

ARCHITECTURAL

MARCH 1953

RECORD



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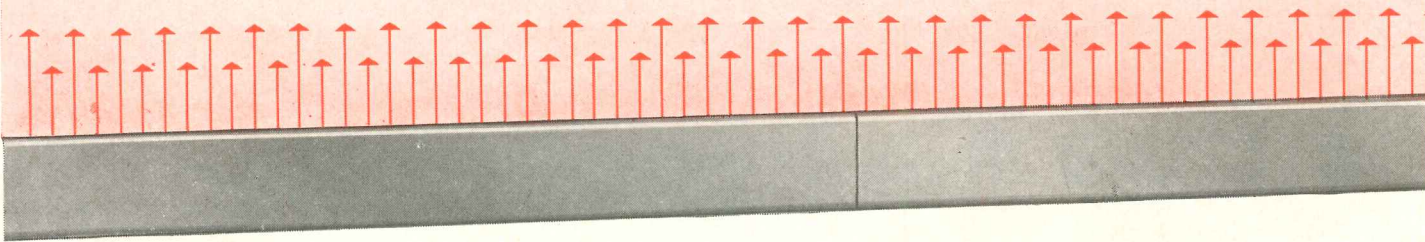
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Cover: The Functions of a Learning Unit. Composition by Peter Piening; photo by Joseph W. Molitor

NEW! Trane Unit Ventilator 40-foot blanket of FORCED,



HEATS MORE EVENLY . . . ends cold corners

VENTILATES MORE UNIFORMLY . . . ends stale spots

STOPS DOWN-DRAFTS CONSTANTLY . . . ends window chill

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Big news! A really basic engineering improvement in unit ventilator development . . . the new TRANE Unit Ventilator System! Architects, engineers, contractors, manufacturers and school boards have long agreed that the ideal unit ventilator would blanket large window areas with a *continuous*, forced stream of tempered air.

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THE RECORD REPORTS

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

ALAN DUNN's trenchant comment on the long series of prison disturbances (for another, see the June issue, page 26), reflects more than the rueful recognition by an unhappy denizen of a stark fact. It was the Director of the Federal Bureau of Prisons, James V. Bennett, who in his annual report this year called for more "open-type" prisons in the United States. The American Prison Association, the nationwide organization of local, state and federal prison officials, has pointed out that the much-publicized riots have nearly all occurred in the institutions which have the oldest plants. There has been a whole revolution in correctional thinking in the last 20 years; and the reluctance of the public purse — in this area at least — has prevented design and construction from catching up. There are some signs that the fortunate result of the unfortunate riots may be to provide a chance.

LET THEM HAVE ROLLS: Prefabricated housing manufacturers must move into the larger, more expensive house field to keep up with the changing patterns of housing demand, says President John C. Taylor of the Prefabricated Home Manufacturers Institute — a progression, as he describes it, from Chevrolets to Pontiacs, Oldsmobiles, Buicks and Cadillacs. No competition for architects in the Rolls area — yet.

THE MILLS OF THE GODS GRIND SLOWLY, etc.: The Federal Housing Administration has relaxed its requirements on roof slope for asphalt, wood or tile roofs from five-to-twelve to four-to-twelve. It seems only fair to note that the announcement was dated January 18 and therefore is not to be regarded as an indication of the design views of the new Administration.

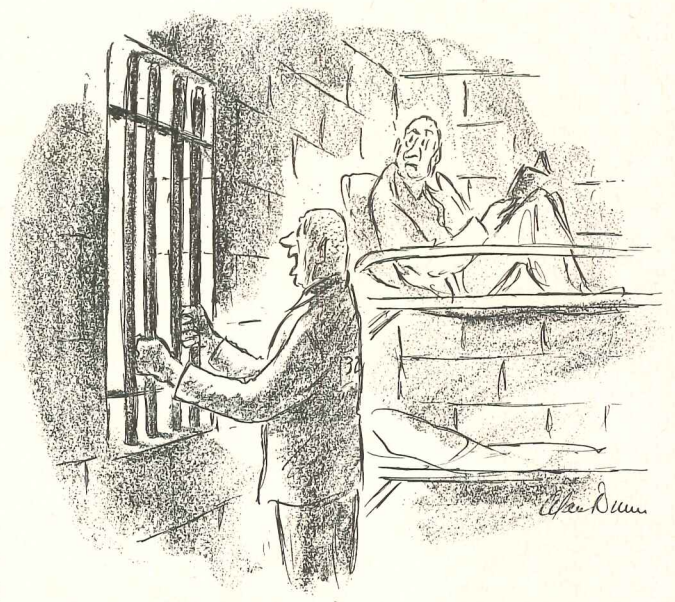
A THOUGHTFUL PROFESSION — for example, architecture — might do worse than ponder one attitude of

the new Administration as expressed by President Eisenhower in his State of the Union message: "We must be strong, above all, in the spiritual resources upon which all else depends. We must be devoted with all our hearts to the values we defend. . . . As our heart summons our strength, our wisdom must direct it. . . . In this spirit must we live and labor, confident of our strength, compassionate in our hearts, clear in our minds."

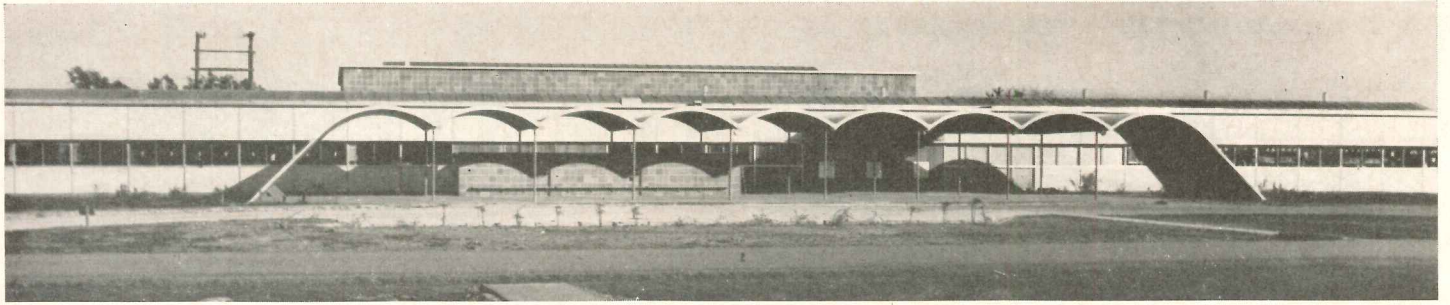
BUILDING TYPES STUDY NO. XXX: The man who developed the V-2 rocket for the Nazis, now technical director of the United States Guided Missile Development Group at Huntsville, Ala., says the "space station" looks closer to feasible now than military application of atomic energy did ten years ago. In a recent address before the American Rocket Society, Dr. Wernher von Braun urged an immediate buildup of scientific efforts towards establishing such a station as an important deterrent to Soviet ambitions. It may be a while before the rocket men turn to archi-

ects for design aid, and even longer before enough practicing architects are concerned with space stations to warrant a RECORD Building Types Study; but in advance of Building Types Study No. 500 (or 5000), here-with a flash on the "program" as gleaned from Dr. von Braun's remarks: an impregnable fortress in space 1000 miles from the earth, able to circle the earth at about 50,000 mi per hr; a launching platform for missiles of the future; facilities for personnel who, armed with powerful telescopes and cameras, could inspect any spot on the earth at least once in 24 hours.

STUCK WITH STOCK PLANS? To date there hasn't been a single request for the State of Virginia's stock school plans, members of the Virginia Chapter of the American Institute of Architects were told at their recent annual meeting. The State, which has so far spent \$40,000 on the project, decided two years ago to have the plans drawn up, to be used by any city or county requesting them; the idea, of course, was "economy."

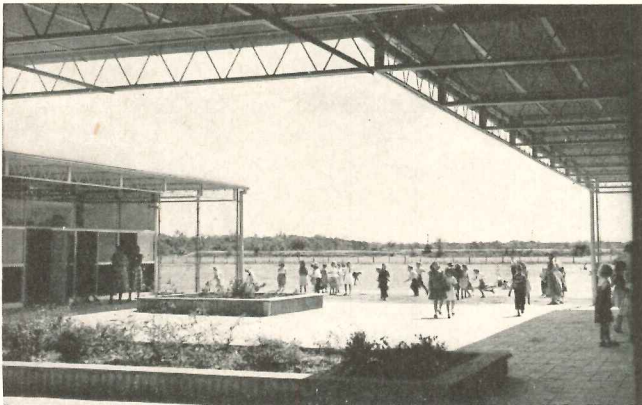


"I'm afraid the architect didn't analyze our needs—he analyzed the needs of the state!"

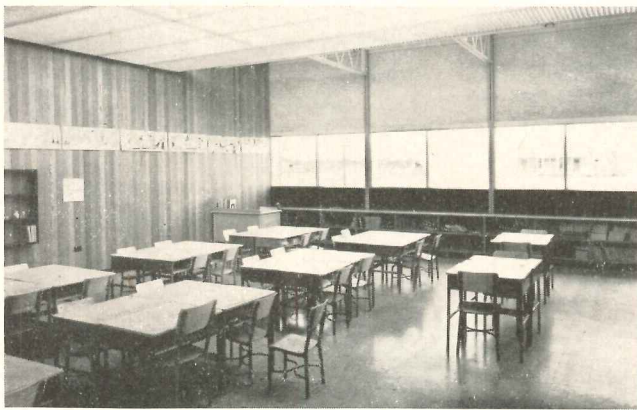


West Columbia Elementary School, Brazoria County, by Donald Barthelme and Associates, Architects, won First Honor Award

TEXAS ARCHITECTURE EXHIBIT WIDELY SEEN IN STATE



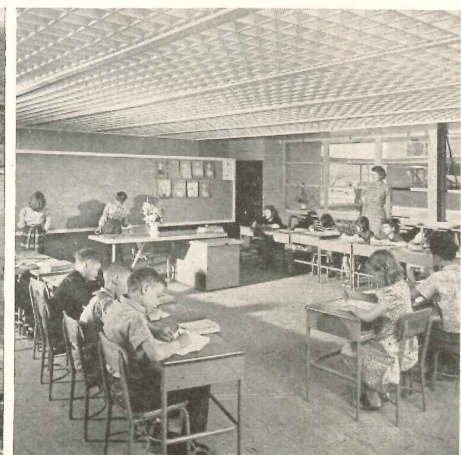
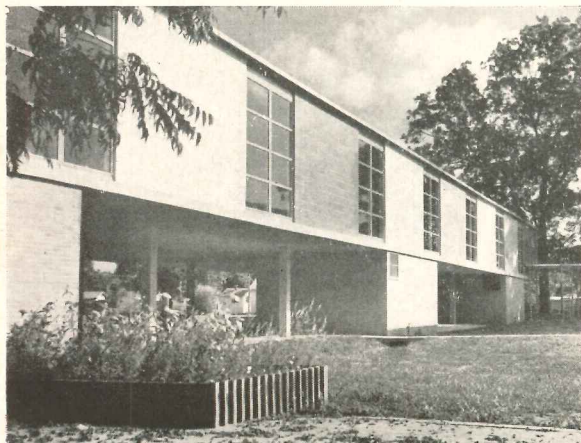
Two more photographs of the first-prize winner. Above, view of courtyard. Below, a typical classroom



TEXAS ARCHITECTURE — 1952, the competitive exhibition sponsored at last fall's Texas State Fair by the Dallas Chapter of the American Institute of Architects, the Texas Society of Architects and the Dallas Museum of Fine Arts, has been making the rounds in Texas ever since and but for scheduling difficulties would also have been seen at the Addison Gallery of American Art at Andover, Mass. In Texas, it has given literally hundreds of thousands outside the profession a look at the current work of the state's architects. From the Fair it went to the architects' state convention at El Paso; then to the University of Texas at Austin; Houston; Agricultural and Mechanical College of Texas, College Station; Arlington State College, Arlington; and back to Dallas. Chairman of the Dallas Chapter's Exhibition Committee is A. B. Swank Jr.

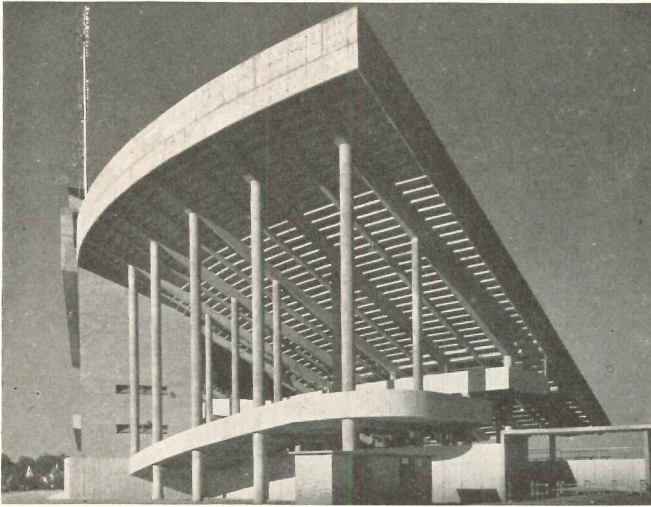
The award-winning buildings selected from 51 entries in the exhibition are shown on these pages. In addition to the First Honor Award and eight Awards of Merit there was one *Hors Concours* award to a "non-conforming entry" (not shown here), Trinity University Classroom and Administration Building, San Antonio — O'Neil Ford, Bartlett Cocke and Harvey P. Smith, associated architects.

Below: Another prize winner by Barthelme & Associates — Sweeney Elementary School, Brazoria County

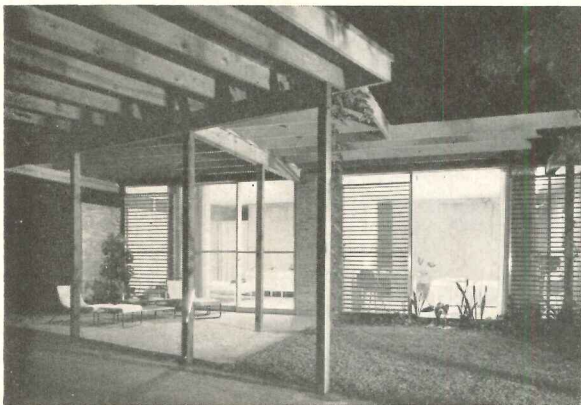
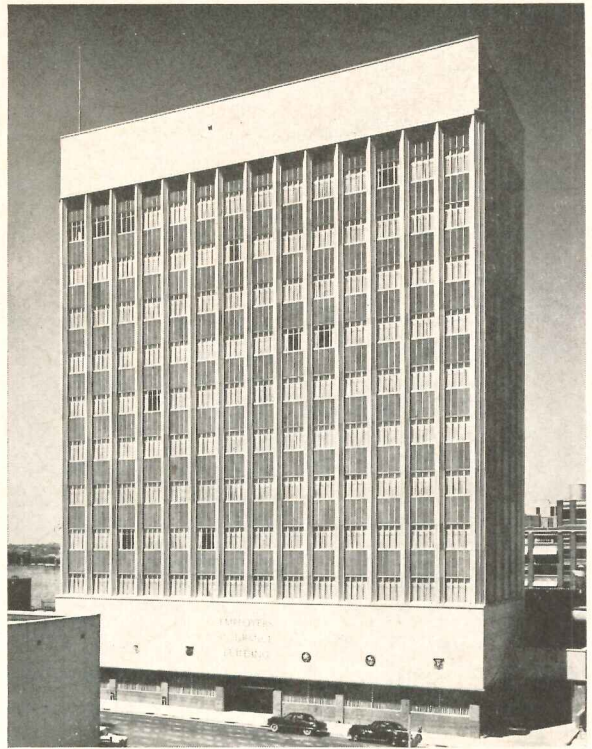


Albany Elementary School, for which Caudill, Rowlett & Scott were architects, scored in competition. Above, air view and typical classroom

More award winners: right, *Employers Insurance Building, Dallas*; George L. Dahl, Architects. Below, *stadium for Rice Institute, Houston*; Hermon Lloyd, W. B. Morgan and Milton McGinty, Associated Architects



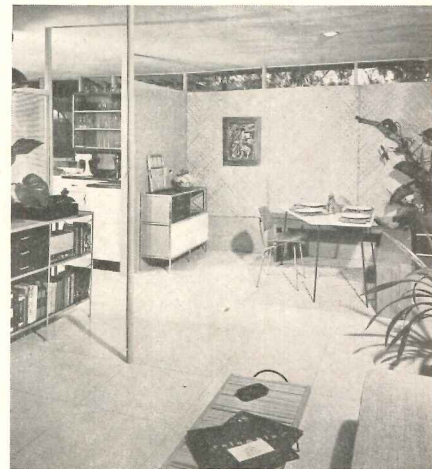
F. W. Seiders, Shoemaker-Stiles



Meisel—Dallas

Two prize-winning San Antonio houses by Milton Ryan. Above, residence of Mr. and Mrs. Duane Berry. Right, two views of house for Mrs. Lucy Dunwoody

Meisel—Dallas



Shoemaker-Stiles



Interior of house by Howard Barnstone for Mr. and Mrs. Herbert Blum, Beaumont, which also won an award

Shoemaker-Stiles



Residence of Judge and Mrs. Wilmer B. Hunt, Houston, Hamilton Brown, architect, won an Award of Merit

THE RECORD REPORTS

Gold Medal Exhibition of Architecture and Engineering Opens at Architectural League with 11 Entries; Georgia Architects Hear Hudnut; Architectural Historians Hold Annual Meeting

THE ARCHITECTURAL LEAGUE OF NEW YORK opened its 1953 Gold Medal Exhibition of Architecture, Landscape Architecture and Engineering last month with 11 entries which included eight in architecture, three in engineering and none in landscape architecture. Engineering was included as a Gold Medal category for the first time in League history. The final Gold Medal Exhibition, including the entries from the earlier preliminary exhibit of mural painting, sculpture and "design and crafts in native industrial arts" as well as the architecture and engineering work, will be held from March 9-27;

and awards in all the divisions will be announced at the final Gold Medal dinner March 19.

MEMBERS OF THE GEORGIA CHAPTER of the American Institute of Architects, holding their annual meeting in Atlanta, heard Joseph Hudnut, retiring dean of Harvard's Graduate School of Design, warn against forgetting that architecture is an art; the present status of architectural education and the present production of buildings, he said, can lead the public to think of architects as mere technicians. Edward A. Moulthrop

of Atlanta was elected as chapter president and C. Wilmer Heery of Athens as first vice president. Other new officers, all of Atlanta, are: Charles B. Altman, second vice president; Bernard B. Rothschild, secretary; J. H. Gailey, treasurer; and Herbert C. Millkey (the retiring president), director for three years.

HENRY-RUSSELL HITCHCOCK of Smith College was reelected president of the Society of Architectural Historians at the Society's annual meeting January 29-31 at Wade Park Manor in Cleveland. J. D. Forbes of Wabash College, Crawfordsville, Ind., is the new editor of the Society's quarterly *Journal*. The annual book award of the society was given to *The Architectural Heritage of Newport, Rhode Island, 1640-1915*, by Antoinette F. Downing and Vincent Scully.

AIR CONDITIONING IN SPOTLIGHT AT HOME BUILDERS SHOW

OUTSTANDING FEATURE of the recent National Association of Home Builders Show in Chicago was the emphasis on year-round air conditioning for moderate priced houses.

A striking range of compact new low-priced units was on display at prices putting them within reach of middle income groups. Lively interest was shown in one session of the convention entirely devoted to air conditioning, and the expressions by architects and builders left little doubt that year-round air conditioning will be a major development in 1953.

Shop Talk, Clinics, Panels

The home show, held at Chicago's Hilton Hotel January 18-22, was attended by 18,000 and included an extensive exhibit of house equipment, materials and specialties.

The four-day session was crowded with clinics, shop-talk sessions, speeches and panel discussions — three or four often being held simultaneously to take care of the large attendance.

One highlight was an address by Nathaniel Owings of Skidmore, Owings and Merrill on "Improving the Design of Your Houses." He stressed the importance of site planning, told the builders not to put too much emphasis on "how much you can get for \$35 per plan." He

somewhat startled his audience with large-screen projections of novel ways to group houses, using joint service areas and communal garages.

Other sessions of the heavily-attended convention included talks by FHA and other Government officials, economists, mortgage experts and research men.

A full-sized roof truss was constructed and demounted on the platform of one of the meetings as part of a "how-to-do-it" session presided over by Leonard Haeger, director, N.A.H.B. Research Institute. "Trade-in" houses were discussed, as well as "Housing the Aged." Rehabilitation of blighted areas by private enterprise came in for extensive discussion with emphasis on the Baltimore plan, described by G. Yates Cook of the Baltimore City Health Department.

In frequent talks and panel discussions throughout the conventions, the builders

(Continued on page 362)



Oscar & Associates, Inc.

Above: Merit Award jury looks over some of the entries. Left to right — Irvin A. Blietz, N.A.H.B., Evanston, Ill.; Richard Bennett, A.I.A., Chicago; and Morgan Yost, A.I.A., Chicago (standing); Leonard L. Frank, N.A.H.B., Hempstead, L. I., N. Y.; Earl W. Smith, N.A.H.B., El Cerrito, Calif.; and N.A.H.B.'s research director, Leonard Haeger, who was not a juror. Below: two architect members of the convention panel on design: Nathaniel A. Owings, of Skidmore, Owings & Merrill, and Morgan Yost



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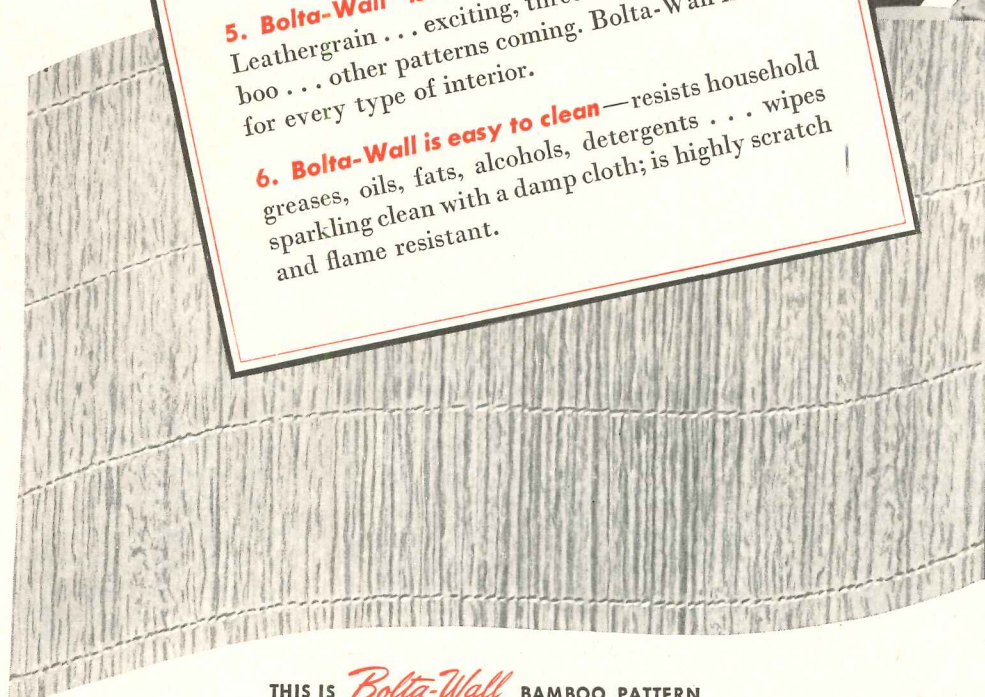
2. Bolta-Wall is dimensionally stable — formulated to eliminate seam shrinkage. Bolta-Wall is the first laminated semi-flexible vinyl plastic; has extra durability.

3. Bolta-Wall has superior hiding power — surface need not be absolutely smooth. "Cushion-backing" helps absorb surface roughness.

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6. Bolta-Wall is easy to clean — resists household greases, oils, fats, alcohols, detergents . . . wipes sparkling clean with a damp cloth; is highly scratch and flame resistant.



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- Architectural specifications
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Humbert Studio



TEN-STORY BUILDING IS COMPLETED FOR FIRST NATIONAL BANK OF TEMPLE, TEX.

THE NEW BUILDING for the First National Bank of Temple, Tex., provides eight floors of office suites in addition to the bank's own quarters on the first two floors. Banking facilities include a drive-in depository with two windows. Wyatt C. Hedrick of Fort Worth was architect and engineer.

Hot-weather comfort was a prime consideration in the design. The plan is

a T-shape so placed on the site that a portion of the south wall and nearly all the west wall can be windowless and still all of the offices have windows. The south wall is further protected by cantilevered canopies at each floor. Green-tinted heat-absorbing glass is used for all windows. The air conditioning system is zoned to maintain a constant temperature and each floor has its own air-

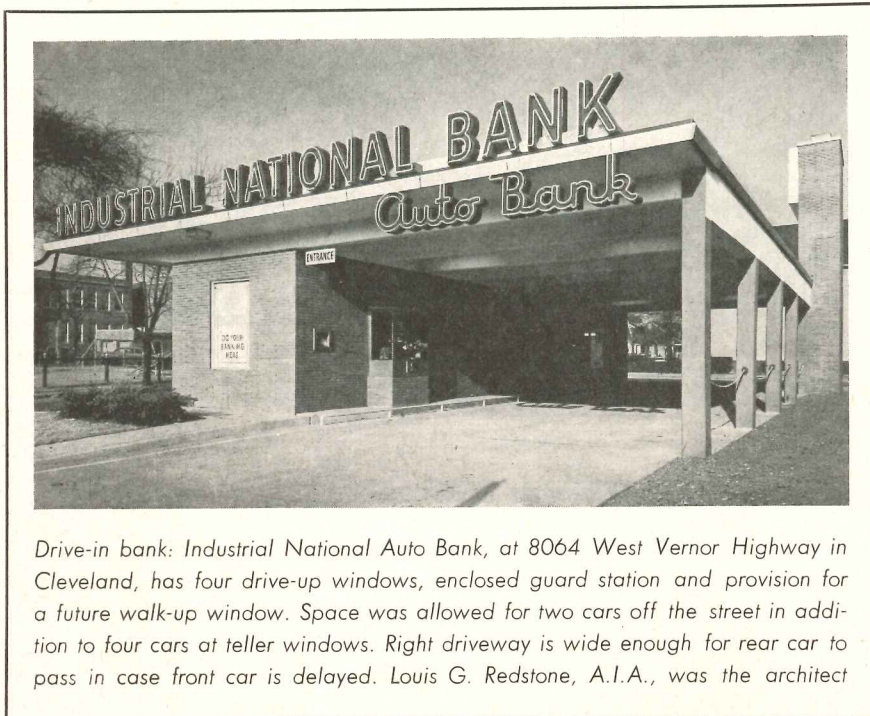
handling unit. It is possible to operate these units independently of each other.

At the main entrance, glass walls open the main banking room to the view of passersby. For easy access of customers, the entrance to the safety deposit department has been placed near the main entrance; and its facilities include, besides the usual coupon booths, a large "family booth" where families may meet with their lawyers when they wish. The interior of the banking room (photos at right above) is finished in walnut paneling.

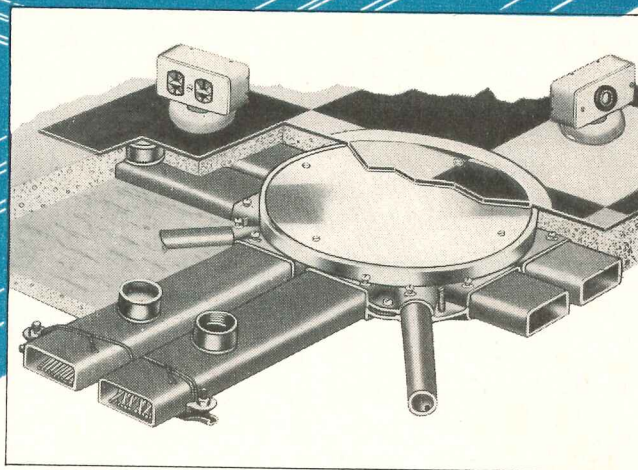
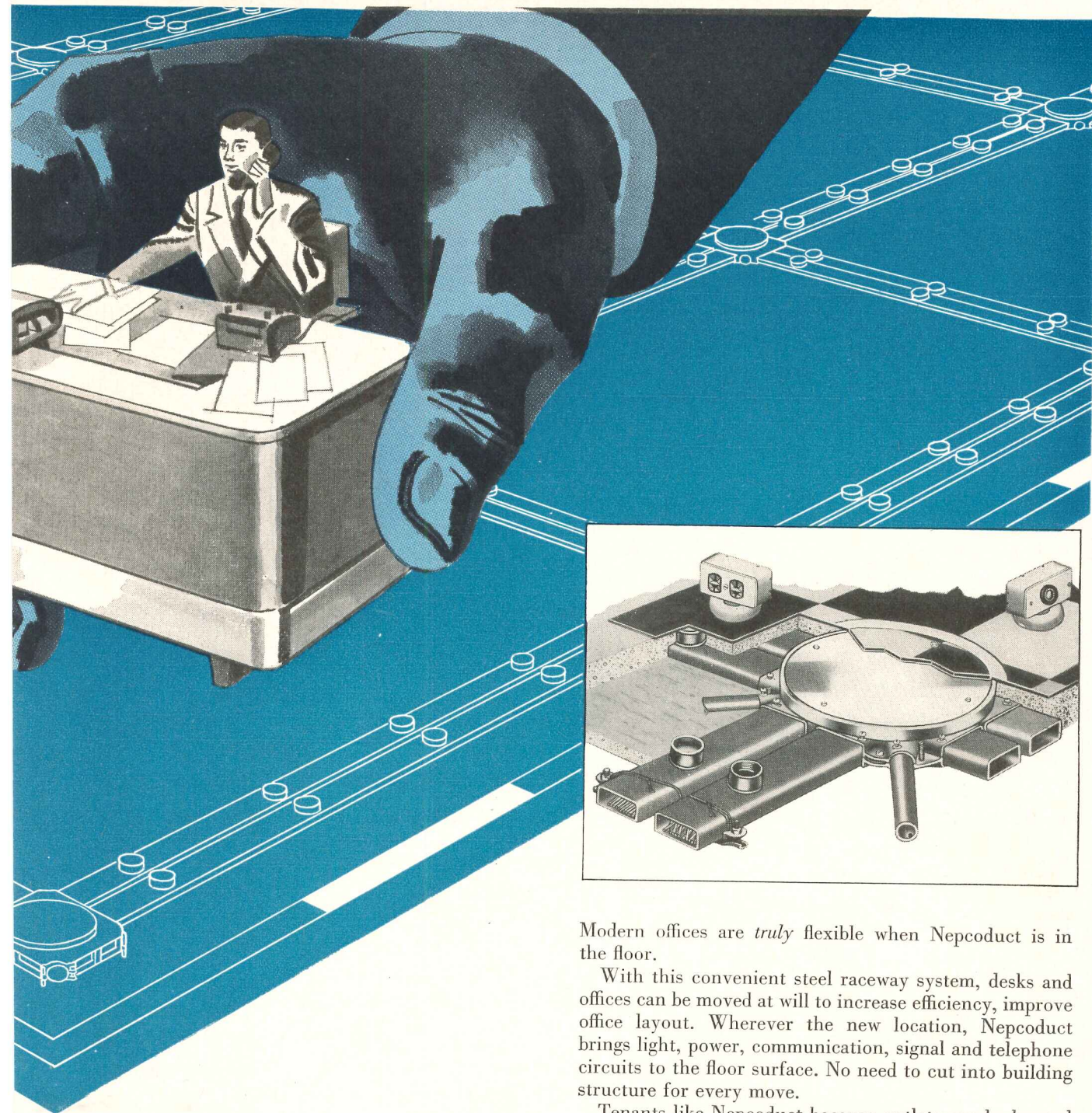
On the second floor are a lounge, recreation room and dining room for employees, a completely equipped kitchen and private dining rooms as well as additional space for banking departments. There are approximately 145 office suites on the third through the tenth floors.

Structure is basically concrete frame; steel framing was, however, used on the first floor, mainly to reduce the size of columns in the banking rooms and eliminate some columns from the lobby. With the horizontal gliding continuous windows, it was possible to carry the brick work on a continuous shelf and eliminate intermediate mullions, thereby keeping masonry work in horizontal lines and avoiding masonry labor around windows.

The sign, 130 ft high with a 55-ft beacon, is made of yellow translucent acrylic plastic, with green four-ft-high letters of the same material. The letters have been subdued or left opaque and it is the background which is lighted at night.



Drive-in bank: Industrial National Auto Bank, at 8064 West Vernor Highway in Cleveland, has four drive-up windows, enclosed guard station and provision for a future walk-up window. Space was allowed for two cars off the street in addition to four cars at teller windows. Right driveway is wide enough for rear car to pass in case front car is delayed. Louis G. Redstone, A.I.A., was the architect



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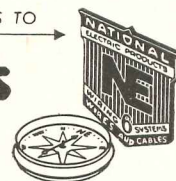
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THE RECORD REPORTS

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	Frame			
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
1951	273.2	271.3	263.7	265.2	262.2	212.8	214.6	204.2	202.8	205.0
Oct. 1952	279.0	275.7	274.3	276.4	274.1	221.1	223.7	216.2	212.7	218.0
Nov. 1952	277.9	274.3	274.1	276.3	273.8	220.4	222.8	216.1	212.6	217.8
Dec. 1952	277.7	274.1	273.8	276.1	273.6	220.3	222.6	215.7	212.7	217.8
Dec. 1952	124.9	123.9	% increase over 1939 109.5 107.0 110.3			155.3	167.9	% increase over 1939 126.8 118.4 130.0		

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
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1	243.1
Oct. 1952	260.2	253.2	253.4	259.6	253.8	251.3	246.2	248.3	251.4	252.8
Nov. 1952	259.5	252.3	253.7	259.5	253.6	249.9	244.4	248.0	251.2	252.4
Dec. 1952	259.5	252.3	253.7	259.5	253.6	249.9	244.4	248.0	251.2	252.4
Dec. 1952	135.5	135.8	% increase over 1939 115.0 116.6 113.1			136.6	146.1	% increase over 1939 111.2 106.1 116.7		

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.

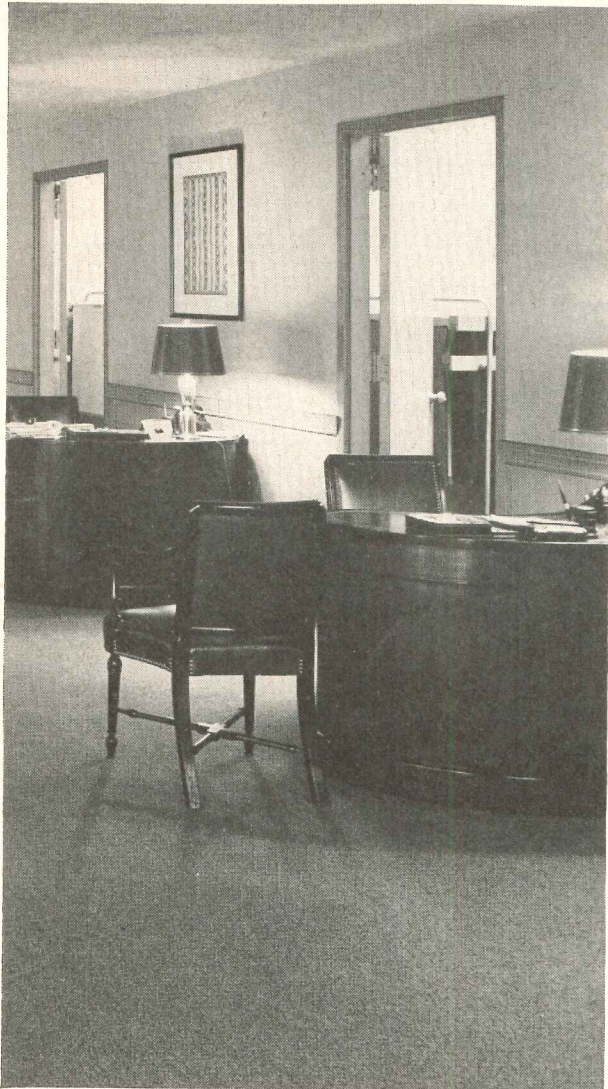
$$\frac{110-95}{110} = 0.136$$

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.

selects offices



Here's what Mr. Bezy says about Cushionlok: "In planning the Pacific Mills offices we wanted to provide a continuous flow of attractive carpet to introduce visitors to these rooms.

"We wanted this large area to be comfortable and pleasant for these visitors.

"It was our objective to use a floor covering which combined beauty and durability, and one that provided *quietness*.

"That's why we chose Bigelow Cushionlok.

"We have found that Bigelow Cushionlok Carpet absorbs noise and greatly reduces voices and other distracting sounds constantly in evidence in a show and sales room.

"Cushionlok is hard-wearing with tough fibres, available in a wide range of colors, and the name of Bigelow behind the carpet means top quality."



BIGELOW Rugs and Carpets

Beauty you can see . . . quality you can trust . . . since 1825

Bigelow sales offices are located in the following strategic cities: Atlanta, Ga.; Baltimore, Md.; Boston, Mass.; Buffalo, N. Y.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Columbus, Ohio; Dallas, Tex.; Denver, Col.; Detroit, Mich.; Indianapolis, Ind.; Kansas City, Mo.; Los Angeles, Calif.; Milwaukee, Wisc.; Minneapolis, Minn.; New York, N. Y.; Philadelphia, Penna.; Pittsburgh, Penna.; St. Louis, Mo.; Salt Lake City, Utah; San Francisco, Calif.; Seattle, Wash.; Hartford, Conn.; High Point, N. C.

REQUIRED READING

DESIGN AND CONSTRUCTION OF THE GENERAL HOSPITAL

Design and Construction of General Hospitals. By United States Public Health Service. Published by F. W. Dodge Corporation (119 West 40th St., New York, N. Y.) in collaboration with Modern Hospital Magazine. 1953. 8¾ by 11⅝ in. 240 pp., illus.

REVIEWED BY EMERSON GOBLE

THE REASON for this book would soon be clear to anybody who visited Marshall Shaffer's office in the U. S. Public Health Service and saw the vast quantities of assorted pieces of hospital literature going out to architects and hospital administrators the world over. There was obvious need for a book assembling the hospital planning material of this office. This is that book.

Shaffer's office has become, in the last ten years, a sort of center of hospital planning, not because he and his staff of architects sit as arbiters (though in a

sense they do), but because among them they have focused all of the research of several divisions of the Health Service and other organizations, and translated it into graphic suggestions for architects. This background information, roughly paralleling the pre-planning research an architectural office might do, or a hospital board, has appeared in magazines, notably ARCHITECTURAL RECORD, *Hospitals* and *The Modern Hospital*, in piecemeal fashion. Reprints of individual articles have been sent out literally by the tens of thousands.

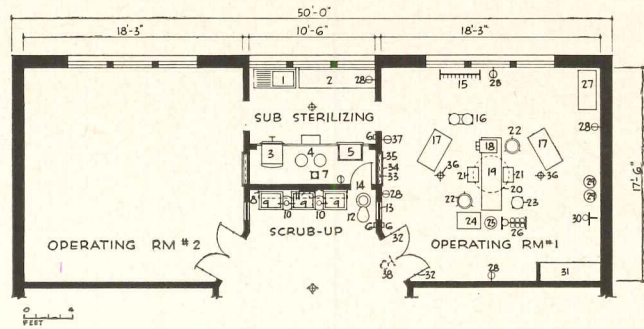
Now the basic planning information has been assembled, restudied, revised for this book.

Perhaps most useful of all to hospital planners is the section on Elements of the General Hospital. These are plans of various departments of the hospital — administrative, surgical, obstetrical, and so on — for different sizes of hospitals. The plans show necessary spaces, properly arranged, with major equipment items illustrated and listed. This section of the book has seen extensive revision since original publication of the elements, for the intensive attention to hospital planning of the last few years has added new elements and has changed many of the earlier ones.

Still useful, but not to be taken quite so literally, is the section on Schematic Plans for the General Hospital. These plans, suggestive only, show typical arrangements of the elements in hospitals ranging in size from 8- or 10-bed "clinics" to hospitals of 200 beds. In almost no actual instance will these plans be completely suitable, but they will suggest relationships of departments and circulation ideas.

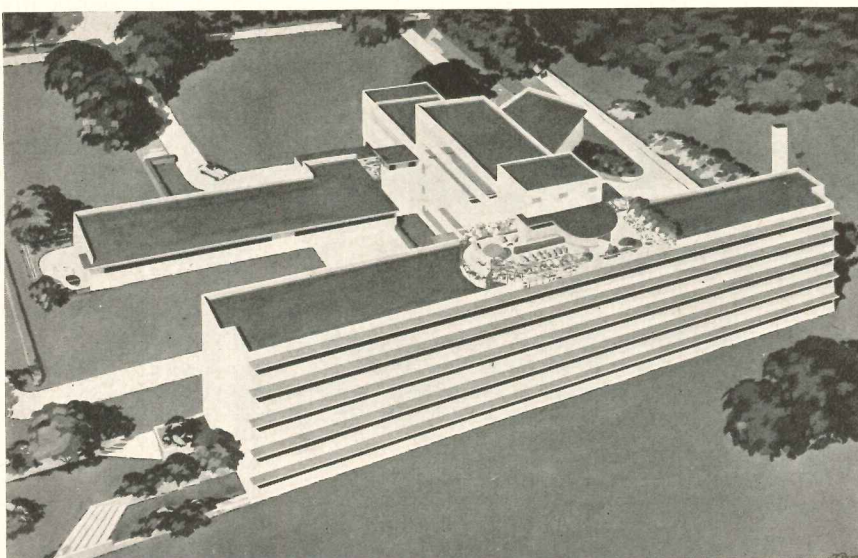
The text portion of the book gives the reasoning behind the plan ideas of the elements and type plans, the disposition of departments and sub-departments, the traffic routes suggested, the medical requirements. This section deserves close reading, especially by those who do not specialize in hospital design. It is indeed Required Reading.

