchases.

In a subsequent move, Mr. Foley apportioned $200 million in new authorization carried in the defense housing and community facilities and services law. It was decided to apply $25 million of the amount for disaster housing on an initial basis, $50 million for military housing constructed under Wherry Act terms, and the other $125 million for programmed defense housing in designated critical defense housing areas.

The defense housing was divided into separate groups: (1) what is needed at Atomic Energy Commission installations and (2) all other programmed defense housing.

Due to the urgency for the AEC housing, $20 million was set aside for prior commitments that may be issued for such construction. Since programmed housing for critical defense areas will require financing greatly in excess of the remaining $105 million of authority to commit, that remainder will permit the issuance of prior commitments to pur-

(*Continued on page 240*)

FIAT "CASCADE" ENCLOSURE

Two PLEXIGLAS panels are the sliding doors of this new bath enclosure. The corrugated panels, measuring approximately 34" x 60", slide easily in a metal track cemented to the tub rim and in a top channel fastened to sidewalls. Called the "Cascade", the enclosures are manufactured as packaged units, with a choice of crystal clear, gold, or pink PLEXIGLAS, by the Fiat Metal Manufacturing Company, Long Island City 1, New York. They are available nationally through plumbing wholesalers.

Another New Idea for Architects...
PLEXIGLAS Bath Enclosures

Looking for an easy way to add the final touch of smartness to a new bathroom, or to modernize an old one? Here it is—a rigid, sliding-panel bath enclosure of gleaming PLEXIGLAS acrylic plastic, crystal clear or in beautiful transparent pastel colors.

Light, attractive, easily installed, PLEXIGLAS enclosures fit virtually any recessed tub. Wet, hard-to-manage curtains are eliminated; the transparent PLEXIGLAS panels give permanent shower protection. The cost of a "Cascade" enclosure, including installation, is considerably less than that of glass panel enclosures. And the resistance of PLEXIGLAS to breakage, water, heat, and discoloration means long life with no loss of beauty.

Bath enclosures are only one of the many architectural applications of PLEXIGLAS. In homes, offices, public buildings, industrial plants, you'll find it useful for breakage-resistant glazing, glare-reducing lighting fixtures, dome skylights, luminous ceilings, decorative screens and partitions. For signs and storefronts, PLEXIGLAS has become a preferred material. If you want to know more about these architectural possibilities, write for our booklet, PLEXIGLAS FOR ARCHITECTURE.

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WASHINGTON (*Cont. from p. 238*)

chase only approximately 50 per cent of the amount of mortgage loans for such housing made by an individual lender, the agency explained. Lenders wishing to obtain prior commitments for eligible housing mortgages were advised to apply to appropriate FNMA agency offices.

Shorts

• Organized labor and the Atomic Energy Commission moved closer together in their attitude to increasing work stoppages at vital AEC construction jobs. After an exchange of telegrams between AEC Chairman Gordon Dean and Richard Gray, president of the Building and Construction Trades Department of the A.F.L., it appeared that a new policy would be worked out between the two organizations. This probably will provide for a moratorium on any strikes at the vital atomic energy plants during the mobilization period. Said Mr. Gray: "We feel that once such a uniform policy is agreed upon, AEC contracts should include proper provisions for elimination of work stoppages. While present disputes appear to be solely between AEC contractors and unions, we believe the underlying cause stems directly from a lack of an equitable, uniform labor policy by the AEC."

• A month ago the Army Corps of Engineers had completed 90 per cent of the 1951 program to rehabilitate Army posts, camps and stations. Housing and training facilities for more than 675,000 officers and men had been occupied or were ready for occupancy. Upon completion of the $113 million program early next year, troop facilities for 745,000 men will have been rehabilitated. Most of the work involves repairs to permanent and temporary buildings and placing the electric, water, sewage, heating, refrigeration and fire protection systems in operation. Post engineers are supervising the work on the job.

• The Department of Defense tried locating the Central Military Procurement Information Office in downtown Washington for a short while. It soon was moved back to the Pentagon, however. Spokesmen for the activity, which is under the Office of Small Business, Munitions Board, said visiting business men seeking ways to participate in the defense production program expressed the wish that the office be left at the Pentagon. It was downtown about five months.

• State governors were told at their Gatlinburg, Tenn., meeting by Mobilization Director Charles E. Wilson that they should not expect any more steel, copper or aluminum for state projects before the end of 1952. This applied to other critical materials as well. State officials have protested vigorously that they cannot get the materials needed for essential highway, hospital and school construction. Again, Mr. Wilson said plans were underway to establish a claimant group within the Defense Production Administration to speak for the states. This has been several months in the making, but he indicated the formal

(*Continued on page 242*)

TECHNIPLAN OFFICE

NEW HIGH EFFICIENCY IN 18%* LESS FLOOR SPACE

*Applies to Techniplan illustrated as compared with traditional arrangement. Other savings up to 30%.

GLOBE-WERNICKE TECHNIPLAN OFFICE

Techniplan, the original fully-developed modular system of office equipment, accomplishes two highly desirable results:

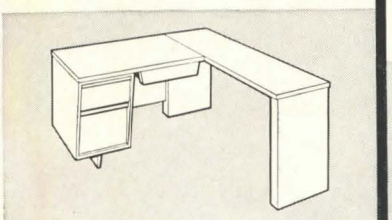
1. Reduces floor space by 18%* per worker without reducing work surface areas.
2. Provides for greater ease and speed in worker output.

TECHNIPLAN uses interlocking, interchangeable units, offering hundreds of variations in arrangement—space utilization. Any desired combination of work facilities. Wasted out-of-reach areas are avoided.

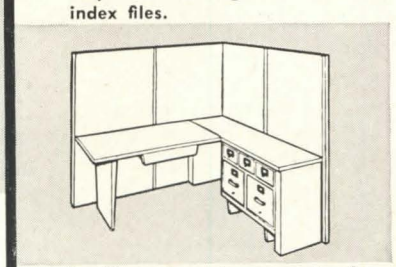
TECHNIPLAN equipment is simple and tasteful in design for distinguished appearance. It can be installed a few units at a time, or the complete office. Rearrangement of the equipment is always easily and quickly made, to suit changing needs.

Get Techniplan information from your Globe-Wernicke dealer—listed in your classified phone directory under "Office Equipment-Furniture"—today!

"L" Unit with horizontal section under auxiliary top. Various arrangements possible for letter files, map and drawing files and card index files.

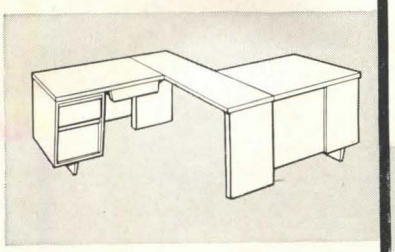


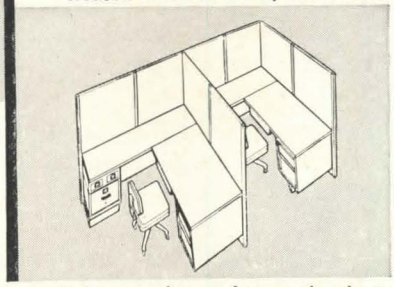
Basic "L" unit—desk with pedestal and center drawer—auxiliary top with end supports.



Partitions for privacy—noise barriers—in full (66″) or medium (48″) height—in all-wood or combination wood and glass.

← Work station for two persons by the addition of desk unit gives economy of space and increased work efficiency.





Two Techniplan bays give semi-private work stations for two persons. Ideal for executive offices. Full height, all-wood partitions.

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Cincinnati 12, Ohio

WASHINGTON (*Cont. from p. 240*)

announcement of such a claimant was due soon.

• The National Chamber of Commerce joined the Building Research Institute. BRI was established recently by the National Academy of Sciences as a complementary organization to its Building Research Advisory Board. It will provide a mechanism by which research executives can be brought into closer association with the work of BRAB, and it will place industry support for the Board on a firmer foundation by substituting membership dues for voluntary contributions.

• Contractors bidding on specified types of Air Force buildings henceforth are permitted to submit alternate forms of construction and design, the Defense Department announced. The new policy covered construction bids on airmen's dormitories, indoctrinees' and overseas replacement dormitories, WAF dormitories, and mess and administration buildings. It permits alternate construction details to be bid in competition with designs already prepared. The general standards of quality or size, or use of methods or materials, have not been lowered, it was said. Aim of the new policy is to secure the best construction possible at the lowest cost.

• The Federal Housing Administration sought to sell the 500-unit Pine Chapel Village development, Elizabeth City County, Virginia. It took offers up to September 28, specifying that the sales price be not less than $3,888,900. This was one of 36 developments in FHA's Property Development Division, involving 3800 units altogether, on which foreclosure actions had been completed. One more large project and two small ones were to be offered soon, FHA said. As of a month ago, there had been foreclosures and re-sales of 83 mortgages covering 40 Section 608 projects. The activity covered 4729 units. And 44 mortgages, involving 1107 units, had been assigned to FHA but not fully foreclosed.

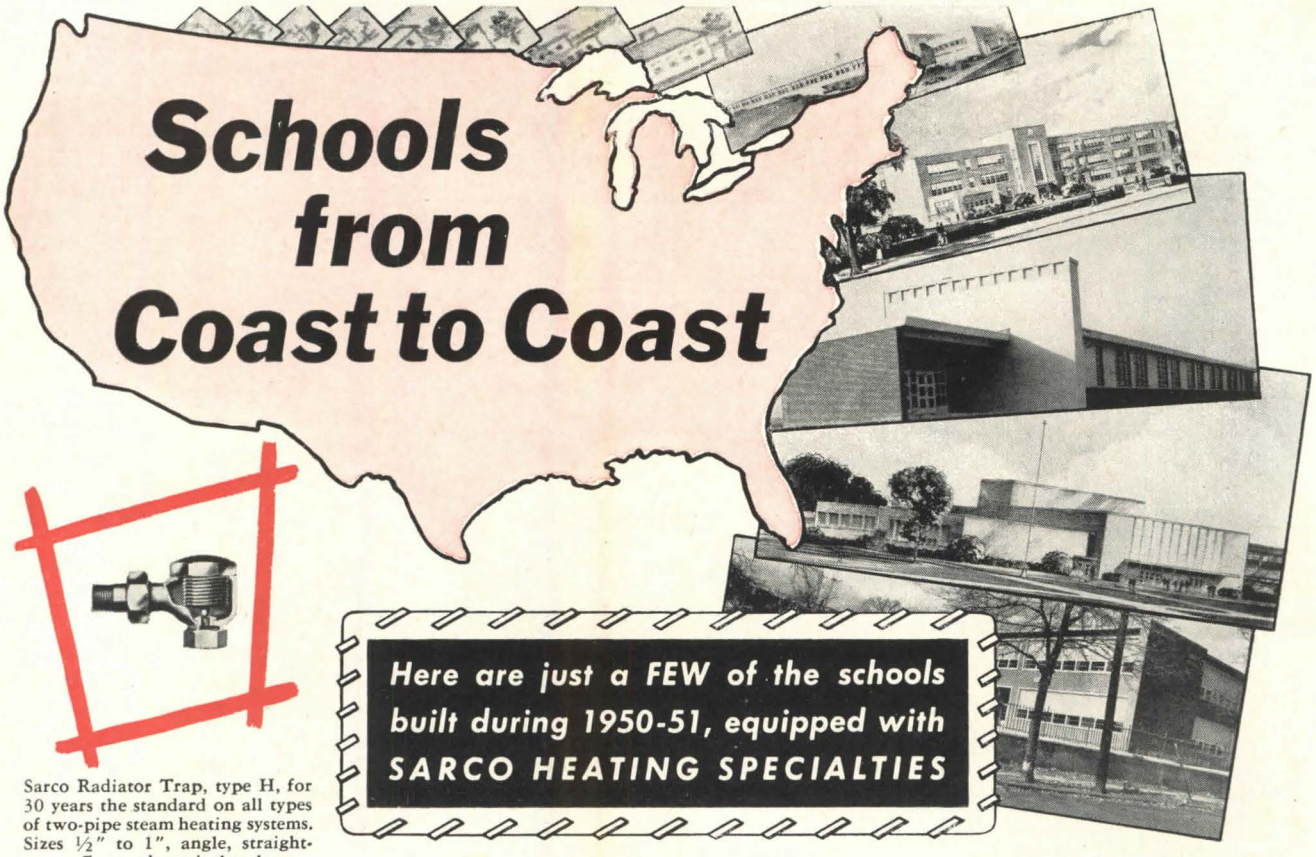
• A new 16-page booklet issued by the Prefabricated Home Manufacturers' Institute tells the story of this industry's contribution to military and civilian housing in the U. S. Entitled "Build Better, Build Sooner with Prefabrication," it is directed to home builders, realtors, mortgage lenders, government officials and everyone interested in the nation's housing activities. Copies are available free from the Institute — 908 20th St., NW, Washington 6, D. C.

