

ARCHITECTURAL RECORD



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THE RECORD REPORTS

JOB PROSPECTS FOR ARCHITECTS IN 1952: INGENUITY IN USE OF METALS WILL HELP

INGENUITY in avoiding the use of scarce materials in design will be an important weapon for architects as they grapple with the uncertainties of the building materials situation in the year ahead.

ARCHITECTURAL RECORD's analysis of job prospects for architects in 1952 reveals a staggering volume of military, industrial and school design work to be done; but the actual volume reaching the boards of architects will attain its possible peak only as conservation techniques are given their fullest and most inventive application.

Vigorous efforts are being made by the conservation division of the Defense Production Administration to help architects find ways to conserve materials.

An intensive study of the subject, sponsored by DPA, has been made by the Building Research Advisory Board, which has filed a report to be issued.

As they scrutinize new sources of business by categories, architects will have as one guide the recent estimates by F. W. Dodge Corporation of 1952 building volumes not so much smaller than this year's apparent record.

MANUFACTURING BUILDING to provide 145 million sq ft of floor space,

only three per cent under the 1951 figure, is expected for 1952. Here the outlook is bolstered by the statements of defense officials, who have continually referred to industrial construction as a favored category. Expansion of plant facilities producing the critical steel, copper and aluminum and other defense-supporting materials got a boost in first quarter allocations of critical materials; and all indications are that these strategic defense-supporting programs will continue to get major emphasis.

MILITARY CONSTRUCTION, not separately classified in Dodge statistical tabulations, is expected to reach a very large volume; a total of \$5,864,301,178 was authorized by the Congress for Army, Navy, and Air Force building programs in fiscal 1952. Architect and engineer firms for this program already have been selected and nearly all architect and engineer contracts actually have been closed. Advance planning will begin soon on the 1953 program.

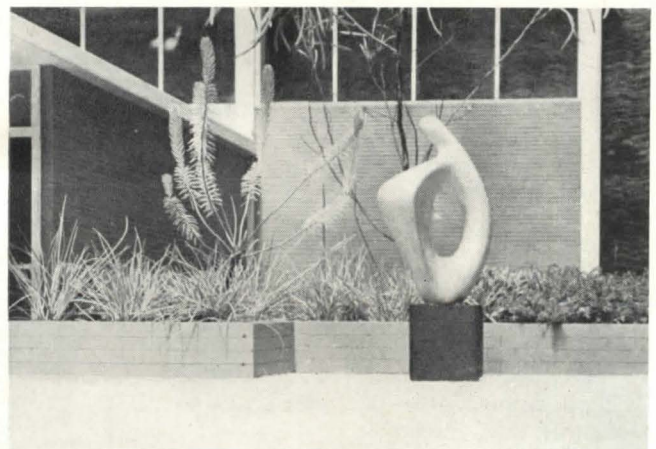
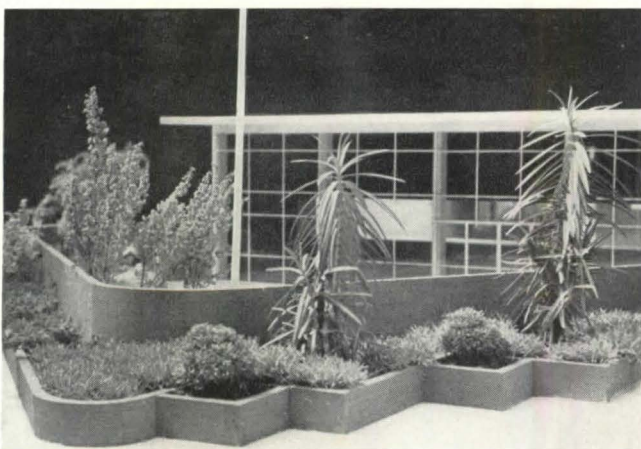
EDUCATIONAL AND SCIENCE BUILDINGS totaling 95 million sq ft of floor area, just nine per cent under the 1951 volume, are estimated for next year in the Dodge tabulation. School

needs as reported by the National Education Association would make 1952 an all-time record year in school building; but the volume to be built is likely to be held short of that by the steel situation. Over the next seven years, the need for new classrooms has been put by the U. S. Office of Education at 600,000.

HOSPITALS AND INSTITUTIONAL BUILDING, expected by Dodge to be off 17 per cent from this year in 1952, still would get 25 million sq ft according to the estimates.

RESIDENTIAL BUILDING is expected to be off 19 per cent from this year; the Dodge estimate goes along with the 850,000 figure which has remained the official government target — as stated by Charles E. Wilson, director of defense mobilization, and Raymond E. Foley, administrator of the Housing and Home Finance Agency.

The late-November revision of first-quarter allocations of controlled materials was said by DPA officials to provide enough additional steel for authorization of 500 new schools in first quarter instead of 300 and for 50 hospital starts instead of none. Revised allocations also provided some relief for other programs, in spite of continued questioning of DPA policy with its claimant agency system.



ARCHITECTURE AND ALLIED ARTS

Photographs above show the model of John Lyon Reid's Sir Francis Drake School, which was one of the highlights of the architectural exhibition at the recent San Francisco Art Festival. The school exemplifies the theme of the Festival, which was

intended "to bring together and promote the integration of the various arts." The architectural exhibition at the Festival was a triumph for the architects, whose work was glowingly reviewed by the San Francisco Chronicle's art critic, Alfred Frankenstein. This year's exhibit had six exhibits in six categories: school, church, commercial, public, residential and community



Dean Pietro Belluschi

EXHIBITION IS BIG NEWS AT GULF STATES CONFERENCE

THE FIRST REGIONAL EXHIBIT ever held of architectural work in the South was the most exciting news at the recent Gulf States Regional Conference of the American Institute of Architects. The high quality of the exhibit gave a special significance to a meeting which was notable for its many evidences of lively concern with the basic challenge of contemporary architecture.

The testimony was everywhere — in the words of the scheduled speakers, in the spirited panel discussions and in the corridor post mortems. It recognized and reflected the arrival of a new economic era in the South, the stage in its industrial expansion when there is more money to spend for building and more demand for good architecture.

Emphasis in all the convention discussions was on integration of technology with the social and economic purposes of the time in a way that will bring architecture to its full prominence as an art.

Dean Pietro Belluschi of the School of Architecture and Planning at the Massachusetts Institute of Technology sounded the humanism theme in his keynote address, urging architects to remember that their clients are not the rich, but all people everywhere.

An able and interesting historical summary, "Evolution of Where We Are Today and How We Got There," was given by Dean Buford Pickens of the School of Architecture at Tulane. Sam Hurst, professor of architecture at Geor-

gia Institute of Technology, related "The Painter and Abstract Design" to architecture. Others who discussed the relationship of architecture to the client and the community were Architect Sam Weiner, Shreveport; Arch Winter, architect and city planner, Mobile, Ala.; and Charles Colbert, architect, New Orleans.

Awards on the exhibit were made as follows:

For residential work

Honor Award — Curtis and Davis, for Arthur Davis house, New Orleans; first mention — Turner & Northington, with Malcolm E. Smith, associate, for Kennedy house, Florence, Ala.; first mention — James T. Canizaro, for George M. Harrison house, Jackson, Miss.

For nonresidential work

Honor Award — Erhart, Eichenbaum & Rauch, Little Rock, and Edward D. Stone, New York, associated architects, for the University of Arkansas Medical Center; first mention — Pearson, Tittle & Narrows, for building for the School of Architecture and Arts, Alabama Polytechnic Institute, Auburn, Ala.; mention — Pearson, Tittle & Narrows, for Britton professional office building, Montgomery, Ala.; mention — Ginocchio, Cromwell & Associates, for student union building at A.M.&N. College, Pine Bluff, Ark.; mention — Bodman & Murrell, architects, Charles Colbert, consultant, for North Scotlandville Elementary School, Baton Rouge, La.

Members of the award jury were: Thomas Creighton, *Progressive Architecture*; Douglas Haskell, *Magazine of Building*; and Frank Lopez, ARCHITECTURAL RECORD. Katherine Morrow Ford was an adviser for the residential category.



Left: At Alabama meeting: Parker Narrows, new president; Bruce Goff; John Carey, outgoing president

Below: U. S. Senator Everett Dirksen was among speakers at North Central States meeting. L. Morgan Yost is at Senator's left. At speakers' table: Howard T. Fisher, David Miller, and Walter Berger

PARKER NARROWS HEADS ALABAMA A.I.A. CHAPTER

PARKER NARROWS of Montgomery was elected president of the Alabama Society of Architects at the chapter's Fall meeting at Auburn. He succeeds John J. Carey of Mobile.

Other officers elected were: Allen Bartlett, Birmingham — vice president; Tom Kirkland, Montgomery — secretary; and J. Streeter Wiatt, Montgomery — treasurer.

Bruce Goff, main speaker at the meeting, stressed the significant difference between building and architecture; good building, he stated, is not necessarily good architecture, but good architecture is necessarily good building.



DISTRICT SESSIONS HELD BY MIDWEST ARCHITECTS

North Central, Great Lakes Seminars Stress Materials

THE NEED FOR TECHNOLOGICAL SKILL in using scarce building materials today was underlined at two recent regional sessions of the American Institute of Architects.

Architects from Michigan, Indiana, Ohio and Kentucky attended the Great Lakes District seminars arranged by Regional Director John N. Richards in conjunction with the annual convention of the Architects Society of Ohio in Columbus.

Brick and masonry construction was the subject of the major seminar on materials. A seminar on office practice, which opened with three speakers to describe the setup in small, average and large offices, was an occasion for spirited discussions and turned into the highlight of the meeting.

Single Award Made

Only one award was made in the annual competition of the Architects Society of Ohio, although the program provided for awards for three classes of buildings. The single citation went to Inscho, Brand and Inscho, for the Fayette County Hospital, Washington Court House, Ohio.

William Huff of Akron was elected president of the Society. Other officers: Rollin L. Rosser, Dayton, first vice president; John W. Hargrave, Montgomery, second vice president; C. Melvin Frank, Columbus, third vice president; Charles J. Marr, New Philadelphia, secretary; and Ronald A. Spahn, Cleveland, treasurer.

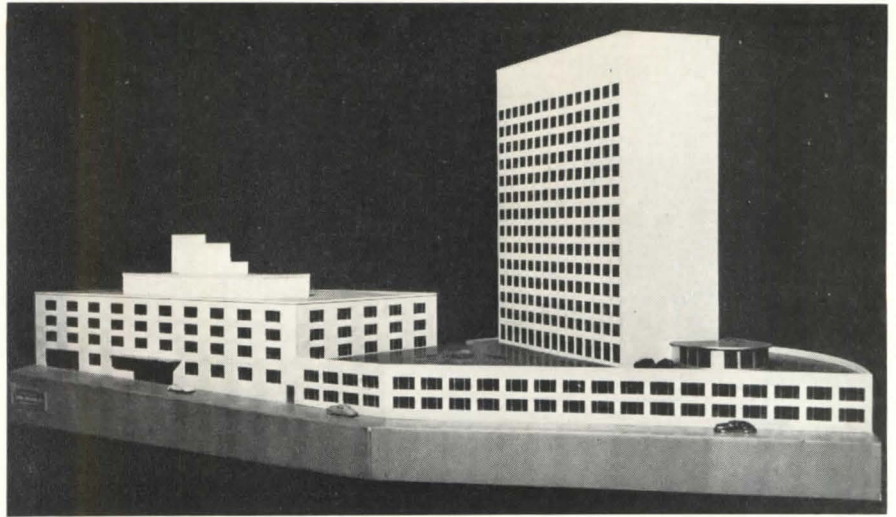
Incentives Needed: Scheick

At Chicago, North Central States architects heard Executive Director William H. Scheick of the Building Research Advisory Board call for "concerted action" at "design board level" to provide incentives for technological skill in the use of building materials.

"In Europe, where there is a shortage of material, the building designer utilizes ingenuity. In America, literally the land of plenty, such utilization has not been employed," Mr. Scheick asserted.

"We have fallen into the habit of not providing incentives to ingenuity on draftboards which result in conservation of materials," he said.

The two-day regional conference opened with a series of discussions on "The Practice of Architecture under Present-Day Conditions."



COLUMBIA PLANS \$22,150,000 ENGINEERING CENTER ON RIVERSIDE DRIVE SITE; FUND-RAISING DRIVE ON

Buildings Will More Than Double Space for Engineering Training; New Concept Defined

COLUMBIA UNIVERSITY has announced plans for a \$22,150,000 engineering center to combine teaching, research and practice in engineering and the fundamental sciences, on both undergraduate and graduate levels, "to a degree never before achieved." Voorhees, Walker, Foley and Smith are the architects.

The Center will be established at Riverside Drive and 125th Street in New York. An existing four-story building is now being remodeled and occupied as it becomes ready. The second unit, a 14-story building to provide some 250,000 sq ft, will be erected as soon as funds are available. Completion by 1954, the University's bicentennial anniversary, is the aim.

The two buildings will more than double the space at Columbia for engi-

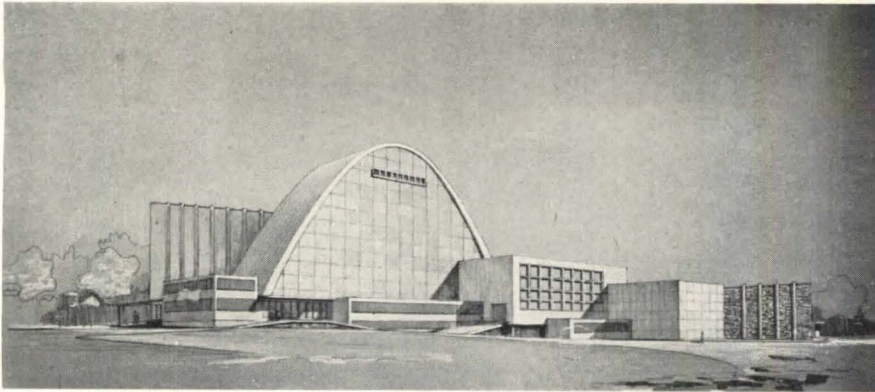
neering training. Besides the Engineering School, plans for the center provide for an Institute of Advanced Engineering Science and a Division of Cooperative Research which will work with industry on problems having educational value.

Funds now being sought for the center total \$22,150,000 — \$13,650,000 for buildings and equipment and \$8,500,000 for professorships, fellowships and scholarships.

Goal of the Center, according to Dean John R. Dunning of the School of Engineering, will be the "engineer-scientist" — "trained not only technologically but in the natural, social and political sciences and humanities — imbued with a statesmanlike point of view — with a sense of responsibility as a citizen."

At Great Lakes-Ohio meeting, A.I.A. Regional Director John Richards, A.I.A. President Glenn Stanton, and President Carl Britsch, Ohio Society; and (standing) C. Melvin Frank, convention chairman, President-Elect William Huff, Ohio Society, and William Linch, president of the Columbus A.I.A. chapter





CURITIBA, BRAZIL, PLANS "OFFICIAL" THEATER

The second prize winner in a competition sponsored by the government of the State of Parana in Brazil will be constructed in the state capital, Curitiba, as the state's official theater, following a hot public debate precipitated by the choice of a more traditional design to receive first prize. The project to be built (photographs of renderings above and below) was designed by Rubens Meister, professor of architecture in the Escola Engenharia da Universidade do Parana. It will seat 1900, provide elaborate facilities for opera, concerts, plays, film showings and television



HOUSTON TEACHERS VISIT CITY'S ARCHITECT FIRMS

Public Relations in Action: Profession Explains Itself

ARCHITECTS who took part in the second annual Business Education Day sponsored by the Houston Chamber of Commerce last month had a major opportunity to further public understanding of the architect's function and how he performs it.

Participating firms played host to teachers from the city's public and parochial schools as well as the University of Houston and the Rice Institute. The general program for architects' offices was arranged under the chairmanship of R. Graham Jackson, A.I.A.

Groups of two to six teachers toured drafting room and specification department, were shown the progress of a commission from the time it enters an office till preliminaries have been approved, working drawings and specifications completed and bids received. Then they were taken to an actual job site, where the architect went over the project with them, explaining his responsibilities and duties.

Teachers were luncheon guests of the firms they were visiting. In the afternoon, they and their hosts met in the firm's conference room to discuss the morning's activities and the architect's contribution to his community.

Architects who took part felt the project had been "extremely helpful."

"... 'TIS A HOUSE, BUT NOT A DWELLING"

Department of Architecture & Building
South-West Essex Technical College
Forest Road, Walthamston
London E. 17, England

Dear Sirs:

In the issue for July of your excellent magazine was quoted:

"Thanks, sir," cried I, "'tis very fine,
But where d'ye sleep or where d'ye
dine?"

I find by all you have been telling
That 'tis a house, but not a dwelling."

The lines were described as a savage criticism by Pope. I thought that, though they are often ascribed to him, they appeared first in a letter from a Mr. I. A. Williams to the Rev. Abel Evans, D.D.

They referred to Vanburgh's Blenheim Palace (1705-1722), where Winston Churchill was born.

Is the rest, the beginning of this poem, worth quoting?

"See, sir, here's the grand approach;
This way is for His Grace's coach;
There lies the bridge, and here's the
clock,

Observe the lion and the cock,
The spacious court, the colonnade,
And mark how wide the hall is made!
The chimneys are so well designed,
They never smoke in any wind.
The gallery's contrived for walking,
The windows to retire and talk in;
The council chamber for debate,
And all the rest are rooms of state.
'Thanks, sir,' cried I . . ."

We all agree with the poet; and Vanburgh's plans with their forced symmetry seem to us to have been most inconvenient for his clients.

We like the elevations of his houses

of course, but I believe that Vanburgh's clients were nevertheless pleased with his "extravagant planning" also.

From an interested reader,
C. H. Bingham-Powell

Mr. Bingham-Powell appears to have turned up a literary poser which has no quicker answer than some of the questions raised by Dean Burchard's article. The lines he quotes, from "Up on the Duke of Marlborough's House at Woodstock," are commonly attributed to Pope and printed in all editions of his work; but the editors always make clear in a note that there is no positive evidence of Pope's authorship. The traditional attribution to Pope apparently was a guess from the style. The Rev. Mr. Evans and Mr. Williams are not mentioned in any of the standard sources.—Ed.

NEWS FROM WASHINGTON by Ernest Mickel

How Many Housing Starts Next Year? — Many Conflicting Views; Tighe Woods Sounds Off and Foley Is Named as Defense Housing Chief; October Report Shows Building Dip; A.I.A. Acts in School Crisis; Symposium Provides New Data on Design of Atomic Labs

WASHINGTON last month remained the focal point for the big controversy concerning the number of housing units to be constructed in this country next year. Some observers felt the argument to be just a little on the academic side since the builders this calendar span were going way over the stated government goal. The total will be in the neighborhood of one million units as against the 800,000 to 850,000 that Uncle Sam's housing and monetary officials said the country ought to have.

But to the builders themselves, to the architects, the suppliers of housing materials — and, yes, to the federal officials who were responsible for setting some target for next year — it was a real problem.

The pressures on both sides mounted rapidly. Not many weeks before he announced his resignation, effective November 30, as economic stabilization director, Eric Johnston let it be known he would recommend a cut back to around 400,000 to 450,000 residential units in 1952. Another million-unit year, or even the 800,000 to 850,000 the housing agency was considering as a repeat performance on its 1951 target effort, would be inflationary to a serious degree, Mr. Johnston maintained, warning that it would perhaps bring enough inflation to upset the national economic picture entirely.

Construction in 1952 of 850,000 housing units, figured at an average of \$10,000 each, would add \$8.5 billion to the mortgage credit volume and Mr. Johnston, for one, said he believed the economy might not stand that kind of a load. His proposed figure would cut this credit outlay almost in half.

The Home Builders' Stand

On the other side of the fence the private home builders, through their National Association of Home Builders, were saying that construction of new housing units is not inflationary, that it

consumes, relatively speaking, microscopic amounts of the total production of critical building materials, and that they should be permitted to start at least one million units in 1952 in an effort to keep abreast of the demand.

Somewhere in the center of this storm were Raymond M. Foley and his Housing and Home Finance Agency, wanting the figure to remain at around 800,000 or a little larger for 1952 — much the same as it had been for the current calendar year.

The argument revolved around the inflation aspect of housing, with Stabilizer Johnston frankly basing his contentions on this phase of the problem. At one point he indicated his belief that other forms of private building should be restricted also — for the same reason.

But there were other facets for con-

sideration by the home builders and the government's housing officials. Rent Stabilization Director Tighe Woods dramatized one of these when he criticized the Critical Areas Committee for hampering imposition of rent controls in defense areas and announced that he would ask Defense Mobilization Director Charles E. Wilson to order builders to stop all home construction in so-called "luxury" areas and to concentrate on "critical" locations until congestion in defense areas was relieved.

Foley Heads Defense Housing

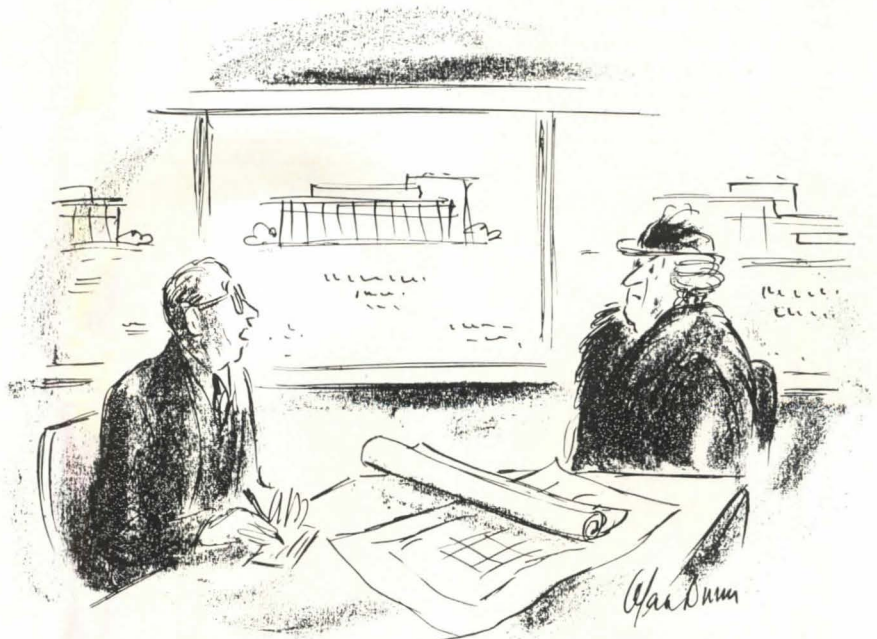
Mr. Wilson's reaction, which was only two days in coming, was equally dramatic and considerably more decisive. He named Mr. Foley head of all defense housing activities — including rent controls.

Mr. Foley was appointed as Mr. Wilson's special housing assistant and will continue his post as HHFA administrator.

The effect of the appointment was to reprove Mr. Woods for his remarks; Mr. Foley has played a leading role on the Critical Areas Committee.

Mr. Woods will be answerable directly to Mr. Foley on all rent control matters involving defense areas. For non-defense areas, his agency will remain under the Economic Stabilization Administration.

(Continued on page 22)



— Drawn for the RECORD by Alan Dunn

"I hope you understand, Madam, that my job is to look on you as an animal with a problem — "

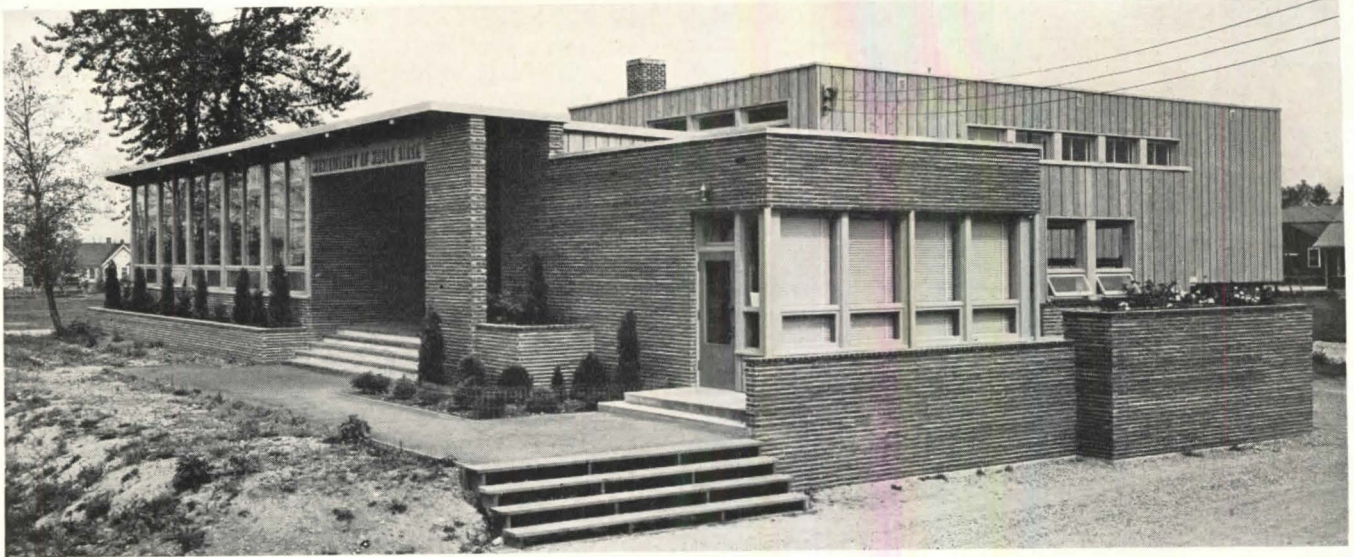


Photo: Jack Cash, B. C. Woods Coast Bureau

Municipal offices for the city of Maple Ridge, British Columbia, combine wood, brick and glass to produce a structure in tempo-

rary style—rare for public buildings in Canada—at relatively low cost. Percy Underwood of Vancouver, B.C., was architect

NEWS FROM CANADA by John Caulfield Smith

Steel Curbs Seen as Brake on Building Materials Shortages

ONE ANSWER to the question "Why hasn't the anticipated acute shortage of building materials developed?" is offered by S. D. C. Chutter, acting manager of the Canadian Construction Association.

Mr. Chutter says that if steel had not been restricted by government order and were now in good supply, there would be a tremendous shortage of materials of nearly every type. Not that there aren't scarcities, he adds, but

things are nothing like as tough as they might have been.

Cement, for instance, is currently in short supply because many steel framed buildings have been redesigned to use reinforced concrete. New cement plants soon to be in production in the Maritimes and in the West are expected to do a great deal to remedy the situation.

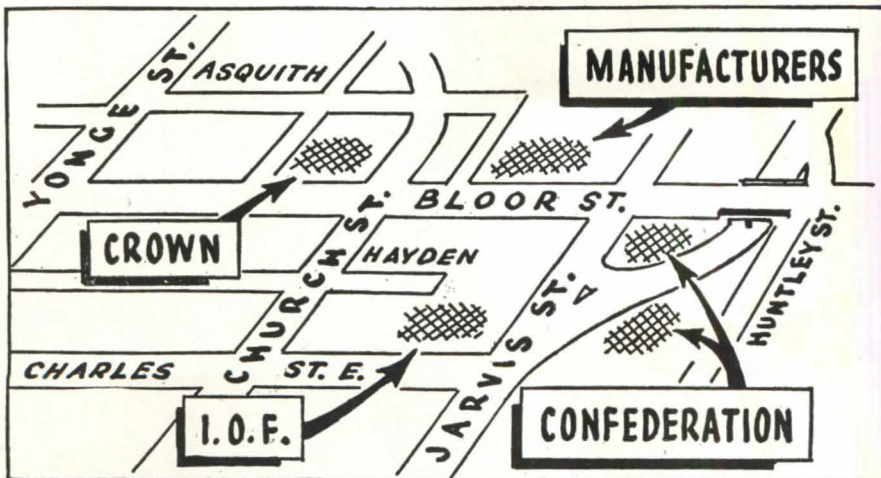
Ease Mortgage Credit in New Housing Regulations

DOWN PAYMENTS ON HOUSES financed under the National Housing Act have

been lowered by new regulations announced by Resources Minister Winters — to 10 per cent for defense workers, 20 per cent for all others. In both cases, maximum amortization period is 25 years.

An enthusiastic reception from home builders greeted the new regulations. However, the *Financial Post*, a leading business newspaper, warned: "Automatic provision of badly needed shelter should not be taken for granted. The shortage of mortgage money is still reported acute by lending institutions. There has been no assurance that house appraisals by Central Mortgage & Housing Corp. will be made more realistic than they have been — on a basis

(Continued on page 274)



Site plan above shows area east of Bloor-Yonge intersection in Toronto, where four insurance companies are contributing to expansion of business district. Manufacturers Life is making a 12-story addition to its head office building; Confederation Life,

Crown Life and the Independent Order of Foresters have completed plans for new head office buildings. Total cost of "Insurance Row" will be nearly \$20 million; Marani & Morris are architects in all cases. Photo: proposed Confederation building

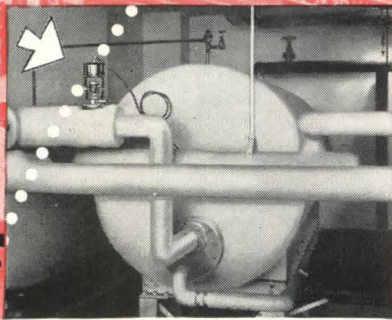


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(a65)

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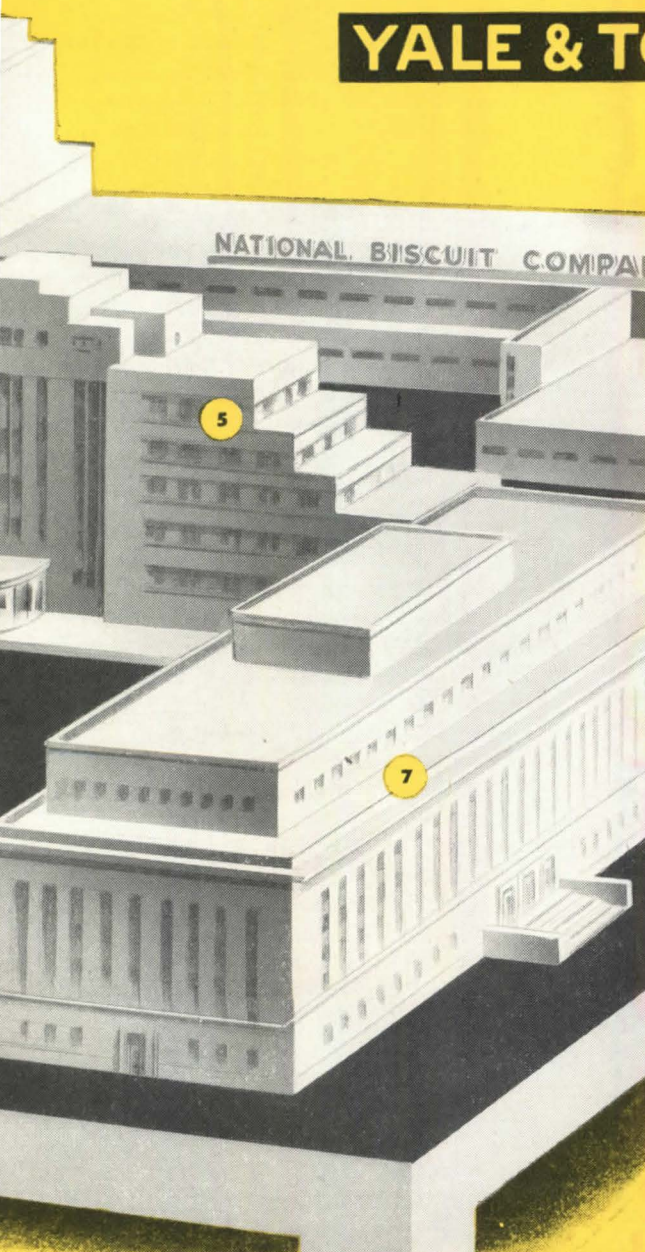
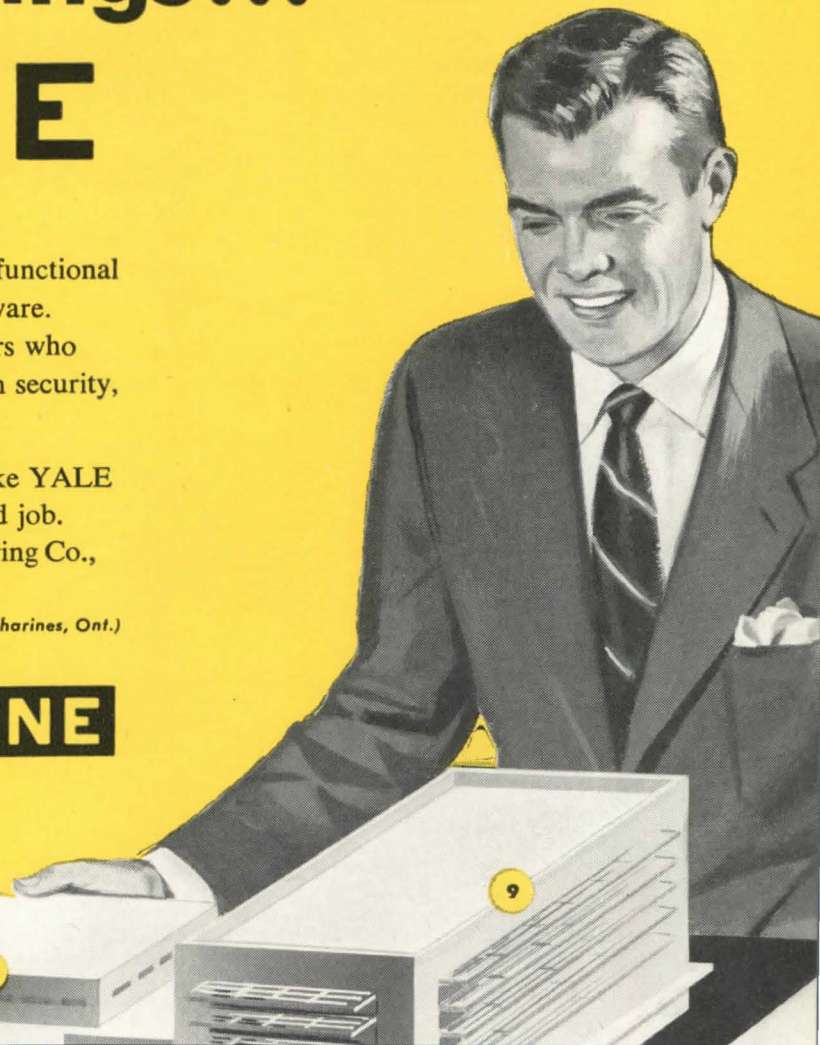
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Contractor: Turner Construction Co.
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3. THE CARLTON HOUSE

Architect: Kenneth D. Norton
Contractor: John Lowry Inc.
Hardware: Atlantic Hardware and Supply Co.

4. SCHWAB BUILDING

Architect: Sylvan Bien
Contractor: 11 Riverside Dr. Corp.
Hardware: Atlantic Hardware & Supply Co.

5. CRIPPLED CHILDREN'S HOSPITAL

Architects: Warren, Knight & Davis
Contractor: Day & Richardson
Hardware: Moore-Handley

6. JOHN HANCOCK BUILDING

Architects: Cram & Ferguson
Contractor: Turner Construction
Hardware: J. B. Hunter Co., Inc.

7. IOWA STATE OFFICE BUILDING

Architect-In-Chief: Tinsley-Higgins & Lighter
Associate Architects: Anthony-Hunter; Beattler & Arnold; Wetherell & Harrison
Contractors: Kucharo Construction Co.; Johnson, Drake & Piper Inc.
Hardware: Kurtz Hardware

8. NATIONAL BISCUIT CO. BUILDING

Architects: Ford, Bacon & Davis
Contractor: L. H. Hoffman Co.
Hardware: Contract Hardware Service

9. SEACOAST REALTY BUILDING

Architect: Charles C. Hartmann
Contractor: C. M. Guest & Sons
Hardware: Hardware Distributors Inc.

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What About Materials?

The materials question remained pretty much an open one during the fourth quarter of 1951. Private home builders, however, expressed real concern that a scarcity of finished products made from metals in short supply, particularly copper alloys, might hold up the completion of a substantial number of their units next year, holding them off the market.

The National Production Authority said the problem here resolved itself to this: Are there going to be enough fabricated items to go with the "A" products to provide a balanced construction program?

NPA's principal worry seemed to be in the copper field. Military requirements were piling up, making it more and more difficult to spread the total supply so that building material manu-

facturers — some 5000 of them — could continue operations, wholly or partially. The estimated shortage of material for production of plumbing brass goods threatened to reduce that segment of the industry to around 50 per cent of its normal operating level by spring. The producers still were working from accumulated inventories. As one official of the building materials division of NPA stated it: when inventories are worked off, watch out!

Permits for Home Builders?

All this gave rise to the important speculative question on housing production: will the government deem it necessary to impose more specific controls than the credit regulations now governing volume in a rather feeble way? Will the credit curbs be superseded by a permit system designed to hold construction volume within the limitations of available materials?

Midway in the fourth quarter, government officials appeared to be convinced that they could hold the line without instituting a permit system. Some NPA quarters expressed the belief that an awkward imbalance in controlled materials might result in the first quarter of next year unless the self-certification set-aside for housing was adjusted upward. But there was a division of opinion within NPA ranks on this subject. Important thing was that as of November, officials said they were considering no important new controls for the construction industry. Apparently they were ready to try to ride out the defense mobilization period with the Controlled Materials Plan as their basic regulatory guide.

Lost: The Big Stick

The wind was out of the Regulation X sails since Congress removed the control powers of the Federal Reserve System and the Housing and Home Finance Agency on all housing under \$12,000 price levels. The authorities had counted on the Regulation X powers to exercise a firm control over home production volume when they were imposed October 12, 1950. But the national lawmakers saw fit to ease the down-payment requirements on homes selling for under \$12,000. With most new housing volume falling below this, the Congressional action took the big stick away from FRS and HHFA.

As was pointed out, two important factors confronted those struggling with

(Continued on page 26)

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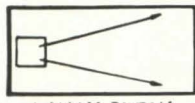
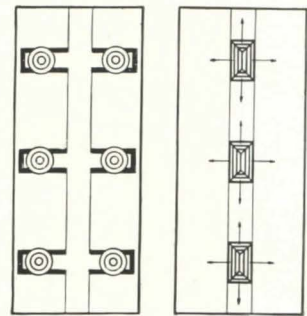
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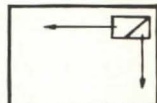
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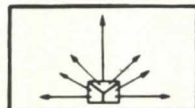
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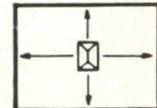
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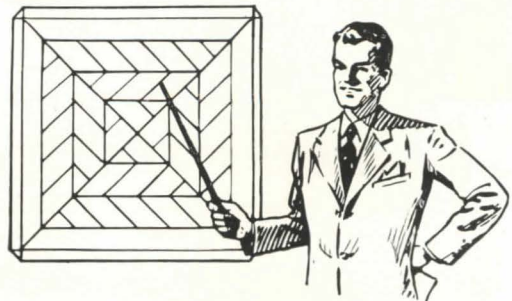
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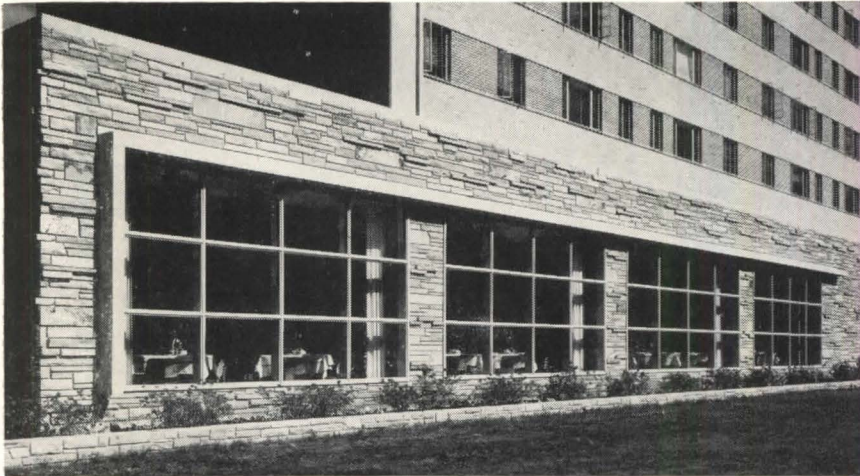
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the 1952 housing volume decision: (1) the impending shortage of plumbing brass goods, and the probable scarcity of other necessary building items, and (2) the extent to which self-certified orders would soak up materials from the open market. Watch the latter. If it is thrown overboard — an eventuality now unlikely — builders will find themselves under a permit system of some sort.

U. S. Figures on October Show Construction Trend: Downward

Housing was not the only type of construction feeling the impact of CMP. The Departments of Labor and Commerce, announcing building activity figures for October, said shortages of materials retarded almost all types of construction during that month. This fact brought a more than seasonal de-

cline in over-all activity. And from the blues being sung by defense agency officials over the short steel and copper situation, it was not hard to deduce that they expected this trend to continue for some months to come.

Delays in construction were extending even to the basic steel and electric power expansion programs, it was reported.

The total value of new construction put in place during October this year was about \$2.7 billion, the Labor-Commerce report stated. The figure was off five per cent from the September total and down three per cent from October of 1950. New homebuilding activity increased slightly in October to become the "notable exception" to the general trend which for the most part indicated a greater-than-usual seasonal decline. Military and defense plant construction continued its "moderate increases" in October.

Said Labor and Commerce: "Structural steel was the principal limiting factor during October and probably will continue as the key material throughout the balance of this year. Within a short time, however, the availability of copper items may be expected to supersede structural steel as the determining factor in the volume of construction in which structural steel is relatively unimportant."

Total private outlay for new construction in October was reported at \$1789 million, five per cent less than in September. Public expenditures of \$903 million for the month were off by six per cent. Private construction was 12 per cent under a year ago, while public construction showed an increase of 21 per cent over the year.

Comparing the first 10 months of 1951 with the same period of 1950, the report said new construction with value of more than \$25 billion was put in place this year. This was \$2 billion more than the 10-month figure for 1950.

It was estimated that total new construction outlays in 1951 would exceed \$29 billion compared with a little less than \$28 billion for all of 1950. Larger public expenditures, particularly for housing, defense plants and military facilities, are accounting for the difference.

Materials Controls Represent "Middle Course": Fleischmann

A recent speech made by Manly Fleischmann, NPA and Defense Production administrator, points up the mate-

(Continued on page 30)

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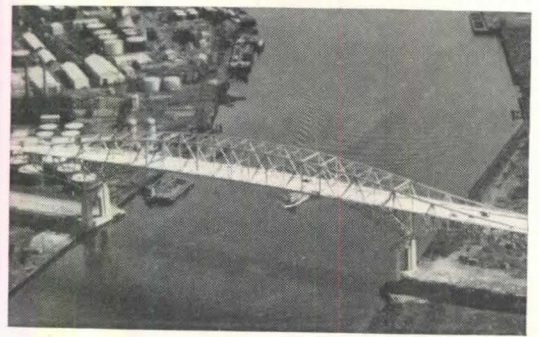
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Service reports, design and engineering details are covered in Alcoa's "Report on Bridge Railings." For a free copy call your nearby Alcoa Sales Office or write, ALUMINUM COMPANY OF AMERICA, 1888M Gulf Bldg., Pittsburgh 19, Pennsylvania.

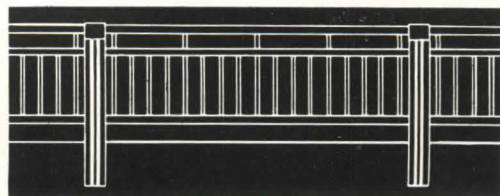
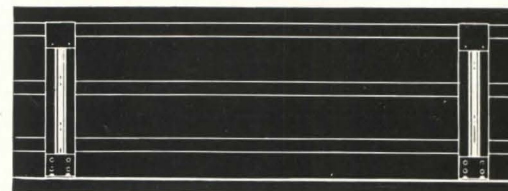
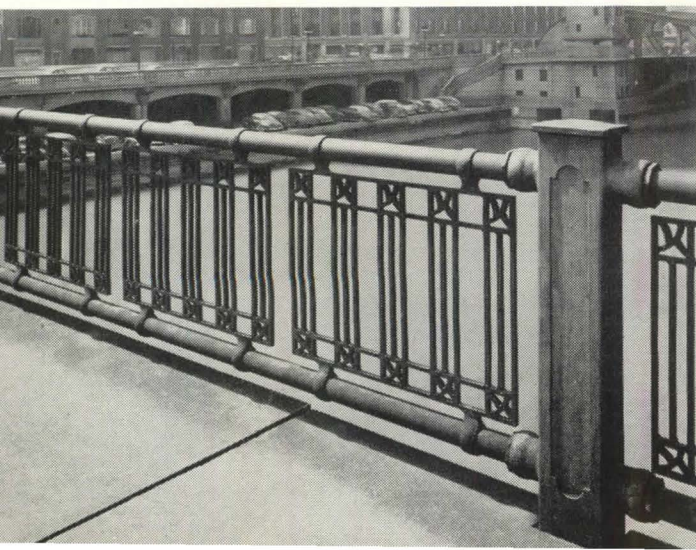
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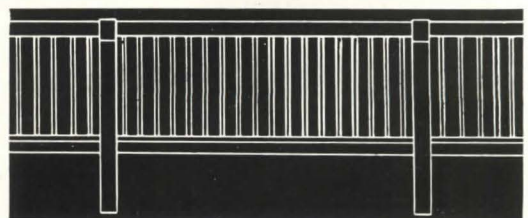


ALUMINUM

Clark St. Bridge over the Chicago River has aluminum railings installed in 1929. Smoke and weather have had no adverse effect on the aluminum.



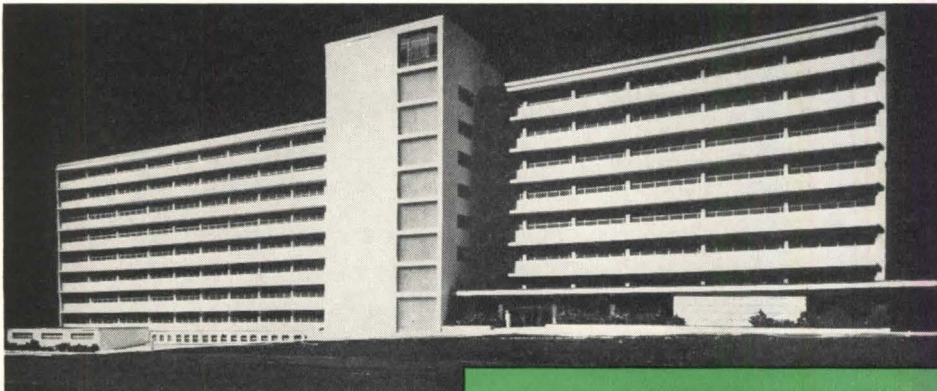
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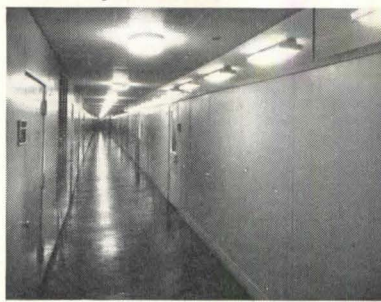
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THE RECORD REPORTS

WASHINGTON

(Continued from page 26)

rials angle to the production picture rather well. He told the C.I.O. convention in New York:

"The course we have chosen is a middle course. Military production would not be greatly accelerated if all civilian production were suspended tomorrow. The major bottlenecks are in design and machinery, rather than in materials. Whatever minor gains might be made would be more than offset by the tremendous economic dislocation which such an action would create—with immediate unemployment on a national scale.

"Equally impossible is it for us to yield to the pressure now being exerted to resume state and local public works programs on a large scale—to build in this year of shortages more schools and hospitals than ever before in our history, or to continue auto production at high rates lest localized unemployment be brought about. Two and two make four, and if we yield to such pressures there would be no escaping the damage that would be done. We can only divide steel, not invent it. We either mean business in this mobilization effort, or we don't.

"In fact, no important national program will suffer any great harm under present allocation policies. For example, despite widespread misrepresentation on the subject, more schools are being built in 1951 than ever before in our history, and the probable allocation for 1952 will be only slightly less than in the record years of 1950 and 1951. How different are the true facts from the impression of disaster for the public school system which some persons would try to create."

Materials Survey Authorized: A.I.A. Acts on School Crisis

The American Institute of Architects is proceeding with its plan to assist the U. S. Office of Education in administration of the Controlled Materials Plan with respect to school construction. At the recent Board of Directors meeting in Portland, Ore., a sum of \$2500 was transferred from the Institute's Special Fund to enable the A.I.A. School Building Committee to hire technical help. A consultant will be employed to take quantities of controlled materials off detailed architectural plans. Results

will help the Office of Education, as a claimant agency, to estimate more accurately the quantities of steel, copper and aluminum needed for school construction.

In this connection, James W. Follin, head of a Defense Production Administration subcommittee on conservation, has said that if architects will change their school designing methods, the limited supply of steel can be stretched much farther. He admits, of course, the great difficulties involved in redesigning projects already completed on the drawing boards. But he believes school authorities and others should be told that they might get their facilities sooner if a change-over from steel to some other structural material were made in the plans submitted.

The Board at Portland appointed a special committee to study the situation confronting the building industry. The Washington, D. C., round table in October was held as a result and the school building program was one of the principal topics for discussion. Object of the efforts is to assure the continuity of a reasonable civilian performance in the building industry.

Push Modular Coordination

The Institute's modular coordination program was given further emphasis by an appropriation of \$2000 in Board action. This supplements a fund of \$1000 set aside earlier toward the development of more interest in the system. The new \$2000 amount was made contingent upon the raising of \$23,000 from outside sources.

Chapter liaison representatives of the Institute's Department of Education and Research are being asked to inform the Department of contractors occupied now or in the recent past on projects using modular coordination. Purpose is to gather information for further data and publications on the subject. William Demarest Jr. is A.I.A. secretary for modular coordination.

The A.I.A. executives also reviewed architects' relations with the Defense Department. This focused on professional fees and negotiation procedures. A complete résumé of the discussions is to be printed later.

Other action at the Portland session: A.I.A. President Glenn Stanton was requested to consult with the Commissioner of the Public Housing Administration, John Taylor Egan, regarding fees for architectural services.

The Board reviewed and approved

(Continued on page 32)

HOW TO



Solve Problems of Vertical and Horizontal Material Transportation—Economically!

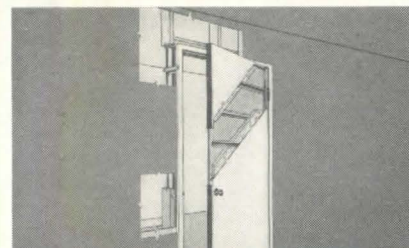


VANDERBILT CLINIC, handling records of 95,000 patients yearly, needed a fast, dependable system for transferring records from floor to floor, chose the VMP Conveyor.



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the present relationship between the A.I.A. and the American Architectural Foundation.

Support Defense Moves

Finally, it approved resolutions recommended by its Committees on National Defense:

(1) requesting declassification of technical information needed by designers of civil defense installations;

(2) requesting Federal Civil Defense Administration to publish minimum standards for protective construction and shelter, since the effects of atomic weapons are classified information and cannot be released;

(3) requesting the FCDA to inaugurate a program with the professional assistance of the A.I.A. to design and build prototypes of schools and other types of buildings on realistic defense standards;

(4) requesting local chapters of the Institute to undertake local surveys of their committees so that slum clearance and redevelopment and other programs can be brought together into a master plan for civil defense action;

(5) endorsing the program of the National Security Resources Board for dispersal of new industrial plants, and calling upon chapters of the Institute to undertake studies in their own areas to illustrate the application of this program, using the publication "Is Your Plant a Target?" as a guide.

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Shoppers' World, Framingham, Mass.

Required more than 65,000 feet of aluminum extrusions. Only a plant having the facilities of completely integrated production — complete control of every phase of store front manufacture — can produce new dies, give absolute control of quality, perfect consistency of finish, yet meet the rigid time schedules required by projects like the vast new Shoppers' World.

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For more information, write for our new A.I.A. folder, Dept. H, 57 Cliff St., Roxbury, Mass.



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BRAB-A.I.A. Session Yields New Data on A-Lab Design

The Building Research Advisory Board has conducted its two-day symposium on laboratory design for handling radioactive materials. These meetings, on November 27 and 28, were co-sponsored by the American Institute of Architects and the Atomic Energy Commission. A great deal of valuable new material on the subject, hitherto classified, now will be published as a result of the conference.

In a pre-symposium statement, the A.I.A. said development of laboratories in the atomic program "demands a new approach in design for the various types of work to be carried on within them." Critical areas demanding new criteria for the proper design might include:

1. Unit laboratory design.
2. Shielding methods.
3. Waste disposal.
4. Surface materials and finishes.
5. Air supply and exhaust.

"There now exists a large body of information of a very useful nature which has resulted from the experience gained in this developed building program, and there are a great many men throughout the country connected with the atomic energy program who now have a very real knowledge of the demands for these new building types," said the A.I.A. statement.

Release of Data Hailed

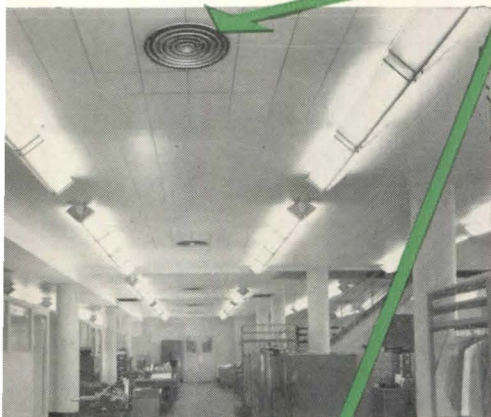
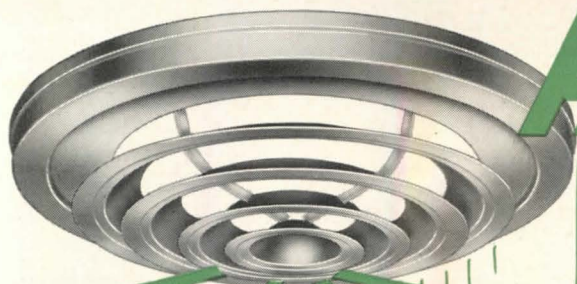
Much of the information discussed at the November sessions had a secondary application in various building types not directly connected with laboratories handling radioactive materials. This fact made the BRAB symposium the more important to architects.

In its own statement on the meetings, the Atomic Energy Commission agreed with the architects that much of the design information on radioactive labora-

(Continued on page 256)

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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

ATLANTA

Period	Residential		Apts., Hotels Office Bldgs. Brick and Concr.	Commercial and Factory Bldgs. Brick and Concr.		Brick and Steel	Residential		Apts., Hotels Office Bldgs. Brick and Concr.	Commercial and Factory Bldgs. Brick and Concr.		Brick and Steel
	Brick	Frame		Brick	Steel		Brick	Frame		Brick	Steel	
1925	121.5	122.8	111.4	113.3	110.3		86.4	85.0	88.6	92.5	83.4	
1930	127.0	126.7	124.1	128.0	123.6		82.1	80.9	84.5	86.1	83.6	
1935	93.8	91.3	104.7	108.5	105.5		72.3	67.9	84.0	87.1	85.1	
1939	123.5	122.4	130.7	133.4	130.1		86.3	83.1	95.1	97.4	94.7	
1940	126.3	125.1	132.2	135.1	131.4		91.0	89.0	96.9	98.5	97.5	
1946	181.8	182.4	177.2	179.0	174.8		148.1	149.2	136.8	136.4	135.1	
1947	219.3	222.0	207.6	207.5	203.8		180.4	184.0	158.1	157.1	158.0	
1948	250.1	251.6	239.4	242.2	235.6		199.2	202.5	178.8	178.8	178.8	
1949	243.7	240.8	242.8	246.4	240.0		189.3	189.9	180.6	180.8	177.5	
1950	256.2	254.5	249.5	251.5	248.0		194.3	196.2	185.4	183.7	185.0	
July 1951	272.3	269.8	264.5	266.3	263.2		211.9	213.4	204.8	203.6	206.6	
Aug. 1951	272.3	269.8	264.5	266.3	263.2		212.6	214.3	204.9	203.7	206.8	
Sept. 1951	273.7	271.6	264.8	266.5	263.6		213.0	214.8	205.0	203.7	206.9	
			% increase over 1939						% increase over 1939			
Sept. 1951	121.6	121.9	102.6	99.8	102.6		146.8	158.5	115.6	109.1	118.5	

ST. LOUIS

SAN FRANCISCO

1925	118.6	118.4	116.3	118.1	114.4	91.0	86.5	99.5	102.1	98.0	
1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.4	104.9	100.4	
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7	99.7	
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9	116.5	
1940	112.6	110.1	119.3	120.3	119.4	106.4	101.2	116.3	120.1	115.5	
1946	167.1	167.4	159.1	161.1	158.1	159.7	157.5	157.9	159.3	160.0	
1947	202.4	203.8	183.9	184.2	184.0	193.1	191.6	183.7	186.8	186.9	
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7	211.1	
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8	216.1	
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5	222.6	
July 1951	251.6	247.3	240.3	243.2	240.7	245.7	240.2	240.3	244.1	244.2	
Aug. 1951	251.3	246.9	240.2	243.2	240.6	245.7	240.2	240.3	244.1	244.2	
Sept. 1951	253.5	249.5	241.4	243.8	241.4	248.1	243.0	242.0	244.9	245.4	
			% increase over 1939					% increase over 1939			
Sept. 1951	130.0	133.2	103.4	103.5	102.9	134.9	144.7	106.1	100.9	110.6	

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.

Cleveland's Shaker Towers chooses MODINE

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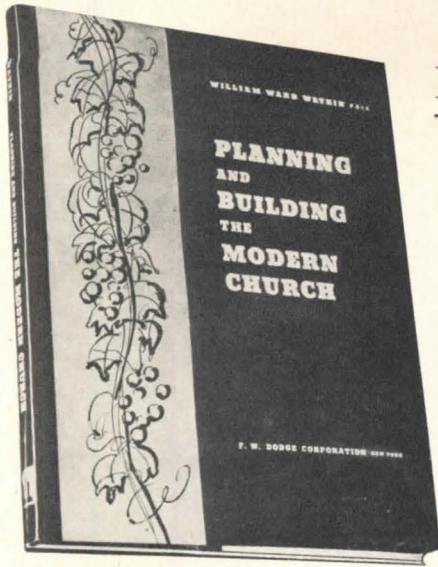


Modine Convectors come in three distinctive enclosures — Type F (shown) for free-standing or recessed installation, Types W and S for wall-hanging.

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K-1134



REQUIRED READING

THE NEW AMERICAN CHURCH

Planning and Building the Modern Church. By William Ward Watkin. F. W. Dodge Corporation (New York, N. Y.), 1951. 9 by 12 in. 162 pp., illus. \$8.50.

REVIEWED BY WILLIAM H. LEACH*

Even the casual reader of this volume is soon conscious of two significant facts. The first is that a new church has been developed in these United States. It is a church with a broad program of worship and education and a wise concept of public service. The second is that skilled architects have kept pace with the growth of the new church and are providing for its adequate housing. Sir Christopher Wren, in the days of his greatness, never dreamed of a church building necessary for the various activities of our modern day. Nor did Ralph Adams Cram, lamented former colleague of the author of the book, foresee the modern needs of electronic equipment and air conditioning which is becoming commonplace.

I think that this is of more than passing interest. Religion evidently thrives in the atmosphere of American democracy. This new church architecture is an American thing. Catholic, Protestant and Jewish churches all reveal the same tendency. It is quite possible that architecture will become the common denominator among the religious faiths in our country.

The above is the background for the

*Editor, "Church Management," and author of "Protestant Church Building."

writing of this book. The author is the head of the Department of Architecture, Rice Institute, Houston, Texas. He has had a wide experience as a practicing architect. He is as anxious as are most of us to conserve the beauty of religious architecture of the past. But he is just as anxious to combine with the building for worship those facilities so necessary for the church of today.