(Reviews continued on page 48)



One of the "elements," from *Design and Construction of General Hospitals*

200-Bed Acute General Hospital (Stanley Reese, Delineator); from *Design and Construction of General Hospitals*



Skylike

SOLVES A LIGHTING PROBLEM

at the
**SHERATON-
CADILLAC**



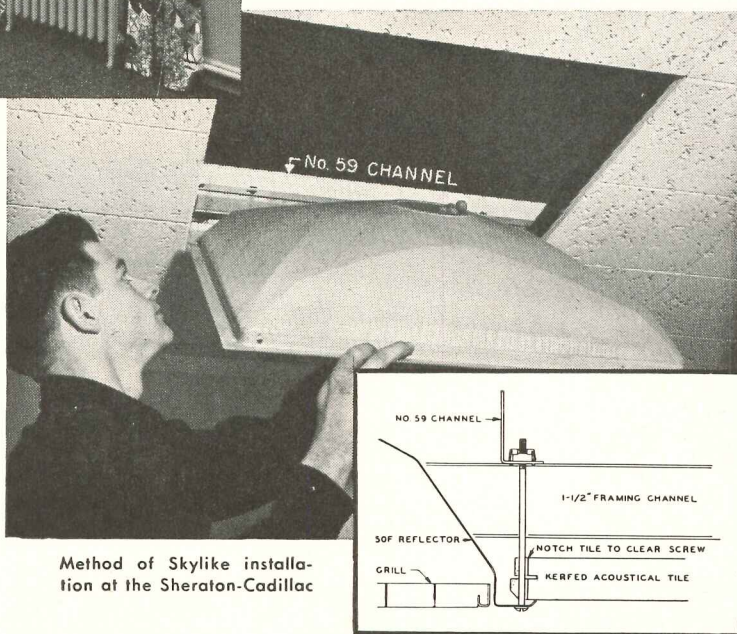
Bedroom suite at the Sheraton-Cadillac using Skylike units

THE PROBLEM . . .

Major renovations of this famous hotel involved air conditioning for the guest rooms. To complete the modernization acoustical ceilings were installed. Hotel management wanted recessed lighting units which would harmonize with any decorative scheme and provide comfortable well diffused illumination.

THE SOLUTION . . .

Recessed SKYLIKE incandescent units using 200W lamps were chosen and installed in the new hung ceiling construction. Sheraton-Cadillac engineers developed a special mounting device for the reflectors which would allow them to be supported from the ceiling framing members without need of bolts or other fastening devices. This permitted adjustment and alignment of fixtures after acoustical panels were installed. (See insert)



Method of Skylike installation at the Sheraton-Cadillac

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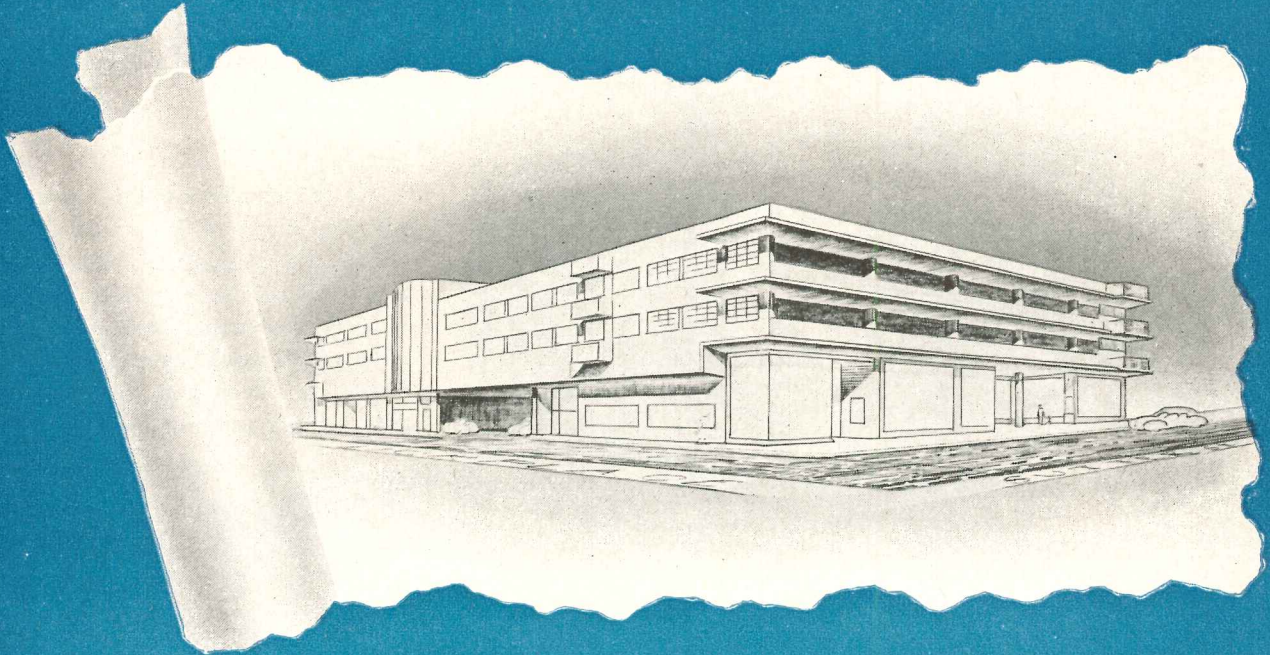
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11% savings over structural steel realized with design using Roebing Strand and Fittings

IN THE BARRETT-LICK GARAGE nearing completion in San Francisco, the plans call for a large, unobstructed space in the entrance area . . . and to achieve this, four columns from the upper stories terminate at the second floor and are carried by the heaviest prestressed concrete girders ever constructed. Prestressed concrete was chosen because it allowed adequate headroom without increasing the story height . . . and, incidentally, there was a \$6,000 saving (more than 11%) over the cost estimate for an alternative structural steel design.

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Roebing Wire and Strand for pre-tensioning are

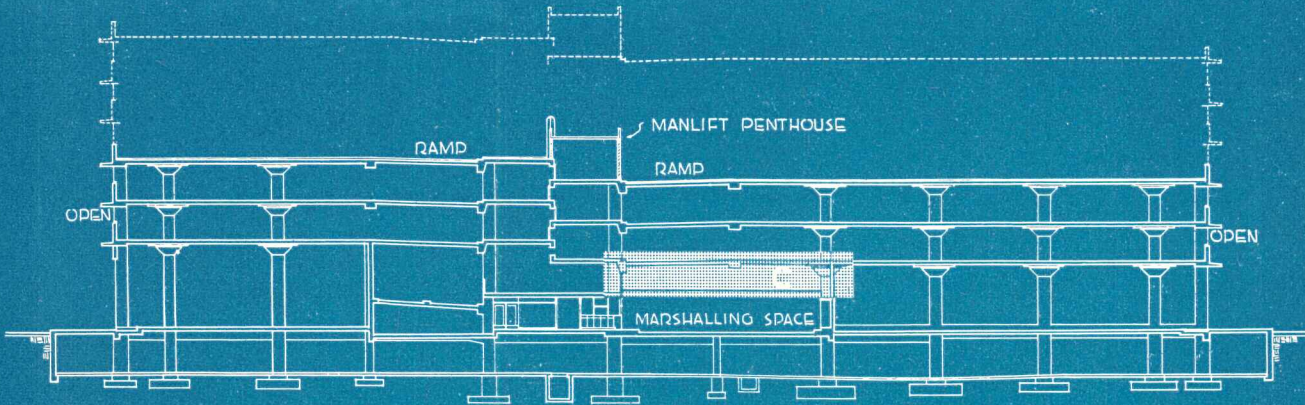
made of high tensile acid steel that results in products of high elastic characteristics. Special treating increases their bonding quality, too.

Roebing Strands for post-tensioning are fabricated from special hot galvanized acid wire, insuring extra strength and elastic properties. At recommended stresses, there is complete safety and no future relaxation of the steel. And Roebing Fittings develop the full strength of the strand without exceeding the yield point of any of their parts. They are attached at the plant and proof-loaded beyond recommended stresses.

Prestressed Concrete is being more and more frequently adopted. Write for the facts and figures on Roebing Prestressing materials. Prestressed Concrete Dept., John A. Roebing's Sons Corporation, Trenton 2, New Jersey.

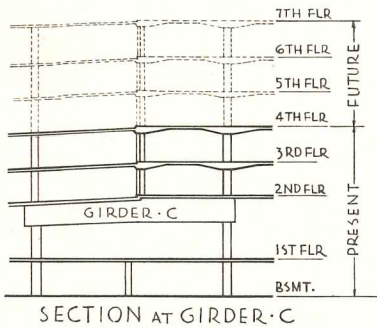
A Subsidiary of The Colorado Fuel & Iron Corporation

girders for California garage



Ellison & King, Engineers • Barrett and Hilp, Contractors

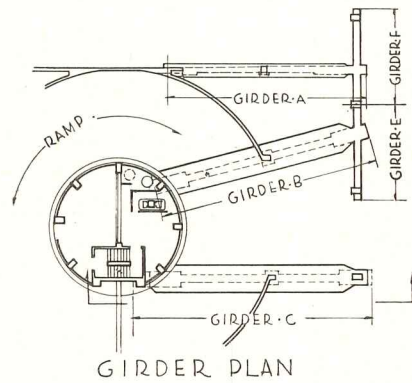
0 10 20 30 40 50 FT.



Open, unobstructed entrance area is indicated directly below girder "C". Note that the design includes provision for three additional stories. This section shows haunched slabs used in actual construction.

Plan view of five prestressed concrete girders, showing their arrangement to meet the free area requirements of this ultra-modern garage.

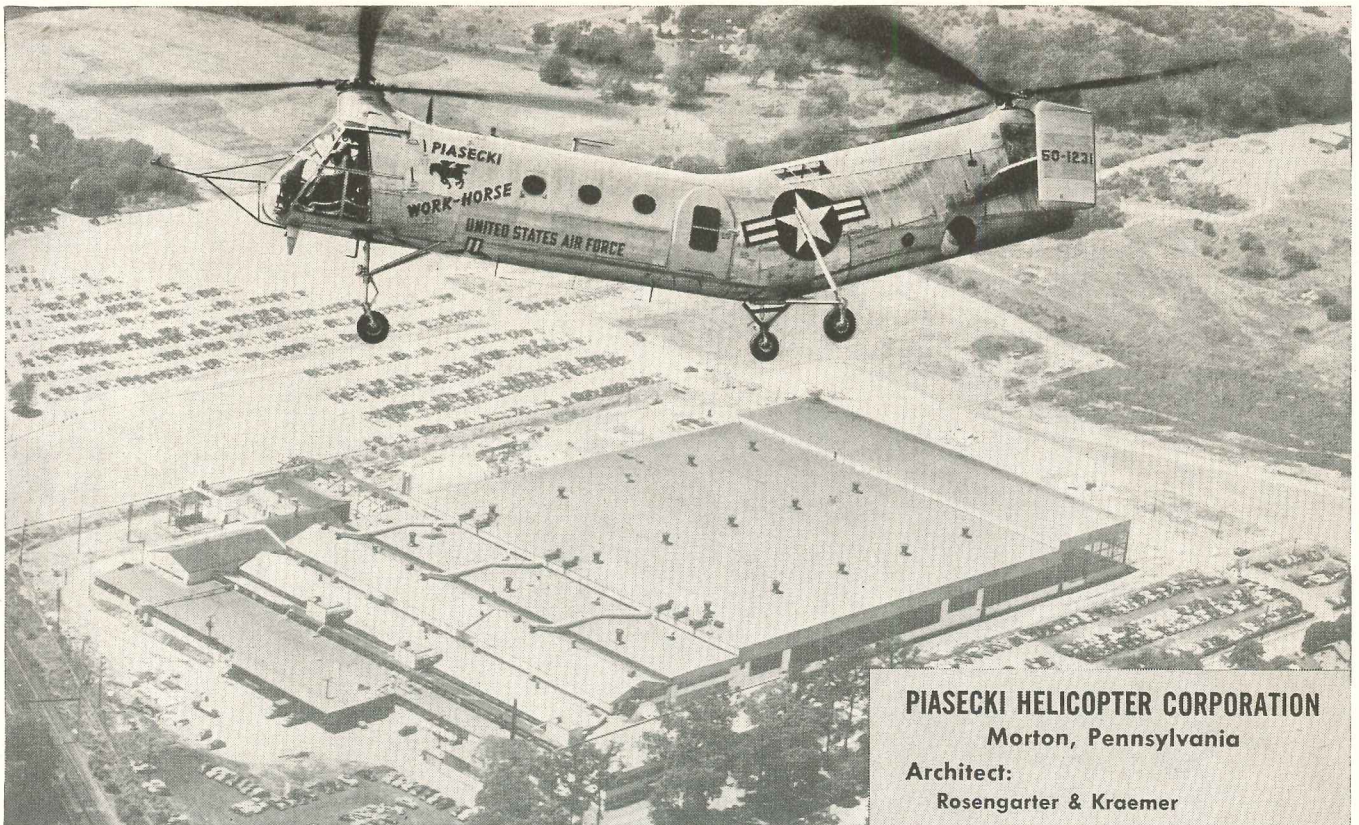
0 5 10 20 30 40 50 FT.



ROEBLING

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST & 5 PITTSBURGH ST • CHICAGO, 5525 W. ROOSEVELT RD
 • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E HARBOR ST & 120 S. HEWITT ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • PITTSBURGH, 1301 CLARK BLDG • ROCHESTER, 1 FLINT ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • ST. LOUIS, 3001 DELMAR BLVD • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, NEW JERSEY





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Architect:

Rosengarter & Kraemer

General Contractor:

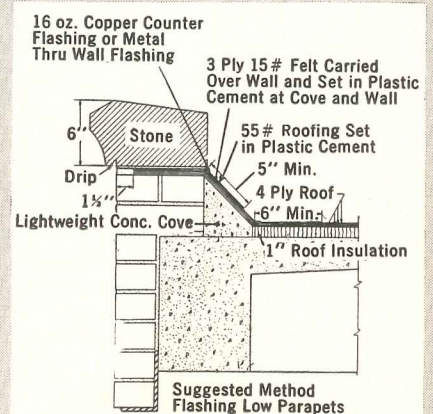
Wark & Co., Philadelphia

Roofing Contractor:

Geo. H. Duross, Inc., Philadelphia

RUBEROID RECOMMENDATION

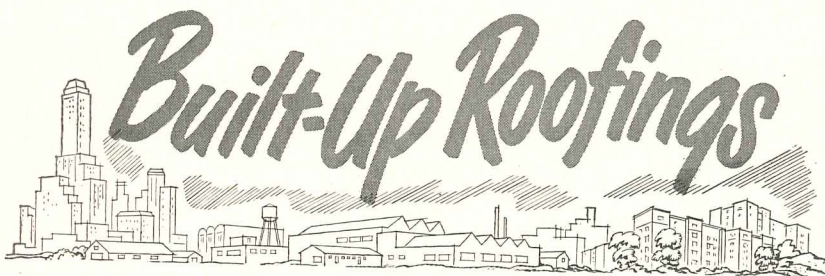
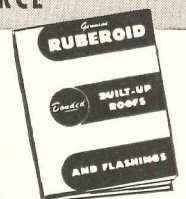
(A typical detail example from the Ruberoid Specification Book.)



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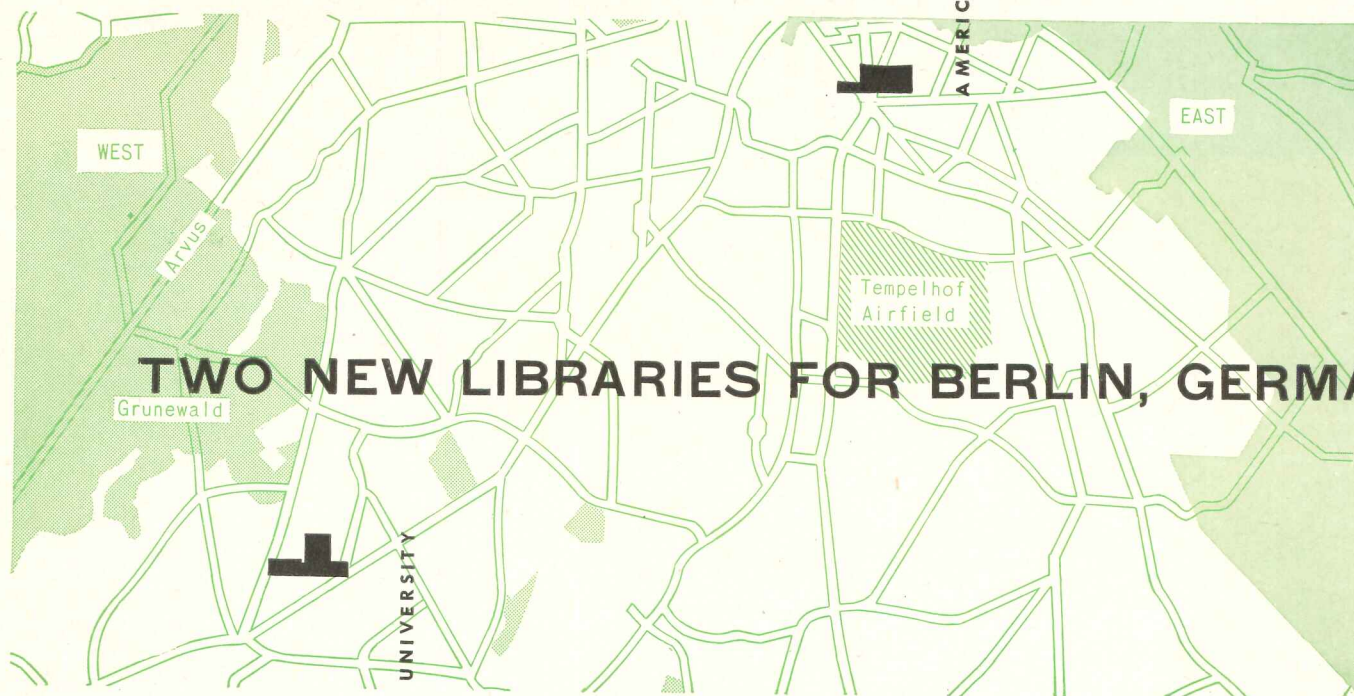


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ARCHITECTURAL RECORD

AMERICAN MEMORIAL LIBRARY



TWO NEW LIBRARIES FOR BERLIN, GERMANY

ARCHITECTS FOR AMERICAN MEMORIAL LIBRARY

Gerhard Jobst, Willy Kreuer, Hartmut Wille, Fritz Bornemann

ARCHITECTS FOR FREE UNIVERSITY LIBRARY

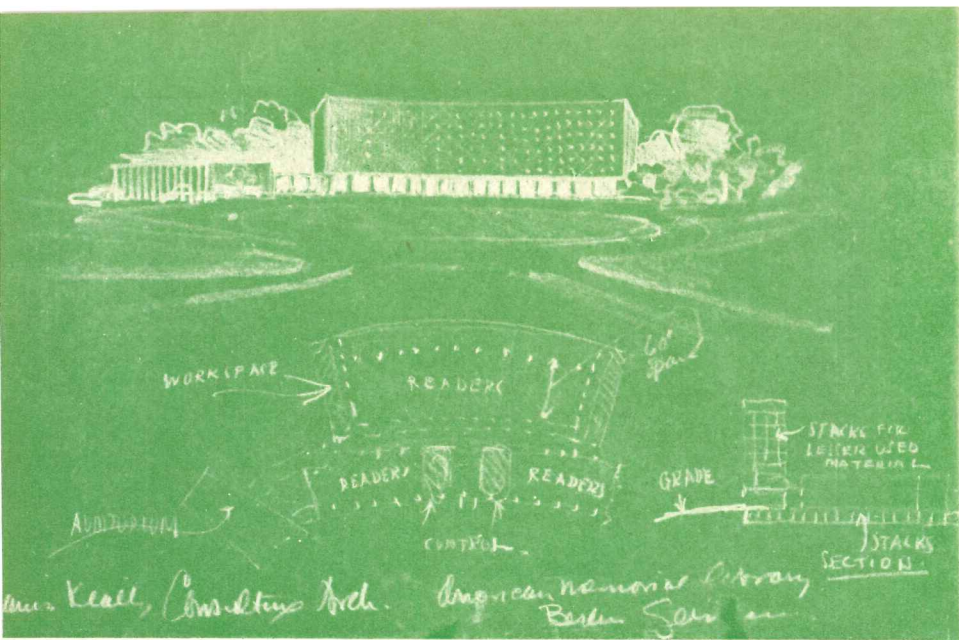
Franz Heinrich Sobotka, Gustav Müller

AMERICAN CONSULTANTS FOR BOTH LIBRARIES

Consulting Architect: Francis Keally, A.I.A.; Library Consultant: Charles M. Mohrhardt, Associate Director, Detroit Public Library, Chairman, Building Committee, Public Library Division, American Library Association

WHEN IN 1948 the city of Berlin was divided into four occupation zones, the greater part of the population was suddenly cut off from the city's main libraries, all of which happened to be located in the eastern sector which the U.S.S.R. immediately closed to the residents of the other three sectors. Book-hungry Berliners, financially unable because of the war to buy the books they wanted to read, soon swamped all existing library facilities in the three zones of West Berlin.

Thanks to the Point IV Program and the Ford Foundation, there are today two major libraries under construction in the city's American Zone, both designed by German architects with an American architect and an American librarian serving as consultants. What the collaboration has meant in the terms of international good will is for the future to determine; what it has meant to the general field of library design is indicated, in part at least, in the following ten pages.

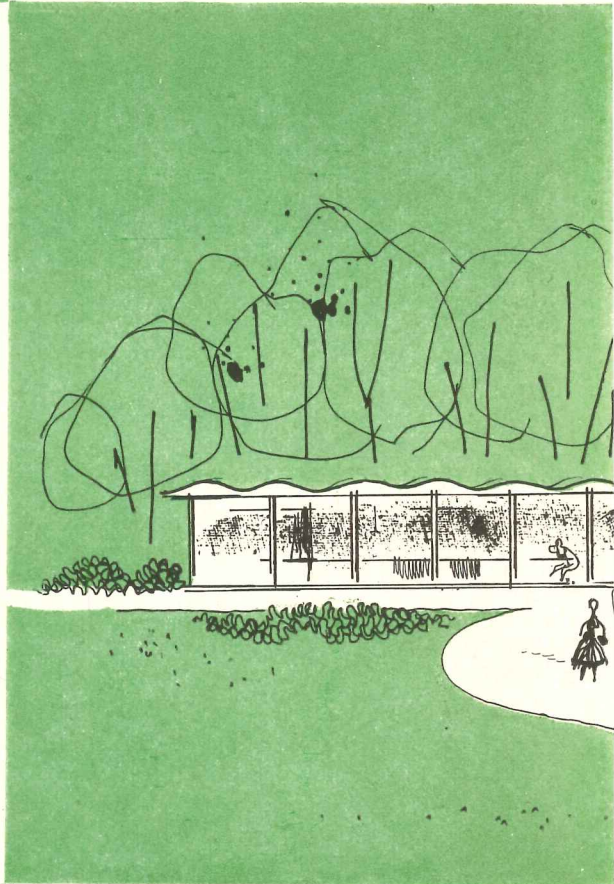
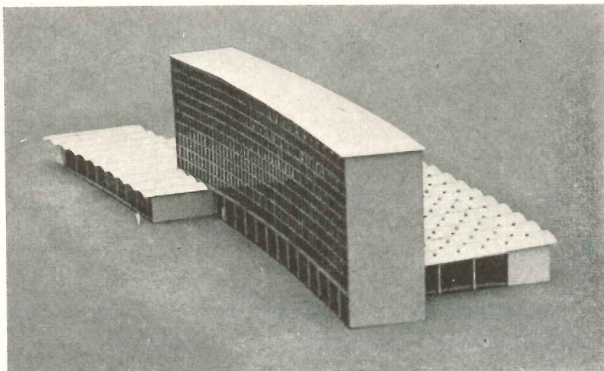


Left: rough sketch by consulting architect shows library's general organization. Note that all public rooms are on ground floor

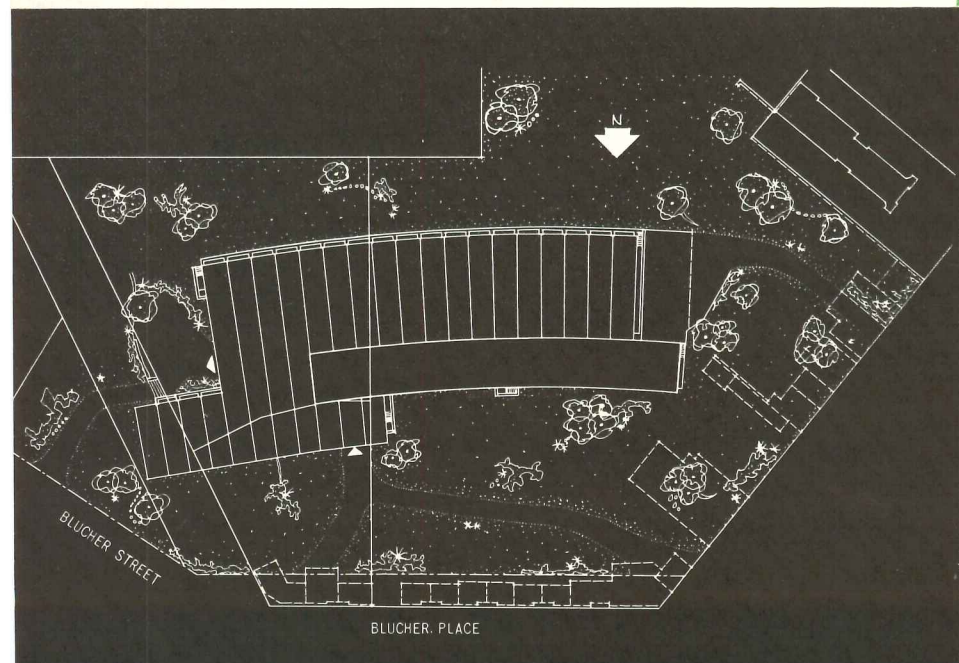
AMERICAN MEMORIAL LIBRARY

Gerhard Jobst, Willy Kreuer,
Hartmut Wille, Fritz Bornemann, Architects

Francis Keally, A.I.A., Consulting Architect
Charles M. Mohrhardt, Library Consultant



Tom Ballenger

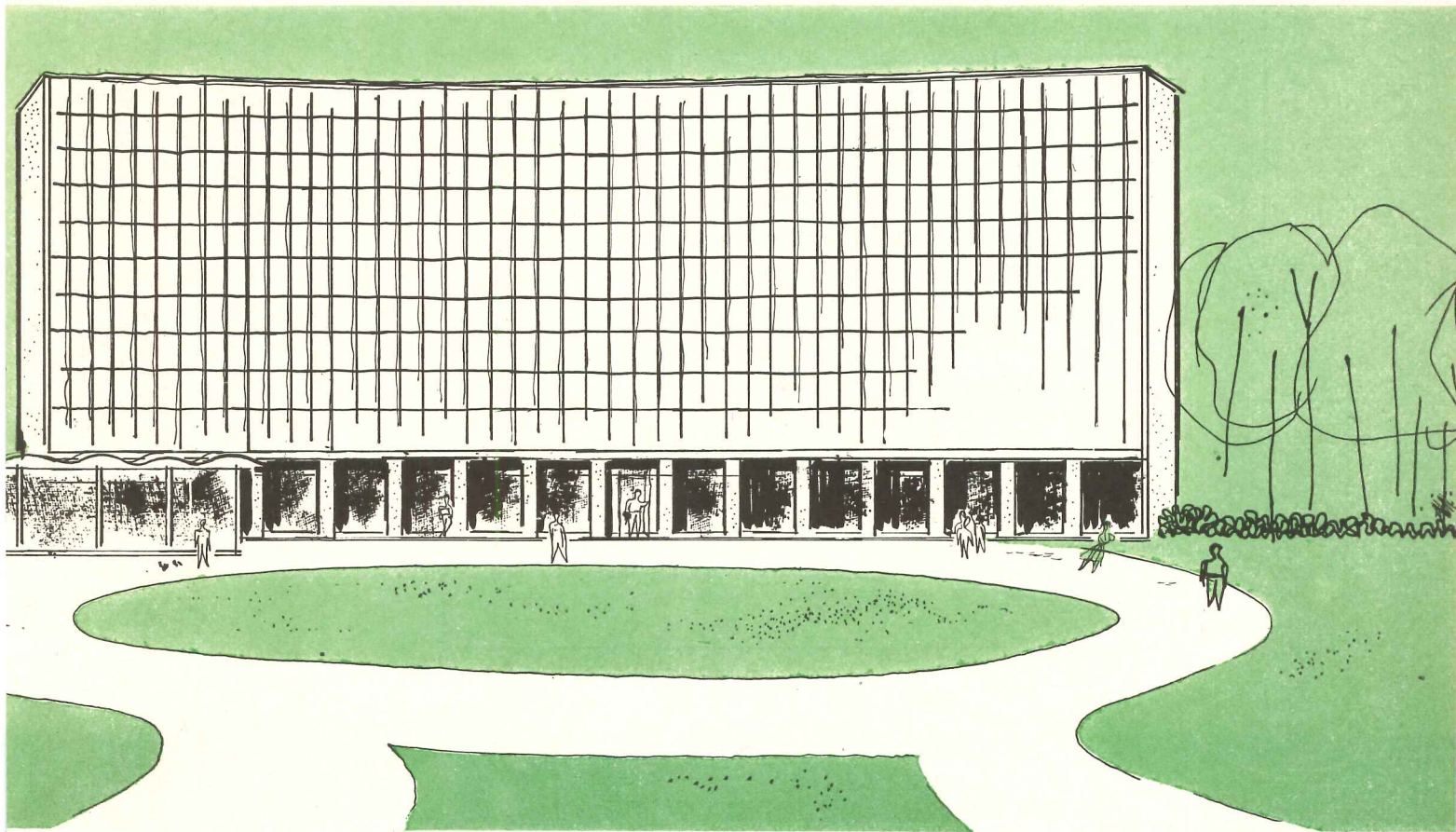


Building will front on important traffic square close to Russian Zone. Above: main (north) façade. Opposite: early construction view

THE AMERICAN MEMORIAL LIBRARY now under construction in West Berlin was made possible by the Point IV program of the United States Government; in the words of former U. S. High Commissioner John McCloy, it was given to the German city "in recognition of the courageous attitude of all Berliners during the time of the blockade." It will be one of the city's most important public libraries, serving as a research center and lending agency for some 60 smaller district libraries.

The new building is in the south central portion of Berlin, almost facing the present boundary between

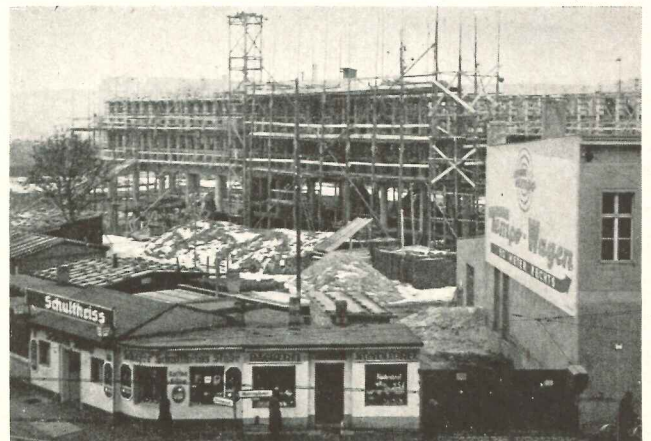
The plan of the main library floor (page 127) stresses maximum flexibility. There are only two fixed partitions in the entire area — glass walls enclosing the children's department and the listening booths of the music departments; all other partitions are movable book shelves arranged around book lifts to the basement stacks. The book lifts are spaced at regular intervals along the entire length of the building, giving every department direct access to the stacks no matter how the movable partitions are placed. A long corridor, with display cases on both sides, runs from east to west, connecting every department with the lobby.

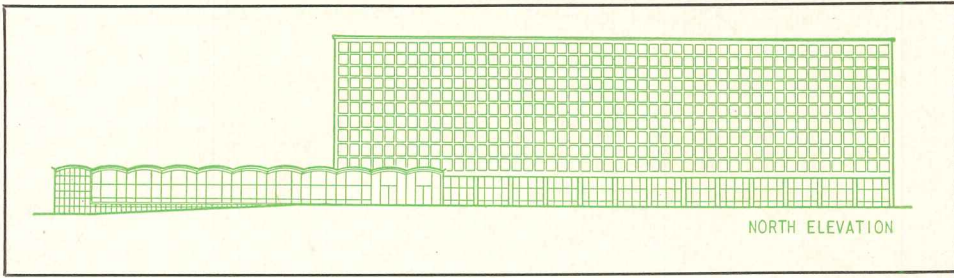


the eastern and western zones. Its main façade, an impressive curve of reinforced concrete, is to the north, fronting on a square which is an important intersection for city transportation systems. The area to the south is densely populated, and contains numerous small and medium-sized industries.

Although part of the building is six stories in height, all reading rooms and public areas are on the ground floor, eliminating the need for public stairs or elevators. One lobby serves both the library and the 350-seat auditorium forming the low east wing; since checkrooms and washrooms are at the eastern end of the lobby, both are accessible from the auditorium even when the library itself is closed.

City of Berlin



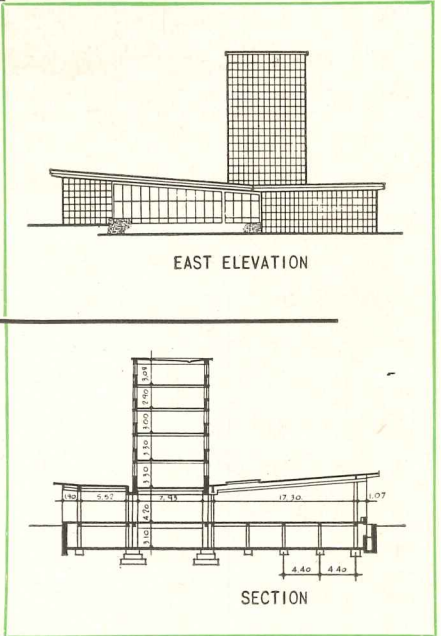


NORTH ELEVATION

AMERICAN MEMORIAL LIBRARY

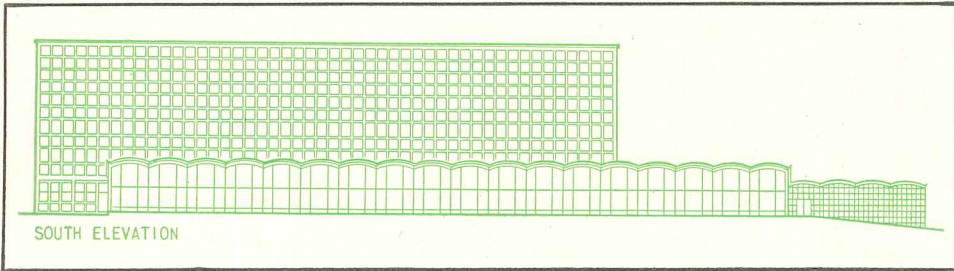
The location of the various reading rooms and departments has been worked out on a basis of use and noise. Those departments expected to be used most frequently are nearest to the main entrance, with the public catalog and reference room serving as a focal point. The "noisy" rooms — home reading, youth department and children's library — will be at the eastern end of the building, the quieter specialized sections such as law and science at the opposite end.

Main floor book shelves will accommodate about 65,000 reference and general circulation volumes; the basement stacks will house another 360,000.

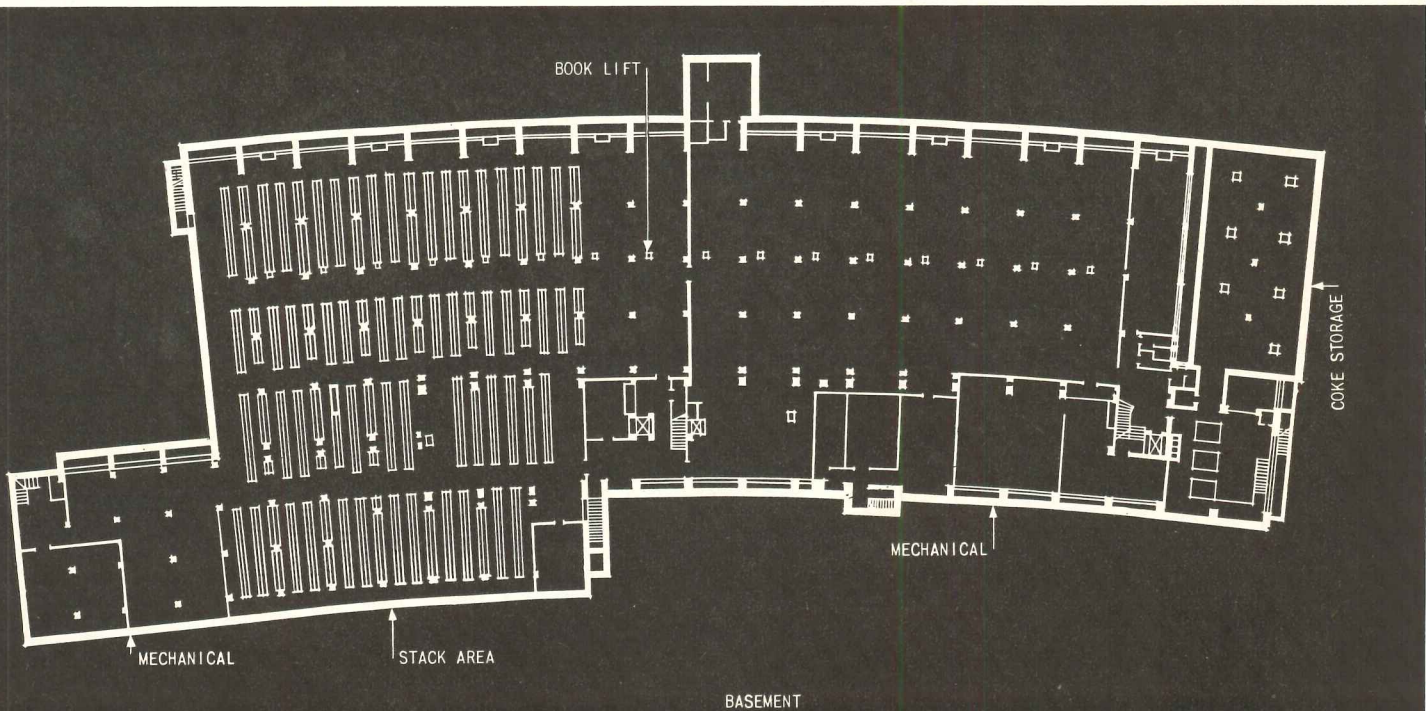


EAST ELEVATION

SECTION

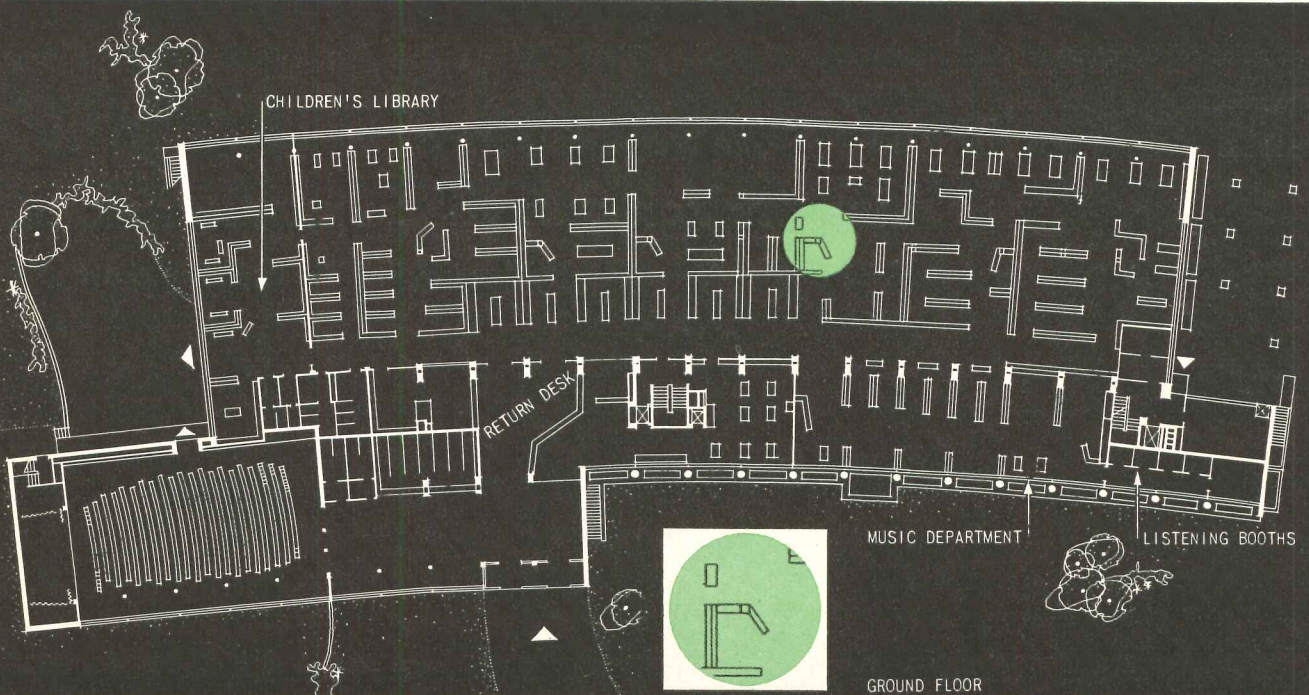
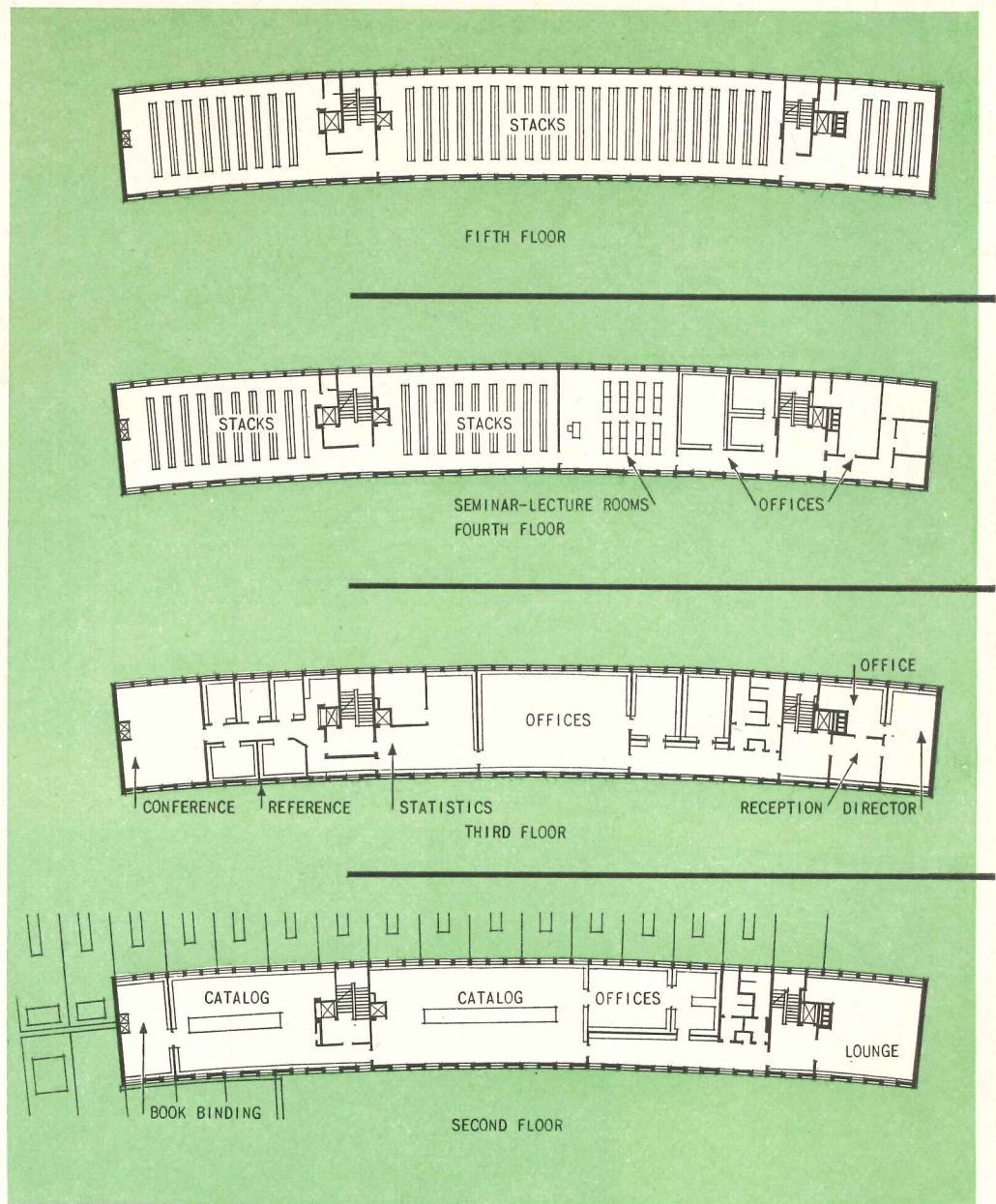