• Mobilizer Wilson, speaking in Cincinnati, proposed as a permanent national defense policy the establishment of dual-purpose plants which could be used three ways: for combined civilian and defense production, for total war production, or for total civilian production. He urged the government to work out agreements with manufacturers to preserve such a type of dual operation for at least 10 years or for "several generations if necessary."

• In the big drive to increase copper production, the Copper Cities Mining Company agreed to undertake a $15.2 million expansion program. This would increase production substantially at its Gila County, Ariz., mine. An agreement with

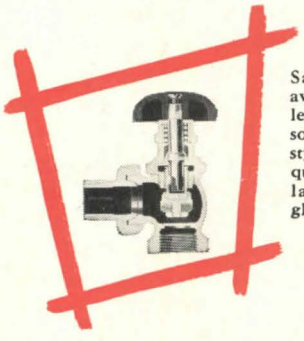
(*Continued on page 244*)

Schools from Coast to Coast

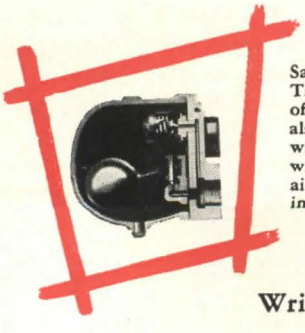


Here are just a FEW of the schools built during 1950-51, equipped with SARCO HEATING SPECIALTIES

Sarco Radiator Trap, type H, for 30 years the standard on all types of two-pipe steam heating systems. Sizes ½" to 1", angle, straightway, offset and vertical styles.



Sarco Radiator Valve, available in spring-packless style as illustrated; also in the bellows-packless style. Sizes ½" to 1½", quick opening and modulating types; angle or globe.



Sarco Float-Thermostatic Trap, type FTL for end-of-main and riser drips; also unit heaters and hot water generators. Fitted with Sarco thermostatic air vent. Air binding is impossible.

State	*City*	*School*
California	Westwood	U.C.L.A.—Geology and Chem. Bldg.
Connecticut	Danbury	Park Avenue School
Connecticut	New Haven	Winchester Elementary School
Connecticut	Wilton	Wilton Junior High School
Florida	Haines City	Junior-Senior High School
Idaho	Coeur D'Alene	Coeur D'Alene School
Illinois	Freeport	Junior High School
Illinois	Lincolnwood	Lincolnwood Elementary School
Illinois	Wauconda	Wauconda Township High School
Indiana	Mishawaka	Bremen School
Iowa	Cedar Rapids	Buchanan Elementary School
Louisiana	Bogalusa	Bogalusa High School
Maryland	Baltimore	Edison-Barton-Mergenthaler High School
Massachusetts	Taunton	New School for Feeble Minded
Michigan	Galesburg	Galesburg School
Mississippi	Gulfport	Northeast Ward Elementary School
New Hampshire	Lebanon	Canaan Elementary School
New Jersey	Lakewood	Public School No. 5
New Jersey	Newark	Dayton Street School
New Jersey	Passaic	Grant School No. 7
New York	Bronx	Junior High School No. 125
New York	Brooklyn	Junior High School No. 14
New York	New York	Public School No. 192
New York	Roslyn	East Hills Elementary School
New York	Stony Brook	Stony Brook Elementary School
North Carolina	Lumberton	Pembroke-Rowland School
Ohio	Cleveland	Case Institute of Technology
Ohio	Lyndhurst	Anderson Road School
Oregon	Eugene	Eugene High School
Pennsylvania	Annville	Lebanon Valley College
Pennsylvania	Franklin County	Mainsville Elementary School
Pennsylvania	Williamsport	Williamsport Jr. High School
Pennsylvania	York	York Township Elementary School
Tennessee	Nashville	Gallatin High School
Texas	Austin	Casis School
Texas	Waco	Waco High School
Utah	Salt Lake City	West High School (Gymnasium)
Washington	Richland	Chief Joseph High School

and many, many other schools

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ALWAYS SPECIFY SARCO 354

(*Continued from page 242*)

the government provides that Copper Cities will buy additional equipment to mine and treat the ore. This will enable it to supply approximately 22,500 tons of the metal per year. The Defense Materials Procurement Agency agreed to purchase up to 170 million of the first 192.5 million pounds of copper produced at 23 cents a pound providing the concern cannot sell it to other domestic purchasers at a higher price. The new copper facilities are expected to start production in October 1954.

ON THE CALENDAR

Nov. 1–2: Ninth Ann Arbor Conference, "Changing Community Patterns as a Result of Community Relocation" — College of Architecture and Design, University of Michigan, Ann Arbor, Mich.

Nov. 1–2: 15th Annual Time and Motion Study and Management Clinic, sponsored by the Industrial Management Society — Sheraton Hotel, Chicago.

Nov. 1–3: 37th Annual Convention, Florida Association of Architects — Roosevelt Hotel, Jacksonville, Fla.

Nov. 1–3: Fall Meeting, Virginia Chapter, American Institute of Architects — Hotel Natural Bridge, Natural Bridge, Va.

Nov. 12–Dec. 6: Gold Medal Sculpture Exhibit, Architectural League of New York — League building, 115 E. 40th St., New York 16, N. Y.

Nov. 14–28: Building Exhibition, Olympia, London.

Nov. 14–Jan. 13: Matisse, an exhibition of more than 70 paintings, 31 sculptures, a selection of drawings, prints and illustrated books, undertaken with the assistance of the French government — Museum of Modern Art, 11 W. 53rd St., New York 19, N. Y.

Nov. 20: Meeting of the Boston Society of Architects; award of the Harleston Parker Medal — Harvard Club, Boston, Mass.

Nov. 27–28: Symposium on Laboratory Design for Handling Radioactive Materials, sponsored by the American Institute of Architects and the Atomic Energy Commission — National Academy of Sciences, Washington, D. C.

Nov. 28–Jan. 27: Good Design, selections from the 1951 Good Design exhibition of home furnishings on view in Chicago throughout the year — Museum of Modern Art, 11 W. 53rd St., New York 19, N. Y.

Dec. 8: Craftsmanship Awards meeting, West Virginia Chapter, American Institute of Architects — Daniel Boone Hotel, Charleston, W. Va.

Dec. 7–Feb. 24: American Sculpture Today, national competitive exhibition — Metropolitan Museum of Art, Fifth Avenue at 82nd St., New York 28, N. Y.

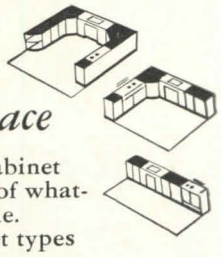
Dec. 18: Annual Dinner, New York Society of Architects — Hotel McAlpin, New York City.

Jan. 4–Feb. 9: Walter Gropius: comprehensive exhibition of the life work of Gropius, architect and professor of architecture at Harvard; photographic coverage, models and paintings by Bauhaus contemporaries — The Institute of Contemporary Art, 138 Newbury St., Boston, Mass.

(*Continued on page 246*)

when a kitchen needs a friend...

CALL ON CURTIS



friendly to space

Yes, Curtis kitchen cabinet units make the most of whatever space is available. With 20 basic cabinet types and a total of 70 sizes to choose from, you can create a kitchen of any size or shape. The dimensions of all units have been standardized to coordinate with other standard kitchen equipment.

friendly to housewives

Curtis wood cabinets are the result of years of research and experience to develop comfort-creating, step-saving, modern kitchens. Counters are of correct height. Toe space is ample. Greater storage space is achieved by special Curtis construction. Labor-saving cabinets "fit around" corners—pan trays, ventilated vegetable drawers, snack bars, are easy to reach, easy to clean.

friendly to pocketbooks

The fine cabinetry of Curtis kitchen units assures lifetime service. Drawers are completely dovetailed—not merely rabbeted and nailed. Hardware is furnished and applied. Curtis wood kitchen units come primed in white so that one finish coat, in any desired color, completes the job.

1866 CURTIS WOODWORK

Curtis makes a complete line of architectural woodwork for the modern home. Make your next home "all Curtis."

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Clinton, Iowa
Gentlemen: I want to know more about Curtis wood kitchen and storage cabinets. Please send your free book. I am ( ) Architect ( ) Contractor ( ) Prospective Home Builder ( ) Student. (Please check above.)

Name.....

Address.....

City.....*State*.....

We'd like to tell you more about Curtis kitchen cabinets—and what they mean to your clients and customers. Mail the coupon for fully illustrated kitchen book.

THE RECORD REPORTS

(*Continued from page 244*)

Jan. 8–10: Annual Meeting and election of officers, National Constructors Association — Waldorf-Astoria Hotel, New York City.

Jan. 12: Annual Meeting, Alabama Society of Architects — Birmingham, Ala.

Jan. 14–17: Plant Maintenance Show — Convention Hall, Philadelphia.

Jan. 14–Feb. 7: Gold Medal Exhibit of architectural works, Architectural League of New York — League building, 115 E. 40th St., New York 16, N. Y.

Jan. 16–18: Eighth Annual National Technical Conference — Edgewater Beach Hotel, Chicago.

Jan. 16–Mar. 9: Buildings by Frank Lloyd Wright; three-dimensional color photographs set in individual viewers to show the office building and recently completed research tower designed by Frank Lloyd Wright for the Johnson Wax Co., Racine, Wisc. — Museum of Modern Art, 11 W. 53rd St., New York 19, N. Y.

Jan. 20–24: Eighth Annual Convention and Exposition, National Association of Home Builders — Stevens and Congress Hotels, Chicago.

Jan. 30–Apr. 20: Prints by Modern Masters: large exhibition of important work in the graphic arts — Museum of Modern Art, 11 W. 53rd St., New York 19, N. Y.

OFFICE NOTES

Office Openings

• Josh C. Bennett Jr., Architect, and W. Dudley Hunt Jr., Associate, have announced the opening of an office for the practice of architecture at 122 E. 10th St., Anniston, Ala.

• Morton Z. Levine, Architect, has opened a new office at 110 S. Dearborn St., Chicago, Ill.

• The recently established Atlantic District of the Army Engineer Corps has opened temporary headquarters at 80 Lafayette St., New York City. The new district, under jurisdiction of the North Atlantic Division, will handle off-continent military construction projects in the Atlantic, from Bermuda north, except projects otherwise assigned.

New Firms, Firm Changes

• Henry S. Churchill, F.A.I.A., A.I.P., has announced the dissolution of his partnership with Kline Fulmer. Mr. Churchill, who will continue to have offices at 19 W. 44th St., New York 18, N. Y., will be available as a consultant for redevelopment, housing and subdivisions, large-scale planning and city planning.

• The architectural firm of Kirby and Mulvin has announced that Ralph Priestley, A.I.A., has become an associate of their firm. Mr. Priestley has resigned as dean of engineering at California State Polytechnic College.

• Ray Stuermer and Vernon Pietz have announced the formation of a partnership for the practice of architecture, with offices at 203 N. Wabash Ave., Chicago.