The prime function of a church is to provide an opportunity for prayer and worship. For ages, churchmen and architects sought to find the combination of lines, materials and colors which would best serve this purpose. They acquired great skill and this we have inherited. The duty of the modern church architect, thinks author Watkin, is to conserve this contribution, but he points out that all change is not necessarily destructive. We build upon the past. In the worship unit of the new church goes the qualities which affect the human soul. Here materials, light, windows, music, aisles, sanctuaries, choirs and similar items play their part. The quality of worship must not be sacrificed.

But the modern church must provide for education. This means classrooms,

assembly rooms, chapels, audio visual aids, handiwork space and similar items. Next, the modern church plays — this means social rooms, recreational rooms, dining facilities, church parlors. The modern church also needs administration; this calls for the proper offices. And, because many people drive to the service, parking space has become a necessity.

Then there are the great overall engineering projects. These would include the heating, ventilation, air conditioning, lighting and electronic wiring and installations.

One by one all of these items are discussed, not as a yardstick guide but to give the architect or churchman reader a picture of what his new church should be.

I think that the author has done an admirable job in spreading his text over two fields. I can assure readers of the ARCHITECTURAL RECORD that churchmen will feel that he expresses their point of view when he writes on worship and educational facilities. I think, at the same time, that the position of the architect might be better appreciated if churchmen would read the book.

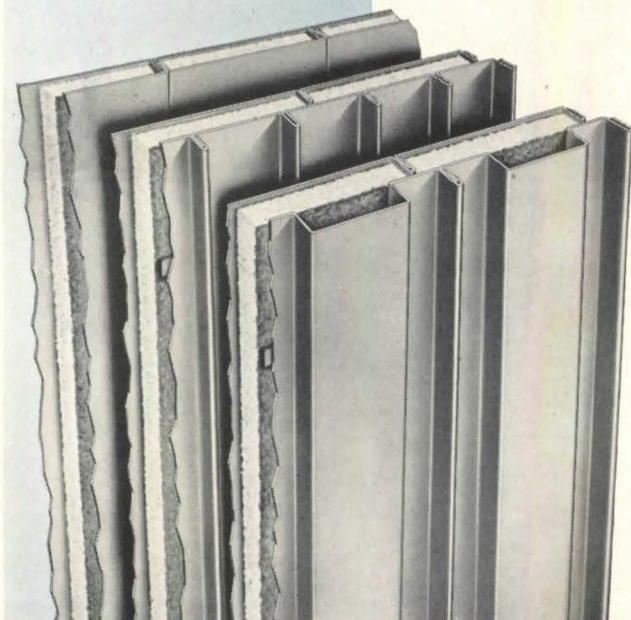
(Reviews continued on page 42)

St. Peter's Church, St. Louis, Missouri. Joseph Murphy, architect. The west front is made entirely of glass, a daring example of modern church design



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ALUMINUM, STAINLESS or GALVANIZED STEEL



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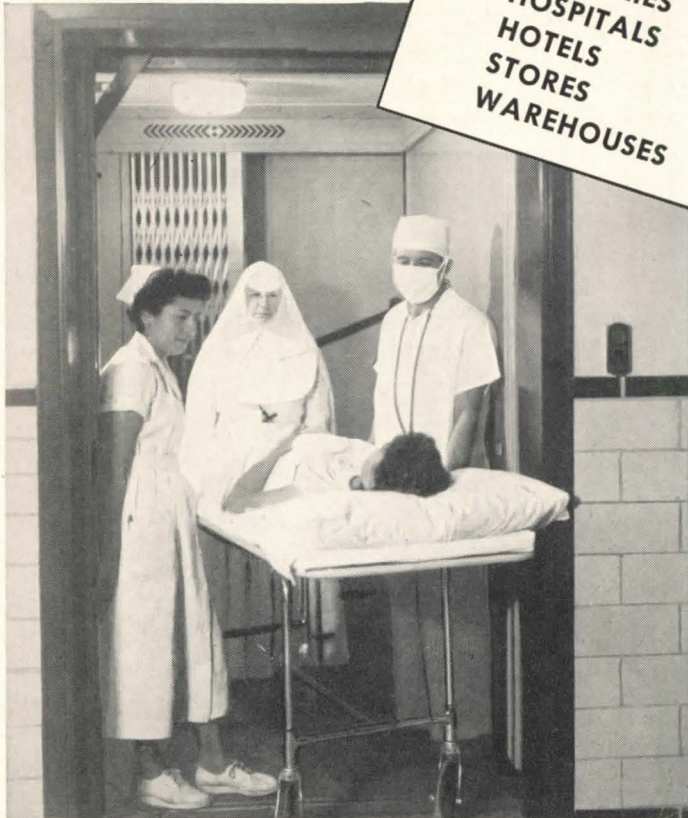


Mahon Insulated Metal Walls employed in construction of a new plant for Ford Motor Company in Cleveland, Ohio. F. A. Fairbrother and Geo. H. Miehl Architects-Engineers. Albert Kahn Associated Architects and Engineers, Inc., Consultants. H. K. Ferguson Company, General Contractors.

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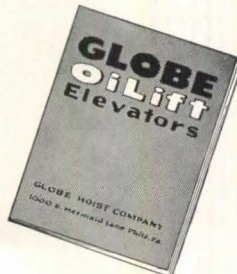
This roomy Globe Elevator, recently installed in St. Margaret's Mercy Hospital, Fredonia, Kansas, was selected for its quiet, dependable operation and economical installation.

Compare a Globe OiLIFT Elevator with a cable-type installation, and you will be surprised at the economies offered by Globe.

The Globe's ascent is powered by an oil operated cylinder. Descent is by gravity. The Globe OiLIFT Principle eliminates expensive penthouse construction and elaborate mechanisms. The result is a very appreciable saving in first cost and operation.

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(Factories at Des Moines, Iowa & Philadelphia, Pa.)

REQUIRED READING

(Reviews continued from page 40)

ARCHITECT'S ANECDOTES

Houses Have Funny Bones. By Royal Barry Wills. With drawings by the author. The Bond Wheelwright Co. (145 East 63rd St., New York 21, N. Y.), 1951. 6 by 9 in., 180 pp., illus. \$3.00.

The profession of architecture, says Royal Barry Wills, has more facets than the Hope diamond. The architect must be all things to his client: designer, artist, planner and builder, and a dozen other things as well — including father confessor, legal adviser and baby-sitter — separately or in any combination. "He often feels like a pair of bloomers in a bargain basement," Mr. Wills concludes in his introduction to this collection of anecdotes drawn from his own experience.

The anecdotes make delightful reading, particularly so since they are illustrated with sly little sketches by the author. Many of them are character studies — like that called "Stigmatisms," which presents, complete with accent, the dumpling-shaped Swedish painter who sings "Yingle Bells" when he is happy and likes great piles of "yelly" sandwiches. Then there is Mr. Sanderson, the efficiency engineer who led Mr. Wills a merry chase through blackberry patches and ice-edged swamps on a property-inspection trip in mid-winter. At the end of the ordeal the winded architect asked when his client proposed to start construction. Said the efficiency expert, after careful figuring, "I want to settle all details carefully and give ample time. It is now December, 1946. I should say early in 1953 would be a good time — that is, of course, if prices are down thirty-seven and a half per cent, which I estimate is a fair mean." "I went to the car, weakly," Mr. Wills says, "and drove seventy-five miles home in the snow."

One of the highlights of the book is the tale called "Clients with Children," a hilarious account of what happened to Mr. Wills and his office when a young couple showed up with two very small and lively children in tow. Another is the almost incredible story of "Imposter Trouble," in which a tramp steals Mr. Wills' Presidential Medal and proceeds to make his way about the country impersonating the architect and passing bad checks in his name.

All in all this is a book which every architect (and probably his wife as well) will find completely delightful.

(Reviews continued on page 44)

House Beautiful's
1951
Pace Setter House

DOBBS FERRY, N. Y.
JULIUS GREGORY, ARCHITECT



Plywood Specified For Finest Construction

EACH YEAR *House Beautiful* builds a Pace Setter house which represents the ultimate in design, construction and use of materials. In the 1951 Pace Setter, Douglas fir plywood plays a major role.

Durable Exterior plywood creates the weather-wise board and batten siding . . . the smooth, flush soffits and breezeway ceilings.

For the important structural parts of the house, PlyScord was specified for strong, rigid wall sheathing . . . for roof decking . . . for firm, solid panel backing.

It's the finest construction money can buy—bar none!

©PlyScord is a registered grade-trademark identifying the sheathing grade of interior-type plywood inspected by Douglas Fir Plywood Association (DFPA).



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STRONG PANELS
OF REAL WOOD

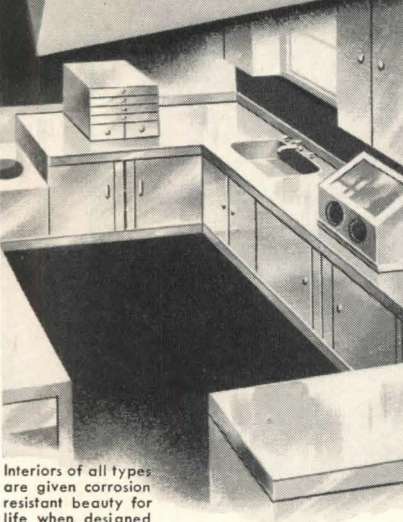


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REQUIRED READING

(Reviews continued from page 42)

THE CRYSTAL PALACE

High Victorian Design. By Nikolaus Pevsner. Architectural Press, London. 7½ by 5 in. 162 pp., illus. 12s 6d.

In this scholarly study Dr. Pevsner analyzes mid-Victorian taste in terms of the social, moral and esthetic attitudes of the time, and arrives at some penetrating conclusions. The period from 1840 to 1860 and 1870 in England was one of economic abundance and a general sense of well being. It was this atmosphere of prosperity and self confidence, Dr. Pevsner says, that inspired designers to go in for curves, decoration all over all available surfaces, and top heaviness.

The book is amply illustrated with drawings of exhibits that were shown at the Crystal Palace in London in 1851 — machinery, furnishings, and sculpture. Each piece is discussed in relation to the whole of mid-Victorian design. A typical example is an easy chair made of papier mache and called *The Daydreamer*. The description of this chair given in the catalog of the Crystal Palace gives an idea of what the author means when he says that designers of the time took "delight in abundant protuberances": "The chair is decorated at the top with two winged thoughts — the one with bird-like pinions, and crowned with roses, the other with leather bat-like wings — unpleasant and troubled ones. Behind is displayed Hope, under the figure of the rising sun. The twisted supports of the back are ornamented with poppy, heartsease, convolvulus and snowdrop, all emblematic of the subject. . . ."

Dr. Pevsner also discusses the views on design of such leading critics of the period as Ruskin and Pugin.

In all, the book is both entertaining and informative.

DESIGN OF WARM AIR HEATING

Warm Air Heating Library. National Warm Air Heating and Air Conditioning Association. 9½ by 11½ in. 243 pp., illus. \$4.80.

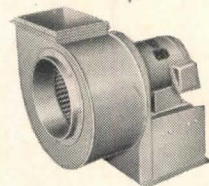
Here under one cover are nine manuals, work sheets for heat loss calculations and selection of equipment, and supplementary pamphlets on specific phases and problems of warm air heating. Based on many years of laboratory in-

(Reviews continued on page 46)

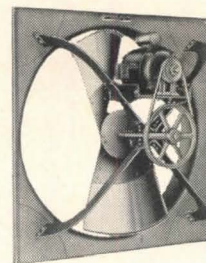
*A fan
for every need*

from
HERMAN NELSON

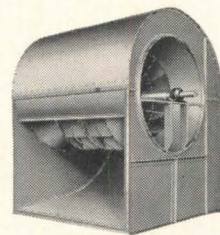
Direct Drive Unit Blowers are available in 11 models. Wheel size from 6" to 11". Choice of speeds available in each size. These units may be mounted on floor, wall or ceiling.



Belt Drive Propeller Fan. These versatile units deliver maximum amount of air effectively . . . quietly. Operate horizontally or vertically. Wheel diameters from 24" to 54". Capacities up to 36,000 c.f.m.



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MOLINE, ILLINOIS



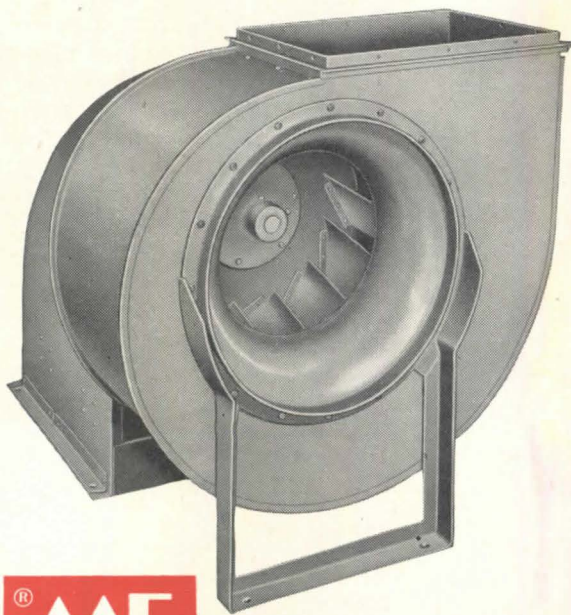
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IT'S GRANCO STEEL ROOF DECK

ROTARY-PRESS FORMED SHEETS

Uniform-pattern

WIDE COVER WIDTH

Reduced number of side laps

Material economy

Greater resistance to concentrated loads

MOST EFFECTIVE SHAPE

(relationship between rib and flat)

Greater Stiffness

High Strength

Deep Ribs (1 5/8")

(the same thickness as a 2" x 4" giving maximum flexibility for architectural design)

ATTRACTIVE DURABLE FINISH

Alkyd resin paint

Rust inhibitive

Autumn brown color

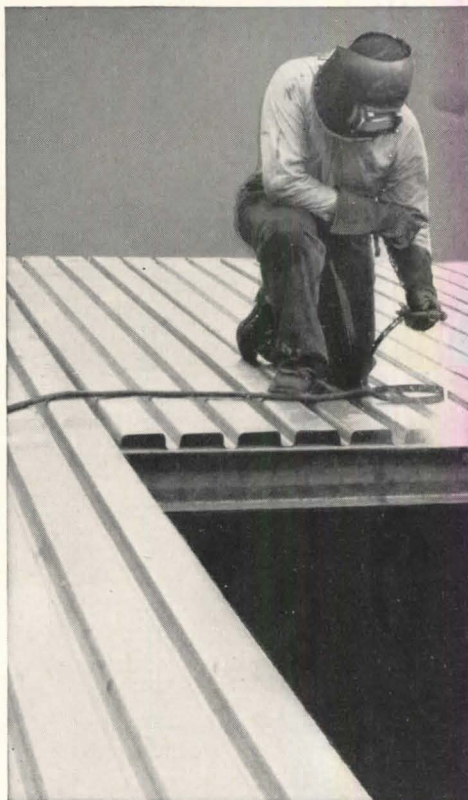
Striking panel effect for ceilings

QUICK TO ERECT

Correct shape for fast laying

35 sq. ft. covered per sheet placed

Side lap adjustment eliminates "sheet crawl"



DESCRIPTION—Granco Steel Roof Deck has longitudinal ribs 1 5/8" deep spaced on 5 3/4" centers and is available in 18, 20 or 22 gage. The ribs are flared at one end permitting proper nesting at end laps. Granco Steel Roof Deck has a wide cover width of 28 3/4" with a maximum sheet length of 14' 4". Positive attachment obtained by welding.

WRITE FOR FREE BOOKLET

Gives description, physical properties, complete loading tables and suggested specifications for Granco Steel Roof Deck. Request booklet No. BDr-511:



GRANCO STEEL PRODUCTS COMPANY

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STEEL CO.

REQUIRED READING

(Reviews continued from page 44)

vestigation at the University of Illinois combined with extensive field research, these manuals give architects design and installation data on the latest developments such as warm air perimeter, continuous air circulation and ceiling panel systems. Until recently the "Library" was circulated mainly to heating contractors, but is now being directed to the architect with the thought that he can use the manuals in designing some systems and to check the specifications of heating contractors in others.

BOOKS RECEIVED

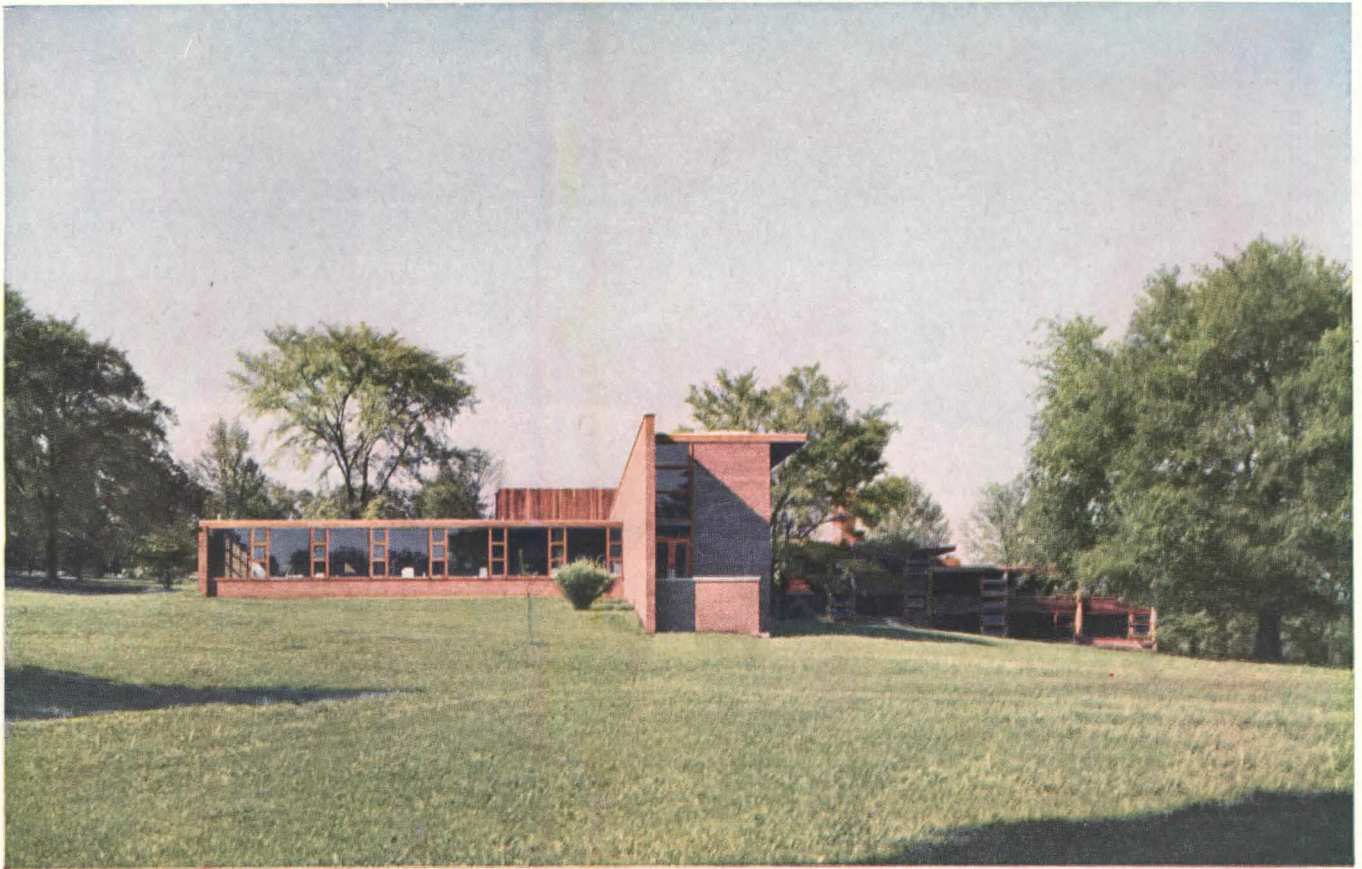
An Approach to Design. By Norman T. Newton. Addison-Wesley Press, Inc., Cambridge — Introductory lectures, given at the Harvard Graduate School of Design to first-year students in architecture, landscape architecture, and city planning, which point up the inter-relationship between design and the broader aspects of modern living.

Church Maintenance Manual. By Roger C. Whitman. Doubleday & Company, Inc., Garden City — A comprehensive manual on the care of church buildings, equipment, and grounds.

Anatomy for Interior Designers and How to Talk to a Client. Whitney Publications, Inc., New York — Second and extended edition of lively tips to interior designers. Illustrations.

45 Contemporary Mexican Artists. By Virginia Stewart. Stanford University Press, Stanford — Informal profiles of the artists at home and at work and excellent reproductions, in black and white and pottery brown, of their work.

1951 Modern Plastics Encyclopedia and Engineer's Handbook. Tells in detail last year's developments in plastic materials, applications, machinery, engineering and techniques. A special section covers "plastics in defense." Removable for handy reference is a plastics properties chart. Technical sections will appeal mainly to the engineer.



FINE ARTS BUILDING, MARYVILLE COLLEGE

Maryville, Tennessee

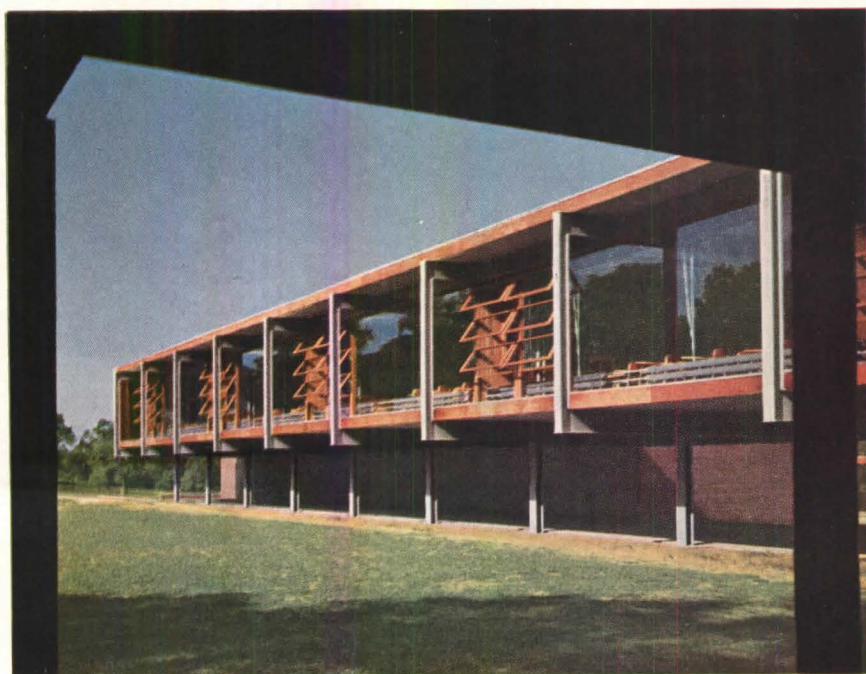
Schweikher & Elting, Architects

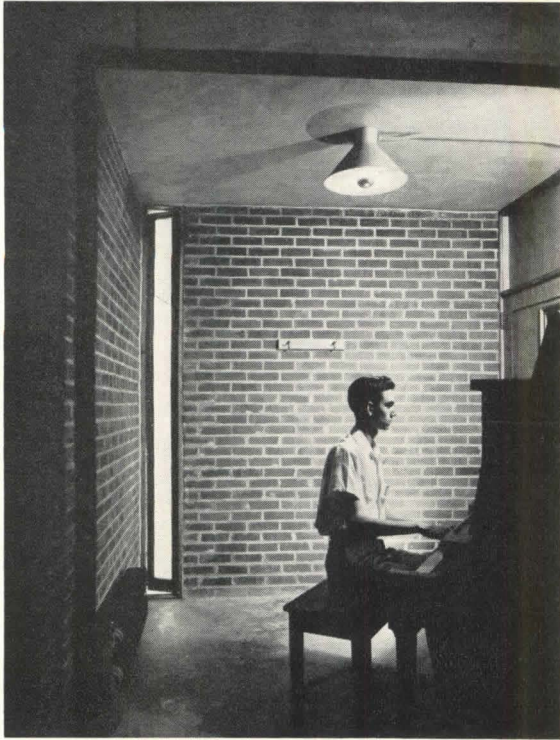


Joseph W. Mollitor Photos

MARYVILLE FINE ARTS BUILDING

Joseph W. Molitor Photos

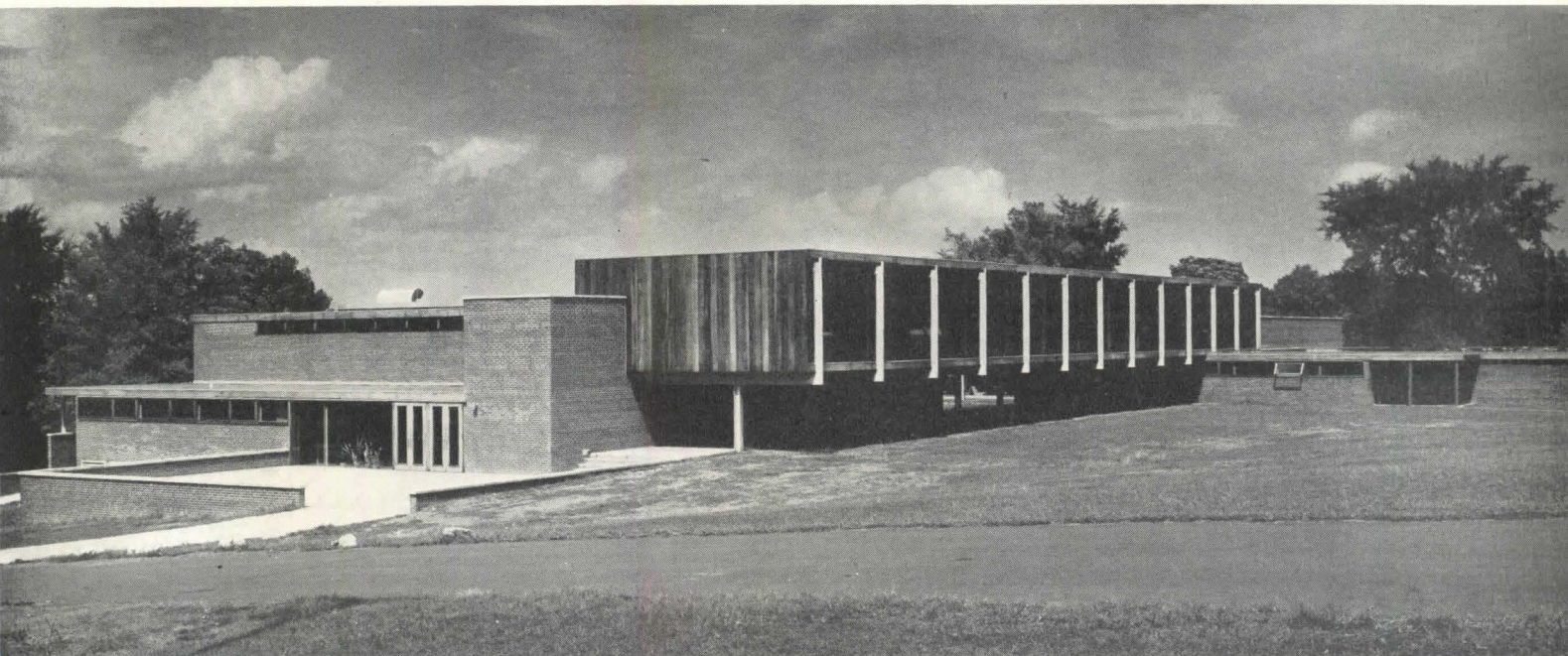




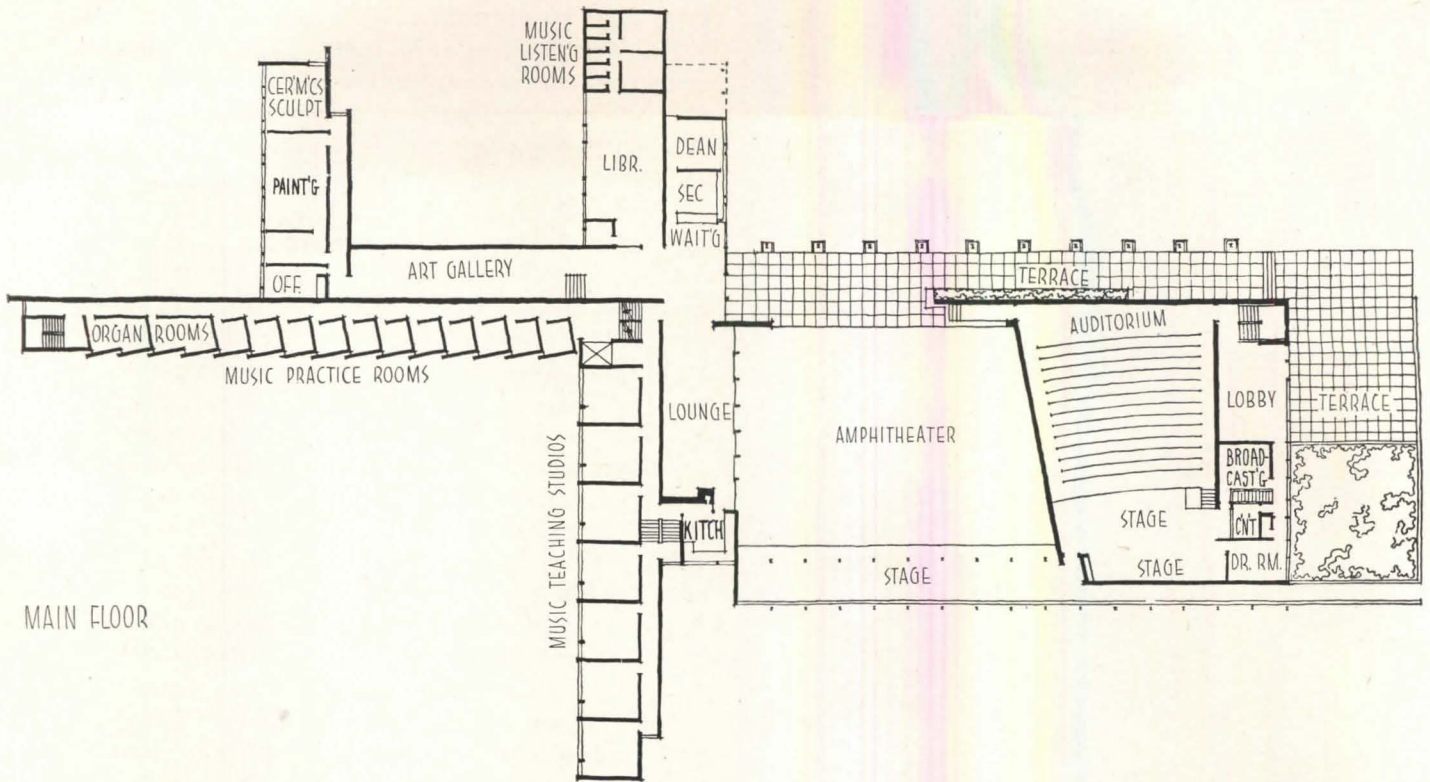
IT IS HARD TO DECIDE, in telling the story of the new Fine Arts Building at Maryville College, whether to concentrate on its complete integrity, on its close approach to functional perfection, or on the romantic revolution it has precipitated on a campus which is extremely pleasant but not otherwise too distinguished architecturally.

Maryville College has always been a small institution. It has a long, honorable, quite liberal history, starting in 1802 when the Rev. Issac Anderson established Union Academy, known as "The Log College." In 1819 Rev. Anderson's efforts caused the Presbyterian Synod of Tennessee to found The Southern and Western Theological Seminary. Later, college and preparatory departments were added; the name was changed to Maryville College; the theological department was discontinued; and, during the Civil War, the college closed. Shortly afterward it reopened, and in 1871 moved to the present campus, a rolling eminence on the eastern edge of Maryville, Tennessee, to remove it definitely from the physical restrictions of its former site inside the then sleepy small town in the western foothills of the Great Smokies. Today Maryville's houses crowd up to the campus; commercial development is reaching out along the highway north of the college hill, toward Knoxville, the TVA, and vast aluminum plants not far away.

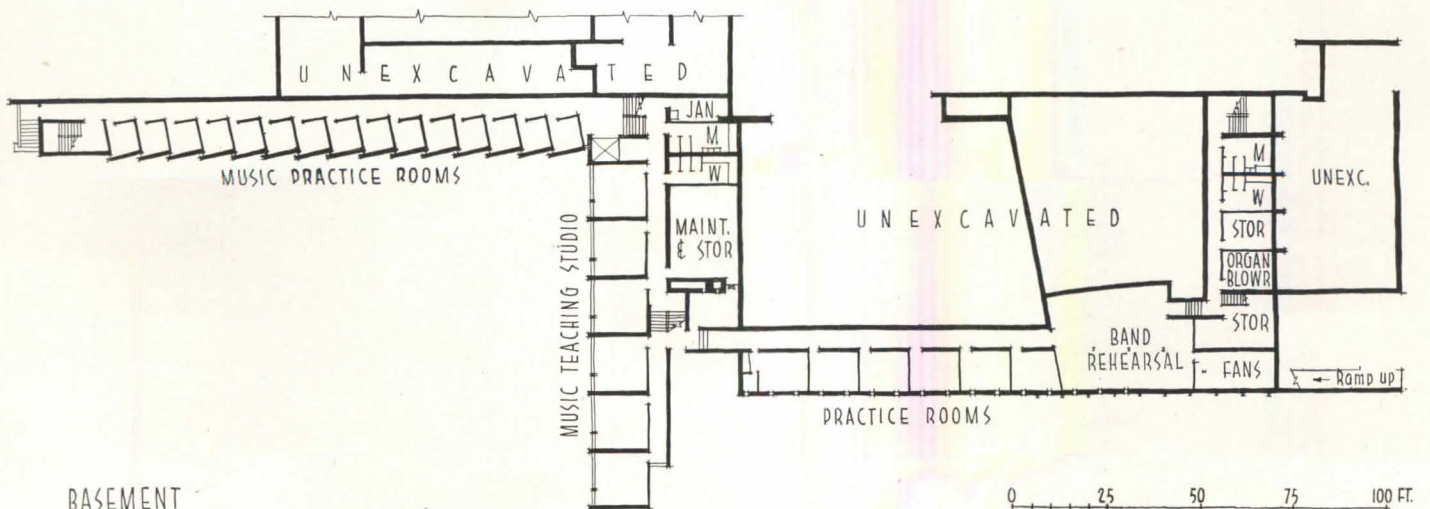
The College's music courses have a high reputation. The many practice rooms (above) are sound-treated. Below: auditorium lobby at left, elevated classroom wing in center, library and administration at right. Structure — of brick, concrete, rough-sawn natural redwood, and steel — is intentionally displayed. Top, facing page: library wing at left; painting, sculpture in center; music practice wing at right



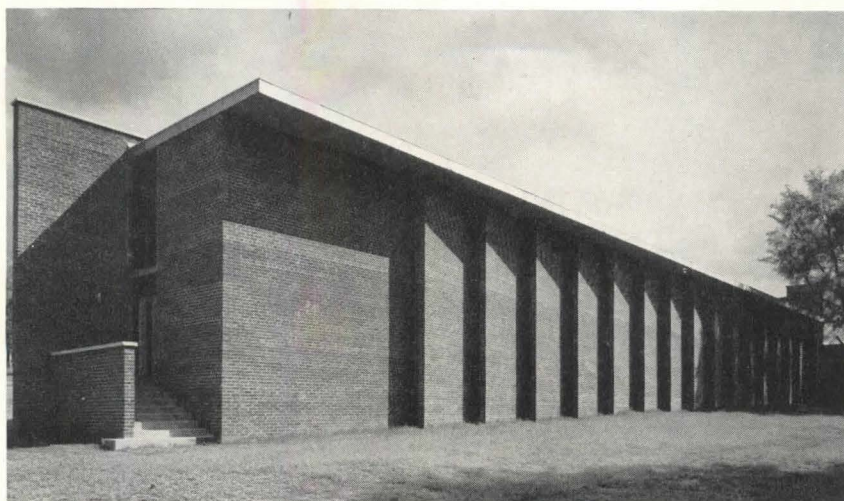
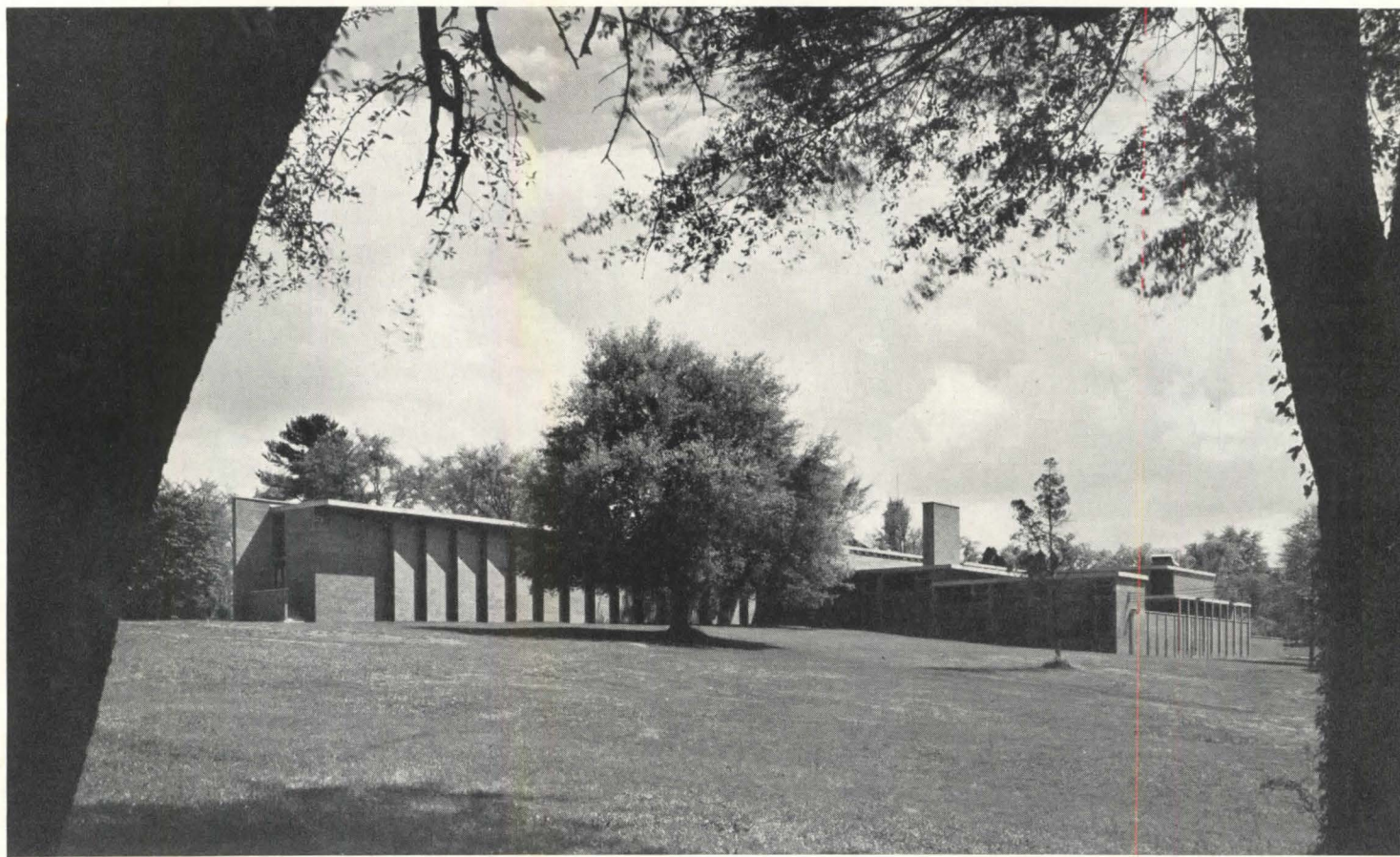
MARYVILLE FINE ARTS BUILDING



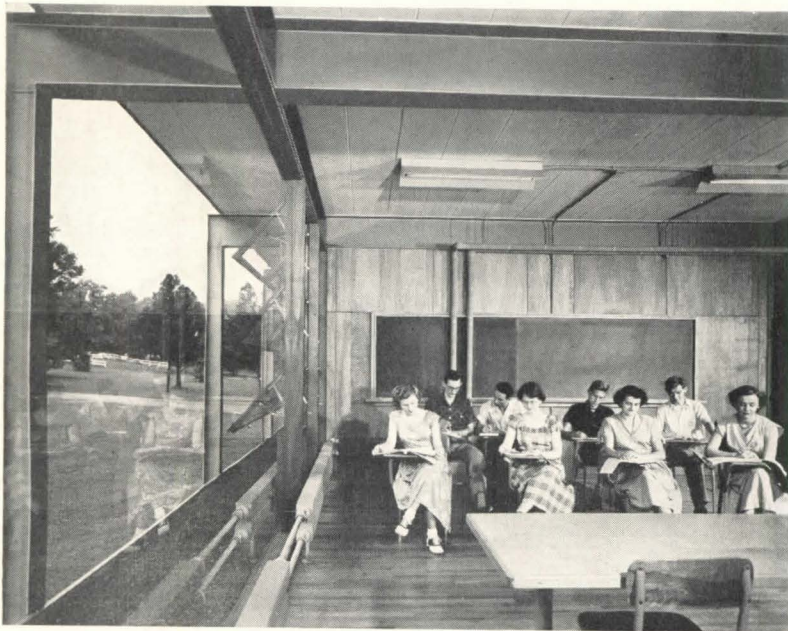
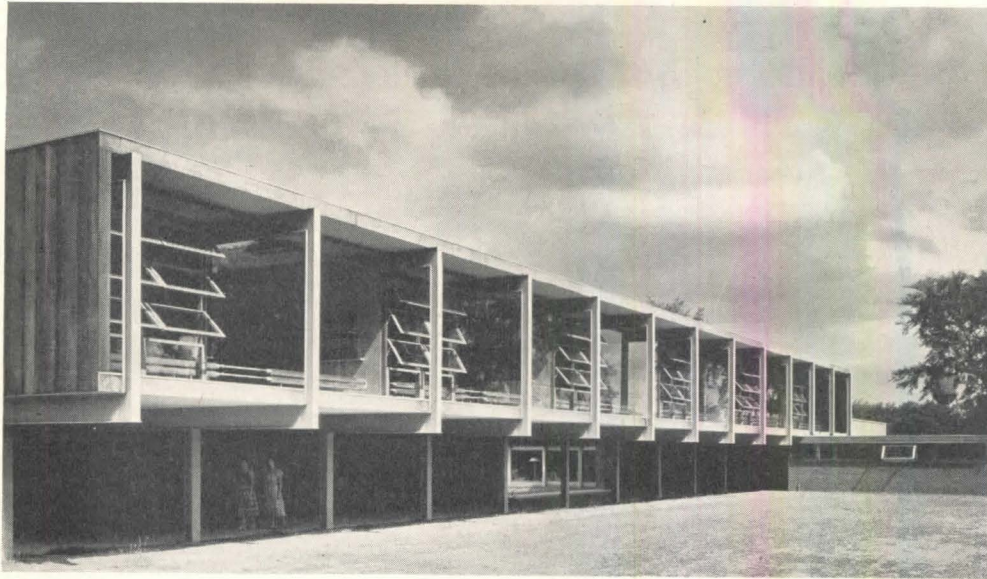
For ten years prior to World War II, Maryville's total student enrolment averaged 816; after the war this rose briefly to over 900. Since a principal aim is to provide college educations for young men and women of small means, the institution's income has had to come largely from substantial endowments. These were not always sufficient; the administration building, just out of the adjoining aerial view, was built of bricks from clay dug, mixed and burned by students one summer years ago. Other buildings on the campus are brick or wood, of an architectural derivation approximately Georgian. When the college chapel, in whose basement music and art classes had been conducted, burned down, funds were obtained to build the Fine Arts Department its own new building. Maryville's graduates (about 50 per cent teachers, one-sixth ministers, the remainder mostly professional) need music and art training; about two-thirds of the students take music courses, and the college choir makes extensive trips.



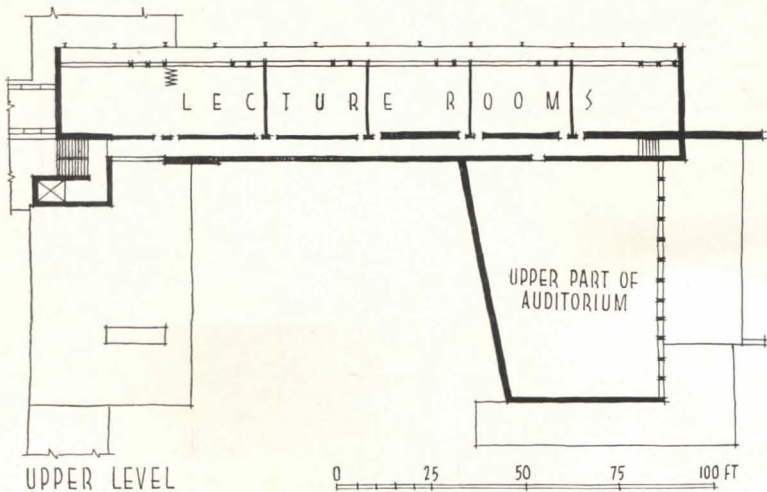
Center, below: west side. Behind auditorium is a partially covered passage for rolling pianos directly from street to outdoor or indoor stage. Pattern formed by exposed vertical steel is picked up by slit windows of basement practice and rehearsal rooms. Bottom: music practice wing also has slit windows; the saw-tooth wall faces these completely away from the college campus, practically eliminating noise interference with other activities



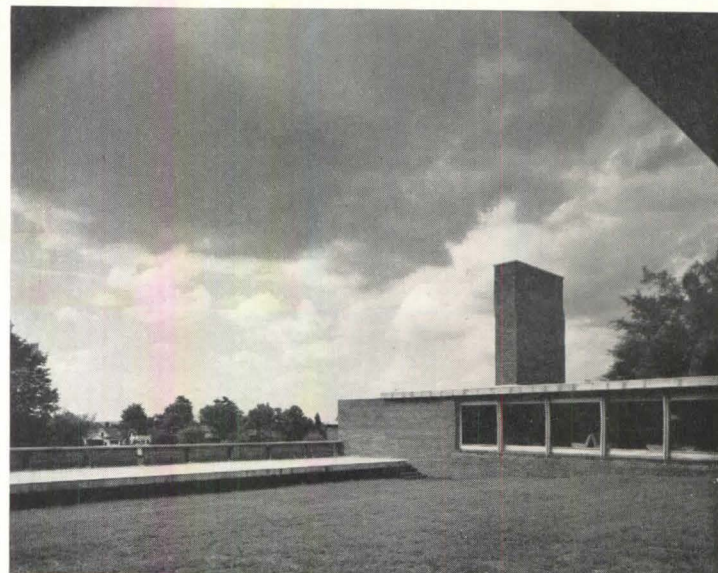
Joseph W. Molitor Photos

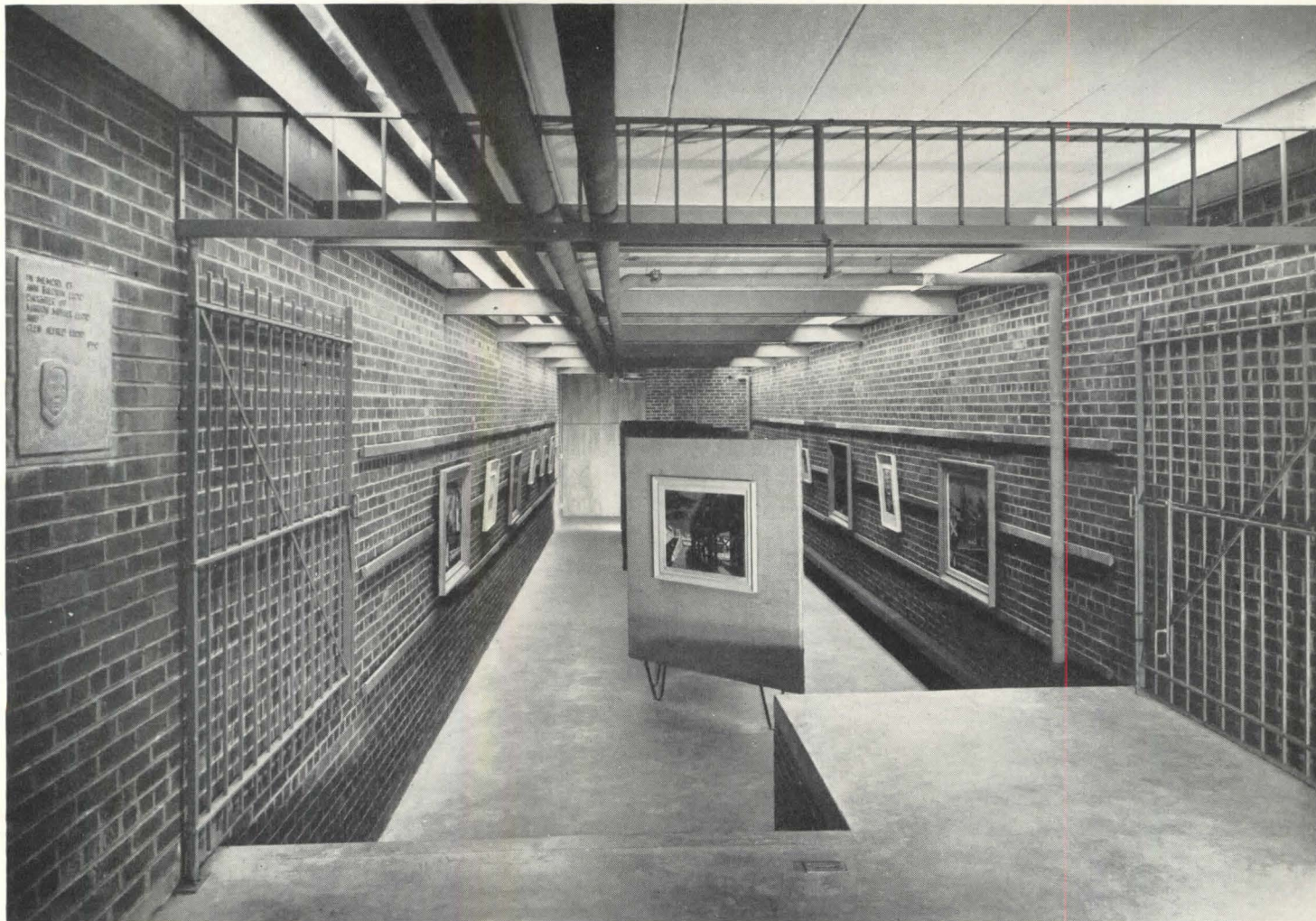


Lecture rooms as such are few in number; not that they are unimportant, but the pursuit of music, painting and sculpture requires more spaces for individual and group study and practice. The building is distinctly departmentalized yet quite simple to administer, which is a result of what might be called *three-dimensional planning*. Another result is the close relation of the building to the sloping site, which makes conventional foundation planting unnecessary. Auditorium, amphitheatre and lounge (see page 104) lie to the south toward the heart of the campus and convenient to an entrance from the town. Each of the other types of activity has its own wing, extensible independently if needed, with circulation fanning out from the waiting room next to the office.



Above, the elevated lecture room wing; exterior at top, typical interior at center, plan at bottom. At right, outdoor amphitheater

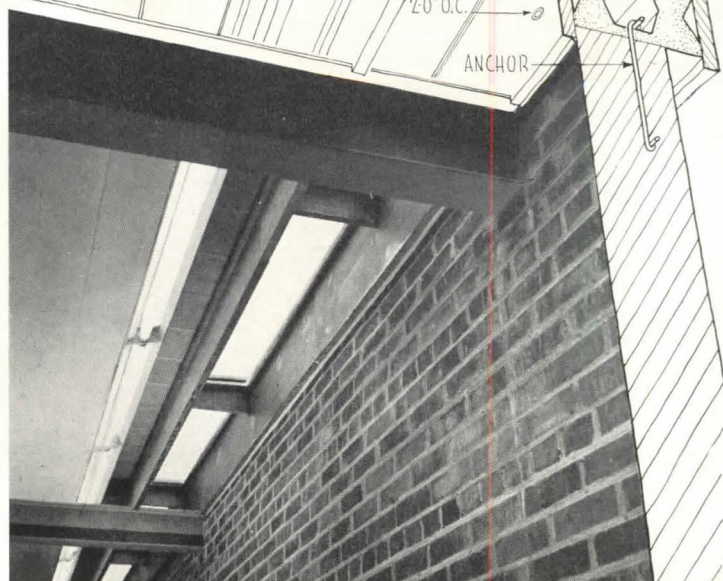
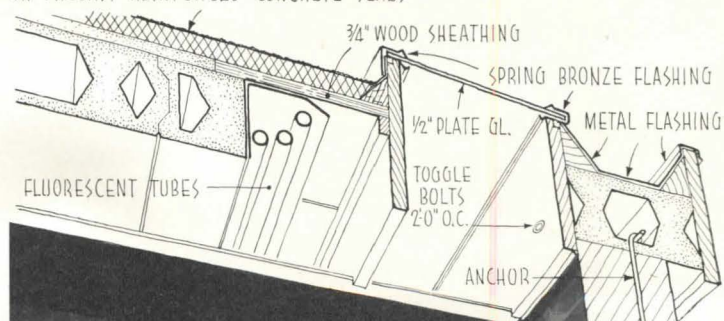




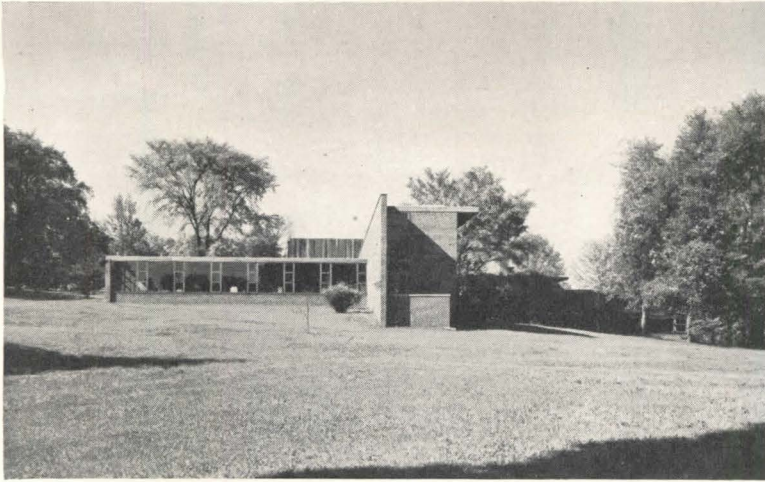
Art gallery, accessible immediately from lounge and student entrance, is also the passage to painting and sculpture wing. Gates — which were not built as designed and are to be replaced — shut off entire wing. Natural and artificial light come from virtually the same source (see below)

Materials used in construction are conventional: local brick, redwood, steel, concrete slab for floors on grade, and a type of precast concrete slab, also locally made, for upper floors and roofs. However, the materials are used directly and exploited fully without regard for convention as such. This was not done wholly to stretch the building dollar, although certain economies did ensue. There was also a strong desire to produce a building which would have at least as much architectural and structural integrity as, for instance, a musical composition. The grace notes and arpeggios were not to be ignored, but they could not be mere embellishments. Consequently the brick and concrete are exposed, the steel is visible, the glass walls are all glass, and against these the piping, radiation, conduit and electrical fixtures are consciously and gracefully composed. Only in one spot, and there for a reason, is the structure concealed. The west wall of the lecture room wing hides a truss, spanning from auditorium to studio block, into which the exposed rigid steel frames are tied. If it had been visible, this truss would have been nearly impossible to waterproof.

BUILT-UP ROOFING ON 1/2" INSULATION BOARD ON 3/4" CONCRETE TOPPING ON PRECAST REINFORCED CONCRETE SLABS



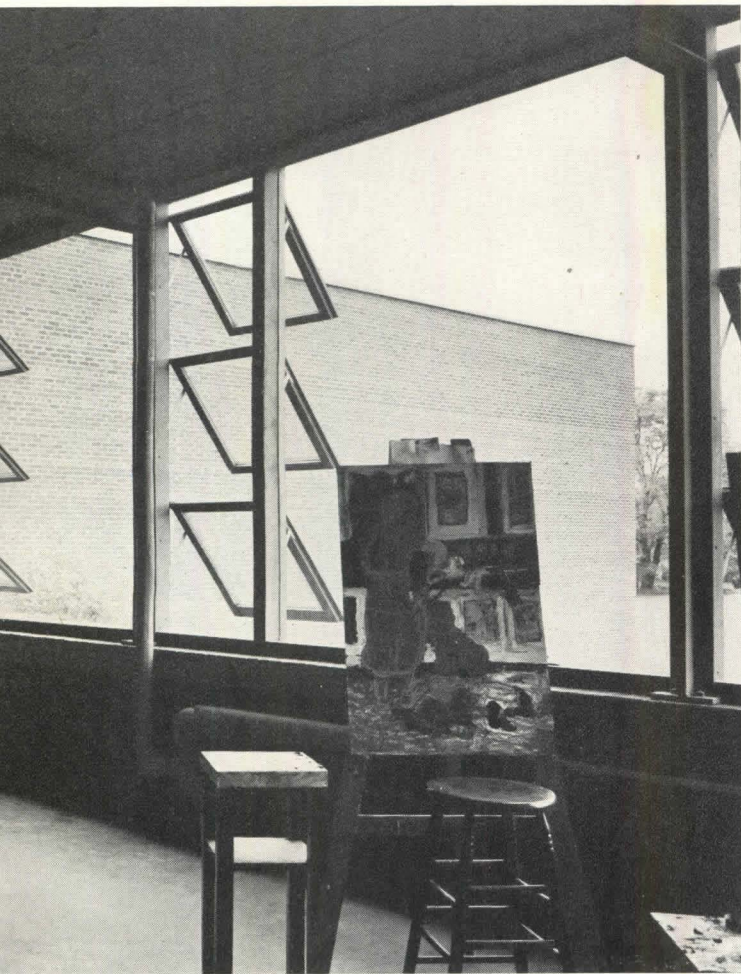
MARYVILLE FINE ARTS BUILDING



Above, view from north; only from camera position can one hear noises emanating from practice room wing in foreground; painting and sculpture wing are at left, teaching studios at right. Photo at right: painting studio has all-glass north wall. This wing can be expanded independently of rest of building if need arises. Below, stair hall, corridor to practice rooms. Elevator for moving pianos stops at five levels, so pianos need never be manhandled vertically



Ground-level entrance to teaching studios, rehearsal rooms, maintenance areas

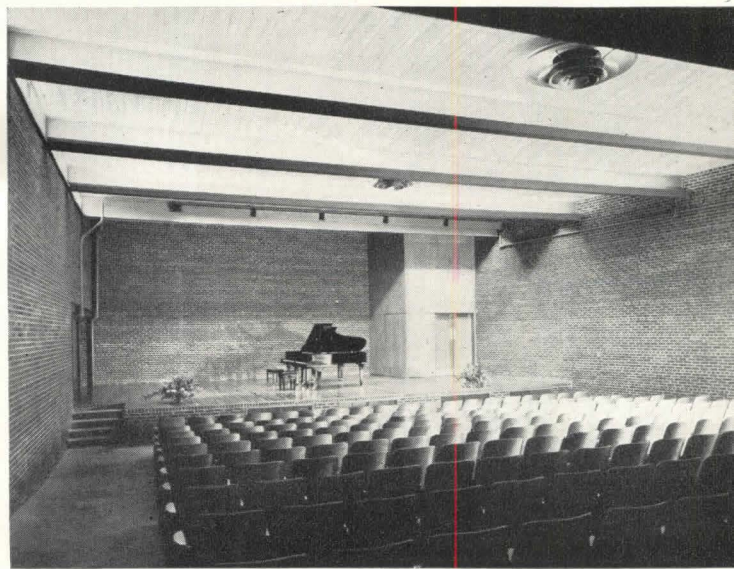


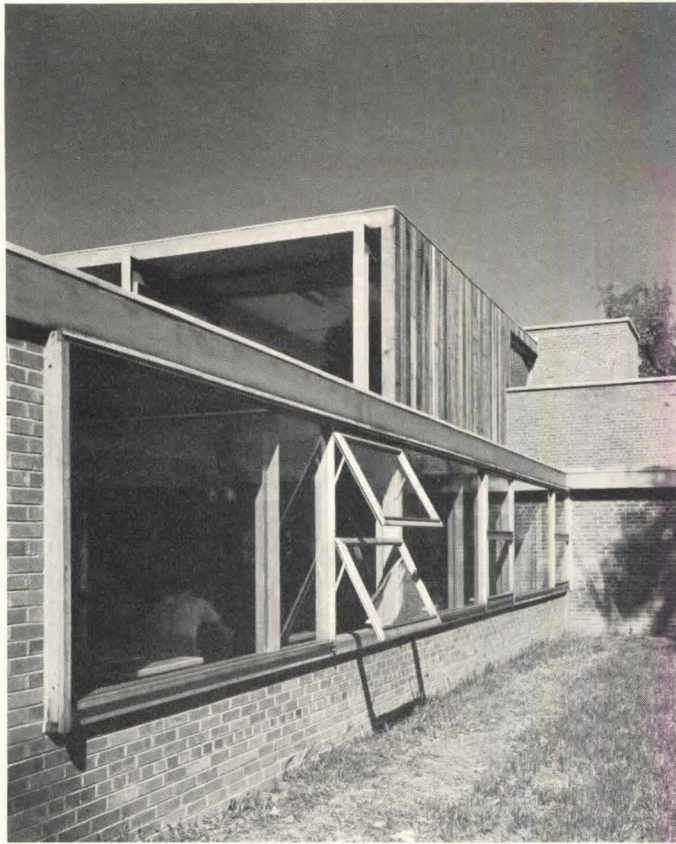
Joseph W. Molitor Photos

To repeat, no conventional finishing materials are used in the building. The only place where plaster appears is in the individual practice rooms which comprise the entire two-story north wing; here acoustical plaster is used on two walls and ceiling of each cubicle. The large lecture room serves occasionally for choir rehearsals; it contains no applied acoustical materials, and to hear a large, mixed choir in it is most exhilarating. The music achieves unbelievable profundities and attenuations with no loss of definition; it is music produced in a space whose resonance, reverberation, and natural absorptive qualities enhance natural sound. One can imagine students trying vainly to recapture a harmony in less happy surroundings.