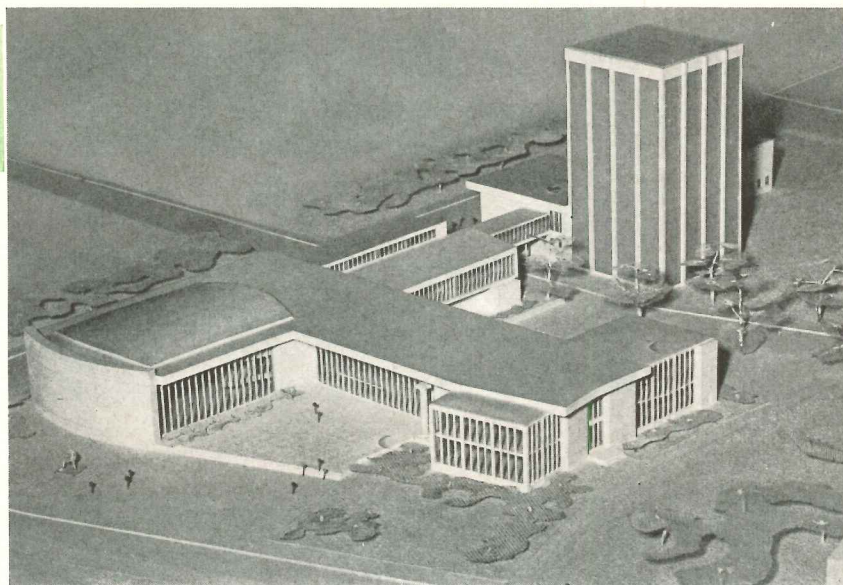
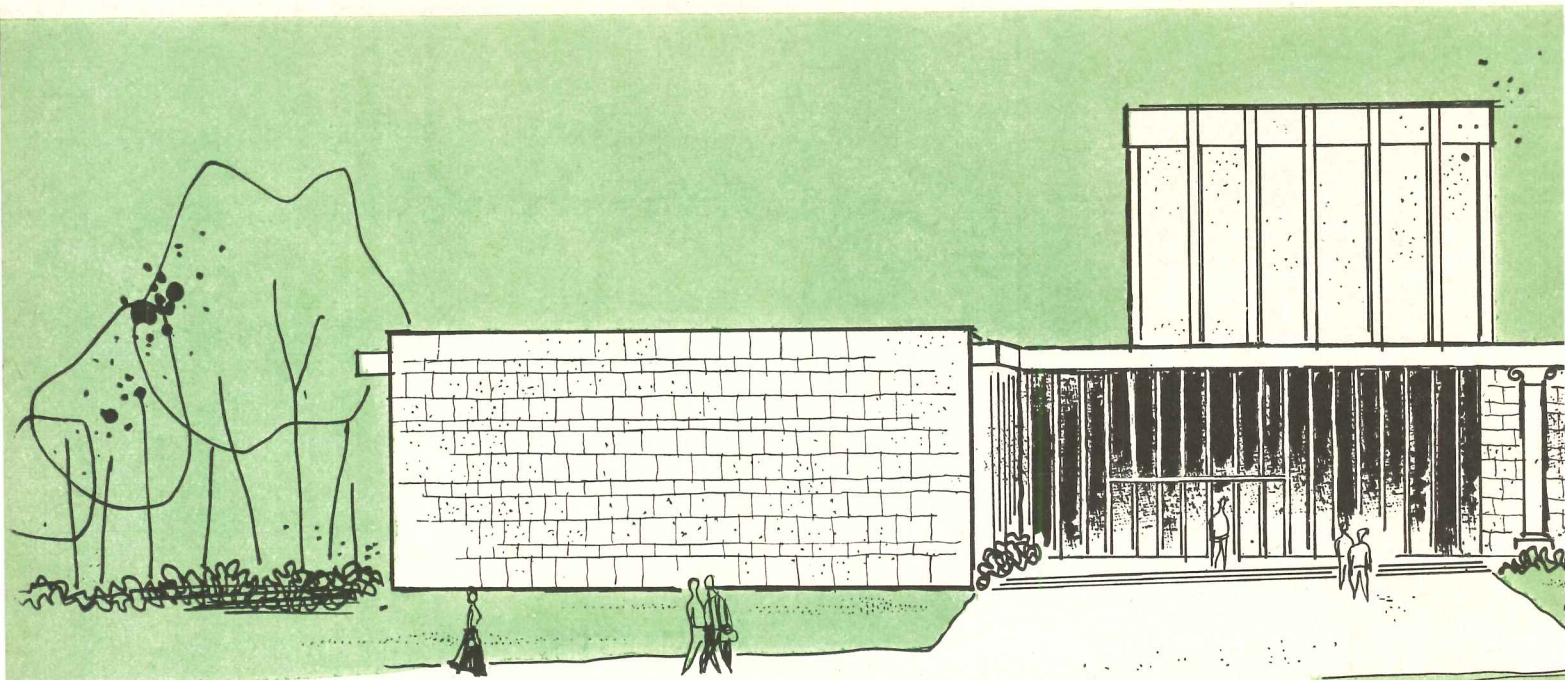
SOUTH ELEVATION



BASEMENT

Public and working areas are completely separate, the former occupying only the ground floor. Public reading and reference rooms are divided by movable partitions and serviced from basement stacks by regularly spaced book lifts (detail below). Offices, work rooms, library school and specialized stacks are on upper floors. Construction is reinforced concrete. Design was winner of competition open to all architects in Western Germany. Scale of plans: $\frac{1}{8}$ in. = approximately 1.85 m or about 6 ft





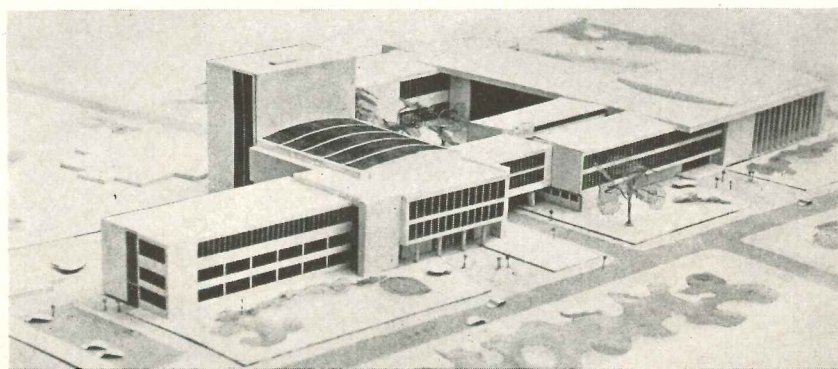
Franz Heinrich Sobotka
Gustav Müller
Architects

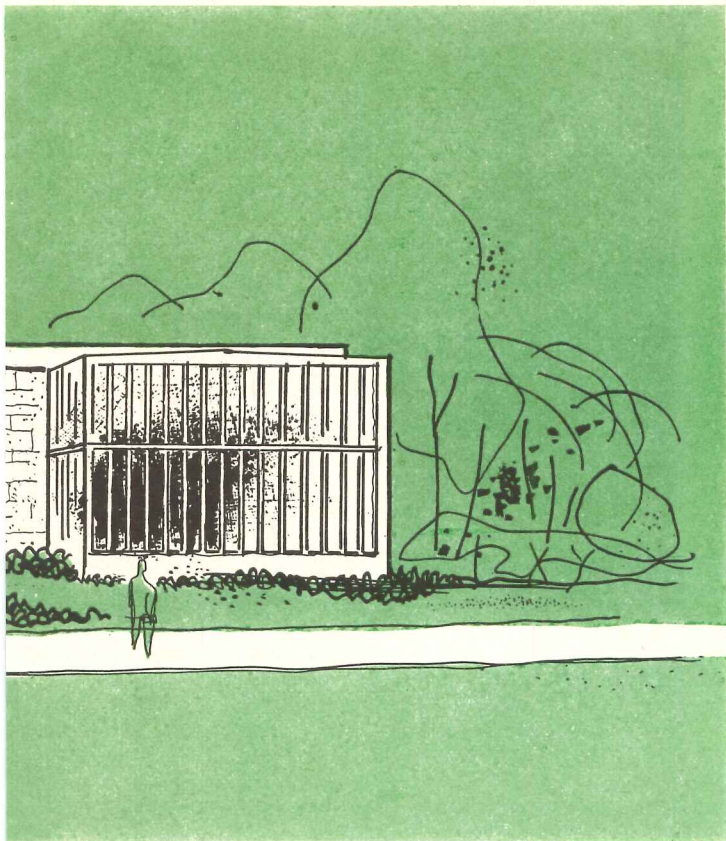
Francis Keally, A.I.A.
Consulting Architect

Charles M. Mohrhardt
Library Consultant

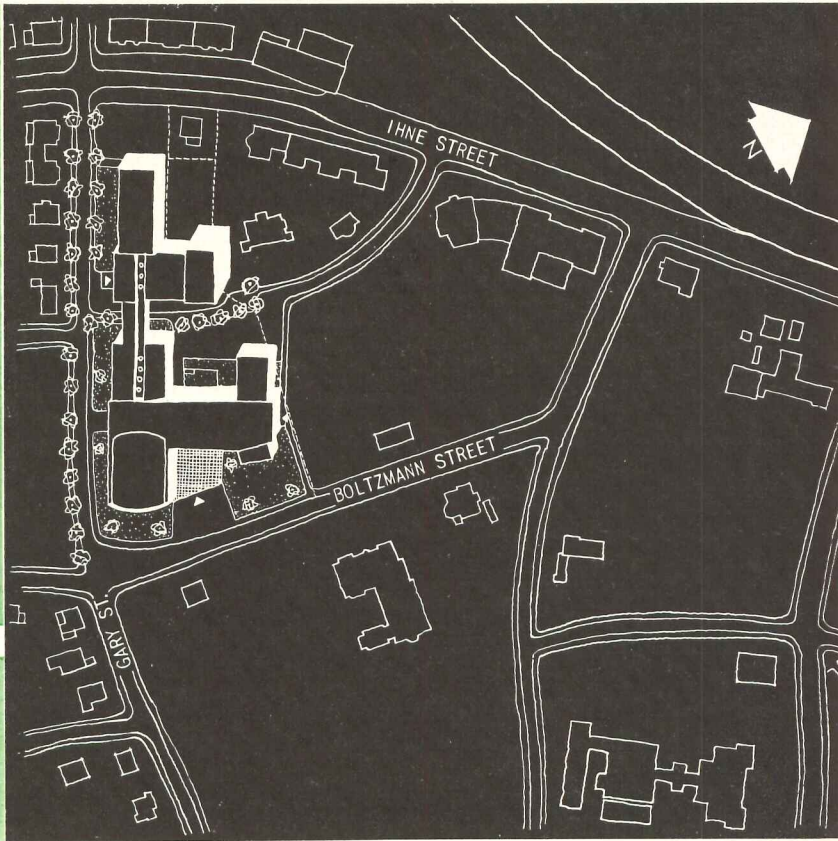
LIBRARY FOR THE FREE UNIVERSITY OF BERLIN

Above: model of winning design. Below: another model shows same component parts but different arrangement





Tom Ballenger



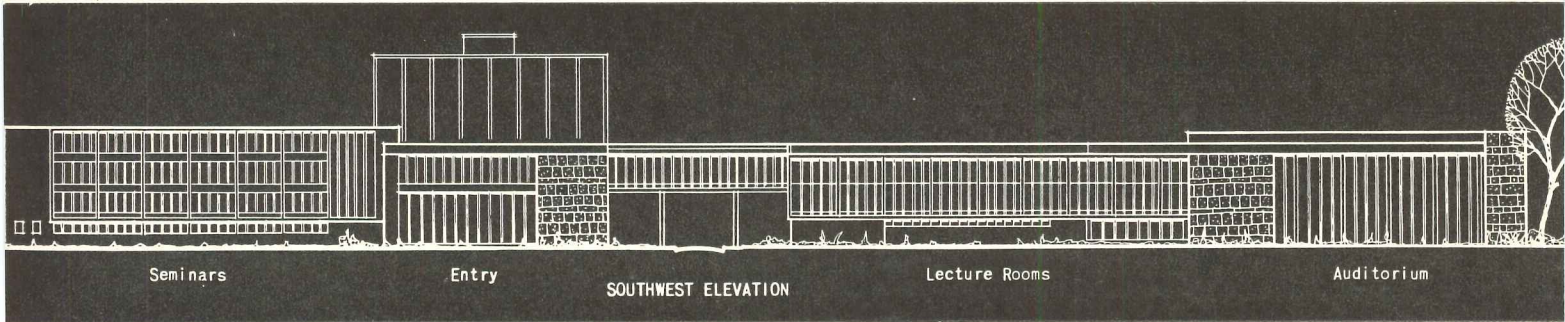
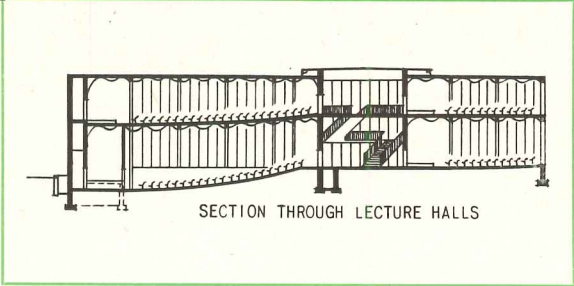
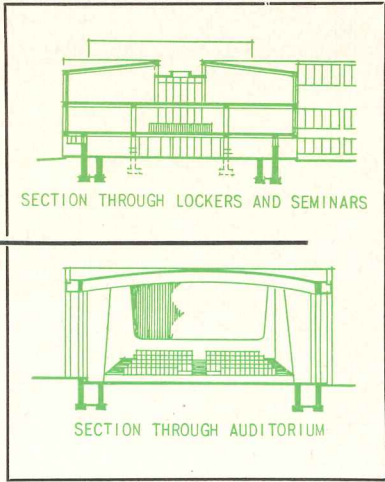
THE FREE UNIVERSITY OF BERLIN was founded in 1948 as a result of the four-way treaty division of the city which placed the existing Friedrich-Wilhelm University (now Humboldt University) in the Soviet Sector. By November of that year some 2140 students had enrolled in the new school, nearly 40 per cent of them from the Soviet Zone. Two years later (the fall of 1950) the enrollment had reached 5600 and the buildings rented or bought for university use were wholly inadequate; classrooms were widely scattered and the university had no proper center. Furthermore, there was no central library, though the various departments in three years had collected around 350,000 books and periodicals — a good start, but far from an adequate number for the growing student population.

In 1951 the University received a grant of over a million dollars from the Ford Foundation and immediately started plans for a combination library-lecture hall building. The architects, chosen by competition, were given three main requirements: (1) the building must strongly emphasize the idea of the academic community and become a center for the whole university;

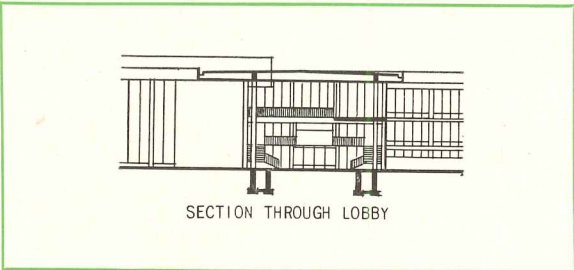
(2) the library and lecture halls must be directly connected; and (3) a close contact must be established between the new library and at least some of the seminar libraries.

The new building is planned to accommodate 750,000 volumes, about 25,000 of which will be open-access standard and reference works in the reading rooms. The books in the stack tower will be divided into about 20 groups and arranged by number in such a way that open access and special work centers will not be required.

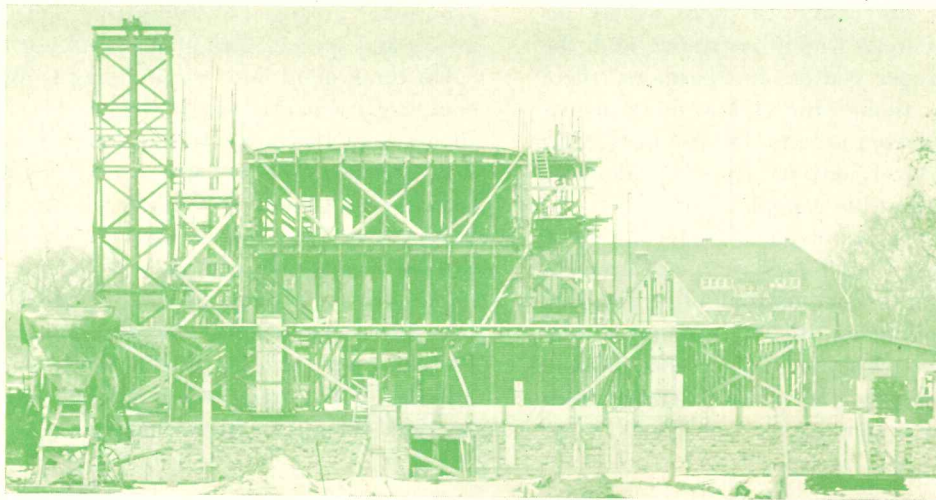
On the ground floor the building is divided into two completely separate wings with a service drive between them; from the mezzanine up, however, a bridge connects the two. The east wing contains a two-story auditorium plus a number of smaller lecture halls and classrooms; the west wing houses the stacks, reading and catalog rooms and seminars. A general catalog in the main library will index all the seminar libraries to facilitate interdepartmental lending and research work. Present plans call for the inclusion of three seminar libraries in the main building, with six or eight others provided for in two future wings.

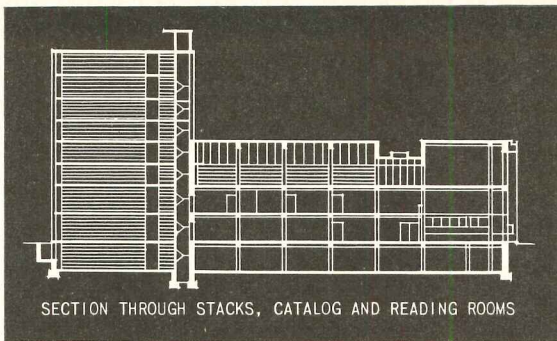


Sections and plans show careful consideration of readers' varying needs ranging from assembly hall to seminar rooms. Below: building is now under construction

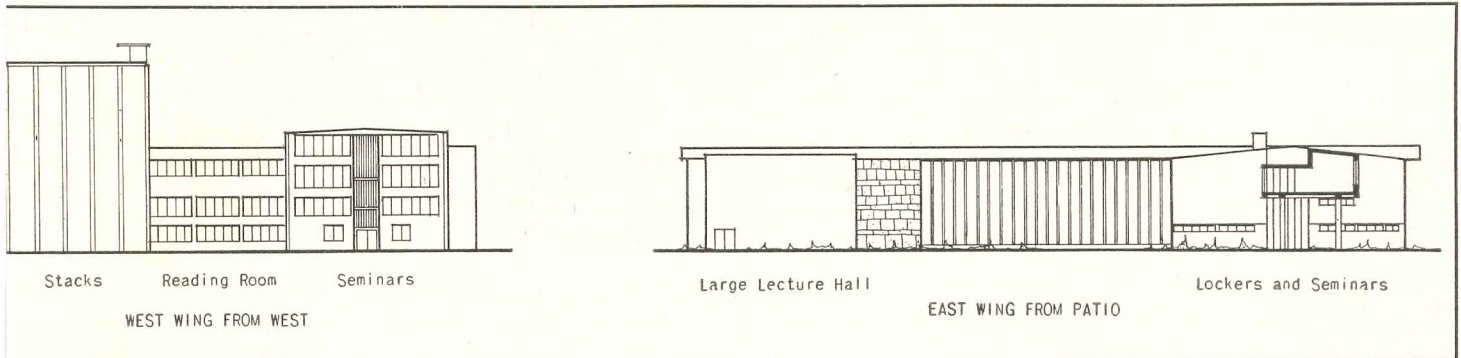


City of Berlin

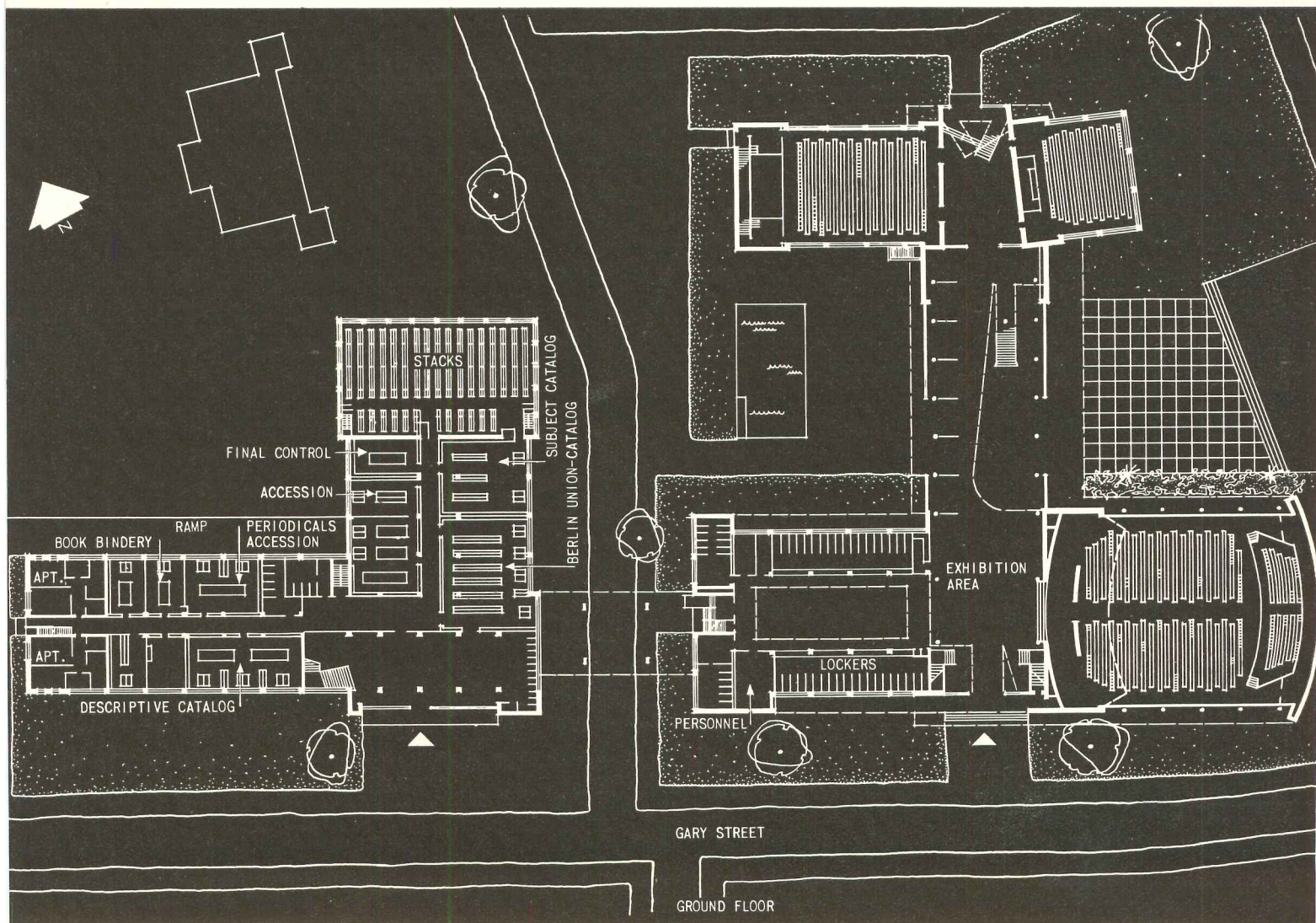




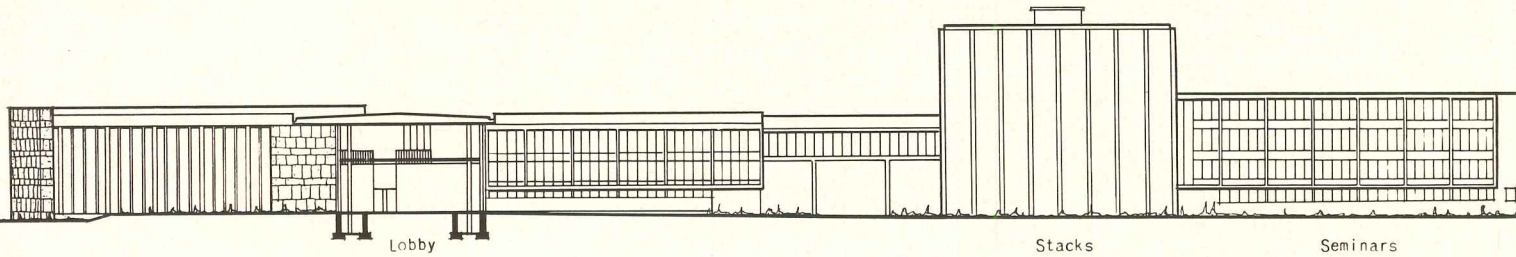
Stacks here are housed vertically instead of horizontally as in American Memorial Library. Reading rooms, public areas and work space, however, are similarly placed



On ground floor building is divided into two wholly separate wings with a service drive between them. West wing houses the various catalogs; east wing, auditorium, lecture halls, lockers and exhibition hall

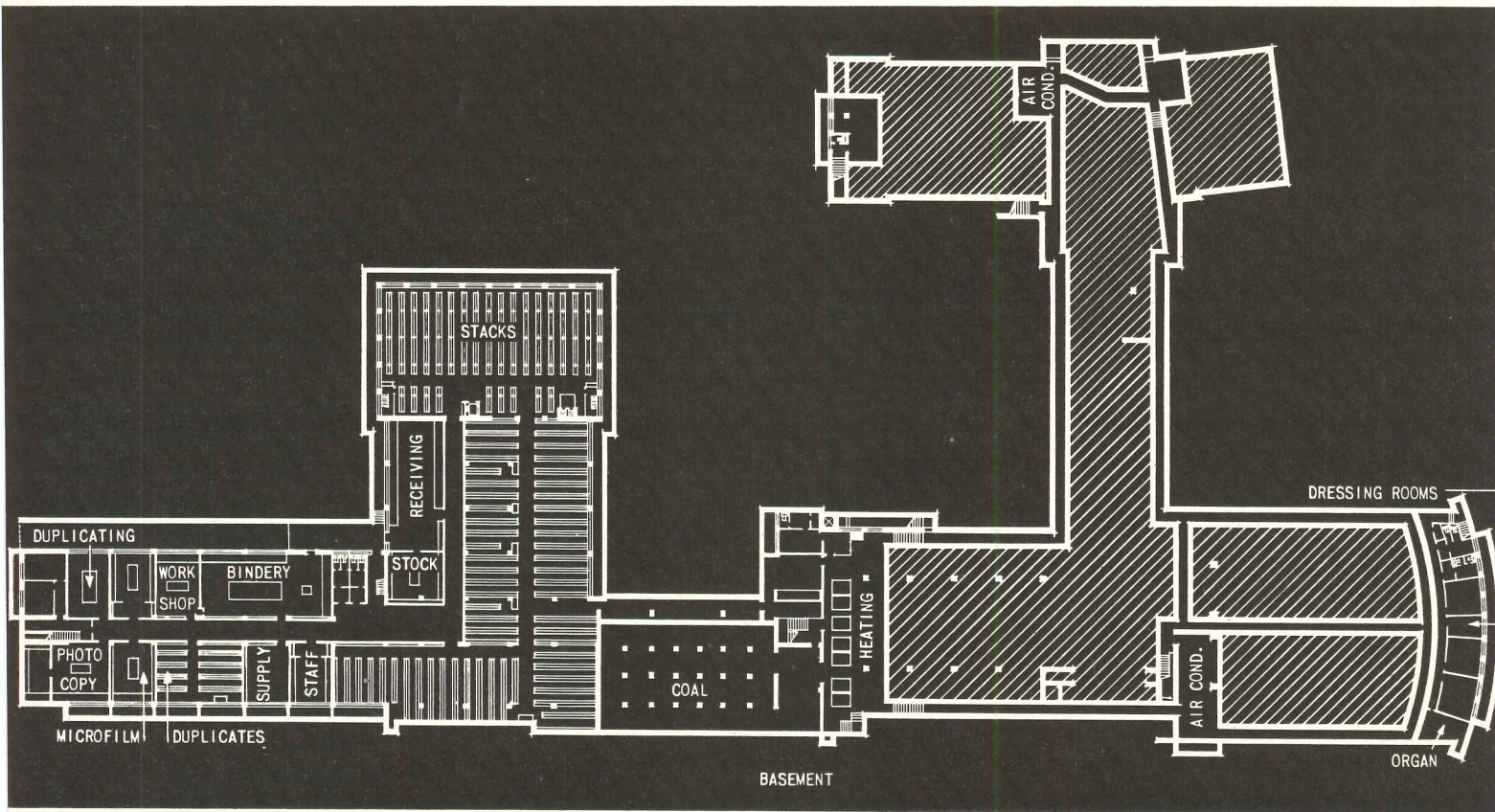


FREE UNIVERSITY LIBRARY

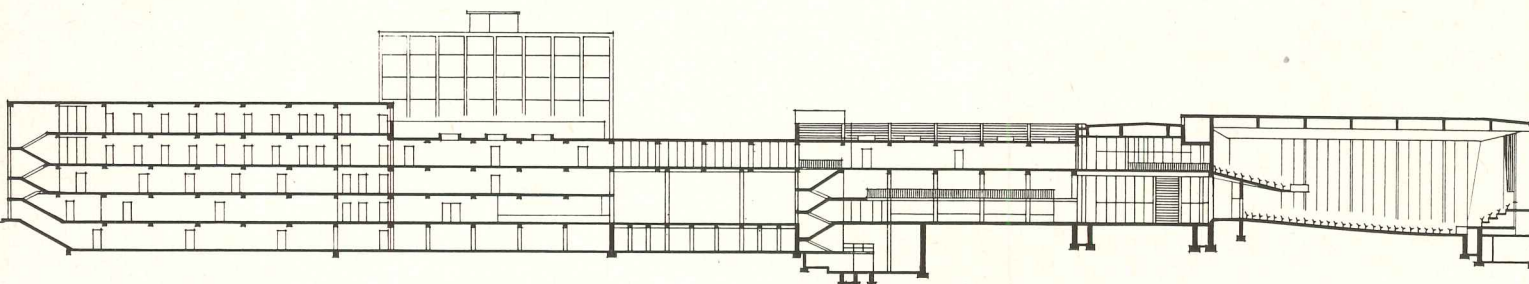


NORTHEAST ELEVATION

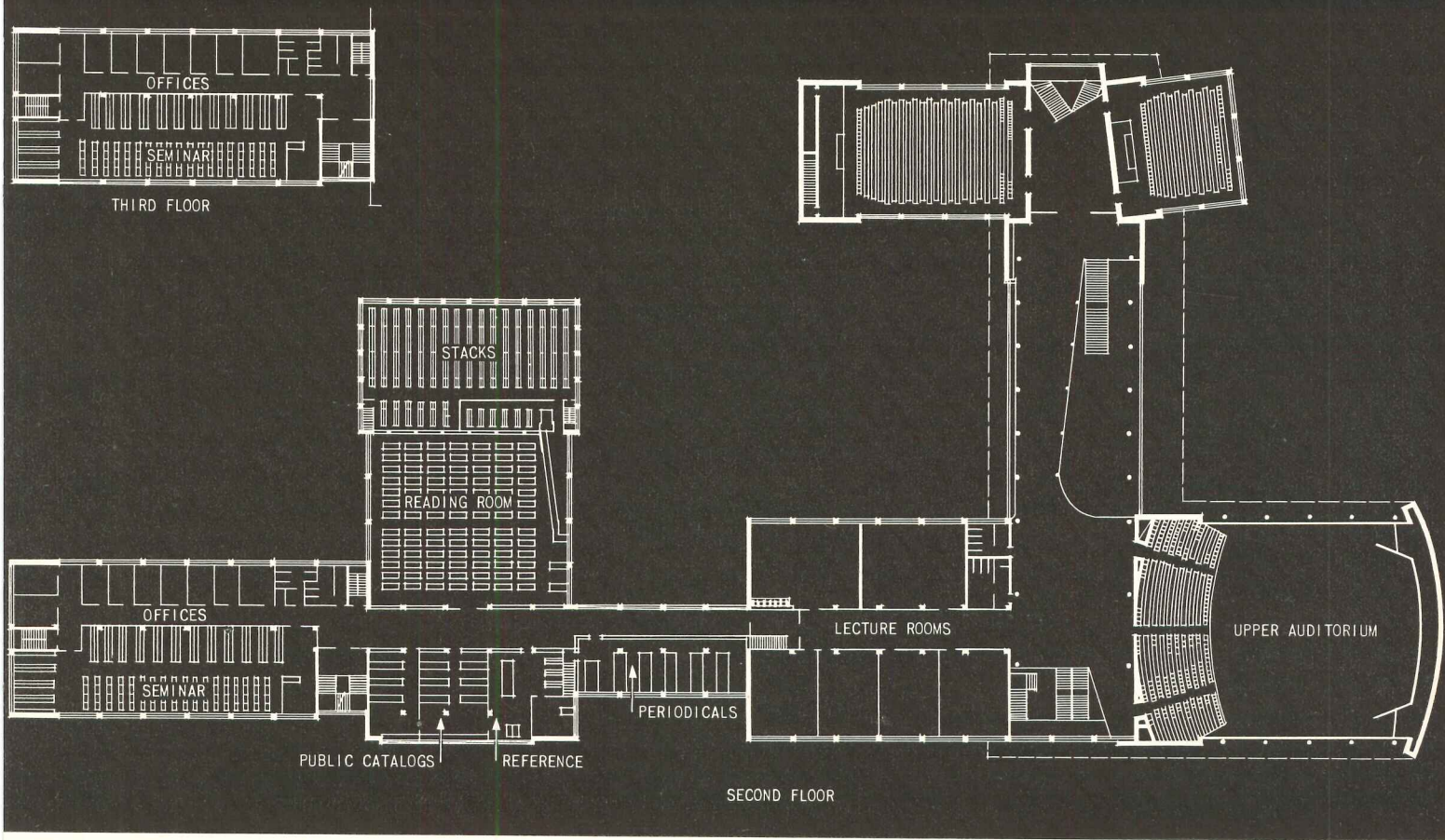
The complex requirements of a library-classroom building were simplified considerably by the two-wing plan on all upper floors as well as on the ground floor



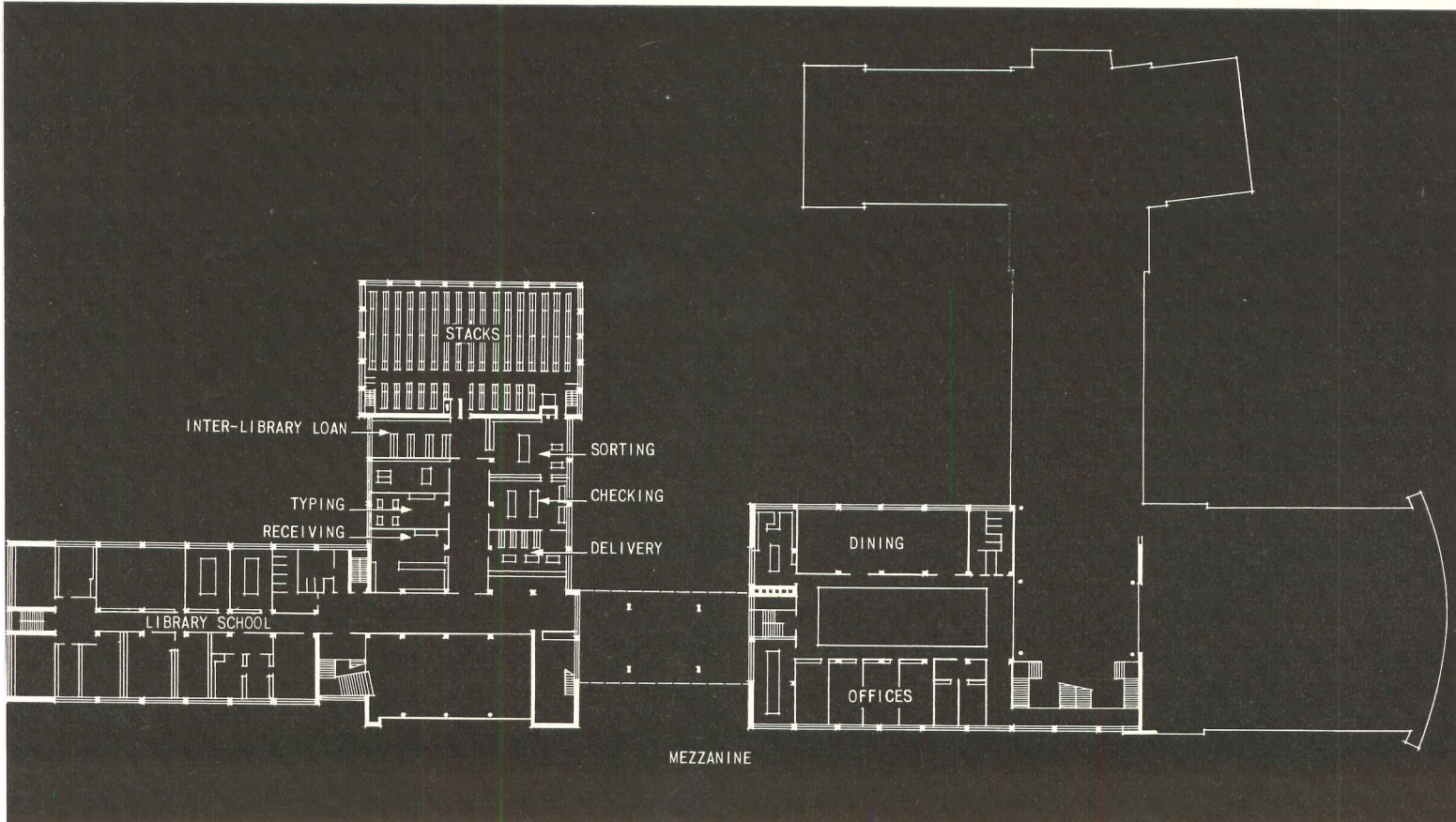
The entire "behind-the-scenes" area of the library is on the basement level: book bindery, receiving and stock rooms in the one wing; coal storage, air conditioning, heating, and auditorium and dressing rooms in the other

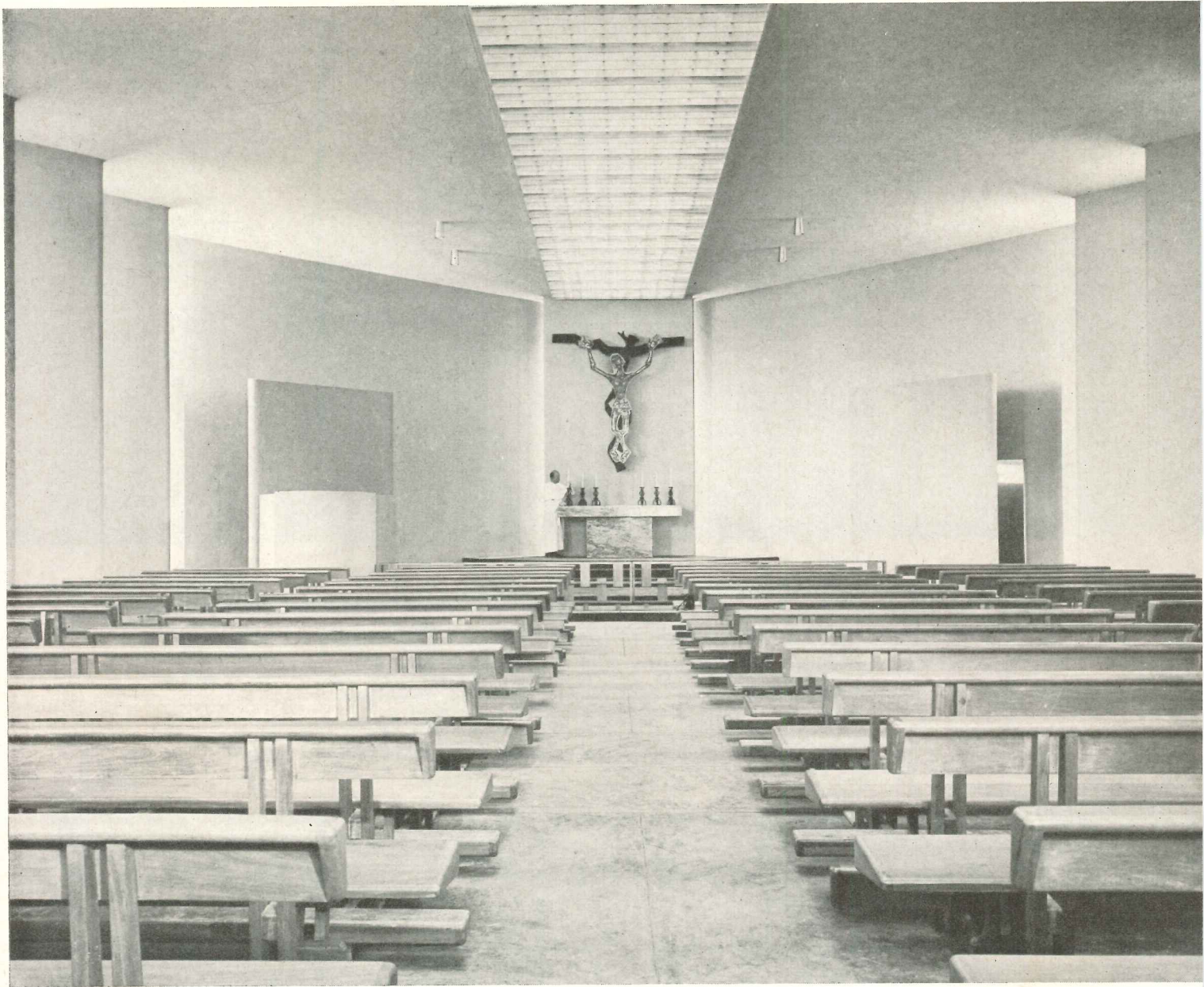


LONGITUDINAL SECTION



Main stack area is in a rectangular tower handy to all reading rooms. Quarters for library school, seminar and seminar offices occupy rest of west wing. Dining room, kitchen, large and small lecture halls and additional offices for general staff fill upper east wing floors. Scale of plans: 1/4 in. = approximately 51 m or 16 1/2 ft





Hamilton Wright photos

As one walks down the center aisle towards the altar, above, the angle of the canted, oval-shaped concrete piers is such that they seem to form a wall defining the nave. However, upon looking sideways between these same piers into the side chapels, one sees out to the palm trees and the sky, the only barrier being a delicate concrete screen with planting growing through and above it. The crucifix over the altar is the work of Father Macolino Maas, O.P., of Bayview, P.R.