(*Continued on page 248*)

Sanymetal*

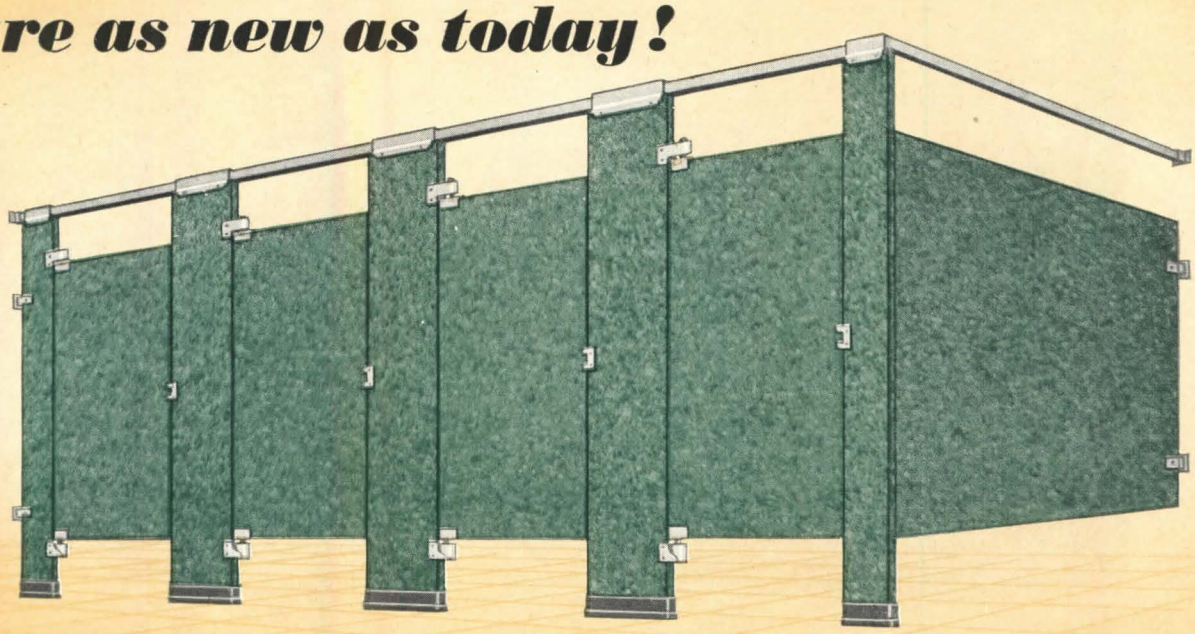
HARDBOARD FLUSH TYPE

(DENSELY COMPRESSED HARDBOARD OVER SOLID INSULATION BOARD)

TOILET COMPARTMENTS

They conserve metal!

They are as new as today!



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 (*Continued from page 246*)

New Addresses

The following new addresses have been announced:

Weston Holt Blake, Architect, 903 Jefferson St., Wilmington, Del.

Edward O. Blodgett, Architect, 251 Kearney St., San Francisco 8, Calif.

Pierre Blouke, Architect, 53 W. Jackson St., Chicago, Ill.

Rose Connor, Architect, 170 E. California St., Pasadena 2, Calif.

Irving Dickstein, Architect, 307 Alma St., Palo Alto, Calif.

Bernhard Dirks, Architect, Mohawk Trail, Greenfield, Mass.

Matthew B. Ehrlich, Architect, Earle Theater Building, 1028 Market St., Philadelphia 7, Pa.

Carroll W. Everett, Architect, York and Sawyer, 101 Park Ave., New York, N. Y.

William G. Harvard, Architect, 2714 9th St., N., St. Petersburg, Fla.

Michael M. Kane, Architect, 12381 Cedar Rd., Cleveland Heights 18, Ohio.

Long & Gatling, Architects, 1640 Brown-Marx Bldg., Birmingham 3, Ala.

Max M. Sandfield, Architect, 4013 Cedar Springs, Dallas, Tex.

Harold E. Woodward, Architect, 150 Archer St., Spartanburg, S. C.

Paul D. Woodward, Architect, 716-A Bousch St., Norfolk, Va.

AT THE COLLEGES

Hebrew Technion Seeking Expanded Teaching Staff

In line with the urgent need for engineers and architects in the growing state of Israel, the Hebrew Institute of Technology at Haifa is now seeking to expand its teaching staff in nearly all departments.

The American Technion Society, 154 Nassau Street, New York City, reports that openings exist for a professor or associate professor of architecture; for associate professors and other staff for the three divisions of the Faculty of Civil Engineering — Buildings and Structures, Public Works, Hydraulic Engineering; professors, lecturers and instructors for the faculty of mechanical engineering.

More teaching personnel is also required for the newly-established faculty of science.

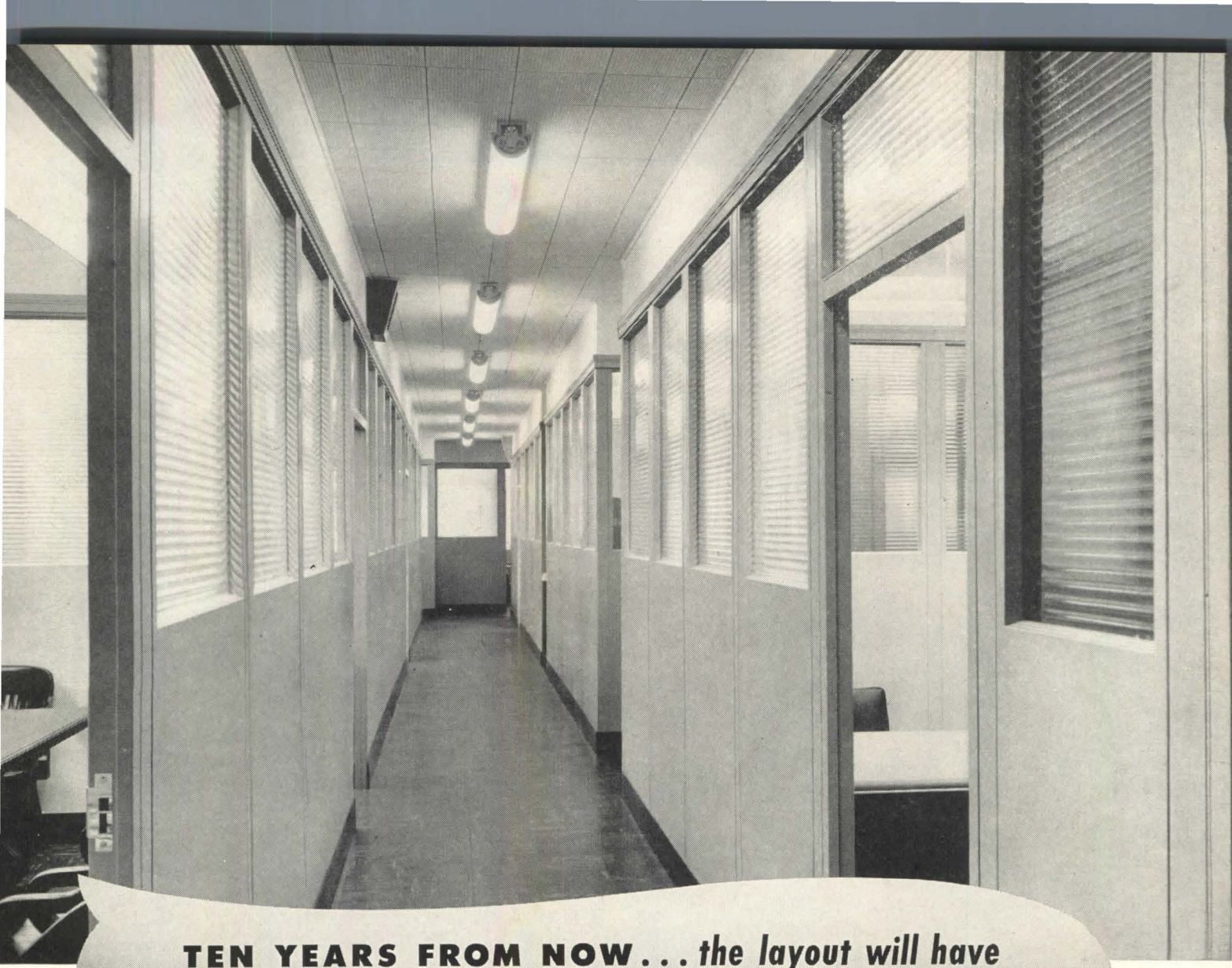
Some assistantships of many which are open will enable the holders to carry on research and to study for higher degrees.

To the right candidates for posts in the higher grades, the Technion offers lifetime contracts, with a pension scheme on retirement. It will pay their fares and their families' and transportation charges for their personal effects to Israel. It will also see to it that they get proper housing, etc.

Convocation Sees Shortage Of Engineers as Alarming

The need for public recognition of the crisis in engineering manpower was stressed in all the sessions of a day-long convocation recently arranged by the Engineering Manpower Commission of the Engineers Joint Council and the En-

(*Continued on page 250*



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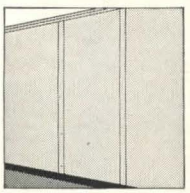

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For all the facts see Sweet's Architectural File or write for Mills Movable Metal Walls Catalog No. 51.

★ **MILLS** *Movable* **METAL WALLS** ★

(*Continued from page 248*)

gineers Society of Western Pennsylvania.

The convocation, held on the campus of the University of Pittsburgh because of Pittsburgh's proximity to major industrial centers, attracted some 600 representatives of American industry, the engineering profession, college educators and Pittsburgh secondary schools.

The engineering profession itself was called upon to "broadcast" the facts about the "alarming" shortages of engineers in local communities and a program for attracting new personnel was outlined.

Also outlined was a program for the utilization and strengthening of the engineering profession for the guidance of the military. The military establishment was cautioned not to call those in critical engineering positions without due regard for the importance of their present service. It was stressed that enlisted and officer reservists whose training qualifies them as engineers should be used in assignments only engineers can fill.

At the same time industry was urged to use engineers only in jobs which require engineers and not to hold young engineers in "interne" positions any longer than necessary: engineers should be moved to positions of maximum responsibility.

The Engineering Manpower Commission said the pattern of utilization of engineers must be greatly modified if vitally necessary engineering work is to be accomplished with the limited numbers of engineers available.

Speakers included G. A. Shoemaker, president and acting chairman of the Engineers Society of Western Pennsylvania and vice president of the Pittsburgh Consolidation Coal Co.; A. C. Monteith, vice president of Westinghouse Electric Corp.; S. C. Hollister, dean of Cornell University; M. H. Trytten of the National Research Council; C. H. Brown, manager of engineering and manufacturing services of Eastman Kodak Co.; Adm. Ben Moreell, president of Jones and Laughlin Steel Corp.; Gen. C. E. Dargusch (Ret.), legal counsel for the Engineering Manpower Commission; Dr. Douglas Brown, dean of faculty at Princeton University and member of the Committee on Specialized Personnel; and Dr. P. N. Powers, assistant to the president of the Monsanto Chemical Co. and former secretary of the Scientific Manpower Committee.

Lincoln Foundation Awards Annual Engineering Prizes

Engineering honors and cash awards totaling $5000 have been given by the Lincoln Arc Welding Foundation of Cleveland to 63 young engineers in 28 states, representing 34 engineering schools. Funds totaling $1750 were also awarded to three engineering schools to establish scholarships in honor of and named for the engineers receiving the main awards.

The awards were made in the fourth annual competition of the Foundation's Engineering Undergraduate Award and Scholarship Program. The program offers awards for papers by engineering undergraduates on the design, fabrication, research or maintenance of structures or machines in which arc welding is used. The Foundation is sponsoring a 10-year series of programs to encourage

(*Continued on page 252*)

 (*Continued from page 250*)

undergraduate engineers to use "imagination and ingenuity" in developing engineering projects.

Major awards were made as follows:

First Award, $1105.03 — Hugh M. Rush, for his paper, "Hydraulic Cranes for Military Vehicles." Purdue University will receive $1000 to establish four scholarships in the Department of Mechanical Engineering, in which Mr. Rush was enrolled when he prepared his award paper.

Second Award, $552.20 — Walter H. Halstead, for his paper "A Comparison of Riveted and Welded Design on a Through Plate Girder Railroad Bridge." Lafayette College receives $500 to establish two scholarships in the Department of Civil Engineering in his honor.

Third Award, $276.25 — Paul E. Potter, for his paper, "An All-Welded Steel Bridge." Oregon State College receives $250 for a scholarship in the Department of Civil Engineering.