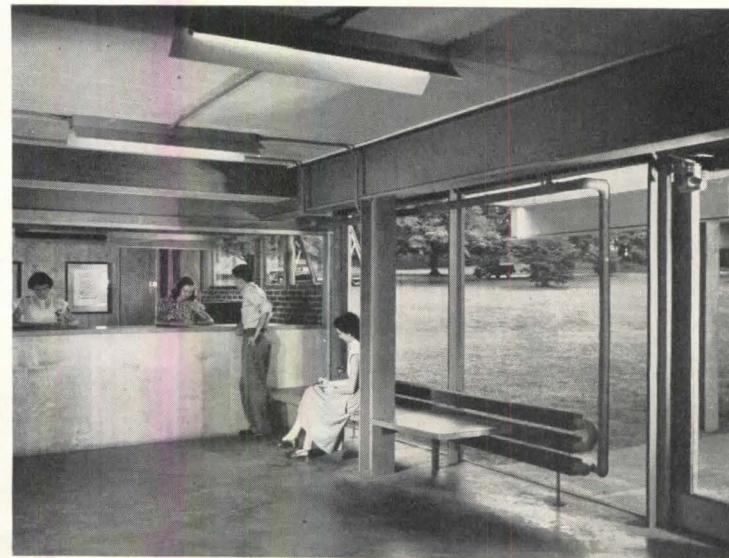
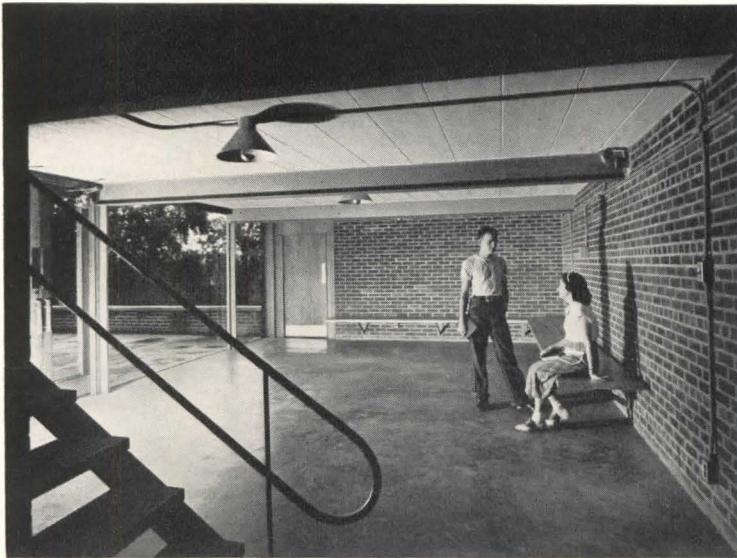
The building does other things to students, and to faculty as well. It has shortcomings (the local bricklayers had little understanding that their work was to endure naked; some space was sacrificed in the painting and sculpture department; it took time to balance the heating system; etc.), but these are all minor, or easily remedied, or resulted from decisions undertaken with full knowledge. In the main, Maryville's Fine Arts Building provides spaces which function exactly as they were intended to, spaces clothed wholesomely and naturally by materials whose solidity or transparency at the point of use seems entirely appropriate. These qualities of honesty and fitness have vastly stimulated the entire college.

Below, left, teaching studio. Right, interior of auditorium, intended primarily for musical events. Organ, when installed, will be at rear of stage with speaking pipes of one or more voices exposed

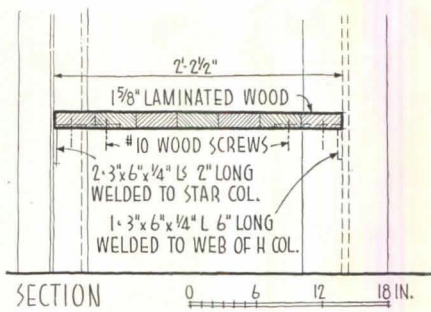
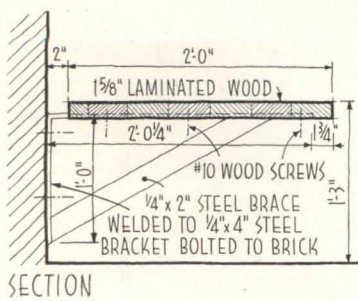




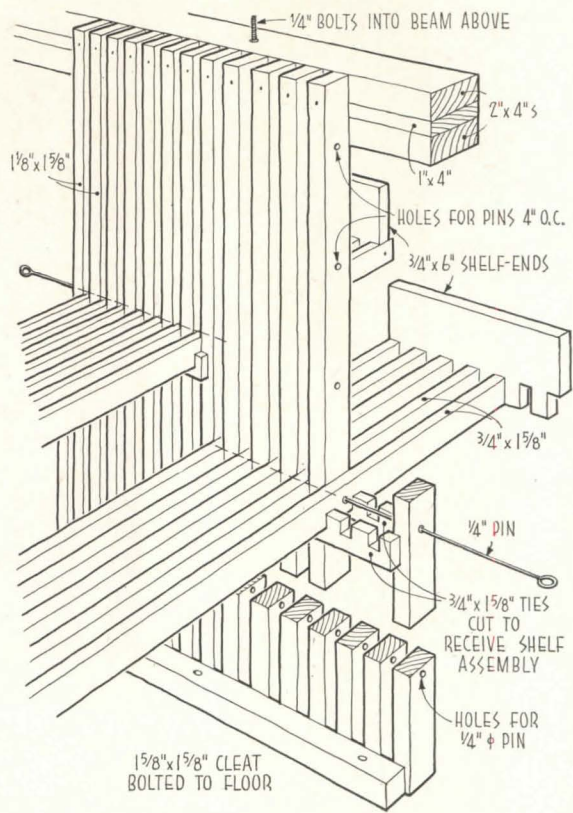
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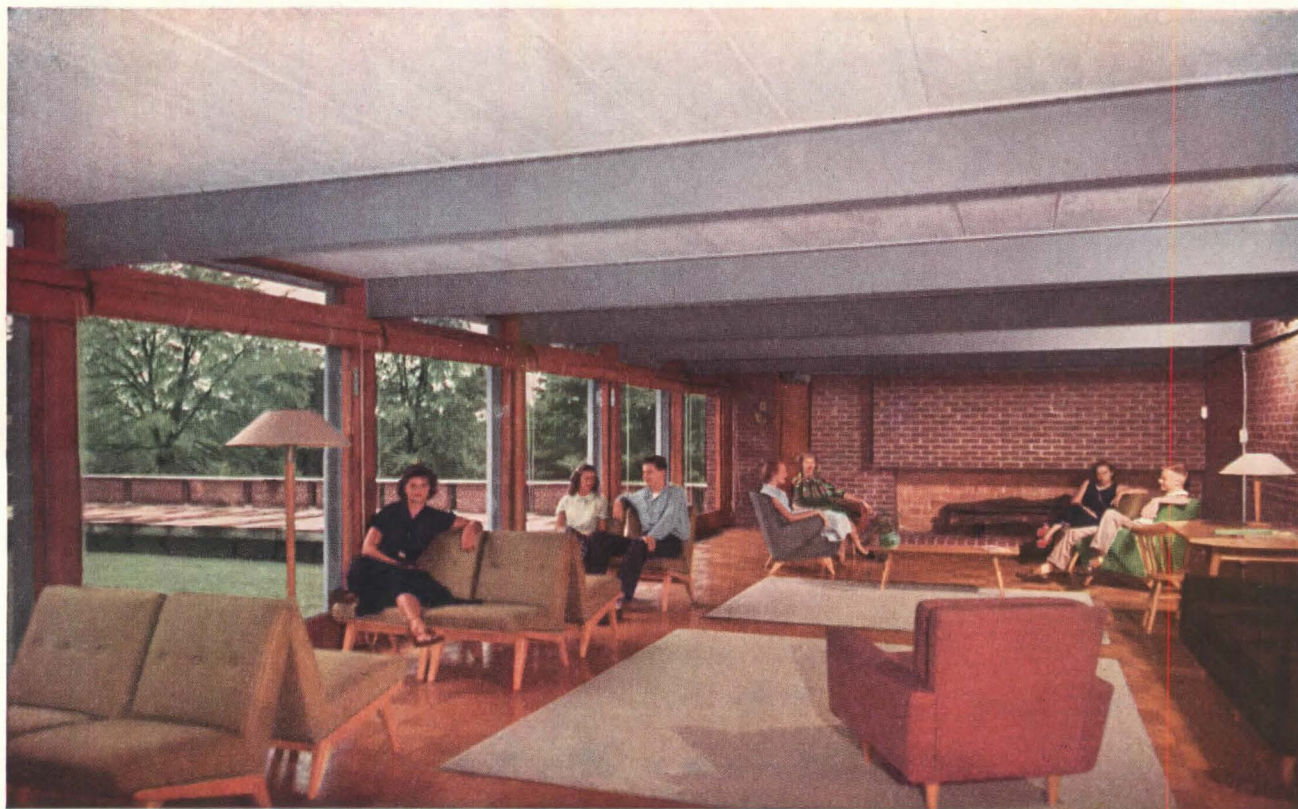
BUILT-IN BENCHES



Above, left, auditorium entrance lobby; right, student entrance and waiting space adjoining office. Even in these more formal parts of the building the structure is almost completely exposed; so are mechanical and electrical systems. Heating is 2-pipe hot water, zoned, supplied from the College's central boiler plant



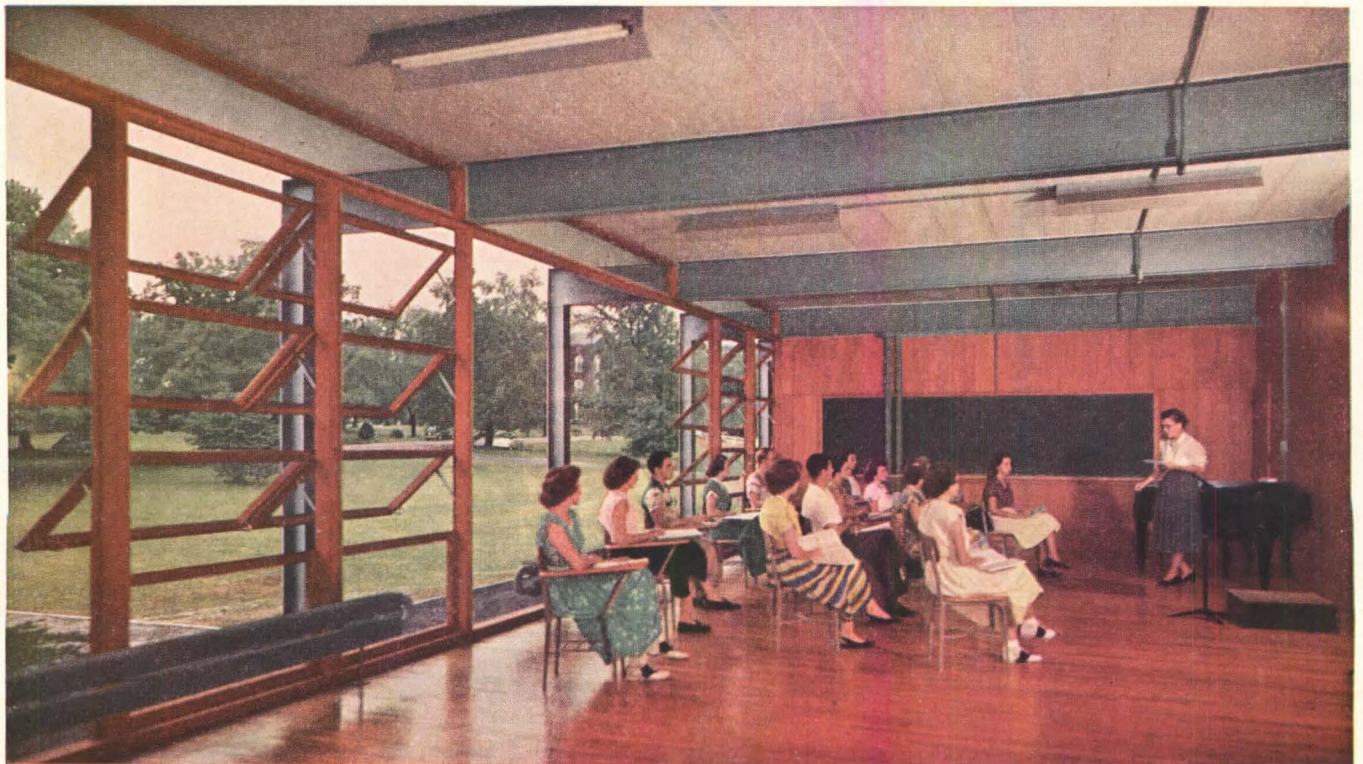
Two photographs above: library, exterior and interior. Book shelving, of naturally finished birch strips, is in effect hung from the continuous wood member bolted to bottom flanges of exposed steel ceiling beams. Adjustable shelves are secured by long, removable, metal pins. Photograph below: lounge, overlooking the outdoor amphitheater



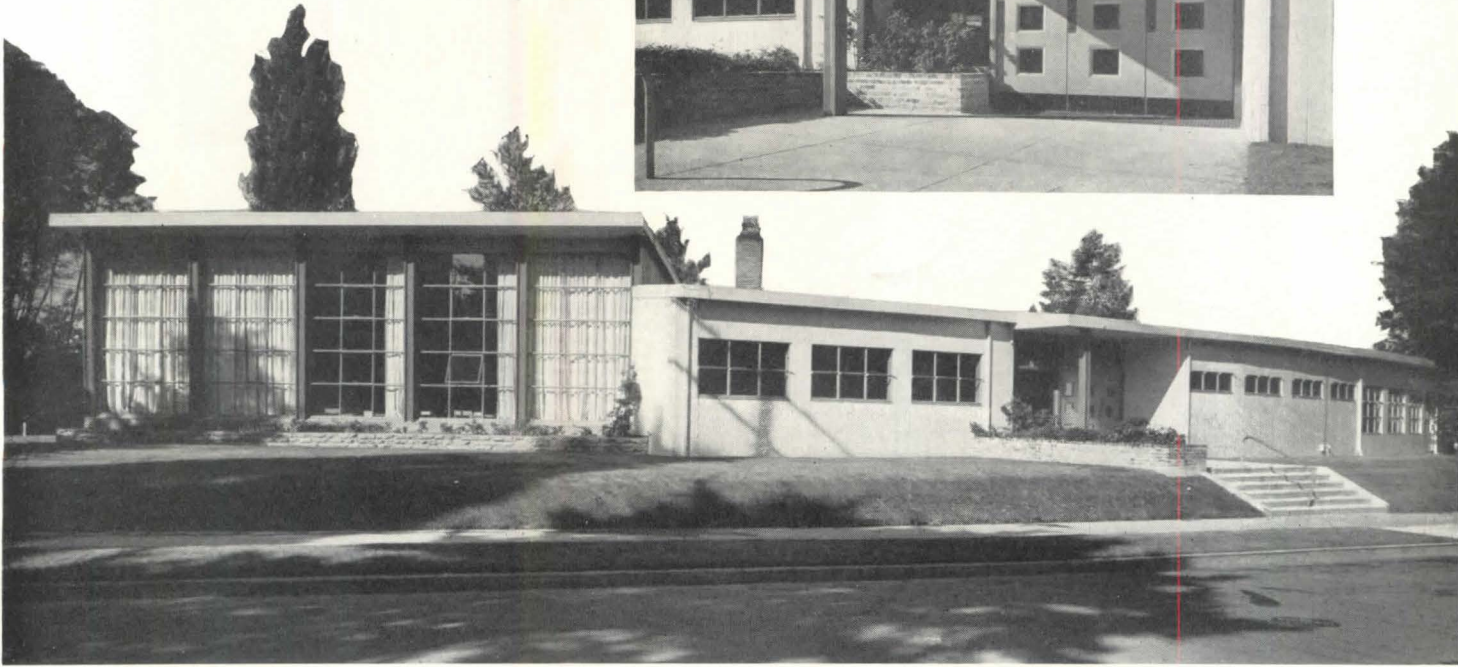
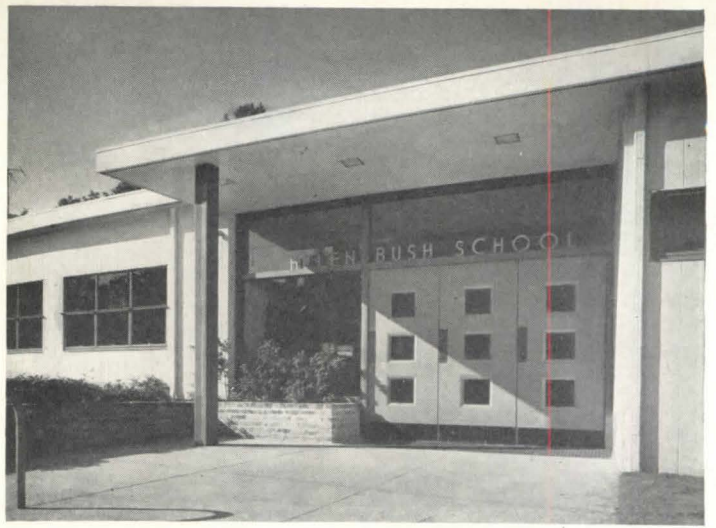


Joseph W. McIlitor Photos

Classroom unit (exterior above, typical interior below) is designed with something of the finesse required in violin making. For instance the rigid steel frames consist of standard structural shapes mitered and welded at corners. To obtain perfect continuity of line meant that welding had to be a precise operation. Though it was admittedly hard to get "finish craftsmanship" from welding crews, the desired results were achieved without undue difficulty



*John T. Jacobsen and
Victor N. Jones & Associates
Architects*



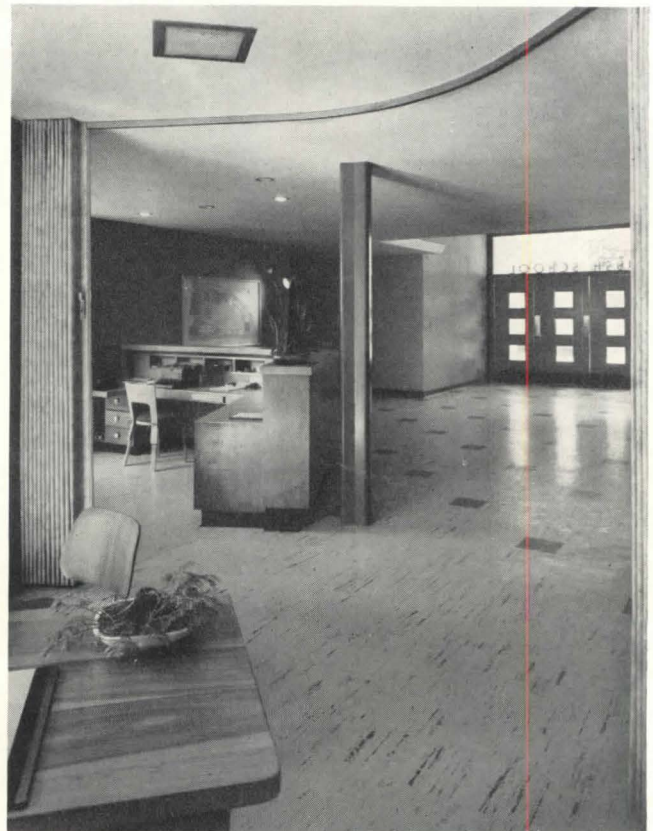
LONG-RANGE PLAN FOR A PRIVATE SCHOOL

The Helen Bush-Parkside School

Seattle, Washington

FROM BASIC PLANS prepared in 1936, this informal, simply designed school is being constructed in successive stages as needs increase and funds become available. The building combines the Helen Bush School for Girls, which has classes in junior high and high school grades, and the Parkside School, which is coeducational and has classes through the sixth grade. The total enrollment is about 300; classes are selective and limited in size.

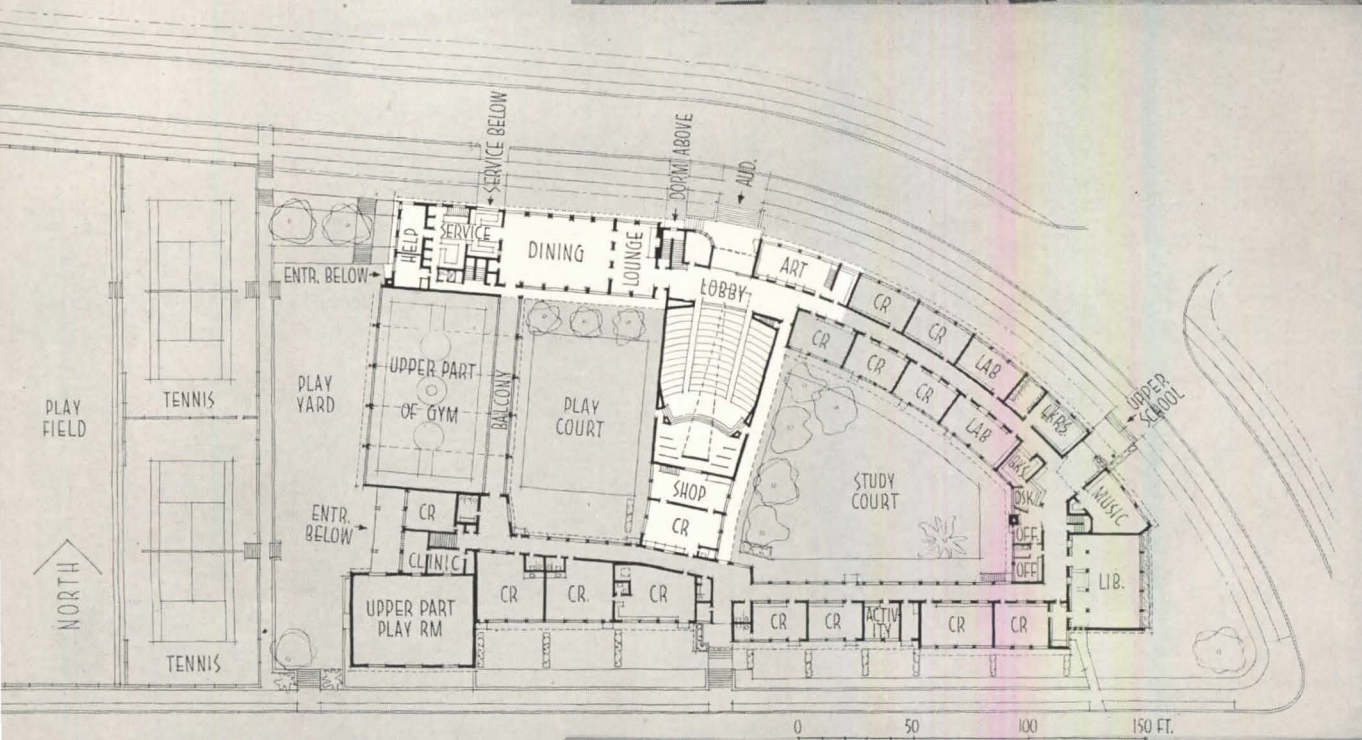
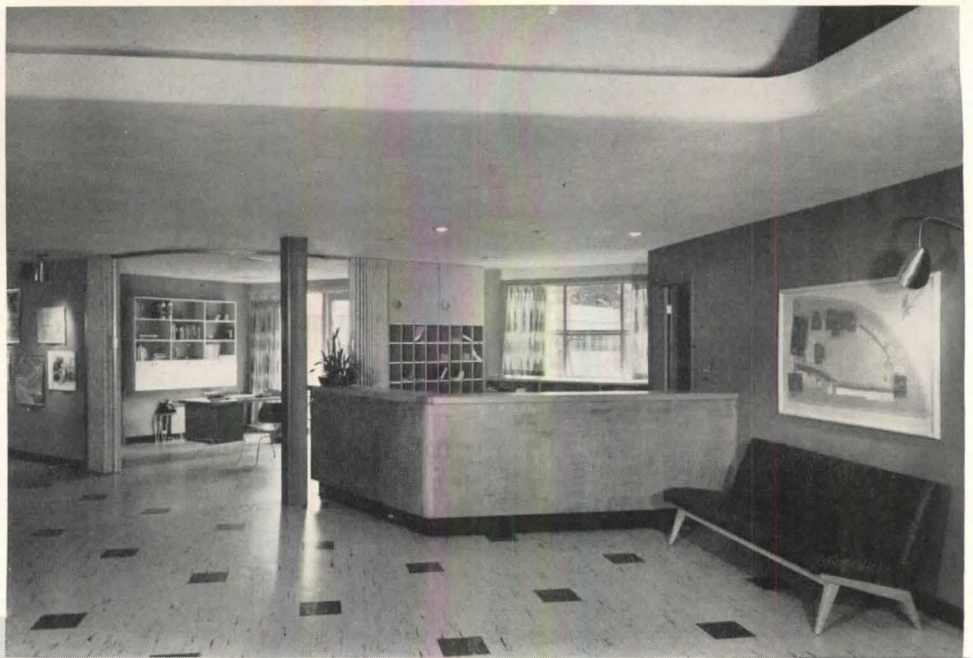
The original scheme has been generally adhered to through the years, with changes only in detailing. That the results are as fresh and valid today as fifteen years ago is due principally to the early adoption of modular planning and the conception that school design should be unobtrusive, in human scale, and directly expressive of materials and structure.



The large window-wall of the library dominates the curving north facade of the high school. Vertical cedar siding is painted cream with touch of greenish yellow, trim is rust color. Lobby has same colors

Dearborn-Massar Photos

Final plan and original model of school are shown below center. White portion has not yet been constructed. Pleasant interior courts are used to obtain maximum use of restricted site

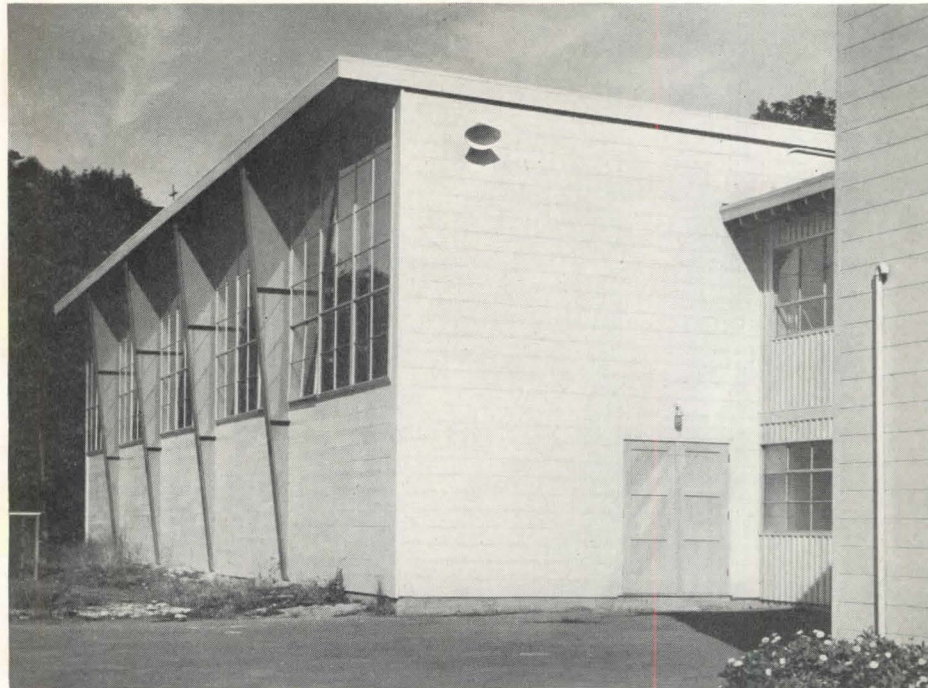
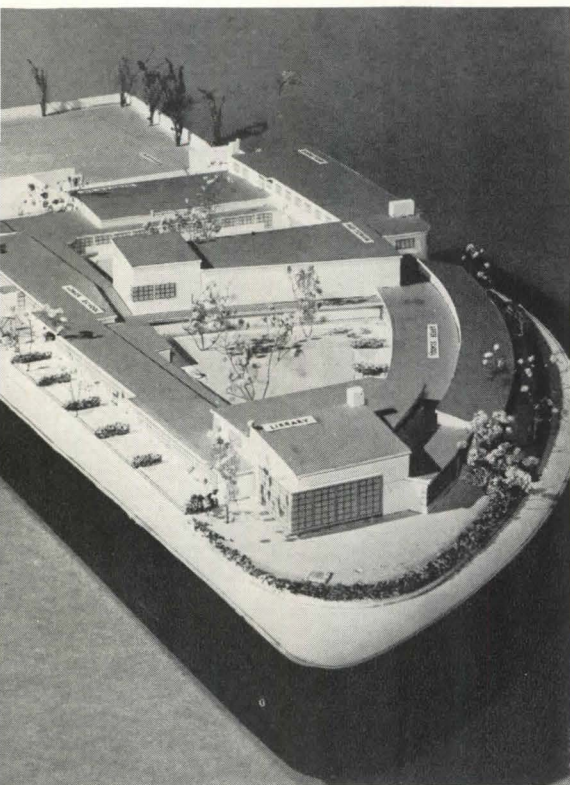


Interiors are furnished in simple, home-like manner, as in principal's office (right); all were designed by Mary Bassetti. The office opens upper school lobby (top)

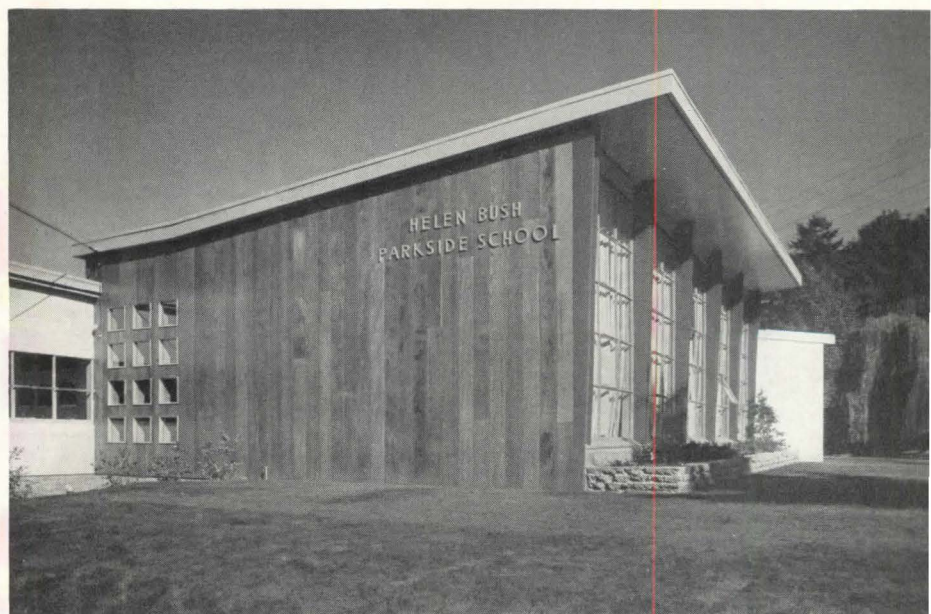


PRIVATE SCHOOL

Gymnasium ▶

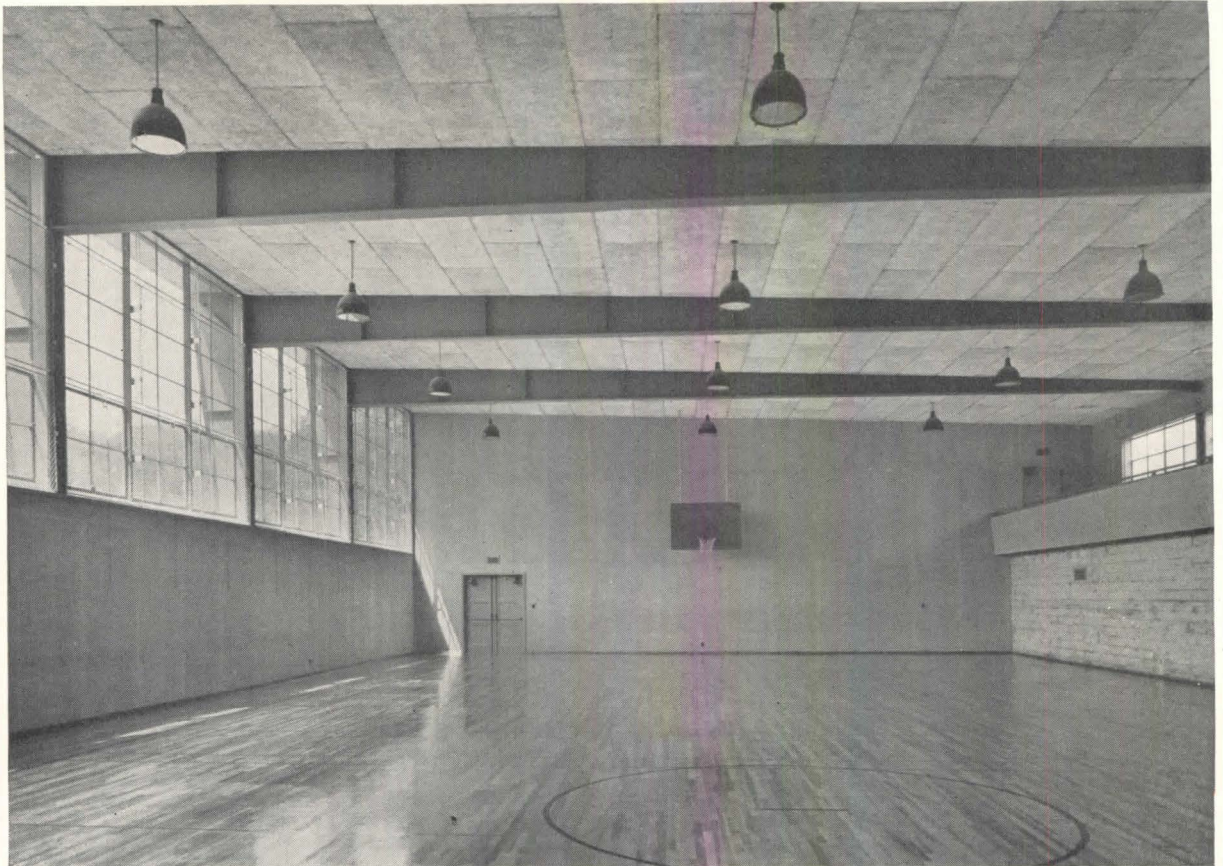


The latest construction on the school, named for the late Mrs. Helen Bush who initiated the program, includes the upper school rooms, library and gymnasium shown on these pages. Economy was a prime consideration in construction. Foundations and floors are concrete on grade, and all framing and siding is wood except that continuous steel frames span the gymnasium. Roofing is built-up tar and gravel. Jack Morse, Architect, helped supervise recent construction; Mrs. Eunice Curtis designed the landscaping. Mrs. Marjorie Liven-good heads the school at present.

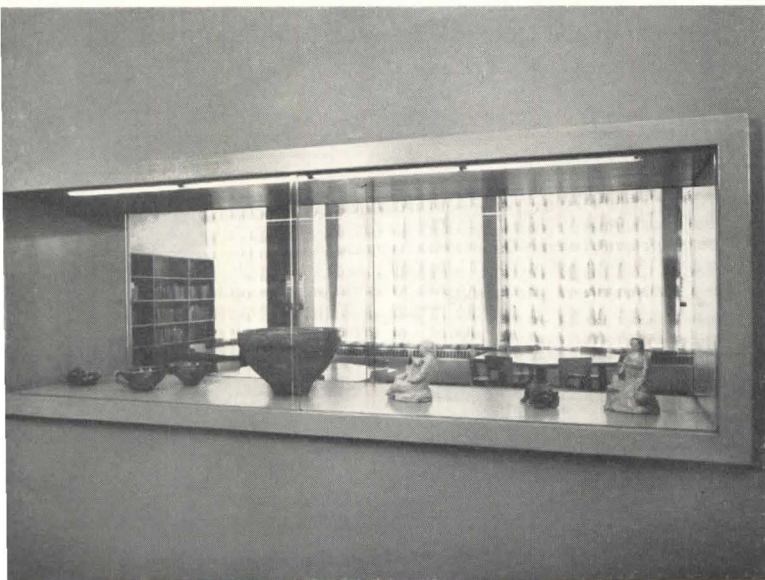


Dearborn-Massar Photos

Library ▶

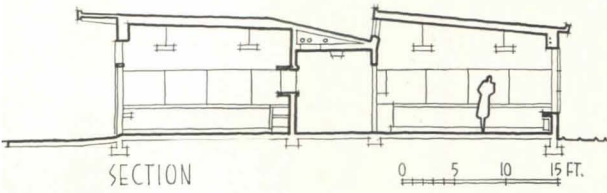


The large area of the gymnasium (above) is spanned by tapering, continuous steel frames, left exposed on both interior and exterior. Space under balcony will be connecting passage to future wing

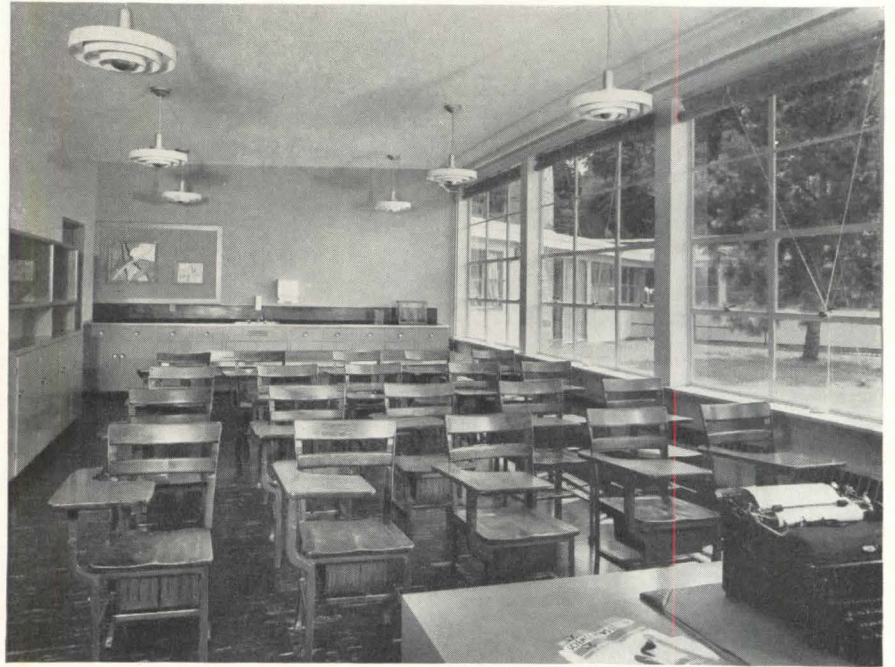


Library (above and right) is well lighted, quiet, doubles as study hall. Showcase window (left) helps minimize disturbance from visitors. Continuous radiators under windows reduce drafts

PRIVATE SCHOOL

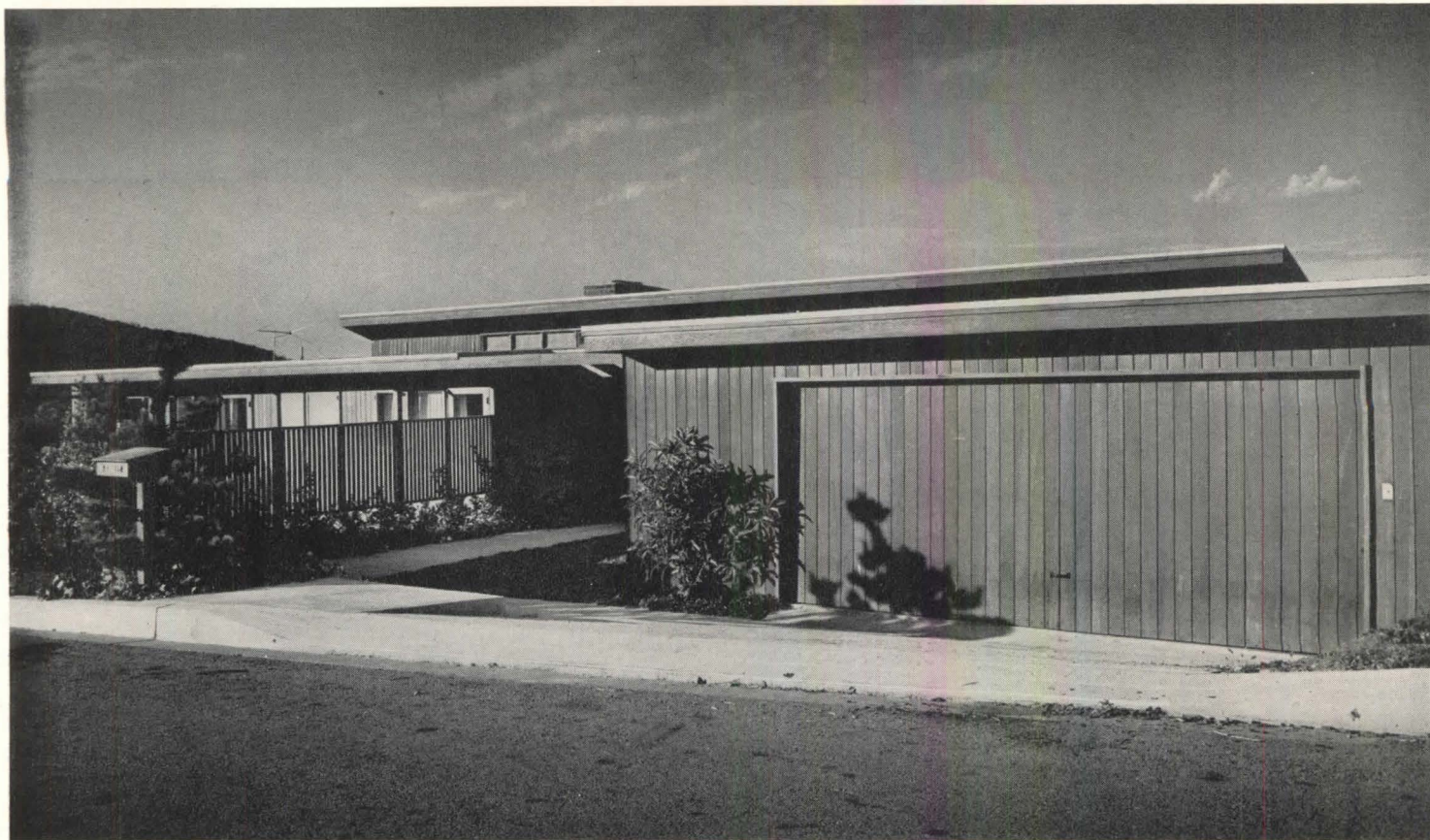


Clerestory permits bilateral lighting in many of classrooms (section above). Right: typical lab



Dearborn-Massar Photos





RESIDENCE OF MR. AND MRS. FRANK McCAULEY



House is set well back from street, with main entrance shielded by garage. Main entrance (right) is unusually effective with large side panels of diffusing glass

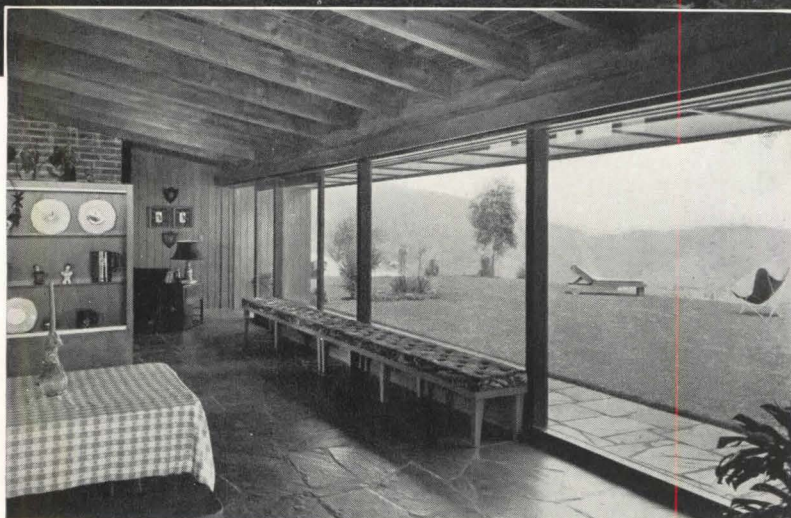




Bel Air, California

Arthur B. Gallion, Architect

*Calvin C. Straub in Charge
of Design and Construction*



Robert C. Cleveland Photos

THE OWNERS OF THIS HOUSE are a young couple with two small children and an awareness of the future needs of those children. Their principal requirements were ample space for informal entertaining, a protected play area for the children, and a large nursery which could be converted easily to two separate bedrooms when the youngsters pass the nursery age.

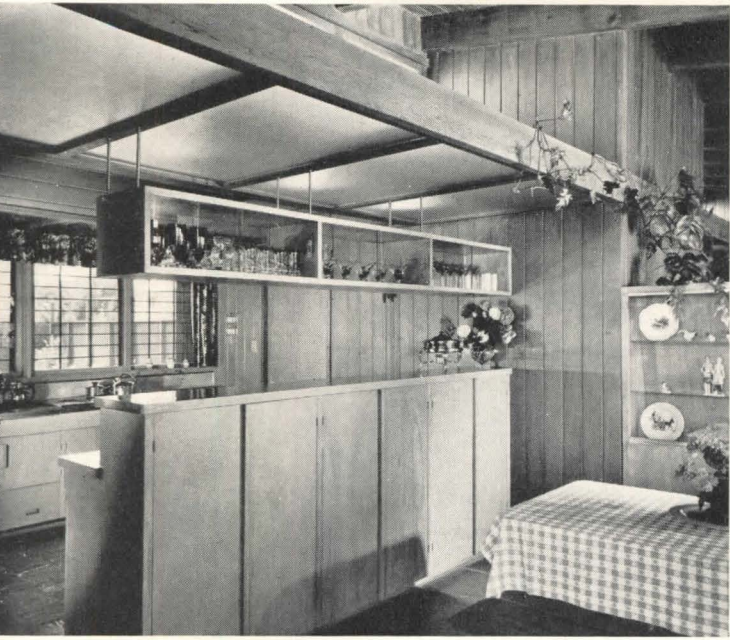
The house was planned to make the best of a difficult site — a flat bench of land bulldozed out of the foothills in western Los Angeles. A magnificent view of the mountains and the city, a strong prevailing west wind, and the problem of the area's occasional raw cold were

the main factors to be considered. Hence the almost solid expanse of glass at the rear, facing the view, and the more closed-in front.

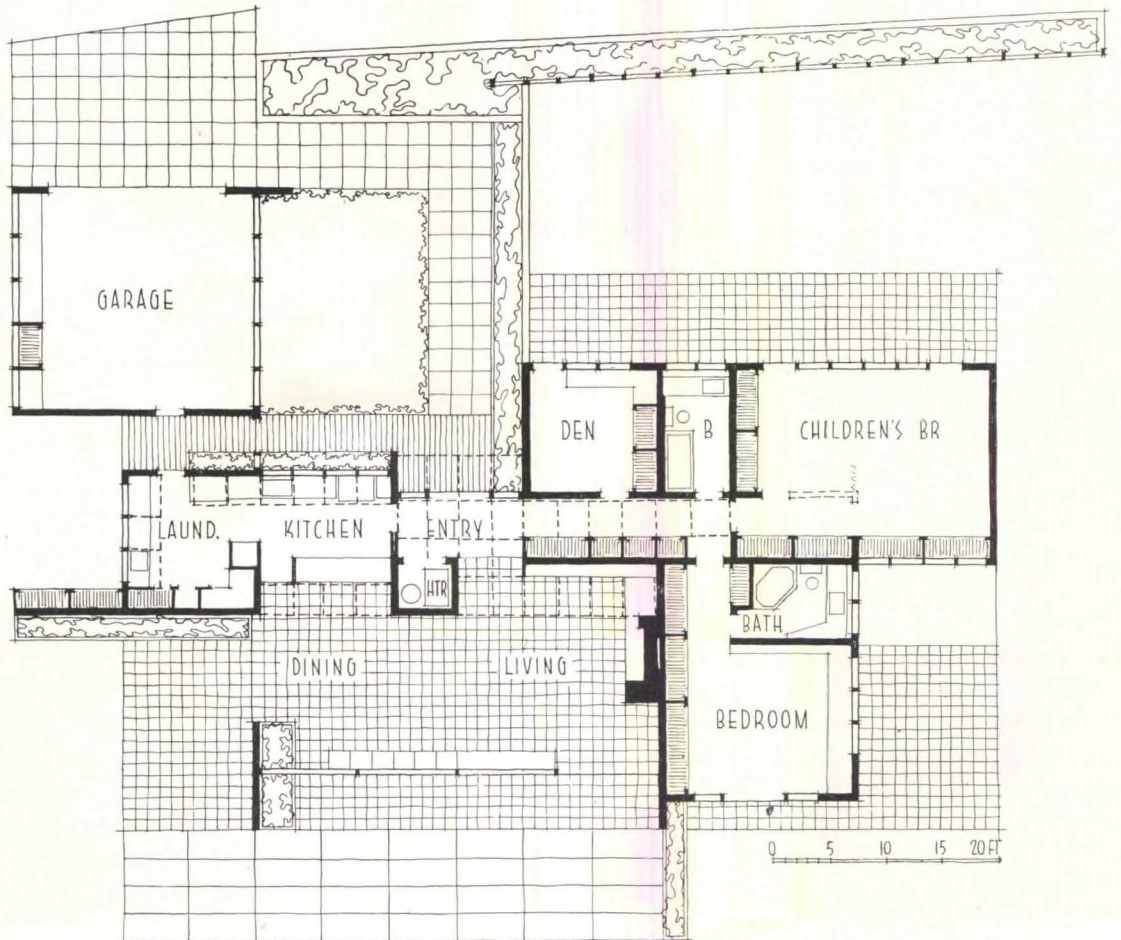
Of particular interest is the remarkable amount of storage space provided in every part of the house (pp. 122-123). Also noteworthy are the interesting roof-line, the exposed rafters, and the use of cross-ribbed diffusing glass in ceilings. Both exterior and interior walls are vertical redwood siding, stained. Floors are concrete slab and gray slate.

Mr. McCauley, a contractor, personally selected all equipment for the house.

MC CAULEY HOUSE

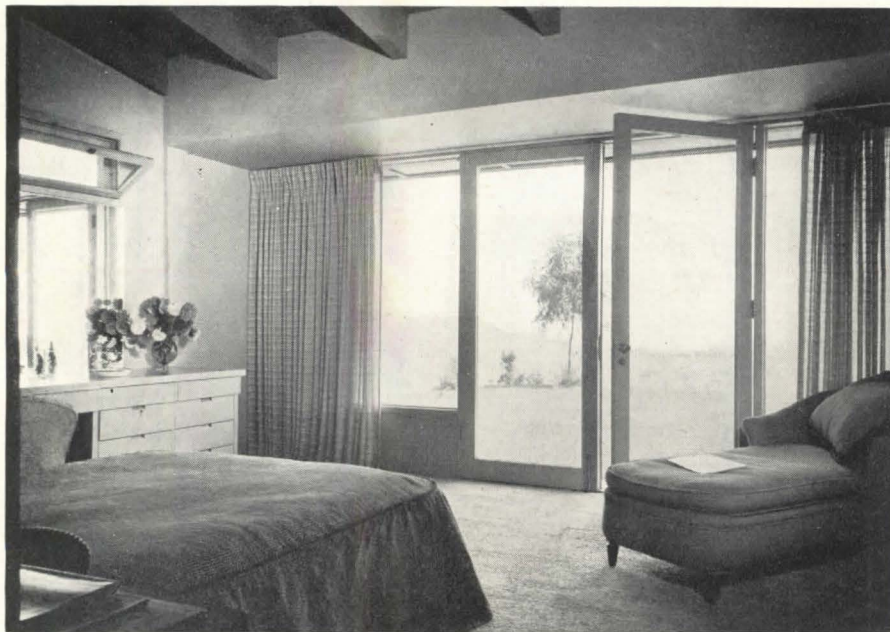


Living and dining areas are separated by a storage cabinet which is movable to allow for large-scale entertaining; dining area opens to a covered terrace and garden. Plan (below) shows care with which home was designed around family's changing needs: as children grow older, nursery can be divided into two bedrooms; meanwhile their play area can be supervised from guest room-den near front entrance





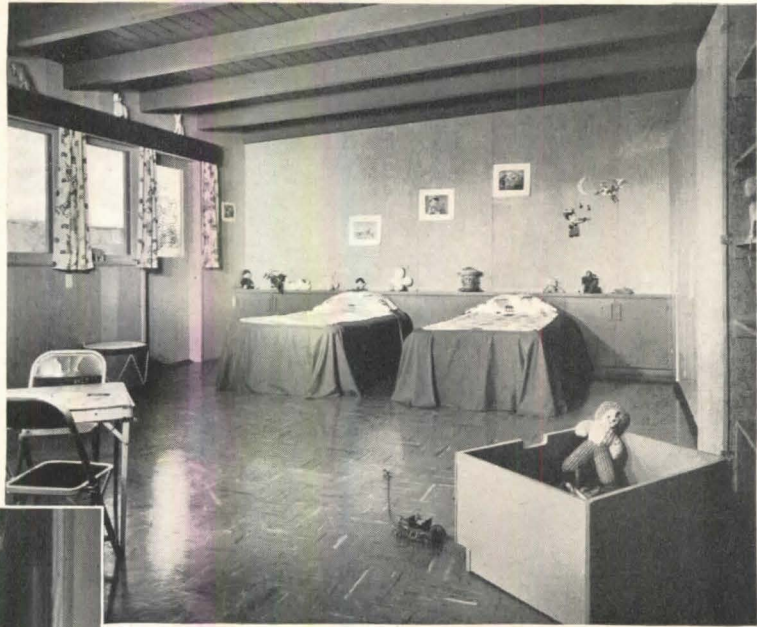
Living-dining area is one large open space, saved from being overwhelming by the introduction of a translucent plane beneath the clerestory windows. Clerestory lighting and glass ceilings and soffits, used here experimentally, have proved to be most satisfactory although quite expensive. Master bedroom (below) opens to north-east, will be more secluded when landscaping is complete.



Robert C. Cleveland Photos

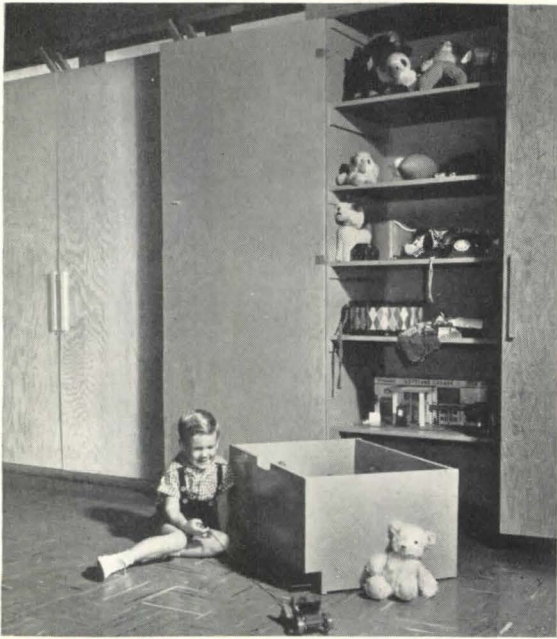
MC CAULEY HOUSE

*Storage Facilities
Unusually Generous*



Most noteworthy feature of this house is the unusual amount of built-in storage space. The hall (left) leading to the nursery and master bedroom is lined along one full side with closets for coats, linen, etc. Nursery (above) has a whole wall of built-in cabinets for clothing and toy storage; there are two wardrobes, so placed that each room will have one when the nursery is divided into two bedrooms.