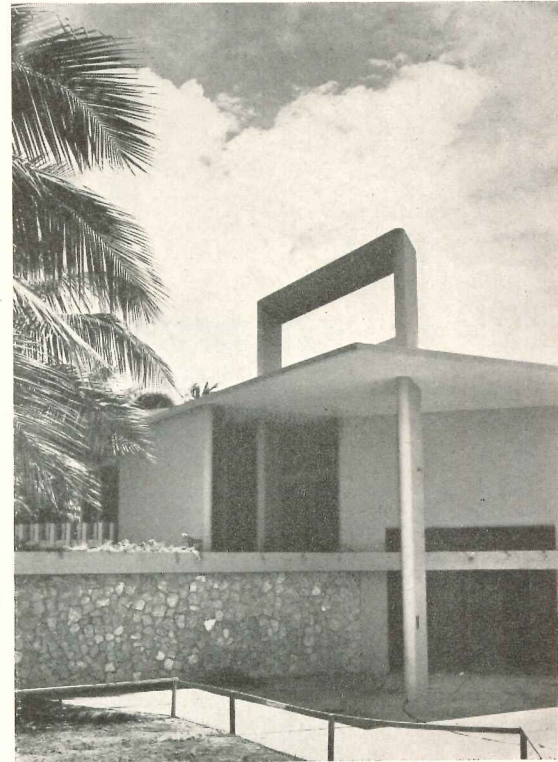
THE SANCTUARY OF SAN MARTIN DE PORRES

Built for the Dominican Fathers, Bayview, Cataño, Puerto Rico

THIS DESIGN FOR A CATHOLIC CHURCH in the tropics has a satisfying quality of seeming to belong in its lush, sunbaked setting. The architect has contrived to have the foliage contribute as much to the effect as the structure itself. Klumb, a former pupil of Wright, has here successfully combined the lessons of scale, organic

space, and the relationship of structure and nature with his own disciplined expression of function.

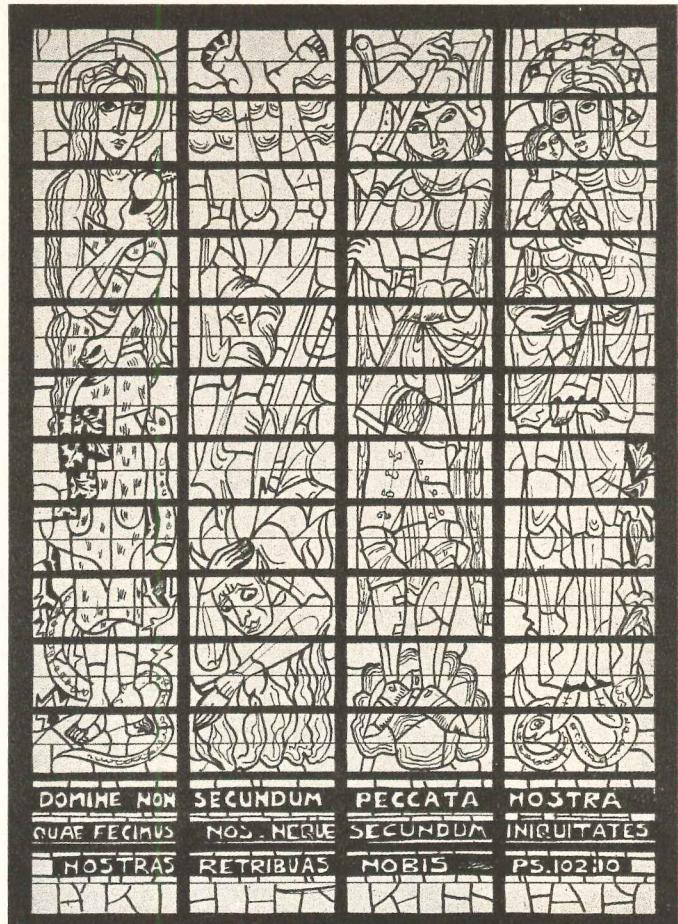
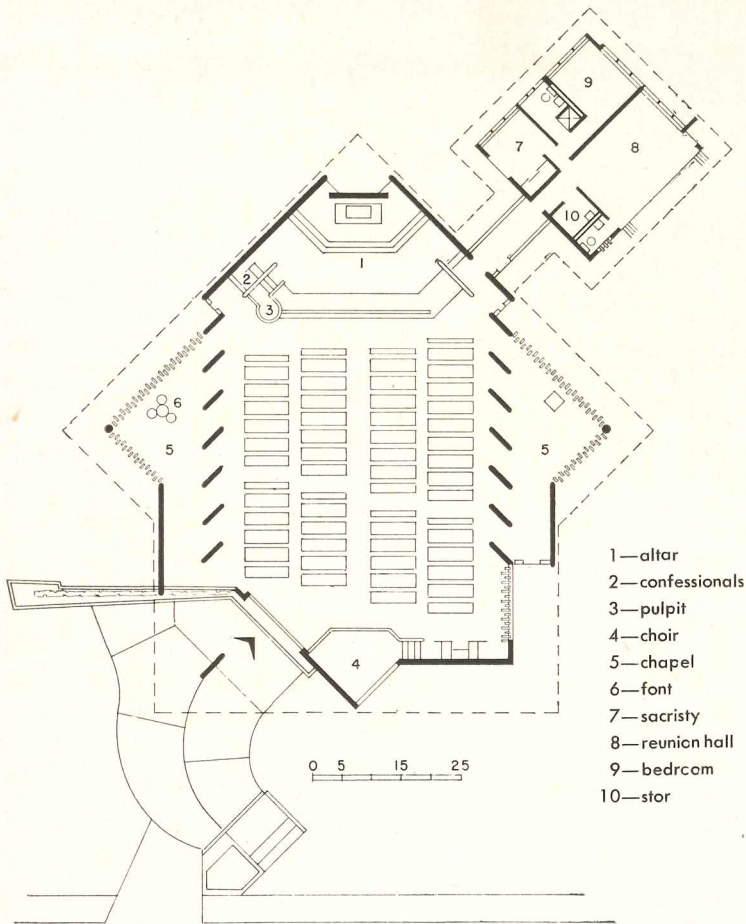
The building is of reinforced concrete which is plastered inside and out; the roof is reinforced concrete over steel joists with an acoustical plaster finish for the ceiling of the church space.



Henry Klumb, architect

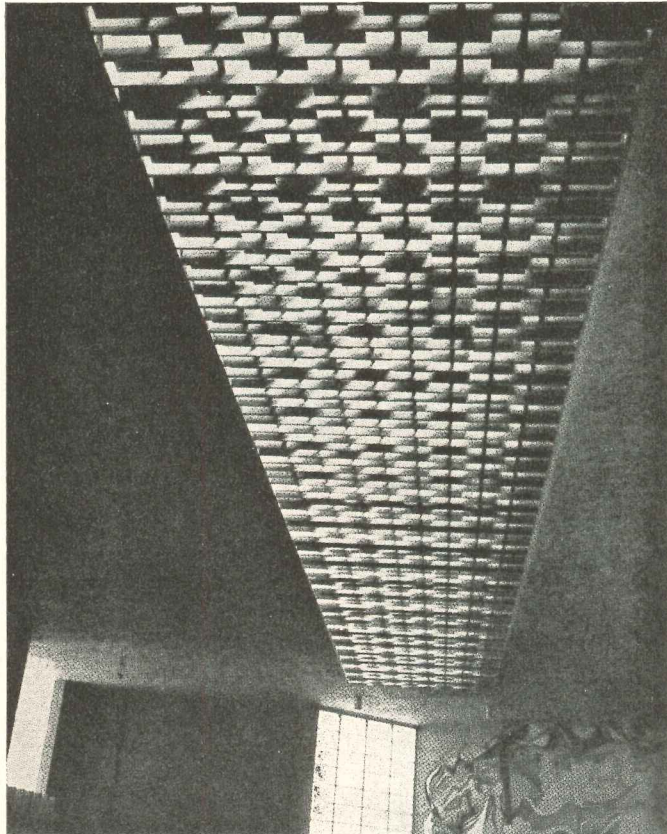
*Milton Martinez,
structural engineer*

*Milton Cobin,
landscape architect*



Illustrations courtesy of Liturgical Arts

THE SANCTUARY OF SAN MARTIN DE PORRES



The plan, actually a square within a square, expresses the openness and tropical character of the church

Design for stained glass window, above, is the work of Joep Nicolas, a local artist. It will occupy the opening to the left of the mural (right page, top). The decorations are designed to be visual complements

The combination skylight and grill, left, provides balanced interior daylighting, gives direction to the nave, imparts a delicate airiness to the roof slab

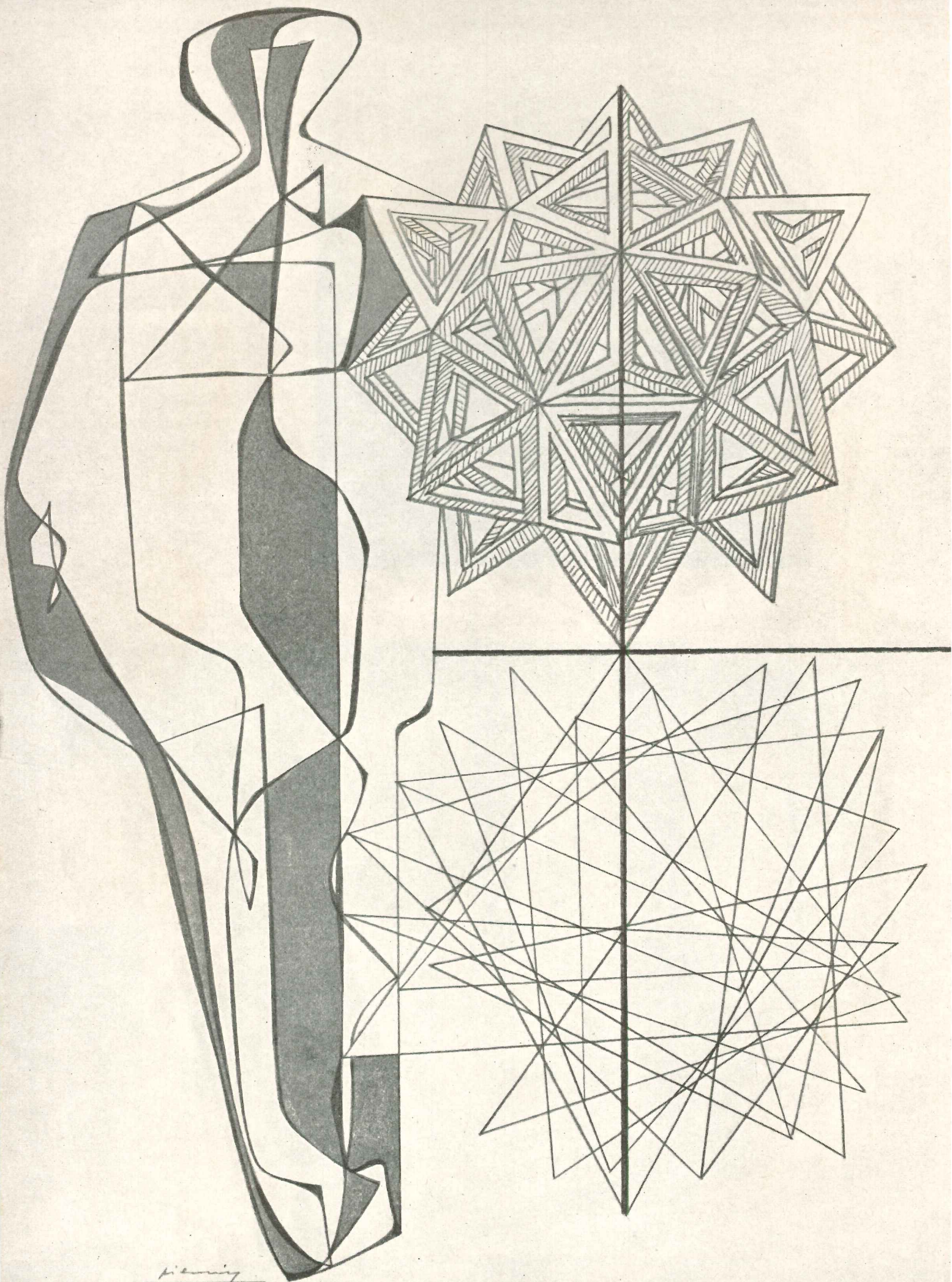


The partly finished mural over the entrance door, left, represents the sacrifice of Isaac, and is being executed in whites, grays and black by Narcisco Dobal, Puerto Rican artist

The statue of St. Martin, by Suzanne Nicolas, below, adds a note of warmth to the otherwise rather austere chapel

Hamilton Wright photos





W. G. S. W.

THE THREE LAMPS OF MODERN ARCHITECTURE

JOSEPH V. HUDNUT*

I. THE LAMP OF PROGRESS

“. . . many concepts, valid in provinces outside the arts, have been introduced into the criticism of architecture and have gained an acceptance there. These are lamps, alien to architecture, and yet illuminating architecture; lamps which throw into sudden brilliance some single façade or tower which then overshadows all the rest of the building; lamps which clarify sometimes and sometimes confuse.”

THE CONCEPT OF HISTORY as an unbroken process of development had its origin in the Renaissance. A constituent of humanism was the belief that men make their standards and do not merely discover them — and the notion that those standards should change and yet not change toward a greater perfection was unthinkable in a climate so charged with optimism as that of the sixteenth century. When the early rationalists, having rediscovered nature, found that there were, after all, fixed standards beneath her apparent diversities, they concluded nevertheless that history might advance through progressive discoveries and clarifications of these standards; and after Newton had established his marvelously complete scheme of the world — one which worked in such a sense as to enable successful prediction — the logical conclusion seemed to be that the scheme was working for human betterment. The German philosophers, from Herder to Hegel, overlaid this mode of thought with the romantic overtones which gave it a currency so wide and popular that it is a fundamental today, even among those who are reconciled to the notion of a nature unguided by spiritual authority.

It should not be surprising then to find that the minds of architects, a species concerned at all times

** Lectures delivered at the College of Architecture and Design, University of Michigan. Copyright 1952, University of Michigan Press.*

with foresight and constructive imaginings, should be invaded by the idea of progress; that they should transpose into the history of their art this idea of ever-ascending rhythm and development; and that, by a deduction as agreeable as logical, determine an architecture specific to themselves at the highest pinnacle yet attained. The architects of the Vitruvius Britannicus had no doubt of the superiority of Georgian England over all cultures which had preceded it and as evidence offered the surpassing excellence of their own art above that of Italy and Rome. The architects of the Gothic Revival, although somewhat more hesitant before the towers of Chartres and Amiens, as confidently expressed, in the picturesque silhouettes of the Houses of Parliament, that transcendent promise which they had discovered in the prosperous, august, and glittering cycle of Victoria; and the certain faith of the America of 1910 in the invincible march of American enterprise could scarcely have been more evidently attested than in the proud and complacent peristyles of McKim, Mead, and White. Standing under the plaster vaults of the Pennsylvania Station, who could doubt a progression toward new miracles and new enlightenments? In each age, architecture was borne forward on buoyant assurances of progress, unimpeded and ever benevolent.

The thought of our present-day architects is more deeply colored by the idea of progress and by the sentiments which progress provokes than was the thought of architects in any other era. Architects are peculiarly sensitive to the splendor and promise of a new world which, they believe, is taking shape around them; particularly eager to open the laboratories of their minds to the qualities of that world; and more than any others resolute to celebrate in their art whatever is specific to their advancing civilization. And what witness of our fervor could be more revealing than the

name by which they delight to distinguish the architecture of their day: *modern*?

A new civilization is being forged, an old civilization is breaking into pieces. Civilizations are made by men, the result of forces set in motion by men. Whatever its present confusions, some order and structure will prevail in a coming synthesis; this order and structure will consist, not of material circumstance — of mechanical refrigerators, airplanes, and skyscrapers — but of a new mentality and ideal; and these mentalities and ideals will be more healthful for human life than any which now obtain or ever have obtained. There must be new valuations, ethical and social, new modes of behaving and thinking, new standards of beauty evolving beneath the changing appearances of our world. Architects wish to participate, not as technicians merely, competent in planning, in costs, and in technologies of building, but as artists capable of insight and expression. Their new art is founded upon optimism. It does not recognize the possibility of triumph by the destructive forces which array mankind.

Thus there has been lighted, in a realm apart from architecture, a lamp which has cast its spell over a generation of architects. As if by a common impulse architects ceased to look backward; threw away their Renaissance and Gothic toys; and, guided by this alien radiance, sternly set about the somewhat paradoxical business of belonging to their time. A new mode is established; a revolution "more fundamental than any in seven centuries" is accomplished; advancement and new enlightenments have become the universal themes of architecture, illustrated in revelations of structure and utility, strict and uncompromising; in the impacts of our machines, severe and undisguised; in the standardizations imposed by our commerce and industry; in hard lines, unshadowed walls, angular silhouettes, and fanaticisms of plate glass, pilotti, and streamlining. Over multiplex invention and novel trappings, over our austerities, denials, and flagellations, the lamp of progress reveals our slightly argumentative but unmistakable delight in a modernity peculiar to ourselves.

Now that this revolution is complete, this victory assured, we ought to review the conflict and to reassess its consequences. We have put an end to eclecticism. We have discarded the rules of the Academy, laughed the styles of architecture out of the window together with all ethical judgments of art, and discredited, for at least a generation, that literate and documented tradition which Louis Sullivan, with exceptional self-restraint, denounced as "hypocritical, degraded, mealy-mouthed, hopeless and putrid." We have, in effect, brought our techniques to the surfaces of our art, believing that these will acknowledge in our style the inward nature from which they sprang; and we have searched for and found many new inventions. Was this what we set out to do? Did we truly achieve that liberation for which we hoped? A great epoch has begun; there exists a new spirit; and industry "overwhelming

us like a flood which rolls on to its destined end" has furnished us with new tools. We ought to ask now if that new epoch and that new spirit have truly and faithfully informed our work. It is futile — and just a little silly — to run our rapier again and again through the body of our enemy, who lies dead at our feet. We have time now to glance at whatever rifts there may be in our own armor.

At this point I must recall a principle which is, I think, fundamental in the criticism of art: *expression is the supreme law*. Every artist, we must assume, wishes to tell us something in the language of his medium. At the beginning of his work or in the process of its development the architect, whenever he is an artist, proposes to himself some central impression which his building shall leave on the receptive mind, some vital and essential spirit which shall animate the whole. His art then is successful in the degree to which he has succeeded in that expression. We must not censure an architect's work, in so far as it is art, by logical or technical standards. The necessary questions are these: What has this architect intended? How far has he succeeded, with such materials as were afforded him, in carrying out his intention? Does his work express that which he meant it to express?

A building, when it deserves our notice, does so as an expression of something, of some experience or feeling either in the architect himself or in the world around him. As critics we must focus our investigations upon this central concept, which must be implicit in all that we write. Our guiding star should be not the way in which the architect worked, the theories of design to which he gave his allegiance, the time, place, and circumstances which surrounded and influenced him, the truthfulness and propriety of his sentiments, or the fitness, firmness, and economy of his methods — although all of these are valid investigations for the historian — but the peculiar and individual life he has instilled into his constructed fabric and the mysterious means by which he evoked that miracle.

In following this principle we must be careful not to search for a source of expression in an architect's personality — in whatever bundle of psychological traits an architect exhibits in his practical life. These are pleasant or unpleasant, conventional or picturesque, ethical or unethical; but they are almost always distinct from that artistic personality which is the creative force in a work of architecture. You will not discover the poetic and tortured soul of Louis Sullivan — or his deep-tinted rhetoric — in his exact and linear skyscrapers and his careful ornament. The crotchety mind of Richardson disappears under his masculine arcades, his rugged, craglike silhouettes. The opposed styles of Le Corbusier and Wright have their origins not in opposed temperaments but in opposed concepts of the functions of art. If by self-expression we mean the exploitation of personal traits, then self-expression is the unforgivable sin of an architect. Nor should we

look in architecture for the expression of those fleeting sensations, exquisite or brutal, which are thought appropriate to poets and musicians.

The range of expression — or, let us say, the range of ideas to be expressed — is thus limited in each art. Music can express themes inaccessible to sculpture; sculpture, themes inaccessible to architecture; nor can that which is expressed in any of these be adequately translated into words. It is obvious that the architect must be content to capture only those things which architecture can capture.

From these considerations I shall draw a second principle in design which, I think, is quite as fundamental as the one I have already stated. Expression is the supreme law of architecture, and *this expression is limited to ideas and feelings which are related to life in its general, or collective, form*. However original to his own experience, however deeply known and felt, an architect's theme is an experience, not intimate and personal, but known, in some degree, to all men.

Architecture is mute before individual happiness or suffering. Neither love nor hate, jealousy nor anger, despair nor hope can be expressed in the language of stone or steel except as these are first made the passions of society. To be fused into architecture these must become shared experiences. I do not, of course, mean that emotions, engendered by memories, may not cluster about a house or that architectural forms may not become, through no agency more mysterious than association, deep wells of sentiment; but it must be obvious that these are not shared or collective experiences but personal.

The genius in architecture is he who, commanding the means of expression, feels beauty and meaning in the general life of mankind more clearly and intensely than do other men. The beauty most moving in architecture is that expressed by the cathedral; but the grandeur and promise of the state can also be exhibited in noble patterns; and architecture has always been solicitous of the adventure, relived a million times each day, and the loyalties, forever reaffirmed, which are the secure foundations of family life. Our institutions may tell their stories through the buildings which clothe them, and cities, like Venice, may proclaim in architecture their power and splendor or, like Athens, their serene pride and their piety; and it may be that we shall also express, in the form we give to a modern world, some dignity and promise in the life of mankind as a whole.

These are spiritual values, inaccessible to measurement and objective analysis. The art which exhibits them is not a special function, the exercise of an aristocratic club, but has its roots in the life of mankind from which it cannot be separated. That which the architect experiences we have already experienced; that which he tells us we have already known; and that which distinguishes genius is not a difference in kind from humanity but a difference in intensity of

feeling and clarity in expression. "Genius," said Croce, "is not something fallen from heaven but humanity itself."

If it will be admitted — if only for the purposes of this paper — that these, the experiences of men in society, are indeed the themes most congenial to architecture, then, before returning to the idea of progress, I should like to introduce a third principle which, I think, is also fundamental. Expression is the supreme law of architecture; the themes of architecture are ideas related to men in societies; and *the vehicle of expression is always plastic*.

The architect is concerned with shapes and the arrangement of shapes, architecture being "the masterly, correct and magnificent play of masses brought together in the light." The definition is that of Le Corbusier and is developed by him in eloquent language:

"The architect, by his arrangement of forms, realizes an order which is the pure creation of his spirit; by forms he affects our senses to an acute degree and provokes emotions; by the relationships which he creates he awakens profound echoes in us; he gives the measure of an order which he feels to be in accord with our world; he determines the various movements of our heart and of our understanding; it is then that we experience the sense of beauty."

The term "shape" includes lines, planes, and volumes; and, although these abstractions may be expressive in themselves, they gain an architectural expressiveness through that arrangement which "realizes an order which is the pure creation of the spirit." That kind of order is form. I do not mean that form *is* beauty — the idea which colored the Renaissance — but rather that form is beautiful when it is also an expression of feeling. We do not know by what mysterious means an architect gives form and individuality to his work. We do not know where form comes from and how it develops and expands or how it becomes irradiated with celestial fire. The rules of the formalist, minutely and strictly followed, give us only lifeless pattern. But we do know that form is the substance of architecture.

An architect models his building — subject to a thousand tyrannies of use, technical compulsions, costs, conditions of the site, and the vagaries of clients — as a sculptor models clay. He assembles, shapes, and defines volumes and masses; establishes their relationships to each other and to the whole; adds or takes away from each; emphasizes or suppresses, simplifies, elaborates, distorts. So far as an architect strives for expression he strives for form.

Having thus set forth — I hope not too tediously — what I conceive to be fundamentals in the analysis of architecture, I shall return to a consideration of the idea of progress and of that sentiment for modernity which is the reflection of this idea in architecture.

I shall not bring into question the belief that design should be the outcome of a sound knowledge of materials

and technical processes and of fitness for practical purpose. Our new inventions in manufacture, our new possibilities in the design of space, will reshape the world anew. A new architecture will be the child, in a technological sense, of a new era. I take these things for granted. I am concerned, rather, with that idea and feeling which was provoked by the triumphant progress of our day, with the need of our architects to celebrate that idea and feeling in their constructed patterns, and with the mode by which they hoped to effect that celebration. I should like to re-examine this the central practice of our architects in the light of the principles of criticism which I have described.

Let us examine first the idea and the need; and afterward the mode of expression.

From its earliest formulations the idea of progress has had, as we have seen, a strong materialistic flavor. Schelling, who considered history a development, compared this development to that in the physical universe. Hegel adopted the same analogy, human history being an epitome of a vast cosmic process, intended by God but proceeding in accordance with physical laws. Marx accepted this idea as fundamental but proposed "the material conditions of life" as the cause of change in human thought and art. In all instances the concept of progress in human life is identified with progress in the physical world.

When, therefore, our architects extended this idea from its home in philosophy into the realm of art it was almost inevitable that they should identify the progress of architecture with the progress of their technologies. The cumulative advancement of man's inventions, a continuous temporal process, was seen to be like that of nature; and nature, in turn, had set the pattern for the forward march of man. Airplanes, radios, and skyscrapers became the advance guards of humanity — and of a new architecture. They are the heralds that announce the new day.

Upon that assumption our architects built a little philosophy of their own. The marvels of new machines being the certain evidence of new marvels in civilization, the conclusion that our social, economic, and political systems are also evolving toward new perfections in harmony with the machine, was too inviting not to be embraced. The machine shall create a new order, a new freedom of thought, a new religion, and a more glorious architecture: an architecture which overcomes those inhuman living conditions which are the cause — and never the consequence — of moral degeneration and anarchy, an architecture which exhibits the clarity and logic, the unflinching exactness, of the new life which the machine is to sustain.

Our new architecture is thus founded upon an aspiration, not upon a reality. Our architects do not, as a rule, assure us of any dignity or grace in our present scheme of life, for they can find none, but of a perfection of well-being in a scheme to be presently invented. Our architects are possessed, not by intuitions of grandeur

in the nature of man, but by a sentiment for the material progressions which surround him, for the glittering promises of new technologies. The philosophers of progress did not give our architects a new background of life and inspiration in which they might believe with certainty and passion. For the heaven they destroyed, they gave us the terrible splendor of a material universe carried forward on the great wave of evolution which carries us forward also.

But what is the purpose of architecture if it is not to discover a background of life and inspiration: to look below the confusions and frustrations of the material world and to recognize below these appearances the universals that shape the quality and direction of human life — to bring these out, exhibit them, make them known and eloquent? A sentiment for material progressions is not drawn from the general spiritual life of our time. The promises of a technological Utopia may kindle the mind of an architect but never the heart of mankind. Whatever may be our faith in industry and the machine, however firm our conviction of new freedoms and new horizons, we shall never satisfy with these the hunger of men for some assurance of beauty in their present lives and their present environment. Utopias are the purest distillations of romance.

I admit the validity of romance in architecture but only upon condition that it be made integral to form. A solicitude for Utopia is inherent in every work of art and is admissible when accompanied by a deeper significance. But that companionship is infrequent in the greater part of our modern practice. We are satisfied to exhibit our feeling for modernity in the naked appearances of our new building techniques. Being without formal values these *represent* rather than express modernity. They cannot, without reshaping of the artist, express anything.

Thus, both the idea which we seek to express and our mode of expression are essentially romantic. They have their principle in association. Just as the idea of human progress is associated with that of mechanical progress, so the products of our technologies — steel construction, plate glass, prefabrications — are made to represent in our minds a social and spiritual advancement. They do not address us as elements in a language of architecture, but as visible evidence of a way of life in which they participate.

Since modern architects had at their command engineering principles and utilitarian satisfactions peculiar to our present civilization, they hoped, by giving these a visual emphasis, to make them bridges over which the spirit of that civilization might enter modern buildings. Those who know modern buildings will recognize the modes of construction peculiar to the present. They will apprehend the new uses set forth in shapes and relationship dictated by these uses, and this will persuade them of a unity between modern architecture and their own necessities and desires. Being aware in our buildings of a control of space congenial to their way of life, they will recognize their own more spacious world within

our stricter boundaries. The visible surfaces of our time will thus be made eloquent of our time.

This is, to say the least, an uncertain eloquence, dependent upon descriptive and technological values. It is in that mode that a suit of armor evokes the Middle Ages and a purple toga the age of Augustus. Steel and plate glass, like armor and toga, are fragments in the outward show and surface of a civilization. Like these they are symbols of a civilization and in the same way gain a dramatic influence by affinities with the civilization in which they belong. No part of their command over our imagination arises from a "vital and essential spirit" with which an architect has animated them, but from sentiments which cluster about them — the sentiments which they illustrate rather than embody. And he knows little about the human heart who does not know that sentiments can cling as closely to a Ford car or an Enfield rifle — or to a steel girder, for that matter — as to Roman toga and knightly armor.

Art is a conscious process, not an accident. The modernity of steel construction is not instilled by an act of the will. Steel girders are modern as Shakespeare is Elizabethan and Disraeli Victorian — because they cannot help it. There is lacking in all of these that intention which is the essential ingredient of art: no one *intended* that Shakespeare should be Elizabethan. No doubt there is an art in selection but, considered as elements of expression, in what way does the selection of a girder differ from the selection of a gargoyle? Each of these, if our minds are so tuned, will summon an atmosphere appropriate to its world, but the art is as extrinsic in the one instance as in the other. One romanticism has replaced another romanticism.

This casual nature of modernity, when dependent on practical invention, will become increasingly evident as the shapes engendered by our new technologies become familiar. They have already ceased to arrest our attention; soon they will not even surprise us. Already we take strip windows for granted, accept undecorated walls as a matter of course and mass production as a normal process of the building industry. Without novelty these no longer symbolize progress; we shall find their affectation of drama and consequence somewhat tedious when we have seen them a hundred thousand times. When that happens our architecture, unfounded in spiritual experience, will lack even the palliatives of a story book.

The aridity of our new architecture — its severity of plane and contour, its precision, its devotion to fact — does not arise, as many traditionalists suppose, from the advancement of our sciences. It arises rather from defeat of our art: from the failure of our architects to make use of new technological forms as the materials of artistic form. No one can stay the swift progression of our sciences of construction or of our techniques of planning, and no architect should wish to arrest these for a moment. But it is essential that we should command them to some harmonies with the spirit of man.

We set out to express the idea of progress, the sense

of achievement and promise with which this idea had kindled our hearts. But the idea of progress, as this took shape in our minds, was too often unconcerned with the values of the general spiritual life; and the method by which we strove to express this idea is not the architect's method — of idea embodied in three-dimensional form — but a romantic method, dependent upon representation and association. The progress with which we were concerned is a philosophical concept originating in speculative thought outside that realm within which architecture finds its expressive themes; and this concept was not translated by free modelings of mass and space into plastic patterns — the architect's true *métier* — but was, rather, exhibited in technological invention and circumstance in the belief that these are competent, without formal values, to provoke a sense of that new world of which they are the magnificent evidence. The idea is empirical; the mode of expression, romantic.

We must be set free from that spell which the lamp of progress, lighted in a province apart from our art, has cast over our minds. We must be free from this present obsession with contemporary materials and techniques to the exclusion of all other bases of design: free to crystallize these into plastic unity and clarity or suppress them altogether; to impose upon them harmony, proportion, rhythmic disposition; to make color, mass, line, and light authoritative means of expression; in a word, free to re-establish the sovereignty of form in the art of architecture.

And how can an architect be free if at every step of his design he encounters structures, materials, or contrivances made immalleable to his will, not merely by considerations of practical necessity but by the more impregnable mortar of esthetic dogma? If, indeed, expression is the supreme law and if the measure of excellence is the degree to which an architect has expressed that which he set out to express, then every element in a building untouched by his shaping hand must be considered an abridgment of his art.

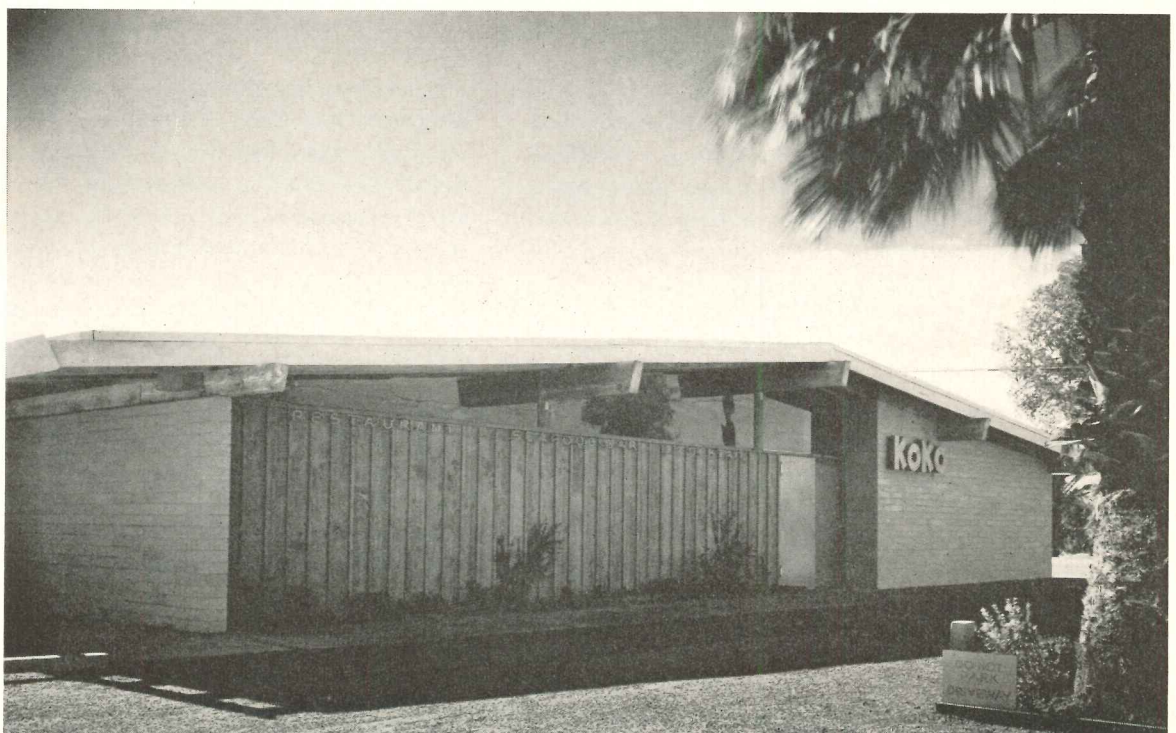
Karl Marx has given the concept of progress a unique interpretation which, I think, is not without influence on architectural practice. It would be proper, perhaps, to call this influence subconscious. The arts, said Marx, are determined in each era by the means of production specific to each era; and he gave to mechanized industry a high rank among those successive heavens to which man ascends through economic ameliorations. Thus, our art advances toward that supreme excellence in which architecture will become a form of industrial design.

To this doctrine Picasso, himself a Marxist, replied: "To me there is no past or future in art. If a work cannot live always in the present it must not be considered at all. The art of . . . other times is not an art of the past; perhaps it is more alive today than it ever was."

Art does not progress.



INFORMALITY KEYNOTES RESTAURANT ON





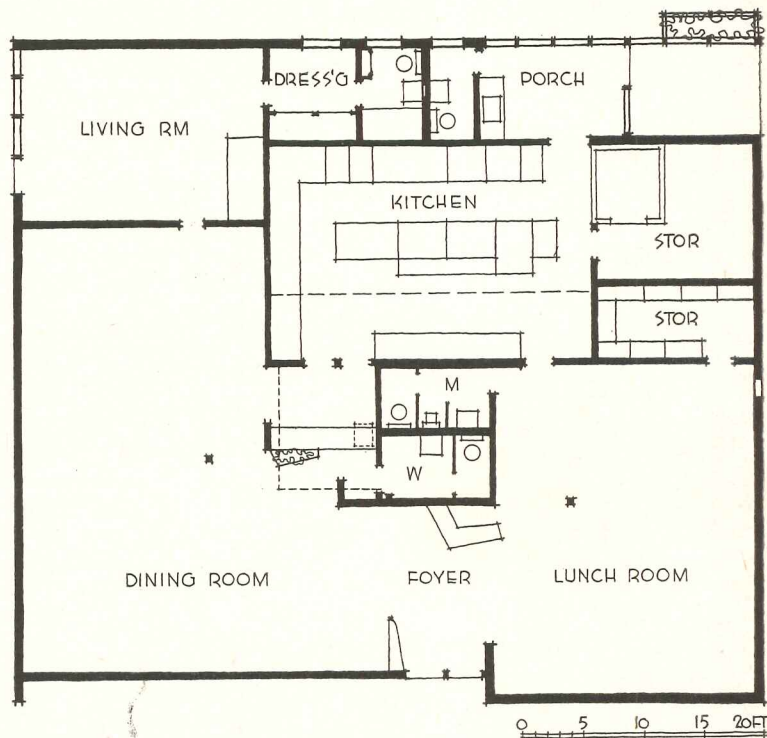
PHOENIX OUTSKIRTS

KoKo Restaurant, Phoenix, Arizona

Ralph Haver, Architect

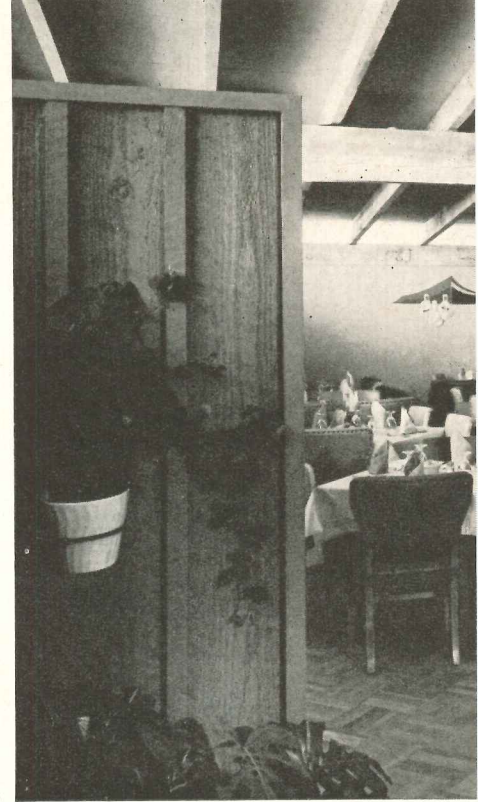
THE SITE SELECTED for this small restaurant is on the northern edge of Phoenix, adjacent to the winter resort area. Since prospective patrons would therefore include vacationers as well as local residents, an informal atmosphere was an obvious must. Falling in nicely with this requirement was a limited budget coupled with a limit (self-imposed) on critical materials.

Both exterior and interior are in keeping with the informal ranch-type construction typical of the area. The building is an economical rectangle, with all utilities banked for further economy. Foundation is concrete, exterior walls are pumice block; interior walls are painted pumice block or random-width boards and battens. Ceilings in the two dining areas and the owners' apartment are rough wood beams with painted fiber insulation board between the beams.