Scholarships, Fellowships

• An endowment fund to award full tuition scholarships to students entering the college of engineering has been established at Lehigh University by York-Shipley Inc. of York, Pa. The scholarships will be awarded on the basis of financial need, character, personality and scholastic achievements. Preference will be given applicants from York County who wish to enroll in the mechanical engineering program. The first two awards already have been made — to Paul E. Klinedinst of York and Clifford Trout of Neptune, N. J.

• The Department of Landscape Architecture of Harvard University offers to those eligible for admission as regular students a scholarship for the next academic year with an income of $600, equal to the tuition fee. Students who have received a B.A. within the past four years and June 1952 candidates are eligible. Award will be made on the basis of scholastic standing and evidence of interest in the field of landscape architecture. The curriculum includes design of areas of land for human use and enjoyment — broad scale physical planning, civic design, housing, parks and parkways. Queries, which are due by December 1, 1951, should be addressed: The Chairman, Department of Landscape Architecture, Robinson Hall, Harvard University, Cambridge 38, Mass.

• The Acoustical Materials Association Fellowship in Acoustics at the Massachusetts Institute of Technology for 1951–52 has been awarded to Kenneth W. Goff of Weston, W. Va. Mr. Goff is working on special techniques for applications to correlational methods.

Faculty Appointments

• The Department of Architecture of the University of Illinois, Urbana, Ill., has announced the appointment of Ambrose M. Richardson as professor of architecture. A graduate of Illinois Institute of Technology, Professor Richardson has been associated with the architectural firm of Skidmore, Owings and Merrill in the Chicago office since 1945 and, prior to service in the Army

(*Continued on page 254*)

This 5000-watt artificial sun rides hoop-like tracks and moves through a 180° arc to simulate the sun anytime of the day, anywhere in the world.

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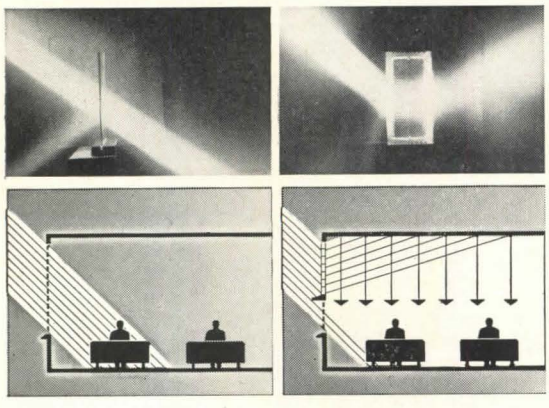

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INSULUX GLASS BLOCK

INSULUX FENESTRATION SYSTEMS

—by the leaders of Daylight Engineering

(*Continued from page 252*)

Engineer Corps during World War II, from 1938 to 1941. He is now on indefinite leave. Professor Richardson will take charge of the department's graduate courses in architectural design and will also conduct graduate courses in advanced planning techniques and urban housing.

The Department has also announced the appointment of John G. Replinger as instructor in design. Mr. Replinger has for the past year been research associate assigned to the Chicago Architectural Archives project, in which the University of Illinois and the Art Institute of Chicago are cooperating.

• The School of Design of North Carolina State College announces the appointment of Hugo Leipziger-Pearce as professor of architecture; Eduardo F. Catalano, associate professor of architecture; Roy Gussow, assistant professor of design; Leslie J. Laskey and Louis Tavelli, instructors in design; and Kenneth McCoy Scott, instructor in architecture.

Lewis Mumford, visiting professor for the past three years, will return for a fourth year. Other visiting lecturers will be Alden B. Dow, R. Buckminster Fuller, Ludwig Mies van de Rohe, Pietro Belluschi and Naum Gabo.

• Howard K. Menhinick, director of regional studies with the Tennessee Valley Authority, has been appointed Regents' Professor of City Planning in the School of Architecture at the Georgia Institute of Technology.

• Appointments to the staff of Pratt Institute have been announced as follows: John Johansen, to teach design analysis; Sidney Katz, Robert Hays Rosenberg and Ranieo Corbelletti, to teach design; Mrs. Sibyl Moholy-Nagy to teach history of architecture; Douglas Haskell, to be a visiting lecturer in theory.

COMPETITIONS

N. A. H. B. Contest Entries Are Due by November 15

Entries in the fourth annual "Neighborhood Development Contest" sponsored by the National Association of Home Builders are due in Washington November 15.

The contest is intended to give recognition to the best community developments and housing projects constructed by members of the N.A.H.B.'s 180 local affiliated associations.

For single-family homes, garden apartments, shopping centers, 70 per cent of the judging will be on site planning and layout features and 30 per cent on architectural design of the buildings. Construction must be approximately 25 per cent complete.

In community development projects which include a variety of dwelling types, shopping centers and other community facilities, weight of 40 per cent will be given for the community plan and layout features, 30 per cent for the existence of or provision for various community facilities, and 30 per cent for architectural design. Construction on such

(*Continued on page 256*)

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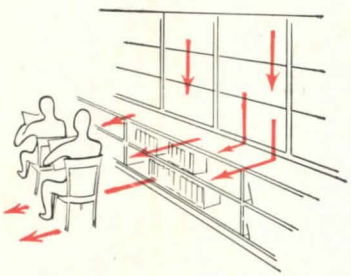

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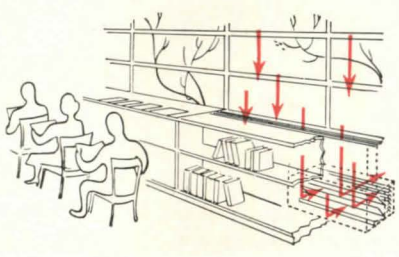

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(*Continued from page 254*)

entries must be approximately 10 per cent complete.

Entries should take the form of exhibits showing maps, layouts, floor plans and photographs. General information on the selling price of houses and improved lots, rentals per room, with lists of utilities and services provided, size of trade area, store and parking area, number of car spaces, etc. for shopping centers must be included in the mounted exhibits.

Winners will be selected by a jury composed of leaders in land and community development, and will be presented with scrolls at the N.A.H.B.'s January convention in Chicago. The exhibits will be on display there.

Applications Invited for 1952 Brunner Scholarship

Applications for the 1952 Brunner Scholarship will be accepted by the New York Chapter of the American Institute of Architects until November 15.

The grant, for an amount up to $2400, for advanced study in some specialized field of architectural investigation, is awarded annually by the Chapter "to further the development of architecture in the United States." The subject of the study may be chosen by each candidate.

The recipient will be selected entirely on the basis of his individual merits as shown by proofs of his eligibility, by the value and practicability of his chosen subject, his previously recorded capacity for study, his character, ability, purpose and promise. There is no formal competition.

Any citizen of the United States who has an advanced professional background and is engaged in the profession of architecture and its related fields may apply. Further information is available from the Chapter office, 115 East 40th St., New York 16, N. Y.

"Centerpiece" Is Sought for 1952 Indianapolis Home Show

Architects, architectural designers, draftsmen and architectural students of the nation have been invited to enter a competition to design a house to be built as the "centerpiece" of the 1952 Indianapolis Home Show.

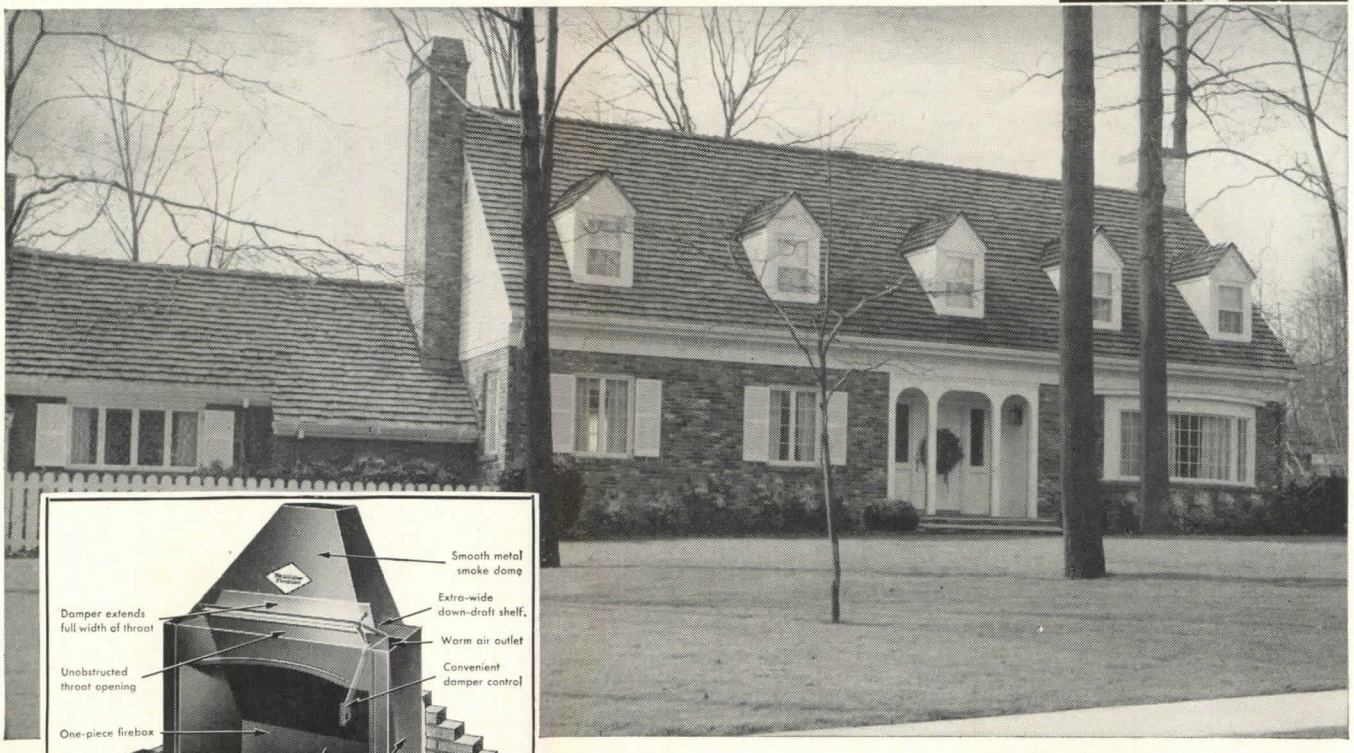
The competition, which was won last year by 25-year-old Ewing H. Miller of Miller and Vrydagh, Architects, Terre Haute, Ind., has the sponsorship of the American Institute of Architects. Edward D. Pierre, F.A.I.A., is serving as architectural adviser.

The problem is the design and plot layout of a one-story house, with or without basement, to contain not more than 1600 sq ft floor area. The house must have three bedrooms and "suitable spaces" for living, dining room or alcove, kitchen, laundry, general utility and storage. A two-car garage is required, but it and any porches are to be included in area footage at 50 per cent of actual floor area. Basement, if any, is not to be included in footage. The program stipulates that "the use of modular planning and construction is desirable but not mandatory" and that suitability of the style and living convenience and construction for the midwestern location shall be considered.

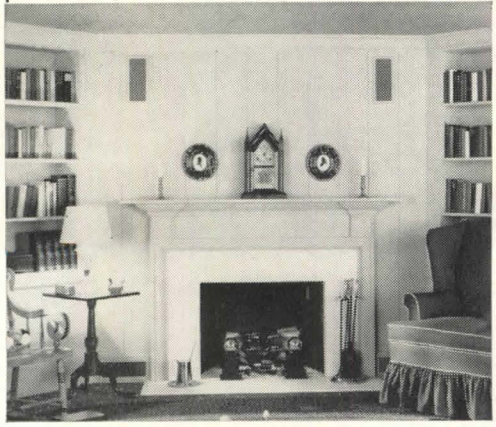
(*Continued on page 258*)

"A Heatilator Fireplace cuts my supervision time way down!"

says **CARL KEMM LOVEN**
Nationally-known Architect, Glen Rock, New Jersey



This beautiful home is typical of many designed by Carl Kemm Loven that include the Heatilator Fireplace.



There are many Heatilator installations throughout the country such as this lovely Early American style.