Robert C. Cleveland Photos

The master bedroom (above, right) has two cedar-lined wardrobes, meticulously planned to provide a space for everything. Kitchen (below and opposite) not only has innumerable built-in shelves and cabinets but boasts a highly unusual pantry shelf department adjacent to the ovens. (The ovens seem rather far from the nearest work surface, incidentally.) Even the garage has a storage room



AN ECONOMICAL

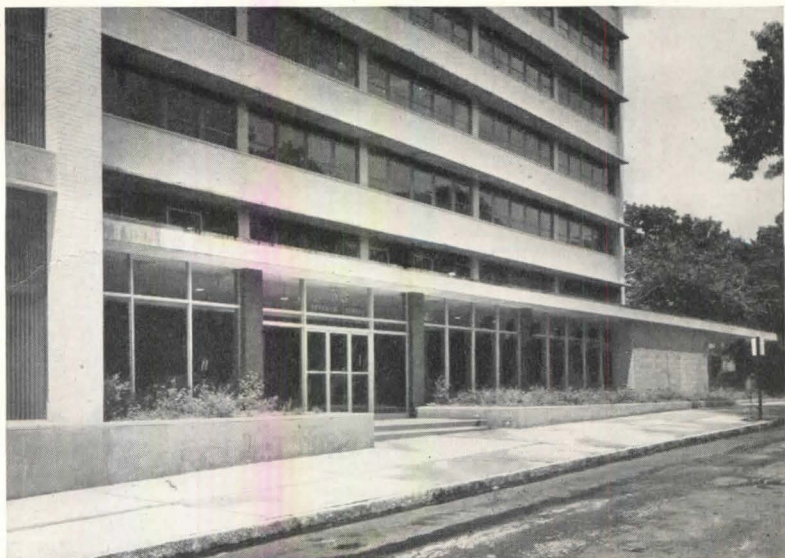
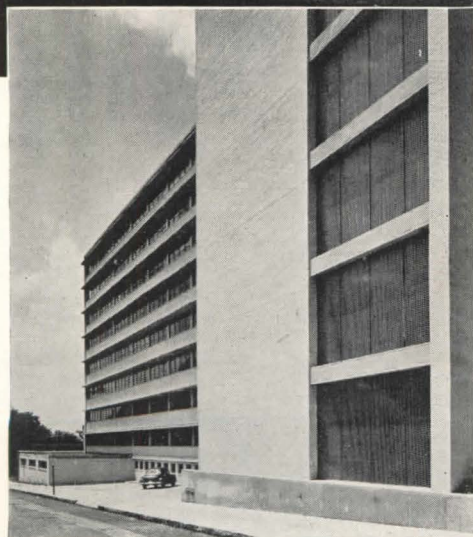
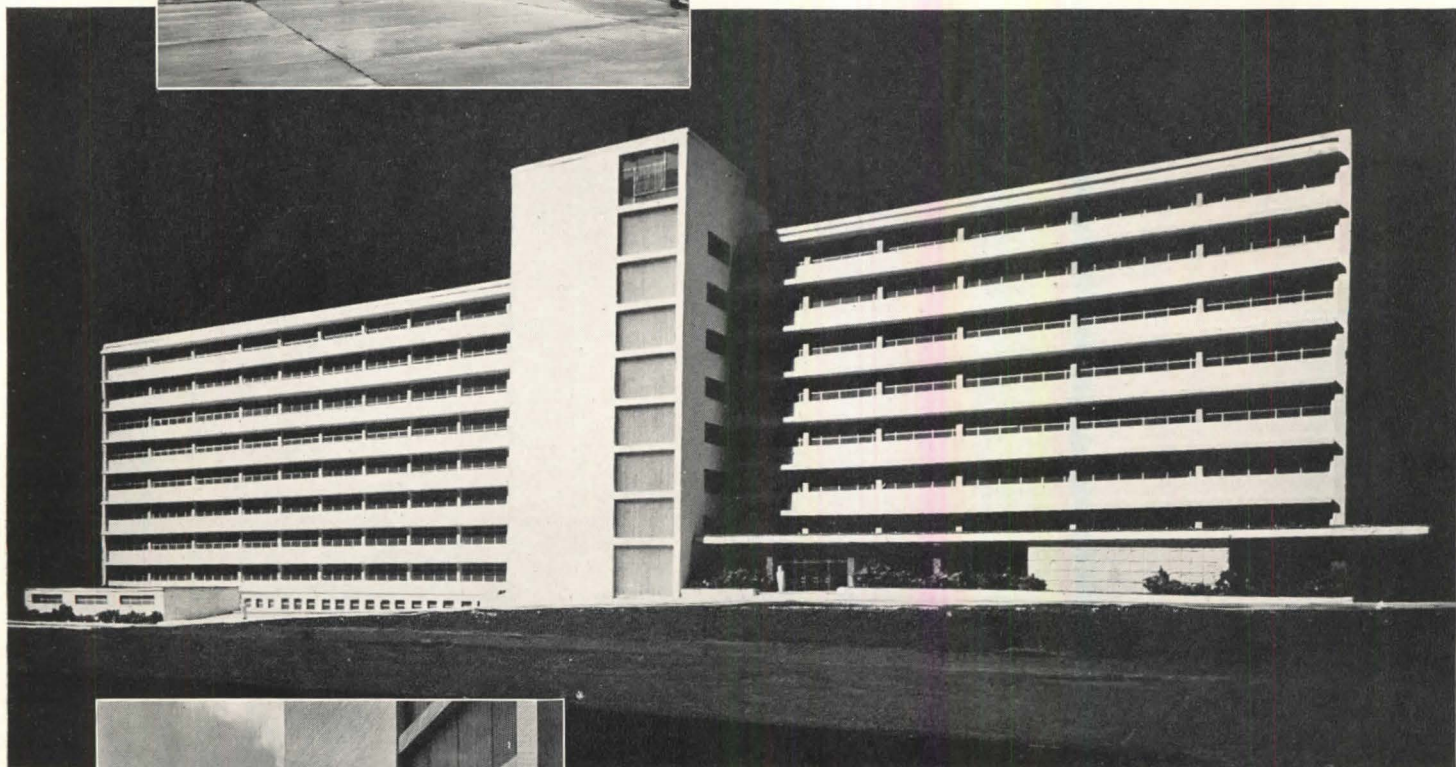
Peachtree — Seventh Building, Atlanta, Georgia
Alexander & Rothschild, Architects

W. H. Armstrong, Structural Engineer

Newcomb & Boyd, Mechanical Engineers

Charles R. Massell, Contractor

Harold N. Cooledge, Jr., Landscape Designer



OFFICE BUILDING FOR GOVERNMENT TENANCY

DESIGNED to house offices of the Federal government, this building represents construction economy to an unusually high degree. Though it is fully air conditioned, it was built by private enterprise and rented to the government for the remarkably low figure of \$1.52 per sq ft.

Federal government offices in Atlanta, as in many another city, were bursting out of many scattered quarters, until efficient operations were not possible. The government approached the builder, Ben J. Massell,

Slab band reinforced concrete construction was used, with joists and beams of the same depth, permitting uninterrupted runs of ducts and piping.

The air conditioning contract was awarded at a cost of 83¢ per sq ft of conditioned area, plus 13¢ for heating, for the almost unbelievably low total of 96¢ a sq ft for heating and air conditioning. Similarly other elements were worked down in a constant search for economies, in a manner that should give some small solace to taxpayers.



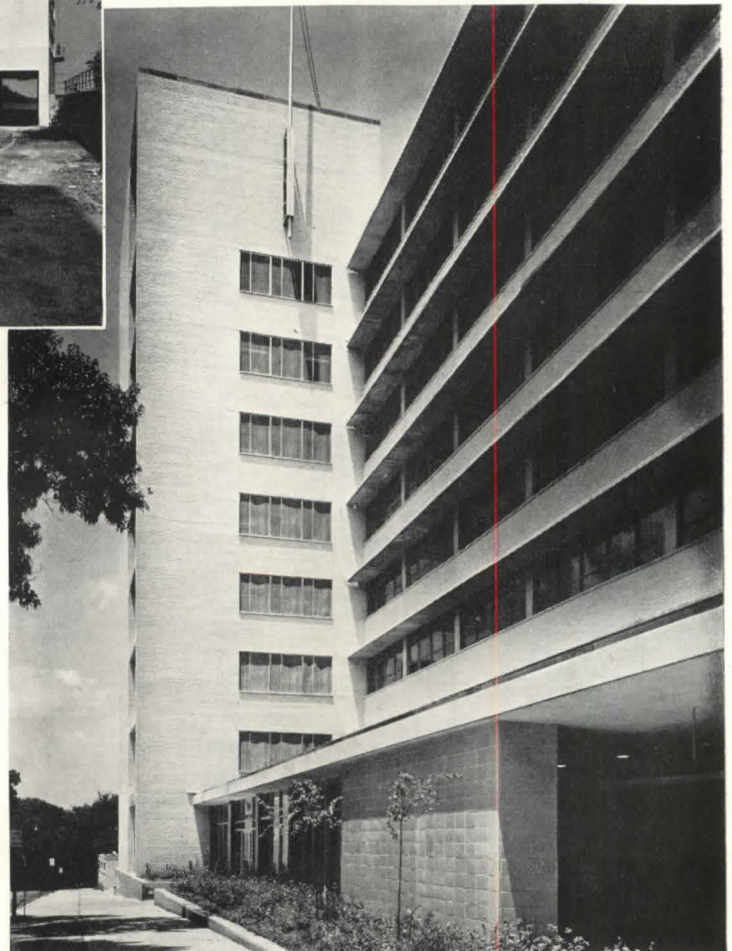
Joseph Molitor Photos

Economy note: the contractor feels that the concrete sunshades more than paid for themselves as scaffolding, in addition to the considerable operational savings in air conditioning load

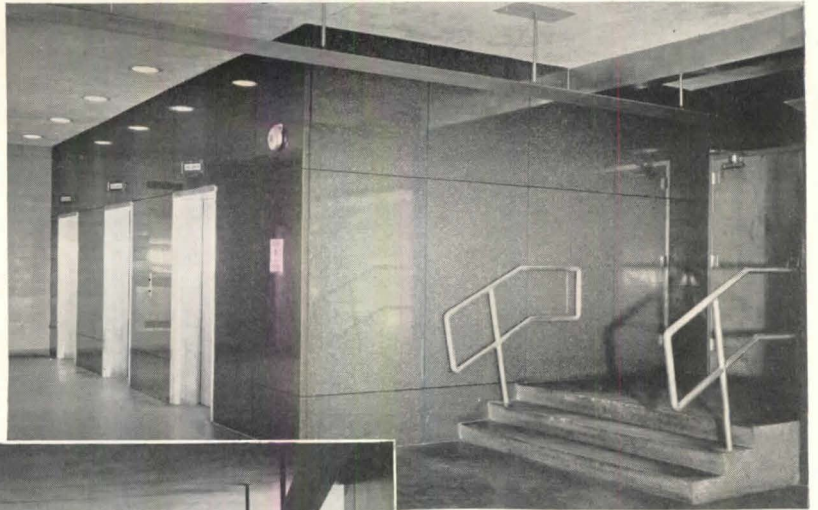
with the proposal that he undertake to bring the various offices together in one large building, for a rental specified by Congress. The project grew until the building has 42,000 sq ft per floor for a total rentable area of 370,000 sq ft.

One major economy came through the development of deep areas. The typical section measures 72 ft, giving offices almost 32 ft deep. This depth, while normally considered excessive in a rental building, is well suited to large government offices, particularly in an air conditioned building. Moreover, if shallow offices are desired, the 72-ft width permits two corridors with open offices between.

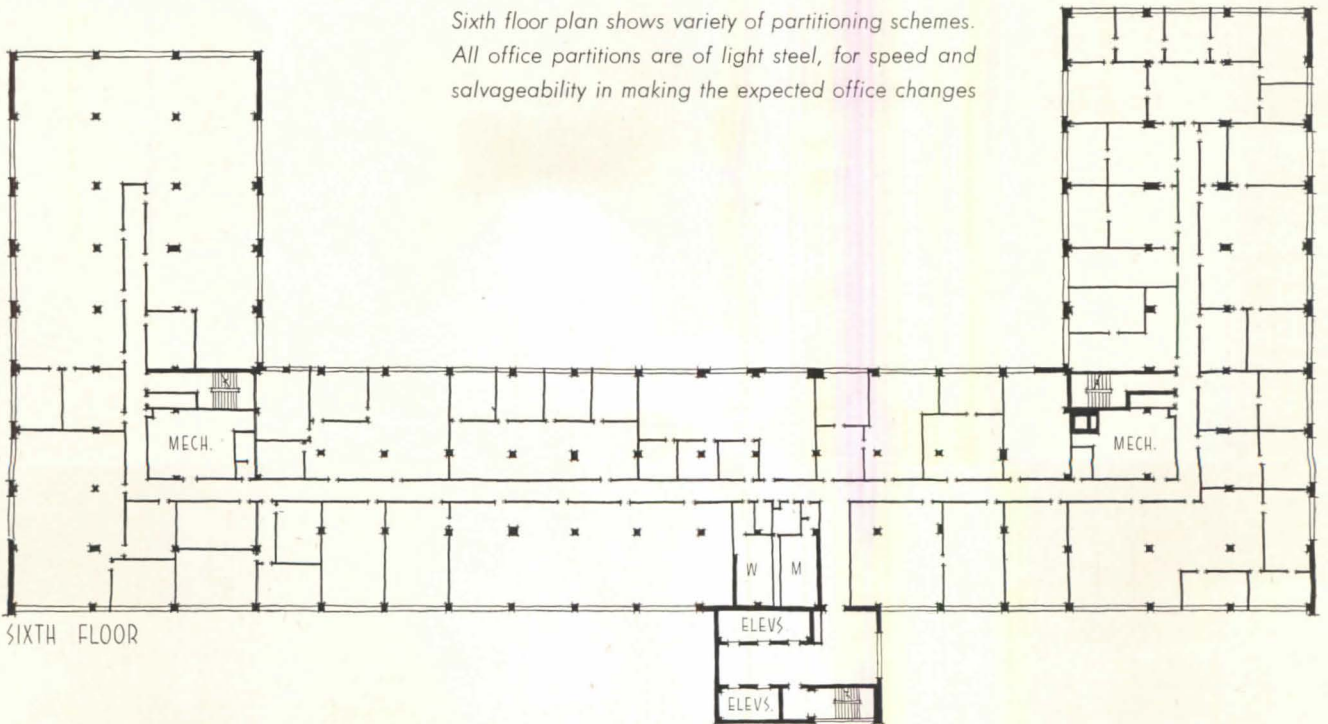
A projected elevator and stair tower also contributed to the economy of the scheme; it permitted uninterrupted typical framing throughout the central section.



Right: elevator lobby on first floor.
 Below: main entrance lobby is quite
 inexpensively finished, but has the
 graciousness of unusual spaciousness

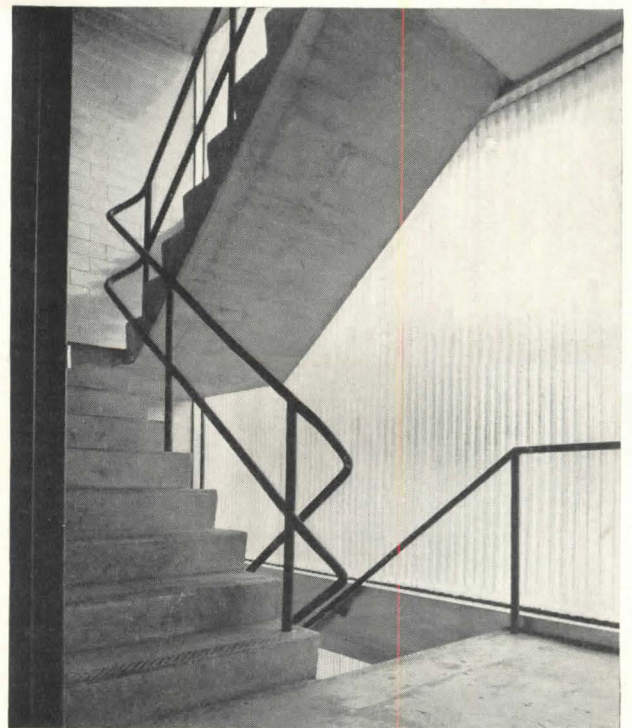
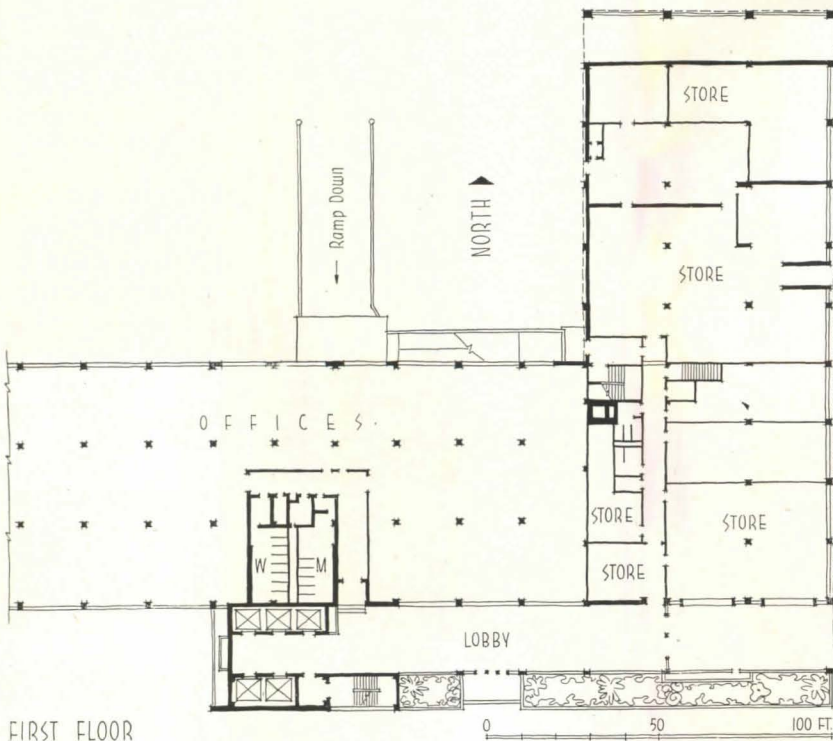


Sixth floor plan shows variety of partitioning schemes.
 All office partitions are of light steel, for speed and
 salvageability in making the expected office changes





Left: elevator lobby on upper floor.
 Below: typical government office is large open space. Ducts are run exposed for economy; suspended acoustic ceilings



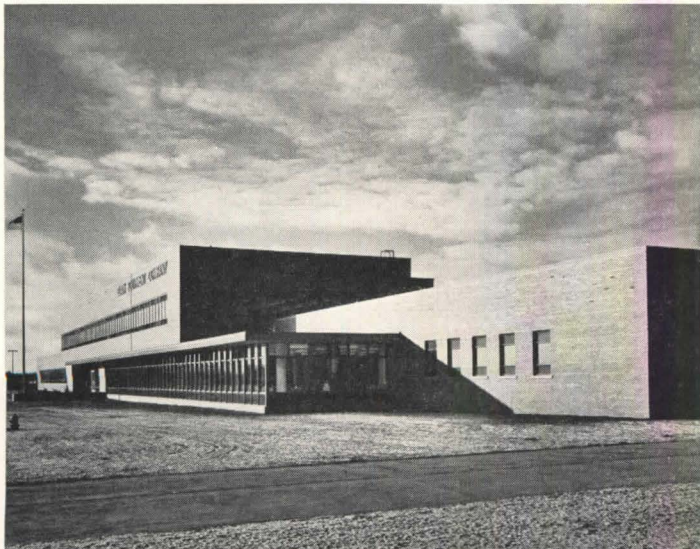
FIRST FLOOR

FACTORY FOR CLARK EQUIPMENT COMPANY

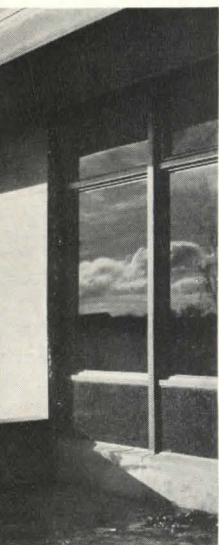
Albert Kahn Associated Architects and Engineers



Al Salter Photos



JACKSON, MICHIGAN



Two-story office building is attached to front of factory building. One-story projection in foreground, with full glass walls, is employees' cafeteria of 7000 sq ft area

AS AMERICA once more expands its already fantastic productive capacity, new factories seem to go up so fast that it all seems remarkably easy, and one plant seems much like another. On closer inspection, however, it begins to appear that each new crop shows improved design, closer design integration, in a gradual process of refinement. In other words, factories go through the same evolution as the improving products of the factories.

From the standpoint of appearance, the refinement process appears entirely natural. It is pretty generally true that factories have taken on a directness of expression that seems to fit in forthright fashion, without disguise but with a new feeling of dignity and purpose. If it all looks easy, it might be considered that virtue always looks simpler to achieve than it is.

Inside the plant the same process of development has gone forward, but perhaps with less lyrical attention to expression and more to function. Here factory design gives more attention to welfare and comfort and efficiency of workers, to effectiveness of layout and materials handling, to facilities for power and light and transportation.

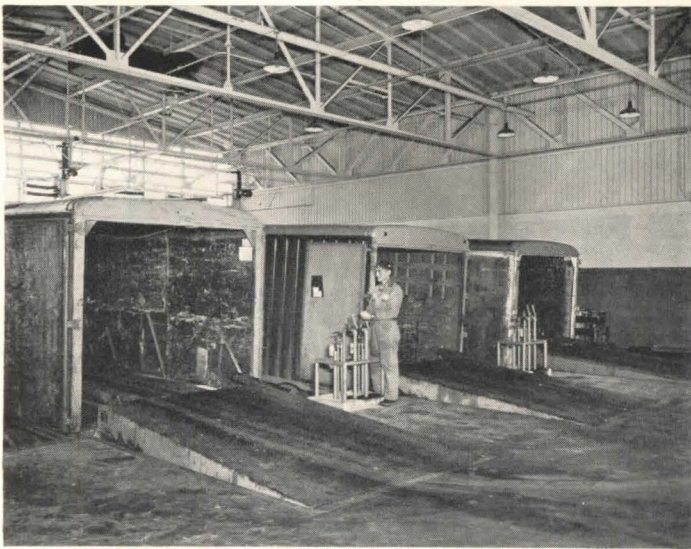
This new plant for the Clark Equipment Company is fully representative of the modern factory in all respects, and warrants a fairly detailed description of its interior facilities.

The plant is located on a large tract of land southeast of Jackson, Michigan, along the Michigan Central Railroad, and is expected eventually to provide employment for 3000 workers. The project consists of (1) a one-story manufacturing building; (2) a two-story office building connected to the east end of the manufacturing building; (3) the boiler house at the rear of the plant, and (4) plant service facilities including substation, water tower, pump house and tank farm. The employees' parking lot is located along the south side of the plant.

The manufacturing building is 815 ft long and 522 ft wide, covering a floor area of 425,125 sq ft. The column spacing in this area is 40 ft by 60 ft, and the clear height under the bottom chord of the steel trusses is 16 ft. The frame is of steel; the enclosing walls are of brick and steel sash, and the roof is cement tile with 1½ in. of insulation and built-up roofing.

The office building has a floor area of 42,600 sq ft including first and second floors, and is located 225 ft back from the roadway, allowing for a deep lawn and landscaping. The first floor of this building houses the general offices, process engineering and plant layout, accounting, the personnel office, hospital, cafeteria and kitchen. The second floor contains the executive offices, sales and general offices, product engineering, purchasing and production control, and conference rooms.

At present the 7000 sq ft dining area of the cafeteria provides seating capacity for approximately 600 persons at one time and is equipped with two counters, both used for serving. Provision is made for the installation of an additional cafeteria counter if and when it is re-



Hydraulic leveling devices at truck dock



Employees' cafeteria

quired to meet the needs of an expanded labor force.

The frame of the office building is of concrete construction, and the exterior walls are brick and stone. Inside walls in the office area are of tile and plaster; in the cafeteria, kitchen, hospital, toilets and locker rooms the walls are of glazed hollow tile. The floor of the building is of cement, monolithically finished. The finish floor generally is asphalt tile; in the hospital area, cafeteria and toilet rooms the floor is terrazzo, and in the kitchen quarry tile. The ceiling throughout is acoustic tile suspended from the concrete floor slab. The interior partitions are of metal and glass.

The entrance lobby of the office building has glazed tile wainscoting with photo murals above extending to the ceiling line on two sides. The exterior wall and entrance vestibule are of aluminum frame with large plate glass panels.

The walls of the office generally are painted a light gray-green with the sash and doors in a slightly darker tone and black base. The window stools are dark cedar Tennessee marble. The ceilings are slightly off-white, and the asphalt tile floor is marbledite, dark brown in color.

Walls and columns in the factory area of the manufacturing building are painted with a dado 6 ft high of dark green, and a very light green above, including all exposed steel surfaces.

The employees' entrance is located at the south side of the factory building easily accessible from the parking lot. The locker and washrooms are located at both sides of the entrance corridor; shower rooms and toilets are also provided in this area. Four raised toilets, conveniently located, have been installed in the manufacturing building.

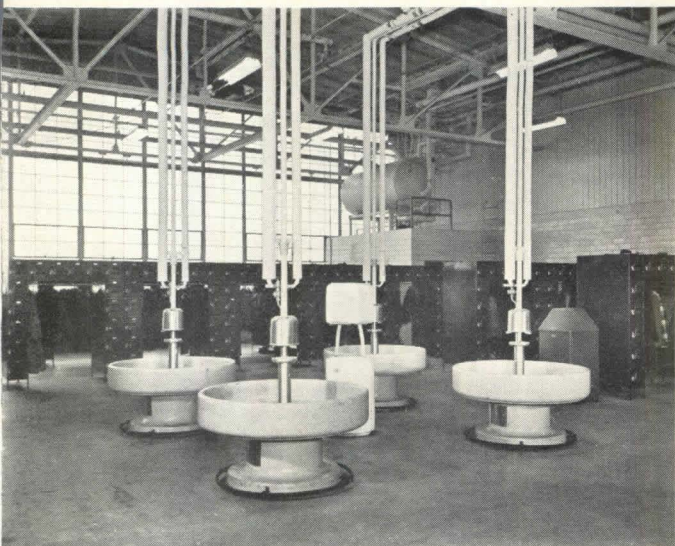
For receiving of materials and the shipping of the finished products by truck, three truck wells have been provided and a railroad dock located at the northwest corner of the building. Hydraulic leveling sections in the

dock at the truck wells are provided to compensate for differences in level between the floors of trucks and the dock. The truck wells are completely enclosed, eliminating drafts from open doors in cold weather. Since most of the materials are transported by truck, ample concrete roads have been built along the south and west sides of the plant.

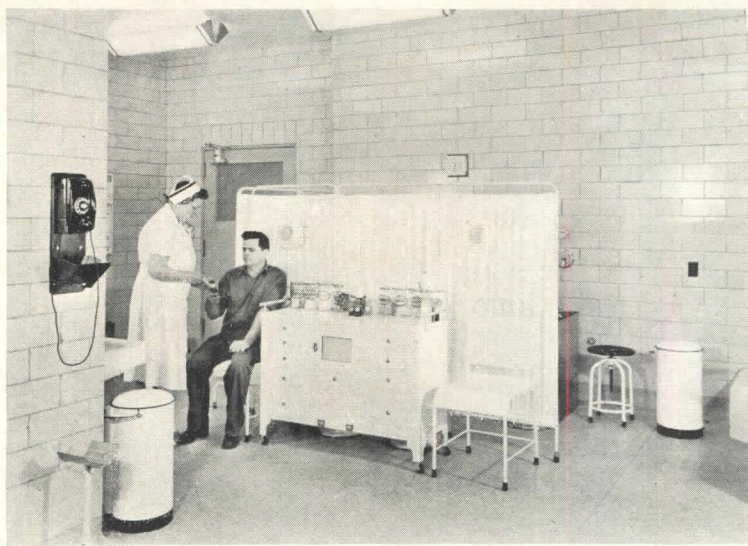
All sanitary sewage runs to a central pumping station where it passes through communitors (rotating screens) before it is allowed to flow into the pumps, whence it is discharged into a force main approximately 9500 ft long. This main discharges into the sanitary system of the city of Jackson.

For the air conditioning system for the office building, three supply systems have been provided in the fan room on the second floor, between the office and factory areas. Each supply unit is equipped for filtering both the outdoor and recirculated air, and tempering the air to provide satisfactory conditions throughout the office building. This is accomplished by zoning the exterior base for supplying temperatures in these exterior bays different from those supplied in the interior areas. The air is introduced into the rooms through ceiling outlets, and the air is exhausted at both the ceiling and at the floor. Provision has been made in the supply units for the future installation of cooling coils, eliminator plates and drip pans for air cooling.

Excellent lighting was insisted upon, with fluorescent lighting of 35 foot-candles intensity maintained in the factory, with the exception of the heat treat departments in which Mercury fixtures are used, giving 16 foot-candles intensity. Office lighting is fluorescent with intensities from 40 to 45 foot-candles. The engineering department, naturally, has the greatest light intensity, 80 foot-candles of non-glare or low brightness lighting, accomplished with surface type fluorescent fixtures specially shielded in continuous rows spaced 6 ft on centers.

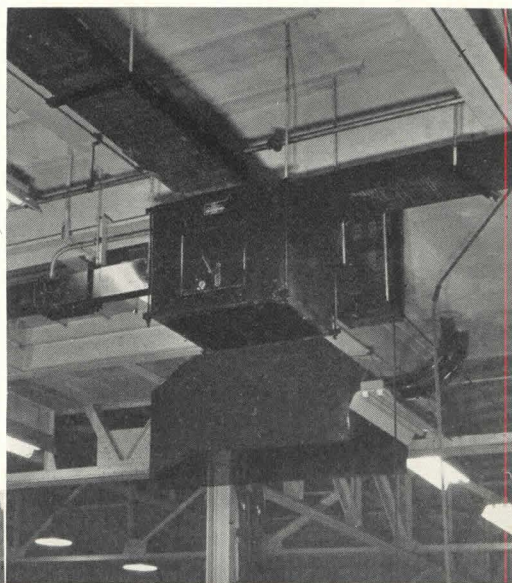


Employees' washrooms and medical station (right)



Al Salter Photos

Main factory area has maximum window areas, with fluorescent lighting to maintain 35 foot-candles of artificial light. Clearance to trusses is 16 ft; column spacing is 40 by 60 ft. Power for lighting is taken from bus-way through small dry-type transformers high on the columns (inset, right)





LAUREL MEDICAL BUILDING

Studio City, Los Angeles, California

Leo P. Raffaelli, Architect

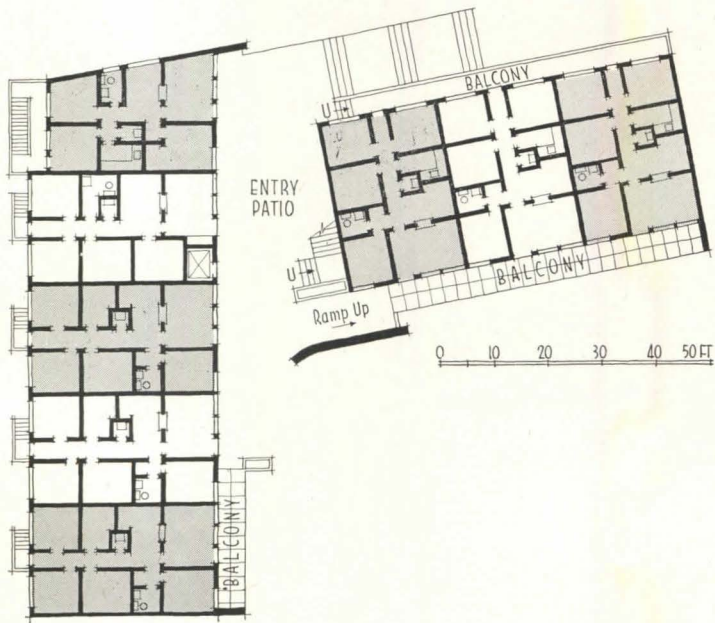
MORE AND MORE OFTEN in climates which permit it, balconies are being substituted for interior corridors. In this medical office building in Los Angeles the balcony-corridor was used to exceptionally good advantage to provide each suite with two direct entrances — one for the patients and a private one for the doctor. It also permitted all outside reception rooms.

To control the traffic flow within the L-shaped build-

ing, an open "patio-lobby" was placed at the juncture of the two wings. Ground-floor suites are reached by balconies opening directly from the lobby, and second-floor offices by stairs leading from the lobby to the balcony-corridor above.

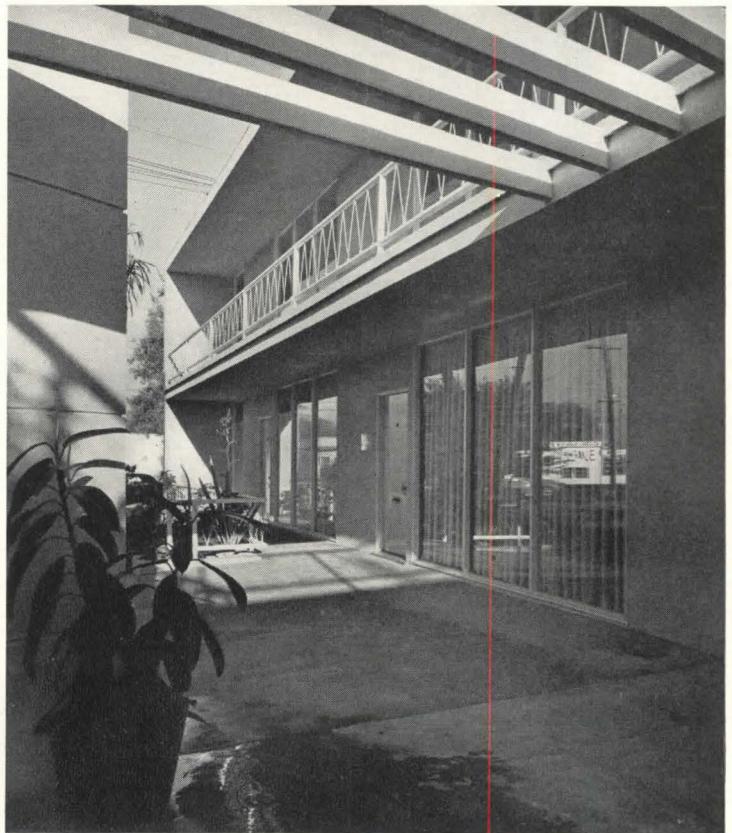
Most of the units were planned for use by general practitioners, specialists, etc., but four of them were fully equipped for dental offices. All interior walls were



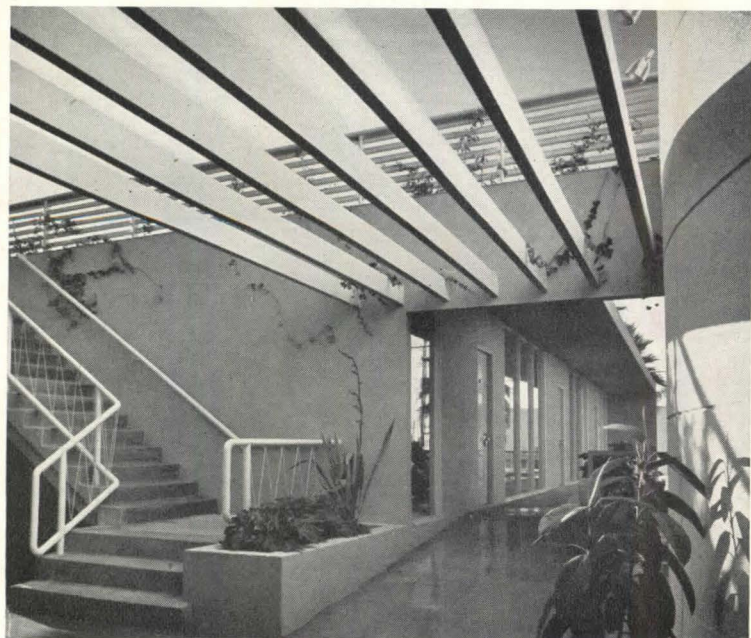


made non-bearing to permit alteration of any one of the units for special use without structural change.

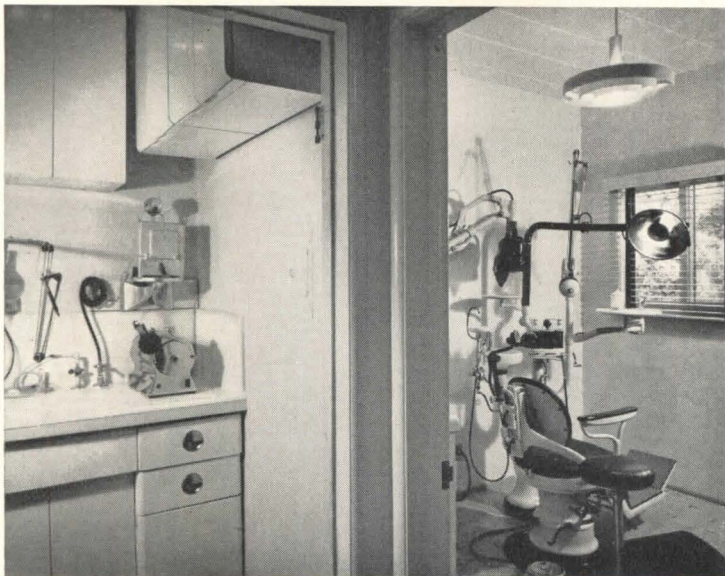
The building was placed to the rear of the lot not only for maximum quiet but also to make the most of landscape opportunities, and to permit the preservation of all existing planting. Parking areas are provided at both front and rear. Construction is wood frame and stucco, on concrete foundation.



Main entrance (opposite page) is marked by curving sign tower which serves also to shield the patio-lobby (left and above). Balcony and stairway construction is concrete slab over wood frame. Pipe railing has $\frac{1}{4}$ in. wire cable lacing. Reception room off lobby (top of this page) faces stairs to rear parking area.



MEDICAL BUILDING



Above, left: one of the four units fully equipped for dental use. Above, right: main entrance to pharmacy. Below: rear of building; stairs lead to patio-lobby; rear entrance to pharmacy is at ground level at foot of stairs. Foundation was recessed to heighten effect of unbroken surface of end walls



Julius Shulman Photos

APARTMENT HOUSES

ARCHITECTURAL RECORD'S BUILDING TYPES STUDY NUMBER 181

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

A VAST AMOUNT OF PLANNING INGENUITY has gone into the development of the typical middle-class elevator apartment. The starting point has always been the high cost of elevators, the goal to make the elevators serve as many apartments as possible.

The typical plan that has emerged is in the shape of a cross with the elevators at the center. Corridors down the center of each wing give access to apartments on each side. Site conditions or the size of the lot may require one or more of the wings to be shortened or even eliminated. The resulting T-shaped plan is frequently seen; the Lee Apartments in Salem, Oregon (page 141) is a good example. Where land values are higher a tower version of the cross plan is often used. In this scheme, public corridors are eliminated and the two apartments in each wing open directly off the elevator lobby. The Cornell Arms in Columbia, South Carolina (page 140) is of this type. As indicated by these two examples, one from the southeast, the other from the northwest, there is nothing regional about the typical apartment building. Examples can be found in practically every city in the country.

The defects of the cross plan are the long corridors, whether public or private, the use of the living room as a corridor and poor internal circulation in general, lack of cross-ventilation, and complete disregard of orientation whether for sun, breeze or view. The living room, which should be the pleasantest room in the apartment, tends to be buried in the reentrant angle of the building, its small window embarrassingly close to the neighbor's window.

A recent improvement on the tower type is shown in the Army Twin Towers in Chicago (page 142) with its square plan. Better livability has been achieved at the cost of fewer apartments per elevator. In the exciting design for River Ledge at Hastings-on-Hudson, N. Y. (page 143) the basic rule of elevator economy has been discarded. With only two apartments per elevator, every defect of the cross plan has been eliminated. Unfortunately, the price that the occupants will have to pay in order to enjoy this very superior degree of livability has not yet been established.

Although influences in architecture usually move down the social and economic scale, one important influence in apartment design has come from below. The typical plan developed for public housing was the two- or three-story walk-up with two apartments per stair per floor. People soon became uncomfortably aware that these low-rent apartments provided a degree of cross-ventilation, privacy, and orientation that were unobtainable at any price in the typical elevator apartment. River Ledge is nothing more than this scheme plus elevators and other amenities.

Other attempts to combine the advantages of the walk-up apartment and the elevator building have been

along two general lines. One device that has been more often used abroad than here is the exterior corridor. In this scheme all apartments have through ventilation, with some loss of privacy. The Cooperative Residences in Chicago (page 146) and the Angamos Apartments in Lima, Peru (page 147) are of this type, although both are walk-ups. The other approach is the one described by Mr. Funaro (page 137) resulting in the scheme known as "skip-floor" or "skip-stop," where the elevators stop only at every third or fourth floor. Apartments on the intervening floors can have through ventilation and full privacy at the price of walking up one floor or down two. The west building at 100 East Erie (page 144) is an example of this scheme. There is no reason in theory why these two methods could not be combined with the result that an exterior corridor would occur only at every third or fourth floor.

Air conditioning may give the typical cross plan a new lease on life. Natural ventilation and orientation cease to be factors in an air conditioned apartment, and small sealed windows would reduce the lack of privacy. The day may even come when interior rooms are acceptable and this could have a profound effect on apartment house planning. If each unit were to have only one of its four or five rooms on an outside wall, apartment houses might assume the massive shapes generally associated with loft buildings.

The very small apartment house, less than ten families say, is an entirely different building type. Small scale, non-fireproof materials, and an intimate relation to site and landscaping, make the small apartment closely akin to the single family house. As might be expected, many of these small apartments, such as the one shown on page 148, have been designed by architects who are known for their work in the small house field. Another example of this type of building comes from Mississippi (page 154).

All housing today suffers from insufficient space, and apartments are even more cramped than houses. This fact comes into sharpest focus in kitchens. Does preparing a meal take any less space in an apartment than in a house? Yet in many apartments which are otherwise well designed, the kitchens are much smaller than in houses of comparable size, and are completely inadequate when judged by the standards developed by the Small Homes Council of the University of Illinois.

Another defect of most apartments is their disregard of the powerful human desire for some outdoor living space and a chance to grow a few things. Balconies or porches should be standard items in apartment house design — not decorative balconies, but usable ones — not for a few tenants, but for all. That balconies need not be limited to warm countries is shown by recent experience in Cambridge, Mass., and long experience in Sweden.

— J.H.C.

COST OF MULTI-STORY BUILDING CAN BE CUT

By Bruno Funaro, A.I.A., of Howard T. Fisher & Associates

ARCHITECTURAL RECORD REPORT No. 1 on Housing and Home Finance

Agency Research Project No. 1-T-99 with Illinois Institute of Technology*

THE steady increase in building costs is of greatest concern to the designers and builders of low-rent apartment houses. To offset these increased costs, room sizes have been decreased, comfort standards reduced.

There is no easy way to lower costs without lowering living standards still further. It is necessary first to appraise the real human needs, then consider how these may be most economically satisfied by integration of planning, structure and equipment, rather than by more "surgery."

Recent buildings (a few of which are shown on the opposite page) indicate some fresh and pregnant ideas for reducing the cost of apartment houses. To promote research in this direction beyond the scope possible for the individual the Housing and Home Finance Agency has called upon Illinois Institute of Technology and Howard T. Fisher & Associates to study all phases of the design of multi-story apartment houses in order to find ways in which construction and maintenance costs may be reduced and the quality of livability improved.

The researchers have decided to concentrate their initial effort on a new evaluation of those planning

techniques and building products which have not yet been generally accepted for use in multi-story apartment houses. Most favored, of course, will be those which require the least use of critical materials urgently needed for the defense program.

Under most careful study at present are concrete skeleton frame, steel skeleton frame, exterior bearing walls of concrete or reinforced masonry with or without interior columns, modified cellular construction primarily without beams or columns, and curtain wall construction. Prefabricated floor and wall units and simplified plumbing and heating units will be studied.

Present research is centered upon a typical T-shaped plan developed by the Chicago Housing Authority and also upon an alternate guinea-pig plan developed by the researchers (see pages 138-139). This plan is specifically intended for the study of those building techniques and materials which would not be equally suitable to the Chicago Housing Authority plan. It appears to the researchers at present that construction economies might be achieved with a thorough integration of plan and a simplified structure, the repetition of units and the use of standardized prefabricated elements.

ROOM AREA (SQ FT) IN:	1949	1951
Living Room	150	145
Kitchen and Dining	90	70
Bedroom	125	120

Room sizes go down

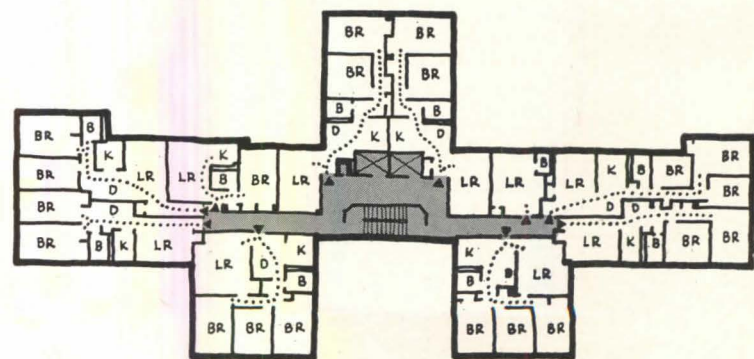
Minimum room sizes for one-bedroom apartments in P.H.A.-aided low-rent housing; however the 1951 room sizes are greater than those used in 1942



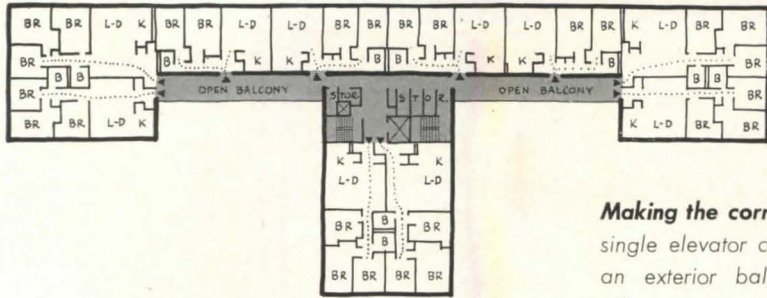
Costs go up

Average construction cost per cu ft: New York Housing Authority

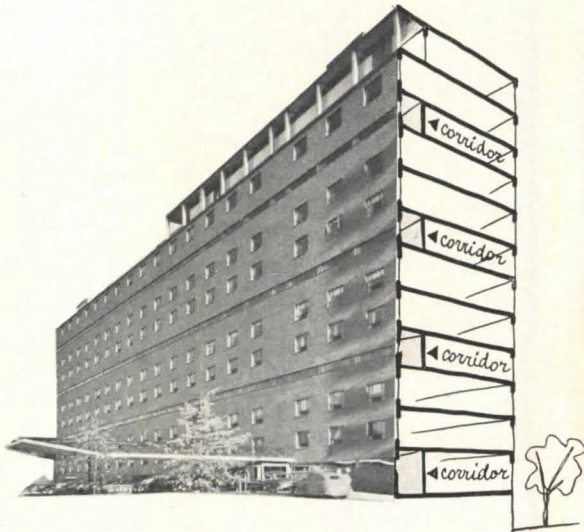
*This article is based on a progress report on Housing and Home Finance Agency's Research Project No. 1-T-99 being conducted under contract by Illinois Institute of Technology, Prof. E. I. Fiesenheiser, Project Director, Howard T. Fisher & Associates, Inc., Architects and Industrial Designers, Subcontractor. The substance of this research is dedicated to the public. The accuracy of all statements or interpretations is solely the responsibility of the author. Statements may be altered by further investigation before the project is completed.



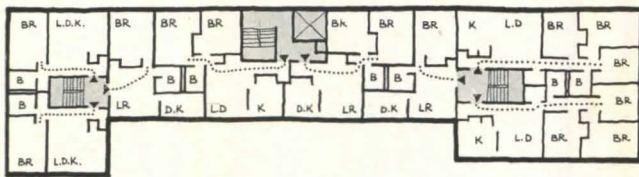
Ten apartments on a single elevator core inevitably produce long corridors and lack of cross-ventilation for some apartments, even when the building has been most skillfully designed. Lillian Wald Houses, New York Housing Authority. F. L. Ackerman, L. Goldstone, architects



Making the corridor useful. Again ten apartments served by a single elevator core, but the connecting corridor becomes here an exterior balcony. This allows good cross-ventilation of all apartments, is also a place for parents to gossip and children to play on rainy days. Ogden Courts, Chicago Housing Authority. Skidmore, Owings & Merrill, architects

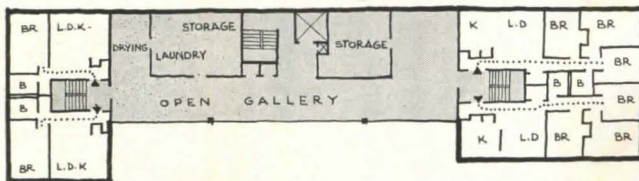


Skip-floor elevator systems, where a limited number of corridor floors, served by elevator, are connected by stairs with the apartments above and below, make it feasible to serve a large number of apartments from a single elevator core, without much waste corridor space. The corridor floors are clearly revealed by continuous horizontal windows across the facade. This building is by no means low-rent housing, but the skip-floor scheme with its combination of potential savings through reduced public corridor area and the added amenity of double exposure for all those apartments which are on the non-corridor floors suggests its applicability to low-rent apartment houses. Eastgate, Cambridge, Mass. Brown, Koch, Kennedy, De Mars and Rapson, architects



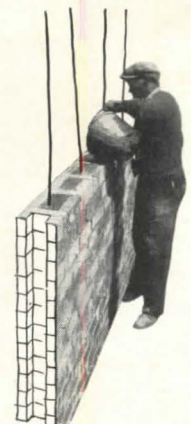
Typical floors (2, 3, 5, 6, 8, 9, 11)

Corridor floors house community services in a low-rent apartment house with skip-floor elevators for the St. Louis Housing Authority. This adds amenity to cost saving. A 16-per-cent saving over a typical cross-shape plan is estimated: 12 per cent of this is due to less corridor space and the elimination of basements (the usual basement service areas are now on the corridor floors); the other 4 per cent is due to fewer elevators, simpler structure. Hellmuth, Yamasaki & Leinweber, architects



Elevator stop floors (4, 7, 10)

Construction costs may also be lowered with new building techniques such as the unique reinforced brick construction pioneered by Holsman, Holsman, Klekamp & Taylor, Frank J. Kornacker, associated architects and engineers at the Lunt-Lake Apartments in Chicago. This system is said to have saved cost and erection time, by permitting a third more area to be laid up per mason-day. The wall is load bearing, saves exterior columns and spandrels. Every other brick is set in rowlock fashion as a wall tie. The wall is reinforced with vertical and horizontal rods and is made monolithic by pouring grout to fill interstices (cf. ARCHITECTURAL RECORD, September 1950, page 142)



GUINEA-PIG PLAN—AND HOW IT WAS BORN

To evaluate possible cost savings in the planning, materials and equipment which go into a multi-story apartment house, the researchers sponsored by the Housing and Home Finance Agency (as described on the preceding pages) have evolved an alternate guinea-pig plan as a base for cost estimating.

This plan, as shown on this and the opposite page, derives from the typical three-story walk-up unit with one apartment on each side of the stair hall. This has the advantage of structural simplicity. It is well fitted for incorporating either a conventional frame structure, or some cellular system of interior bearing walls (see illustration at right), which allow the exterior walls of the building to function as merely a protective skin. Such a plan is also well suited to the use of standardized repetitive building elements. Each apartment here has cross-ventilation; there is a minimum of space wasted on corridors; and, unlike the plans of many recent housing projects, the living room here does not have to double as a connecting corridor within the apartment unit.

It has been found possible to transfer this plan, with all its advantages, to the high-rise apartment house. To avoid the unjustifiable expense of one elevator shaft serving only two apartments on each floor, it follows naturally that this plan should be combined with the skip-floor system of elevator layout.

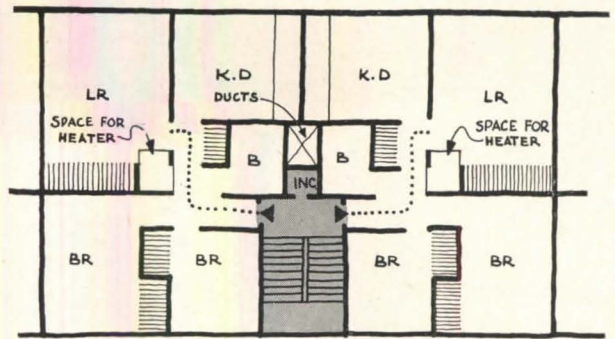
In the proposed high-rise building shown here, community facilities such as laundries, drying yards and play areas would be provided on every fourth floor, where the tenants could reach them without having to go outdoors. The elevators would stop only on these floors and stairs would lead from this corridor floor to the apartments one flight up or two flights down.

In addition to the community facilities on these corridor floors there will also be space for a number of one-bedroom apartments. These increase the variety of accommodations within the building, and are particularly valuable for elderly people who cannot be expected to use the stairs. As a cost control, this plan is believed to be of extremely practical value.

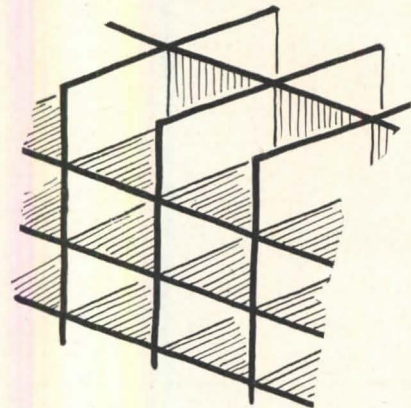
***In high-rise version,
corridor floors house tenant services***

The three-story walk-up plan, with all the previously mentioned inherent advantages, has been translated into a high-rise apartment house by piling up a number of three-story units vertically one above the other. Corridor floors are used as the filling in this sandwich.

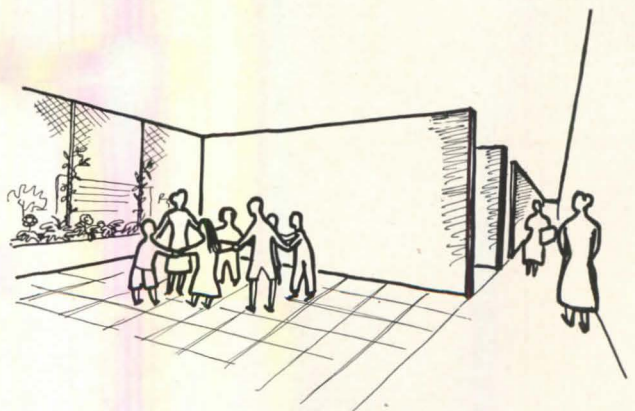
All the necessary horizontal lines of communication are concentrated on the corridor floors, also the various community facilities which in a standard apartment house would be put in the basement. Each corridor floor becomes the play and service yard for the tenants of the three-story slice.



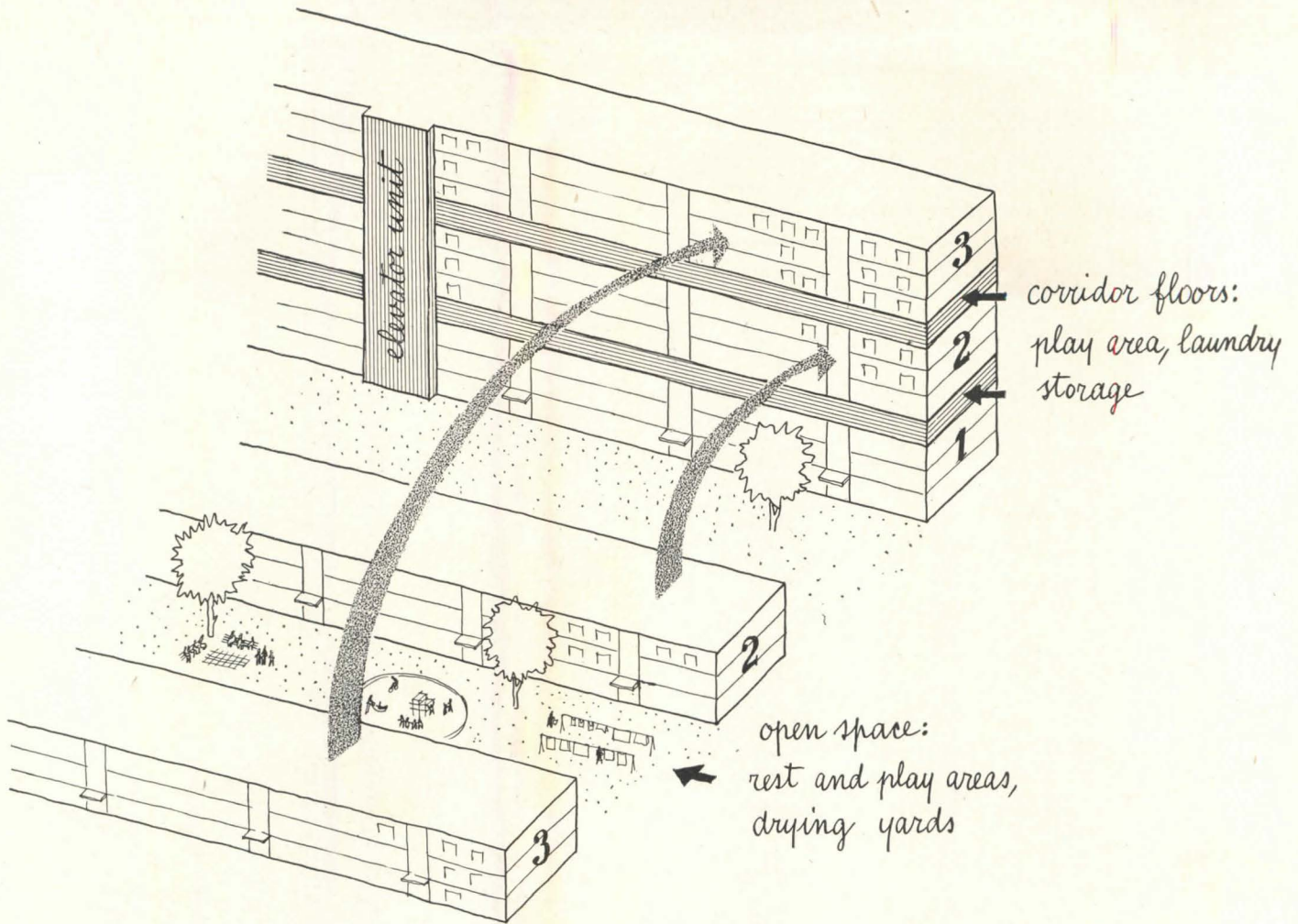
The unit plan



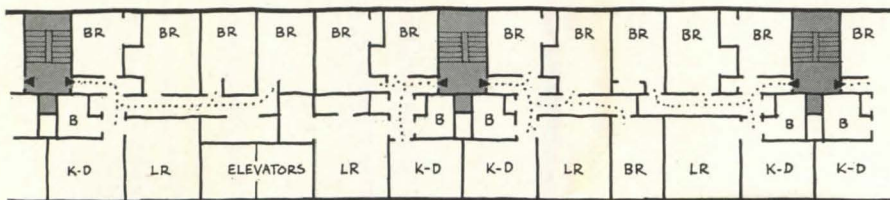
***Modified cellular construction
with bearing interior walls***



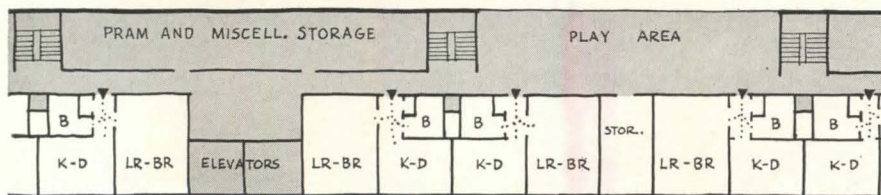
Play area in a corridor floor



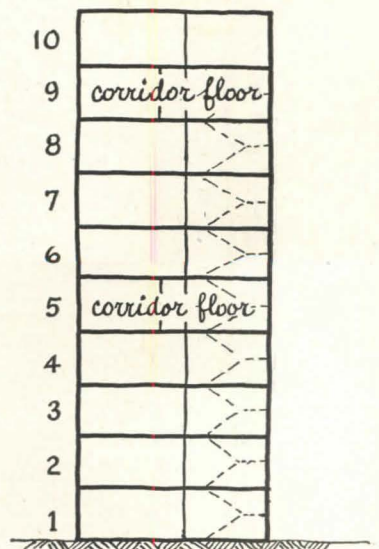
Diagrammatically shown above is the translation of the typical three-story plan to a high-rise apartment house with community services on corridor floors. **Developed into a ten-story apartment house** (below) and fitted with skip-floor elevator system. Tenants may go one flight up or two down to reach a corridor floor



Non-corridor floor (2, 3, 4, 6, 7, 8, 10)



Corridor floor (5, 9)



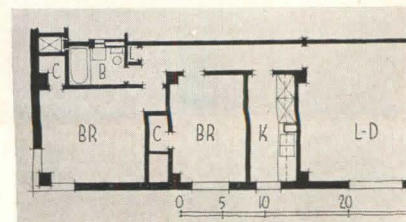
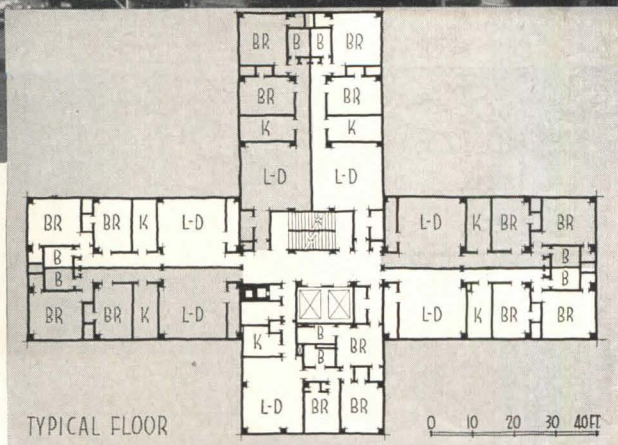
Section

CORNELL ARMS, COLUMBIA, SOUTH CAROLINA

Stork & Lyles, Architects; Bissett, Carlisle & Wolff, Associates

THE COMPACT SERVICE CORE contains two elevators, a pair of scissor stairs, incinerator and air conditioning equipment. Public corridors are almost eliminated and entrance corridors are not over 10 ft in length. Each of the three typical wings contains two two-bedroom apartments. The shorter wing contains one three-

bedroom and two-bath unit; this apartment is so arranged that one bedroom and bath can be rented separately. All baths are interior, even when located on outside walls. Unusual in a building of this type is that each apartment has its own storage room. Windows are small, since the building is air conditioned.