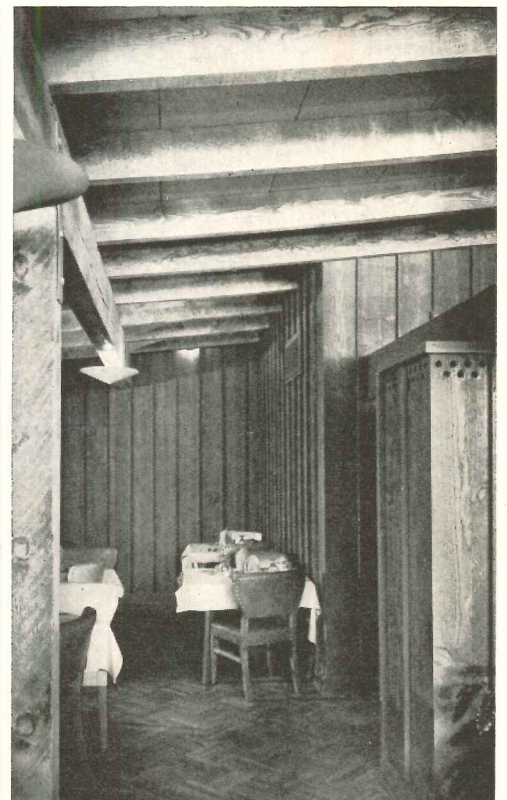
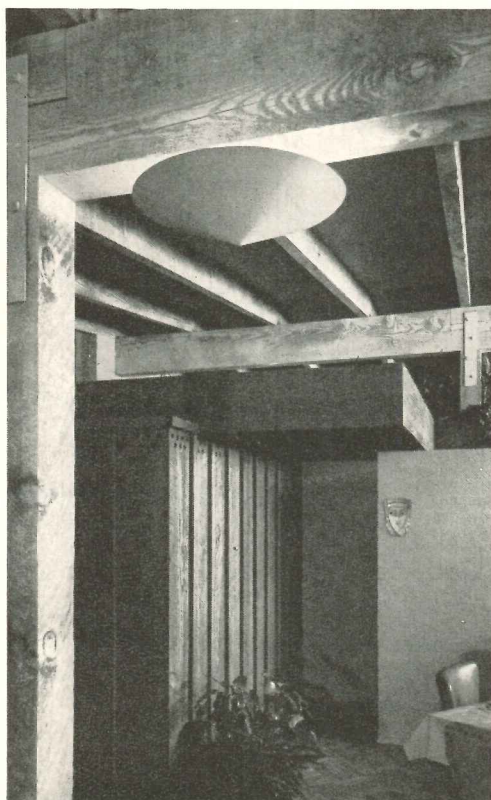


Simple rectangular plan, grouping of utilities and choice of materials not only kept costs low but also helped to achieve informal atmosphere

PHOENIX RESTAURANT



Stuart Weiner

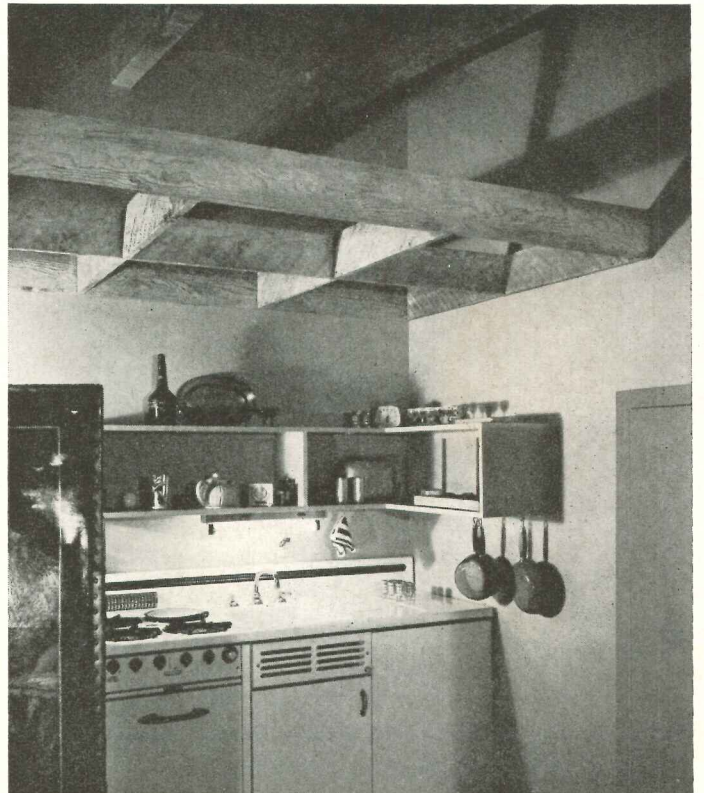


OWNERS' APARTMENT

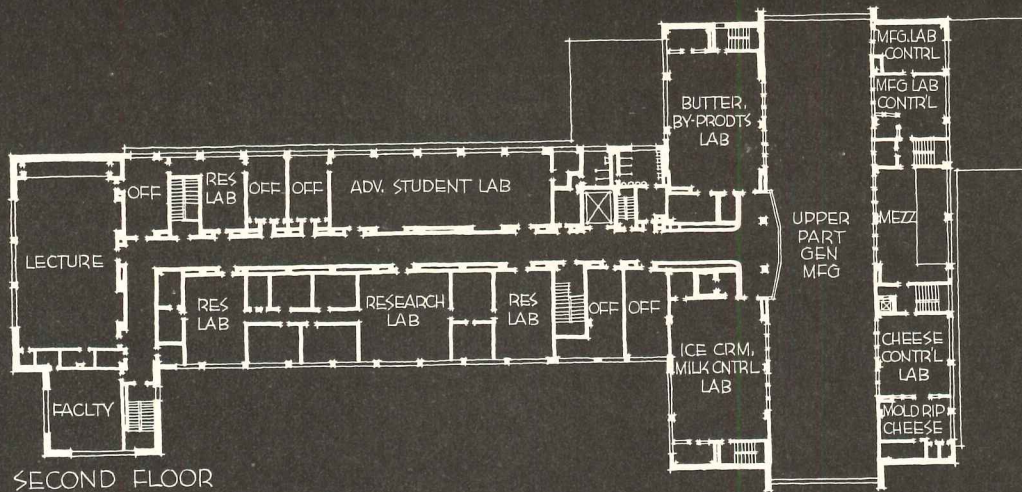
Below: at rear of restaurant is small one-room apartment for owners. Tiny kitchen (bottom of page) is built into one end of living room



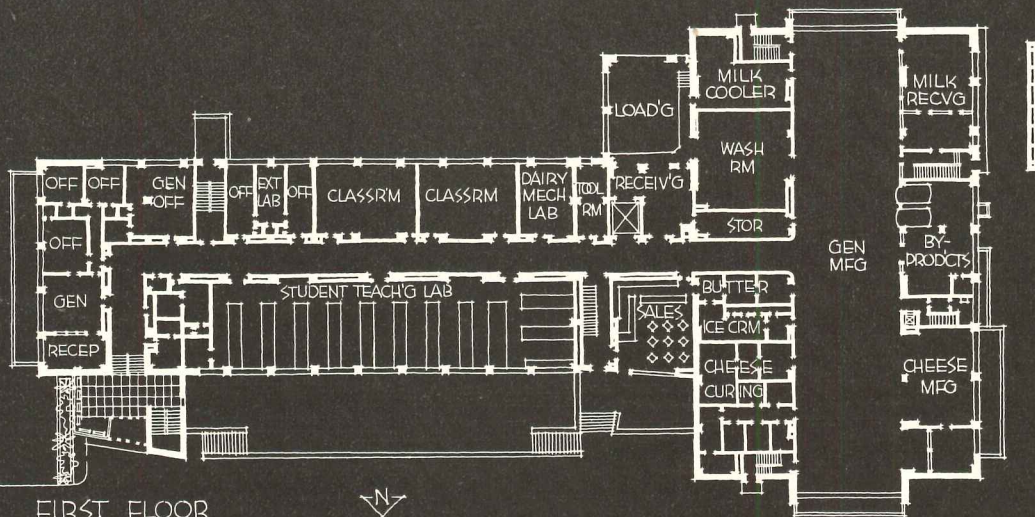
Murals add a gay note to both lunchroom-bar (left, above) and main dining room (above). Ceilings in both rooms are fiber insulation board between wood beams; lighting fixtures were architect-designed



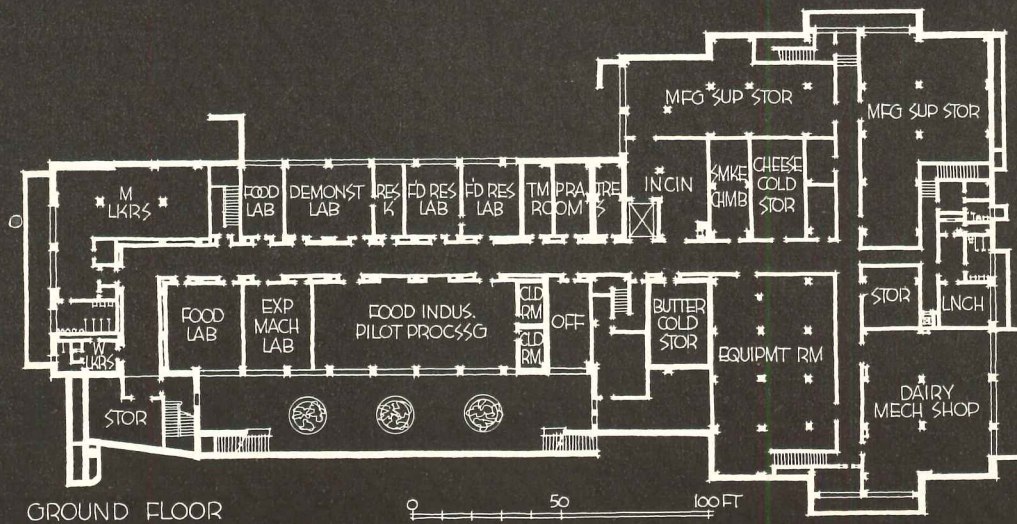
Compact restaurant kitchen (above) serves both dining areas. Ceiling here is plastered, without wood beams



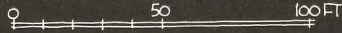
SECOND FLOOR



FIRST FLOOR



GROUND FLOOR



UNIVERSITY OF WISCONSIN'S NEW DAIRY LAB

Babcock Hall, Madison, Wisconsin

Grassold and Johnson, Architects

Hedrich-Blessing

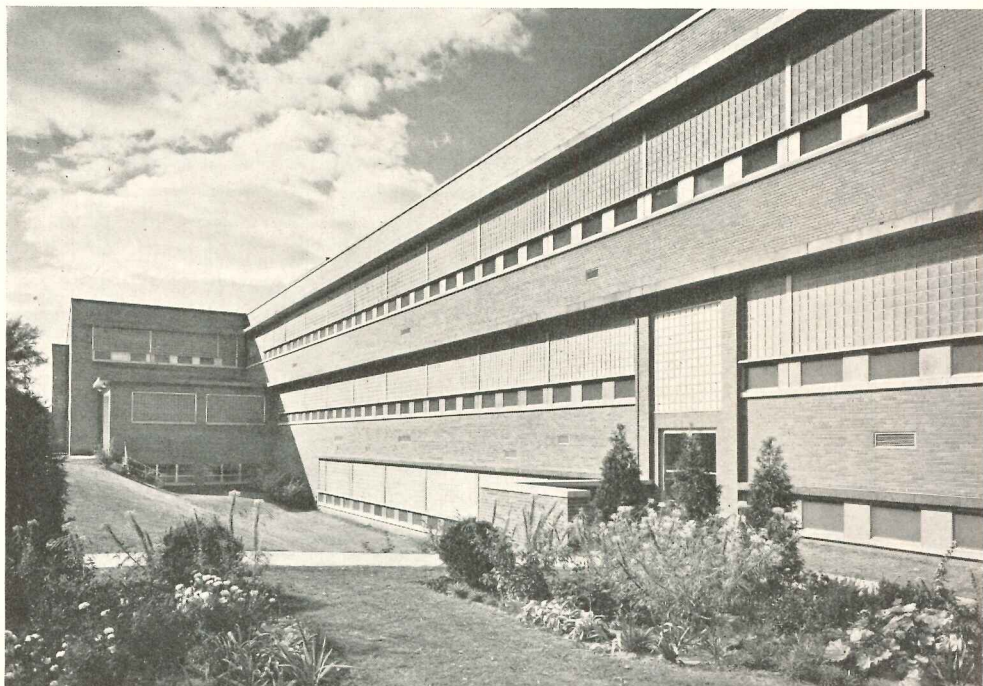
THE DAIRY INDUSTRY has a fine new asset in the University of Wisconsin's clean-cut, well-equipped Babcock Hall, named for Dr. S. M. Babcock, inventor of milk fat test apparatus. Devoted to the study and improvement of milk and dairy product manufacturing, the building is basically a model plant, flanked by facilities for testing, research and instruction. The careful thought that went into planning and selection of materials to meet the exacting requirements of these processes brought the building a first prize in the Second Annual Competition of the Wisconsin Architects Assn.

A number of features were devised to protect milk from contamination, to resist moisture or condensation damage, and to assure easy upkeep. Flush surfaces are used throughout: interior walls are structural glazed tile, glass block; floors in labs and manufacturing area are acid-proof brick tile pitched to drains; asphalt tile floors are used in classrooms, terrazzo in corridors and toilets. Fungicide paint was used on other surfaces to prevent mold.

In the manufacturing area, lights are moisture-proof, hinged for service from attic. Pipes come up through the floor in stainless steel service islands, then run horizontal to equipment, to reduce leakage through floors. Some labs have an overhead bus system for utilities to permit quick installation of equipment for teaching purposes.

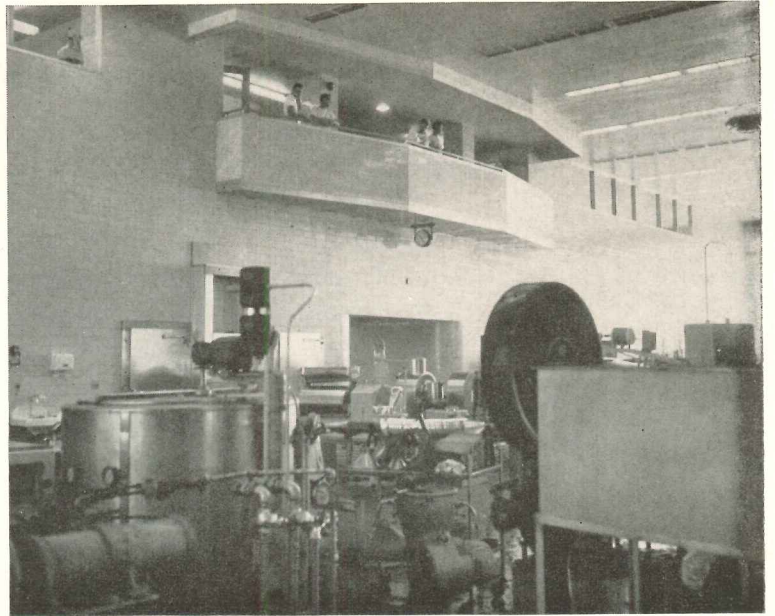
Special ventilation and air filtering devices assure pure air supply and prevent spread of mold spores. Work areas have air pressure slightly above atmospheric level to prevent entrance of contaminated air. Heating is from a central campus power plant.

Joseph H. Volk was heating and ventilating engineer; L. R. Schmaus, sanitary engineer; and Wanty & Associates, electrical engineers.



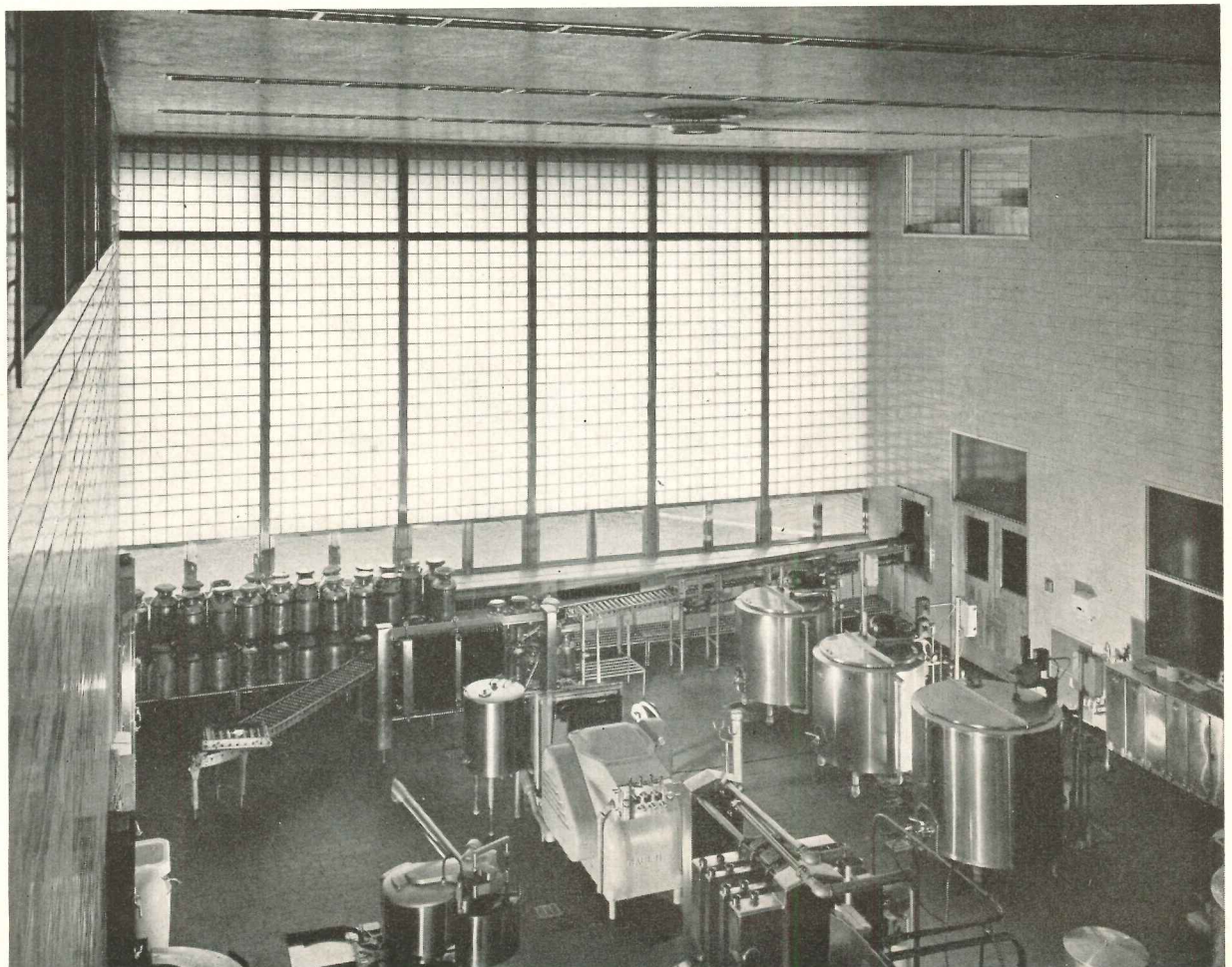
Babcock Hall has reinforced concrete and structural steel frame, face brick exterior, limestone and granite trim

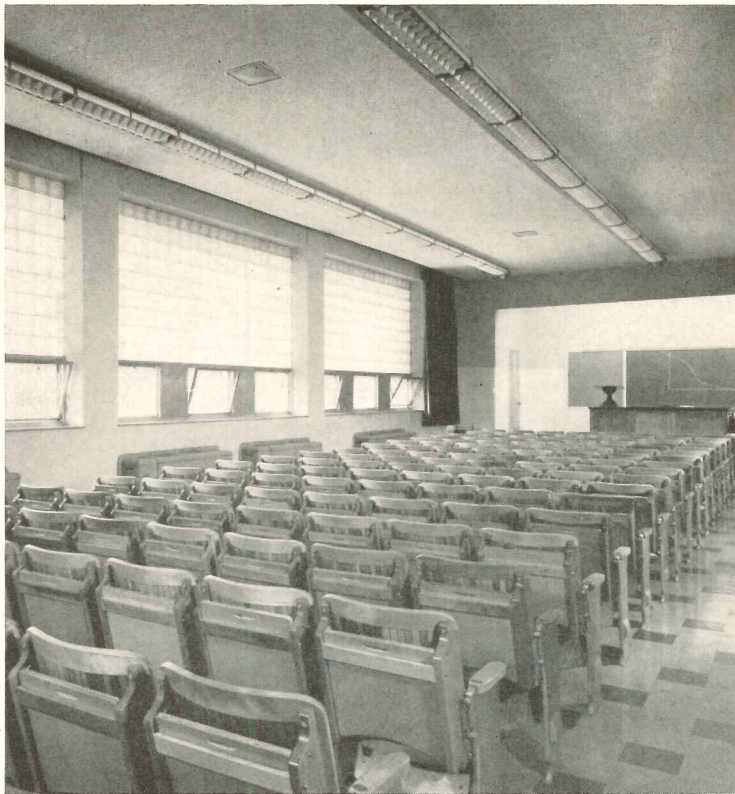
WISCONSIN DAIRY LAB



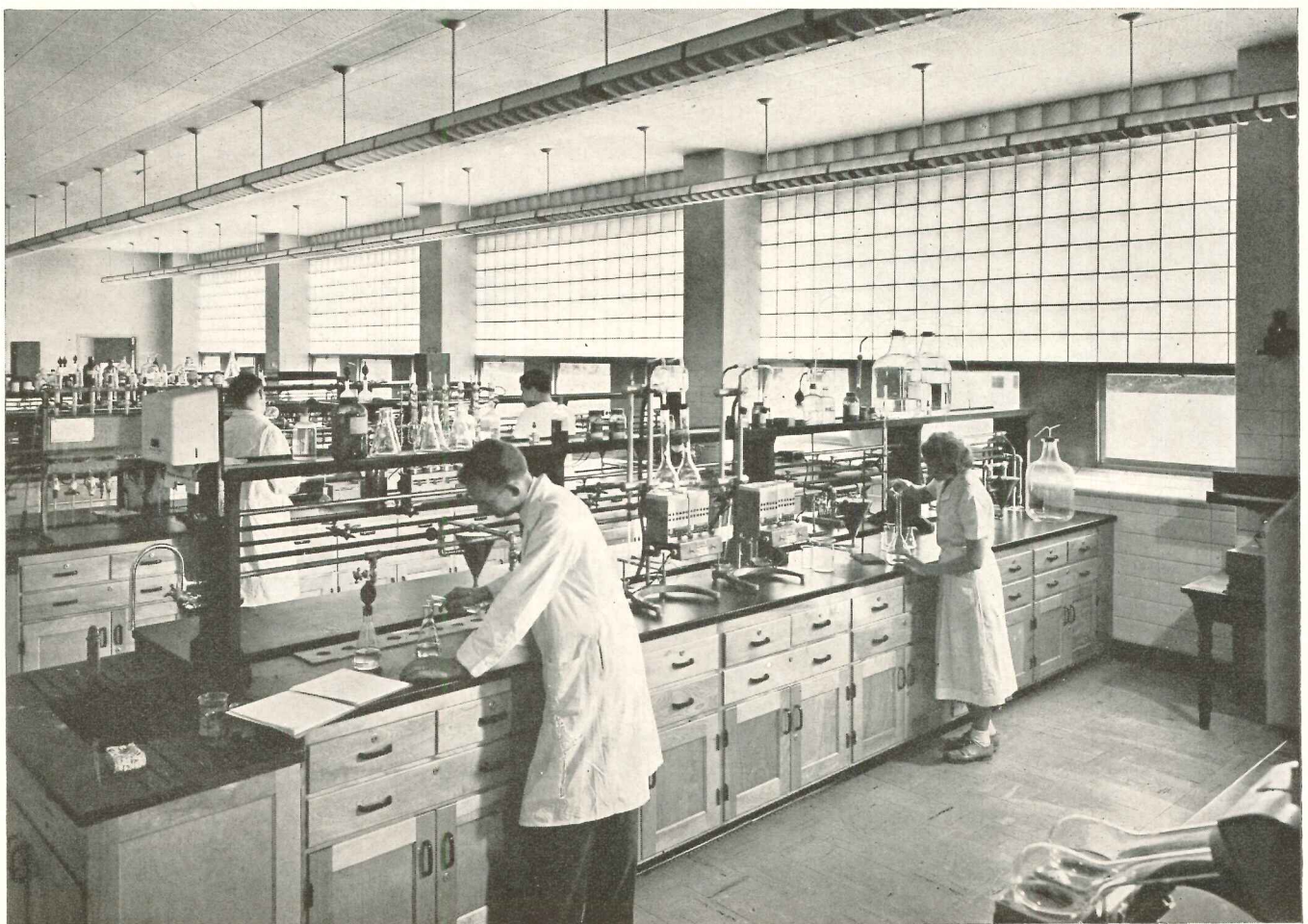
Hedrich-Blessing

Directional glass block gives good daylighting in food processing labs (above left) and manufacturing area (below). Observation gallery (above right) overlooks the main manufacturing processes





Color and reflectivity were carefully considered in the selection of finishes of equipment and woodwork in lecture hall (above) and research labs (below)



ARCHITECTURAL INTERIORS

Design | Details | Materials | Equipment

Pan American Ticket Office
Carson and Lundin, Architects

DAYTIME TICKET OFFICE — NIGHTTIME DISPLAY

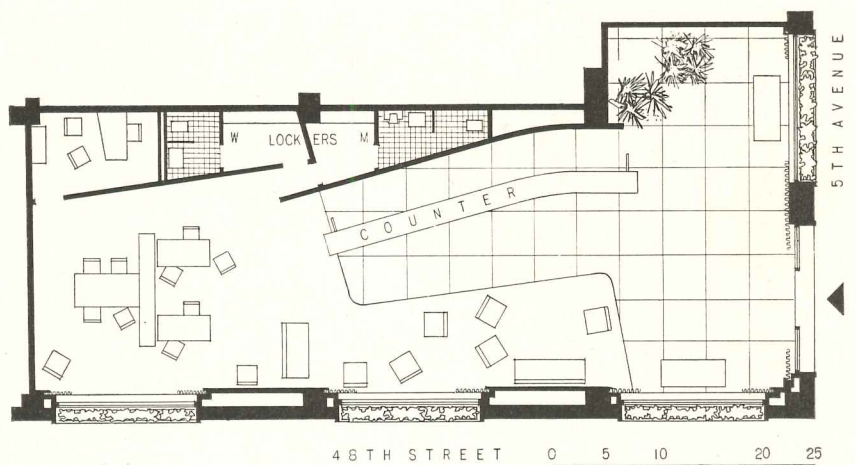
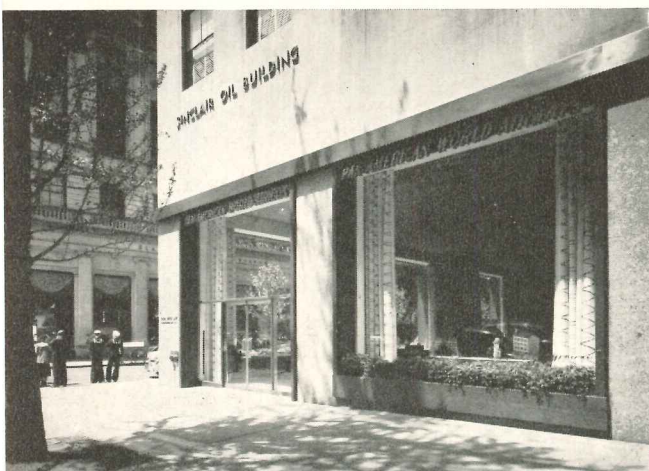
CAPITALIZING on the fact that New York's Fifth Avenue attracts many evening strollers as well as the daytime crowds, the architects for this ticket office have created a two-way lighting scheme: first, a pattern of downlights to illuminate the room, counter and map for the daytime trade; while the second system, for nighttime display, aims a group of floods at the decorative map from its facing window walls.

Located in the Sinclair Oil Building, newest addition to the Rockefeller Center Group and designed also by the same firm, this midtown office for Pan American World Airways is devoted solely to ticket sales and tour

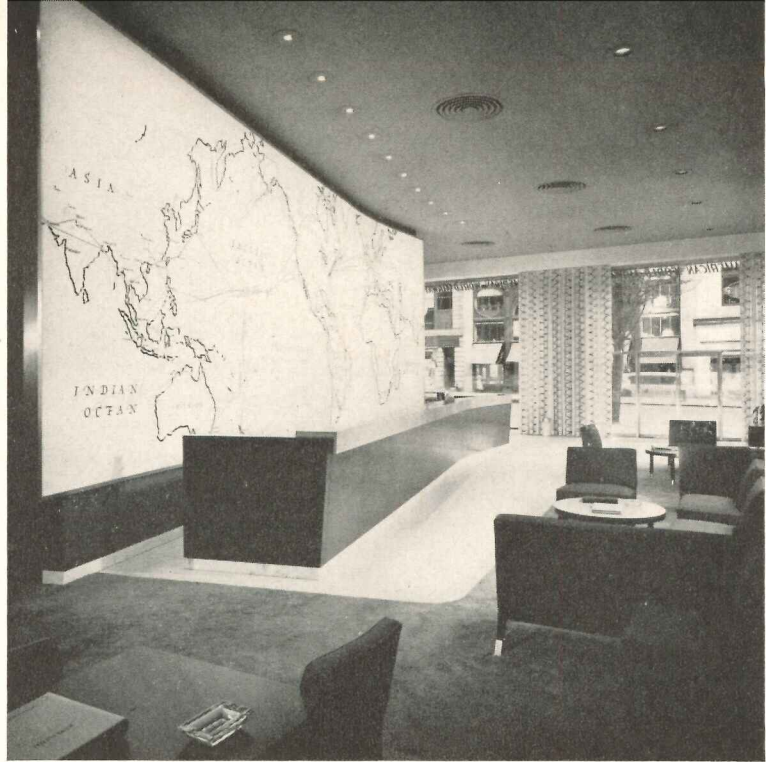
information. The limited space contains in addition only necessary lockers, toilets, and a small office.

Natural gold colored bronze is used for the exterior glass frames, doors, plant boxes and lettering. Japanese yews are planted under the large windows.

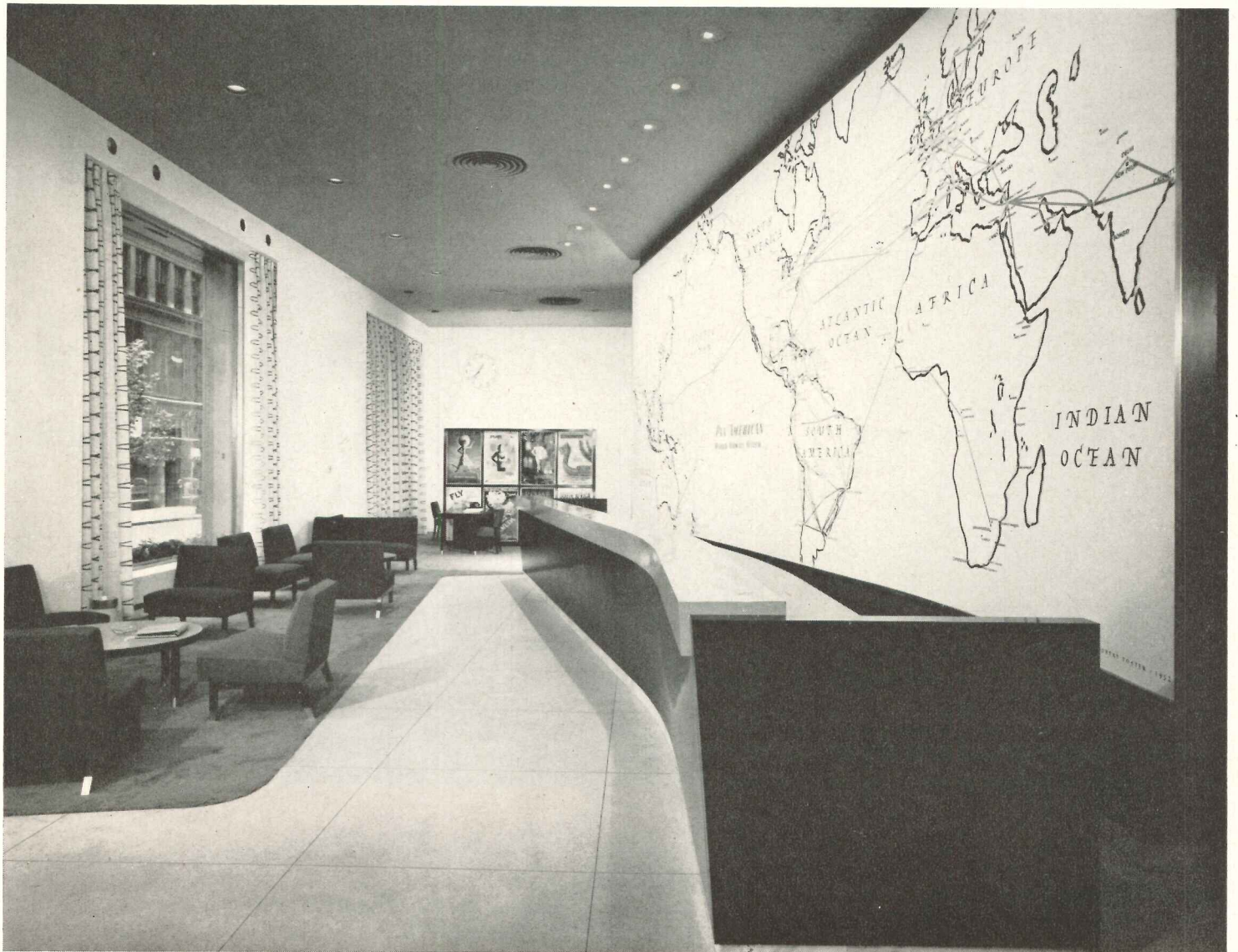
The principal focal point of the interior is the large wall map of the world which shows Pan American routes. Designed by Robert Foster and executed by Rambusch Decorating Company, its surface is coarse textured canvas painted in white, off-white and black, with the route lines in gold leaf. The panel is enclosed within a heavy yellow bronze frame.



Exterior, left, faces the corner of 48th Street and Fifth Avenue, which is the southernmost portion of Rockefeller Center



Ezra Stoller





ARCHITECTURAL INTERIORS
Design | Details | Materials | Equipment

Ezro Stoller

Philip C. Johnson, designer
Landis Gores, associated

A CONNECTICUT



HOUSE FOR A TELEVISION EXECUTIVE

House for Richard Hodgson

UNLIKE THE FUSSY RESTLESSNESS that characterizes many houses, this design achieves both clarity of expression and a feeling of repose. The essential horizontality of the structure's disciplined envelope and its quiet colors contribute to its restfulness, as does the simplicity with which masonry and voids have been handled. Careful attention to detail, insistence on a high standard of craftsmanship, and the studied articulation of surfaces and materials are all factors in the effect of orderliness.

To achieve the necessary separation of living, sleeping and service areas in a manner maintaining privacy with a minimum cutting apart of these elements, they have been arranged in U shape about a landscaped patio which becomes the major focus of the design. Such a scheme yields some of the amenities of the attenuated "zoned" plan in more compact form. A future bedroom wing to the east will complete the scheme.

The roof construction consists of wood joists framing into steel girders supported by masonry and the four interior steel H-columns. With the exception of a small area, the floor slab is built on grade and contains hot-water radiant heating coils.

The ceiling is white acoustical plaster; the walls pale gray glazed brick, white plaster or oak; the floor is black ceramic tile; all exposed metal is painted charcoal gray.

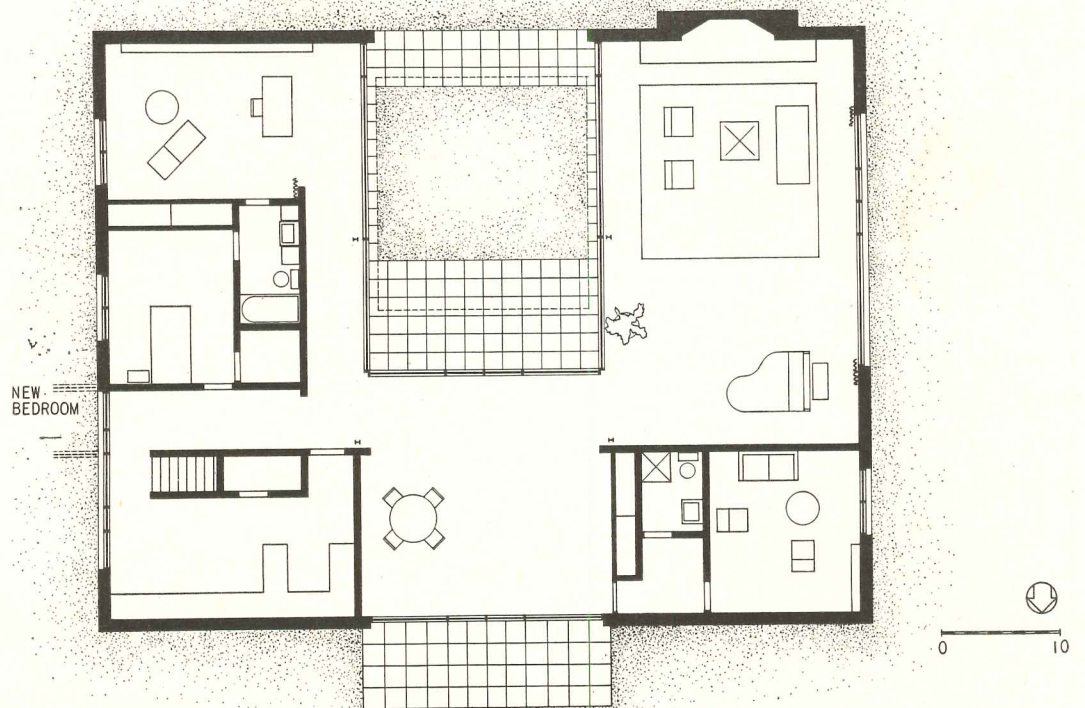
Ezra Stoller

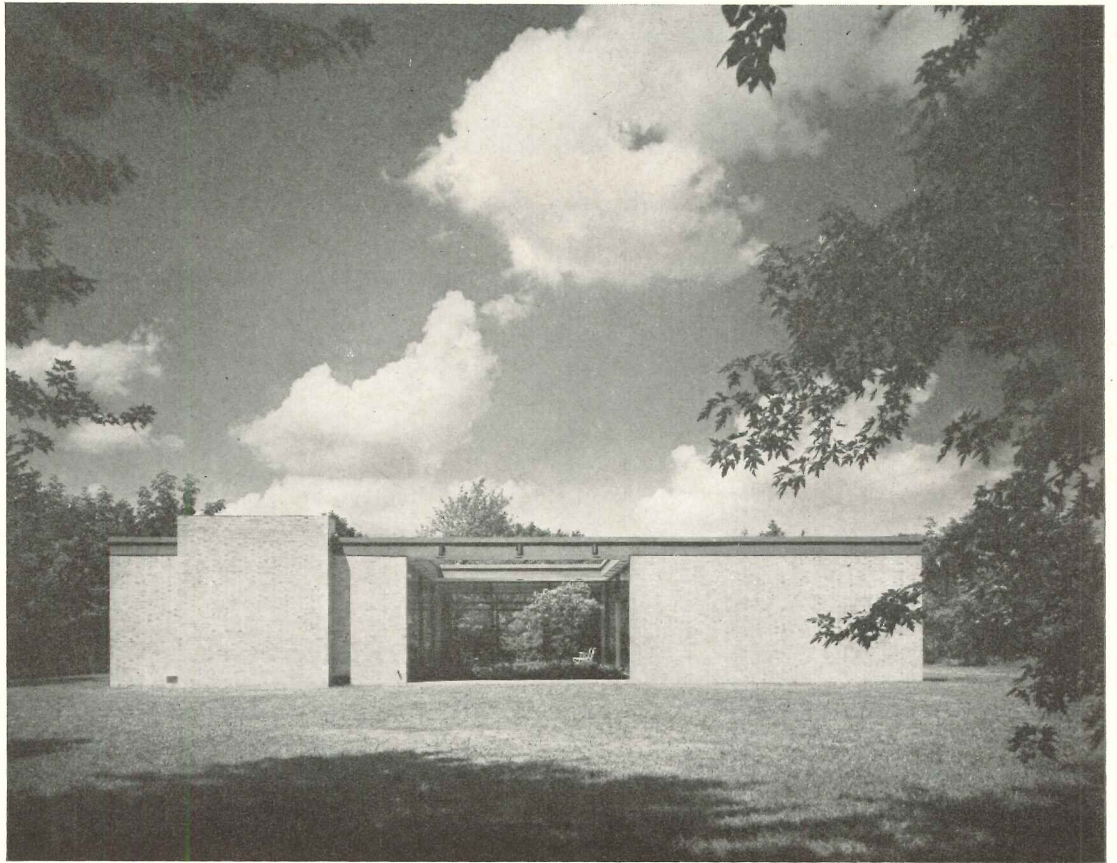
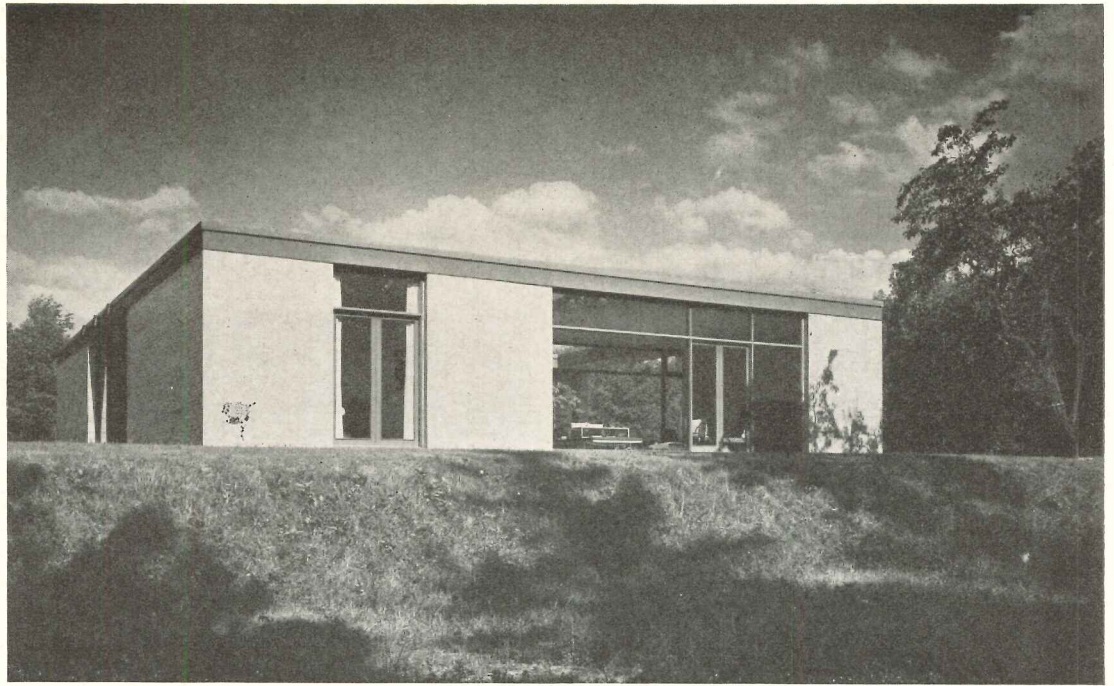
New Canaan, Connecticut