"YOU'LL avoid trouble with a fireplace smoking or not drawing properly if you use a Heatilator* Fireplace unit," says Mr. Loven. It is factory engineered and designed so that even an inexperienced mason can install one *with a minimum of supervision.*

NO LIMIT TO DESIGN. A versatile architect, Carl Kemm Loven has designed scores of beautiful homes, summer camps and hunting lodges of every style and decorative treatment. The Heatilator unit fits into his plans perfectly because it allows complete freedom of architectural expression with no restrictions on mantel design or use of materials. It is a scientifically designed, heavy-gauge steel form, complete from hearth to flue, around which any style of fireplace can be built.

A LIFETIME OF EXTRA COMFORT. "A fireplace should be more than a decoration," says Mr. Loven. "My clients want extra comfort, too, and a Heatilator Fireplace gives it". It circulates heat to warm the entire room instead of giving off a little radiant heat and wasting the rest up the chimney.

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(*Continued from page 256*)

Factors to be considered in judging are listed as follows: plan arrangement; adequate use of space; structural practicability; adequacy of equipment; external appearance; effective presentation; suitability as an exhibit centerpiece.

The Indianapolis Home Show plans to build the winning design in the Mall of the Manufacturers' Building, Indiana State Fairgrounds, for the duration of the Exposition, April 18–27, 1952.

Entries in the competition must be postmarked not later than midnight on December 16. The award will be announced January 10 and the winners notified and paid immediately afterwards.

These awards will be made: first prize, $500; second prize, $100; third prize, $50; fourth prize, $50.

Required application forms may be obtained by addressing Mr. E. D. Pierre, architectural adviser, c-o J. F. Cantwell, managing director, Indianapolis Home Show Inc., 1456 N. Delaware St., Indianapolis 2, Ind.

Five Group Contests Planned For '52 Lighting Merit Awards

Five separate competitions will be held to choose the recipients of the Merit Award Certificates and 25 $100 prizes in the competition sponsored by the Fourth International Lighting Exposition and Conference.

Architects and consulting engineers will be judged in one of the five groups. Others are: electrical contractors, utility lighting and power representatives, electrical distributors' lighting specialists and salesmen, and owners and users of industrial and commercial lighting.

The competition closes January 31. Requests for official rules and entry blanks should be sent to the Merit Award Committee, 4th International Lighting Exposition and Conference, Room 818, 326 W. Madison St., Chicago 6, Ill.

Awards will be conferred at one of the sessions of the Conference, May 6–9 in the Cleveland Auditorium at Cleveland, where successful entries will be exhibited. The Conference is sponsored by the Industrial and Commercial Lighting Equipment Section of the National Electrical Manufacturers Association.

AWARDS

UN Building Gets One of Two "Office of the Year" Awards

The United Nations Secretariat Building in New York and the Chicago offices of Foote, Cone & Belding were selected to receive the annual "Office of the Year" awards for 1951 at a luncheon in New York last month.

The awards, given last year for the first time, were based this year on a poll conducted by the sponsor, *Office Management and Equipment Magazine*, among architects, decorators and management engineers. They are given to offices in two categories — for more than 500 employees and for less than 500 — which are chosen as outstanding in design, layout and equipment.

Architects as well as owners of the winning offices were honored at the award luncheon: for the United Nations Building, Harrison and Abramovitz, Ar-

(*Continued on page 260*)

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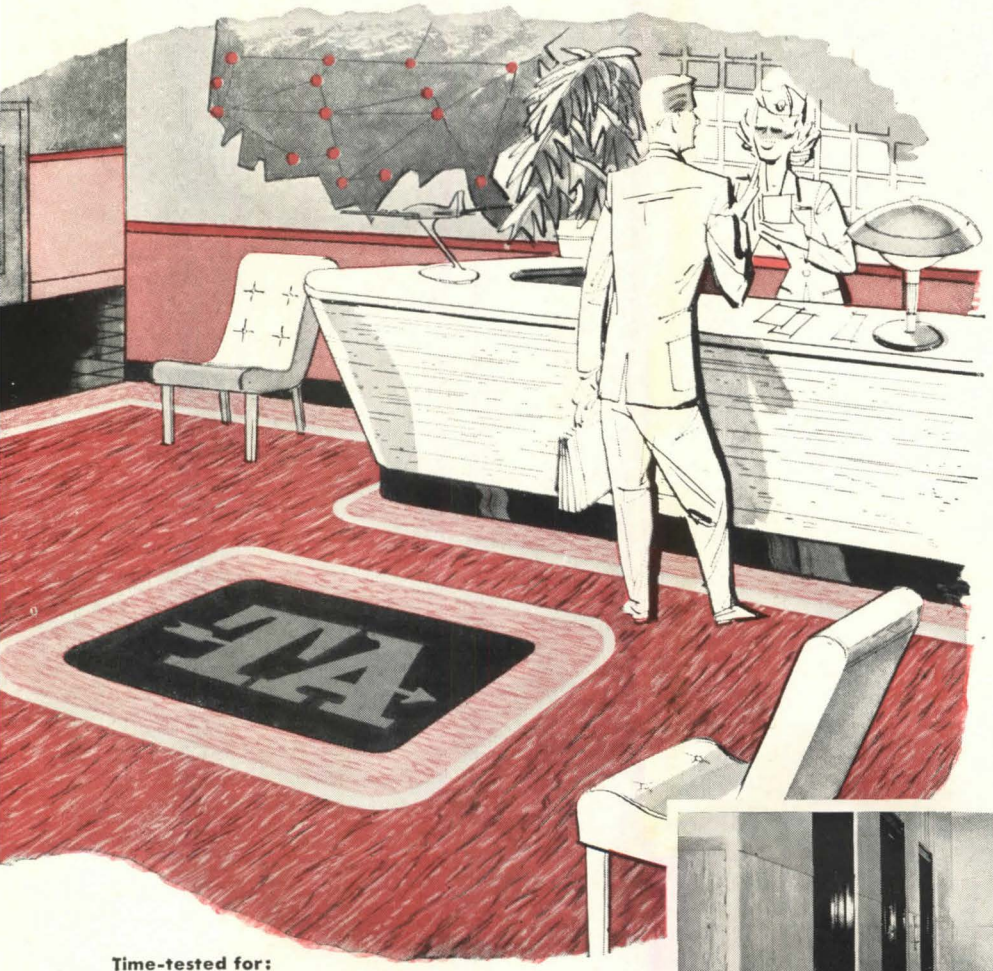

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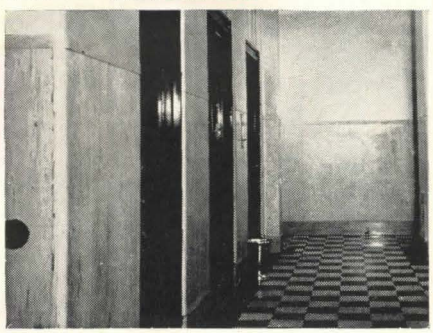

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(*Continued from page 258*)

chitects, New York; for the Foote, Cone & Belding offices, Friedman, Alschuler & Sincere and Harper Richards, Chicago.

In addition to the plaques for winners, Certificates of Honorable Mention were awarded to two offices in each category. Certificates for offices employing more than 500 went to the offices of the Farm Bureau Insurance Companies, Columbus, Ohio — Benham, Richards & Armstrong of Columbus, architects; and Dun & Bradstreet, Inc., New York — Reinhard, Hofmeister & Walquist of New York, architects. For offices employing fewer than 500, certificates were awarded to the First National Bank of Tulsa — Carsin & Lundin of New York, architects; and the Northwestern Mutual Fire Association offices in Los Angeles — Richard J. Neutra of Los Angeles, architect.

Parents' Magazine *Announces Winners of Home Competition*

Winners of the annual builders' competition for the 1950 "Best Homes for Family Living" have been announced by the sponsor, *Parents' Magazine.*

The National Merit Award went to Jere Strizek of Jere Strizek Inc., Sacramento, builders, for a house for Mr. and Mrs. R. C. Bovey, designed by John W. Davis, also of Sacramento.

The awards are offered in each of five geographical regions in two price classifications — houses under $16,000 and houses sold for prices ranging from $16,000 to $25,000.

This year only one award was made in the higher price category — to Robert C. Davenport, president, Hollin Hills Inc., Alexandria, Va., builder, for a house for Mr. and Mrs. Howard West, Charles M. Goodman Associates, Washington, D. C., architects.

In the lower price category, awards were made as follows:

B. V. Zamore, president, Zamore Builds Inc., Waldwick, N. J., builder; house for Mr. and Mrs. George Moll, Waldwick, N. J.; Harvey P. Clarkson, A.I.A., New York, architect.

Robert C. Davenport, president, Hollin Hills Inc., Alexandria, Va., builder; house for Mr. and Mrs. Alex Radin, Hollin Hills, Alexandria, Va.; Charles M. Goodman Associates, Washington, D. C., architects.

Albert Balch, Community Builder & Realtor, Seattle, builder; house for Mr. and Mrs. E. F. Stephens, Seattle; W. A. Wollander, c–o Carroll Hedlund & Associates, Seattle, architect.

Jere Strizek (the National Merit Award winner).

Fritz Burns, Kaiser Community Homes, Los Angeles, builder; house for Mr. and Mrs. H. S. Burns (not related to builder), Los Angeles; Henry J. Friel, Los Angeles, architect.

The awards were made to the homes the judges felt provide "the greatest livability" for an American family with two or more children and were judged on the basis of arrangement, use of space, storage facilities and provision for equipment. Also taken into consideration were the usefulness of the site as planned for outdoor family activities, durability, convenient use, simplicity of maintenance, attractive architectural

(*Continued on page 262*)

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Architect: Barney & Banwell
Engineer: Parson, Kallas & Fuller
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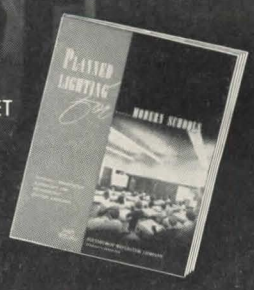

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(*Continued from page 260*)

design, structural soundness and quality of workmanship.

The Jury of Award was headed by Richard Bennett, A.I.A., of Loebl, Schlossman and Bennett, Architects, and included Leonard Haeger, A.I.A., building materials expediter for the National Association of Home Builders, acting for W. P. Atkinson, N.A.H.B. president; William H. Scheick, A.I.A., executive director, Building Research Advisory Board, National Research Council; and Mrs. Maxine Livingston, Family Home Editor, *Parents' Magazine*.

Awards will be presented formally to the builders of the award-winning houses during the convention of the N.A.H.B. at Chicago in January.

Plaques Awarded to Honor "Most Beautiful" Bridges

Three bridges selected as the most beautiful steel bridges opened to traffic in the United States during 1950 have been awarded stainless steel plaques by the American Institute of Steel Construction.

The winners in the contest, which has been conducted annually by the Institute since 1928, were selected by a jury of architects and engineers from a field of 97 entries, more than double the number of entries last year.

The winners were:

Class I, for bridges with spans of 400 ft or more — Columbia River Bridge, Wenatchee, Wash. Owner, State of Washington Department of Highways; designer, George Stevens, bridge engineer, State of Washington Department of Highways; fabricator, American Bridge Company.

Class II, for bridges with spans under 400 ft, costing over $500,000 — South Holston River Bridge, on Tennessee State Highway 34, Sullivan County, Tenn. Owner, State of Tennessee; designer, Tennessee Valley Authority; fabricator, Virginia Bridge Company.

Class III, for bridges with spans under 400 ft, costing less than $500,000 — Caldwell Avenue Bridge, over Edens Expressway, Cook County, Ill. Owner, Cook County, Ill.; designer Cook County Highway Department, J. Edwin Quinn, architect; fabricator, Bethlehem Steel Company.

Bronze plaques will be given for six bridges which received honorable mention.

Members of the award jury were: Glenn Stanton, president of the American Institute of Architects; Prof. Carlton T. Bishop, School of Engineering, Yale University; Rene d'Harnoncourt, director, Museum of Modern Art, New York City; Albert Kruse, architect, Wilmington, Del.; Alfred Shaw, architect, Chicago.

• Students from Oklahoma A. & M. College won the ARCHITECTURAL RECORD prizes and the six Second Medal awards in the Beaux Arts Institute of Design Class A Problem IV competition. The problem, written by Walther Prokosch, architect, of New York, was an airport terminal building.