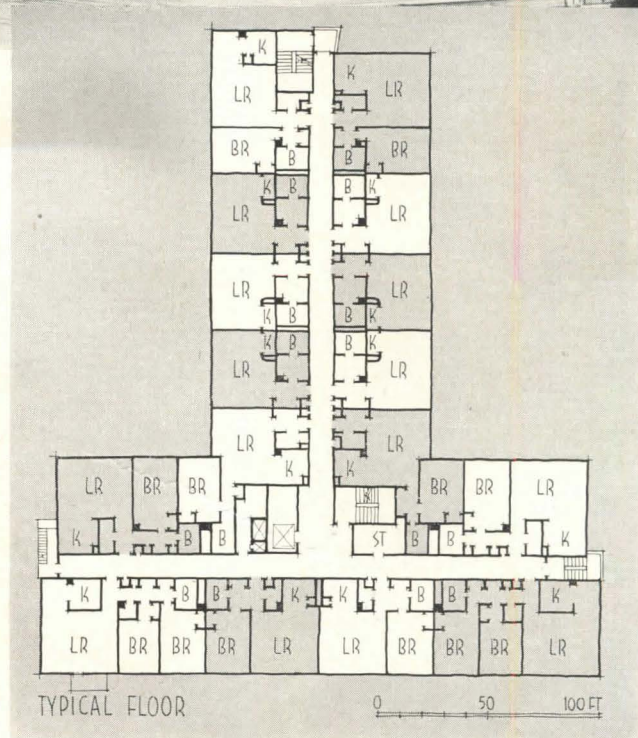
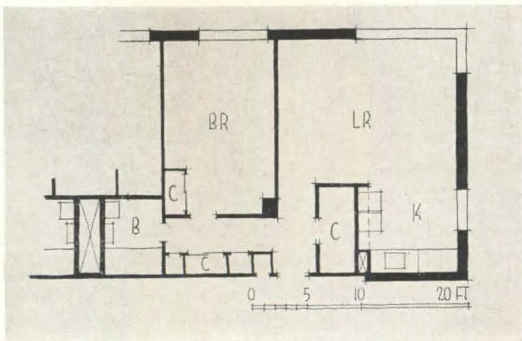
LEE APARTMENTS, SALEM, OREGON

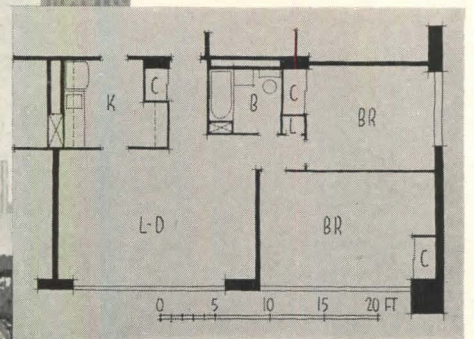
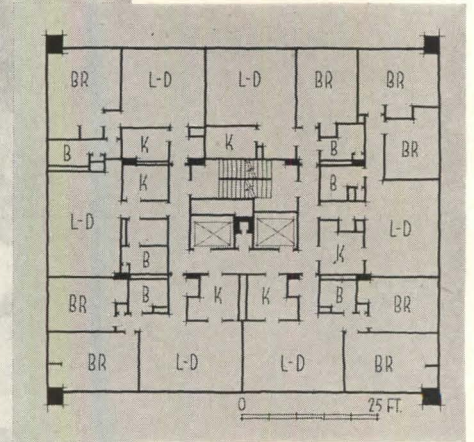
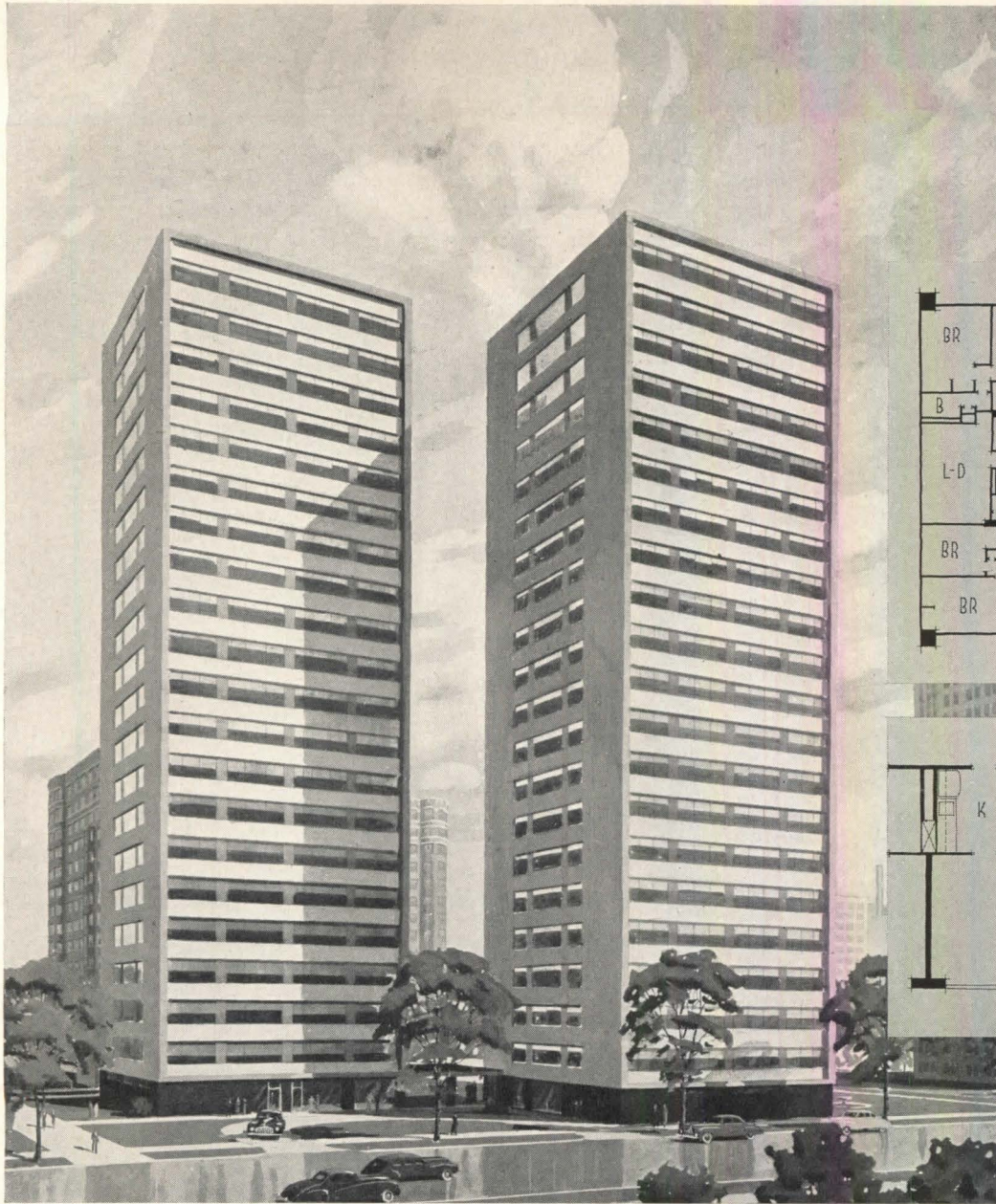
Victor N. Jones & Associates, Architects and Engineers

THIS 101-FAMILY APARTMENT HOUSE is located on a corner lot facing on a park mall leading to the capitol two blocks away. The business district is about the same distance. There are 39 efficiency apartments, 50 one-bedroom and 12 two-bedroom units in the seven-story building. Average room count is 2.73. Average

rents are \$31.73 per room or \$86.86 per unit per month. Construction is reinforced concrete painted on exterior.

Service core contains one elevator with provision for a second and one stair. At end of each wing is another stair or a fire escape. Parking space is provided under the rear wing of the building.





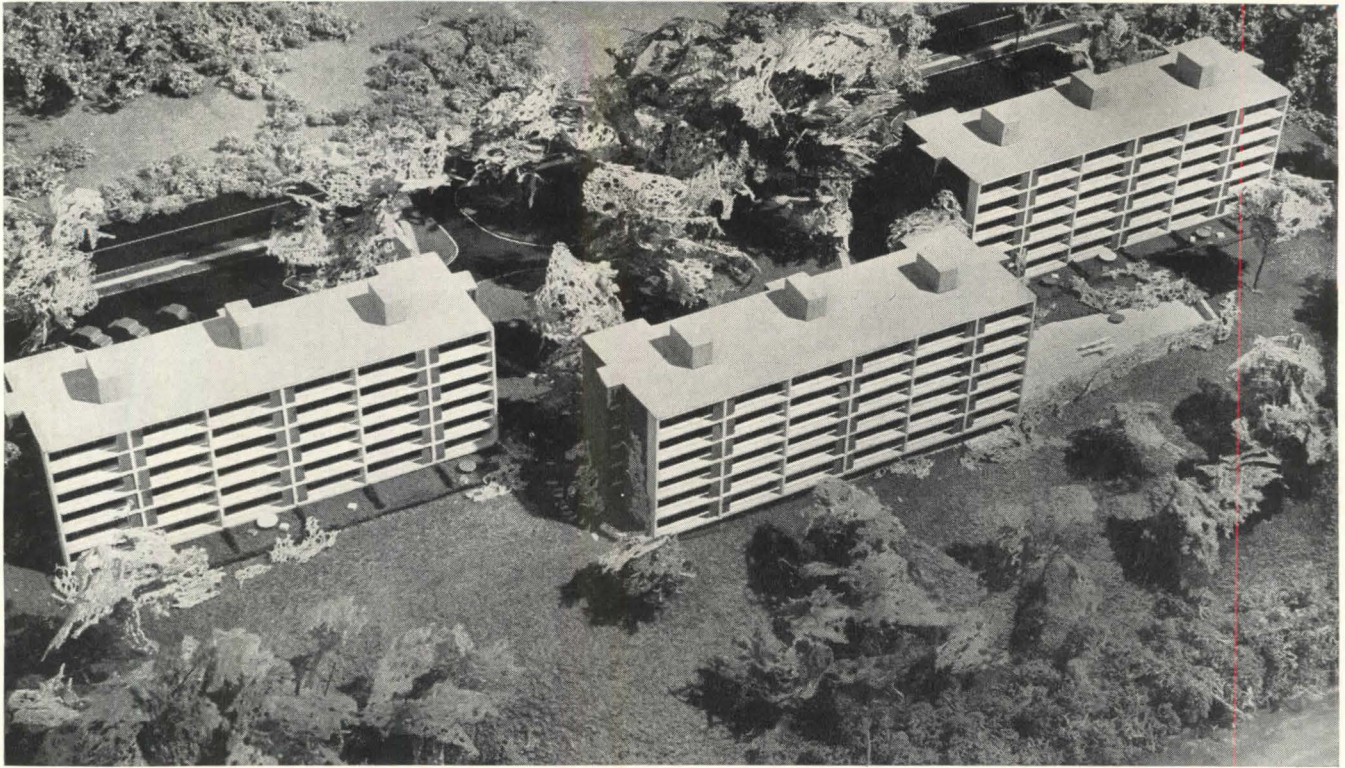
ARMY TWIN TOWERS APARTMENTS, CHICAGO

A. Epstein and Sons, Architects and Engineers

THIS 252-UNIT DEVELOPMENT is being built under Title VIII of the FHA for the housing of military personnel and civilian employees of the Fifth Army. The two identical buildings are approximately square in plan and 22 stories high. The service core consists of two elevators and a scissor stair with the public corridor wrapped around three sides. This scheme permits better unit plans than in most elevator apartments. Interior baths and kitchens permit all exterior walls to be devoted to major rooms. These rooms are fairly shallow

and since the windows extend in most cases from wall to wall, the natural lighting is exceptionally good.

Construction is of reinforced concrete, placed by the pumperete method and speeding in its curing by the vacuum process for the removal of excess water. Exterior finish is brick on two sides, and stainless steel spandrels on the other two sides where the windows are continuous. Radiant heating, with individual controls will be provided by means of copper tubing embedded in the structural slabs.



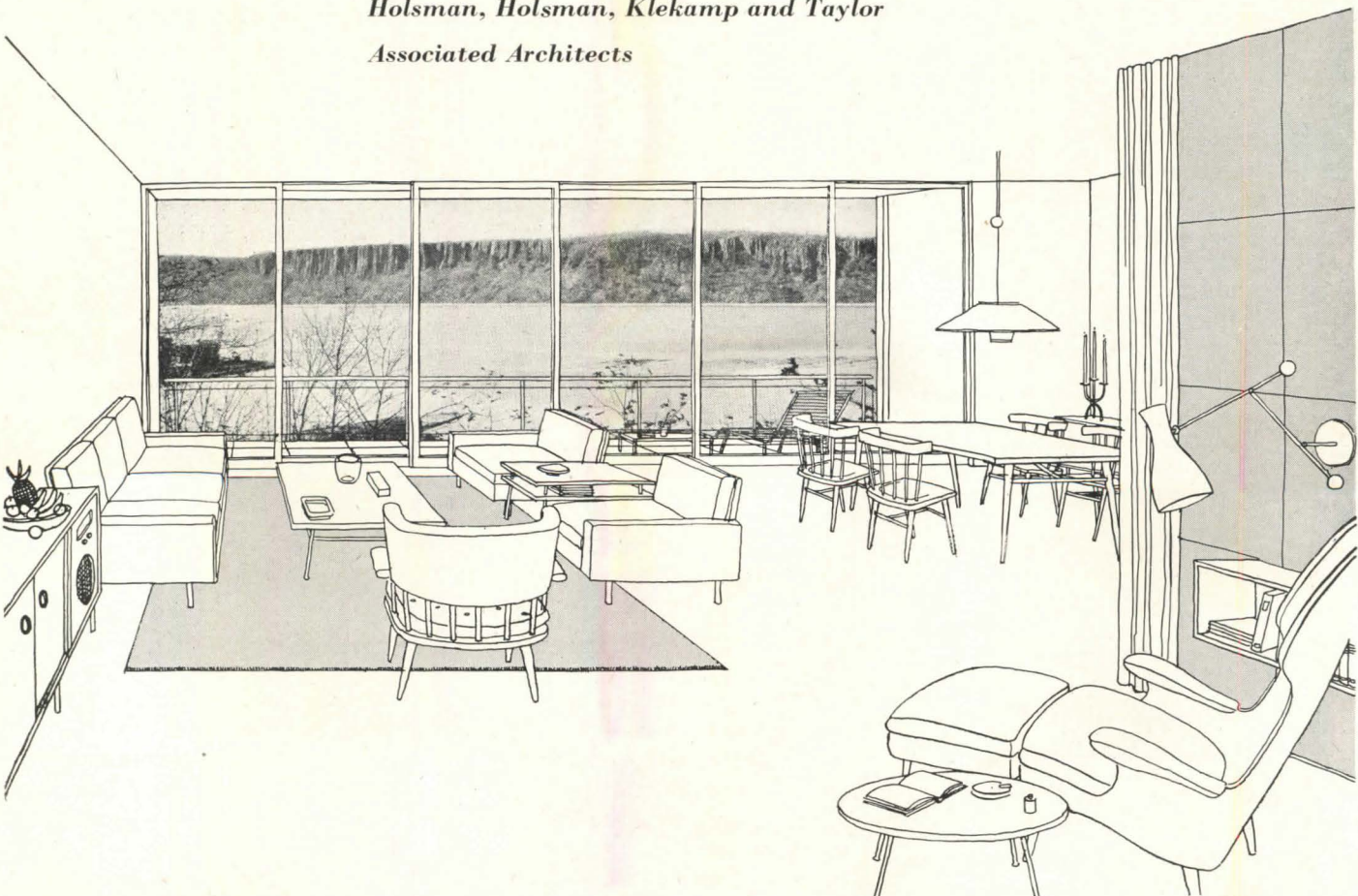
RIVER LEDGE GARDEN APARTMENTS

Hastings-on-Hudson, N. Y.

Antonin Raymond and L. L. Rado

Holsman, Holsman, Klekamp and Taylor

Associated Architects

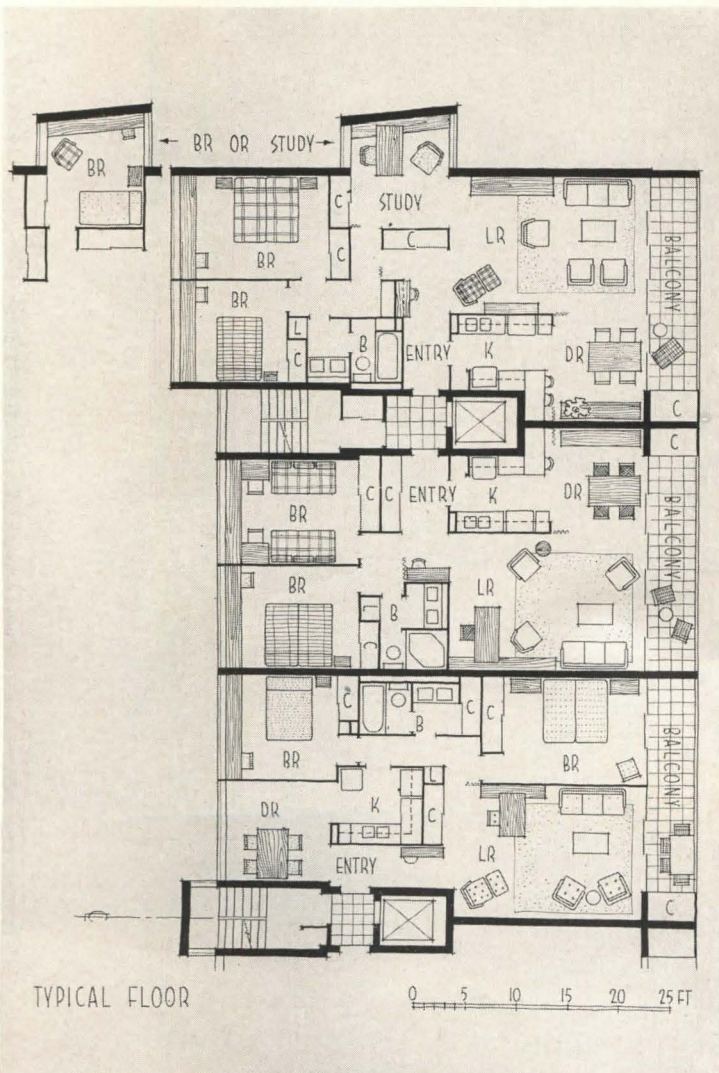
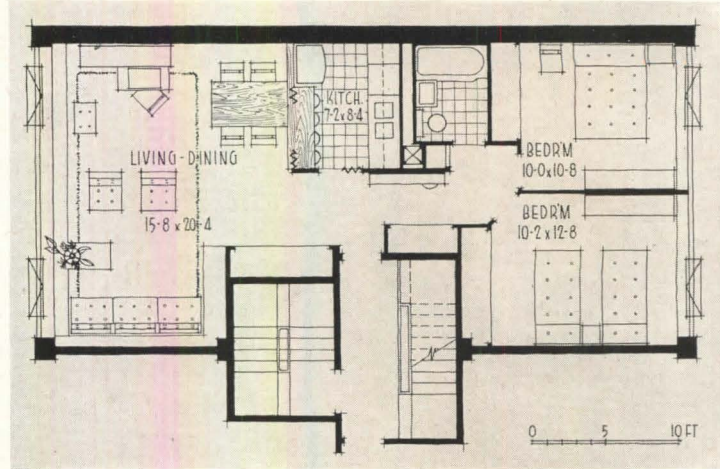


RIVER LEDGE

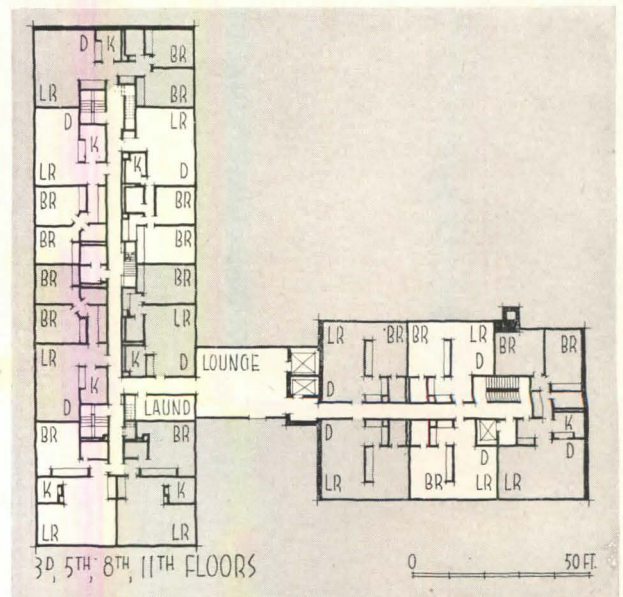
On a beautifully wooded site overlooking the Hudson River, this development has been designed to exploit a splendid view to the west. All of the 114 units in the three six-story buildings have an unobstructed view. In addition, each apartment has a balcony running the full width of the river side. Balconies are thoughtfully provided with storage space for outdoor furniture. Projecting balconies and party walls help to shield the glass wall of the apartments from the western sun. An elevator and a stair serve only two apartments per floor, with the result that all apartments have through ventilation. The sloping site permits six additional units in the basement of the center building.

Exterior wall construction will be similar to that of 100 East Erie, described on the opposite page. Floor construction will be hollow precast concrete slabs with radiant panel heating. Party walls will be reinforced concrete. Partitions will be gypsum drywall.

This project and the following one are being developed under the sponsorship of the Community Development Trust of Chicago's mutual ownership plan.

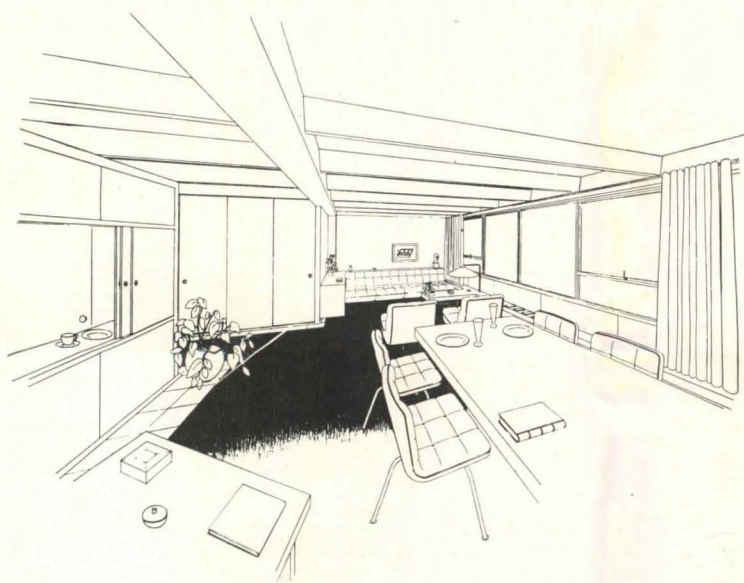


Holsman, Holsman, Klekamp and Taylor, Architects



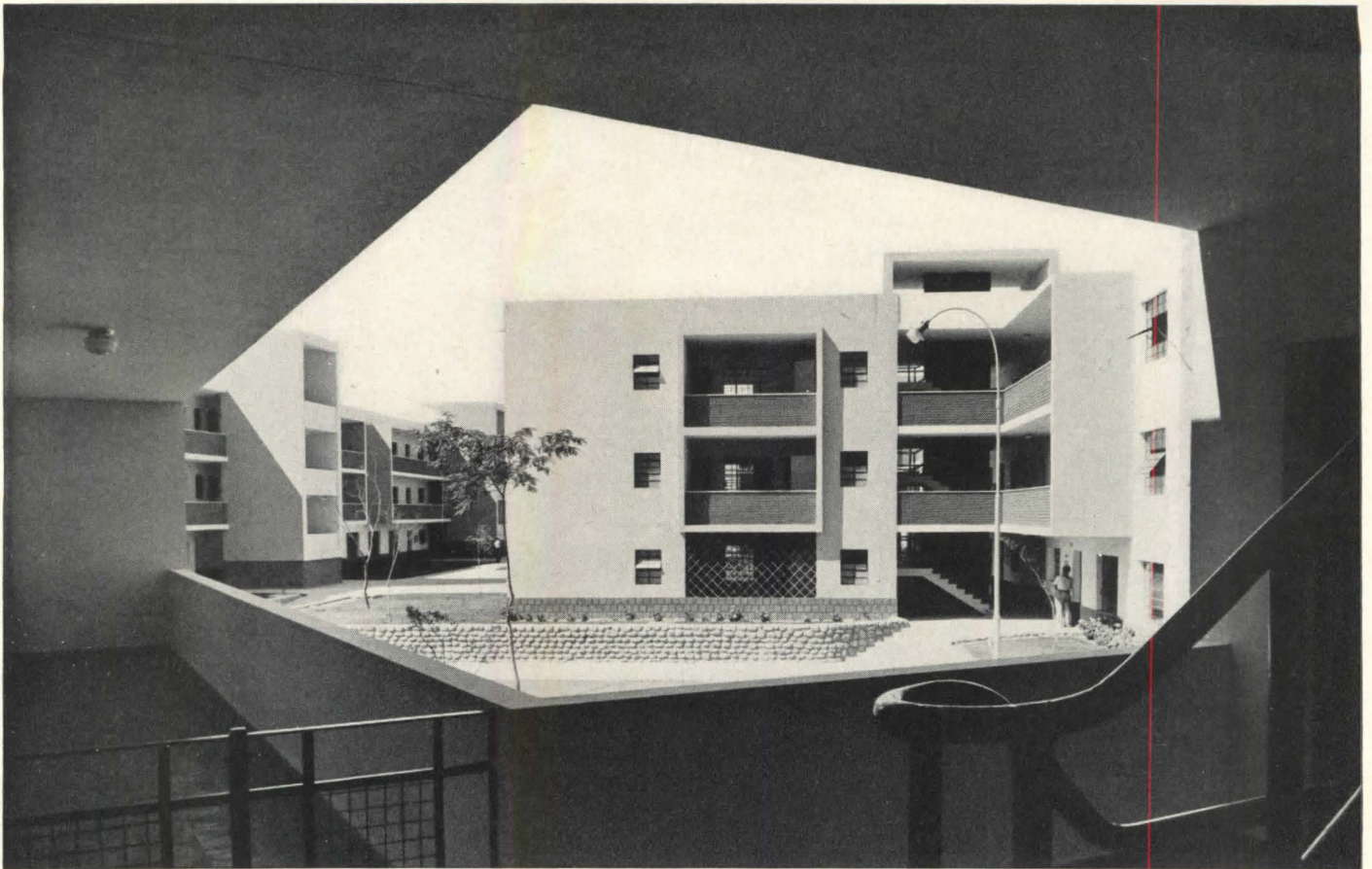


100 EAST ERIE, CHICAGO, ILLINOIS



THIS MUTUAL OWNERSHIP DEVELOPMENT will occupy the site of Cyrus McCormick's "elegant" mansion dating from the 1870's. Rising from a two-story commercial base, which features a spacious central court enlivened by planting and pool, are two apartment buildings with only the most tenuous connection. The east building contains 64 one-bedroom apartments in a conventional corridor scheme with an elevator stop at each floor. The west building utilizes the "skip-stop" scheme for its 56 two-bedroom apartments. Access to the elevators in the east building is by glass-enclosed bridge at every third floor. Service elevators in each building connect every floor with the basement, where parking for 42 cars is provided. Apartments are well planned and pleasantly open in feeling.

Wall construction will be 8-in. lightweight reinforced concrete poured between exterior finish of precast brick panels, 4 by 8 ft by $2\frac{1}{4}$ in. thick, and interior finish of precast lightweight concrete. Floors will be cork tile on precast accoustical concrete slabs supported by concrete beams with permanent metal forms. Heating will be radiant with individual thermostatic controls for each apartment.

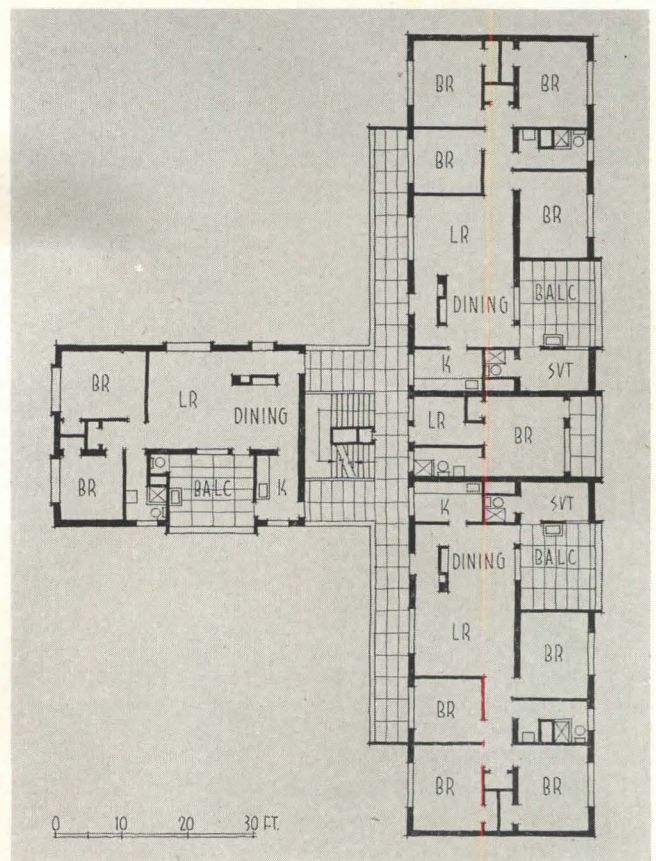
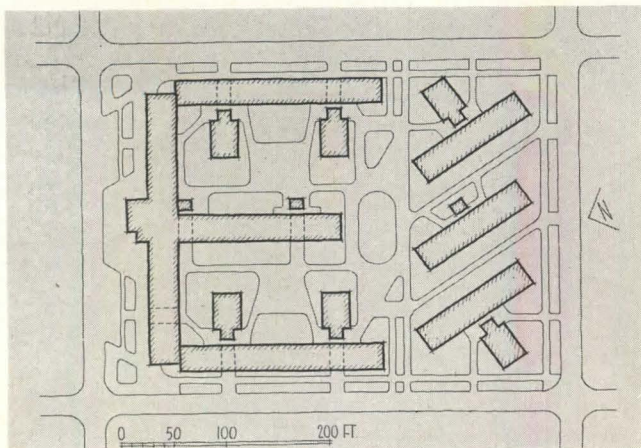


ANGAMOS APARTMENTS, LIMA, PERU

Santiago Agurto Calvo, Architect

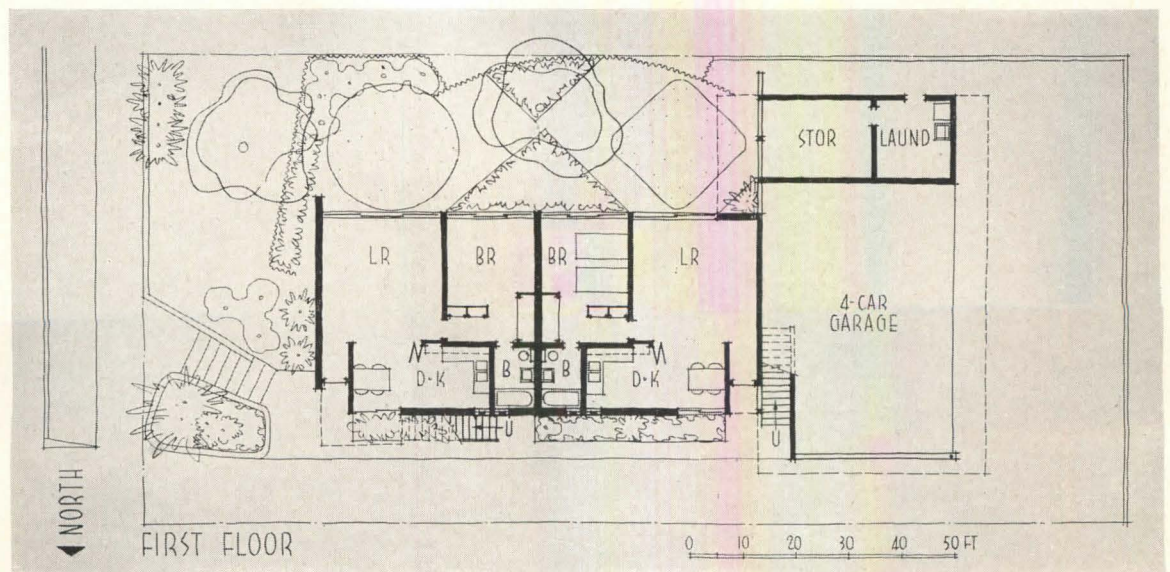
IN LATIN AMERICA exterior corridors and stairs are no longer novelties. In this example from Peru the stairs are well protected from the weather and all apartments have private terraces.

In addition to 92 apartments, ranging in size from one to four bedrooms, the block-square development includes three playgrounds and a group of eight stores and a cafeteria. Off-street parking space is provided in front of the stores.





Julius Shulman Photos





315 SOUTH VIRGIL AVENUE, LOS ANGELES

Carl Louis Matson, Architect

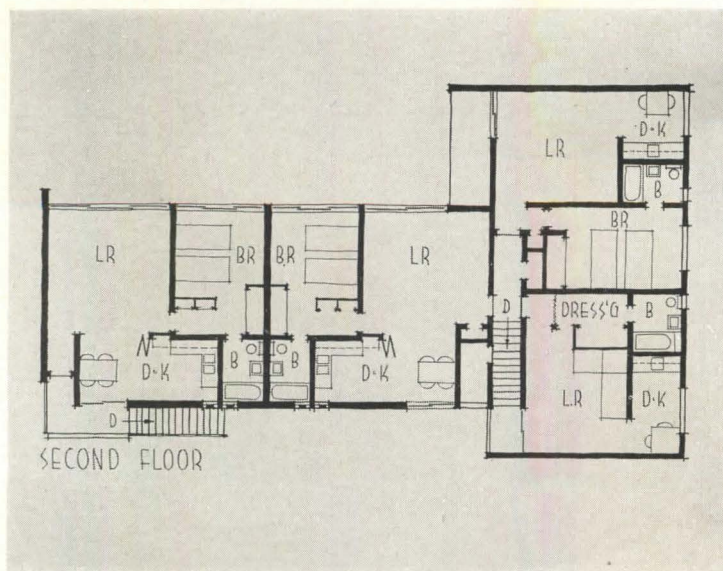
Eckbo, Royston and Williams, Landscape Architects

THIS SIX-FAMILY APARTMENT HOUSE was built on a 60 by 120 ft lot in an old residential section only five minutes from the center of the city. The architect selected the property with the belief that many people would like to live close to their work and also enjoy some of the pleasures of outdoor living. His judgement proved correct and the apartments have been very popular, especially with young professional people.

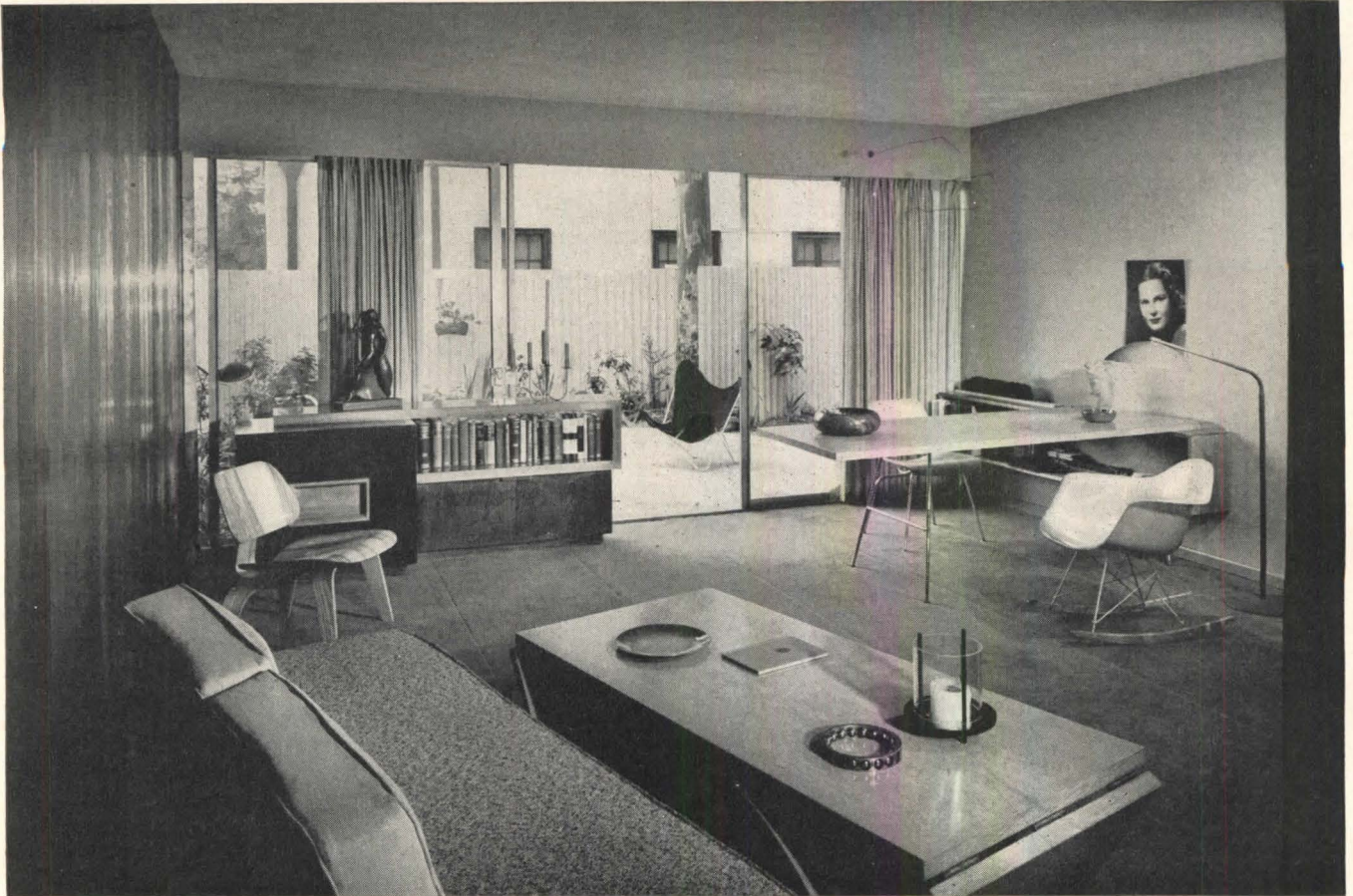
Construction is of wood frame on concrete slab.

The area of the building proper is 3925 sq ft, plus 900 sq ft in laundry, storage, and carport. Built under separate contracts, the total cost was \$32,000, including landscaping, carpets, draperies, ranges, refrigerators and garbage disposal units.

Sound insulation between floors is provided by resilient clips for ceiling lath and ½-in. fiberboard above the subflooring. Party walls are built of staggered studs with continuous mineral wool blanket.



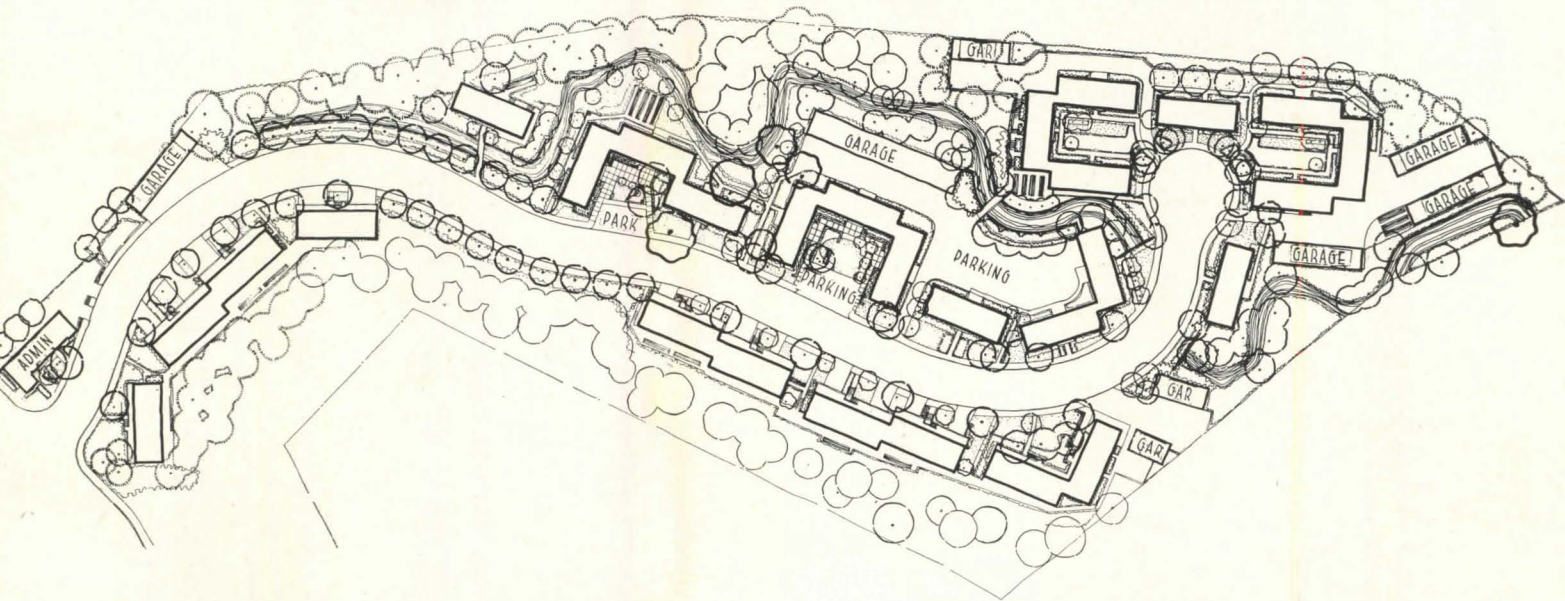
Of the six apartments four face south and all have through ventilation. Two apartments have balconies and two have terraces. Fences of corrugated asbestos-cement provide privacy for the attractively landscaped terraces. Sliding glass doors give access to balconies and terraces



Julius Shulman Photos

Below: Folding partition may be used to separate kitchen from dining or to cut both off from the living room. Partition is made of mahogany plywood and moves on casters





CASTLEMONT GARDENS, OAKLAND, CALIFORNIA

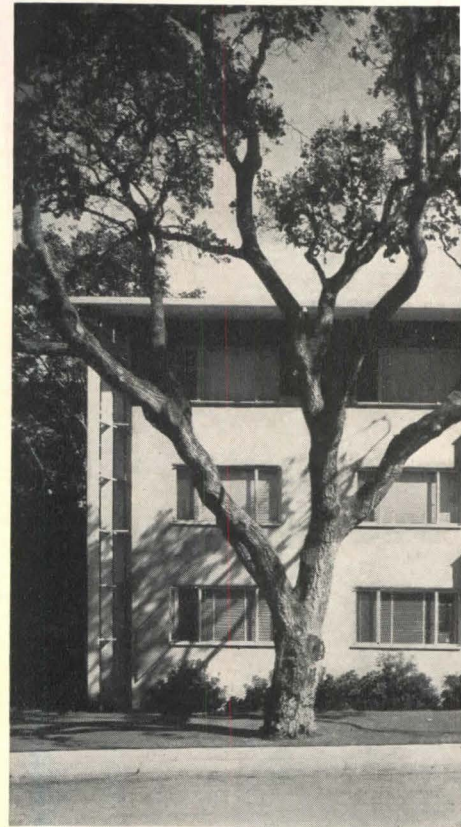
John Carl Warnecke, Architect

THE DEVELOPMENT of a successful 608 project on this all but impossible site was a considerable triumph for both architect and owner. The irregular tract consisted of the steep-sided and heavily wooded valley of a meandering creek. Containing no buildable land by conventional standards, the valley had been bypassed by the rapidly expanding city. The site was further handicapped by the existence of a trunk sewer with three branches, each with a 10- or 15-ft easement, which cut into the valley.

As though the physical difficulties of the site were not enough, the developers were also faced with a legal obstacle; the entire tract was zoned for single-family houses. Even though the property was completely isolated from the surrounding community by steep and for the most part heavily wooded slopes, with access possible only at the westerly end which was already zoned for commercial use, several hundred neighboring property owners fought long and vigorously against the requested rezoning.



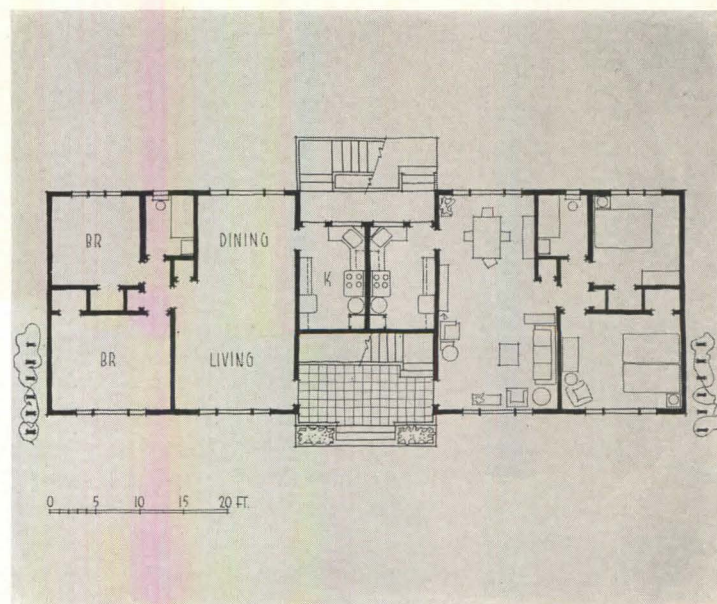
CASTLEMONT GARDENS



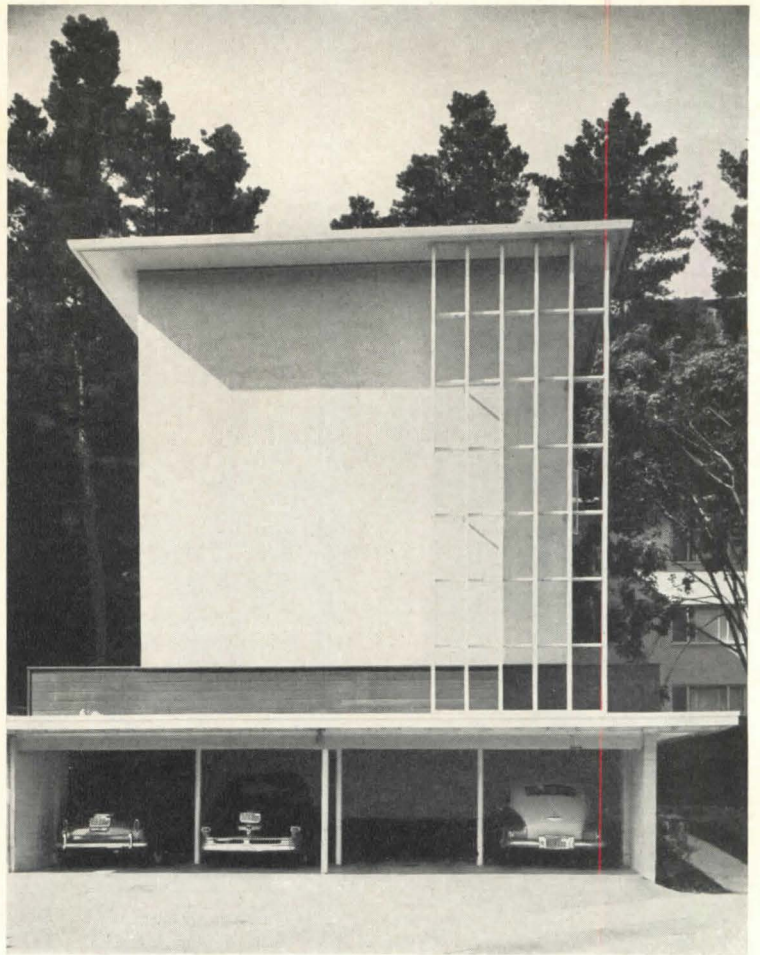
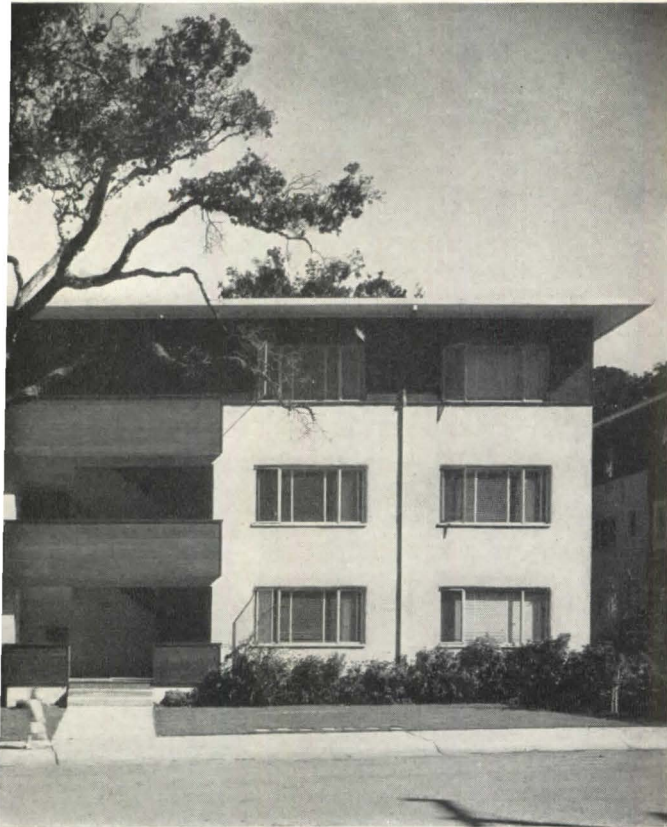
Typical unit plan (below) shows the larger than average rooms and the two stairways which serve each unit. Main stair is well protected from the weather

The total development consists of 140 two-bedroom apartments in 15 two- and three-story buildings. Although the project had to be designed for operation as a single unit, it was necessary in order to obtain the most favorable financing under FHA to divide it into eight separate projects, each costing less than \$200,000. Each division was required to conform to all FHA and city regulations and to be complete within itself, including garages, utilities, laundry rooms, and storage lockers.

The basic plan is a two-bedroom apartment with a gross area of almost 1000 sq ft. The result is rooms which are considerably less cramped than in the average 608 apartment. Although there are only two apartments per floor, there is a main and a service stair serving each apartment. Both are technically exterior stairs but the main stair is well protected from the weather, being almost entirely within the building line. The balcony-like stair landings have been made a feature of the exterior design and serve to give the project its principal architectural interest.

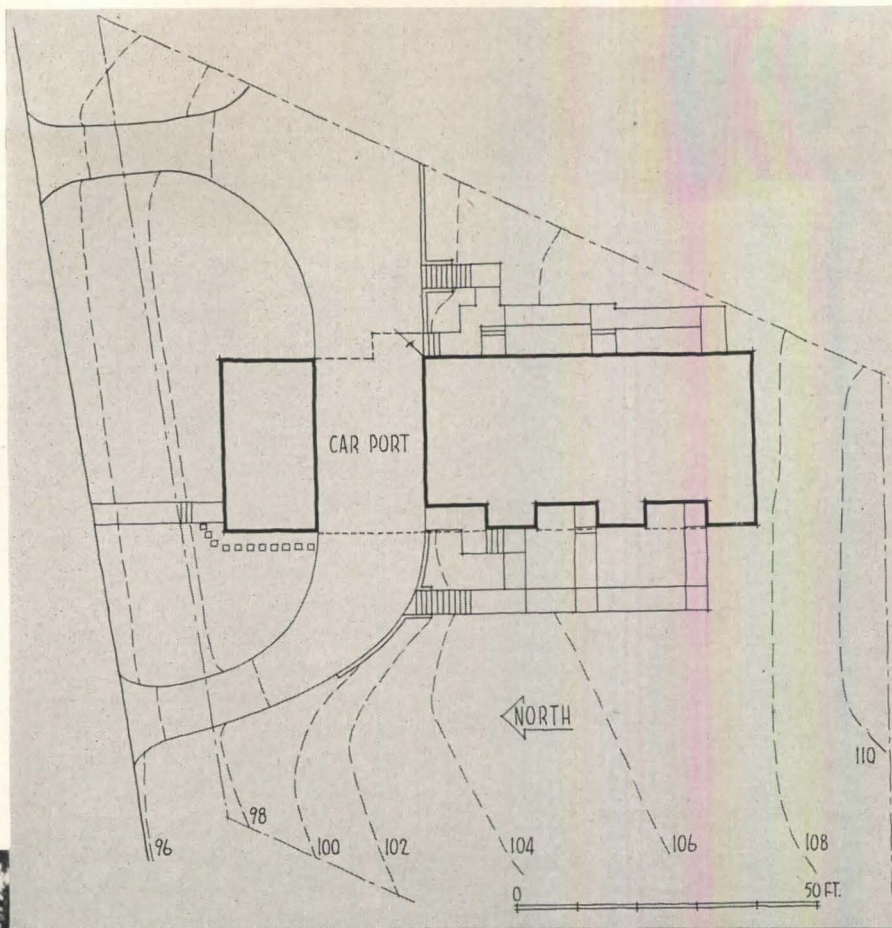


Rondal Partridge Photos



Below: service court and garages. Below, right: the stream which winds through the length of the property had to be repeatedly bridged and culverted





FIVE-FAMILY APARTMENT HOUSE

Jackson, Mississippi

James T. Canizaro, Architect and Engineer

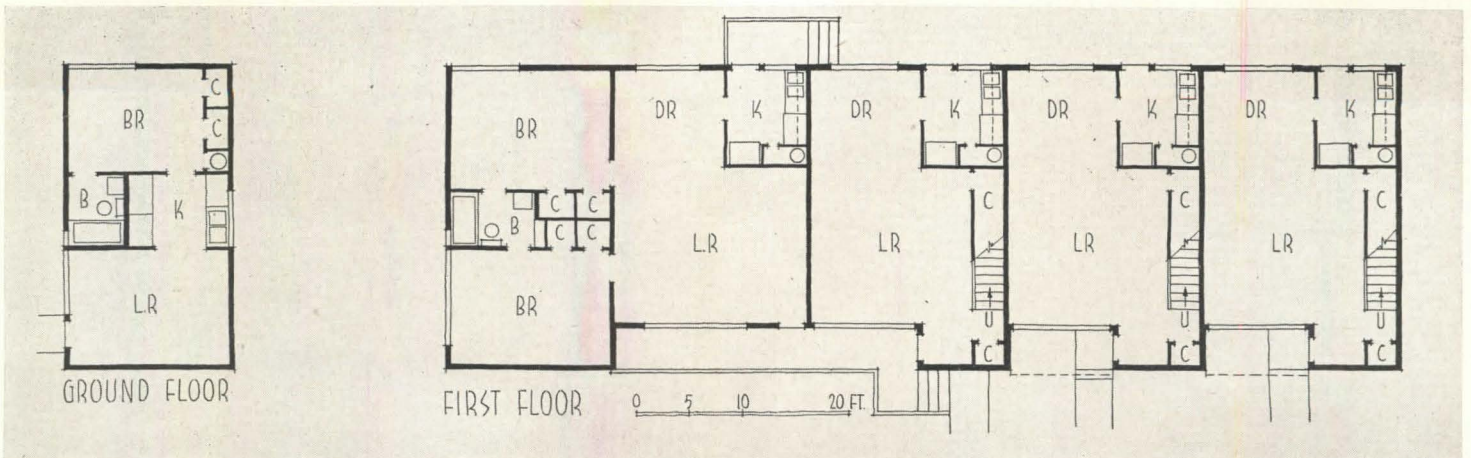
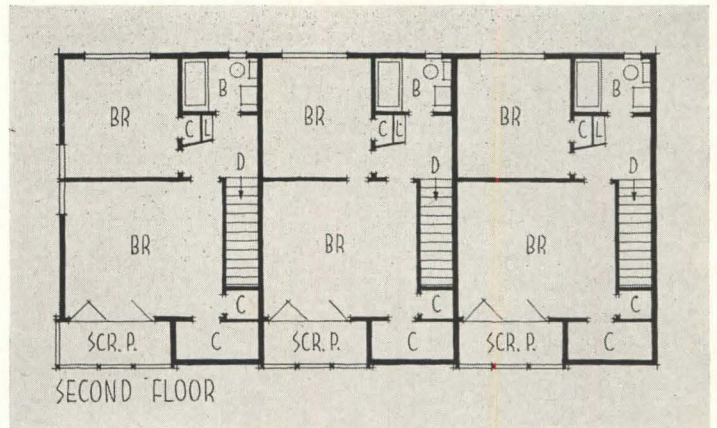
THIS FIVE-FAMILY APARTMENT HOUSE is owned by the architect, who had little difficulty in convincing the owner of the soundness of his solution. The project was conventionally financed and the approval of FHA was not required.

The architect's solution to the problem presented by the irregular, steeply sloping site was to step a long thin building up the slope. The building contains four apartments with two bedrooms and one with one bedroom. The upper apartments are duplex suites with their bedrooms on the floor above. The result is that although there are three floors, no one has to walk more than one flight to reach his living room.

The two-bedroom apartments have a gross area of about 1000 sq ft. All apartments have through ventilation. The architect was able to retain some fine oaks on the upper level which provide summer shade for a large part of the building. Roof overhangs supplement the shade of the trees. Screened balconies are a pleasant feature of the duplex suites and for the greater part of the year their area can be added to the bedrooms. The balconies also provide protections for the main entrance and the living room windows on the floor below.

The building cost \$42,900 including blinds, ranges, and refrigerators. The area of the building is approximately 4600 sq ft.

Below, left: first floor plan. Between, right: second floor; three units at right are duplexes. Above: third floor, upper level of duplex apartments. In the basement off carport are storage, servants' dressing room and lavatory





FRANKLIN APARTMENTS, INC., ST. ALBANS, VT.

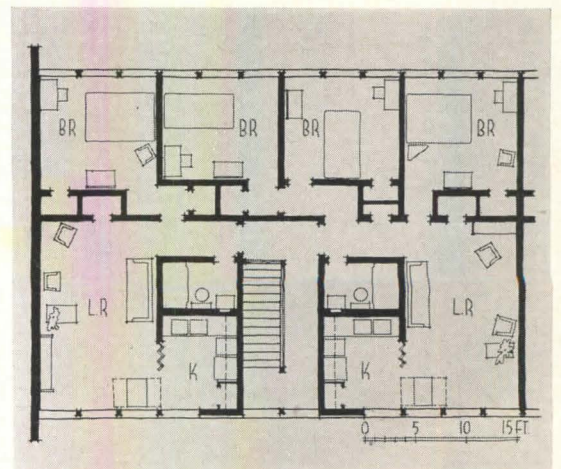
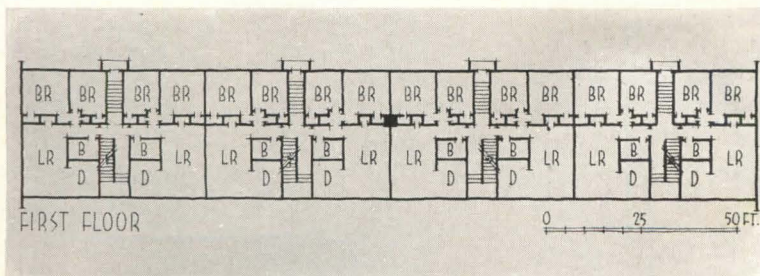
Whittier and Goodrich, Architects

GARDEN APARTMENTS all over the country are being forced to wear ill-fitting clothes copied from old New England houses. This straightforward design from Vermont may surprise some people, who had forgotten that New England is also famous for practicality and intellectual honesty.