THE HODGSON HOUSE, NEW CANAAN, CONNECTICUT

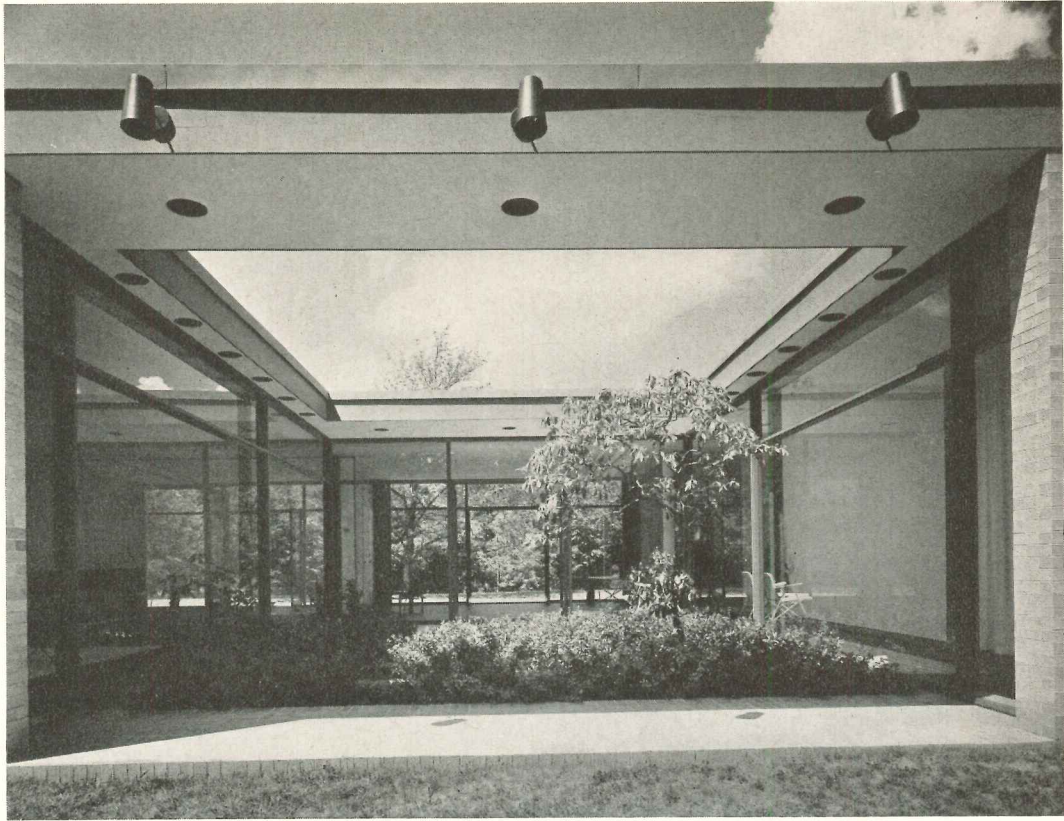


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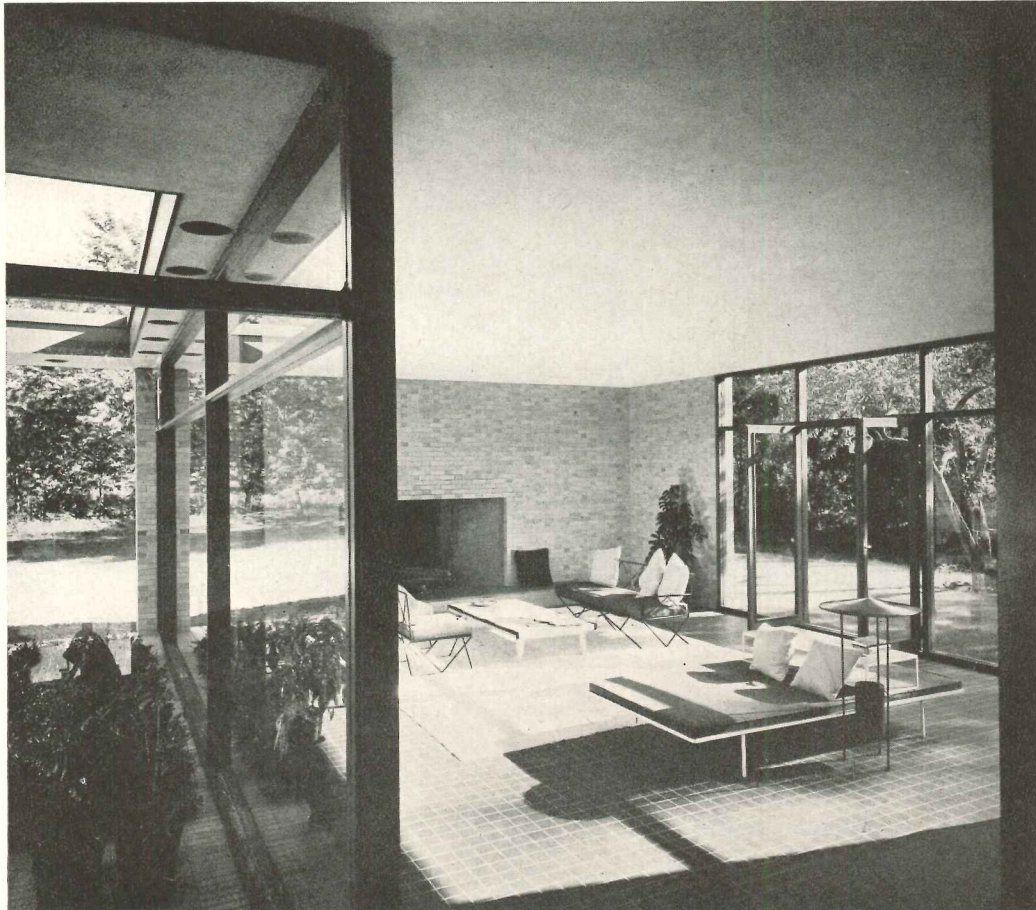




The house is located on a wooded hillside overlooking the valley to High Ridge beyond and is set in a clearing on a gently raised earth platform much in the spirit of the historic podium. The three pictures above, right and left, show the exterior elevations from as many directions



Glazing the plane on axis with the patio gives the interior direction and yields a "through" effect



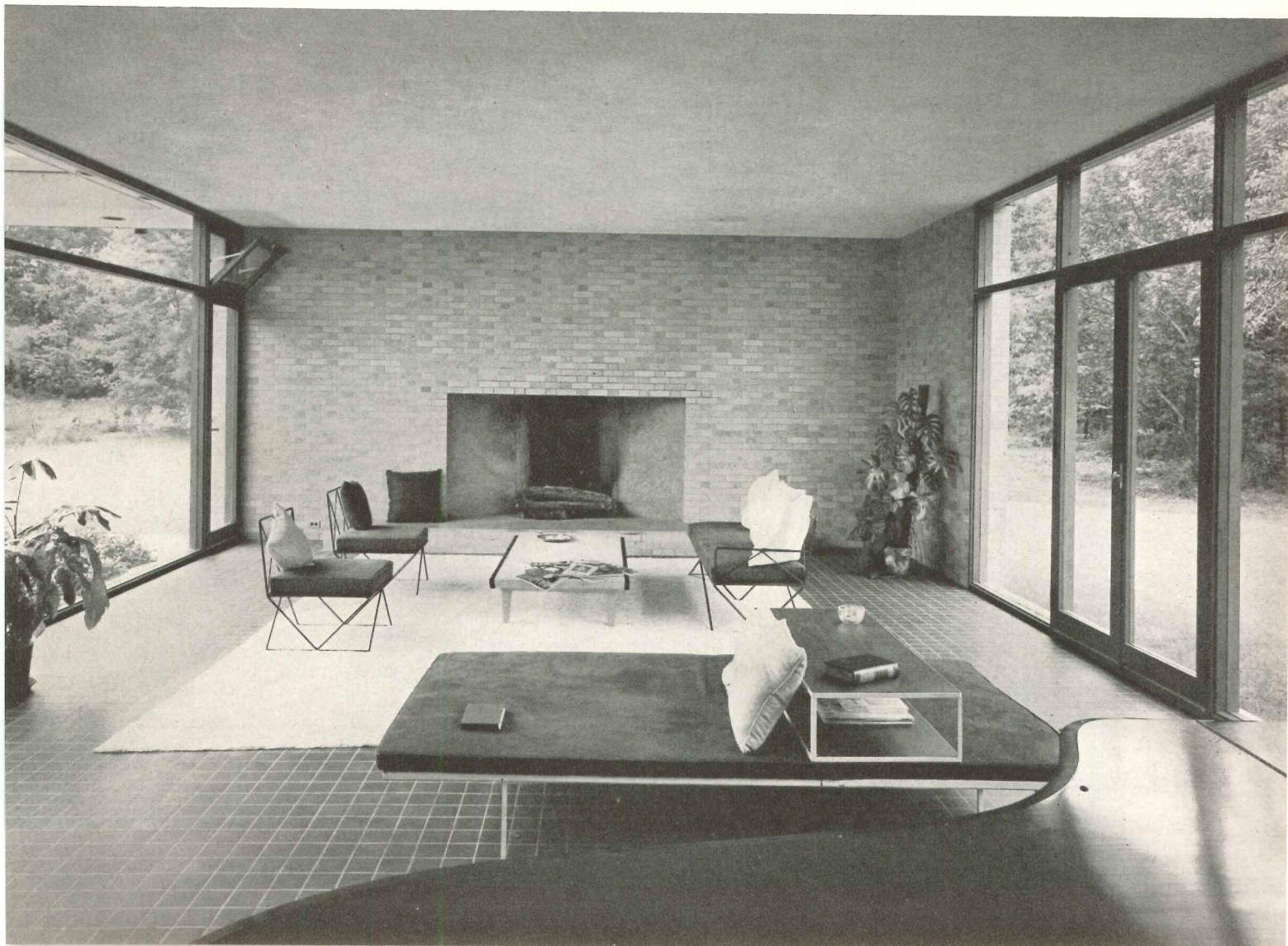
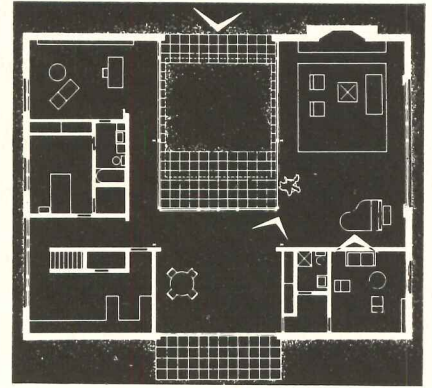
Ezra Stoller

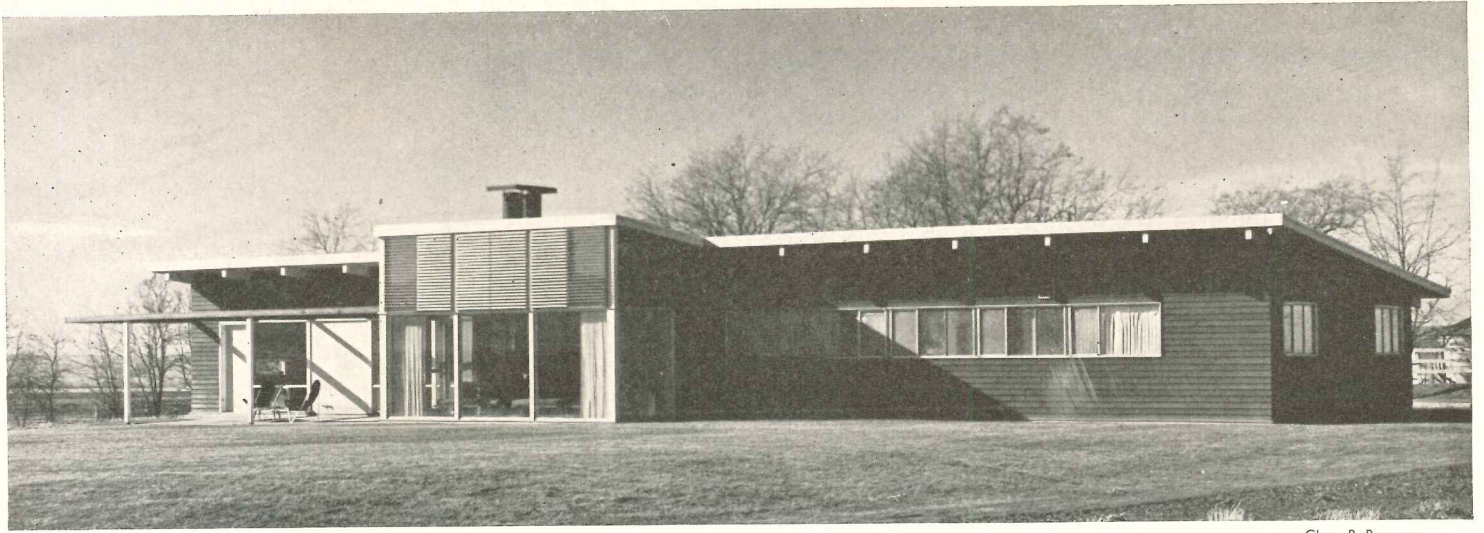
THE HODGSON HOUSE, NEW CANAAN, CONNECTICUT

Looking into the patio from the clearing, top left

View from entry into living room, bottom left

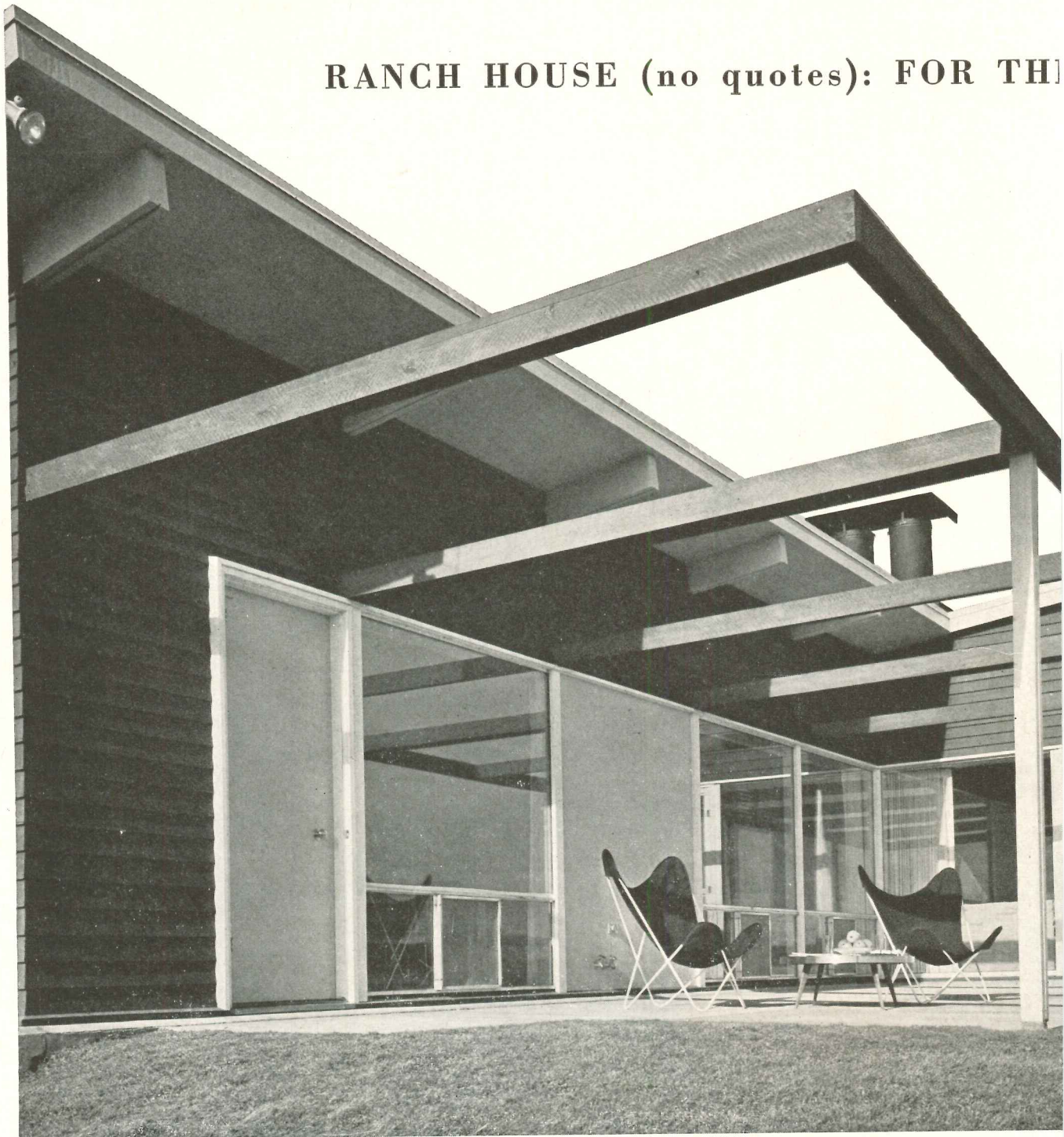
Large recessed fireplace is living room focus, below





Chas. R. Pearson

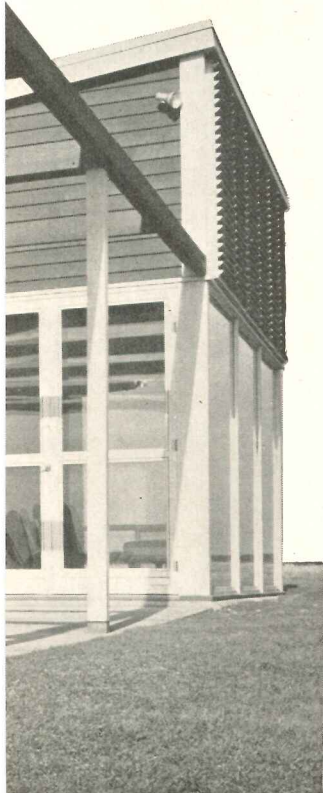
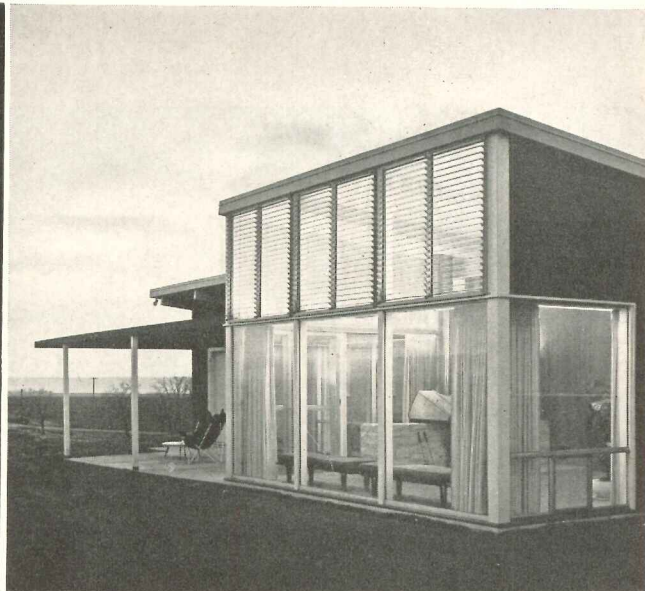
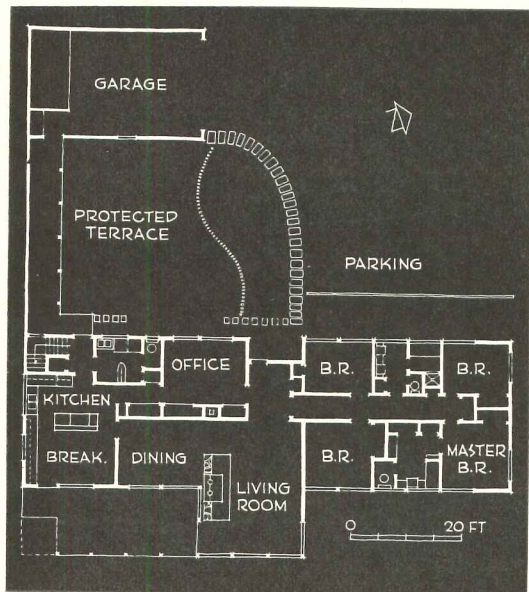
RANCH HOUSE (no quotes): FOR TH



*Residence for Lawrence Minnick
Lawrence G. Waldron, Architect*

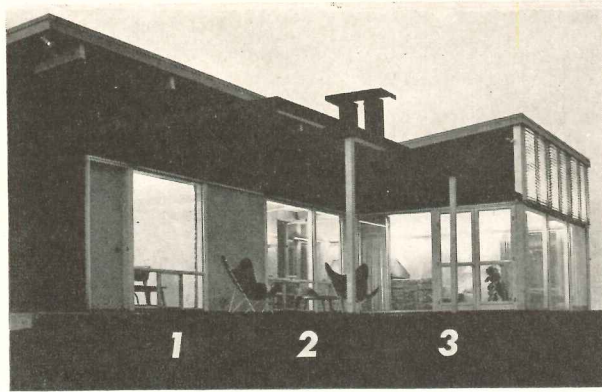
(once) WILD WEST

DESIGNED FOR A RANCH in the dry rolling hills outside Walla Walla, Washington, this trim little house provides compact, yet open and roomy quarters for a family of five. Ample outdoor living areas, broad windows and exterior aluminum blinds on the upper portion of the living room sash provide against the hot summers of the area. All major rooms face a distant mountain view and are oriented against the prevailing southwest winds. The west terrace is for spring and autumn use.

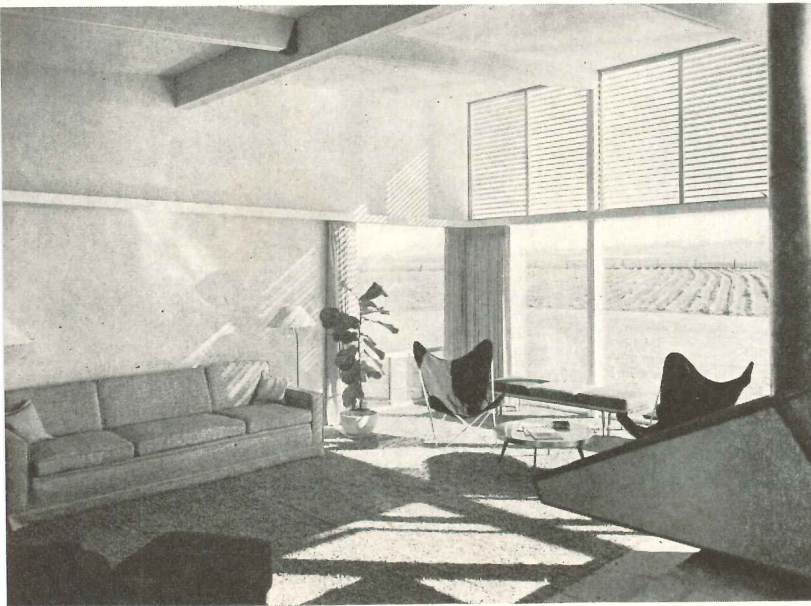


In addition to the abundance of glass and outdoor living areas, a sense of spaciousness is gained in the living-dining area and in the kitchen-breakfast room by the use of suggested divisions rather than partitions. The house is wood frame, with stained cedar siding. Interior walls are plaster and varnished wood; ceilings are acoustic plaster, floors are red oak, cork or vinyl tile. Window sash and screens are aluminum. A winter air conditioner is used plus cooling coils for well water circulation.

RANCH HOUSE



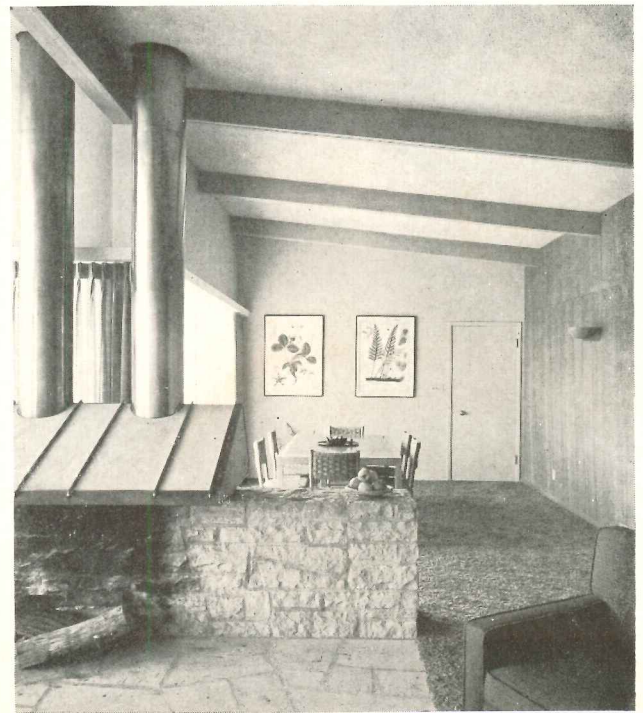
1 Major rooms all open on view, including breakfast area. Kitchen cabinets are birch, equipment is electric. Floors are vinyl tile



Chas. R. Pearson

2 The dining area is separated from the living room by a freestanding fireplace

3 The living area has aluminum blinds over upper portion of windows, draw curtains over lower sections to temper the sun



®

Since the mid-1930's, when research on what is now becoming our American educational pattern began to crystallize, ARCHITECTURAL RECORD has published an average of two school Building Types Studies a year. In these 30-odd studies we have translated teaching requirements into programs for building design. Engelhardt, Engelhardt & Leggett were educational consultants for nearly all the school buildings shown in this month's study.

SECONDARY EDUCATION AND ITS BUILDINGS

What is the nature of the coming high school curriculum?

What will high school buildings be like?

FOREWORD

IN January, 1953, a small group met in Charlotte, N. C., to discuss the evolving secondary school program and the buildings it will need. All of us — architects, educational consultants and school administrators — were conscious of the continuing need for elementary classrooms and of the tremendous curricular, administrative and financial problems that face the country at all levels of public education; but because development of elementary schools has, generally speaking, reached a fairly high plane we felt we could let that subject rest for a while.

Charlotte's 18-month-old Myers Park High School has a campus plan, and as its buildings are built is coming to have the facilities needed for good teaching and for a constantly developing program. In recent years one national curriculum trend has been toward what is variously called the common learnings, general education, or life adjustment program, or any of several other names (ARCHITECTURAL RECORD Nov. 1952). Myers Park High School gave us the chance to study a plant and an evolving program in operation, to gain knowledge against the day when the secondary school building problem, now beginning to plague us in isolated instances, should become as acute generally as the elementary is today. Seven of us descended on the city:

William Curtis, Superintendent of Schools, Wallingford, Conn., who has an immediate high school building problem;

N. L. Engelhardt, Jr., member of the firm of Engelhardt, Engelhardt and Leggett, educational consultants;

Alonzo J. Harriman, architect, member of the A.I.A. Committee on Schools, from Auburn, Maine;

Stanton Leggett, also of Engelhardt, Engelhardt and Leggett;

Frank G. Lopez, of ARCHITECTURAL RECORD;

John W. McLeod of McLeod & Ferrara, Architects, Washington, D. C., and Chairman, A.I.A. School Committee;

Joseph W. Molitor, architectural photographer, who photographed what we were discussing.

In Charlotte we added to our group:

John French, Principal, Myers Park High School;

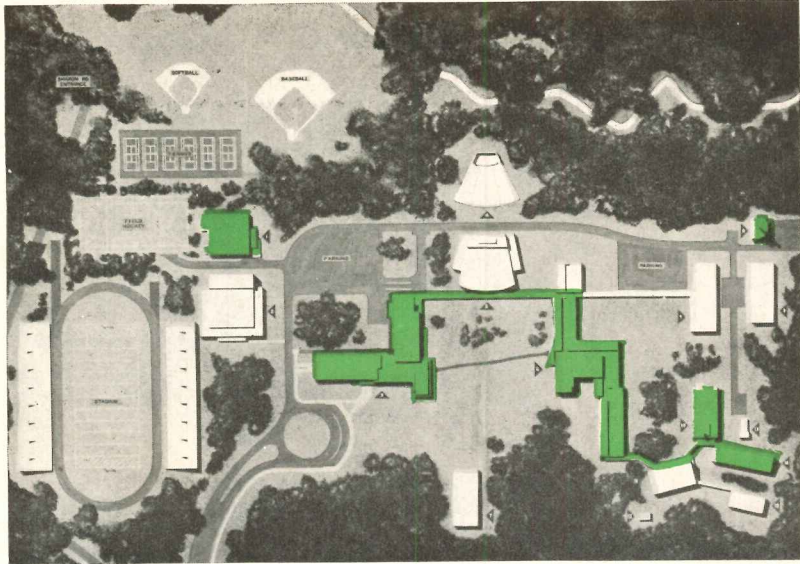
Elmer Garinger, Superintendent of Schools, City of Charlotte;

James Stenhouse, of J. N. Pease and Co., architects and engineers of the Myers Park High School.

We met and talked with James R. Lyles, Assistant Superintendent in Charge of Instruction, City of Charlotte, and others in the Department;



The Educational Climate



with teachers from Myers Park and with students. We probed into all the buildings on the campus, noting facilities, conduct of classes, attitudes and methods of teachers. We tried to evaluate their effects on the pupils. We discussed what we had seen until the wee small hours, and continued the next day, some of us longer. Our talk ranged far beyond the limited application of principles at Myers Park; some exciting potentialities began to formulate themselves.

Charlotte and Its School System

Charlotte has no one large industry to support its people. While it does have a healthy pattern including small industry, commerce, and business and professional activity it is primarily a distribution center. This means that much of its population is "white-collar" and a high percentage of its high school students go on to college. (Although statistics from Myers Park High mean little yet, since it has been in operation only a year and a half, 93 per cent of the school's first graduating class are continuing their education. This high figure was reached partly because the Myers Park area is one of Charlotte's choice residential districts.)

Charlotte's people are moving out to the suburban periphery and its schools, elementary and secondary, are following. The school housing problem is acute at all levels of the 6-3-3-2 system; the city's two junior colleges use existing high school facilities for their combined vocational and collegiate program. Myers Park High is one of the new schools just inside city limits, on a 75-acre site. It was designed as a senior high school, but due to shortage of space elsewhere has had to take in junior high students. Enrollment this year is about 1200; when all the buildings now intended for its undulating campus are built, its design capacity will be 2000; it will probably have to accommodate more. This expected crowding, similar existing conditions in Charlotte's other secondary schools and the popularity of the junior colleges are a few of many indications of the increased "holding power" of schools, a phenomenon visible also in other cities and one which aggravates the educational effects of recent high birth rates plus normal population growth.

Discussion

Most of our talk was tape-recorded. We began by asking Nick Engelhardt and Stan Leggett, as the educational theorists present, what a common learning program is. We learned something of its variety; simplest, perhaps, is the mere relation of two or more basic and compatible subjects — language arts and social studies for instance — which can be taught in close association in class periods longer than normal, to allow time for exploring their interdependence. Far more complex is the radically different approach which employs to the full the "learning-by-doing" or "experience" method; in an extreme instance a group of students chooses a problem or series of problems and, led by teachers who often have to learn with the group, obtains familiarity with mathematics, sciences, history, languages, practical and fine arts, and so on, in the course of finding a solution. Subjects are taught as tools to work with, exactly as they are used in adult life. Principles are learned by their actual development through real experiences, not by accepting statements of theory from textbooks. Following this, the conversation (somewhat edited) proceeded:

ENGELHARDT: Bill (Curtis), what would you say is the fundamental purpose of public education?

CURTIS: Why, creating good citizens, I suppose.

LEGGETT: Then which is important, facts that have to be learned laboriously by rote, or learning how to use those facts and others — which we can dig up as we need them — when we meet problems in every-day life?

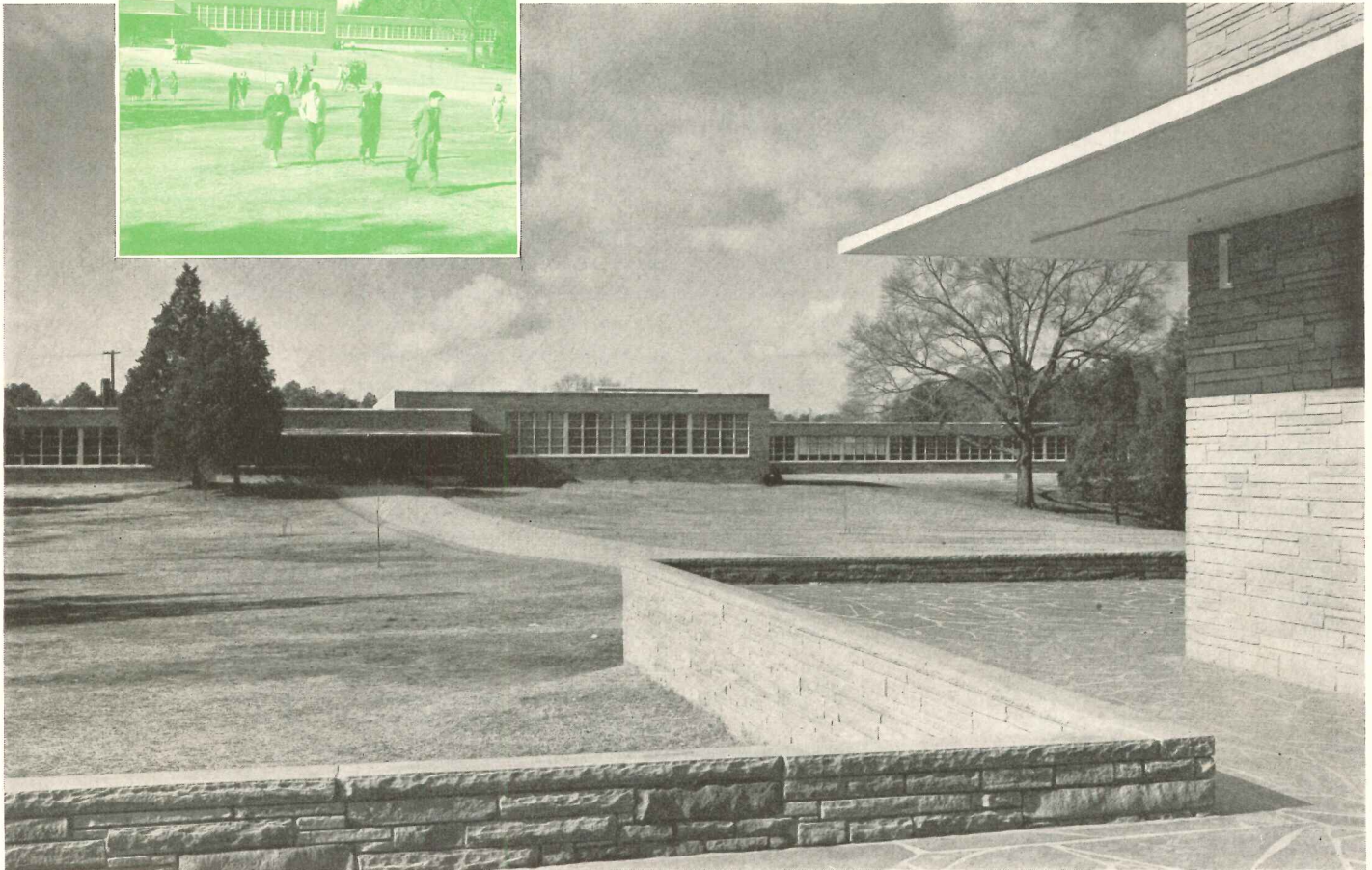
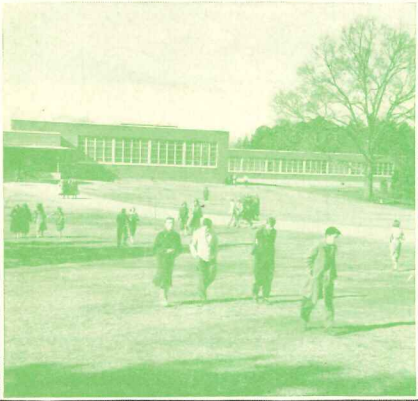
HARRIMAN: Well, what is the learning process? Is learning an accumulation of memories? Is memory the same thing as mental capacity?

ENGELHARDT: We're not discussing memorization. We don't think of the mind as a quart basket to be filled or a muscle to be developed physically. We don't know much about the learning process, but it does appear that actual experience, meaning sensory contact with all sorts of things and their use in real situations, does speed up learning. Facts and processes come to have more meaning.

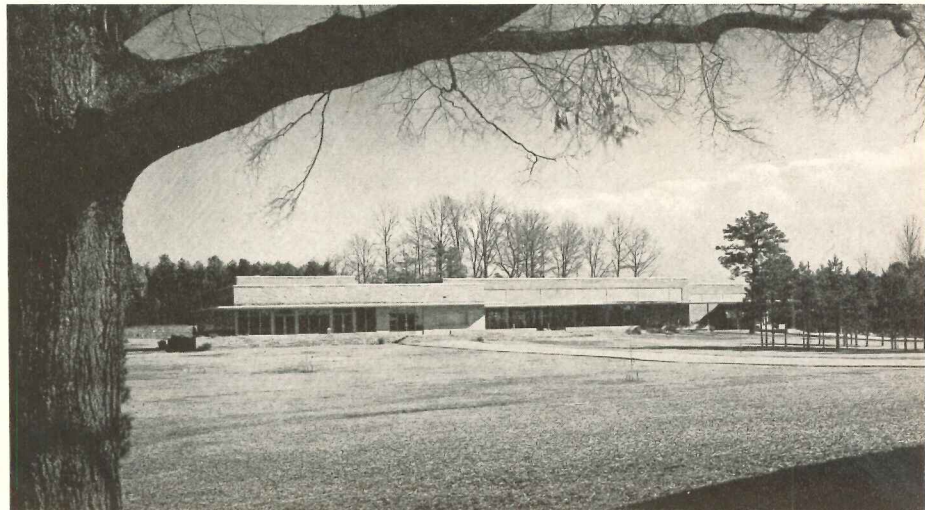
Myers Park High School, Charlotte, N. C.; J. N. Pease & Co., Architects and Engineers. Of its projected buildings, only those shown in green on rendering (opposite) are now built: left to right, gymnasium; student center containing lounge, cafeteria, guidance and administration; library building (also contains classrooms); physical and natural sciences; boiler house at upper right



Joseph W. Molitor



Photos of Myers Park High School: top, entrance, student center; middle, from terrace of student center toward library; bottom; from library toward student center. Inset: students crossing from classes in library building to student center; few campus paths have been laid out, may follow routes students use



Myers Park: left, group inspects site of field problems, directed by science teacher (Frank Eller, extreme left). Right, exterior of library from grassy bank; in fine weather, outdoor reading is encouraged



STENHOUSE: Yes, you can get more from one look at the Grand Canyon than from two hours' reading about it.

LEGGETT: There's much more to be learned nowadays than there used to be, to fit youngsters for life in our mechanical age. We have to develop and improve ways of learning more quickly, and we've had some success at the elementary level, I think. The elementary school used to take a full eight years, universally; it was mostly memory courses or subjects. Now it takes only six years in many places, six years of experience learning, and children go much farther educationally than they used to in eight. And at the same time, all types of people are sending their children to school for a longer term of years; right here in Charlotte the holding power of the high school has about doubled in ten years.

HARRIMAN: Is the school solely responsible for that? We have a higher living standard, and some credit for advance must be due the publications, television, radio and the movies.

MCLEOD: Is it important that, today, so many high school graduates can't spell?

ENGELHARDT: I wonder if we do turn out more poor spellers now than fifty or even twenty years ago?

LEGGETT: Matters like learning to spell correctly and the many other rote-learnings are important to an extent; but their importance has to be balanced against other things we demand of education. For instance, one job a school must do now is try to make up for experiences children used to have within their families or in normal daily routines. Many experiences we call common, remembering our own youth, just are not common today. The child seldom works now with the father or mother in the home or business or farm. Maybe lack of these domestic influences is a reason for the incidence of symptoms of juvenile delinquency.

HARRIMAN: Improvement in physical education programs could help in that respect.

LOPEZ: Add to the other factors the problem of the commuter-father; his influence is very limited.

MCLEOD: But it's only a few years since working people worked from 6 A.M. to 6 P.M., six days a week, and saw their children even less. That's not a new problem.

ENGELHARDT: Another result of our broadening civilization is that in secondary school we've piled subject on subject until the program is terrifically complex. There is so much for the student to encompass that the subject-matter approach won't do. Experiences that we never used to dream of have to be made available to children and, conversely, some things have lost value, particularly if we regard the school as a maker of good citizens.

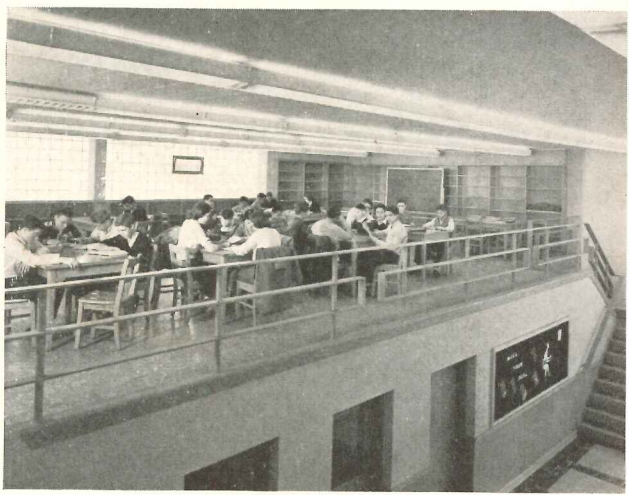
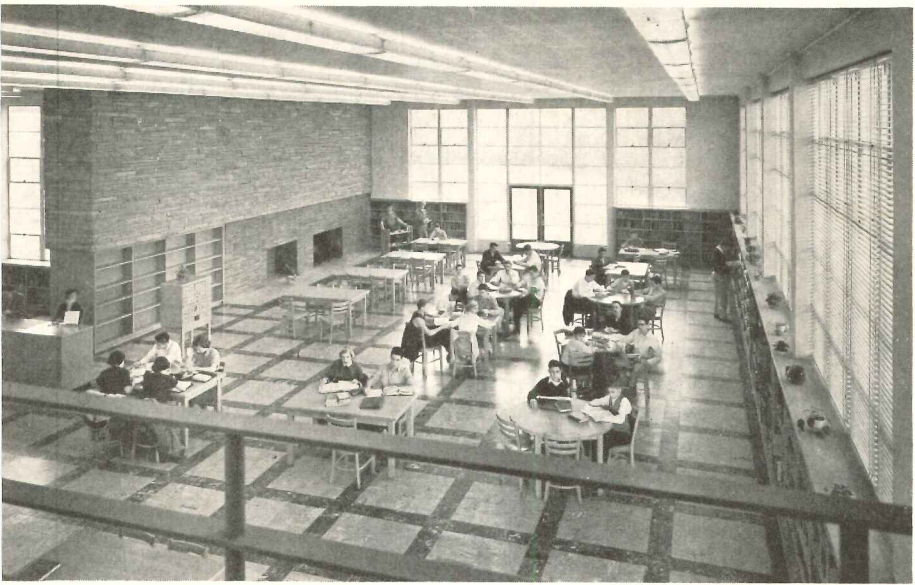
MCLEOD: That's an answer to my spelling question. But how can a child learn $2 \times 2 = 4$ except by rote, or counting on his fingers?