R. L. Robinson was awarded Second Medal and first ARCHITECTURAL RECORD prize; L. G. Ost Jr. Second Medal and second ARCHITECTURAL RECORD

(*Continued on page 264*)

(*Continued from page 262*)

prize. Other recipients of Second Medal were D. L. Adamson, L. J. Dellaport, J. L. Samuelson, D. W. Williams.

• The American Society of Mechanical Engineers has named Thomas Roy Jones, president of Daystrom Inc., Elizabeth, N. J., as the 1951 winner of the Henry Laurence Gantt medal for "distinguished achievement in industrial management as a service to the community."

ELECTIONS APPOINTMENTS

• Officers of the Architects Association of Illinois have been reelected to serve for another year. They are: Edward A. Kane, Edwardsville, president; John Fugard Jr., Chicago, vice president; Edgar E. Lundeen, Bloomington, secretary-treasurer. The A.A.I. consists of delegates from the three Illinois chapters of the American Institute of Architects: Chicago, Central Illinois and Southern Illinois.

• William M. Collier Jr. of Abilene has been named president of the Fort Worth Chapter of the American Institute of Architects. Mr. Collier, who as vice president last year was the first non-resident of Fort Worth ever to hold office in the organization, now becomes its first non-resident president.

• John D. Lange has been named executive director of the National Association of Housing Officials following the resignation of John M. Ducey. Mr. Lange, in the housing field since 1940, has been for the past three years director of management of American Community Builders, Inc., the firm headed by Philip M. Klutznick that built the new town of Park Forest (ARCHITECTURAL RECORD, May 1951, pages 93 to 125). Earlier he had been assistant community manager of Greendale, Wisc. and had key posts in regional and central offices of the Federal Public Housing Authority and its successor, the Public Housing Administration.

• Russel Wright, New York industrial designer, has been elected president of the Society of Industrial Designers for 1951–52. He succeeds Dave Chapman, Chicago designer. Other new officers are: Carl Bjorncrantz, Chicago, vice president; Jean O. Reinecke, Chicago, secretary; and A. Baker Barnhart, New York, treasurer.

• Katherine Morrow Ford has joined the staff of Knoll Associates, Inc. as head of public relations. Mrs. Ford had been architectural editor and consultant for *House & Garden* magazine from 1945 until her recent resignation. Earlier she had been administrative assistant of the President's Conference on Home Building and Home Ownership and secretary of its Committee on Standards and Objectives; executive director of the national educational organization, Better Homes in America; and administrative assistant of the Research on Slums and Housing sponsored by the Phelps-Stokes Fund. Mrs. Ford has written a number of books on architectural and interior

(*Continued on page 266*)

Andersen Casements, St. Paul, Minn., home, Norman Johnson, architect

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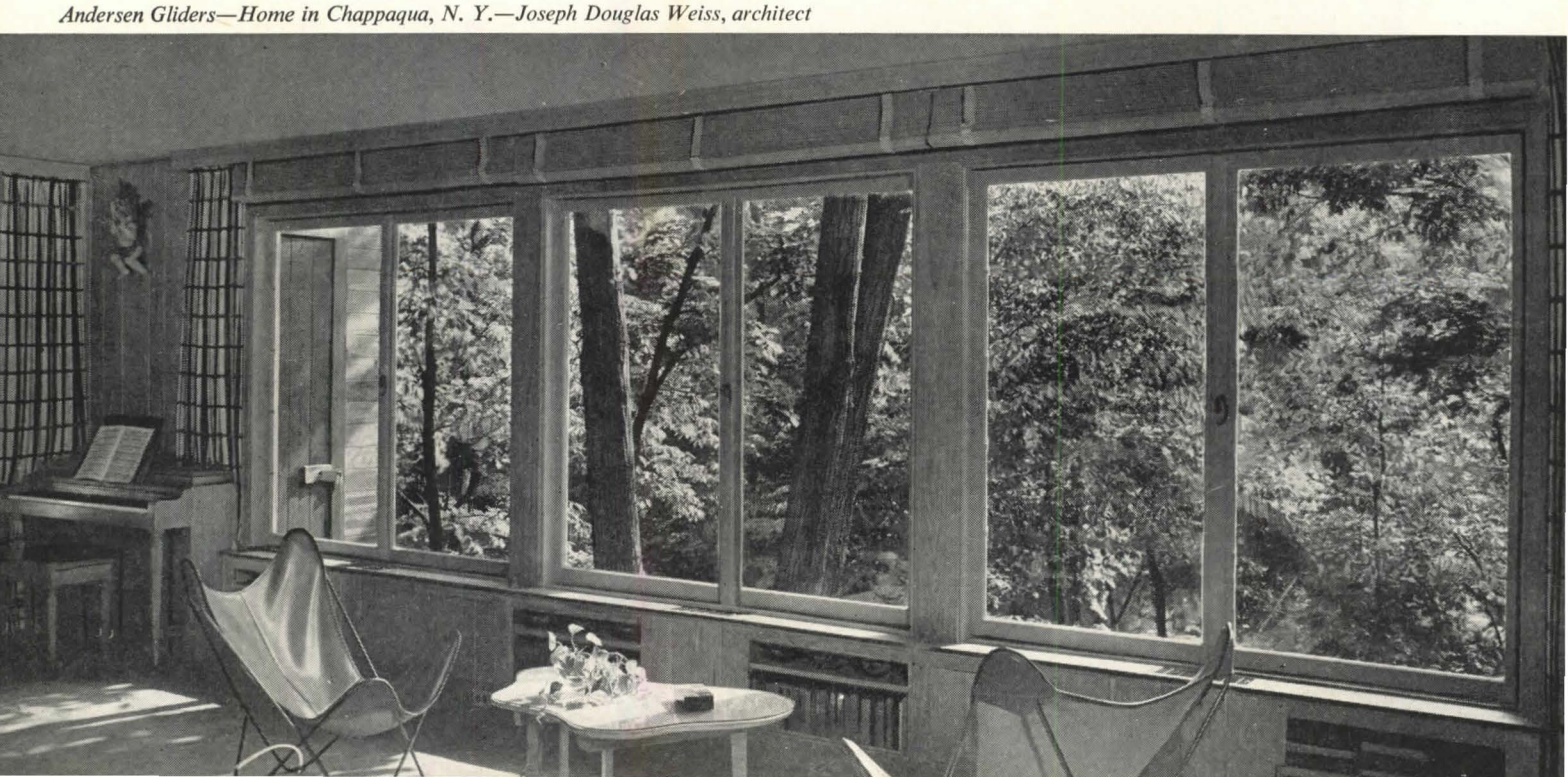
Andersen Gliders—Home in Chappaqua, N. Y.—Joseph Douglas Weiss, architect



(*Continued from page 264*)

design subjects, including "The Modern House in America," "The Design of Modern Interiors" and the forthcoming "The American House Today."

• Ben Nash, Fellow and past president, has been awarded the Medal for Achievement by the National Board of Industrial Designers Institute. It was presented for his "courage and pioneering, for educational work and personal achievement, all in the field of Industrial Design."

EXHIBITIONS

Architectural League Opens Gold Medal Series Nov. 12

An exhibition of sculpture opening November 12 at the Architectural League of New York will inaugurate the League's 55th annual Gold Medal show.

The most outstanding work from the exhibition will be selected by a jury for the Sculpture Gold Medal to be presented at a dinner on November 15.

Next in the series of five Gold Medal exhibits at the League will be the exhibit of architectural works, January 14 to February 7. Deadline for preliminary submission is the second week of November.

Succeeding exhibits will be held as follows: design and craftsmanship in native industrial arts — February 11–March 7; mural painting — March 17–April 4; landscape architecture — April 7–May 2.

The series of individual exhibits will culminate in a comprehensive combined exhibit of all the arts. This final Gold Medal show will be timed to coincide with the annual convention of the American Institute of Architects, to be held June 17–22 in New York City.

Information about making submissions for any of the exhibits may be obtained from Miss Anna Clarke, executive secretary, Architectural League, 115 East 40th St., New York 16, N. Y.

NEW WILLIAMSBURG MOVIE TELLS RESTORATION STORY

The epic tale of the restoration of Colonial Williamsburg is strikingly told in a new 16 mm. documentary film in color recently released as the first project in a new audio-visual program for Williamsburg.

The 44-minute motion picture, with narration by Actor Walter Abel, can be rented or purchased through the new Film Distribution Section, Colonial Williamsburg, Williamsburg, Va.

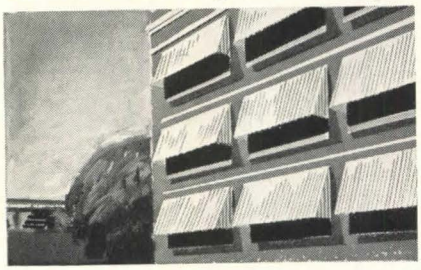
"Williamsburg Restored" opens with scenes of reaction in the old city to news of the Boston Tea Party. Later scenes cover the days of the 1920's when the last vestiges of the old city's Colonial heritage were becoming obscured and the idea of restoring it developed between Rev. W. A. R. Goodwin, rector of Bruton Parish Church, and John D. Rockefeller Jr. Mr. Rockefeller, incidentally, appears in the film to portray himself in scenes with the late Mr. Goodwin, played by the rector's son.

The center portion of the film tells the heart of the restoration story; and it takes something over half the running

(*Continued on page 268*)

Architectural Service

Attractive Awnings



Rapidly increasing use of aluminum awnings is due to their advantages in all types of structures—institutional, commercial, industrial and residential. Besides providing desired shading, aluminum awnings reflect sun's heat—do not absorb and hold it against the building. Maintenance is never a problem with fireproof, rustproof, permanent aluminum . . . either in natural finish or one of the unlimited number of color combinations that are available. Fixed or roll type awnings made from Reynolds Aluminum are sold by many reliable manufacturers. We'll be pleased to send you their names.

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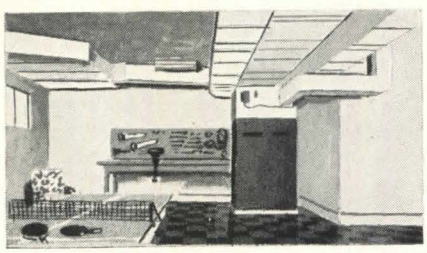
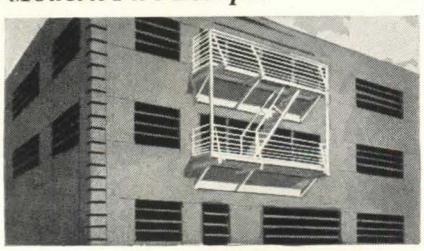


A fast-moving trend to aluminum for heating, ventilating, and air conditioning ducts will soon make it the accepted material standard. Aluminum makes neater installations—an important factor in such places as game rooms. Rust problems are eliminated in laundry areas or wherever moisture is a consideration. Finished costs for aluminum ductwork are comparable to those with less permanent materials because lightweight aluminum is easier to handle, fabricate and install. For completely satisfied clients specify aluminum ductwork.

Modern Fire-Escapes



Rust will never stain the buildings you design when you specify fire escapes made of always attractive Reynolds Aluminum. Painting expense is eliminated for the building owner, too . . . especially important where corrosive industrial fumes are encountered. Savings made possible by the lighter structural load and easier erection frequently offset the small added material cost. A Reynolds architectural aluminum specialist will work with you on fire escape or any other aluminum design problem.

(Advertisement)

(*Continued from page 266*)

time. Most architects will wish it had occupied more; they will also wryly note that while there is painstaking detailing of the incredible architectural difficulties overcome in the process of achieving maximum authenticity in the restoration, the names of Perry, Shaw and Hepburn, the architects who guided it, and their colleagues are not mentioned.

The closing scenes show the city today, with visitors roaming some of its most famous sites.

The film was produced for Colonial Williamsburg by the Julien Bryan International Film Foundation under the direction of Francis Thompson. Except for Mr. Rockefeller, the actors are Williamsburg citizens.

HOUSTON ARCHITECTS AID SCHOOL DEFENSE PROGRAM

Members of the Houston Chapter of the American Institute of Architects have been helping to spot the best locations in the city's public schools for student shelters in case of air attack.