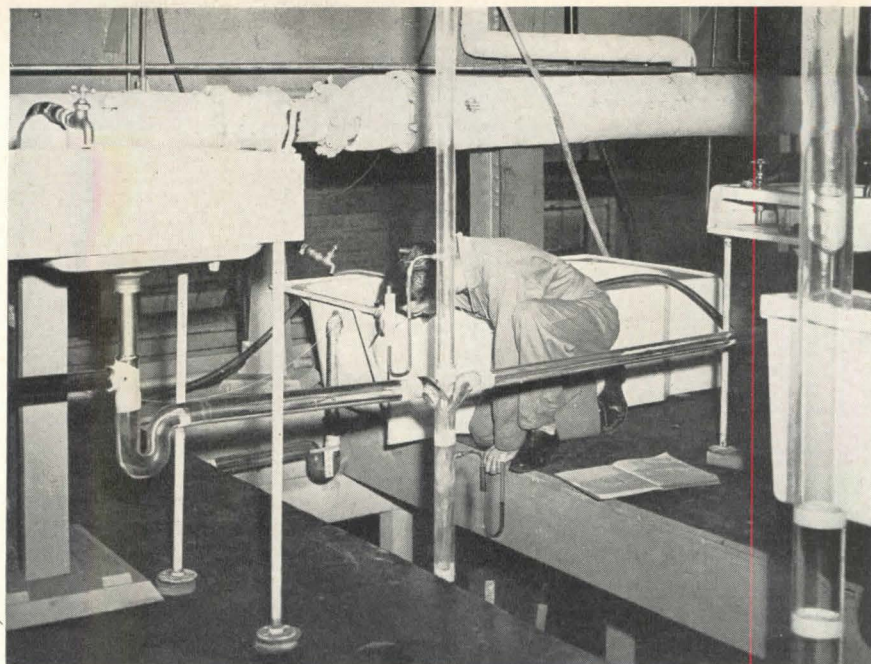
This 20-family apartment building is of frame construction and was designed on a 4-ft module. End walls are solid brick. Side walls are brick veneer up

to the first floor window sills and striated plywood above that level. Windows are steel casements with steel interior trim.

Apartments have from one to three bedrooms and are arranged two per stair per floor. A sloping site permits four apartments in the basement. The rest of the basement is used for laundry and drying rooms, storage lockers, and boiler room. All apartments have through ventilation, interior baths, and open kitchens.



Technical basis for much of the National Plumbing Code came from tests like this one, which was conducted at the National Bureau of Standards. Pipes and fittings are made of transparent plastic, so that the flow can be observed and photographed by a movie camera. Full-scale plumbing was constructed, such as the two-story, duplex-house system diagrammed at the bottom of the page. In the photo, flow conditions are being observed in a bathtub trap



METALS SAVED BY NATIONAL PLUMBING CODE

Based on a report by Vincent T. Manas

Chief, Emergency Plumbing & Heating Code Branch, Building Materials Division, NPA

TODAY there are over 1000 cities and towns in the nation which have their own plumbing codes. Many of these codes are obsolete, contain restrictive provisions, and do not embody improvements made possible by recent research. The result is waste of millions of dollars and tons of metal annually. Government efforts to improve plumbing code requirements include the *Uniform Plumbing Code*, sponsored by HHFA, and, most recently, the *National Plumbing Code*, issued jointly last June by NPA and HHFA, the purpose of the latter being to adjust differences in proposed standard codes prepared by various national organizations. Calculations on the following pages show that between 500 and 700 lb of cast iron, steel, and lead can be saved in each new housing unit under the new plumbing code.

Recommendations to Conserve Metal

At latest count some 250 principal cities have now adopted the National Plumbing Code, in addition to the states of New York, Colorado, Florida, and Louisiana. Authorities in NPA feel that the following developments hold the most promise for conservation and for standardization of plumbing materials and design:

(1) General adoption of the National Plumbing Code, particularly in those areas where existing codes have greater requirements.

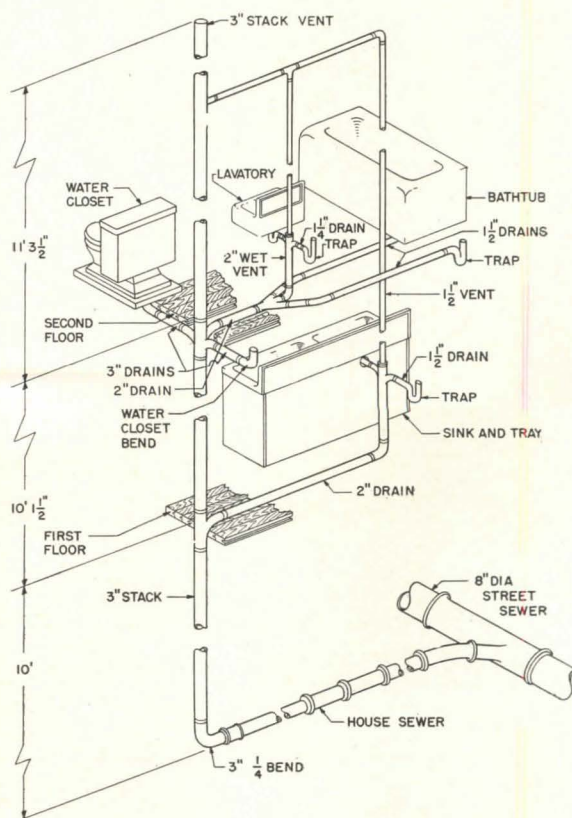
(2) Proposed emergency federal specifications for plumbing fixtures.

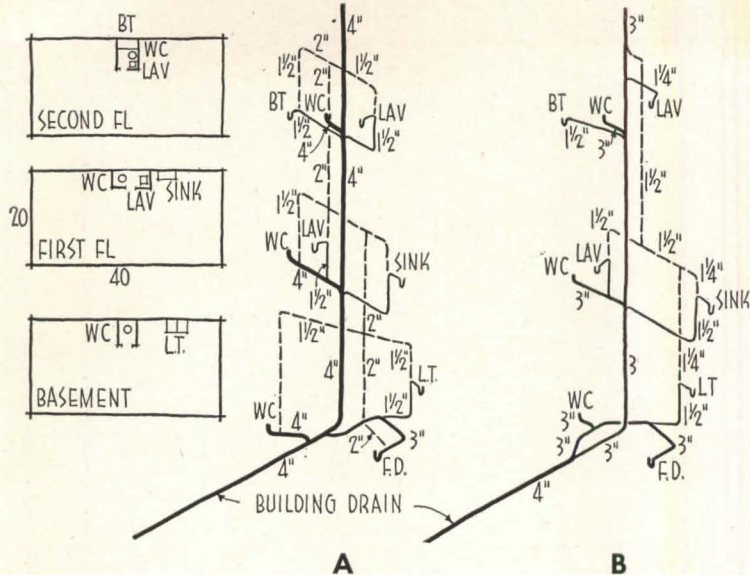
(3) Proposed new standards on service-weight, cast iron soil pipe, a weight reduction of 25 per cent over the extra-heavy type.

(4) A proposed manual of design to provide recommendations on design and practice for use of architects, engineers,

plumbing contractors and many others.

The Government Advisory Committee on Plumbing (part of an advisory group comprising representatives of all governmental agencies dealing with construction), which reached tentative agreement on the above a few weeks ago, is expected to issue soon specific recommendations toward conservation





Plumbing required for a one-family house.

Dashed lines indicate vent piping. Bathroom, second floor. Kitchen and powder room, first floor. Laundry trays and toilet, basement. Sketch A represents piping required by many codes. Sketch B represents piping required by the National Plumbing Code. Many cities require a house trap and fresh air inlet, which adds another 127 lb. Other cities require that the sewer from the building to the public sewer be installed with extra-heavy cast iron pipe, which adds 520 lb.

and design standards on plumbing. Here are some of the suggestions made by the Committee.

Studies should be initiated on present loading tables for plumbing fixtures in the National Plumbing Code which may be too conservative because of the probability factors now used.

Elimination of galvanized coating now required for drainage piping and venting systems may be possible if a current study at the National Bureau of Standards turns out favorably.

Concerning plumbing fixtures, the following suggestions have been made for steps to be taken during the material shortage. Plated finishes might be eliminated on many portions of fixture trim for which other coatings are available. Styles and sizes of plumbing fixtures might be reduced. Deluxe trims and equipment might be discontinued for the period of emergency. Many of these items require copper and other critical materials which are not necessary to their function. Standardization of fixture outlets and traps to produce lower discharge rates could achieve reduction in pipe sizes. Production of non-metallic plumbing fixtures, such as vitreous china or vitrified, glazed porcelain, could further reduce metal consumption.

There appear to be possibilities of tremendous savings when conclusive data are made available on the capacity of building drains, building stacks, and fixture branches in relation to venting requirements. This can mean reduced pipe sizes and increased loads.

There is a need for technical data and field information for the possible extension of unvented drain lengths for all plumbing fixtures which will provide greater flexibility in design and less piping.

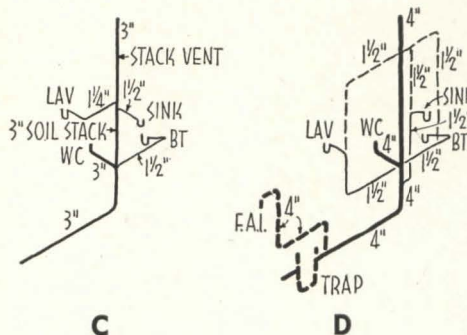
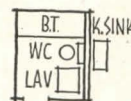
The Committee strongly recommended

TABLE 1

National Plumbing Code		One-Family House (Two Floors and Basement)	Other Codes	
Length or Units	Weight, Lb		Weight, Lb	Length or Units
—	—	4" X.H. (Extra-Heavy) C.I. Soil Pipe	732	60'
—	—	3" X.H. (Extra-Heavy) C.I. Soil Pipe	92	10'
—	—	2" X.H. (Extra-Heavy) C.I. Soil Pipe	25	5'
20'	164	4" Service Weight Pipe	—	—
50'	300	3" Service Weight Pipe	—	—
5'	20	2" Service Weight Pipe	—	—
—	—	4" X.H.C.I. Y's TY's or Tees	161	7
—	—	3" X.H.C.I. Y's TY's or Tees	32	2
1	21	4" Service Weight Y's, TY's or Tees	—	—
5	70	3" Service Weight Y's, TY's or Tees	—	—
—	—	3" X.H.C.I. Bends	10	2
3	12	3" Service Weight Bends	—	—
—	—	3" X.H.C.I. Trap	17	1
1	15	3" Service Weight Trap	—	—
—	—	4" Water Closet Bends	66	3
3	60	3" Water Closet Bends	—	—
—	—	4" Flashing	—	1
1	—	3" Flashing	—	—
—	—	2" Galvanized Pipe	128	35'
40	108	1 1/2" Galvanized Pipe	203	75'
15	34	1 1/4" Galvanized Pipe	—	—
—	—	2" Galvanized Mall Fittings	10	5
5	8	1 1/2" Galvanized Mall Fittings	6	4
2	2	1 1/4" Galvanized Mall Fittings	—	—
3	5	1 1/2" Drainage Y's, TY's	6	4
2	3	1 1/2" Drainage Els	8	5
3	3	1 1/2" Drainage Tuckers	3	3
2	2	1 1/4" Drainage Els	—	—
—	107	Pounds of Lead	140	—
—	934	Total Weight Savings = 42%	1639	—

Plumbing required by a one-family, one-story, no basement unit.

One bathroom and kitchen sink back to back. Sketch C is for the National Plumbing Code, and Sketch D represents other codes. Some cities do not require a house trap and fresh air, so total weight for Sketch D would be reduced by 131 lb, leaving 782 lb. Other cities will permit lighter pipe, as in the National Plumbing Code, which takes away 84 lb, leaving 698 lb. However, when an extra-heavy, cast iron building sewer is required, assumed to be 40 ft, this adds 488 lb



that the use of copper tubing be retained for use in the water supply system with the further recommendation that a study be made of copper tubing which is approximately 70 per cent lighter in weight than commonly used, but which will not be impractical. The Committee feels that, at least, this copper tubing should be considered where water conditions have a deleterious effect on ferrous pipe.

A recommendation having two-fold implications is that immediate study be started on the effect of water pressure on plumbing design. Besides reducing pipe sizes, the water conservation program would be aided.

Penalties of Obsolete Codes

Obsolete codes impose unnecessary expense on the public in many different ways. Oversized pipes must be used, and vents that are not needed must be installed. Designers and contractors must be familiar with the multitudinous details of the different codes where they work. The interpretation of code requirements is often difficult, leading to time-consuming negotiations and, sometimes, the removal and replacement of construction partially completed. Manufacturers must furnish variations of a given product to meet different requirements, instead of standardizing their product.

Analysis of 50 Representative Codes

Of 50 typical cities recently surveyed, 20 have either adopted the National Plumbing Code or are revising their codes so as to agree with it. Obsolescence and overdesign in the other 30 will be illustrated by typical examples. Five codes require extra-heavy, cast iron soil pipe for the building sewer. Seven require the installation of a house trap and fresh

TABLE 2

National Plumbing Code		One-Family Unit (One Story, No Basement)	Other Codes	
Length or Units	Weight, Lb	MATERIAL DESCRIPTION	Weight, Lb	Length or Units
—	—	4" X.H. (Extra-Heavy) C.I. Soil Pipe	602	50'
45'	280	3" Service Weight Pipe	—	—
—	—	4" X.H.C.I. Y's and TY's	96	4
3	66	3" Service Weight Y's and TY's	—	—
—	—	4" X.H.C.I. Sweep	45	3
1	14	3" Service Weight Sweep	—	—
—	—	4" X.H.C.I. House Trap	28	1
—	—	4" X.H.C.I. Return Bend	22	1
—	—	4" X.H.C.I. Water Closet Bend	22	1
1	20	3" Service Weight Water Closet Bend	—	—
—	50	Caulking Lead	92	—
5'	14	1 1/2" Galvanized Pipe	82	30'
3'	7	1 1/4" Galvanized Pipe	—	—
—	—	1 1/2" Gal. Drainage San Tee	3	2
—	—	1 1/2" Gal. Drainage Tee	1	1
—	—	1 1/2" Gal. Drainage Tuckers	3	2
1	2	1 1/2" Gal. Drainage Els	5	3
1	2	1 1/4" Gal. Drainage Els	—	—
—	—	1 1/2" Galvanized Malleables	5	3
—	435	Total Weight Savings = 52%	913	—

air inlet, which are not recommended in light of present knowledge. Ten of the codes require that the unvented length of a fixture drain must not exceed 2 ft.

All fixtures have to be back vented, according to 13 of the codes. For a number of years stack venting has been advocated for a single-story system (or

the top floor of any system) as providing adequate drainage and venting, requiring less pipe than a conventional back-vented system. Under certain conditions, wet venting (drain for one fixture acts as vent for another) is entirely practicable in one- and two-story drainage systems, with relatively simple restrictions on the fixtures and sizes of vents.

A SUMMARY OF BRITAIN'S WORLD-WIDE

Special Report on the Congress by D. E. Parsons

Chief, Building Technology Division, National Bureau of Standards

The author was on the program and discussed U. S. research on weathering and durability

INTEREST in building research by people from nearly all nations was evidenced by the size and nature of the membership, and the quality of the papers and discussions at the Building Research Congress in London, September 11 through 20. The Congress was attended by more than 1300 architects, engineers, and builders from 50 countries. Although many international meetings have been held relating to engineering and sciences which have a bearing on problems of building, none previously had as its subject the problem of building as a whole.

It was appropriate that this Congress should be held in the United Kingdom because the first building research station was established about 30 years ago under the Department of Scientific and Industrial Research of Great Britain. It was also appropriate that Dr. F. M. Lea, the Director of the Building Research Station, and other members of the staff took a leading role in organizing the Congress.

Congress Organization

The Congress was organized into three divisions — Division I dealt with design and construction methods; Division II, with materials; and Division III, with acoustics, heating, air conditioning and lighting.

The authors of papers, all of which were preprinted, were allowed not more than 15 minutes and were urged to consume only 10 minutes in presenting brief summaries of their papers and such added new material as seemed appropriate. This rule was well enforced for the most part, which enabled the meetings to begin and end on time, yet allowed time for a number of discussions, which were limited usually to about five minutes each.

Trips to industrial, governmental, and university laboratories, to the sites of constructions, and to various engineering works and exhibits were well planned and conducted.

Scope of Papers

The papers in Division I reviewed present practices in the design and erec-

tion of buildings and suggested ways to develop improved methods. The reviews cited many examples of improvement in design, such as those pertaining to columns, thin shells, use of light alloy structural members, light-gage structural members, and glued laminates of timber.

New information was presented on foundation problems in cold climates, shrinkable clays, and deep piles. Great savings in the weight of buildings achieved during the past century were recognized. The use of welding and of machines for cutting, drilling, hoisting, and transporting have aided in reducing the amount of labor at the construction site. Many profitable fields for new laboratory research were pointed out, as well as the need for improved mechanical aids. More versatile machines are needed at the site of erection to replace those designed for one material or operation.

A number of papers discussed durability of materials in different environments, giving an excellent summary of current problems. Advances in technique were described, and an excellent summary of the properties of lightweight concretes was given. Evidence was presented of the use of scientific controls in the manufacture of clay products, and a summary of recent research on the properties of brick masonry was presented. Other papers dealt with the quarrying and use of building stone, the manufacture and properties of lime, and technical problems relating to paints, plasters, curing of concrete at high temperatures, preservation of timber, and the properties and uses of plywood. The need for further research on materials was stressed by most authors.

Papers on acoustics of building discussed theories of design, application of these theories and construction procedures. Problems of heating and air conditioning were similarly treated, emphasizing the effect of climate on operating efficiency and comfort. Problems of radiant heating were not neglected and the effects of external

temperature changes on buildings and heat transfer through constructions were discussed. Brightness, glare, daylight intensities, and color were considered, and specific problems relating to the design of factories, hospitals, and schools were investigated.

It was repeatedly implied, when not stated explicitly, that most of present-day building is with materials long in use and by traditional methods of erection, but it was also agreed that changes are being made as rapidly as the basic information needed to assure their success becomes available. Only those writers who had predicted complete and sudden change in the appearance of buildings and in materials and methods of erection following World War II were thought to be disillusioned by what must seem to them slow progress.

Problems Are Universal

Listeners were made aware that many of the problems facing the building industry and professions in different parts of the world are identical, and that others are so related that fundamental research in one country helps to solve questions in others. Although building and safety codes may have retarded progress in the past, the present tendency in most of the countries represented is to revise codes as soon as precise knowledge makes that possible without undue risk. More rapid progress must await new technical information. The lack of adequate methods of testing and evaluating materials, constructions, and equipment is a serious handicap. The natural tendency of some units of the complex building industry to adhere to traditional ways presents a problem in many countries.

The papers presented at the Congress were printed in three volumes. A small supply of these is still available and may be obtained at a cost of \$9.80. Discussions of the papers will appear in a fourth volume now being prepared for publication. Copies of the publications may be obtained from the Organizing Secretary, Building Research Congress, 57 Onslow Gardens, South Kensington, London S.W. 7, England.

BUILDING RESEARCH CONGRESS

Excerpts from an address, "Building Research Today," by Dr. F. M. Lea, Director of Building Research, Department of Scientific Research of Great Britain, at the opening session of the Congress, emphasizing the necessity of integrating building research

The whole experience of building research points to the need for integration of its results. Building research does not split up neatly into the formal divisions of the sciences. Its problems often cut across the normal dividing lines; they go beyond the physical sciences into psychology, sociology and economics, and they extend into the arts and crafts. Though the man of science may feel the ground growing steadily less firm as he moves away from the exact sciences, he can never forget that it is the response of man that is the test of a building, and that this response is conditioned by the whole environment rather than by any individual part of it.

Building Research Includes Many Sciences and Arts

It is still, I think, too often imagined, and in this the building industry is far from singular, that research consists of the study of isolated problems, the solution to any one of which is complete unto itself. There are limited and simple fields in which this is true, but building is a complex operation of design, manufacture, and construction in which major changes in any one particular procedure can rarely be made without many repercussions.

It is, indeed, the recognition of this that has led to the rapid development of building research organizations. But there is also another reason. Though the phrase "building science" may, for convenience, be loosely used, there is no separate science of building as such. In the three stages, planning, investigation, and application, research needs not only the scientist and the engineer, but also the architect and the builder, the economist, the worker in social studies, and the help of medical science. Research work extends outside the laboratory not only to investigations of building operations, of full-scale structures, and of conditions as they are in existing buildings, but also to full-scale trials in experimental building.

Building research is not the exclusive province of research organizations bearing that name. Major contributions come to it from the work of individuals

or groups in universities, in other research institutions, and in industry. But, however important the sum total of these contributions, something additional is required to secure coherence, integration and application. The form this takes will vary in different countries according to particular habits of organization and needs. In some it may be limited to a committee or central body charged with the selection of investigations desired, with the stimulation of activities in existing institutions, and with voluntary collaboration. But this will often lead, as experience in this country and elsewhere has shown, to the more positive steps of setting up, first, specific research groups, and then a central research institution. It is of much significance that central building research organizations now exist in many countries throughout the world. The formation of these, many of them in recent years, reflects the importance now attached to the application of scientific research to this traditional industry.

New Experimental Techniques

The scope of building research has steadily broadened. In recent years the introduction of new experimental techniques has provided potent weapons for furthering the study of structures. The application of X-ray and electron diffraction, and electron microscopy, to the study of materials has served both to check and to extend knowledge of their fundamental nature. A new branch of engineering, soil mechanics, has arisen from the study of the behavior of soil and gone far to show how buildings and structures may be saved from subsequent trouble.

Another important and interesting development of research has lain in the technical-economic sphere. In research on materials and structures we commonly and legitimately isolate technical problems for initial study. The application of their results will, in the final event, depend much on economic considerations, but these enter as a separate stage rather than as an integral part of the research itself. No similar separation of technical and economic factors is pos-

sible when we come to examine building operations, as, for example, the ways in which materials are handled, and built into place on the site. Here the performance of man and machine, economic and technical data have to be obtained side-by-side.

The application of scientific research to a traditional industry raises problems which are not present in modern industries which have grown from science. Part of the function of research is to make clear the scientific basis underlying traditional methods, so that they can be more readily and intelligently modified to suit changed materials, methods, and circumstances.

Why The Time Lag in Building Innovations?

The structure of the industry with its separation of design, manufacture and assembly does not facilitate the introduction of that which is new. Changes may involve action by each of these three separate branches, and experience in non-traditional methods of house building, for example, shows how much care and close collaboration is needed if potential successes are to be realized. Some of the papers presented to this Congress provide good evidence of this.

We hear much of the time lag between research and application. The means by which this can be reduced must be of vital concern to the building industry, for improvements in its methods can do much to give mankind those higher standards of living to which all aspire. While research in a manufacturing industry can be applied direct by the producer, there is no such single channel through which the results of building research can be put in effect. They have to be applied, sometimes singly, but often severally, by the different branches of the industry. With responsibility divided, collaboration becomes essential if each branch is not to find very human reasons for any failure to secure collective advance. Building research organizations can do much to integrate the results of research, but in the end it is on the industry itself that progress depends.

STUDIES ON COOLING OF TROPICAL HOUSES

By *W. R. Woolrich*

*Dean, College of Engineering; Director, Bureau of Engineering Research
The University of Texas*

The author is chairman of the newly formed Committee on Tropical Housing and Building Research of the Building Research Advisory Board

IN A MAJOR PORTION of those states south of the thirty-sixth parallel, an area in which thirty million people have learned to live successfully, the residents need to recognize a much different concept of building for comfort from that which prevails in the northern areas of this nation. The greater portion of the inhabitants in this area should be more interested in homes designed for coolness than for warmth. It requires fully as much ingenuity to maintain a southern house at a satisfactory level of coolness in summer as it does to maintain a northern house at a satisfactory level of warmth in winter.

Most Research on Heating

Probably 90 per cent of the scientifically sound research that has been done on the heating, cooling, and ventilating of the dwellings of man within the United States has considered him as a refugee from cold. Yet two-thirds of the peoples of this earth are refugees from heat, not cold, for most months of the year.

The better houses of the South have been built with too much of an investment in heating equipment and too little in summer livability. When the heating seasons last only two, three, or four months annually, it is very difficult to justify investments in elaborate heating devices and equipment.

At The University of Texas, tests are being conducted to show how dwellings can be kept cool by natural means through proper design and choice of materials. This article comments on the cooling of two ceramic houses and one FHA frame house by using the night air. But, first, it is well to inquire why many of today's houses in the South fail to provide protection from heat.

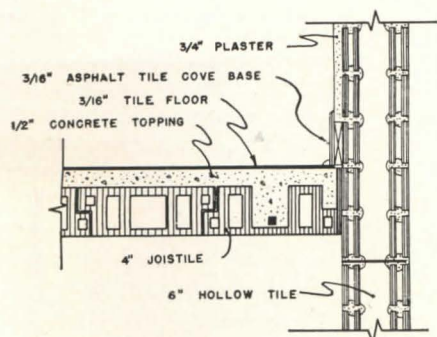
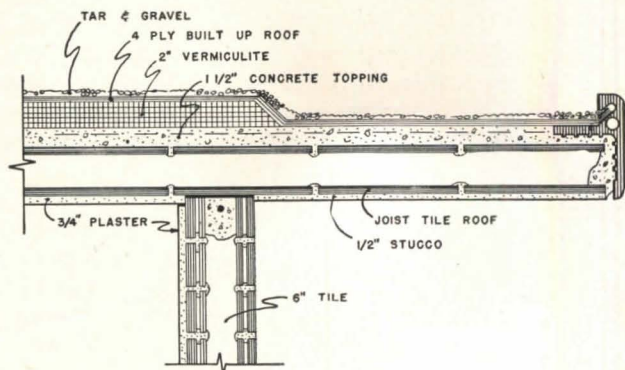
Unfortunately, what has happened too often is that northern house designs have been adapted to southern areas, with a reduction in the building mass and a degradation of the workmanship standards for the floors, walls, and ceilings, based on the rationalization that the milder climate requires less adherence to heavy construction and reduces the need for careful carpentry or masonry. These are entirely false premises for satisfactory permanent tropical construction.

Improving Summer Comfort

Much can be done to improve warm-weather livability by the architecture and the engineering of the house itself. The procedures followed to obtain the maximum benefits of properly located



An all-ceramic house under test at The University of Texas can maintain lower daytime temperatures by utilizing night air to cool down the walls, which will then soak up daytime heat



windows, doors, and ventilators can contribute much to the comfort of a warm-climate house. The landscaping and adjacent tree and shrub planting can be important factors. The building materials used may have a most marked effect in achieving summer comfort.

The recent publicity given to solar heating indicates that the major portion of areas south of the thirty-sixth parallel might well turn to the sun for all or nearly all of the required comfort heating. It is of interest that, in much of this same area, the storing of nighttime coolness to be utilized the following day is already an accepted practice by some of the more alert home owners. This procedure, however, holds possibilities of much more effective application than house designers and builders have utilized to date.

The recently publicized procedure, which originated in Germany, for keeping houses cool by circulating outside night air through masses of crated, sized stone stored in the basement and then in the daytime re-circulating the air within the house through these stones and back to the rooms is fascinating. Such a system, however, would not be very attractive in the southern zones where basements for houses are the exception. There is, nevertheless, an excellent opportunity for architects to use the same principle by designing within the house various walls, staircases, fireplaces, flower boxes, shelving, and floors in attractive masonry materials through which the cool night air could be circulated for the storage of coolness to be effectively used in these rooms during the period of high outside temperatures the following day. This can be especially effective if done with all of the outside house windows closed throughout the daytime.

In the simpler designs for homes, all or most of the investment in home cooling can be accomplished by utilizing natural ventilation and adopting workable living procedures. As the house design grows more complex, mechanical cooling devices can be employed more effectively.

For a large number of people, the investment in ventilating fans will be as far up the economic price scale as they can justifiably go. Unfortunately, only a small percentage of the fans installed in modern homes give their maximum usefulness as coolers of the houses because of injudicious selection, installation, and usage.

In the larger southern homes, refrigerated cooling is desirable. On the

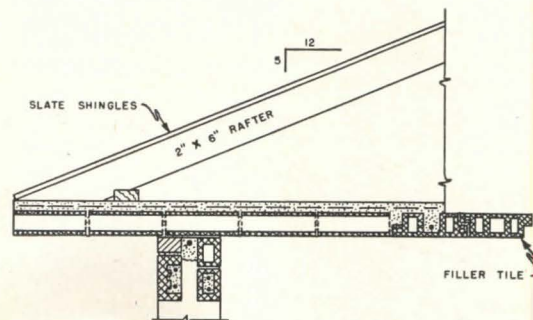
coastal plains, mechanically refrigerated cooling is to be especially recommended since it can effectively cool and dehumidify the air in one process.

There are still many questions to be solved relative to refrigerated air conditioning in the home, including the interesting possibilities in radiant cooling, but most of the current study in which we are engaged is devoted to the possibilities of keeping humans cool who must live in structures in which the investment must be limited to cooling either naturally or by fan installations.

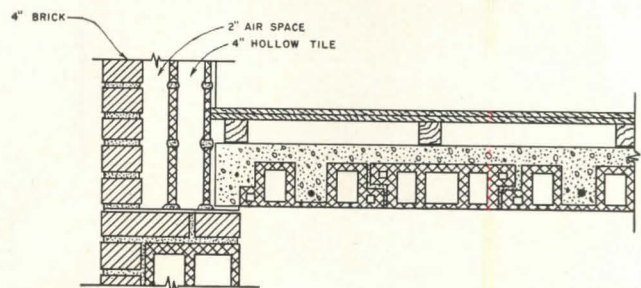
In Austin, Texas, for the period from June 15 to September 15 annually, not only can you predict the weather with a reasonable amount of certainty, but you can also, within a close approximation, write a formula for the dry- and wet-bulb temperature variations each twenty-four hours. In the Austin area it is a better than 90 per cent chance that each day of the above period will have a dry-bulb temperature which will rise each mid-afternoon to between 90 and 100 F and rhythmically fall each night to 78 or 74 F by four



Another house being tested to obtain data on natural cooling of tropical houses is constructed of brick walls backed up by tile



Roof section is $\frac{1}{2}$ scale of floor section



o'clock in the morning. During the same period the wet-bulb temperature will rise to not over 76 to 78 each mid-afternoon and fall not below 70 to 74 by four in the morning.

The 10 per cent or less days when these rhythmic variations will be upset are the brief storm periods, which occur rather rarely in summer. An analysis of these daily temperature cycles indicates that (a) evaporative cooling can be successfully used much of the time in the area, (b) outside sleeping temperature conditions are quite ideal and should be imitated as far as possible in design and construction, and (c) storage

of night coolness in the mass of the structure holds interesting possibilities.

Cooling of Three Houses

To illustrate the storage effect of the night coolness in the semi-arid climate of the Southwest and the relationships of this storage to house livability, three houses in the housing research project at Austin, Texas, were selected for tests. The specific study described here was made by Lucky Sawamura, Professor Wayne Long, and the writer.

An FHA-approved, six-room frame

house has been used in the studies as a reference check for comparison with other houses built of more fireproof materials. There is a 42-in. attic fan installed with intake in the hallway and with discharge into a vented attic. The heating is forced warm air.

A second house of brick and tile is designed similarly to the frame house, but has a ceiling and floor of joistile (a special ceramic tile) and wall of brick, backed up by hollow tile. The ventilating fan and furnace have been installed similarly to the frame house.

The third house is all-ceramic and has many features different from the other two. The roof is ceramic, with a low-pitched roof over the south half of the house rising above a flat roof over the north section. The floor is joistile and the walls are 6-in. hollow tile, plastered on the inside. This house has hot-water panel heating in the floor, and has two 42-in. fans arranged to pull air through the house and discharge above the flat portion of the roof.

All three of the houses have the same orientation, floor area, number of rooms, and are quite alike in internal arrangement.

The tests reveal some interesting characteristics. There is very little difference in the inside summer temperature of the brick and frame houses if they are kept closed day and night. From day to day these houses will accumulate more heat until they reach a thermal balance.

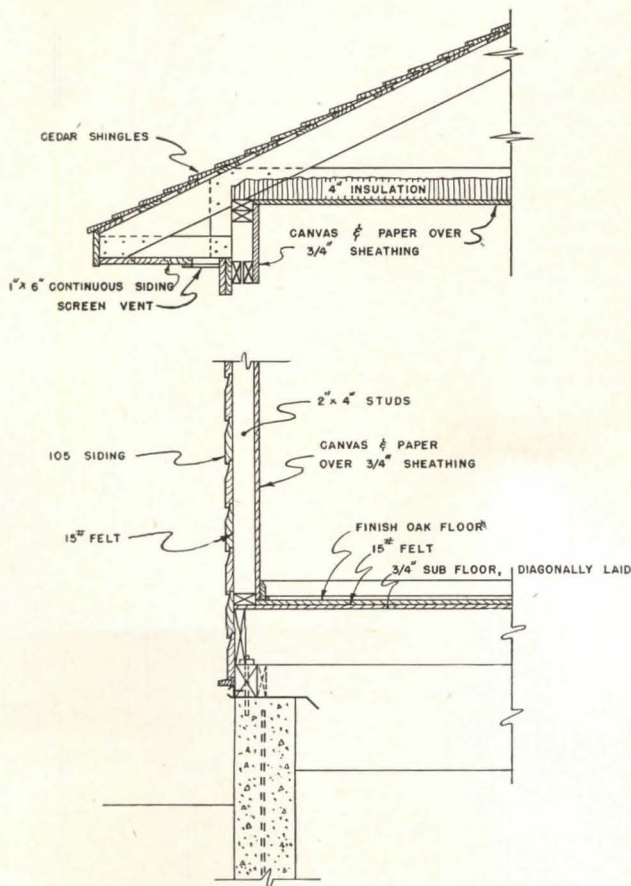
There is much to be gained by opening the windows and leaving them open night and day with both brick and frame houses. The brick house has a slight advantage, caused by the mass of material within the house accumulating more coolness at night.

With windows closed day and night in the ceramic and frame houses, there is little difference in the 24-hr effect.

A comparison of the all-ceramic and frame houses, when they are fan ventilated at night and are closed in the daytime, shows that the ceramic walls heat up more quickly in the morning sun, but, later in the day, the ceramic house has a lower inside air temperature. There is considerable evidence that, with nighttime fan ventilation and daytime closing of the house, the optimum storage of coolness could be accomplished by using lightweight ceramic outer walls and more massive room partitions. Probably the early residents of southern areas who built heavy masonry partitions to assure room privacy also achieved a reservoir of cooling.



This frame house, similar in size and plan to the ceramic houses, was used as a comparison to demonstrate how much cooling could be stored in the heavy walls of ceramic tile and brick



HEATING AND VENTILATING ENGINEERS OPEN ENVIRONMENT LABORATORY

November 1 marked the opening of the ASHVE Environment Laboratory, the heating engineers' newest and, perhaps, most important facility for fundamental research on panel heating and cooling.

The Environment Laboratory is a large room in which the temperature of all room surfaces and portions of each surface can be controlled separately, so that it is possible to simulate a variety of combinations of cold and warm walls, windows, floors, and ceilings. To simulate a corner room of a building, two walls can be cooled to desired temperatures, while some portions of these walls can be held at a lower temperature to act as glass areas.

The room will be used as follows:

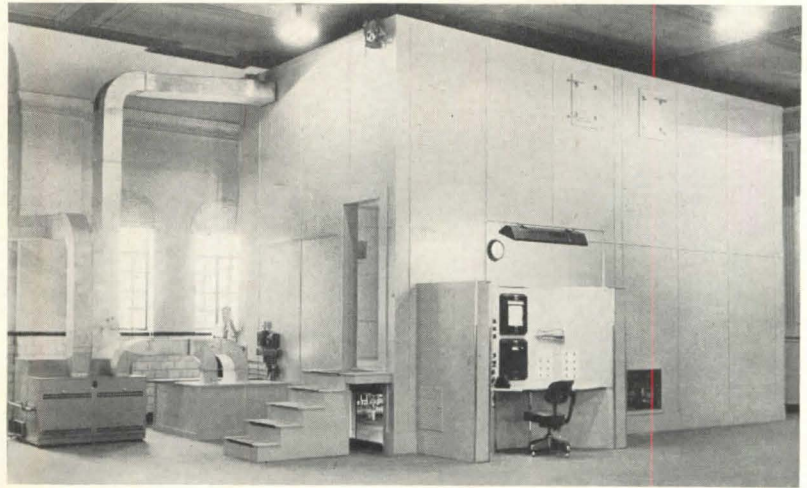
1. To measure the method of the exchange of heat between the surfaces of the room and the air in the room as they are affected by temperature of the surfaces, temperature and humidity of room air, rate of ventilation, character and location of room surfaces.

2. To determine the influence of radiation on human comfort.

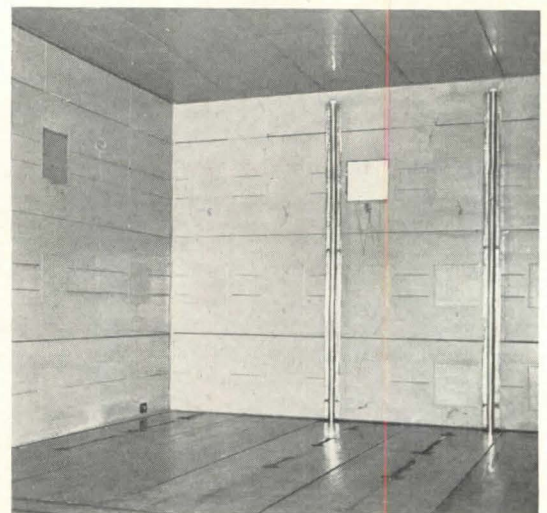
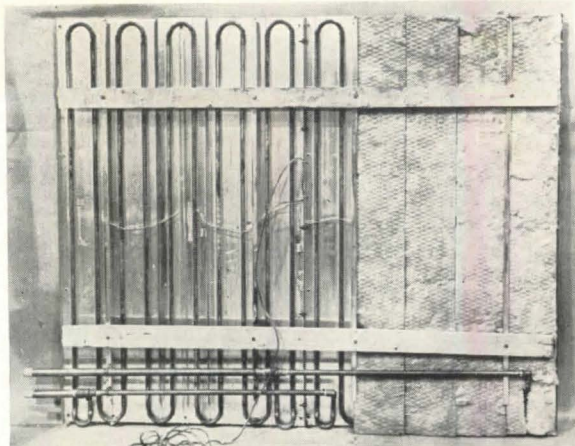
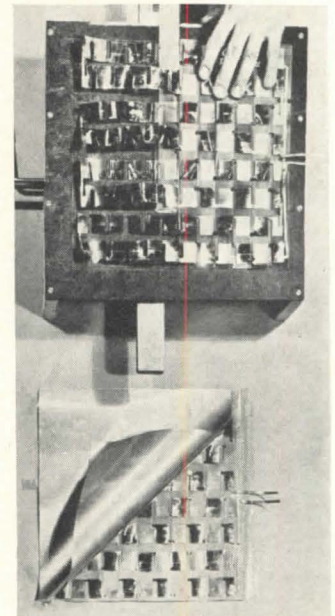
3. The room may also be used for a study of the removal of heat by means of heat-absorbing panels.

4. Evaluation of the effect of different interior surface finishes on the performances of panels.

The laboratory is necessary to the ASHVE four-part research program on panel heating and cooling: (1) heat distribution within and behind the panel, (2) heat transfer between the panel and the space in the room, (3) comfort conditions, and (4) controls.



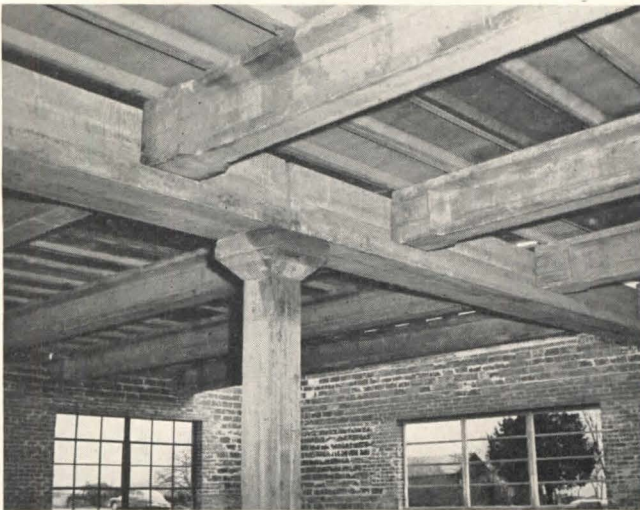
Above: exterior of the laboratory showing the instrument console, entrance to crawl space underneath the stairs, and dehumidifier and duct work. The ceiling can be raised or lowered. Right: 175 heat flow meters like this, made of bimetallic foil separated by plastic spacers, will measure how much heat is picked up or given off by the room surfaces. Lower right: the two shining pipes are perforated ducts for introducing air to simulate infiltration; behind the pipes are polished shields to direct air away from the walls. Lower left: rear view of aluminum panels with copper coils



NEW DEVELOPMENTS IN PRESTRESSED CONCRETE



Above: prestressed roof beams for machine shop of geophysical laboratory in Tulsa, Okla. Beams were prestressed with 14, 1/4-in. high-carbon wires. Below: ceiling of main laboratory building; 30-ft beams are prestressed, girders are not



Below: machine-made blocks shown at left were assembled into prestressed girders for a highway bridge near Detroit, Michigan



Evidence at the MIT conference on prestressed concrete last August and other reports indicate that there is a great deal more construction underway with this method than might have been expected, considering that the first U. S. prestressed bridges were completed only a year ago.

Further demonstration of the interest that has been aroused was the seminar held by the Central States District Conference of AIA on October 19. P. F. Blair and Son, of Tulsa, Oklahoma, conducted tests on a 50-ft prestressed beam, and Charles C. Zollman led the seminar.

At the MIT conference, P. F. Blair, Jr. described two prestressed buildings for a geophysical laboratory in Tulsa. Prestressing was started in December, 1950, for the main building and in May of this year for the machine shop. The Blair company began in September to prestress 50-ft beams from 28 to 50 ft in length for an elementary school in Tulsa.

That developments in prestressing are spread throughout the country was further demonstrated at the MIT conference by discussion of a bridge near Detroit, opened a month ago. The bridge, designed by Johnson and Anderson, engineers of Pontiac, Michigan, has a superstructure of job-assembled, precast concrete block girders (see construction photos), prestressed with galvanized bridge strands.

News of prestressed roof beams in an industrial building comes from the F. W. Wakefield Brass Co. in Vermilion, Ohio, which used 60-ft beams in a 60 by 200 ft addition to their factory, designed by the Austin Co.

PRODUCTS for Better Building

Wood Paneling

Mass-milling techniques, good supply of imported and domestic woods, and a growing acceptance of the use of random widths and lengths have reportedly brought the cost of solid wood paneling within the range of moderately priced homes, according to the Philippine Mahogany Association.

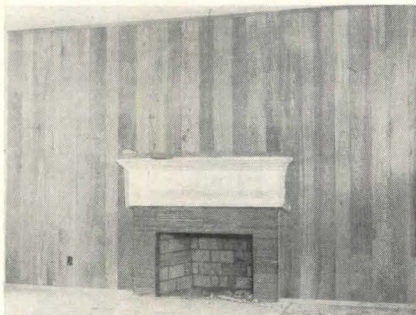
Processing costs are said to be considerably lowered by the mass production techniques that permit 10,000 to 30,000 feet of wood to be run in a single batch. Use of random lengths and widths is claimed to reduce a great amount of waste and special processing. Other cost-cutting items in installing wood paneling



Thinner panels employed for moderate-cost installations of solid wood paneling



Employment of random lengths and widths of wood paneling lowers costs



Installation of solid wood paneling in low-cost home is result of mass-milling

include use of a $\frac{3}{8}$ in. thick panel instead of the $\frac{3}{4}$ formerly used, and selection of the second grade, which has only a few minor defects, instead of top grade. Philippine Mahogany Association, 111 W. Seventh St., Los Angeles 14, Cal.

Lighting Show

Of interest to architects, consulting engineers and utility lighting service personnel is the *Westinghouse Lighting-at-Work Show*, which is currently touring major cities in the United States. Lighting application problems relative to industrial and commercial areas are

analyzed by the use of slides, movies, charts and a mock-up architect's office. The 90 minute presentation stresses "fitting the design to the use" by making case studies of school, office, low-bay, high-bay and other commercial and industrial lighting applications. Included in the discussion are possible lighting layouts, types of light distribution patterns, luminaires, lamps, ballasts, and wall, ceiling and floor coverings for each job. The American Institute of Architects has said of the show that "it is of value and interest to the architectural profession." Information regarding where the show can be seen may be obtained from Westinghouse Electric Corporation, 306 Fourth Ave., Pittsburgh 30, Penna.

Motorless Electric Refrigerator

Development of what is said to be the first completely silent electric refrigerator is reported by *Servel*. Since, like the

manufacturer's gas and kerosene refrigerators, the new electric model operates on the absorption principle in which heat energy activates the freezing system, there is no motor, hence no motor noise. Heat is supplied by a compact electric unit, and since the entire system contains no moving parts to require repair or replacement, the manufacturer offers a ten-year warranty on the refrigeration unit, twice the time of the current standard-practice warranty. Constant temperature control is also cited as an important feature of the new model. Since there is no motor and no variation because of cycle of operation, the desired temperature is said to be maintained without fluctuation once it is set by dial. The electric models will be priced approximately the same as the manufacturer's gas models. They operate on both AC and DC and are available in eight sizes, ranging up to 11.5 cu ft. Servel, Inc., Evansville, Ind.

(Continued on page 234)

LITERATURE FOR THE OFFICE

Air Conditioning Equipment

(1) *Custom-Air* (Bulletin DS-369); (2) *Unitrane* (Bulletin DS-420); (3) *Centravac Hermetical Centrifugal Refrigeration Unit* (Bulletin DS-399). Booklets describe two Trane air conditioning systems. The first discusses the manufacturer's central conditioning system, which features individual room temperature controls, moisture and ventilation remaining constant for the entire installation; the second deals with a multi-unit conditioning system, in which each room has its own separate air conditioner with both temperature and humidity controls. Both booklets include complete descriptions, with illustrations and charts, of the respective systems, together with outlines of procedures for planning complete installations and information about specific features. The third bulletin describes in detail a component part of the Custom-Air system, which may be used separately in conjunction with equipment made by other manufacturers. It furnishes information relative to the selection of medium horsepower centrifugal units ranging from 45 tons upward. 34 pp.; 34 pp.; 42 pp.; all illus. Trane Co., La Crosse, Wis.*

Glass Block

Insulux Glass Block. Besides describing properties and advantages of glass block, the booklet shows new 1951 designs in the manufacturer's line, with specifications included. Procedures for replacing regular and arched-head windows in 8 and 12 in. walls are outlined, amply illustrated with detail diagrams. 15 pp., illus. American Structural Products Co., Toledo 1, Ohio.

Shutters and Dampers

Air-Flo "Weather Sealed" Shutters and Dampers. Specifications, diagrams and photographs of a variety of shutters including automatic, manual and motor-operated shutters, automatic ceiling shutters and automatic back draft dampers. A table of recommended sizes is included. 11 pp., illus. Air Conditioning

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

Products Co., 2340 LaFayette Blvd., Detroit 16, Mich.

Steel Rolling Doors

The Lawrence Steel Rolling Doors. A brief description of the manufacturer's line, including a new series of underwriter's labeled fire doors. Specifications and diagrams are included for both these and regular service doors. Insert shows typical installations of manual, chain and electrically operated doors in both face-of-wall and between-jamb types. 8 pp., illus. with 11 pp. illus. insert. Lawrence Steel Co., 5746 Venice Blvd., Los Angeles 35, Calif.

Insulating Glass

Foamglas Insulation for Piping and Process Equipment. Booklet describes nature and properties of Foamglas, lists typical data for cold, intermediate and hot applications, details for insulating tanks, ducts, removable covers and tank heads, and accessory materials. Tables show sizes and shapes of the material available in pipe insulation, standard blocks, beveled lags and standard curved surfaces, as well as recommended shapes and thicknesses for various installations. 23 pp., illus. Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa.*

Incinerators

Plibrico Incinerators. Pamphlet describes incinerator installations for a variety of ordinary and special needs. Included are rubbish destructors, for dry waste; garbage incinerators, for wet refuse and garbage; biological and pathological incinerators; linings for crematories; steel-ribbed wood burners; portable incinerators and smoke abatement equipment. 15 pp., illus. Plibrico Jointless Firebrick Co., 1800 Kingsbury St., Chicago 14, Ill.

Calcium Silicate Products

The Story of Kaylo. Booklet describes properties and characteristics of Calcium Silicate and its uses and potentialities in the construction field. Heat insulating blocks, pipe insulation, insulating roof tile, laminated wall panels

and fire doors are all discussed. 20 pp., illus., Owens-Illinois Glass Co., Toledo 1, Ohio.*

Fluorescent Lighting

Mitchell Dynalite, Job Rated Lighting for Industry, Catalogue No. 438. A complete line of 82 industrial fluorescent units is illustrated in this catalogue, which includes complete specifications for all models, dimensional diagrams, tables of coefficients of utilization and distribution curves. Also included are descriptions and pictures of available accessories for the line, as well as information concerning the manufacturer's "economy line" of industrial units. 11 pp., illus. Commercial and Industrial Lighting Div., Mitchell Mfg. Co., Chicago 14, Ill.

Kitchen Planning

Prize Winning House Plans: Special Kitchen Planning Awards. Utilizing 13 prize-winning plans from the National Association of Home Builders — Forum House Design Competition, this booklet illustrates in detail how the manufacturer's kitchen equipment may be arranged to suit the kitchen plan of each. Over-all floor plans of each house are also shown, together with small line sketches of each. A reference sheet of specifications of units in the manufacturer's line is included, showing each in scale with its catalogue number. 29 pp., illus. Youngstown Kitchens, Mullins Mfg. Corp., Warren, Ohio.

Lightweight Concrete Specifications

Light Weight Insulating Perlite Concrete Typical Mix Designs. A table of five recommended standard mixes for lightweight insulating perlite concrete, which is said to establish for the first time the joint experience and technical knowledge of mix ratios, water cement ratios, air entraining qualities, etc. The information was compiled in order to afford the building industry precise data on economical use of the material. Perlite Institute, 35 W. 53rd St., New York 19, N. Y.

(Continued on page 252)

STRUCTURAL FORMS — 1: Rigid Frames in Steel

By Seymour Howard, Architect, Instructor at Pratt Institute

These sheets form the first of a projected series on structural shapes, designed to provide a handy rule of thumb type of calculation to speed early stages of architectural design. Later installments will cover wood and concrete as well as steel.

Purpose of these sheets: To give the architect a description and analysis of the principal features of certain structural forms as they affect preliminary architectural design.

RIGID FRAMES IN STEEL (SINGLE SPAN). Shape of frame, structural considerations:

For each condition of loading there exists a corresponding frame shape in which bending stresses can be eliminated. This shape is the *pressure line* and can be found from the string polygon for the given loading (Fig. 1).

A frame when built, however, is not subject to only a single condition of loading. The self-weight of the structure is constant, but the shape will be distorted by temperature changes, by axial strains, and may be deformed by foundation movement. And the imposed, live-loads will vary with weather and with the use of the structure.

These variations in loading can be properly anticipated by choosing a shape which corresponds best to the loadings expected for most of the time and which corresponds safely to the loadings expected at any time. This form will require the least material and will usually not cause tensile stresses.

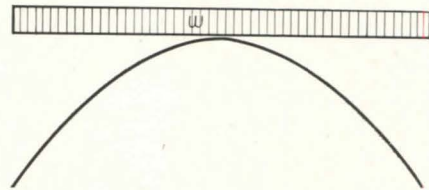
Shape of frame, architectural considerations:

Although they are often the most satisfying aesthetically, the curved (or polygonal) forms and large $\frac{\text{height}}{\text{span}}$ ratios required by purely structural considerations are often wasteful of cubage and expensive to construct. (See Fig. 2, Sheet 2).

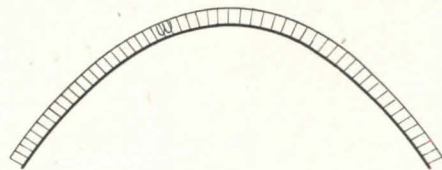
WARNING. In no case should shapes or sizes approximated from these diagrams and tables be used without a complete structural analysis based on the specific problem, even if the conditions of loading seem to be exactly the same as those on which these diagrams and tables are based. The reference material cited in each case can be used for the more complete analysis.

Fig. 1

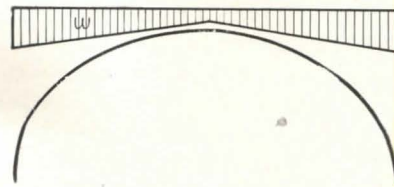
Frame shapes to eliminate bending stresses for various loadings



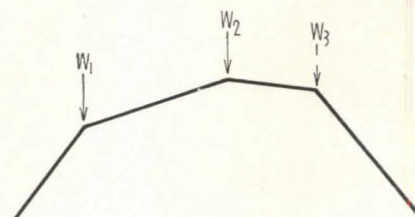
For exactly equal horizontal loading,
A Parabola



For the dead weight of a constant section,
A Catenary



For increasing load toward the abutments,
An Ellipse

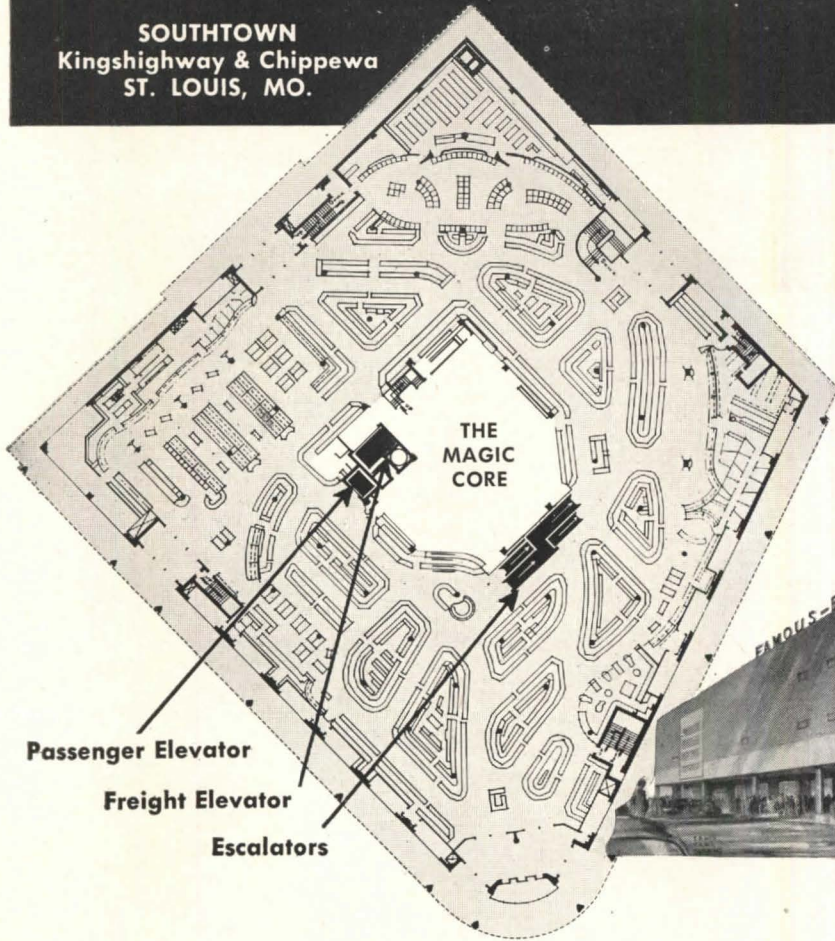


For point loads,
A Polygon

Architectural Engineering
TIME - SAVER STANDARDS

FAMOUS-BARR Includes 7 Otis Escalators

SOUTHTOWN
Kingshighway & Chippewa
ST. LOUIS, MO.



in "MAGIC CORE" Merchandising Machine



P. John Hoener, Architect
Westlake Construction Co., General Contractors

Famous-Barr says, "Southtown is a famous first—the only retail store designed around the 'Magic Core'! It's the most efficient merchandising machine in the country. We predict it will set the pattern for stores to come. Southtown, which opened August 24th, is the third store in Famous-Barr's design-for-service in the St. Louis area. Floor space? Over 300,000 sq. ft. Probably the country's largest suburban store!"

All elevators, escalators, telephones and public rooms are efficiently compacted within the "magic" service core in the center of the building. Departments are arranged in "shallow" design, providing wider open entrance areas

and easy traffic flow. Every floor gains 300 lineal feet of wall space for merchandise display and stock. Less walking for sales people should raise their sales volume and improve their peak hour service.

Otis engineers worked closely with the architect and the Famous-Barr management in planning *free-flow* escalator service from parking areas to basement and UP and DOWN to all four sales floors—which are also served by an Otis passenger elevator. Incoming stock is carried by an Otis freight elevator from the basement to "Stockroom Mezzanines" located between each sales floor. All stock is then checked, marked and sent by chute to the selling floor below.



Free-flow

ESCALATORS
increase store-wide sales

OTIS FREE-FLOW ESCALATORS are spacious inclined aisles. Their continuous movement attracts people instinctively to upper floors and basements. They have been designed . . . to provide a moderate cost, standardized escalator that is suitable for installation in any type of building . . . to reduce the amount of building framing or altering because they're lighter, more compact . . . to reduce installation time and to permit business to continue as usual. Otis quality prevails throughout for safety, reliability and attractiveness. A new Otis data booklet BM-59 covers layout, location and construction requirements.

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For further details of OTIS equipment, see SWEET'S Architectural File. Or, call your local OTIS office. Otis Elevator Company, 260 11th Avenue, New York 1, N. Y.

STRUCTURAL FORMS — 2: Rigid Frames in Steel

By Seymour Howard, Architect, Instructor at Pratt Institute

When architectural considerations necessitate rectangular shapes, bending moments are introduced and larger sections are required. The more the shape of the frame departs from the pressure line, the greater the bending stresses introduced. In fact, the bending moment at any point on the frame can be calculated from the distance between that point and the corresponding point on the pressure line (Figs. 3, 4).

Slight changes in the shape of the pressure line with all except heavy concentrated loads have little effect on the frame design. This is true even for typical arch design where, theoretically, it is possible to make the arch axis and the pressure line coincide (for any single load condition) for the full span.

If the axis and the pressure line do not coincide, additional material is required to resist the moments induced. However, this added material is not entirely wasted because it provides an additional safety factor against unusual unbalanced load conditions. It is for this reason that unbalanced loads are so critical in the case of curved arches and are relatively of little concern in the typical rigid frame.

Where dead weight of the frame is extreme or where loads are unusual, some economies can be effected by careful study of the pressure line location.

Since rectangular frames depart the most from the usual pressure line, the diagrams have been prepared for this type. Section depths chosen on the basis of the rectangular frame can be used for preliminary purposes for other shapes as well.

Fig. 2

Frames following the shape of the pressure line may waste cubage

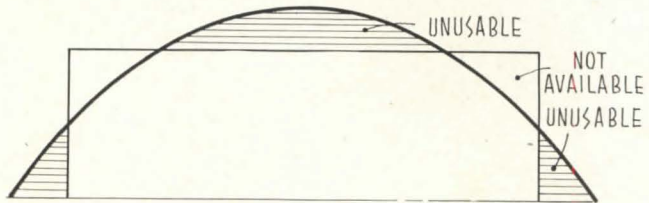
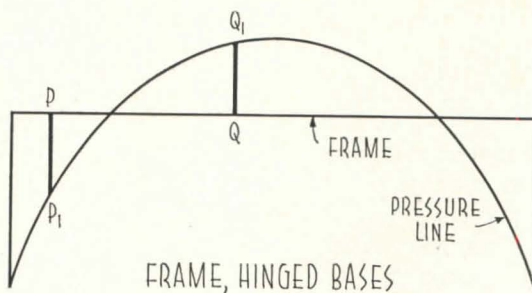
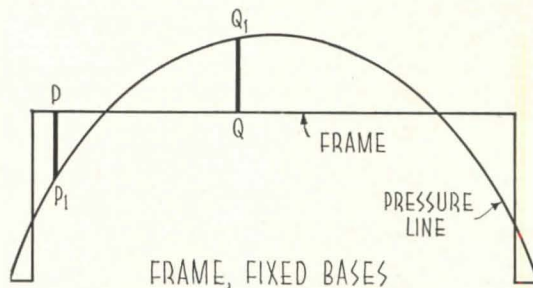


Fig. 3



Bending moment varies in proportion to the distance from the frame to the pressure line

Fig. 4



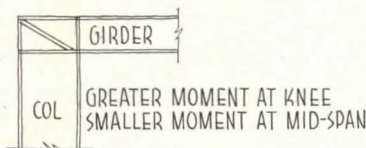
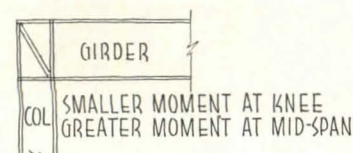
Depth of section has been used as the principal function because this is usually the major consideration in preliminary design.

In making the final calculations for a frame, it may be found economical to use one depth of section for the girder and another for the column

portion. These variations will affect the distribution of moments in the frame as in Fig. 5 shown below.