LEGGETT: As I said, of course there has to be some memory work. But the city child's reading primer, all too often, still contains the phrase, "O, O, O, see the cow". There is no cow for him to see, so "cow" means just as much to him as "OOO". We want him to see, touch, hear, even milk the cow. And at secondary school level, have you heard of the group of children who accumulated about fifty dollars some way, got together scrapped things from junk yards, made some parts themselves, and by the end of the year had a working cyclotron? Splitting an atom is a real thing to them, not just a phrase.

For another thing, in the past it was fairly easy to put together a logical curriculum composed of that day's necessary subjects. But as we have added more subjects, order and relationships have been lost; there is only a false chronological order remaining.

LOPEZ: The experience program makes tremendous demands of the teacher, doesn't it? What happens when we have, as we do now, many teachers not qualified to carry such a load?

ENGELHARDT: It does challenge the teacher; and teacher-training standards, like others, do rise too slowly. But that should not be the criterion for designing either the curriculum or the buildings.



Myers Park: photos above, library interior; balcony end now does duty as study hall; under it are conference alcoves, office, work room, listening booths. Fireplace corner was intended to have lounge furniture. Below: student lounge and soda bar

Joseph W. Molitor



HARRIMAN: John (French), last year didn't you run two-hour periods and allow about ten minutes between classes? And this year you have shorter periods?

FRENCH: Yes, we had some two-hour classes last year. Some teachers and students had difficulty adjusting to longer periods and every-other-day classes. This year we've changed to one-hour periods; but with more changes between classes, we had to cut the change time to five minutes. It hasn't been too good; we've been ruled by the clock too much. So we're going to have to allow about seven minutes per change, and we may reinstate some two-hour periods in certain classes.

HARRIMAN: Does the fact that there is a campus plan at Myers Park affect the length of period?

FRENCH: Yes; or perhaps I should say we've had some requests for longer periods this year. And in classes devoted to any kind of creative activity, where it takes time to kindle the creative spark — well, you hate to ring a bell and extinguish that spark.

STENHOUSE: In a traditional high school, say three floors, class changes take as long; going up and down stairs, and congestion . . . well, you can make an equal distance horizontally . . .

GARINGER: We learned the disadvantages of short periods all over again when one class started preparing a history of Mecklenburg County in slides. Frequently we had to stop because the students had to attend another class instead of proceeding for an hour and a half or so. We had invited speakers in to tell us certain things, and they, as well as the students, were often cut short.

STENHOUSE: Yes, that happened to me. Maybe just one subject a day would be ideal.

GARINGER: It might get monotonous. But long ago in Charlotte we tried 80-minute periods, four per day. We made our field trips really count then, trips to cotton mills and business houses. We got the idea from Lincoln High School, Lincoln, Nebraska. Far as I know they're still using it.

Physical Education Facilities

LOPEZ: Alonzo, a while ago you spoke of physical education. Myers Park has a new gym, just opened and full of youngsters. I'd like to ask the educators among us: What good is the traditional gymnasium? Does the spectator sport improve the physical condition of students? Does it tend to exclude non-participating students? In terms of buildings, does it not postulate a very expensive facility, of rigidly uniform design?

LEGGETT: The average team sport that brings out a large squad does benefit many students.

ENGELHARDT: Quote: a good interscholastic team helps to make a school's reputation; and it's true that the standard gym across the country is designed for varsity basketball and 1500 spectators. End of quote. Stan, why don't we have non-team, non-competitive sports?

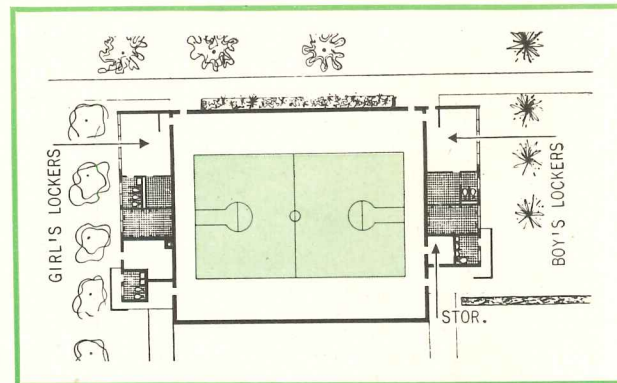
HARRIMAN: Your team sport benefits only a few in each class, and some of those few are done positive harm. Too often the high school star reaches his peak importance then, during adolescence, and he never recovers afterwards. You know, when I was in Europe looking at schools I found their gymnasiums were different than ours. They don't spend the money we do — principally to benefit spectators.

MCLEOD: Yes, their gyms are small. A lot of them have swimming pools.

ENGELHARDT: Swimming is one sport everybody can participate in.

FRENCH: To an extent, we have such a program at Myers Park. Bear in mind that we don't have all the buildings built yet, that we got our gym just last week. We use areas both indoors and out. Some activities are team games, some are not.

LEGGETT: However, all physical activities need a certain area and volume. Providing spaces for individual sports won't reduce the total building volume; but



making room for the one that takes the most space can make many of the others possible.

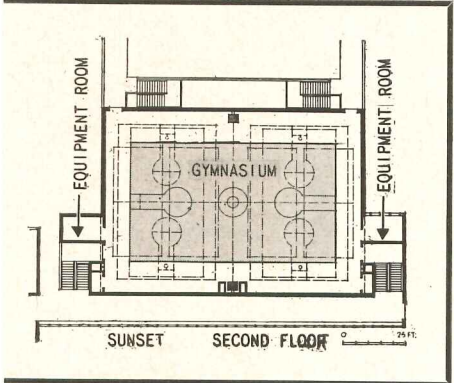
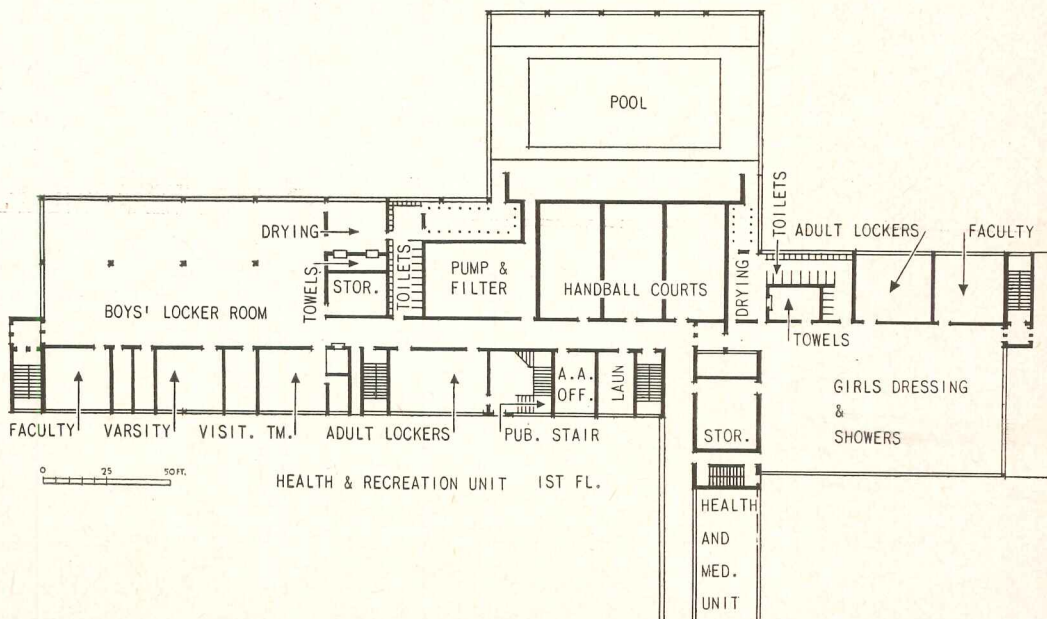
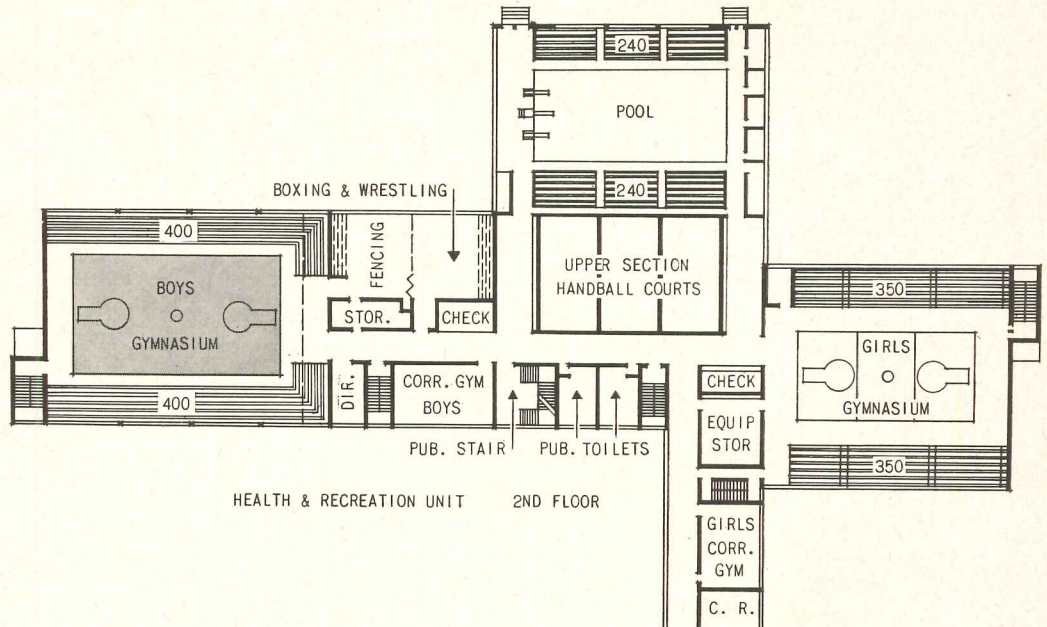
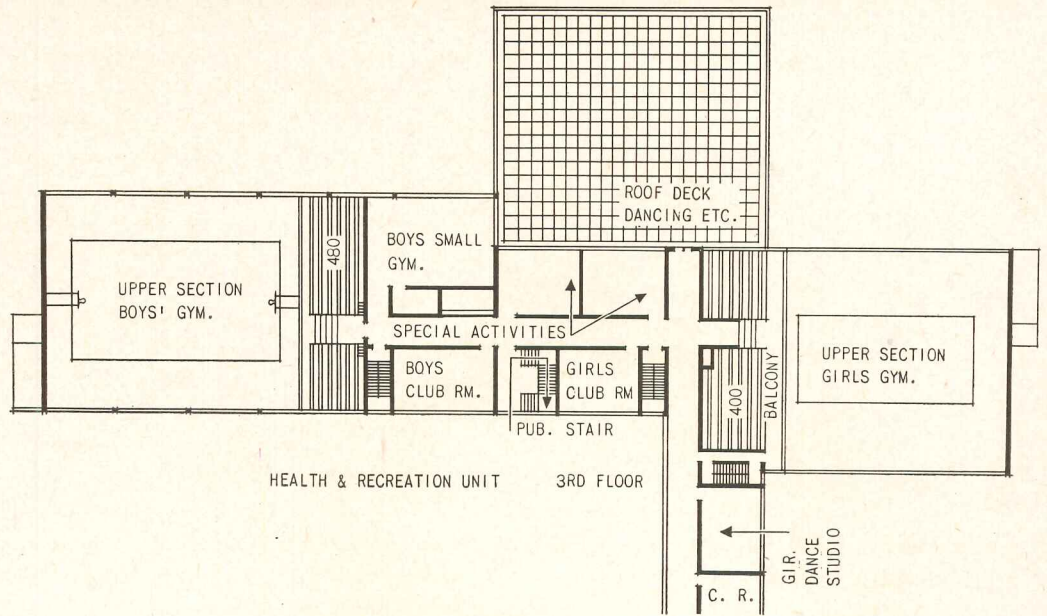
LOPEZ: You mean basketball? Which is more important, participation or competition?

FRENCH: Participation, of course. But we have some 120 students per class, half boys and half girls. We don't expect our typical gym structure to dictate a program of just team sports. We do have some semi-basement space, low-ceilinged, that we can use for other purposes.

ENGELHARDT: I'd say the secondary school needs provisions for all kinds of physical activities. Curtis, in Connecticut would these all have to be under roof?

CURTIS: To a degree. We'll need a raft of different kinds of spaces. We want physical education daily, not three times a week. In general, I believe physical education people would like to emphasize the intramural program more than interscholastic sports. However, the average layman, who makes up the community and pays the bills, does not yet see the value of an intramural program. He's likely to in-

A comparison of practical and theoretical: facing page, gymnasium at Wagener 12-Year School, Aiken County, S. C.; W. G. Lyles, Bissett, Carlisle & Wolff, Architects. Below, gymnasium at A. P. Giannini Junior High School, Sunset Community Center, San Francisco, Calif.; Thomsen & Wilson, Architects. This is one of a group of schools comprising the center (A. R. March 1952); there is considerable outdoor space for physical education



Right: theoretical scheme developed some years ago by N. L. Engelhardt, Jr. with Harrison & Fouilhoux, Architects, for complete 3-story physical education unit containing most of the facilities considered desirable

sist: "We want to see our team perform. We want a swell gym." The school has to go along with his demand for a traditional gym and hope that space for intramural and non-competitive sports can be added later.

ENGELHARDT: And nine times out of ten you get a gym for 1500 spectators, period.

CURTIS: That's often true. The extent of the floor — probably the most expensive single item in a school — dictates design.

GARINGER: How about not flooring the entire area? Could part of it, maybe under the bleachers, have a dirt floor?

LOPEZ: Very likely you'd find temporary, removable flooring being installed over the dirt.

GARINGER: Temporary flooring is unsatisfactory. Could the space be arranged in use areas so flooring cannot be installed? And we need outdoor paved area for games, and so on.

CURTIS: We need outdoor space even in the northeast states; we use it in all but the very worst months. Perhaps paving could be radiant heated to get rid of ice and snow?

HARRIMAN: In Maine we use it even in snowy weather, but paving presents problems. Our frost action is very severe.

LOPEZ: What about fishing, hunting, camping, the use of firearms? These need little construction and need not overload the teaching staff. They're non-competitive, and can be valuable in after life.

LEGGETT: So can some competitive games, such as squash, handball or badminton; but these take so much space for so few students that we must virtually rule them out; while such a game as basketball

can and does occupy many students. Although the court is large, it can be justified.

HARRIMAN: How many students did you say use the Myers Park gym at one time?

LEGGETT: It was designed for 80. It is now used by 120.

As total enrollment increases to the anticipated 2000, the 120 per physical ed period will grow to 160. Suppose there is bad weather for three weeks running, and all must be taken care of indoors; how in heaven's name can you provide 160 pupil stations? Say there are 80 engaged in team sports: that leaves another 80 for low-ceiling activities, and, brother, that's a whale of a lot of space! Particularly when non-competitive sports take more than competitive.

CURTIS: In some gymnasiums there is open space not used for courts, but for other activities. Could such areas have lower ceilings, to reduce volume?

HARRIMAN: How about mezzanines in such areas?

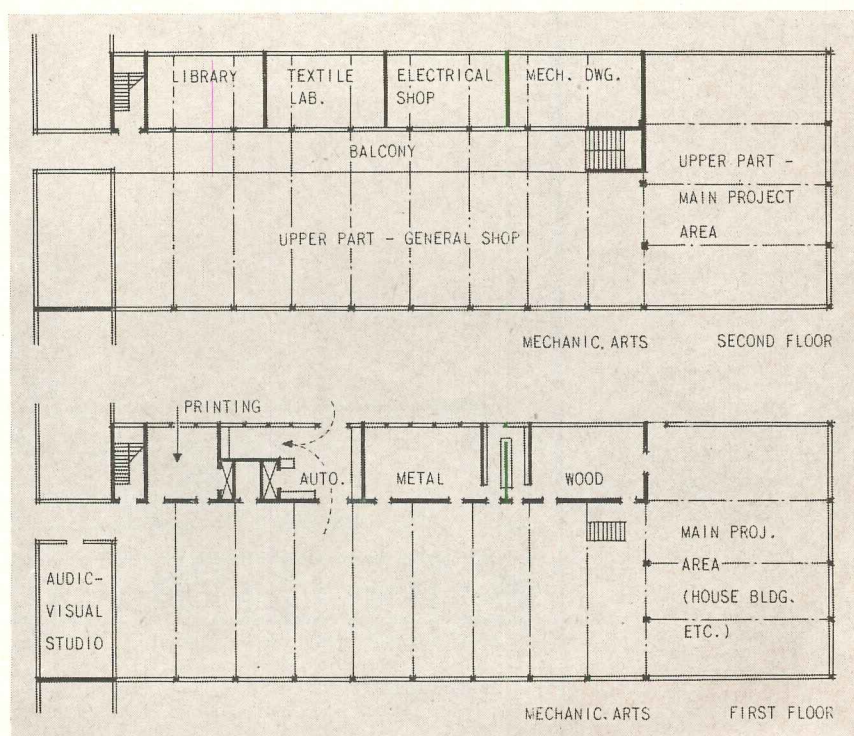
FRENCH: Yes, we could use a building designed that way for a participation program. And maybe we'll get the field house that's planned, some day.

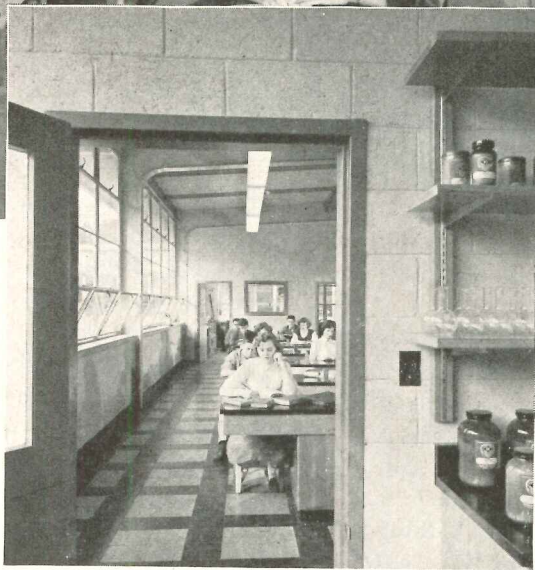
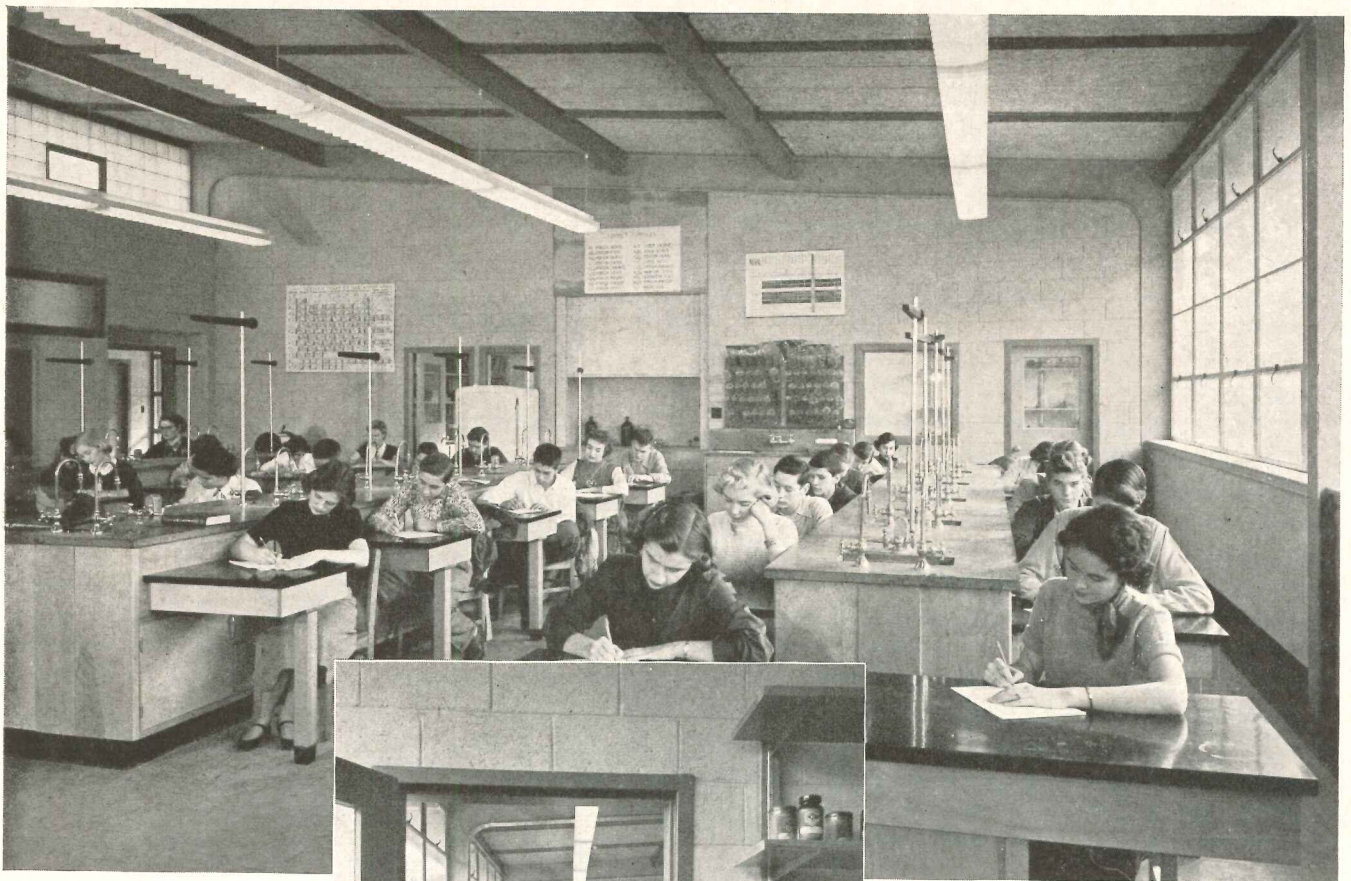
The Arts, Crafts and Sciences

HARRIMAN: Your long-range plan for Myers Park shows shop buildings over at one side, near the science group. Could they be nearer the auditorium, maybe even a part of the stagecraft unit? Lots of stage work is shop work, and as long as we're talking about integrating courses or subjects . . .

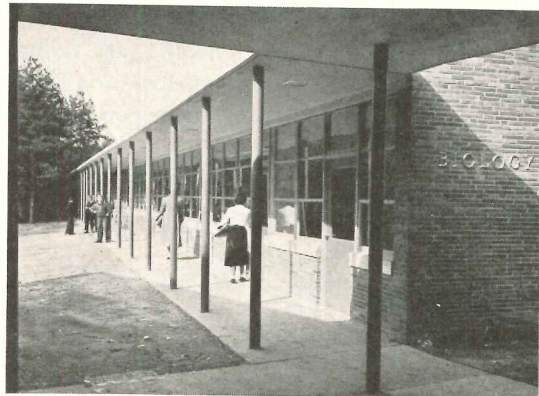
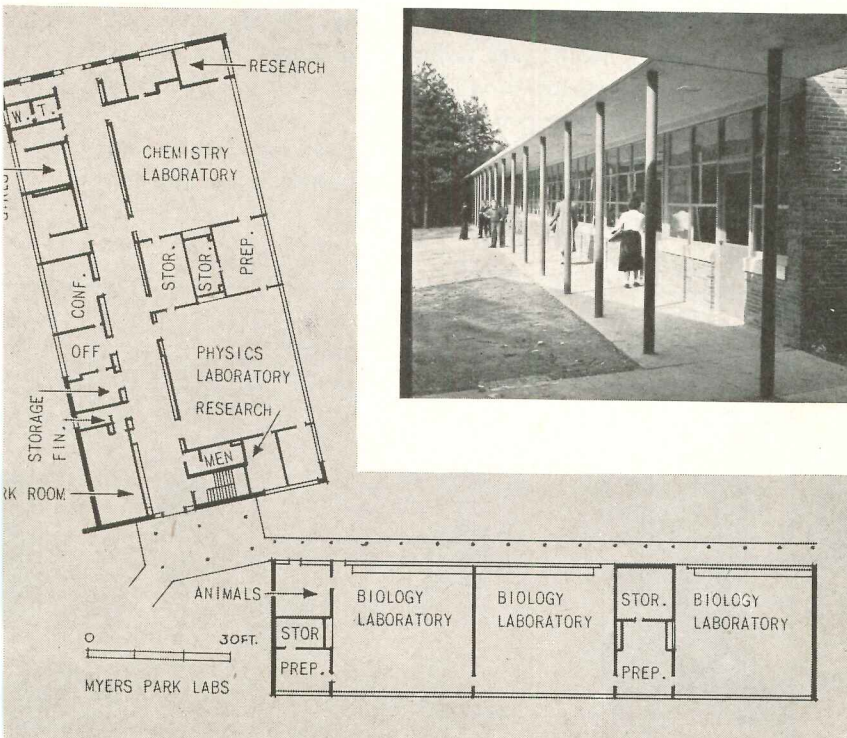
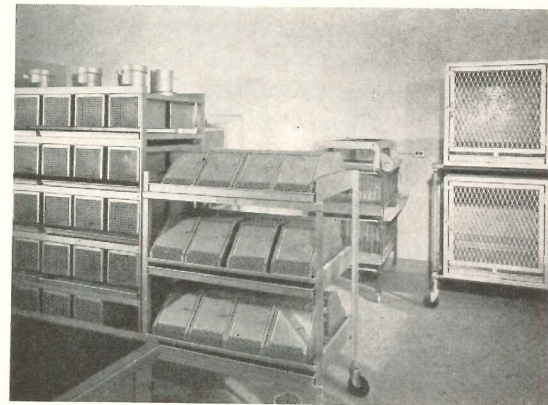
ENGELHARDT: Shop activities in relation to stagecraft are quite different from the shop as a place for acquiring skills. The facilities are different. All a high school uses on a stage is one set of flats which are repainted over and over again. You need storage

Scheme for "mechanic arts" unit—now generally referred to as "shops"—developed some years ago in the then existing office of Harrison & Fouilhoux, Architects; N. L. Engelhardt, Jr., Consultant; building design concept has changed little up to present, though educational concepts are beginning to change





Joseph W. Molitor



Science buildings at Myers Park: top, physics lab-classroom; note charts affixed to concrete block wall. Center, view from preparation room into another laboratory. Left, outdoor corridor, natural sciences building. Above, animal room; at present stage of school development this may not be essential, though in future it is expected to be needed

for a few cans of paint, plenty of space with a balcony or ladders, and more room for storing scenery and properties. On the other hand, a shop set-up has a number of different teaching areas: carpentry, metal-working, printing, electrical, art, ceramics, automotive, and so on. Each has a complement of special equipment.

MCLEOD: We've been talking about an experience program. Well, when children build sets and properties, they're using the techniques of the arts, generally — mathematics, electrical service, even historical research; and they're building something for actual use.

ENGELHARDT: Most properties could be made on a couple of small woodworking units. That's still a lot different from a shop to teach carpentry skills.

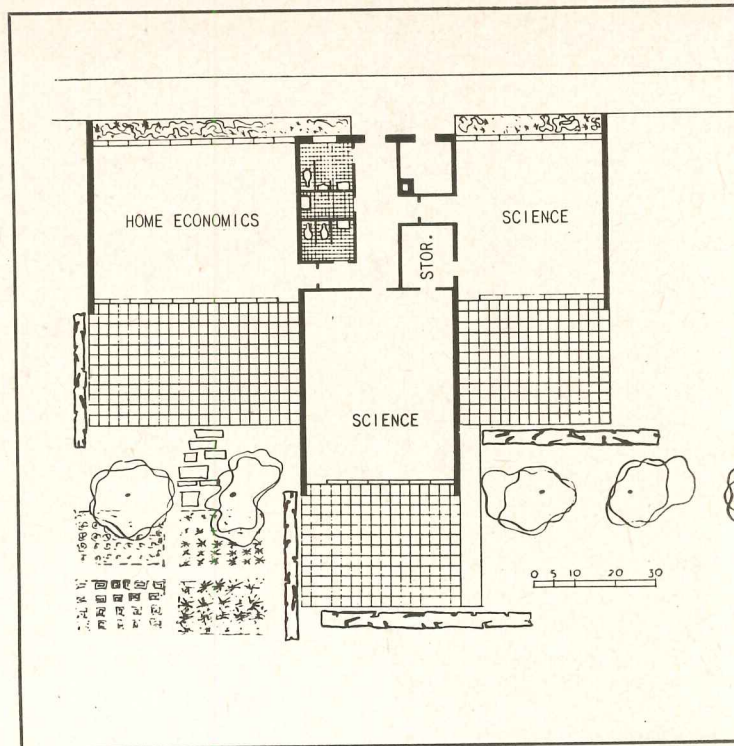
HARRIMAN: I don't see that the difference warrants duplicating space and equipment. We're working now with Cole of the Yale drama school; he insists on having the shops adjoining the stage. We're putting a slot in the backstage floor so flats can be lowered and painted. It seems to me that when shops and stage are adjoining it's easier to have the interest and participation of more children.

ENGELHARDT: Where does driver education go? That's a shop activity. What has it to do with the auditorium?

LEGGETT: The way we integrate these learnings is strongly influenced by our traditional attitude toward them. We've always considered development of manual skills or personal talents as something apart from academic progress. I don't see how we can continue to separate them; and if art, for instance — including dramatics — is no longer to be a thing apart, our traditional program and buildings are going to have to change, too.

ENGELHARDT: Why shouldn't the metal shop be near the science unit? We've proposed that it be at Myers Park principally because Frank Eller, the science teacher there, needs shop facilities.

GARINGER: His pupils are always busy on projects, working models of motors and such; that's the way they learn the principles of physics, not out of text-



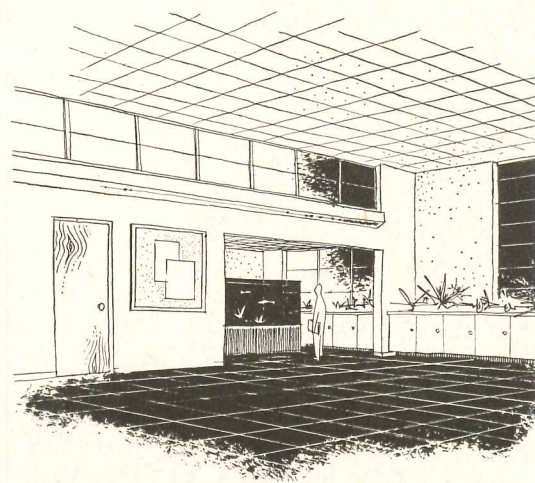
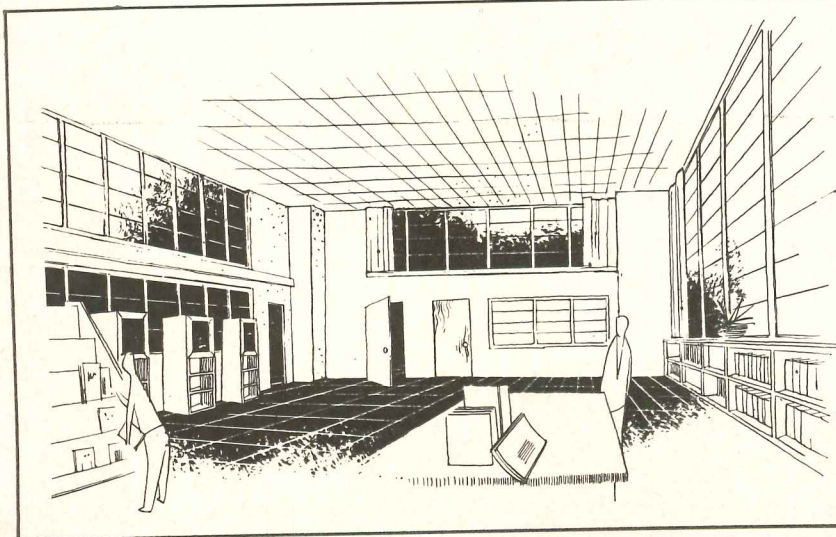
books. He needs a shop as much as a library.

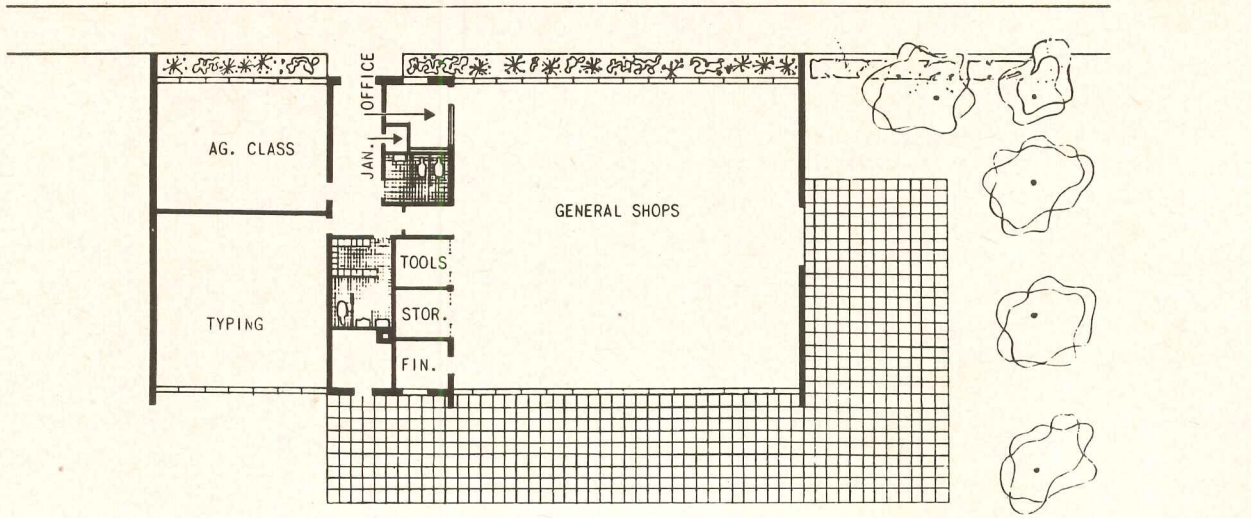
HARRIMAN: I suppose he wants an electrical shop, too; but wouldn't that work better next the stage where students work with lights, dimmers and sound production?

LEGGETT: All kinds of shops are needed for all these teaching groups. Home economics needs an electrical shop, too, though its function might be limited to teaching how to replace fuses, to spot dangerous wiring, and so on.

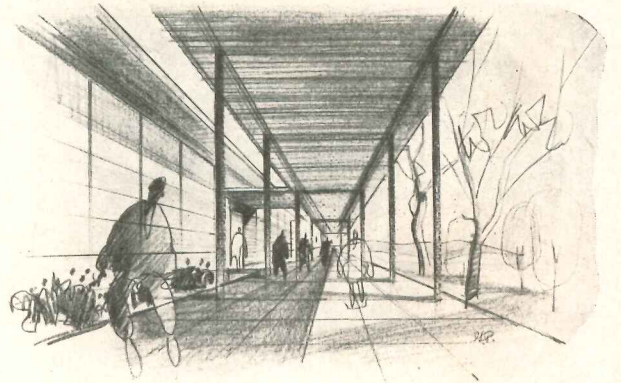
ENGELHARDT: It seems to me every student, boy and girl, should take home economics, so boys as well as girls would be better prepared to undertake domestic responsibilities. Another thing: the biggest problem most people face is buying a house. How can they judge construction? Every boy, at least, should learn about house construction.

HARRIMAN: I take it you're not talking about a course designed to produce building mechanics, but one to demonstrate values.





Left, science and home economics; and above, shop, buildings in the high school portion of Wagener 12-Year School. Classes are grouped in series of child-scaled buildings along a covered walk (sketch, right)



STENHOUSE: We use sound movies and slide films on construction at architects' meetings, and learn a lot. This sounds to me like a place to use audio-visual aids.

LEGGETT: But, again, the real experience of building — maybe not a big house, maybe something smaller, but definitely not the traditional tie rack! — that real experience does a much better job than secondhand learning.

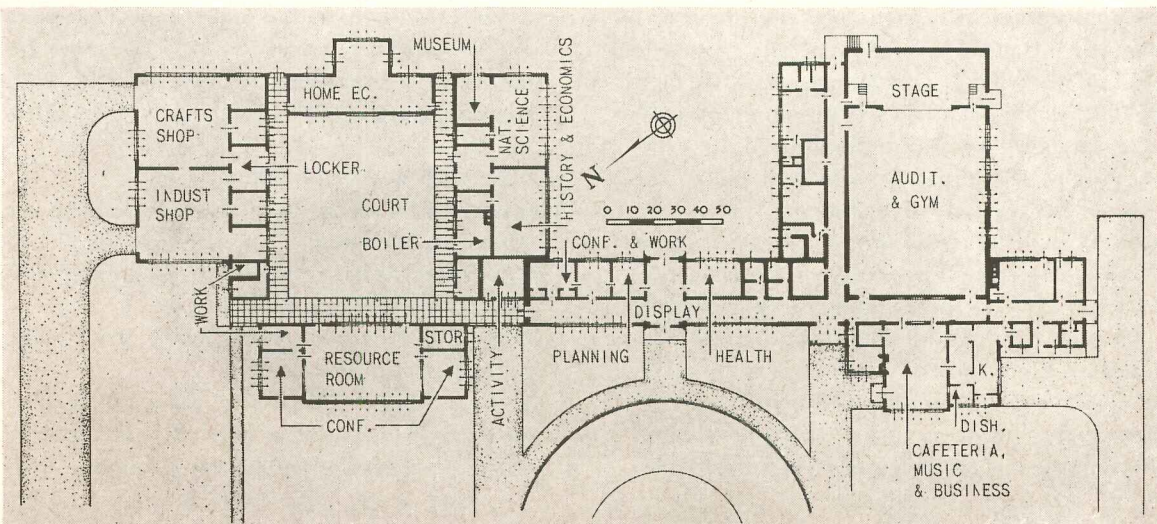
STENHOUSE: Why not, then, have students build a house, then take it down, and have the next class rebuild it, and so on?

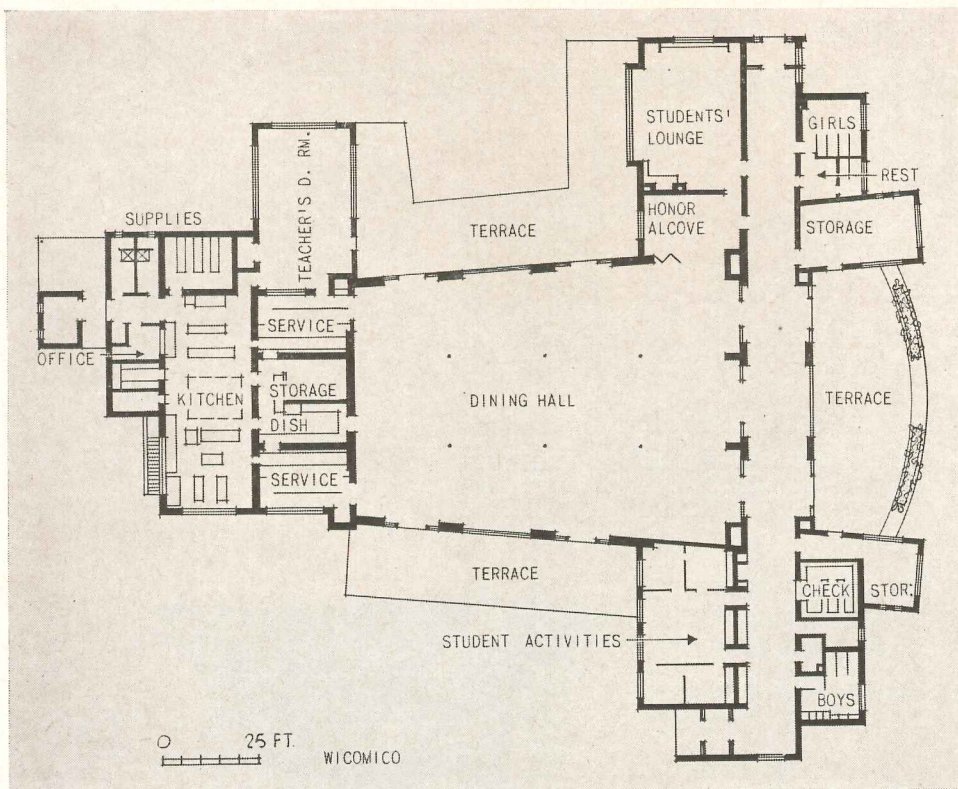
HARRIMAN: If you have limited shop facilities scattered at various school areas, just how much value does the limited facility have? Wouldn't children learn more in a complete shop with full equipment?

ENGELHARDT: Shop work is a means to an end in a science unit, where understanding of science is the aim. The means are necessary but only in a limited way. In a shop the student learns primarily the tech-

Are Shops Academic Facilities?

Below, South County High School, Dorchester County, Md., has no classrooms in the accepted sense. Students work on projects or problems in labs or shops and on field trips. One sketch shows natural science lab, museum at left, where topographic model of sea floor is being made. Other sketch: resource room has broader function than the usual library. Finney-Wolcott & Associates, Architects





◀ Left, dining hall, Senior High School, Salisbury, Md.; Malone & Williams, Architects. Note that an "Honor Alcove" opens from the main dining area and connects with student lounge. Partitions in activities room can be shifted

▶ Right, main building at Wagener 12-Year School and sketch of library court. Juxtaposition of auditorium, music and art rooms, even the library (divided for different age-groups) make possible a close integration of subject matter

niques, and that is not education, it's merely acquiring skills.

MCLEOD: Is Myers Park going to have a separate facility for art? Where will it be located? In what connection with other subjects will it be used?

FRENCH: We've been thinking of a separate building . . .

LEGGETT: In a nice, wooded section of the site, over near the science group; the reason was principally romantic, I guess.

MCLEOD: Why not tie it into the auditorium?

ENGELHARDT: We weren't—and still aren't—quite sure how the program will develop. Let's repeat that we're glad that not all of Myers Park's buildings have been built, and that what's been done here is only a first step toward resolving what an ultimate program may be.

GARINGER: We intentionally postponed the home economics building. Our notion was eventually to have a separate building with a demonstration cottage, that might be student-built, for succeeding students to use. As time goes on, we find home-making tying in more closely with English, science, and so on. Where should we place the department?