The activity came out of an offer of the chapter's services to Houston Civil Defense Director A. W. Snyder by the chapter Civil Defense Committee, which includes Talbott Wilson, Stayton Nunn, Herbert Cowell and Maurice Sullivan.

Principals of the city's schools were advised that their schools would be inspected for safety locations if they desired it.

The committee has prepared a check sheet for the inspecting architect, based on information from government sources. When a principal requests an inspection, the Civil Defense Committee attempts to locate the architect who designed the school, or, if the original architect cannot be contacted, an architect who has done work on the school. If neither is available, some member of the chapter is chosen to inspect the school and make recommendations to the principal. The inspecting architect makes an appointment with the principal, examines available plans of the school, makes a tour of the building and submits a report.

AIR FORCE HAS OPENINGS FOR AIRPORT ENGINEERS

Commissions for airport engineering officers are offered by the First Air Force to men with experience in airport design and construction.

Requirements for commissioning, in ranks from first lieutenant to lieutenant colonel, depending on age, include a bachelor's degree in civil engineering or a related field, and active technical experience in engineering design and construction, with particular emphasis on the design, preparation of specifications or construction of airports and highways.

The First Air Force is also seeking "air installation officers," who must have a university degree in architecture or one of the following branches of engineering: architectural, structural, general, civil, mechanical, industrial, or electrical. They also need professional knowledge of accepted engineering practices, preparation of plans and specifications and design and development.

Queries should be addressed to: Department of Military Personnel Procurement, Headquarters, First Air Force, Mitchel Air Force Base, N. Y.

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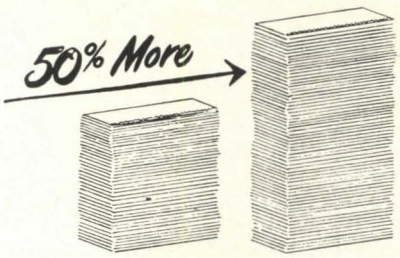

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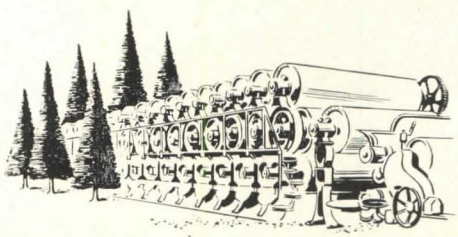

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of Nibroc towels is available year in and year out—made by one company from timber-cutting to finishing. One Brown Company machine alone, called "Mister Nibroc," produces nearly 30 million towels daily.

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CANADA

(*Continued from page 13*)

Dewar, Stevenson & Stanley were architects for the remodeling of Edmonton Gardens, civic arena in Edmonton, Alta. Extension at south end provided space for some 1400 additional seats. New lighting system also was installed

McDermid Studios Photo

Curbs Hurt Architects, But Engineer Shortage Is Acute

GOVERNMENT RESTRICTIONS on building and the steel shortage have curtailed their operations so that architects are no longer in short supply, the Technical Service Council reports.

The scarcity of engineers remains acute, the Council says, and a Canadian selection team has been touring Europe in search of qualified engineers.

Until the building restrictions began to make themselves felt, architects were in even greater demand than engineers. Now some younger architects are having a hard time finding jobs.

The Council, a 23-year-old organization which provides contact for industry with technically trained personnel, notes that demand for engineers has been accelerating since last year and the shortage continues in spite of the record graduating classes in engineering schools for the past two years.

Mechanical and civil engineers are most urgently sought, but indications of a growing shortage are appearing in the chemical and electrical fields as well.

The record level of industrial production, rather than defense orders, is considered responsible for the high level of employment.

August Building at New High; Eight Months Up 92 Per Cent

The all-time construction contract record, established in August 1950, was topped by 30 per cent by the $187,612,600 total for August of this year. At the same time, the cumulative total for the first eight months of 1951 reached $1,692,-741,300, a lead over the same period in 1950 of $811,106,800, or 92 per cent.

Maclean Building Reports Ltd., responsible for these figures, states that residential construction continued to

(*Continued on page 272*)

Welton Becket & Associates, *Architects*

MODERN DOOR CONTROL BY *LCN* · CLOSER CONCEALED IN DOOR

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THE RECORD REPORTS

CANADA

(*Continued from page 270*)

slump in August, dropping 27 per cent. This figure is considerably less than the 41 per cent drop noted in July; but the percentage is, of course, on a smaller volume. In addition, since the residential building material index moved up by 16 per cent in the year ending June 30, and since other costs are up proportionately, the drop in volume is greater than that shown by the difference in the value figures. For the first time in many months no single residential project valued at more than a million dollars was initiated.

Public and institutional building, combined in one category with commercial construction, carried the group to a better than $5 million increase over last year. Figure for August included over $20 million in direct defense contracts.

With very few large jobs in the industrial category, this type of building registered only a small gain in August. Largest jobs were a rolling mill expansion in Selkirk, Man., and a chemical plant in New Toronto, Ont., each valued at $1 million; a plywood plant at Victoria, B. C., at $2 million; and a petrochemical plant in Montreal, valued at $4 million.

Striking increases continued to be made in engineering construction during the month of August. Solid basis was found in three large jobs — a $30 million power plant and dam in British Columbia, another refinery, valued at $10 million, at Sarnia; and a Canadian National Railways line in Manitoba now getting under way and expected to cost $14.5 million.

The totals for the eight-month period showed industrial building a whacking 245 per cent over the same period last year; engineering 322 per cent ahead; commercial and institutional 43 per cent ahead; and residential 15 per cent under.

Builders Attack Credit Curbs As House Starts Show Decline

The decline in the number of dwellings started in the first six months of the year — placed at nine per cent — has aroused the National House Builders Association. There were 38,465 starts in six months of 1951 compared with 42,149 for the same period last year.

(*Continued on page 274*)

CONCRETE JOIST Floor Construction SAVES 4 WAYS on your Concrete Building!

When you specify *Concrete Joist* floor construction for your concrete building, you save materials, construction time, and cost. Furthermore, reduction of dead floor weight will permit economies in the building frame, too.

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THE RECORD REPORTS

CANADA

(*Continued from page 272*)

Angus Gordon, the N.H.B.A.'s new executive secretary, warned that many home builders might leave the housing field "unless credit restrictions are eased, thus giving reasonable assurance to builders that they won't be put out of business."

If this happens, said Mr. Gordon, "their skills and experience may thus be lost when the time comes, as it must, to make up for the present official neglect of the importance of housing.

"Government planners should look ahead," Mr. Gordon asserted. "By next spring our war plants will have pulled thousands of persons now employed in primary industries to our cities. The working force will also be swollen by the arrival of additional thousands of immigrants. Despite its words to the contrary, there is evidence that housing is the last of government's worries. Unless more vision is shown, we're bound to have a shambles of trailer camps, shacks and piano crate villages around our war plants, with all the social, health and schooling problems such developments bring.

"We have a Department of Defense Production, but no department to look after the housing of defense workers. Surely the folly of planning up to the factory fence must be apparent to everyone. We have to have more housing, and home builders are prepared to play a full part in providing it. However, they cannot operate in the strait-jacket now imposed by mortgage credit restrictions."

Layoffs Threaten

Meanwhile, many home builders are enjoying a grim chuckle over a letter they've received from the federal department of labor, asking them to find jobs for unemployed auto workers.

"Right now," comments Rex Heslop of Etobicoke, one of the country's largest builders, "we're letting men go ourselves. The government's credit restrictions have hit housing just as hard as the automobile industry. Our own and subcontractors' crews are down from 400 to 20 men. Present down payment requirements are so harsh that families with modest incomes can't save enough to buy homes of their own. If we aren't

(*Continued on page 276*)

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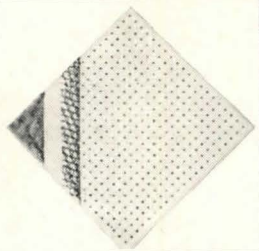
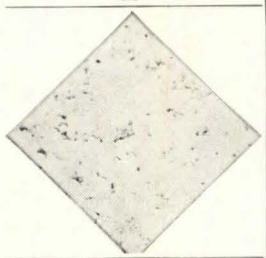
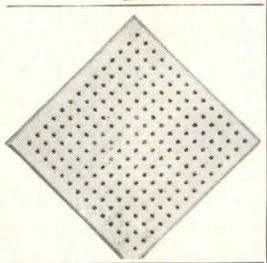
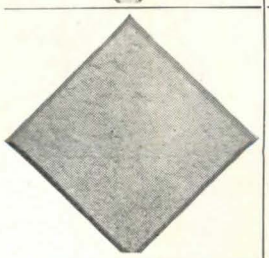
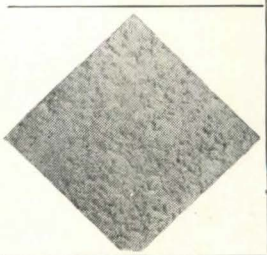
	**ACOUSTIMETAL** Low maintenance cost. Can be washed or painted any number of times. Panels quickly removed for access to plumbing and wiring. Fireproof, permanent, salvageable.	.85	1¼″	12″ x 24″	Alkyd resin enamel finish. Baked on by infra-red light. Bonderizing of metal assures greater adhesion of paint.
	**TRAVACOUSTIC** Fireproof mineral tile. Closely resembles beautiful travertine stone. Fissures vary in size, depth, and arrangement. Permanent, sanitary, acoustically efficient.	.65 .70	11/16″ 13/16″	6″ x 6″ 6″ x 12″ 12″ x 12″ 12″ x 24″	Non-glaring white finish applied at the factory gives high light-reflection. Repaintable with brush or spray gun.
	**ACOUSTIFIBRE** Perforated wood fibre tile. Round, clean holes drilled deep into porous core. Chemically-treated against mould and fungus. Sanitary, cleanable, repaintable.	.50 .65 .70	½″ ⅝″ ¾″	12″ x 12″ 12″ x 24″	Factory-applied shell-white finish on face and bevels results in high light-reflection.
	**ECONACOUSTIC** Low cost wood fibre tile. Distinctive brushed texture surface offers unusual natural beauty. Cleanable with vacuum cleaner.	.60	½″	12″ x 12″ 12″ x 24″	Prepainted white. May be spray-painted when other colors are desired.
	**THERMACOUSTIC** A mineral wool product which is sprayed to various thicknesses. Fireproof and rotproof. Especially adaptable to irregular surfaces.	.80 at ½″ thickness	As desired	Monolithic	Fissured texture can be repainted to harmonize with the decorative scheme without destroying its acoustical properties.

THE RECORD REPORTS

CANADA

(*Continued from page 274*)

permitted to build and sell houses for sensible down payments, we've no alternative but to cut production."

Campbell Holmes, North York builder and past president of the Toronto Metropolitan Home Builders' Association, echoes Mr. Heslop's remarks. "If we have to disband our crews," he says, "the home building industry will disintegrate. Our workers' skills are highly specialized. They're not like factory employees who can be used in any one of a variety of manufacturing processes. Once building tradesmen get settled in other types of work, it is difficult if not impossible to get them back."

House Prices Continue Rise

While federal deflationary measures have reduced the number of new house starts, the law of supply and demand seemed to be pushing the price of existing dwellings higher.