Whether the column and girder sections are of the same depth or not, a frame in which rolled sections are used is less expensive to fabricate than a frame of variable section,

Fig. 5. Effect of girder and column sizes on bending moments



THIS WILL NOT BE TRUE IN FRAMES OF EXTREME PROPORTION, EQ.:





Chapel, St. Francis Episcopal Church
San Jose, California

Architects: Higgins & Root, A. I. A.
Photograph: Lionel T. Berryhill



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STRUCTURAL FORMS - 3: Rigid Frames in Steel

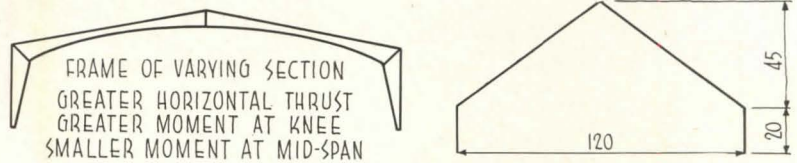
By Seymour Howard, Architect, Instructor at Pratt Institute

though it will require more material. Variable depth section frames are therefore more often used for long span frames, which cannot be fabricated from rolled sections (Fig. 6).

Few frames are built without haunches at the knee and relatively few are built with horizontal girders. Therefore, the depths shown in Diagram 1 are somewhat larger than normally encountered. The following is a comparison between a few "complete" designs (with normal knee haunches) and the recommendations of Diagram 1. (See Table A.)

Note: For exact calculations for a given frame, use "Single Span Rigid Frames In Steel," by John D. Griffiths, published by American Institute of Steel Construction, Inc., 101 Park Avenue, New York 17, N. Y. or standard texts on indeterminate structures.

Fig. 6



FRAME OF VARYING SECTION
GREATER HORIZONTAL THRUST
GREATER MOMENT AT KNEE
SMALLER MOMENT AT MID-SPAN

As the frame departs from a rectangular shape, moments are reduced. For a simple gable shape, the reduction will permit up to a maximum of about 20% reduction in depth of section for relatively extreme proportions as shown above right

Table A

Actual Conditions with haunched frames				Theoretical Conditions (See Diagram 1) Depth of Section, in.
Span, ft	Height, ft	Column, in.	Girder, in.	
40	12	14	12	17
60	16	18	16	22
80	16	24	24	27
100	16	30	27	32
120	16	36	30	38

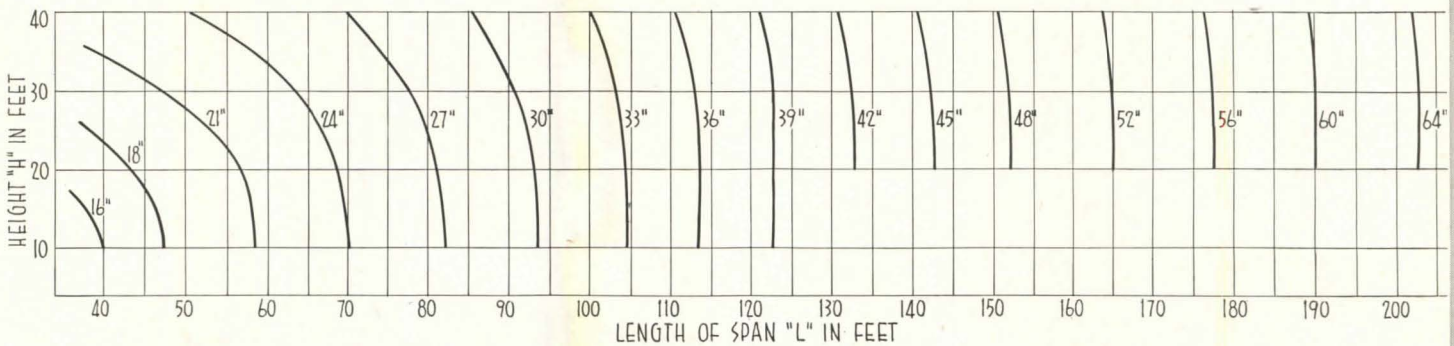


DIAGRAM 1—DEPTH OF SECTION AS FUNCTION OF LENGTH OF SPAN AND HEIGHT

Calculated for rectangular frames, spaced as shown in Diagram 2, and carrying total vertical load (including structure) of 50 lbs/sq ft and a horizontal load of 30 lbs/sq ft

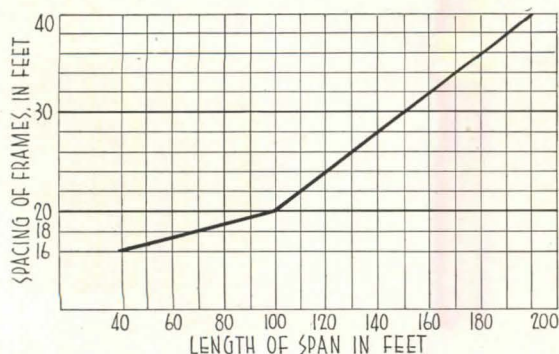


DIAGRAM 2

Showing spacing of frames used to make calculations for Diagram 1

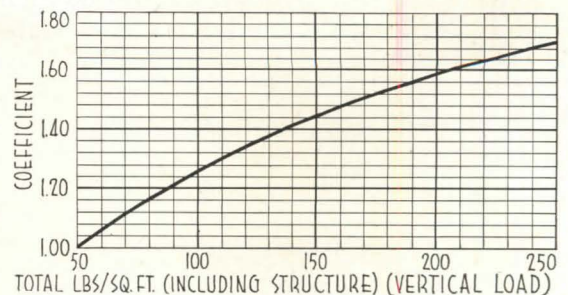


DIAGRAM 3

Multiply depth of frame as found in Diagram 1 by coefficient corresponding to actual total load per sq ft

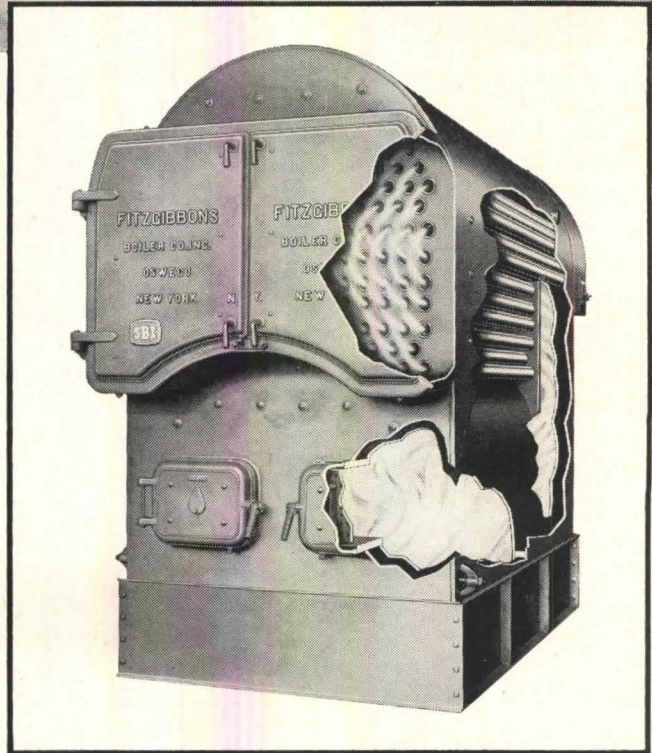


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IN THIS APARTMENT DEVELOPMENT

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Write for Bulletin AR-12.



At top, a section of Norwood Garden Apartments, Baltimore, Md. Above, a "D" Type Boiler, one of 18 Fitzgibbons boilers of several types which heat the development. Heating contractors, Sutch and Steigler, Baltimore.

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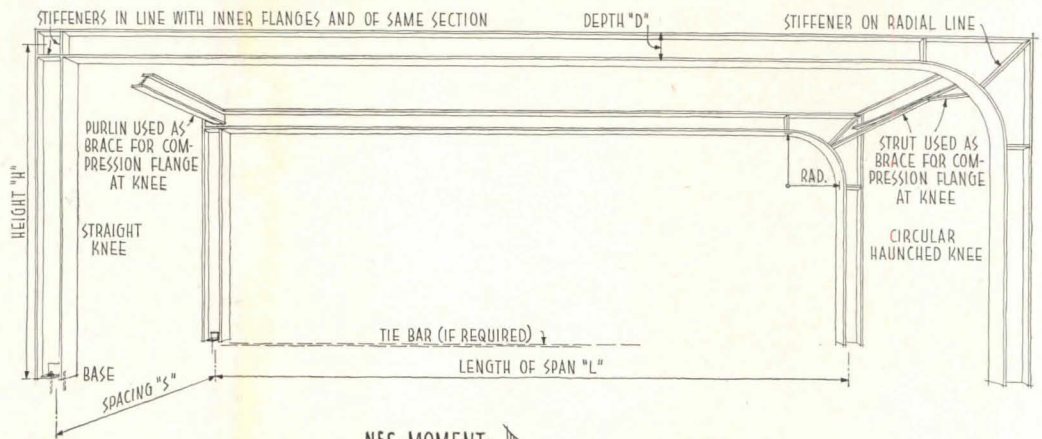
65th Anniversary



1886-1951

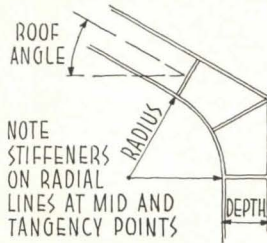
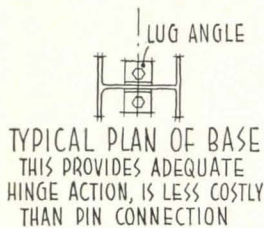
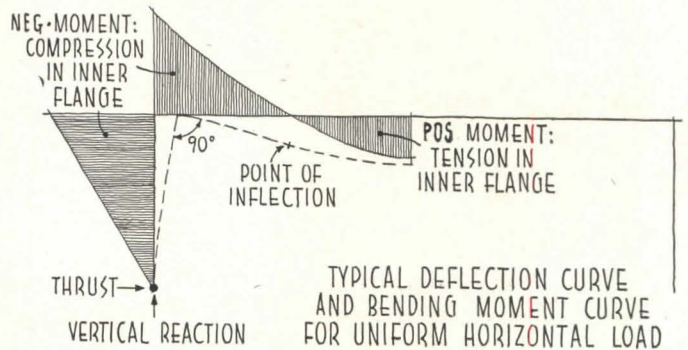
STRUCTURAL FORMS - 4: Rigid Frames in Steel

By Seymour Howard, Architect, Instructor at Pratt Institute



PERSPECTIVE SHOWING PRINCIPAL FEATURES OF TYPICAL SINGLE SPAN RIGID FRAME IN STEEL

Either straight knee or haunched knee (circular or polygonal) may be used. Frame can be made equally strong with either. Haunched knee increases thrust, increasing moment at knee and decreasing midspan moment



HAUNCH RADIUS	
Roof Angle	Radius
0°	3 x Depth
15°	2.5 x "
30°	2.0 x "
45°	1.75 x "

GENERAL CONSIDERATIONS

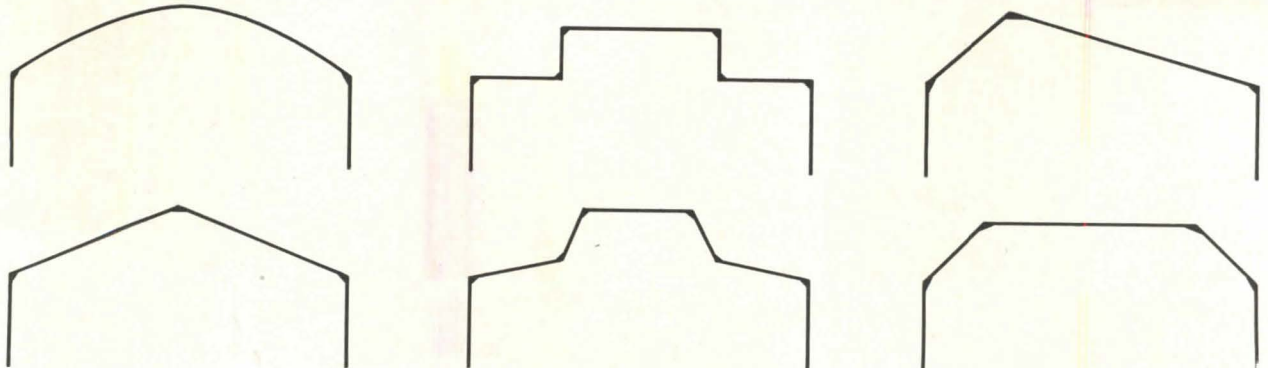
Advantages (compared with column & truss design)

- Decrease in height (and cube) of building
- Increase in clear headroom within building
- Simpler maintenance
- Clean appearance
- Simpler erection

Disadvantages

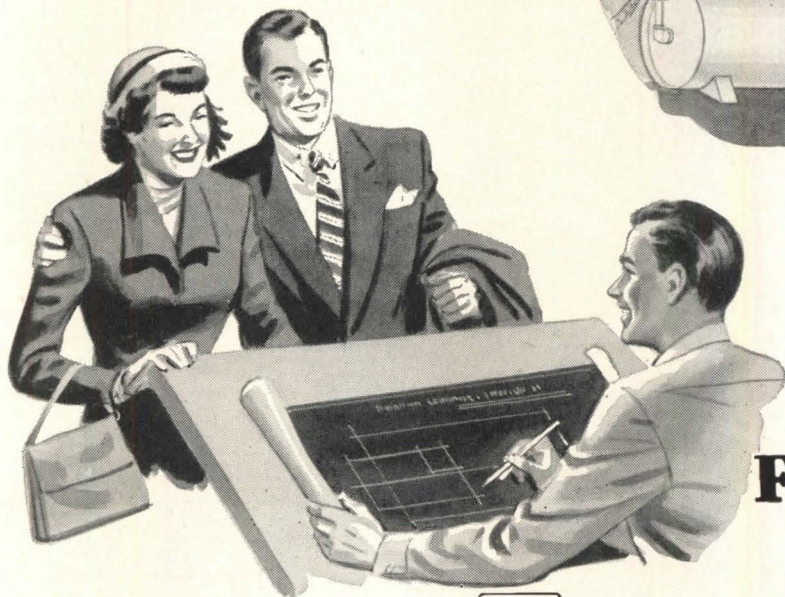
- Greater weight of steel may be required
- Builder and fabricator may be unfamiliar with detailing and erection

OTHER TYPICAL ONE STORY RIGID FRAME SHAPES INCLUDE TYPES DESIGNED FOR MAXIMUM USABLE CUBAGE, FOR PARTICULAR ROOF COVERINGS AND FOR MONITOR LIGHTING

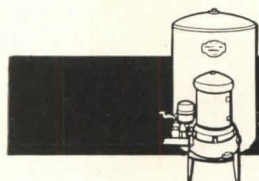


who's afraid of

"GHOSTS"?



not the architect
who recommends
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water supply and
conditioning equipment



Water systems—all types, from under-sink models to deep well heads.



Water heaters—electric or gas (city natural, mixed or LP) models; in capacities from 30 to 82 gallons.



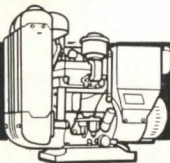
Sump pumps—beat seepage problems; protect against flash floods. Fully automatic, reliable. Four models.



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Ask also for the new Fairbanks-Morse catalog on Generating Plants—used for stand-by emergency light and power service by hospitals, theaters, airports, etc.

For both reprints of Sweet's Architectural File sections and the new Generating Plant catalog, write R. W. Lewis, Room 413, Fairbanks-Morse Building, 600 S. Michigan Ave., Chicago 5, Ill.



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and again . . .
proof that *you can depend on*

B. F. Goodrich Flooring Products

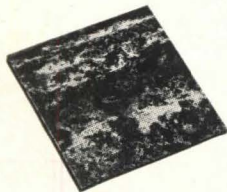
RUBBER TILE CHOSEN for the new B. Altman & Company store in White Plains, New York. Mr. Kahn, of the firm of Kahn & Jacobs, N. Y., well-known architects who designed this smart, new store, agrees . . . "you can depend on B. F. Goodrich Flooring Products."



There is no question of the ever-increasing popularity of B. F. Goodrich Flooring Products among architects

who believe in quality. Every day, architects are specifying these premium products for new jobs. Rubber tile, backed by B. F. Goodrich, means new beauty, new comfort, new quiet. Its "Super-Density" assures work-free maintenance. And its durability, means years and years and years of wear! Ask about it today!

Here's another
B. F. Goodrich Flooring Product



ASPHALT

TILE your best bet for extra beauty and wear below, as well as on and above, grade.

others include: ARRAFLOOR
(Vinyl Plastic Asbestos Tile)

Rubber Cove Base

Rubber Stair Treads

Rubber Thresholds

Complete range of
cleaners, cements, waxes.

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B.F. Goodrich
Flooring Division
WATERTOWN, MASS.

Architectural Engineering

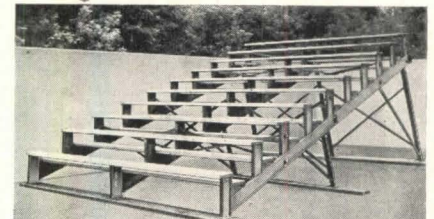
PRODUCTS

(Continued from page 234)

short process. Other features include metal support stackers, metal-stitched to panels and said to serve as firm anchors for them, controls which prevent misalignment or jamming of door, fixed end-post to maintain vertical alignment, and top suspension, which eliminates floor tracks. Available in both standard and custom sizes. Foldway Co., 1732 Glade St., Muskegon, Mich.

Portable Bleacher

Sico, a portable steel bleacher which, according to the manufacturer, can be towed, carried or demounted into small units is furnished in sections 12 ft long and 5 rows high, weighing 789 lb with planks, 325½ lb without planks. Eight spectators can be accommodated, allowing 18 in. seating room for each, on a single row of the section, making a total



Portable steel bleacher seats 8 persons per section row, can be demounted easily

accommodation per section of 40 persons. Sections can also be obtained in any multiple of 5 rows high, with guard rails as required. Cleats for attaching foot and seatboards are included and plank-ing is furnished if desired. The manufacturer further states that no alterations are necessary when adding linear or vertical sections. Seating, Inc., 3565 Wooddale Ave., Minneapolis 16, Minn.

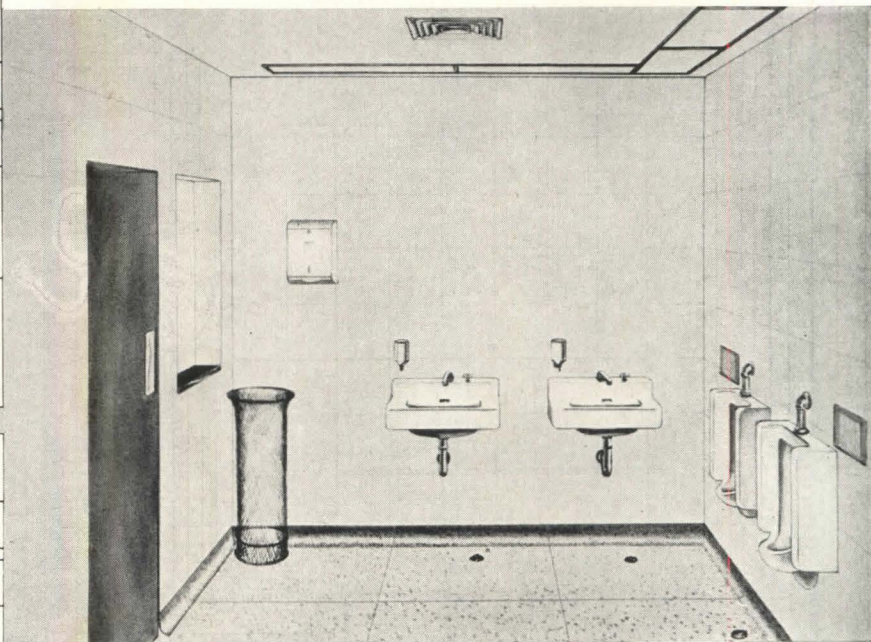
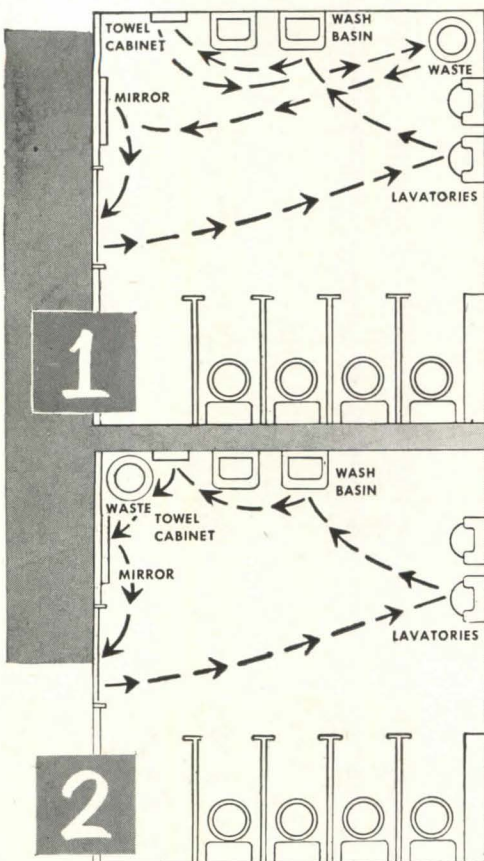
Adjustable Spotlights

Swivelier Gyro-Lites, designed to provide both general illumination and accent lighting in heavy traffic areas, have recently been installed in the corridors

(Continued on page 242)

How important is traffic flow

in modern washroom planning?



(1) One misplaced piece of washroom equipment, like a waste receptacle on the wrong side of the wash basins, will waste many man-hours a year in washroom traffic jams . . . and use up excess paper towels.

(2) A simple rearrangement lets washroom traffic flow in and out easily, quickly. Recessed vents and lighting, and off-the-floor fixtures, make this small washroom modern in every way.

Traffic flow is one of several factors that distinguish a truly modern washroom from one merely equipped with up-to-date fixtures.

This small washroom is modern in both design and function. Its users move progressively from urinals to wash basin, paper towel cabinet, waste receptacle and mirror, then out the door. The plan eliminates congestion—actually reduces man-hours spent in the washroom. It reduces your client's

paper towel costs, too. The staggered towel cabinet and waste receptacle arrangement keeps users moving, gives them little chance to use more towels than actually needed.

At no cost or obligation, you can call in the Scott Washroom Advisory Service to make use of the know-how of trained consultants who have serviced well over 300,000 washrooms. Your Scott Washroom Advisory Service man is equipped to give you

the latest answers on all-around modern washrooms as an integral part of new and old buildings. You'll save your clients countless employee man-hours, help them build good personnel relations by installing the newest sanitary improvements.

Contact Washroom Advisory Service, Scott Paper Company, Chester, Pa.



Send for FREE Leaflet . . .
"Plant Washroom Designing"

Washroom Advisory Service, Dept. T
Scott Paper Company
Chester, Pennsylvania

At no cost or obligation, please send me your study of personnel, traffic and maintenance problems, "Plant Washroom Designing."

Name _____

Company _____ Title _____

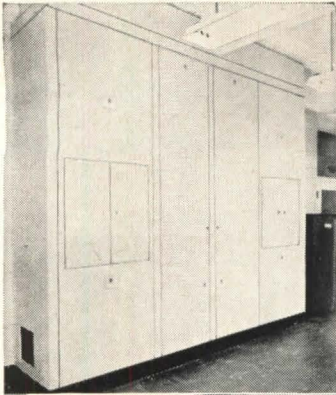
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SCOTT
Symbol of
Modern Washrooms

Trade Marks "ScotTissue," "Washroom Advisory Service" Reg. U. S. Pat. Off.

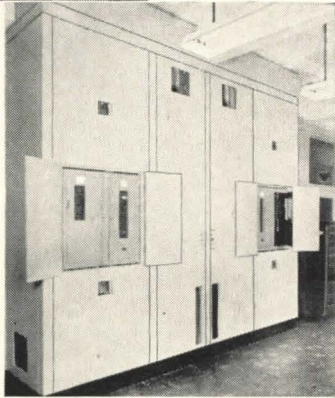


NEWS

Flash!



Partitions by the Mills Company, Manufacturers of Movable Metal Partitions, Cleveland 10, Ohio.

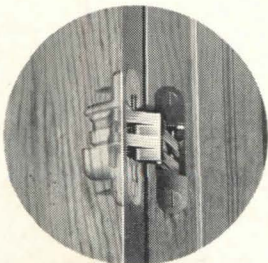


NAVY USES 4 MILES OF PARTITIONS STREAMLINED WITH

SOSS INVISIBLE HINGES

The above example is typical of many similar installations, using SOSS INVISIBLE HINGES, in the United States Naval Ordnance Laboratory at White Oak, Maryland . . . one of the most modern and best equipped research and development laboratories in the world. Over 4 miles of Mills movable metal partitions, streamlined with SOSS INVISIBLE HINGES, were used in this project.

You, too, will find "the hinge that hides itself" ideal for use in every type of MODERN building. The SOSS HINGE is the only hinge that eliminates unsightly, protruding hinge butts. Furthermore, it is the ONLY hinge that helps architects meet the exacting demands of modern design for smooth, flush, streamlined surfaces. For FREE Blue Print Catalogue, that gives complete architectural information on the SOSS HINGE, write to:



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Architectural Engineering

PRODUCTS

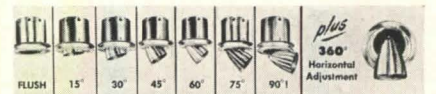
(Continued from page 240)

at the Pratt Institute in New York City. The spotlights serve the dual purpose of illuminating both bulletin boards and corridors, this being achieved through manipulation of reflectance fac-



Adjustable spotlights in dual-purpose installation at Pratt Institute, New York

tors. Wall and ceiling surfaces in the school are light-colored with high reflection qualities and the bulletin board backgrounds are also highly reflective. This combination of factors is said to result in illumination levels consistent with standards acceptable for traffic areas. The lighting units used in the installation are recessed and universally adjustable to any desired position from



Spotlight has full range of adjustment

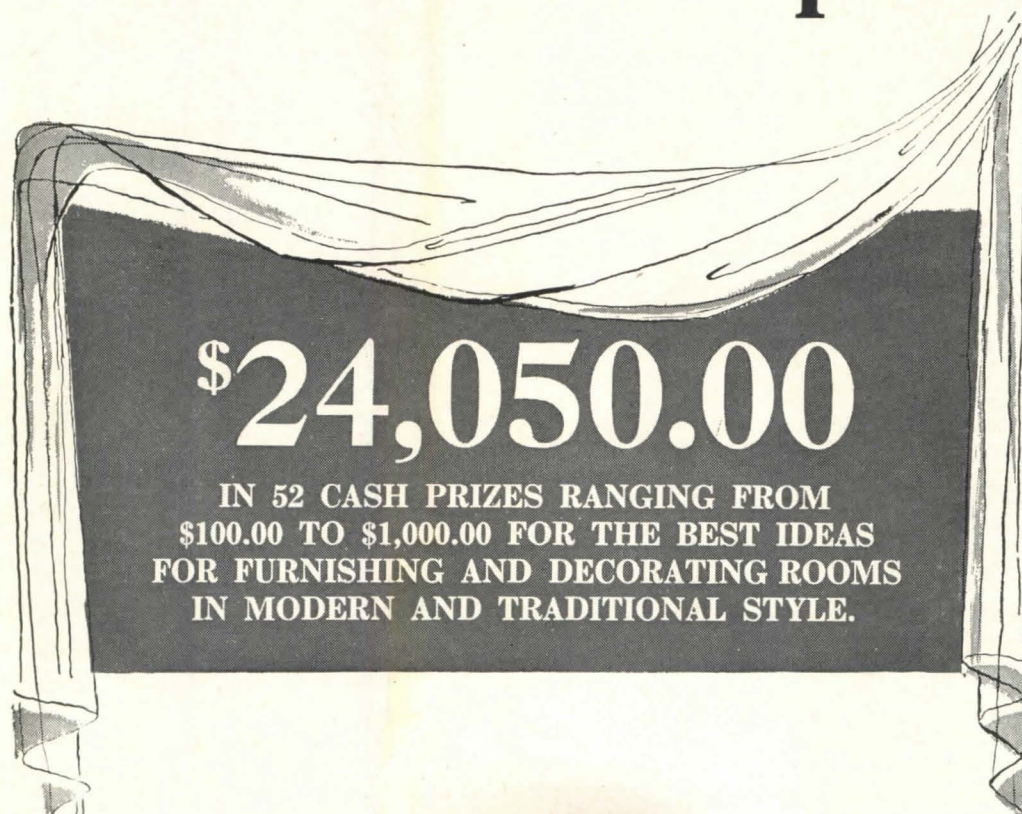
flush in the ceiling to 90 deg vertical as well as a full 360 deg horizontal. The unit is further said to stay put at any angle at which it is set. This wide adaptability is said by the manufacturer to make the lights especially suitable for most school installations. Swivelier Co., 30 Irving Place, New York, N. Y.

(Continued on page 244)

Send now for your free copy of the rules of the

CHICAGO TRIBUNE'S SIXTH ANNUAL

Better Rooms Competition



How would you like to plan the furnishings and decorations for one or more rooms, and then receive cash and nation-wide recognition for your ideas?

That is the opportunity that makes it worthwhile for you to enter the Chicago Tribune's \$24,050.00 Sixth Annual Better Rooms Competition.

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In addition, the Tribune, just as it has in previous years, plans to reproduce the winning designs, or adaptations of them, in full color in the Chicago Sunday Tribune with its circulation of more than 1,500,000 copies.

Everyone is eligible to compete, except employees of the Chicago Tribune and its subsidiaries, members of their families, and of the Jury of Awards, which, as in the past, will be composed of authorities of recognized high standing in the field of home

furnishing and decoration.

It costs you nothing to enter this competition. For complete information to help you prepare your entry, send today for your free copy of the rules which will be sent to you postpaid. Don't delay. Fill in the coupon, paste it on a postcard, and mail it today.

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Better Rooms Competition
Chicago Tribune, 435 N. Michigan Ave.
Chicago 11, Illinois

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Without cost or obligation to me, please send to me by postpaid mail at the address below a free copy of the rules of the \$24,050.00 Chicago Tribune Sixth Annual Better Rooms Competition.

My Name.....

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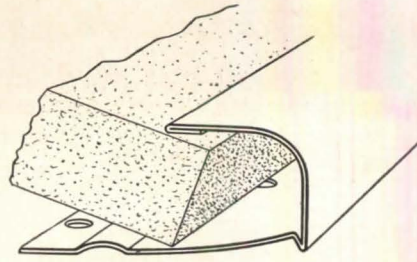
(Please PRINT plainly in pencil—ink may blot)

PRODUCTS

(Continued from page 242)

Steel Casing Trim

A new steel casing for door and window trim recently perfected can be nailed directly to framing and features a spring grip that expands as wallboard is inserted and then clamps it tightly in place. This, according to the manufacturer, assures rigidity and flush fit. Be-



Steel casing trim can be nailed directly to framing, has expanding spring grip

sides acting as a protective border on wallboard around doors and windows, the casing is said to afford an attractive finishing trim. It is made of galvanite steel, can be easily painted and reportedly cannot crack, warp, shrink or swell. Since it is easily cut to mitre corners, it is also said to make for fast installations. Drywall Trim, Inc., 545 Fifth Ave., New York 17, N. Y.

Tankless Water System

Claimed by the manufacturer to be the only pump of its kind, the *Goulds Close-Cupld Balanced-Flow Jet* is a self-contained, shallow-well water system that operates without a storage tank. Within its capacity of 520 GPH at 10 ft suction lift, the pump's self-adjusting capacity feature is said to provide fresh running water in the exact quantity

Rudolph Matern recommends VAN-PACKER CHIMNEY

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PROMINENT
EASTERN
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MASONRY**



As a planner of mass housing, I have the problem of pleasing the varying tastes, as well as the pocketbooks, of thousands of prospective home buyers. Products I specify must not only be good, they must be the finest strict building budgets will allow.

Van-Packer Masonry Chimney meets these qualifications. As an all-fuel chimney, Van-Packer can be used with coal, gas, oil or wood. Because of its low cost, we have found it to be particularly adaptable as the "working" chimney of a two chimney house where the Van-Packer is used to serve the centrally located heating plant and brick construction is used for the fireplace, permitting unrestricted flexibility of plan layout.

Rudolph Matern



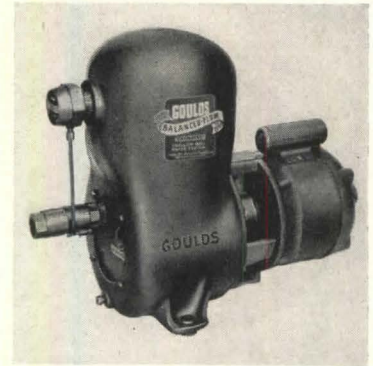
It's easy to install Van-Packer Chimney. Takes only 3 hours or less by one man.

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Van-Packer CORPORATION

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Also manufactured and distributed in Canada by C. A. McRobert and Son, Ltd., St. Laurent, Quebec



Pump provides fresh running water as desired, operates without a storage tank

desired, no matter how many outlets are in use at the same time. Permanent alignment, quiet operation and freedom from wear are also claimed for the pump, a rotating impeller being the only moving part. This impeller, together with guide vane and diffuser, is made of non-corrosive plastic, and all cast iron parts touched by water are treated with a rust-resistant coating. The pump measures 20 by 11½ by 15 in. over all, and installation is described as simple. Goulds Pumps, Inc., Seneca Falls, N. Y.

Translucent Structural Panels

A *Resolite* panel of polyester resins reinforced with fiberglass mat is now available in six colors. It can be had in flats and in all standard roofing sheet corrugation sizes. It is said to be particularly suited for skylighting because

(Continued on page 246)

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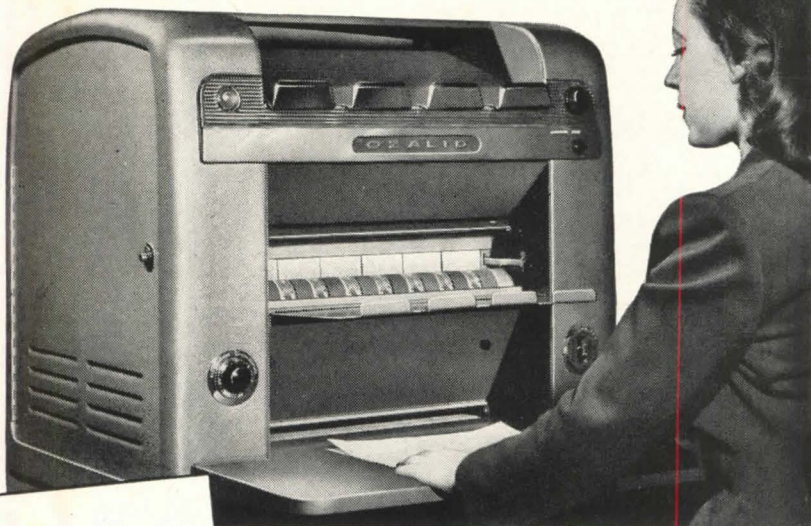
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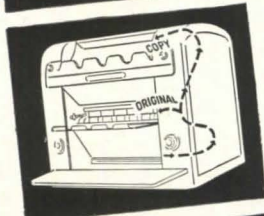
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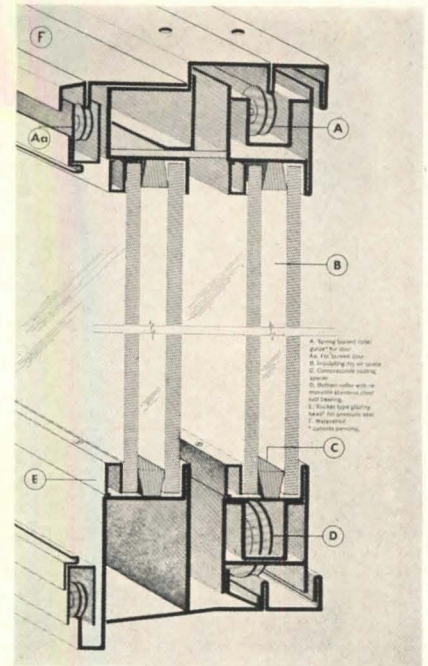
(Continued from page 244)

of its diffusion qualities, but is also recommended for partitions and decorative installations. It is reported to be inert to heat, cold and moisture, shatterproof, and easily worked. Colors are described as stable. When the panels are used with corrugated sheet buildings, no special skylight framing is necessary, since the sheets nest with the metal or

asbestos-cement sheets, and can be easily fastened to them. Resolite Corporation, Zelienpole, Pa.

On-The-Job Dual Glazing Frames

Steel sliding doors and windows known as *Thermo-Glaze* now make it possible, according to the manufacturer, to dual-glaze hermetically sealed windows on the job, using ordinary window glass. A patented easy to operate dehydrator and rocker-type glazing



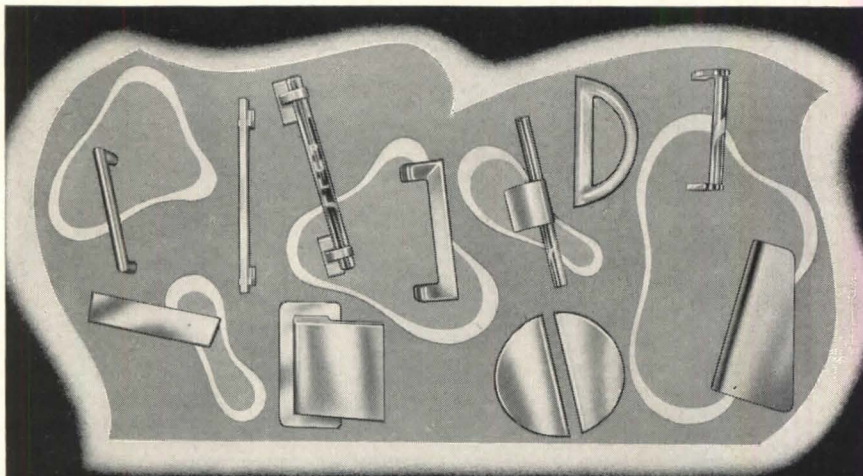
On-the-job dual glazing of hermetically sealed windows using ordinary window glass made possible with new frames

head are employed to seal dry air space between panes at the time of glazing. Such on-the-job glazing is reported to have several advantages, among them the avoidance of breakage and leakage risked in long-distance shipping, easy remedy of breakage or leakage occurring after installation, more dependable synchronization of made-to-specification orders with glazing, and greater economy of local glazing. The frames are said to be leak-proof, electrically welded to insure perfect alignment, and to have removable mullions which permit painting without the necessity of removing glass or doors. 12 models including some for Thermopane are available. Steelbilt, Inc., 4801 E. Washington Blvd., Los Angeles, Calif.

Rubber Floor and Wall Coverings

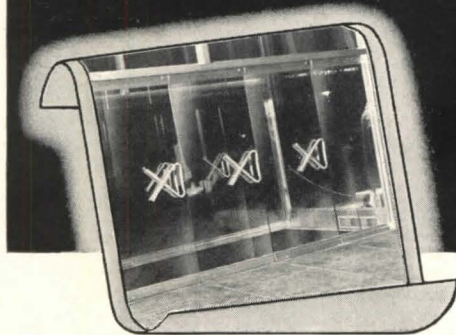
Five new decorator colors have been added to the line of *Flexi-Floor* and *Wall-Flex* rubber coverings. The new colors include chocolate brown, hunter's green and two-tone yellow, all mottled with white, plus a light grey mottled with white, black and pink, and a chartreuse with white and light green mottling. The complete line now encompasses 28 colors. Matching cove base, corners, borders, trim, tread runners and other accessories are available. R.C.A. Rubber Co., Akron, Ohio.

(Continued on page 248)



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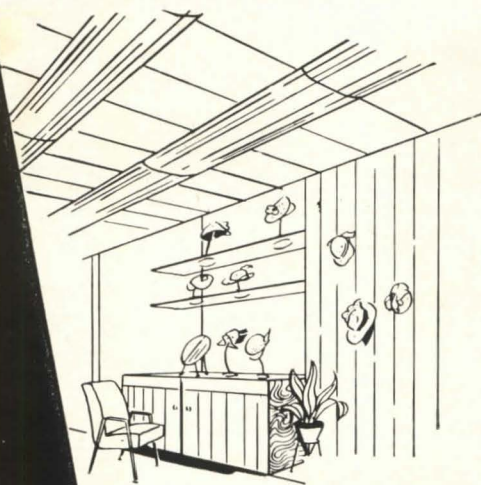
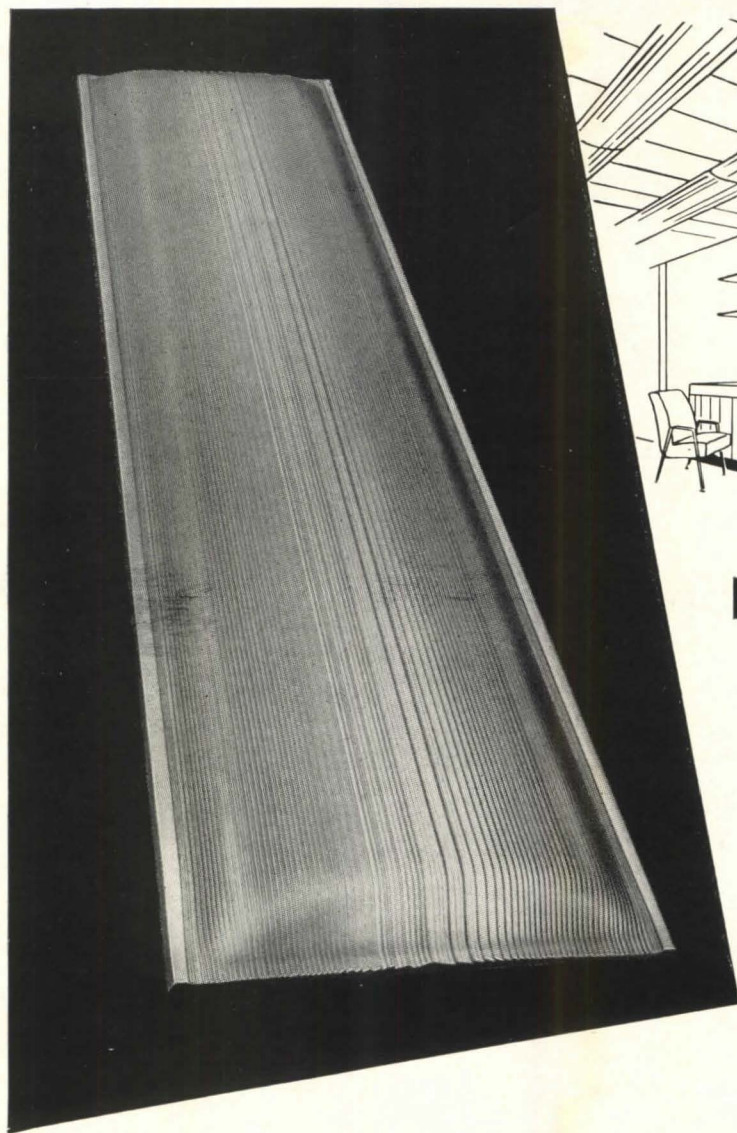
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New Corning Lightweight Curved Lens Panel

Fixture-length for
More Pleasing Appearance

Entirely new in the field of lensed enclosures is the new lightweight *single piece* Curved Lens Panel developed by Corning to complement the clean-lined styling of modern fluorescent fixtures. The pleasing appearance of its fixture-length panels of crystal-clear glass reflects the increasing importance of lighting glassware as an architectural element. The precise optical design in "water-white" crystal is a realization of the need for scientific control over the color and quality of the light produced. Open and closed end panels are available in four standard sizes, and consideration will be given to special lengths and widths. The coupon will give you complete information. Mail it today!



WATER-WHITE! Corning's "water-white" crystal, developed specially for lighting, transmits the true color of the light source. Full utilization of the longer wave lengths improves color rendition under fluorescent light.



FEATHERLIGHT! You will be truly amazed at the lightweight and ease of handling of a four-foot panel of this new lensed enclosure.



SIZES RIGHT! One-piece panels four feet long for individual fixtures and long runs simplify mounting and minimize the number of visible butt joints.



NOT TOO BRIGHT! Control of brightness in the glare zone is achieved by precise treatment of the prismatic details in the side area. Light is refracted out of the glare zones and into directions useful for illumination.



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Pipe, Gauge Glasses, Lightingware, Optical Glass, Glass Components

CORNING GLASS WORKS, Dept. AR-12, Corning, N. Y.

Please send me complete information on new Lightweight Curved Lens Panels.

Name _____

Firm _____

Address _____

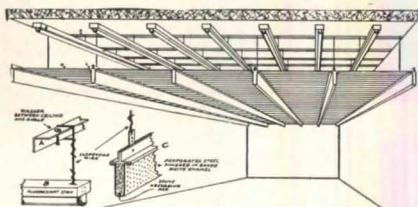
City _____ Zone _____ State _____

PRODUCTS

(Continued from page 246)

Luminous Ceilings

A new method of lighting has been recently developed in the form of luminous ceilings, which are claimed to illuminate a room evenly without shadow or glare. Made of thin white translucent corrugated plastic, the ceilings are hung below fluorescent tubes. Designed for use in hospitals, libraries,



Construction details of suspended luminous ceiling and sound absorbing bars

shops, schools, offices and other work areas, they are equally suitable for dining rooms.

- One type is the *Acusti-Luminus Ceiling*, which is reported to combine acoustical correction and glareless light. Lightweight angle irons are attached to the ceiling at right angles to the course of the plastic ceiling and acoustical fins. From these irons are suspended the light troughs and fins. The fins, which are made of perforated steel containing a sound absorbing pad, support the plastic ceiling. The ceiling can be easily rolled up and removed for washing, eliminating costly maintenance. Luminous Ceilings Inc., 135 S. La Salle Street, Chicago, Ill.

- *Plexiglas* sheets measuring 4 by 5 ft have been effectively used in this type of

no other recessed lighting instrument offers all the practical advantages of Century's series 930 ellipsoidal Downlite . . . compact, low in cost, uses general service lamps . . . bulb just screws in from below—no plate to open . . . eye comfort is assured by the extremely low brightness of the opening—which is small . . . the bottom of the unit is absolutely flat and smooth (no bumps in the ceiling plane) and the precision reflector is Alzak Processed for permanent efficiency . . . also available with gold reflector for warm toned light

CENTURY LIGHTING, INC.,
521 WEST 43RD STREET,
NEW YORK 18

626 NORTH ROBERTSON
BOULEVARD,
LOS ANGELES 46



Plastic sheets used in luminous ceiling at Hotel Sheraton in Pittsburgh

lighting in the Fayette Room of Pittsburgh's Sheraton Hotel. The sheets are supported on the flanges of extruded aluminum T-bars. The T-bars are hung by wires run through holes drilled in their upright sections, and the wire in turn is attached to framing of the original ceiling which was suspended from a concrete slab. The Plexiglas sheets are 1/8 in. thick and the aluminum bars were furnished in 20 ft lengths and joined at their ends with aluminum clips. Rohm & Haas Company, Washington Square, Philadelphia, Penna.

Flat Plastic Laminate

Flat *Alsynite Plasta-Glass* for a wide variety of structural and decorative purposes is now available in quantity. The product is claimed to have several advantages which have already prompted

(Continued on page 250)

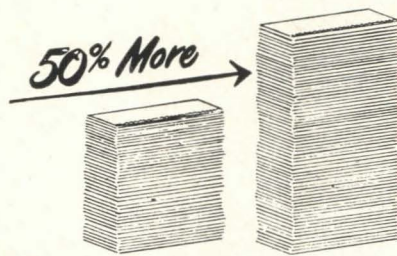
Architects: Why you should specify **NIBROC**[®] cabinets

nearly 1
in every 4 towels
used in industry,
schools, hospitals, and
other institutions
is Nibroc



no drilling

is required to mount Nibroc cabinets on practically any wall surface. A special adhesive bonds them to tile, glass, wood, metal or concrete.



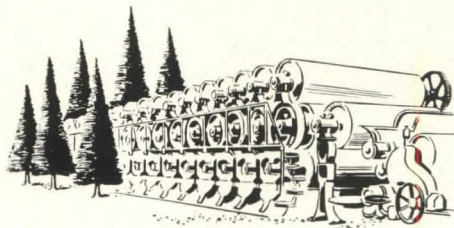
less servicing

is required with Nibroc cabinets. They hold up to 50% more towels than ordinary cabinets.



fast flexible service

is assured no matter where you are located. *Nationwide* distribution and high mill production put Nibroc towels in your hands when you need them.



dependable supply

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.

When you specify Nibroc cabinets for washrooms you get the large modern streamlined cabinet that requires less servicing. Nibroc towels have greater absorbency and wet-strength. They are soft and lint-free. Nibroc is the world's largest selling towel for industrial and institutional use.

Send Coupon Today for Facts on Nibroc Cabinets and Nibroc Towels.

NIBROC TOWELS

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NIBROC TOWELS
GET YOU BONE DRY



BROWN COMPANY, Dept. AR-12
150 Causeway Street, Boston 14, Mass.
Please send me data on Nibroc cabinets
and Nibroc towels.

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

PRODUCTS

(Continued from page 248)

its employment in the plants of several aircraft companies. Among these advantages cited are shatter-proof properties, which make it desirable for industries where the threat of bomb damage must be considered, and good lighting resulting from its light diffusing properties and from the fact that dirt does not cling to it. Heat transmission tests are

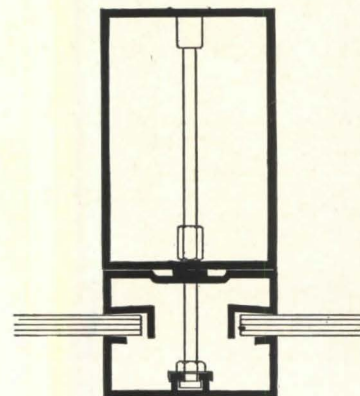
reported to have indicated that the product permits only about half the transmission of glass, with resultant savings in heating costs being claimed. Ease of installation and handling, light weight and great load strength — exceeding all building code requirements — are said to permit cheaper design when the laminate is used. Available in six colors, the resins-and-glass-fibres-base panels are said to be fire resistant and unaffected by weather conditions. Alsynite Co. of America, 4670 Desoto St., San Diego, Calif.

Store Front Molding Installation

The *Bull-way* method of installing alumilited aluminum store front moldings has been used at the new Shoppers' World in Framingham, Mass. In this method the moldings used have flat surfaces and the ends are cut square and butted to each other. Mitering, often a time consuming process, is eliminated, and erection costs are said to be reduced



New method of installing store front molding combines economy and effectiveness. Installation details are shown below



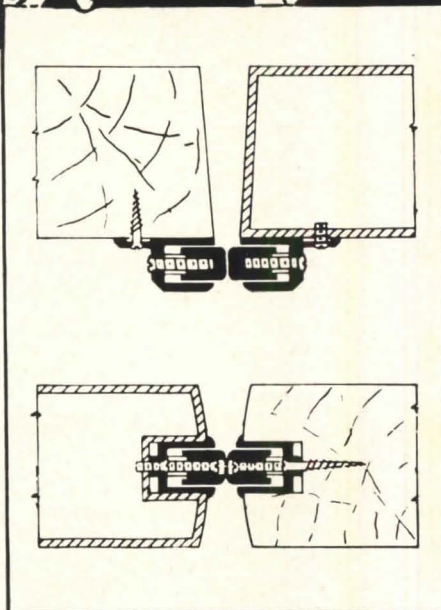
considerably. Capping joints are not a requisite of this technique, thereby creating a smoother appearance to the completed installation. Along with the neat results, this method is claimed to be extremely practical. Glass holding members, door frames, copings and panel divisions are manufactured by the National Store Fronts Company, Inc., 57 Cliff St., Roxbury, Mass.

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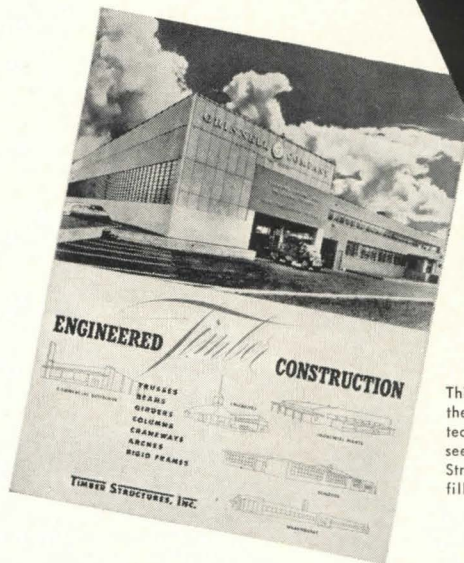
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LITERATURE

(Continued from page 168)

Acoustic Treatment and Lath-and-Plaster Partitions

(1) *Perforated Asbestos and Zerocel Wool, A Custom-Built Acoustical System*; (2) *2-Inch Solid Gypsum Lath and Plaster Partition*. First folder tells the story of Kleinhans Music Hall, Buffalo, designed by Eliel and Eero Saarinen, for which the manufacturer's materials were

used. Sound absorption and description data are furnished. The product is said to be of particular value for custom-built jobs.

The second folder gives details and specifications for gypsum lath and plaster partitions, noting especially the space-saving advantages of this line. In the information furnished, alternate choices for materials and methods are given. Drawings and illustrations complement specification data. (1) 4 pp., illus.; (2) 10 pp., illus. National Gypsum Co., Buffalo 2, N. Y.*

Type Book

Monsen Trans-Adhesive Map Type Specimen Book. Designed for use by persons who prepare graphic line material for reproduction — maps, charts, diagrams, exploded views, plans, etc., the book illustrates examples of over 100 styles of type available on the manufacturer's transparent adhesive sheets. These sheets, which eliminate the necessity for hand lettering and for applying small typographic detail with paste or liquid cement, are of clear acetate backed with pressure sensitive adhesive. The type is printed on the underside in opaque black, white or colors. Words may be cut easily from the sheet, placed and mounted with slight pressure. Drawing lines beneath the acetate are said to reproduce exactly like uncovered portions.

In the present book each face is shown in all sizes from 6 to 24 or 36 pt, and several pages of "quick references" which enable the reader to visually compare faces in full size, 20, 25, 33 $\frac{1}{3}$ and 50 per cent reductions are included. Type may be ordered from the book to individual specifications. 38 pp., illus. Monsen-Chicago, Inc., 22 E. Illinois St., Chicago, Ill.

Safes

There's Money in a Gary Safe For You. Brochure describes in detail various available models of floor, wall and cabinet safes for home, store, office or factory. Also available is a 2 pp. data sheet explaining burglary insurance rates in the Los Angeles, Chicago and New York areas of the United States and how they are affected by the Gary Safe. 4 pp., illus. Gary Safe Company, 1020 Crocker Street, Los Angeles 21, Calif.

Lighting

Holophane Datalog. Catalog describes lighting equipment for commercial, industrial, institutional (including hospitals) and outdoor areas. Explains the principles of light control with Holophane prismatic glass and gives new illumination levels and a new room index table for predicting illumination more precisely. This combined engineering data book and catalog contains 90 product illustrations, 75 cross-sectional drawings and 59 candlepower distribution curves, giving detailed information on a total of 270 lighting units. 64 pp., illus. Holophane Company, Inc., 342 Madison Ave., New York 17, N. Y.

(Continued on page 254)

Palm Desert, Calif.

Ft. McPherson, Ga.

Coast to Coast

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Pittsburgh, Pa.

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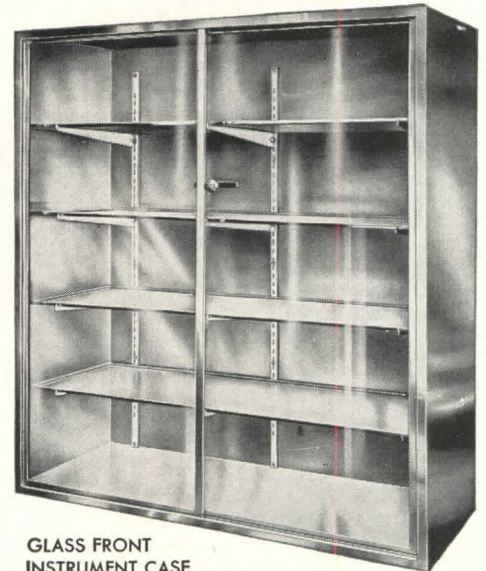
STAINLESS
STEEL
LAVATORY



FOOD SORTING
TABLE



FOUNTAIN SINK



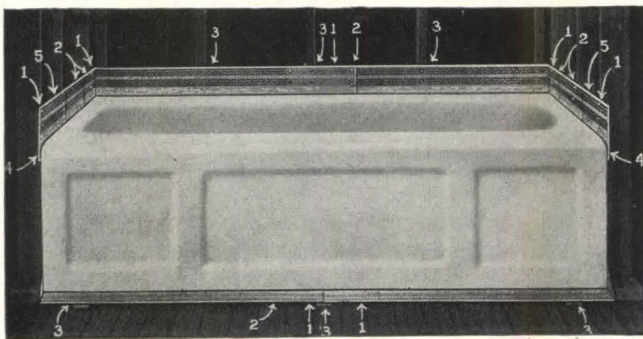
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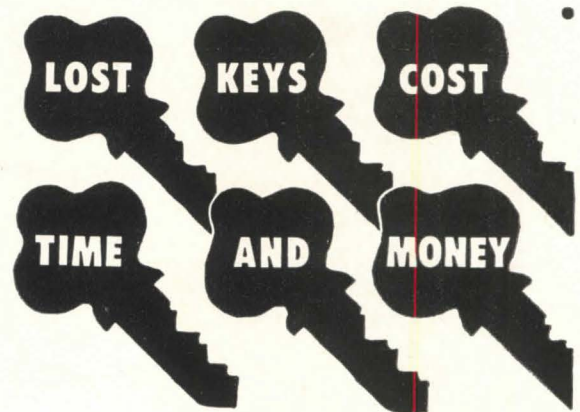
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City, State.....

LITERATURE

(Continued from page 252)

Planning for Dental Offices

To Help Your Practice Grow. This booklet, generously illustrated with photos and plans, offers help to dentists who are already practicing and need to improve their offices as well as to those who may be setting up offices for the first time. "Before" and "after" plans depict the advantages of professional

office planning. Among the variety of plans in the booklet are bungalow studios, apartment building offices, "store front" offices, and office-home combinations. 19 pp., illus. Office Planning Department, Ritter Co., Inc., Rochester 3, N. Y.

Mathematical Reference Book

Lefax Mathematical Tables. Newly revised loose-leaf data book containing mathematical tables and formulae for the solution of problems in arithmetic, geometry, algebra, trigonometry, ana-

lytical geometry and calculus. The material is arranged in 6 thumb-indexed sections. These include: mathematical reviews; squares, cubes, square roots, cube roots, reciprocals, areas and circumferences; five-place logarithms of numbers; five-place logarithms of trigonometric functions; five-place natural trig functions, and hyperbolic functions. 150 pp. Price, \$1.50. Lefax Publishers, Philadelphia 7, Pa.

Labeled Door Limitations

Overly's Guide to Limitations for Labeled Doors, and Guide to Determine Door Swings. Five categories of fire doors, classified according to location and fire exposure, are listed, and the requirements and limitations for sliding and swinging tin clad fire doors and panel and flush type kalamein, composite and hollow metal doors are analyzed. The analysis is made in terms of maximum opening size, minimum door thickness, maximum glass area, frames, door operation and hardware. Descriptions of properties of the various types of doors are included. A chart is also included to help determine door swings from the key side. Right and left hand singles and pairs are illustrated. The guide to limitations is based on Underwriters' Laboratories requirements and applies only to the manufacturer's products. Overly Mfg. Co., Greensburg, Pa.

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W. F. Caperton, Registered Engineer & architectural student, 2540 Prentiss Avenue, New Orleans, Louisiana.

Ronald Gourley, Architect, 1 Allen Place, Boston 14, Massachusetts.

Federico S. Ilustre, Architect, Suite 415 Garcia Building, 624 Rizal Avenue, Manila, Philippines.

R. A. McGarry & Associates, Architects & Engineers, 3908 Lemmon Avenue, Dallas, Texas.

F. H. McGraw & Company, Constructors, Paducah, Kentucky.

L. O. Payne, 18 Beresford Avenue, Croydon, N-S.W., Australia.

Gene Zema, Architect, 1120 East Roy, Seattle, Washington.

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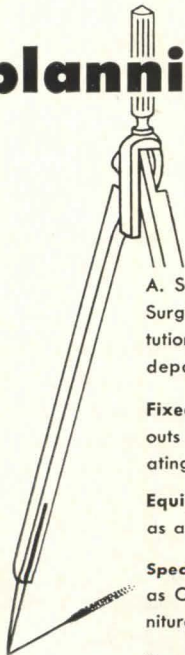
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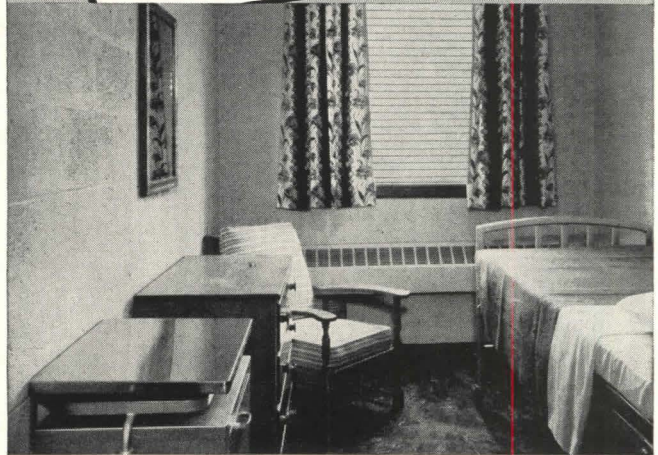
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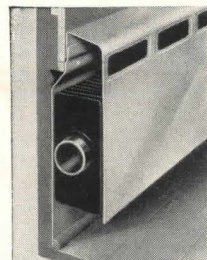


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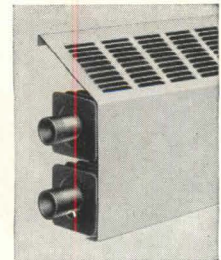
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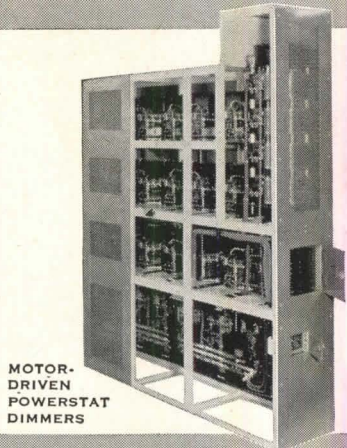
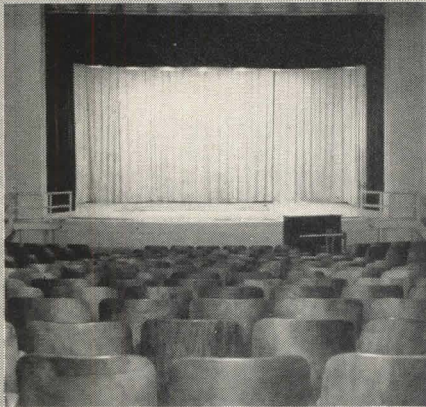
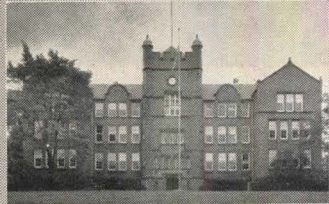


Details in Sweet's Catalog

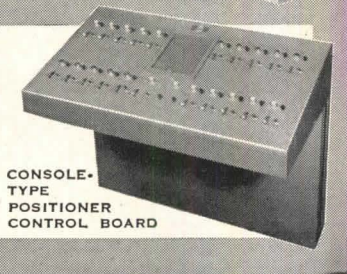
VULCAN THE VULCAN RADIATOR COMPANY 

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SHAW High School
Cleveland, Ohio



MOTOR-DRIVEN
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BRISTOL, CONNECTICUT



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THE RECORD REPORTS

WASHINGTON
(Continued from page 32)

tories had been too long hidden. AEC contractors have held many conferences with Commission personnel on the subject, but these discussions have been classified.

Before the Washington symposium only a small amount of the information was available to the architectural profession, engineers and contractors. Now that much of it has come out into the light of day, the conference proceedings are expected to comprise a veritable handbook for the practicing architect on laboratory design of this nature. The A.I.A. intends to publish serially the formal record of the symposium.

Said AEC: "The total volume of this written record should provide a comprehensive handbook of unclassified design data for 'hot' laboratory construction. . . . If heavy sources of radioactivity are to be made available generally in the near future, architects, engineers and designers will need to have reliable information to enable them to plan laboratories to work with such high concentrations of radioactivity."

***FCDA Outlines New Policy for
Hospitals in Defense Planning***

The Federal Civil Defense Administration, setting up a new policy in regard to hospital location, hospital shelter and federal financial contribution, outlined these purposes:

To encourage the location of new hospital facilities outside or on the periphery of the designated critical target areas, or if within such designated critical target areas, in positions appropriately removed from concentrations of other elements that constitute profitable enemy targets, in order to minimize expenditures for shelters and other protective features required in target areas.

To foster, when the proper authorities determine that new hospital facilities are required in a critical target area, the incorporation of essential shelters and other protective features in such facilities. FCDA may contribute to the cost of such shelters and protective facilities.

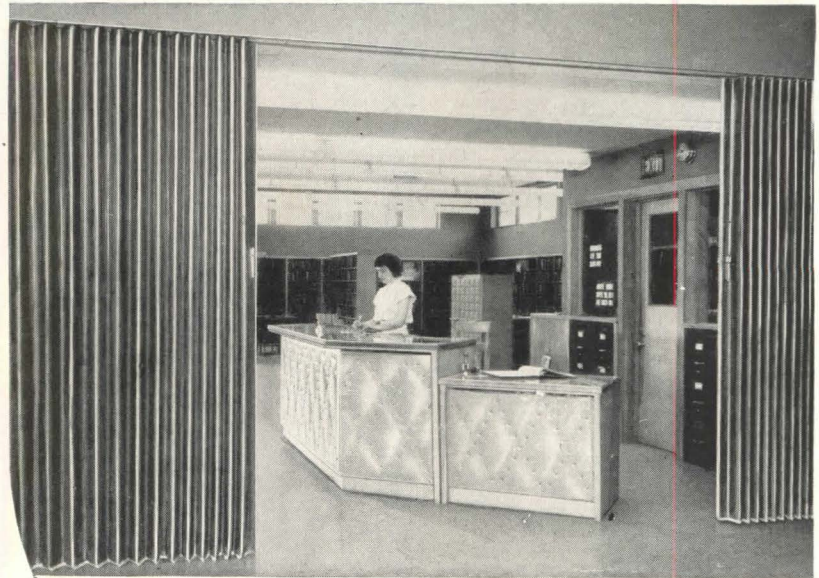
To encourage the construction of essential shelters and protective facilities in existing hospitals in critical target areas, and to make contributions toward

(Continued on page 258)

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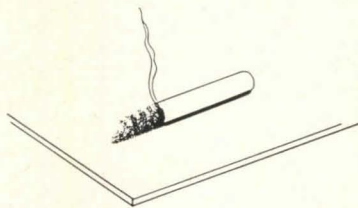
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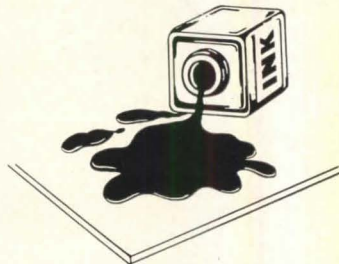
Make these tests before you specify another floor!

Take a sample of Wright Rubber Tile and a sample of any other material you are considering. Subject both samples to the tests shown below. Specify the floor that stands up best and you are sure of having a satisfied client.



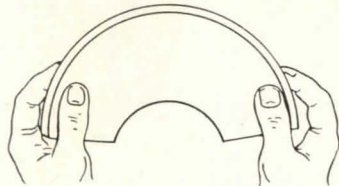
the fire test

Let a lighted cigarette burn out on each sample. Notice that Wright Rubber Tile is *not* charred. Wipe off with a damp rag, the surface is unimpaired.



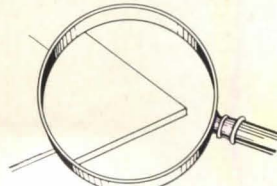
the ink test

Drop some ink on each sample. Let it stand for five minutes and then wipe it off with a damp rag. Notice that Wright Rubber Tile is *not* stained.



the bend test

Try to bend each sample. If the sample bends and springs back like Wright Rubber Tile it will make a comfortable floor that will resist damage.



the examination

Examine both samples through a magnifying glass. The smooth, non-porous surface of Wright Rubber Tile means greater beauty, easier cleaning and longer life.

For thirty years many users of Wright Rubber Tile have known what these tests show. You can't beat Wright Rubber Tile for beauty, comfort, ease of cleaning, long life and resistance to damage. You can specify and install it with complete confidence that you are giving your client the *best*.

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FLOORS OF DISTINCTION

- ◆ WRIGHTEX — Soft Rubber Tile
- ◆ WRIGHTFLOR — Hard Surface Rubber Tile
- ◆ WRIGHT-ON-TOP Compression Cove Base

THE RECORD REPORTS

WASHINGTON

(Continued from page 256)

the cost of shelters and other protective features.

No Funds for Shelters

A drastic reduction in operating funds for the FCDA, which got no appropriations whatsoever for shelter construction in fiscal 1952, has dampened enthusiasm for the civil defense activity. Many closely associated with the program have urged that Congress declare itself either for or against civil defense and make funds available accordingly. A mayors' conference in Detroit stated it: "Civil defense is either necessary or it is not. Congress should make the decision quickly. Unless it does, the civil defense program will disintegrate rapidly."

Inventory Curbs Studied

N. G. Trayfors, wholesale, retail and service trades division, Office of Civilian Requirements, National Production Authority, outlined some important proposed changes in CMP regulations that were under serious consideration by the agency in November. His division was drafting an order on replacement of distributors' inventories affecting a variety of supply items including hardware, construction, refrigeration, electrical and similar materials that are classified as Class "B" products. These would include those stocks made wholly or in part from the controlled materials—steel, copper and aluminum—with the order confining itself to the items used normally in repair, replacement and maintenance activities.

Mr. Trayfors said there was a need to provide a method by which distributors and wholesalers could obtain a fair share of the available supply of such items.

Explaining the considered move, the NPA official said:

"We would contemplate inventory restrictions of the supplies covered in this proposal to prevent overbuying or hoarding by large distributors as against small distributors. . . . As materials become scarcer, some controls are necessary, and we believe that in order to insure the equitable flow of goods from the manufacturer to the distributor, or the retailer, or the ultimate consumer, this order is necessary.

(Continued on page 260)

INDEX

TO HELPFUL LITERATURE

The following list is published as a help to readers who want the latest authoritative literature on plumbing drainage products necessary for the protection of both the supply and drainage lines. Simply check "Items Wanted", and mail as indicated below.

- | | |
|--|---|
| 1. Folder on roof, floor, and shower drains | 5. Folder on backwater and sewer valves |
| 2. Folder on LEVELEZE adjustable top floor drains | 6. Folder on Moderator Shower Mixing Valves |
| 3. Manual RA—specifications and roughing dimensions on all drainage products | 7. Manual SP-3—a 32-page book on Swimming Pool Construction |
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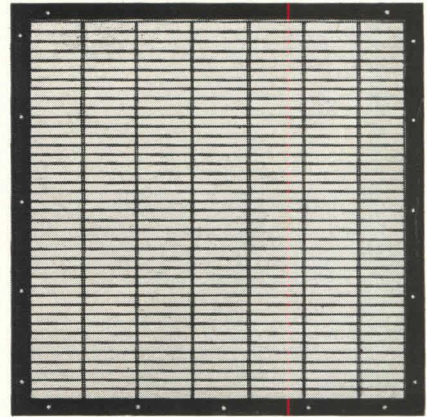
NEW HEAVY-DUTY INDUSTRIAL GRILLE

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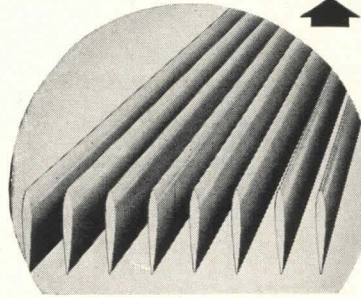
This grille especially designed for Atomic Energy Commission.

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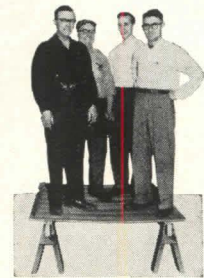
- 14 GAUGE STEEL BLADES
- VERTICAL SUPPORT BARS PLACED ON 6" CENTERS (14 GAUGE STEEL)
- STANDARD GRADE PRIMER COAT FINISH
- 16 GAUGE STEEL, EXTRA WIDE BORDER FOR EASY MOUNTING



Above—Grille face of LOWER WALL, INDUSTRIAL GRILLE. Note close spacing of extra-strength blades ($\frac{3}{8}$ " centers).



Above—Close-up view of volume control section. Note famous solid section AIRFOIL LOUVERS. Each blade is individually adjustable. CONCEALED LOUVER SUPPORT eliminates mullions and butted construction.



Above photo shows the 48" x 48" AIRFOIL INDUSTRIAL GRILLE supporting the combined weight of 4 Titus factory workers.

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(Continued from page 258)

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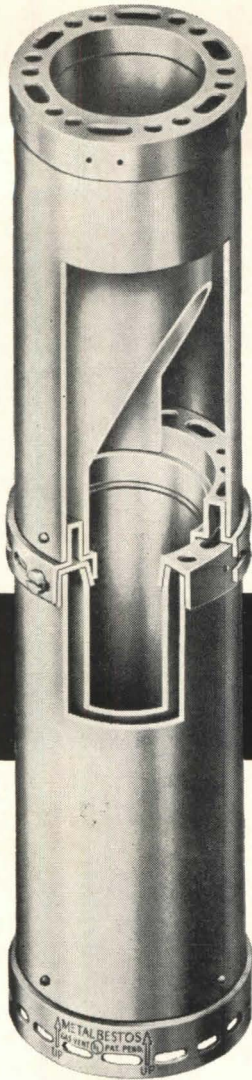
Shorts

- The U. S. Chamber of Commerce has issued a booklet on Building Codes and Construction Progress through its Construction and Civic Development Department Committee. All segments of the building industry and the public, said the Chamber report, should be interested in urging the adoption of appropriate state legislation through which building codes can become effective instruments in orderly and planned community development. Local municipalities were asked to encourage and make it possible for their building officials to take an active part in building officials' organizations. The report was prepared for the department committee by a subcommittee on building codes headed by H. R. Northup, executive Vice president of the National Retail Lumber Dealers Association.

- The National Institute of Government Purchasing has called for a single claimant agency in the government's defense structure to relieve what it termed an intolerable situation in the allocation of critical materials to state and local governments. State and local governments lack a central point where they can bring their allocation problems and receive appropriate answers, it was claimed.

- The new Defense Materials Procurement Agency states that 77 per cent of its expenditures for building up the nation's stockpile of strategic materials involves international trading. Roughly \$4.5 billion dollars has been spent or obligated altogether in building the important stockpile supplies. Nearly \$3.5 billion of this went for materials coming from outside the shores of the U. S. The program must be accelerated, DMPA Administrator Jess Larson be-

(Continued on page 262)



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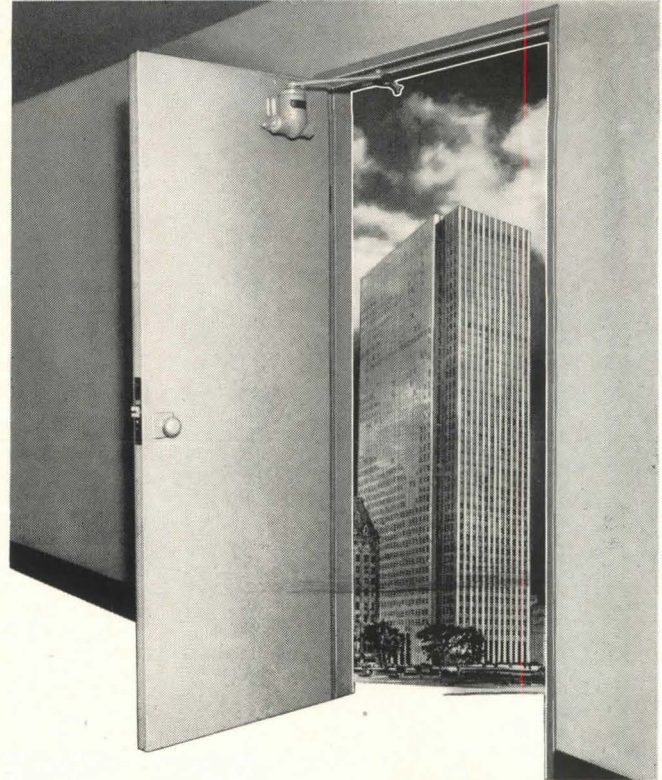
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lieves. He says the current mobilization effort involves more materials and greater expenditures. It is a program which envisions a long-range construction and maintenance of the national defense capabilities and the maintaining of our essential civilian economy.

- The Federal Housing Administration will confer with the N.A.H.B. on proposed revisions of the minimum prop-

erty requirements dealing with conservation of critical building materials. The meetings also will look toward the production of low cost and low rental defense housing. Many builders have complained that the standards are too high. This will be their chance to try to do something about it.

- A recent report by Army officials on progress under the Wherry Act indicated

that since the Act was passed in August 1949, 16 projects have been completed at Army installations involving a total of 6179 family units. These are fully occupied. Eleven more were under construction, totaling 4136 units. And projects with a total of 10,321 additional units were in various stages of being approved. This totals to 20,636 units. But that's not nearly enough, Army claims. One official said his branch of service can justify reasonably the construction of approximately 10,000 Wherry Act family units over and above those already built, approved, or "in the works." Development of the additional housing is being rushed and will result eventually in a supply of 30,000 family units built for the Army under Wherry Act terms. The law was extended for two more years by Congress in the defense housing and community facilities bill. But to solve the housing problem on the basis of currently planned Army troop strength, some 116,000 additional family units would be required at Army installations in continental United States, it was claimed. There are now approximately 46,000 family units on Army installations.

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ON THE CALENDAR

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.

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.

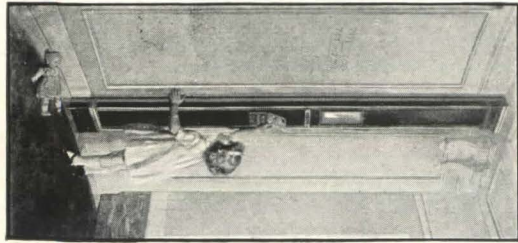
Jan. 14-Feb. 7: Gold Medal Exhibit of architectural works, Architectural League of New York — League building, 115 E. 40th St., New York 16, N. Y.

Jan. 15: Why Experimental Films? — third of 12 evenings on "The Related Arts of Today" presented by the Junior Council — Museum of Modern Art Auditorium, 11 W. 53rd St., New York City.

Jan. 16-18: Eighth Annual National Technical Conference, Society of Plas-

(Continued on page 264)

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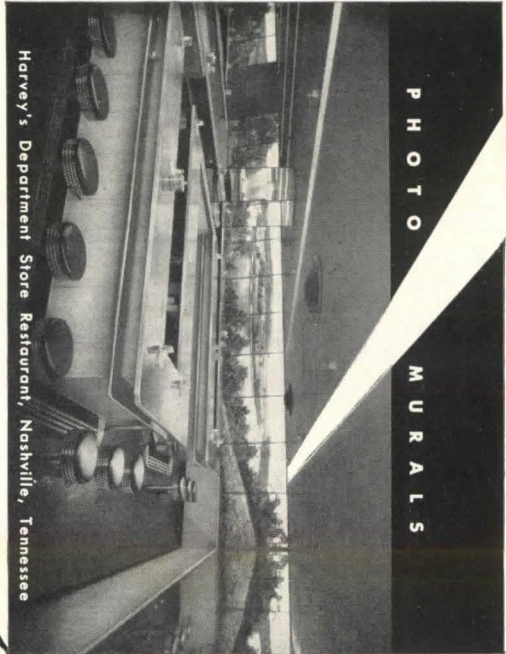


PHOTO MURALS

Harvey's Department Store Restaurant, Nashville, Tennessee

★ This restaurant interior invites patrons to "eat and relax." In the beautiful setting of the wide bending river, portrayed by photomurals and emphasized with mirrors, delicious food is even more enjoyable.

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(Continued from page 262)

tics Engineers Inc. — Edgewater Beach Hotel, Chicago, Ill.

Jan. 16-Mar. 9: Buildings by Frank Lloyd Wright; three-dimensional color photographs set in individual views 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. 25-27: Annual meeting, Society of Architectural Historians — New York City.

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., N. Y. C.

Feb. 5: Poetry Evening — Dylan Thomas; fourth of 12 evenings on "The Related Arts of Today" presented by the Junior Council — Museum of Modern Art Auditorium, 11 W. 53rd St., New York 19, N. Y.

Feb. 11-Mar. 7: Gold Medal Exhibit, Design and Craftsmanship in Native Industrial Arts, Architectural League of New York — League building, 115 E. 40th St., New York City.

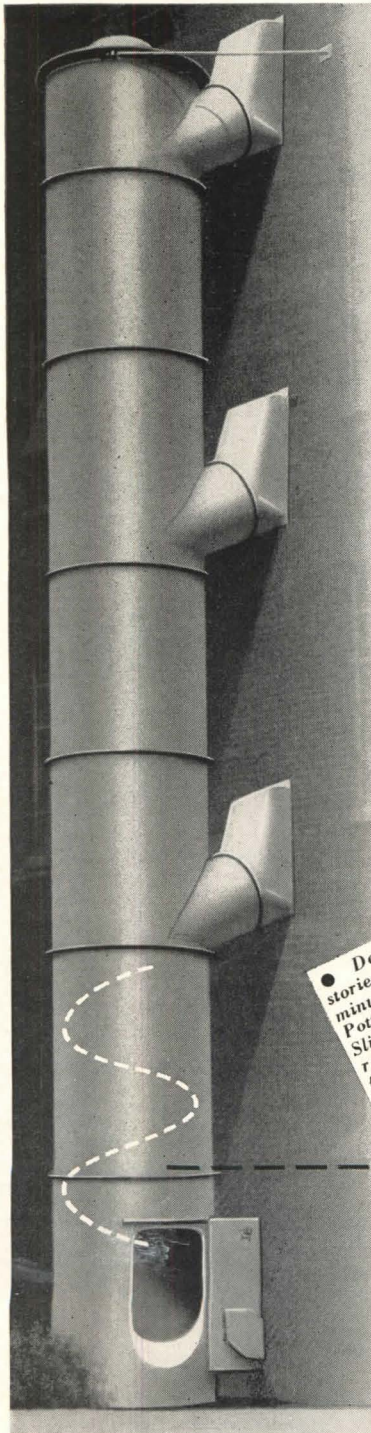
Jan. 25-27: Annual Meeting of the Church Architectural Guild of America and the North American Conference on Church Architecture — Chicago Theological Seminary, University of Chicago, Chicago, Ill.

Feb. 12: Symposium: The New Sculpture; fifth of 12 evenings on "The Related Arts of Today" presented by the Junior Council — Museum of Modern Art Auditorium, 11 W. 53rd St., New York City.

Feb. 21-22: Tenth Annual Conference, Society of the Plastics Industry Ltd. (Canada) — Royal York Hotel, Toronto, Ont.

Feb. 25-28: 33rd Annual Convention, Associated General Contractors of America — Hotel Statler, Detroit.

Feb. 26: The Writer Looks at Painting; sixth of 12 evenings on "The Related Arts of Today" presented by the Junior Council — Museum of Modern Art Auditorium, 11 W. 53rd St., N. Y. C.



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OFFICE NOTES

Offices Opened

- David L. Bockius Jr. has opened an office for the practice of architecture at 13 N. Main St., Ashland, Ore.
- Leo Weisberg, Architect, has announced the opening of his office at 57 Glen St., Glen Cove, N. Y.
- Gene Zema, Architect, has opened a new office at 1120 East Roy, Seattle 2, Wash.

• A new division of the Army Engineer Corps, East Ocean Division, has been set up to supervise offshore military construction assigned to the Corps. Headquarters of the new division is at 800-802 E. Broad St., Richmond, Va. Effective November 15, four offshore military construction districts and an engineer group formerly under the North Atlantic Division, New York, came under the new division.

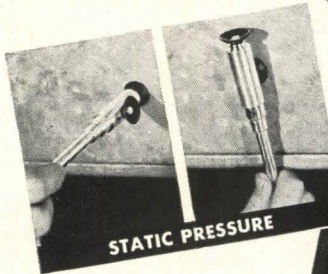
(Continued on page 266)

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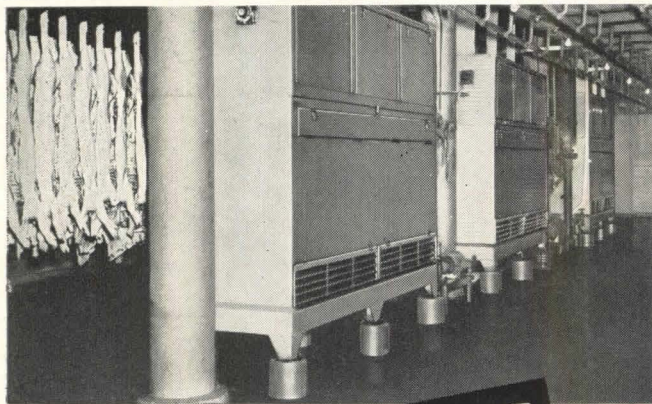


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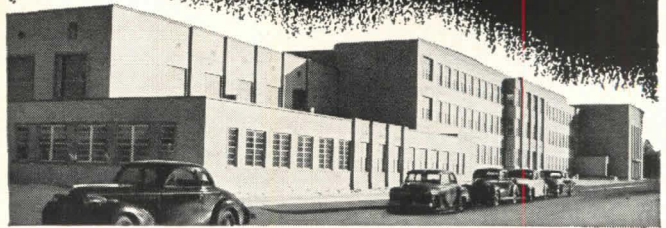
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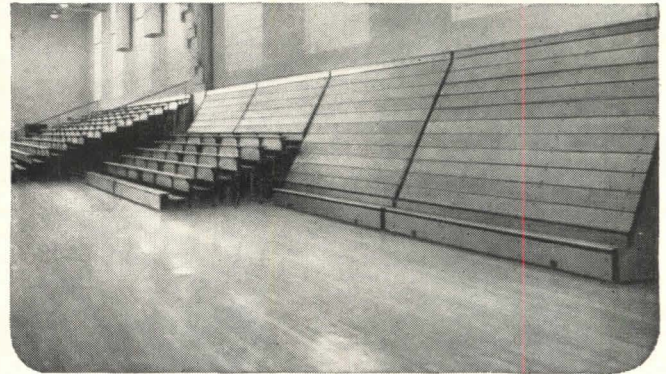


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for example, the 13 tiers occupy 23' depth when open, but only 5' 4 1/4" when closed, thus providing 17' 7 3/4" more usable floor space the entire length of the stands. And notice the vertical filler boards under centers of all seats which enclose the understructure, yet permit placing feet back under seats for properly balanced and comfortable positions. Write for details and prices today.

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THE RECORD REPORTS

(Continued from page 264)

• Arthur D. Little, Inc., consulting research and engineering organization, has opened a Latin American office, at Edificio International 963, Reforma 1, Mexico 1, D.F.

New Firms, Firm Changes

• Aaron G. Alexander, Architect, has announced the closing of his New York office as of Jan. 1, 1952, and his associa-

tion with Hubert E. Reeves, Architect, 154 E. 61st St., New York City, to carry on his existing commissions. Mr. Alexander will continue a limited bank consultant architectural practice from his home at Rolling Acres, Ancram, N. Y.

• Morton H. Caine, Architect, has announced the conclusion of his partnership in the firm which has been known

as Dougan, Heims & Caine and the continuation of his practice at 725 N.W. 19th Ave., Portland 9, Ore.

• Appointment of Harvey P. Clarkson as director of architecture for A. M. Kinney Inc., 2905 Vernon Pl., Cincinnati, has been announced. Mr. Clarkson has been since 1945 practicing architecture in New York and an associate professor and design critic in architecture at Columbia University. In his new post, he succeeds Charles H. Ferber, who will continue on the Kinney staff as a consultant architect.

• Harry E. Stocker, materials handling consultant, has become a partner in the firm of Brown-Guenther-Booss, architects, engineers and industrial consultants of New York.

New Addresses

The following new addresses have been announced:

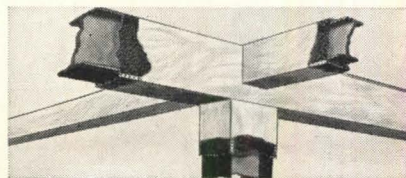
Gerald L. Bilbro, Architect, Imperial Apartments Bldg., 113 E. Solomon St.,
(Continued on page 268)



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The new, 48,000 sq. ft. Oakland Blue Cross office building was occupied only 195 days after ground-breaking! The plastering contractor on this high speed California job took over after another firm found the time limits too tough. Using Zonolite vermiculite Plaster Aggregate for the first time . . . he completed the job on time . . . kept costs below the estimate. In business 27 years, he had never seen such a large job go so smoothly . . . and Zonolite gets a good share of the credit.

Zonolite Plaster cuts handling time, is more easily mixed and applied. Droppings are fewer, workers are less fatigued using Zonolite. Weighing only one-tenth as much as sand plaster, it has almost 3½ times greater insulating value.



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Zonolite plaster gives you low cost, lightweight fire protection for steel beams, columns, floors and ceilings. Zonolite fireproofing has been accorded 4-hour fire ratings for numerous applications. Wherever you need maximum fire resistance . . . with *lightweight* and low cost—specify Zonolite vermiculite plaster aggregate.

Write today for complete up-to-date information and summary of fire tests on Zonolite vermiculite plaster, the full story of this money-saving new way to build better in less time with Zonolite plaster.

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Fay Foto Service Inc.

Shoppers' World, the new Suburban Centers Trust shopping center opened recently at Framingham, Mass., found itself swamped with visitors—too many for comfort, some stores felt. Architects were Ketchum, Giná and Sharp; Kenneth C. Welch, architect, market surveys and research; Adams, Howard & Greeley, consultants on site planning; Shurcliff & Shurcliff, landscape architects; Severud, Elsted & Kruger, structural engineers; Vincent L. Falotico & Associates, mechanical engineers; Schlanger & Hoffberg, consulting architects, and Theodore Content, acoustical engineer, special consultants on theater building

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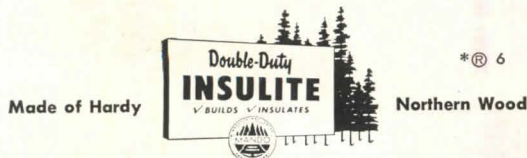


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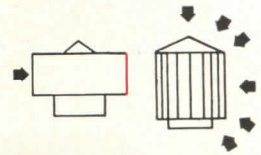
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do you know

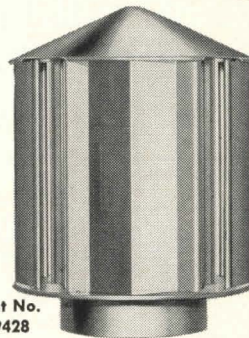
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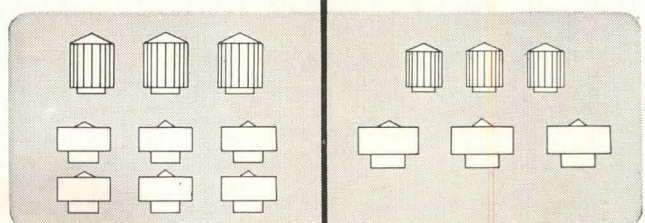


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THE RECORD REPORTS

(Continued from page 266)

Griffin, Ga. (Mailing address: Post Office Box 360, Griffin, Ga.)

L. E. Byfield, Architect, 7630 Washington Blvd., Indianapolis 20, Ind.

Offices of A. R. Clas, Architect, Suite 530, Wyatt Bldg., Washington, D. C.

Arthur A. Gouvis, Architect, 10837 S. Michigan Ave., Chicago 28, Ill.

Willfred D. Holtzman Jr., Architect, 2417 Hempstead Rd., Ottawa Hills,

Ohio; Post Office Toledo 6, Ohio.

Henry Sprott Long and James L. Gatling Jr., Suite 1642, Brown-Marx Bldg., Birmingham, Ala.

Robert Thomas Martin, Architect, 23 N. Dunlap St., Memphis 5, Tenn.

Charles R. Nash, Architect, 116 E. Third St., Ottumwa, Ia.

Grant A. Peterson, Architect, 615 N.E. Ninth Ave., Fort Lauderdale, Fla.

Pollmar, Ropes and Lundy, Architects and Engineers, 209 Architects Bldg., 415 Brainard St., Detroit 1, Mich.

C. J. Ryland, Architect, 847 Abrego St., Monterey, Calif. (Mailing address changed from Post Office Box 847, Monterey.)

L. G. Sherburne Associates, Designers, 108 E. 37th St., New York 16, N. Y.

Lyman G. Slocum, Architect, 7 Dyer St., Providence, R. I.

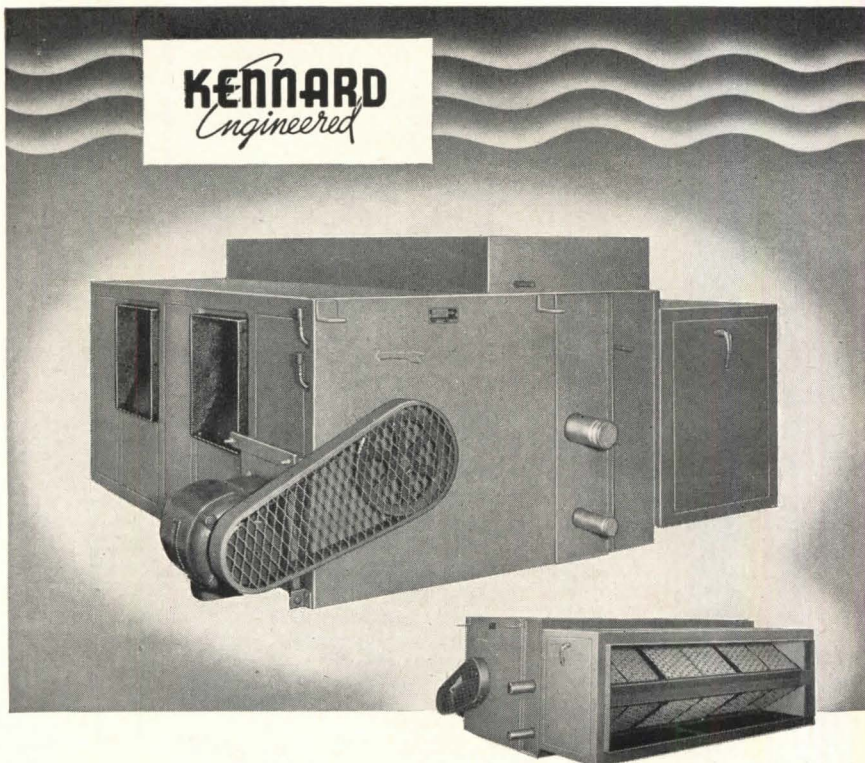
Walter H. Sobel & J. Stewart Stein, Architects, 450 E. Ohio St., Chicago 11, Ill.

Spahn and Barnes, Architects, 1950 Lee Rd., Cleveland Heights 18, Ohio.

Edward M. Y. Tsoi, Architect, Humble Bldg., 909 S. Jefferson Davis Parkway, New Orleans, La.

Walker & Poor, Architects, 787 Fifth Ave., New York 22, N. Y.

Eugene Weston, Architect, 1741 Silver Lake Blvd., Los Angeles 26, Calif.



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COMPETITIONS

- Exercises preliminary to the selection of the 63rd Rotch Traveling Scholarship winner will be held next April. Applicants for the scholarship, which will offer \$3200 for travel and study abroad, must be American citizens and, as of May 1, 1952, not over 31 years old. Details may be obtained from: William Emerson, secretary, Rotch Traveling Scholarship, 107 Massachusetts Ave., Boston 15, Mass.

- The Cranbrook Academy of Art, Bloomfield Hills, Mich., has announced the opening of competition for the scholarships which were established last year in memory of Eliel Saarinen, the Academy's first president, and the institution's founders, George and Ellen Booth.

The three scholarships of \$1500 each will be awarded for advanced study at Cranbrook in the fields of architecture, ceramics, design, metalsmithing and jewelry, painting, sculpture, and weaving and textile design. Scholarships will cover fees for room, board and tuition at the Academy, and will include an allotment for materials and supplies, for the 1952-53 scholastic year.

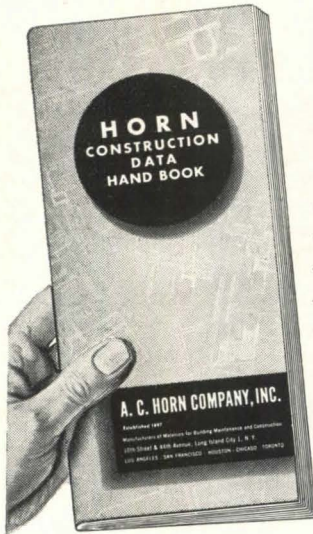
Applications will be accepted until February 15. Detailed information and application forms may be obtained from the Secretary, Cranbrook Academy of Art, Bloomfield Hills, Mich.

(Continued on page 270)

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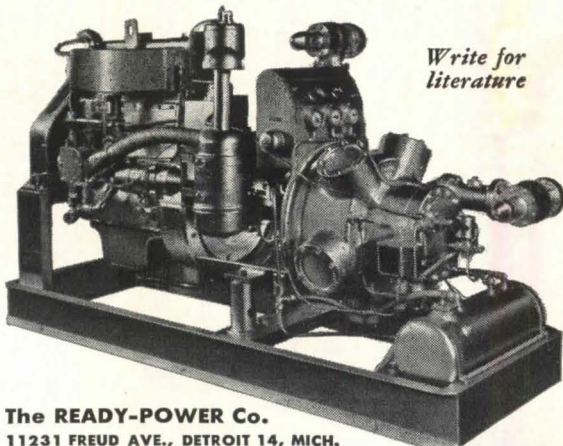
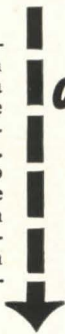
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(Continued from page 268)

• Rules and conditions for the fifth annual competition of the Lincoln Arc Welding Foundation's Engineering Undergraduate Award and Scholarship Program are now available in a 24-page illustrated booklet, available from the James F. Lincoln Arc Welding Foundation, Cleveland 17, Ohio.

The program is intended to encourage undergraduate engineers to use imag-

ination and ingenuity in developing engineering projects in their own fields. Awards totaling \$6750 are made for the best papers on design of machines or structures, or separate components of machines or structures, in which arc welding is the method of fabrication. Welding research and maintenance projects can also be described. Scholarship funds totaling \$1750 are also awarded

to schools for establishment of scholarships in honor of the main student awards.

• Ten cash prizes totaling \$1000 will be awarded to winners of the sixth annual electric sign design competition sponsored by the National Electric Sign Association.

Prizes will be given for the best electric sign designed for an existing motel; a specific problem was selected to make conditions equal for all contestants. A photograph, location map and specifications of the motel are shown in the contest rules, which may be obtained from N.E.S.A., 224 S. Michigan Ave., Chicago 4, Ill.

The contest closes December 31.

• Conditions of the 1951 design competition of the American Institute of Decorators have been announced, and entry forms are available from A.I.D., 41 E. 57th St., New York 22, N. Y.

All designers of fabrics, furniture, floor coverings, wall coverings and lighting who have designed products offered for sale not before January 1, 1951, may compete. Companies may also enter their designs of products offered for sale not before January 1, 1951, accompanied by the name of the designers of each submission.

Closing date for receipt of entry forms is February 1. Design submissions must reach the A.I.D. by February 8.

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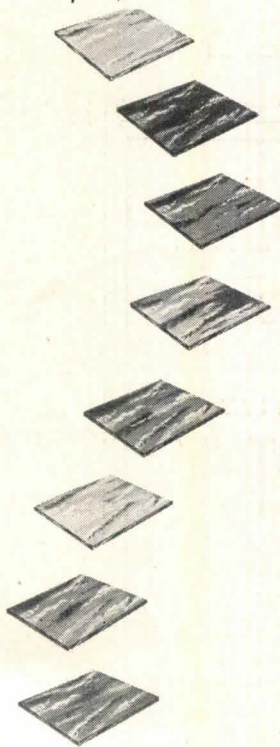
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**LAWRENCE S. BELLMAN,
ARCHITECT FOR 53 YEARS**

Lawrence S. Bellman, 75, senior partner in the Toledo, Ohio, firm of Bellman, Gillett & Richards, Architects and Engineers, died at his home in Santa Barbara, Calif., on October 12. He had been retired since 1948.

Mr. Bellman, who was a Fellow of the American Institute of Architects, was the last surviving member of the architectural firm of Mills, Rhines, Bellman & Nordhoff, founded in Toledo in 1912. The firm became Bellman, Gillett & Richards in 1944.

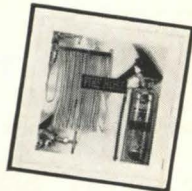
Mr. Bellman joined the firm of George S. Mills, Architect, upon graduation from the University of Pennsylvania in 1895. He became a partner in 1912.

Principal buildings designed by Bellman, Gillett & Richards include the Ohio Building, the Edison Building, the Commodore Perry Hotel, the Secor

(Continued on page 272)



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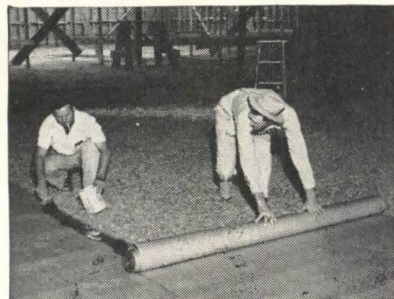


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(Continued from page 270)

Hotel, Lamson's, the Bostwick & Braun Bldg., the main building of the University of Toledo, all in Toledo, and many industrial buildings. The new student union building at Ohio State University is the work of the firm, which has done many other buildings throughout the country.

Mr. Bellman had served as president of the Toledo Chapter of the American Institute of Architects and was second

president of the Ohio organization of architects, founded in 1918.

**JOHN ROCKART DIES AT 79;
CASS GILBERT ASSOCIATE**

John R. Rockart, 79, who was long an associate of the late Cass Gilbert, died October 13 at Bronxville, N. Y.

A native of St. Paul, Minn., Mr. Rockart entered the office of Gilbert &

Taylor, architects, in St. Paul, after attending secondary schools there.

Just before the turn of the century, he left St. Paul for work and study at the Ecole Des Beaux Arts in Paris. After two years he returned to St. Paul at Mr. Gilbert's request and took charge of the completion and furnishing of the Minnesota State Capitol. At the same time he was engaged also in the initial planning of the St. Louis Louisiana Purchase Exposition and the construction of the Fine Arts Building and Festival Hall in St. Louis.

In the next 30 years, Mr. Rockart worked with Mr. Gilbert on the planning and construction of such buildings as the Woolworth Building in New York, the Detroit and St. Louis Public Libraries, the Army Supply Base in Brooklyn, the West Virginia State Capitol at Charleston, the New York Life Insurance Building, the Chamber of Commerce Building in Washington, and important commercial buildings in the New York area.

When Mr. Gilbert died in 1935, Mr. Rockart took over completion of the new United States Supreme Court Building in Washington.

For the next six years he operated his own office as a consulting architect, then went into semi-retirement till 1949, when he joined the firm of Harold P. Zoller & Co., consulting architects, New York City, as an architect, the post he held at his death.

After Mr. Gilbert's death, Mr. Rockart worked also in the city planning field and was chairman of the City Planning Commission of Mount Vernon.

Mr. Rockart was a member of the American Institute of Architects, the Architectural League of New York, the Municipal Art Society of New York and the American Federation of Arts in Washington.

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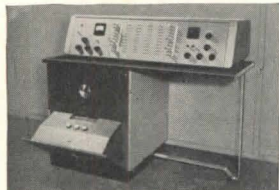
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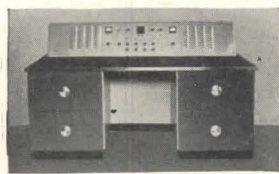
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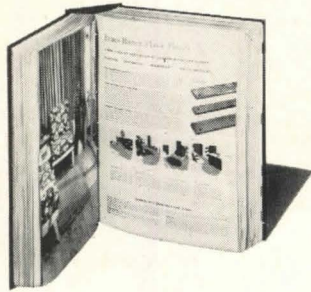
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ADDENDA

• Model photographs in the article "The Henry and Edsel Ford Auditorium, Civic Center, Detroit, Michigan" on pages 113-120 of the November issue of ARCHITECTURAL RECORD were by Robert Shirk.

• Drawings by Alan Dunn were used to illustrate Lewis Mumford's article, "Function and Expression in Architecture," on pages 106-112 of the November issue of ARCHITECTURAL RECORD.



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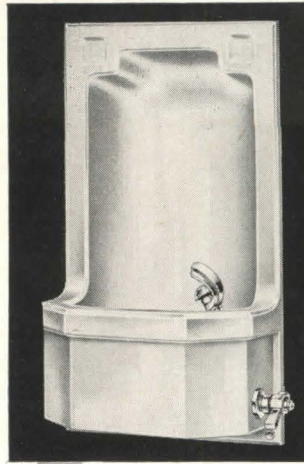
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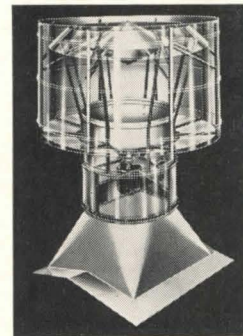


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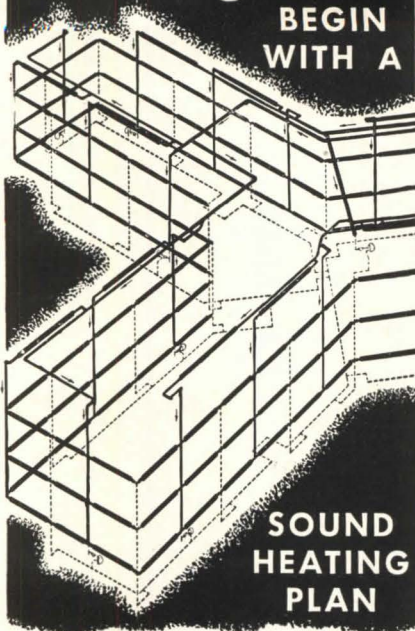
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THE RECORD REPORTS

CANADA

(Continued from page 18)

of costs prevailing nearly two years ago. Also, no system has been set up to channel a steady flow of essential materials to builders."

Resources Minister Winters said efforts will be made to counteract any inflationary trend resulting from the easing of curbs. "Both in respect to dwellings for defense workers and others," he says, "new financing terms will carry as a condition an agreed maximum sale price, and houses sold at a figure above such maximum sale price will not qualify for the additional financing now being introduced by the government."

F. A. Mager, president of the National House Builders Association, has promised the cooperation of members of his organization in holding the line on prices.

Figures on housebuilding during August, latest month on which statistics are available, show a drop in both starts and completions compared with August of 1950.

Some 20 per cent fewer houses were started (7461 compared with 9306 in August 1950) and 18 per cent fewer completed (7183 against 8717 in August 1950). The decline in starts followed the pattern established in the three preceding months, when there were drops of 40 per cent in July, 21 per cent in June, and 14 per cent in May compared with

(Continued on page 276)



A. S. Mathers, of Mathers & Haldenby, Architects, Toronto, took part in impressive ceremonies held recently to open Bank of Nova Scotia Toronto building

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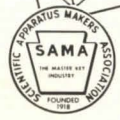
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THE RECORD REPORTS

CANADA
(Continued from page 274)

last year. During the first eight months of 1951, total starts on new houses dropped about 16 per cent. Completions were two per cent lower.

**Building Research Division
Names Staff Climatologist**

N. K. Thomas has recently joined the staff of the Division of Building Research, National Research Council, as a full-time climatologist.

Mr. Thomas, a graduate of the University of Western Ontario in mathematics and physics, took his master's degree in meteorology at the University of Toronto. Before coming to the Division of Building Research, he was with the Meteorological Service for 10 years and during the war years acted as forecaster at RCAF training stations.

One of Mr. Thomas' first jobs for the Division is to prepare a special section on the climate of Canada for the revised National Building Code.

A major project of the Division has been the erection of a series of small test huts at Saskatoon and Ottawa to try out new building materials and methods. One hut at each place is identical.

**\$2¼ Billion Total Forecast
For Construction This Year**

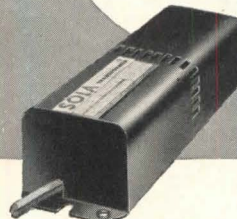
Speaking at the Niagara Falls, Ont., luncheon which closed the annual convention of the New York State Association of Architects, President Earle L. Sheppard of the Ontario Association of Architects predicted a 50 per cent increase in the value of Canadian building this year. This would entail a contract award total of \$2¼ billion; total last year was \$1½ billion.

From the award totals for September recently released by MacLean Building Reports Ltd., it looks as though Mr. Sheppard's prediction stands a good chance of coming true. Total for the first nine months of the year is \$1¾ billion.

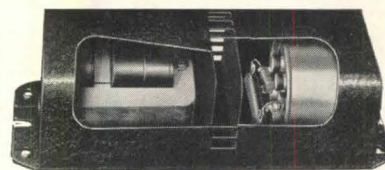
Phenomenal demands are being made on the construction industry in the service of great projects related to natural resources development. Engineering contracts awarded in September were 220

(Continued on page 278)

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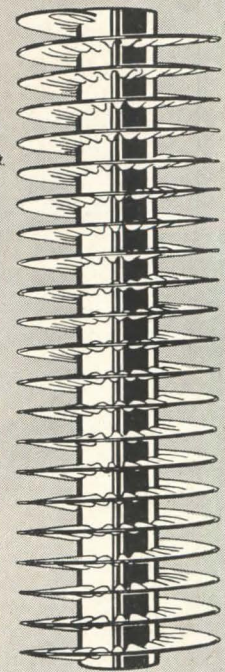
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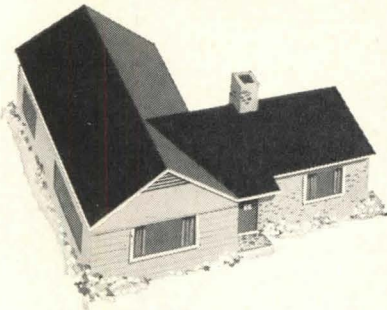
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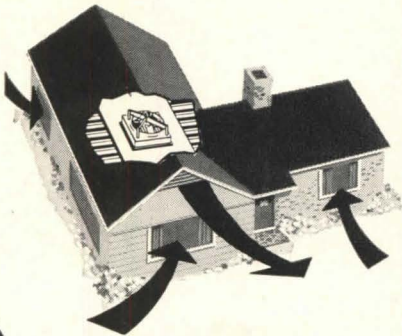
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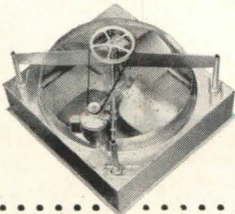
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THE RECORD REPORTS

CANADA

(Continued from page 276)

per cent ahead of the same month last year, while industrial awards led September 1950 by 360 per cent. For the nine-month period, engineering is now 310 per cent ahead, followed by industrial with a 260 per cent gain.

Adding the totals for all categories, September awards reached \$185,294,500, shading those made the same month a year ago by \$56,160,000, or 43 per cent. Only sour note in the boom picture was in the residential category, which at \$29,979,000 was 47 per cent below September a year ago.

The increasing number of big projects is illustrated by the fact that million-dollar-and-up projects accounted for more than half the month's awards. Part of this is explained by the effect of government policy, since it has been the small job sector, residential and commercial work, which has been restricted. The rest of the answer is found in oil, aluminum, base metals, pulp and chemicals being developed by mass-production enterprises.

September engineering and industrial awards carried Ontario to an over-all total of \$101,372,800, a gain of \$54,985,400 over last year. The increase in Quebec was more modest, \$5,945,400, on a total for the month of \$43,222,500. Comparative figures of the totals for the Maritimes and Western regions are: Maritimes, \$7,243,800, down \$3100; the West, \$33,455,400, down \$4.8 million.

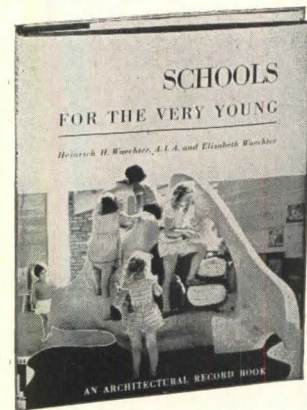


Photo: John Palmer

John B. Parkin, head of John B. Parkin Associates, Architects, has been addressing Builders' Exchanges throughout Ontario on need for improving craftsmanship

Schools for the Very Young

by HEINRICH H. WAECHTER, A.I.A.
and ELISABETH WAECHTER



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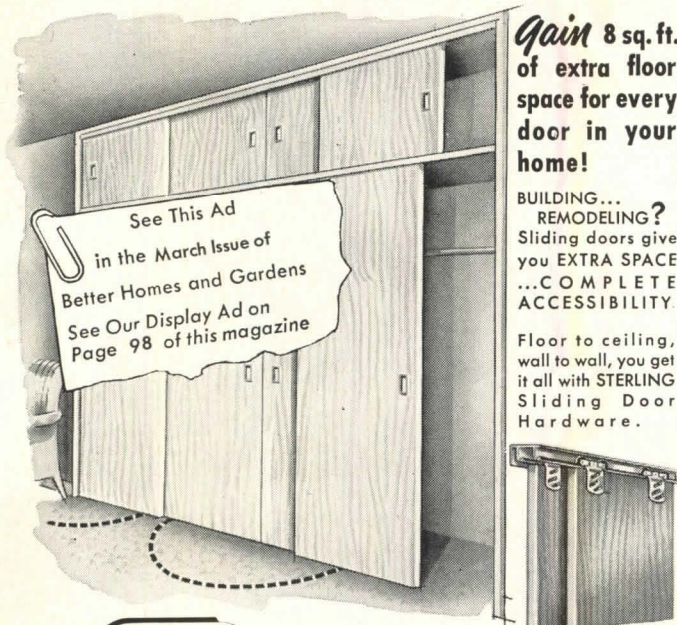
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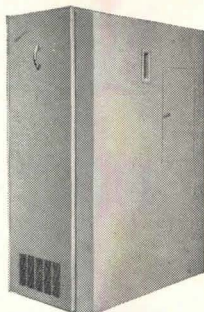


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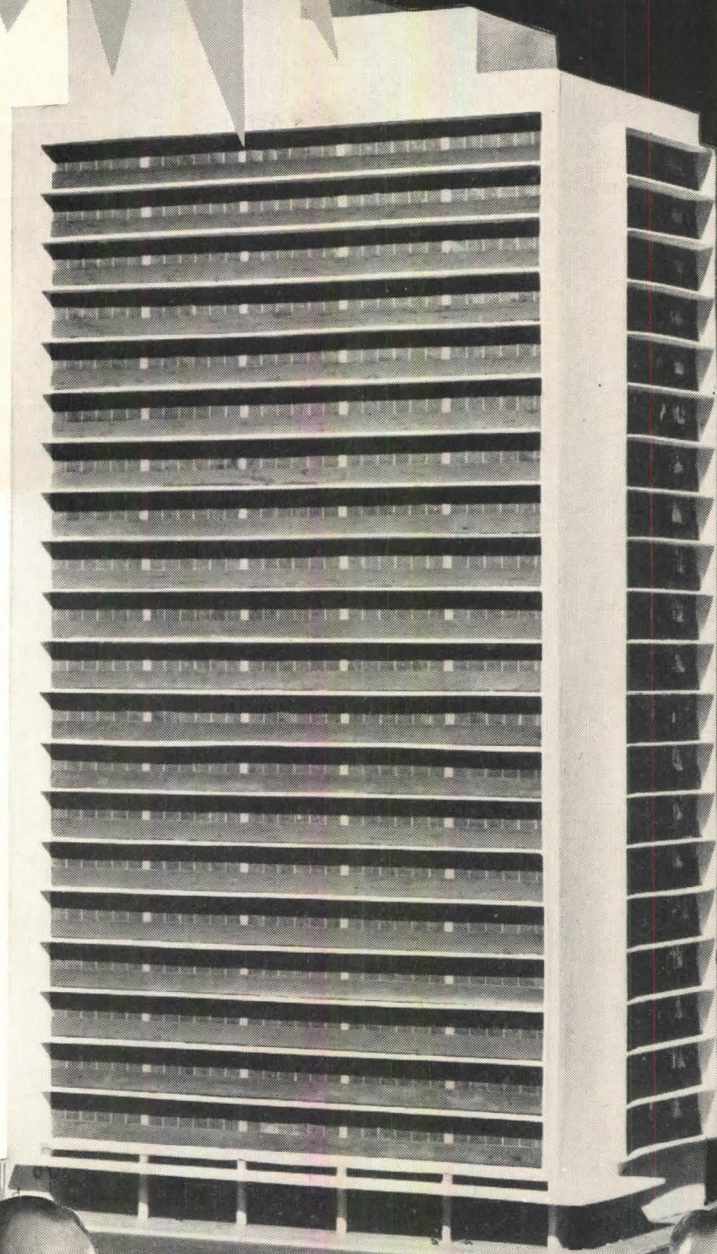
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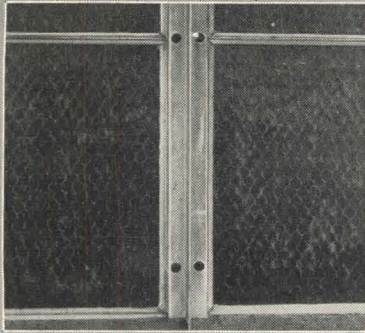
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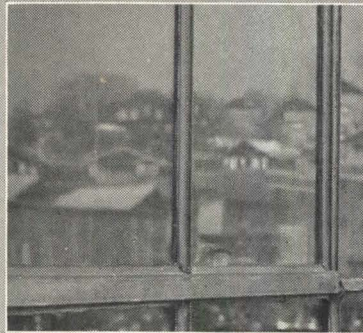
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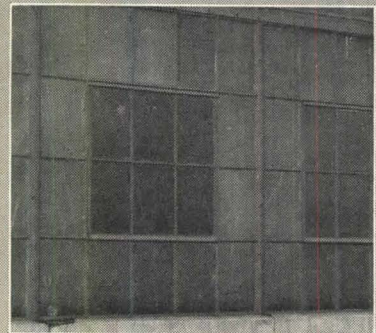
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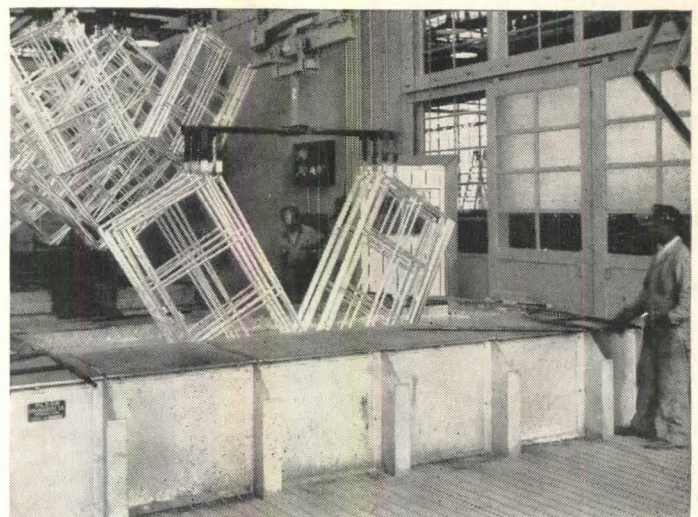
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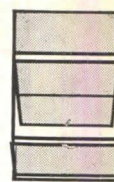
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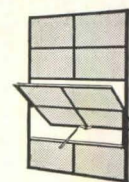
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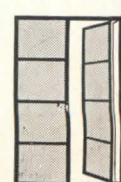
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