W. H. Bosley & Co., realtors, report that Toronto house prices have reached a new peak. Their office index registers 313, 34 points or 12 per cent above the level at the first of the year. The index is based on the average price per residential property sold as compared with the average assessment figures for 1946. Trend for the last three months recorded has been upward:

Month ending	*Average price*	*Bosley Index*
Aug. 11	$11,334	313
July 14	11,072	307
June 16	10,798	305

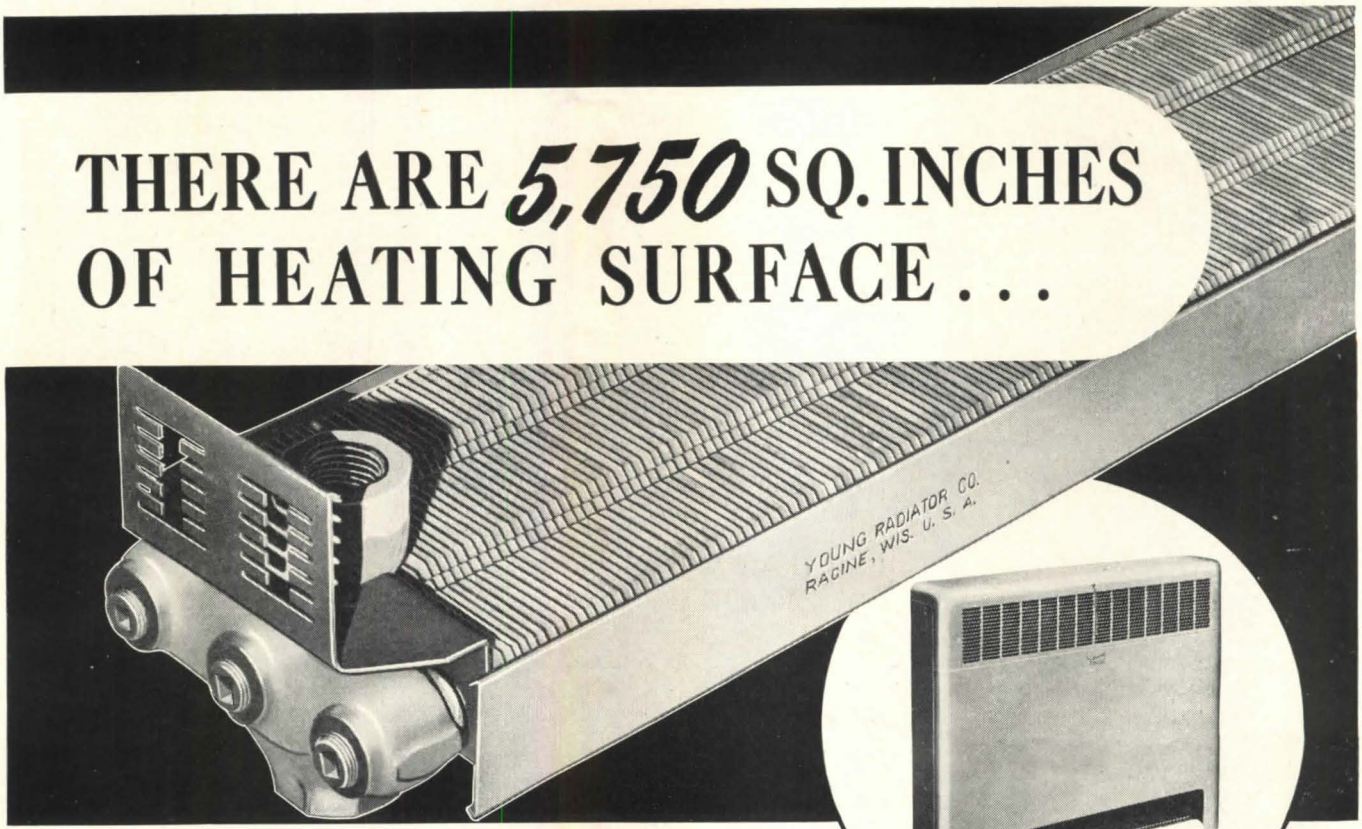
Total sales for the month ending August 11 amounted to $5,995,654, compared with $6,544,905 for the month ending July 14. Total assessments for these properties was $1,911,786, as against $2,121,721. There were 529 properties sold compared with 555 in the preceding period.

Builders' Head Sees Ruin If Curbs Are Not Relaxed

Hundreds of builders face disaster unless mortgage credit restrictions are eased, F. A. Mager, president of the Na-

(*Continued on page 278*)

THERE ARE *5,750* SQ. INCHES OF HEATING SURFACE . . .



Young Type "F" Free-Standing Convector may also be installed in wall recess.

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tional House Builders Association, declares.

"Figures released by the Dominion Bureau of Statistics show 40 per cent fewer dwellings were started in July than in the same month a year ago. The drop can be blamed on Ottawa's failure to regard housing as part of the national defense effort."

Mr. Mager went on to say that builders are eager to supply the houses that are so desperately needed. The obstacle is the size of the down payment required. "Until last February," Mr. Mager pointed out, "the extra one-sixth loan available under the National Housing Act made it possible for families to buy a decent home for $1000 to $1500 down. Now the government makes them pay $3000 to $4000. How can young married couples with children save that kind of money? The answer is they can't. At present, only the well-to-do can afford new houses."

Mortgage credit restrictions do nothing, in Mr. Mager's opinion, to stop the inflationary trend in housing. He claims the cost of new dwellings is rising because wage rates and materials prices are established outside the housebuilding industry. "They're set by the vast volume of non-residential construction, which includes defense construction and amounts to three or four times the dollar value of house building," he declared. "At the same time, because of the limited number of new houses, demand is forcing the price of older dwellings upwards.

"Bad as the situation is now," he concludes, "it will defy description next spring. Already the birth rate, immigration and the influx of defense workers are jamming our great industrial centers. Attics, private garages and basements are full; trailer camps and shacktowns are springing up. Much of this congestion, with its disastrous effects on the health and morals of the younger generation, would be avoided if the government would ease its mortgage credit terms."

Building Wage Up 9½ Per Cent For First Six Months of 1951

Wages in most building trades have soared this year, with an across-the-

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board increase of nine and a half per cent, according to the semi-annual survey conducted by the Canadian Construction Association and 32 Builders' Exchanges.

Other aspects of the building labor picture revealed by the survey: the number of work stoppages doubled in the first seven months of the year, compared with 1950; inclusion of escalator clauses in new wage agreements has become customary.

Ontario Mental Project Is Biggest Canadian Hospital

The new Ontario mental hospital now under construction at Smith's Falls will be the largest hospital in Canada. Its total of 2400 beds will top the largest veterans' hospital — Sunnybrook — listed by the Canadian Hospital Council as having 1400 beds, and the largest civilian hospital — Vancouver — with 1200 beds.

Cost to complete the Smith's Falls project is estimated at $14,400,000. The federal government will contribute $3,276,998 of this sum, the largest single grant made to date under the national health program. The province makes up the balance.

Architect George N. Williams, deputy minister of public works, points out that the first unit, which will accommodate 900 beds, is already in operation, part of its space being used for administrative and other purposes for the present.

Work is under way on a second 900-bed unit and the boiler house, laundry, mechanics' workshop, stores and garage.

Next unit to be built will be a treatment and surgical center with 600-bed capacity. Facilities will eventually include an administration building and a hospital school to increase Ontario facilities for caring for mentally deficient children.

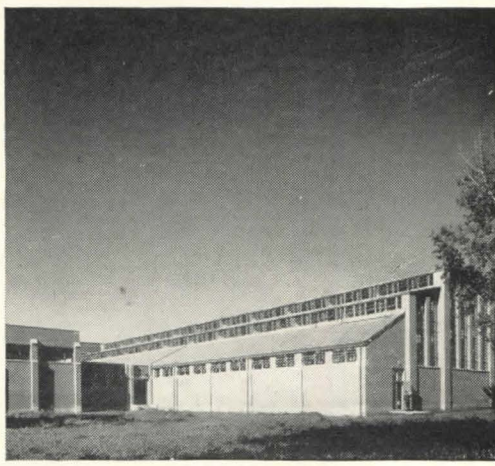
New Bank Opens in Toronto: Biggest Postwar Skyscraper

Canada's largest postwar skyscraper, the 25-story Bank of Nova Scotia building in the heart of Toronto's financial district, was recently opened to the

(*Continued on page 282*)

Building: EVANSTON TOWNSHIP HIGH SCHOOL—Evanston, Ill.
Architects and Engineers: Perkins & Will—Chicago
General Contractor: Peter Hamlin—Chicago
Gypsum Contractor: Anning Johnson—Chicago
Material: Approx. 54,000 sq. ft. of Fiberglas Insulating Form Board—1" thick.

Photos by Hedrich-Blessing Studio.



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For poured-in-place decks, the board—size 32"x48"x1"—is laid in place between subpurlins, normally spaced 32⅝" on center. The board will support the poured mix until it sets without additional support. Another advantage is that it does not rot, decay, swell or shrink, when exposed to moisture. The interior exposed surface has an interesting texture and may be spray painted after installation.

For complete specification information on Fiberglas Insulating Form Board see Sweet's Files—Architectural OR write us today for our A.I.A. File 37-B "Fiberglas Design Data". Owens-Corning Fiberglas Corporation, Dept. 68-K, Toledo 1, Ohio.

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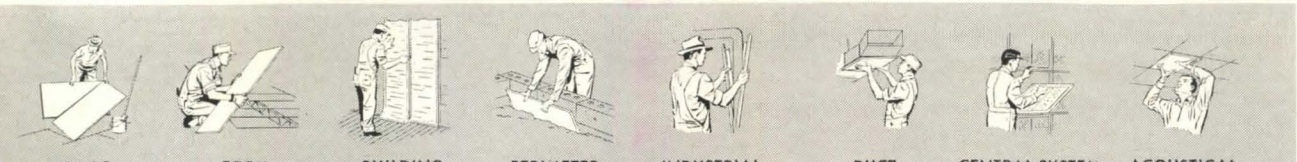

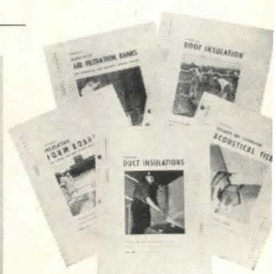

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public. Dignitaries of the political and business worlds took part in elaborate ceremonies climaxed by the presentation of the key to the main entrance to Board Chairman H. D. Burns by Architect A. S. Mathers.

Architects were Mathers & Haldenby; associate architects Beck & Eadie. Structural engineering was by Wallace, Carruthers & Associates Ltd.; mechanical engineering by Karel R. Rybka.

The new building is constructed of Indiana limestone and towers 322 ft above the street. Its architecture is described as "modern classic, with vertical lines strongly accentuated." It is designed to sway as much as two in. under extreme wind conditions.

Bank premises occupy the first eight floor, and the remaining 17 floors are rented. Some 2500 people work in the building. The bank's employees have their own lounges and dining rooms, and — for 22 minutes every hour — hear recorded music selected to relieve tension and fatigue.

The main banking room is three stories high and has on its north wall the largest mural sculpture in Canada — a 600-sq-ft bas relief depicting symbolically the various industries aided by the bank's financial operations. Miss Jacobine Jones was the sculptor.

Vaults for cash, coin, securities and safe deposit boxes are located 40 ft below street level and have walls of steel-plated reinforced concrete three ft thick.

(*Continued on page 284*)

Max Fleet Photo

Another view of entrance, Exclusive Upholstering Co., shown also on page 18

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Montreal Architect Designs Unit for House Cooperative

Jean Damphousse, Montreal architect, has designed a "stock" house for Les Chantiers St. Joseph, a housing cooperative in Granby, Que.

Since its foundation, the organization has built 50 six-room houses at an average cost of $4000.

The down payment for a lot and excavation is $300. Temporary financing is provided by La Caisse Populaire Desjardins of Granby. A lending institution, La Societe des Artisans, gives a mortgage of $3800 on each house at five per cent interest, of which the member pays two per cent and the remaining three per cent is paid by the Quebec government. Amortization period is 20 years, with the interest rate adjusted every five years. Monthly carrying charges run about $30, including property taxes.

It takes only nine working days to erect one of these cooperative houses. Mass production methods are employed in fabricating some of the parts, with the rest of the work being divided between subcontractors and members. The subcontractors put in the concrete foundation and look after the plastering, plumbing, heating and wiring. Members contribute their spare time to erect the structural frame, install the insulation, put on the lath, siding and roofing. When the plastering is finished, members who are specialists take over to apply trim, hang doors and lay hardwood floors.

Ontario President Addresses New York State's Architects

Earle L. Sheppard, president of the Ontario Association of Architects, addressed the luncheon meeting at the General Brock Hotel, Niagara Falls, Ont., as the final event of the annual convention of the New York State Association of Architects October 13.

Mr. Sheppard estimated construction contracts in Canada for 1951 would reach a record-breaking total of $2,250,000,000. "Development of our natural resources is generating the steam behind the biggest building boom in our history," Mr. Sheppard declared.

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