ENGELHARDT: It seems the home arts need some science lab facilities, shop provisions and so forth just as the auditorium may. Is there an advantage in having a home arts unit that has a home environment? Why shouldn't boys have the counterpart of a shop, for instance, as it exists in their own basement or garage?

CURTIS: Integrating these activities with the whole curriculum implies close personal relationships be-

tween teachers. In my own city, Wallingford, many teachers are planning services they can render to other departments. They have to find out what others do or are capable of, and in one instance the shop teacher made a certain space available regularly to the science teacher. But when you add shop facilities to a science unit, don't you add more space, too? How much?

LYLES: Here in North Carolina we've spent several million dollars building schools, and we're planning more. Are these buildings going to be made obsolete by the changes we're discussing?

LOPEZ: Lack of perfection in school buildings needn't render them completely useless; we're trying here to find ways to improve our future performance.

CURTIS: I still don't get one thing. We're talking about a high school that becomes more vocational, and at the same time vocational schools are becoming more like general high schools. When you speak of students building a house, you're actually training journeymen.

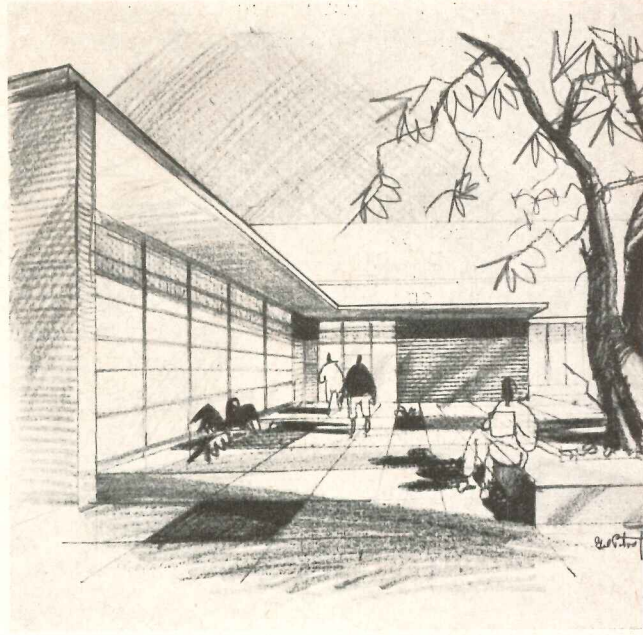
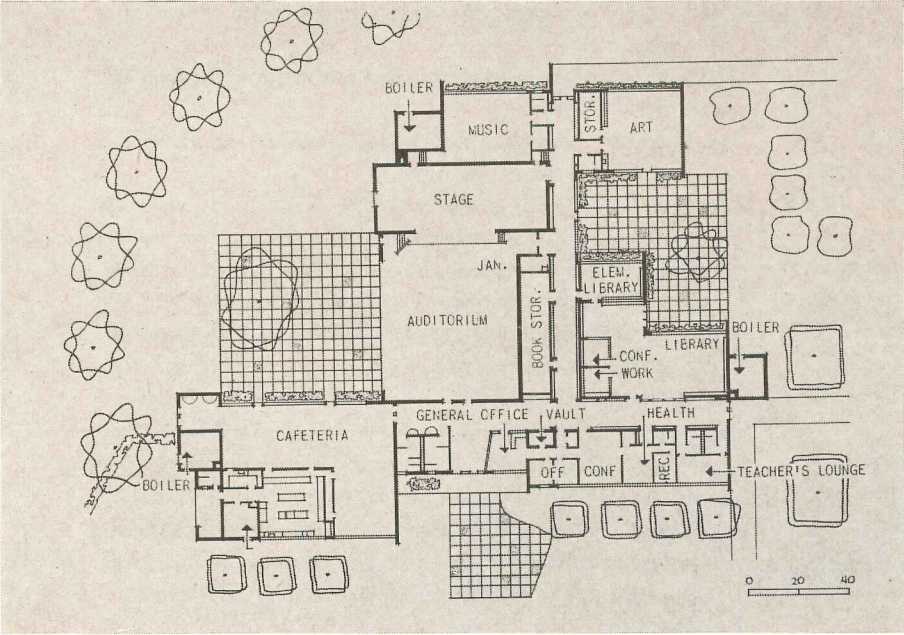
LYLES: Yes; how far should we go?

MOLITOR: This seems to be a good place to use visual education techniques.

ENGELHARDT: Why avoid the real experience? That is what helps later, in adult life.

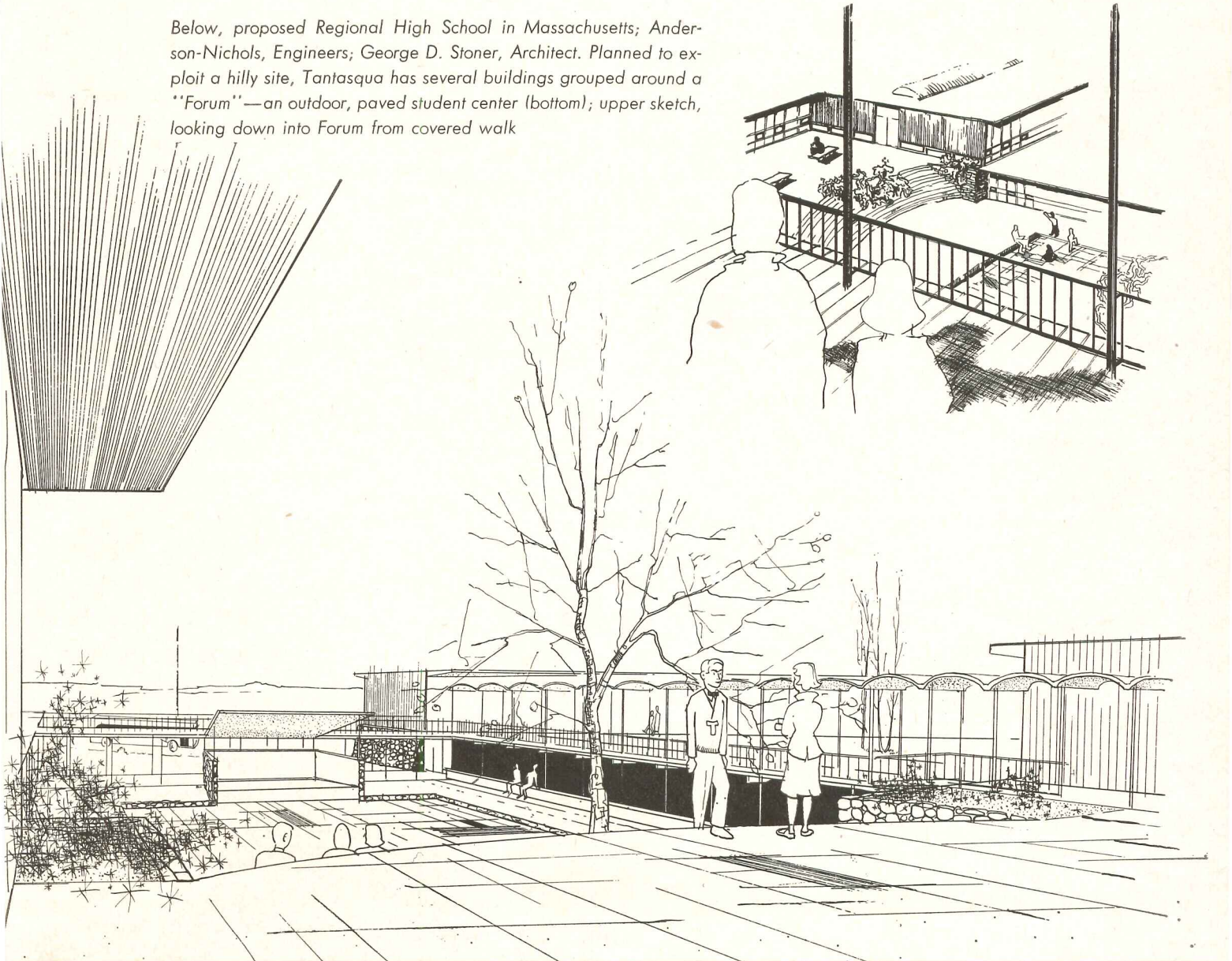
LYLES: It is better, in some cases, not to have personal experience!

CURTIS: Joking aside, if the responsibility is placed on us at the municipal level, I agree; but when we compete with other educational agencies I say no!



Remember: Students Are Social Animals!

Below, proposed Regional High School in Massachusetts; Anderson-Nichols, Engineers; George D. Stoner, Architect. Planned to exploit a hilly site, Tantasqua has several buildings grouped around a "Forum"—an outdoor, paved student center (bottom); upper sketch, looking down into Forum from covered walk



STENHOUSE: Just to add to things, why don't schools teach children something about architecture?

Social Activities

ENGELHARDT: The student center at Myers Park was originally conceived as a way of focussing the school on the student and his socialization processes. We were trying to get as far from subject-matter teaching as possible. And here's another aspect: you have that one large room, the cafeteria, where three or four hundred boys and girls eat at once; meals and meal-times can be turned to the purposes of education; can't we find a better way to, say, increase their social value?

I noticed that the largest group in the cafeteria was about eight, both boys and girls; usually it was four to six. Would the cafeteria work better as a means of learning social behavior if it were broken up into smaller units?

LOPEZ: Like booths in a restaurant?

STENHOUSE: The students walk around from group to group now. I think they like the noise and confusion of the large cafeteria, particularly after they get out of classrooms.

Joseph W. Molitor



ENGELHARDT: But if it gets too noisy they just gorge and go, fast as they can. How about breaking the room up into smaller units? Is there any occasion, say, when your Student Council would like to meet for lunch? Or some other group, maybe a number who were working on a school project, or even some not interested, for the time being, in school matters?

FRENCH: Our Student Council does meet at lunch; that's the only time they can. They use the teachers' dining room — which, by the way, we have to use for teaching space, but it's empty at that hour.

ENGELHARDT: Would having more small areas encourage that practice? Groups like the Council might benefit from having somewhat isolated eating areas, maybe divided by partitions — which might, of course, be removable.

LEGGETT: Instead of using actual partitions, why not something like acoustically treated alcoves, not closed off entirely from a general space?

HARRIMAN: We can do that; we do, with telephone booths.

MCLEOD: And in manufacturing plants, too, with good results.

ENGELHARDT: Perhaps a psychological, not a physical, separation is what we need.

LEGGETT: I'm sure architects can find an answer to that problem, but to me the question is, how can we increase the educational significance of the dining hour? By providing spaces for small groups? Or requiring an entire shift to eat *en masse*? Or a combination of both, with some smaller units opening off a major space?

FRENCH: In part the answer depends on how large these groups are. Possibly a student becomes a more intimate part of a group gathered around a table in a large dining hall. To me it is important to have a space uncluttered, not tight or cramped. The mess of eating might be undesirable.

ENGELHARDT: At that age, children are several different kinds of social animal. The student wants at times to be part of a large group, at others, of only a small clique; at times he's solitary, even anti-social. Quite often he's all three at once.

CURTIS: Referring to cafeteria layout, can several reasonably sized dining rooms be grouped around one kitchen? Could you divide a shift of, say, 400 units into four groups of 100 each?

GARINGER: One outside wall of the kitchen has to be reserved for access for service.

LEGGETT: We planned something like that for Myers Park, didn't we, Jim? Around the kitchen there's the present dining hall on one side, service on another, teachers' dining on a third, and we expect to add another dining hall on the fourth wall.

ENGELHARDT: Perhaps even that is not the educational ideal. Would we make better educational use of the dining hour by transporting food on steam carts from a central kitchen to smaller dining units, possibly at some distance away?

MCLEOD: That's done in hospitals.

CURTIS: It might be desirable to have diversified eating facilities, a variety of spaces for different kinds and sizes of groups.

ENGELHARDT: There would be an administrative problem: these facilities would be so much in demand by various groups that you'd have to schedule them tightly.

FRENCH: With the few facilities we have now, we have exactly that problem. More might reduce the difficulty, or then again, aggravate it.

ENGELHARDT: Elmer (Garinger), aren't there times when you'd like to have all the students intermingle? Should groups and subgroups work in comparative isolation all the time?

GARINGER: You aren't reversing yourself?

ENGELHARDT: No, just speculating. Maybe a group in the cafeteria shouldn't be the same group that works as a unit in a class.

Campus Plan, Buildings and Services

GARINGER: At Myers Park we had intended to use the cafeteria terrace for outdoor eating. But our health department has ruled against that, unless the terrace is screened.

LEGGETT: This cafeteria business is one of a series of problems that we can reasonably expect schools to concentrate on in the future. All of them relate to a concern about the children themselves, as people and as individuals. It's important that they have a chance to relax and mingle with the other students between classes. Student officers are important. We can't neglect this phase any longer in planning either programs or buildings. At Myers Park there is a student center, a dominant in the composition, for that very reason. What can the school building do to reinforce the individual, human student? Again at Myers Park, we believe the distance between buildings is an advantage; it affords a chance to breathe fresh air, unsupervised. What other things can we do?

Something is stirring at Myers Park. It's evident in the attitude of the students, more readily with some than with others.

LOPEZ: Yes, we talked to a number of students who had a pride in their school and its buildings. Quite an *esprit* has grown.

GARINGER: We think the students have come to identify themselves with their whole campus.

CURTIS: You fellows saw me taking a lot of pictures of the student center there. In my experience, it's hard to get a school board member, let alone the average layman, to appreciate the importance of non-teaching spaces. I don't think I'll ever convince my people of it until they see it personally. Things like the lounge, the milk bar, terraces and walls there have real educational significance. Even many educators don't recognize that. How common do you think such provisions are going to be?

ENGELHARDT: We're working on more and more of them.

LEGGETT: And trying to make them out-going, not in-growing; to stimulate the imaginations of —

CURTIS: That's important, too. All the way through elementary school we stimulate the child's imagination. When we get to secondary school all that stops short.

CURTIS: Was any premium paid at Myers Park for the campus plan?

LEGGETT: I don't think so; nor do I think there was on the average at other campus schools. (There followed a discussion of details at Myers Park: would a single, large building be cheaper, or would it cost more to put in expansion joints than to build several separate buildings? Ans.: probably more for expansion joints. Daylighting vs. artificial lighting? Ans.: nothing conclusive, but a question whether variation in light intensity might not be beneficial. European insistence on low lighting levels cited. Which buildings at Myers Park seemed most successful architecturally? Ans.: the newest — science buildings, particularly the natural sciences building.)

HARRIMAN: What was the cost of the buildings per square foot?

LEGGETT: \$9.04 per sq ft for the language arts or library unit and the student center building. If you add the entire cost of the central boiler plant, this rises to \$10.40; but only a portion of the boiler cost can be added fairly; the boiler house will serve the entire eventual campus. Pro-rating the heating system cost brings the figure to \$9.77.

LOPEZ: We saw that Myers Park has a coal-fired central heating plant, high pressure, with reducers or converters at each building. Is that ideal? Doesn't it cost a lot?

LEGGETT: Coal is the cheapest fuel here, and its use almost demands a central plant.

CURTIS: Whatever the fuel, would it ever be cheaper to have a lot of separate boiler rooms?

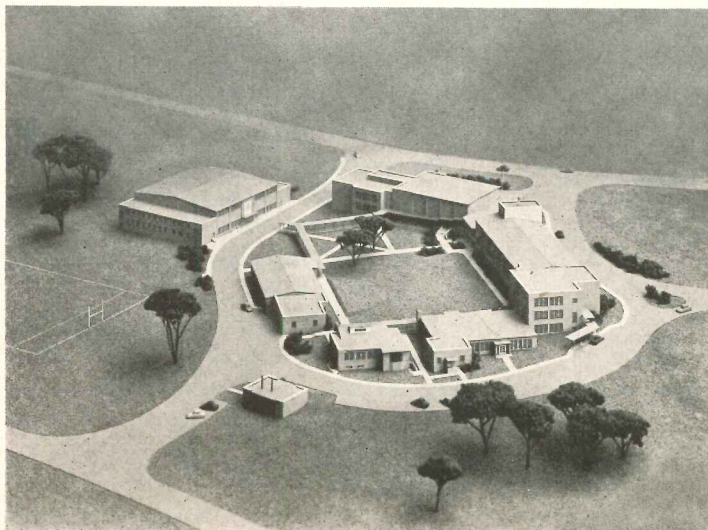
MCLEOD: Oh, yes. Maybe not one for each building; maybe one for a closely knit group of buildings.

HARRIMAN: And since you have to have a lot of janitors for a lot of buildings, it wouldn't increase your maintenance staff much.

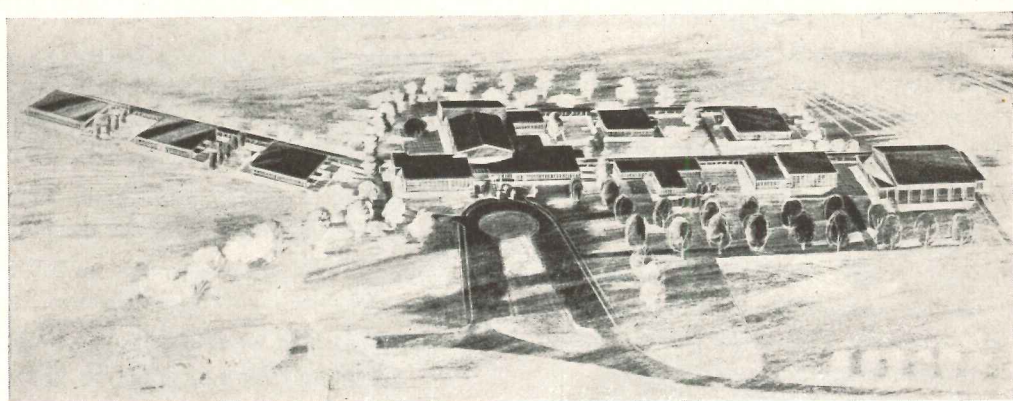
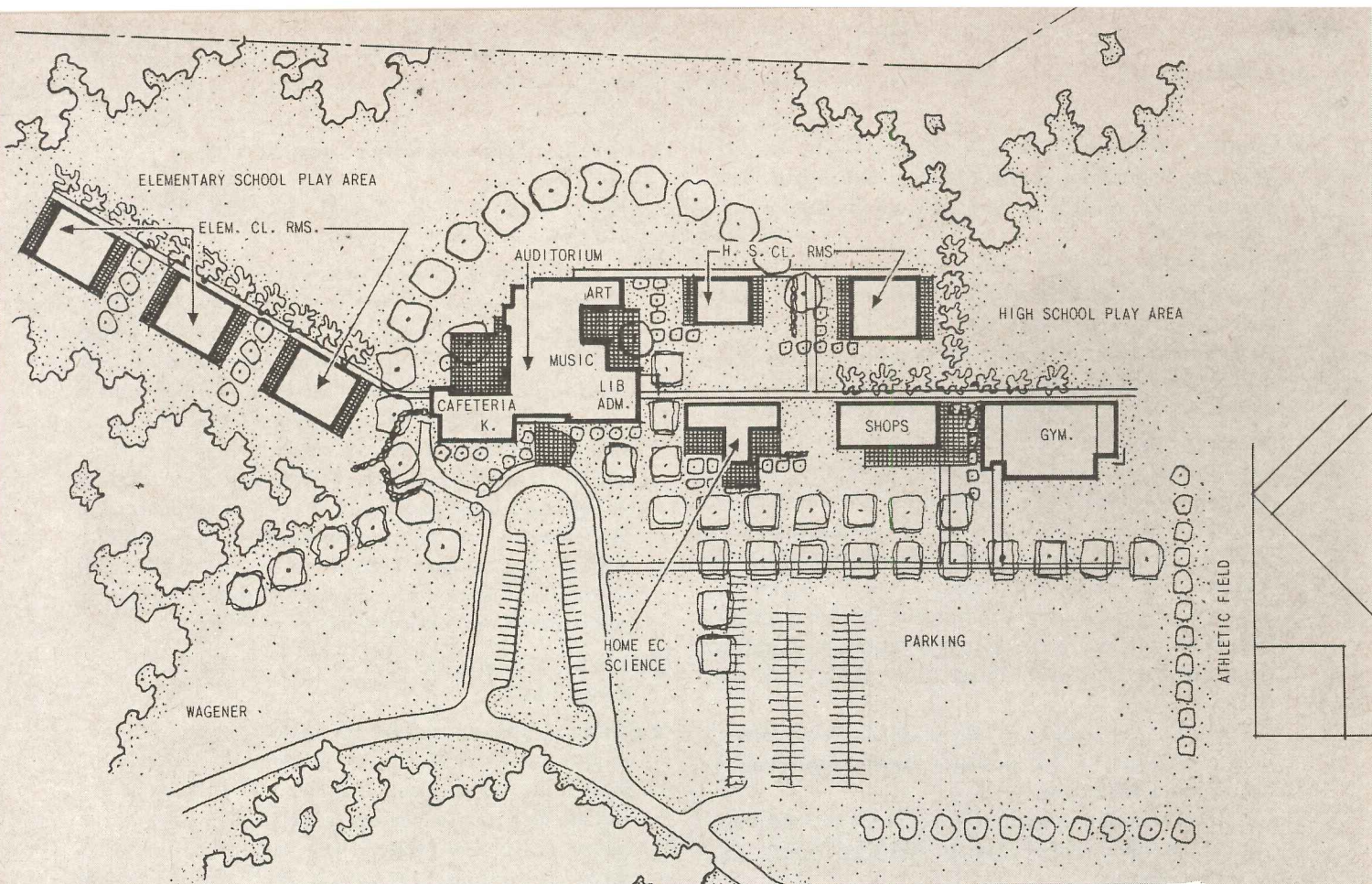
MCLEOD: Was there another way of getting to the boiler room at Myers Park, on the original site plan?

GARINGER: Yes, we had a perimeter road, but it hasn't

Hedrich-Blessing



Even when schools have more conservative curricula than the discussion suggests, campus plans have been found advantageous. Left, Clayton High School, Clayton, Mo.; William B. Ittner, Inc., Architects



Above, plot plan and air view, Wagener 12-Year School, Aiken County, South Carolina; William G. Lyles, Bissett, Carlisle & Wolff, Architects. Left portion of campus, for elementary grades, is carefully separated from secondary grades at right. Construction of a number of relatively small buildings rather than one or two large ones is expected to hold down costs. It will also afford excellent opportunities for developing a curriculum based on experience-learning

been built. The road system is not what we had planned; I think automobile traffic ought to be kept out of the campus, even for deliveries.

CURTIS: What about roads for driver education?

GARINGER: In the center of the city, at Central High School, the Police Department has designated streets for our program of driver training.

ENGELHARDT: Using a campus road might be all right for preliminary training, but the real experience, when the time comes for it, is only gained by driving in actual traffic. One thing that does bother at Myers Park is the number of cars the students own.

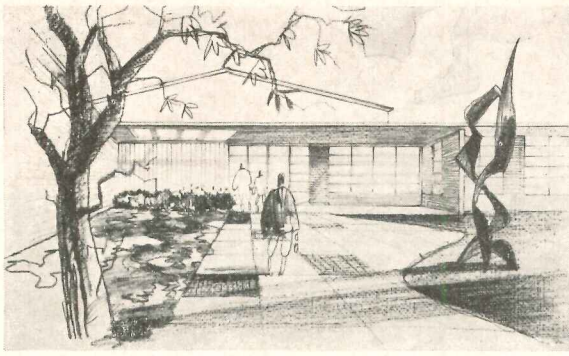
FRENCH: Yes, that's a problem.

LOPEZ: How do you communicate between buildings?

Would an inter-com or public address system help?

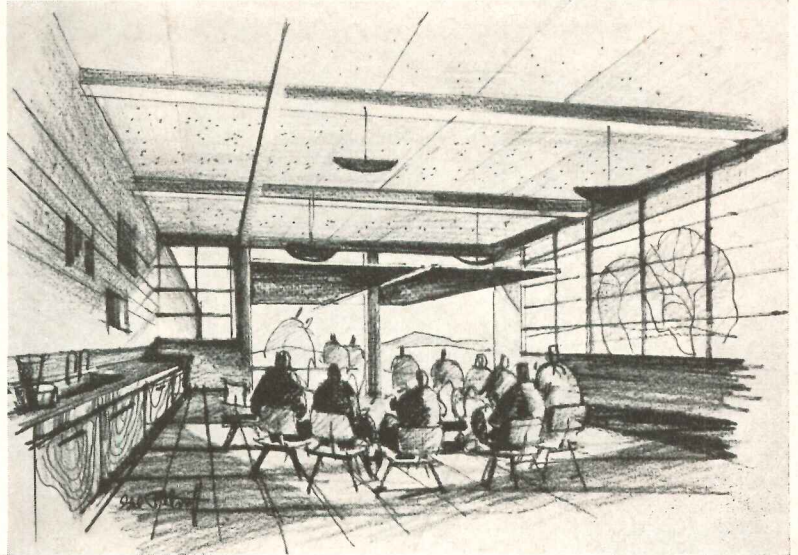
FRENCH: We use telephones, and . . .

LEGGETT: What would we use a full-fledged public ad-

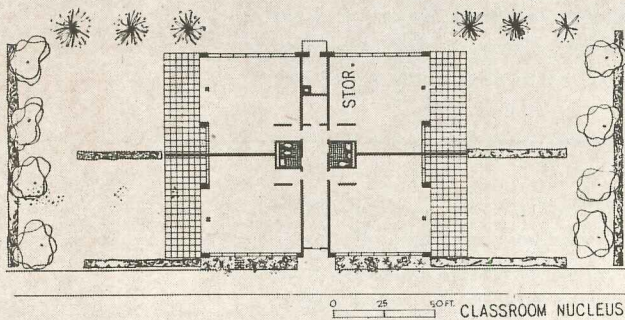


Left, entrance to main building at Wagener School; below, study for typical classroom. Note horizontally pivoted wall sections which unify indoor and outdoor classrooms

*A New Kind of
Learning Unit
Emerges*



Left, plan of classroom building, Wagener School. Program required equal indoor and outdoor area, with complete unification of the two. Each building has its own heating plant, toilet facilities, storage



dress system for? Broadcasting speeches? The telephone works for intercommunication, and the expense of an installation, etc., would be hard to justify. Of course the time may come when Myers Park might get so complex it would have to have one, so I don't think the school ought to be designed so an installation would be impossible.

HARRIMAN: What about making use of radio or TV?

ENGELHARDT: You could say there's so little on TV that's worth while, at least during school hours, that the expense, again, can't be justified. I take it you mean a central antenna, piped to various locations, and so on.

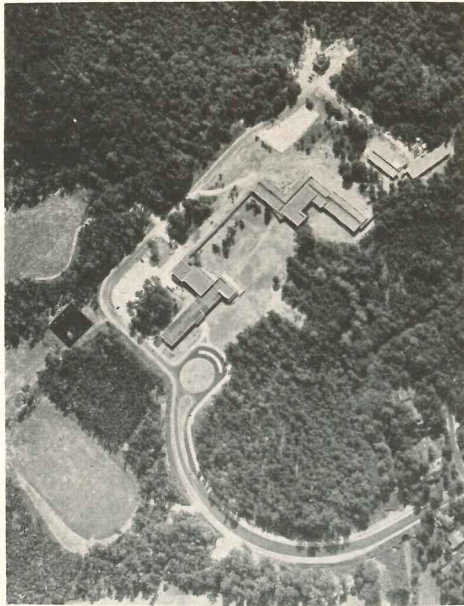
LEGGETT: It would make more sense to have a portable radio in each classroom, so it can be plugged in and tuned to whatever a class needs; the same goes for a TV set eventually.

GARINGER: In Charlotte we've been discussing establishing educational TV programs. Possibly we can achieve that by interesting wealthy, influential private citizens. But it takes a lot of money.

The Learning Unit

ENGELHARDT: There's something fundamental in all we've been discussing. Perhaps we can improve on what's done at Myers Park and elsewhere. A while ago Stan (Leggett) spoke of possibly coordinating more subject matter into larger units, to get a total approach to a project or problem rather than to each subject as a subject. How big can a learning group be and remain manageable? Can we have, say, 75 children, with three teachers? Could they successfully coordinate many aspects of learning — English, languages, arts, sciences, mathematics, for instance

A Hundred or More Students In One Group



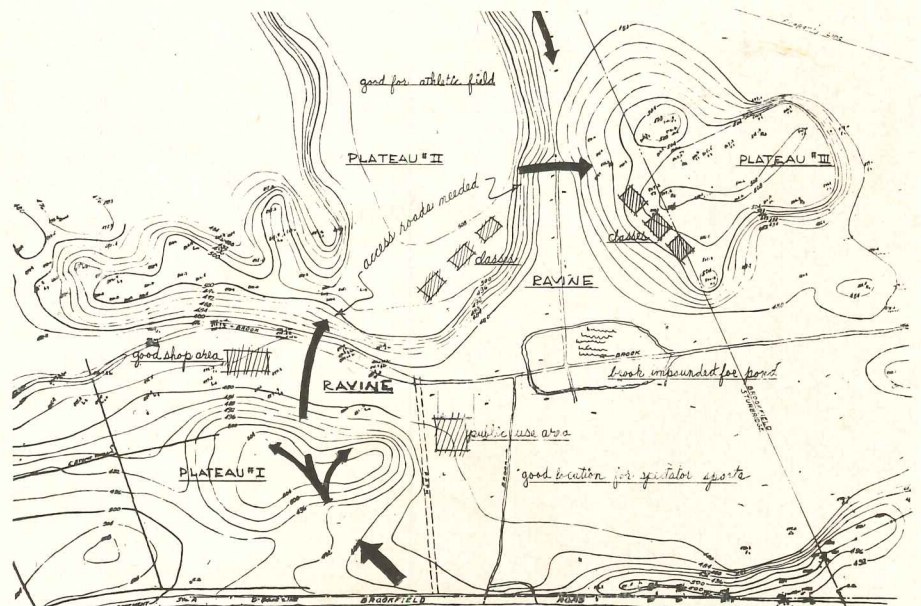
Joseph W. Molitor



Campus at Myers Park, above and left, is to be completed as needs develop and funds become available. On air view, black square indicates gymnasium just completed. Left, top, bicycle shelters virtually empty; bottom, parking lot, mostly students' cars



Campus, proposed Regional High School, in Massachusetts; Anderson-Nichols Co., Architectural Engineers; George H. Stoner, Architect. Left and center, studies for building location; right, air view; gym-auditorium in foreground is to be built in a natural hollow to minimize construction cost. Athletic fields are to be along highway to encourage full-time use as teen-age center.



— toward the development of one project? Can we create for such a group a laboratory which might permit them to act either as a whole or as smaller sub-groups to attack special phases of their problem?

GARINGER: Hasn't that been tried some place?

ENGELHARDT: I seem to remember that it has, but I think it failed because it was not what we seem to have been discussing here, but rather a fairly traditional class organization in a standard classroom; so to bring into play the necessary subjects the group had to spread all over the school plant and the experiment fell apart.

But I was thinking of a learning unit which had an art section, one for conferences, one for its library, another for movies or slide films, others for science and shop and so on.

LEGETT: Do you mean a series of 75- or 100-pupil high schools?

ENGELHARDT: Almost, perhaps; yet things like gym and music might draw on the populations of several units.

CURTIS: How would you put these groups together?

On basis of like programs, or abilities? If so, might you defeat the school purpose of training for citizenship —

ENGELHARDT: Probably the composition of a unit should depend on chance alone.

CURTIS: I should think so.

FRENCH: Such a unit could be formed around what we call the common learnings; at what point are specialized units needed — or are they needed at all?

ENGELHARDT: Well, if a school has 500 students, there might be three or four of these — call them learning units — plus a few special facilities to make a well rounded, complete program.

GARINGER: Nick (Engelhardt), it would be interesting,

and possibly necessary, to let students volunteer for such a unit, to work on what interests the group. That might help in gaining parents' cooperation. Give them help, direction, to guide them into learning the things they should —

LOPEZ: Guidance would be one of the toughest problems.

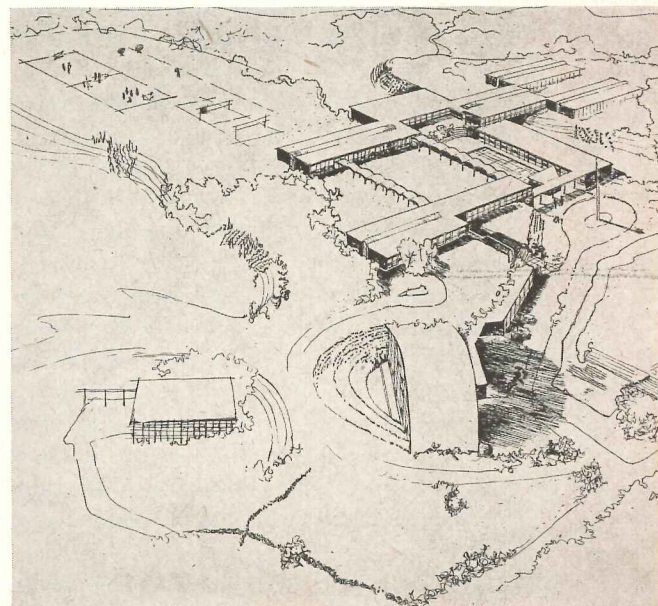
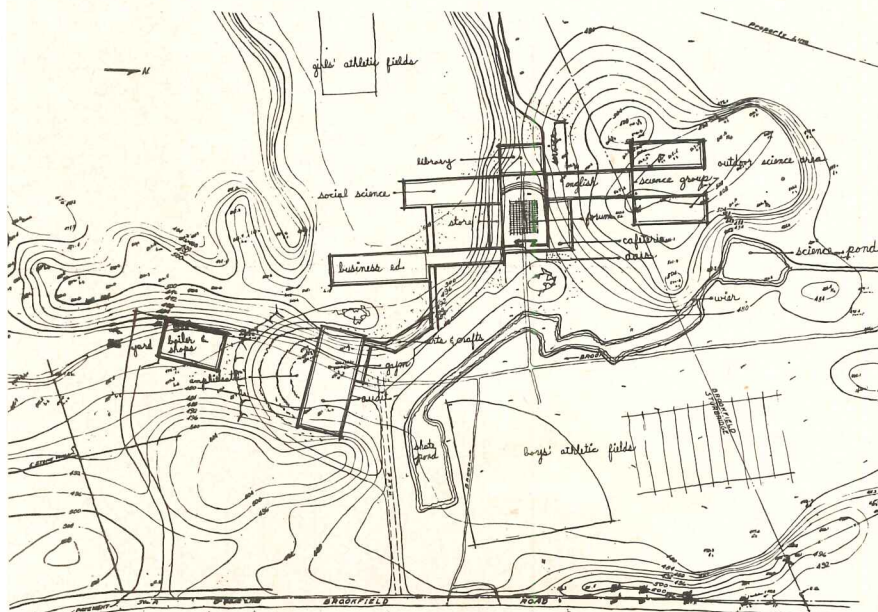
GARINGER: And would probably require more staff attention.

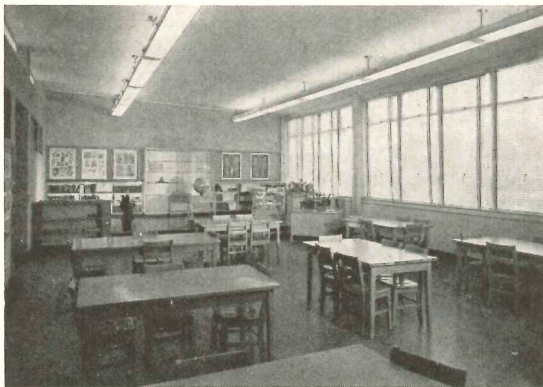
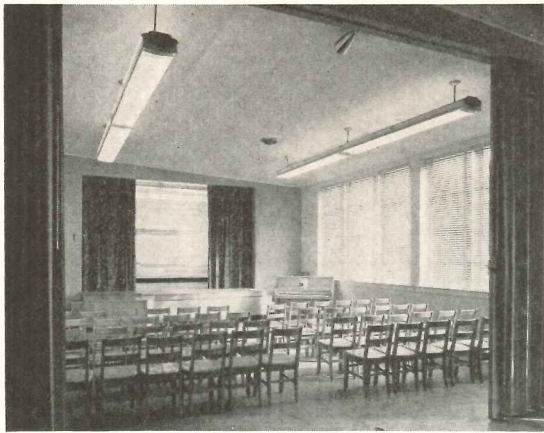
LEGETT: Considering this idea from the consultant's point of view, would you say Myers Park is planned all wrong? Should we have broken it down into groups by ages or in some fashion; and should all the activities of each group be concentrated or coordinated, with access for each group to the sciences, family living, social studies, languages and all the rest of the major learnings? Should each group have its unit facility, and the school be made up of several such units?

FRENCH: One problem now at Myers Park is accentuated by the fact that our school plant is incomplete; but even disregarding this temporary space difficulty, the teacher who wants the kind of program you're outlining needs a wealth of teaching materials, available immediately, and that requires a lot of different kinds of spaces so things won't have to be assembled from distant points.

LEGETT: Suppose we're talking of the junior high school level. I'd say each learning unit would be self-contained and cover, maybe, 80 per cent of the junior high program. It would have to be so designed that there could be free interchange between the parts of the learning unit, so any sub-group in it could draw freely on any of its parts.

MCLEOD: Do you propose moving the students to special places for specialized subjects?





Students, Facilities,

LEGGETT: I'd guess there would have to be four or five teachers; you'd need that many to cover the special fields; and I'd do that within the unit itself. Which means, of course, since the pupil-teacher ratio is pretty generally established at about 30 to one, you'd have 120 to 150 students per unit, not 75. But one teacher can't know everything.

MCLEOD: I've often thought we should throw away our present concept of the cubical classroom, if only so a group of children could learn under at least two or three teachers. That would help overcome the problem the inferior teacher presents — and it *is* a problem!

ENGELHARDT: That works in kindergartens now, but it might not at the age-level we're discussing.

CURTIS: I've seen it tried in two cases. We had to, because we lacked space and had to double up. In one instance, teachers with comparable ideas worked well together; results were excellent. In the other, although the teachers didn't clash they had different ideas; one came to dominate; results weren't satisfactory.

FRENCH: Last year, in seventh and eighth grades, we

arranged schedules so a math-science teacher and an English-social studies teacher shared their two sections and worked together somewhat. We didn't schedule that way this year, and the teachers have just asked me to reinstate the idea next year. They had found they complemented each other.

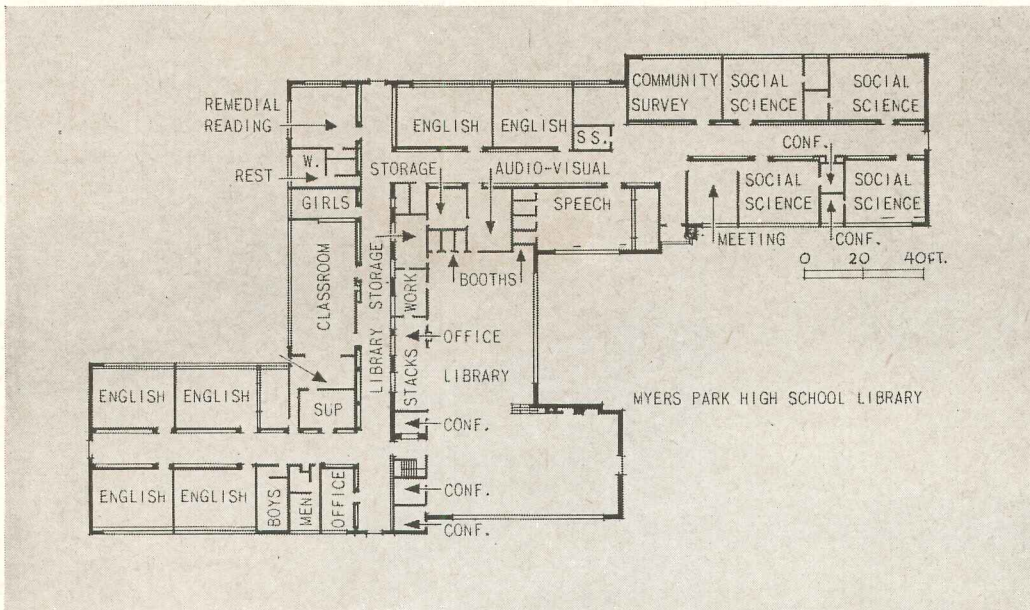
LOPEZ: But you did not have the learning unit Nick proposed.

FRENCH: No.

ENGELHARDT: Without the right kind of plant there may be too many physical handicaps; but with a plant designed just for the purpose, and with reasonably competent teachers, I think this kind of a program would really click.

CURTIS: Would the learning unit foster higher attainment just by affording more immediate opportunities? Would that arouse enthusiasms?

LEGGETT: It seems to be of great importance to have certain things in immediate proximity: the teacher, the teaching source or facility, and the student, plus the stimulation afforded by the availability of other teachers. Distant opportunities are not likely to be used.



Most classrooms at Myers Park, more conventional in concept, are in the library building (plan above). Facing page, upper left, classroom used for dramatics; lower left, social science room, project alcove at rear; center, part of the guidance suite in student center building. Below, classroom and science laboratory

Teachers in Immediate Proximity

MCLEOD: Physically, would the learning unit be like the Myers Park library?

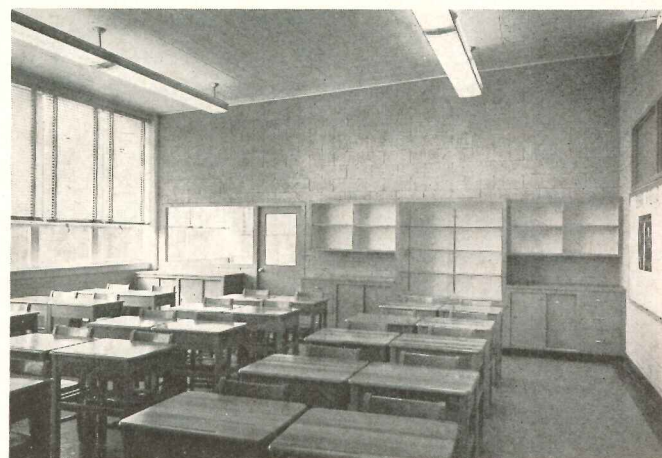
ENGELHARDT: It might; we have to start somewhere. There probably should be a large enough space for the 100 to 120 students, and in this some of the larger projects might develop. It might need certain equipment, such as a globe so big the students would have to climb over it to paint on latitudes and longitudes; and a large sand-pit, big enough for building a topographical model of a whole county. Then around this central space there could be smaller, special areas — photo studio, facilities for art, shop, music, audio-visual aids, and all the things we've mentioned.

HARRIMAN: Can we measure the results of this kind of education? Has it been tried in enough places?

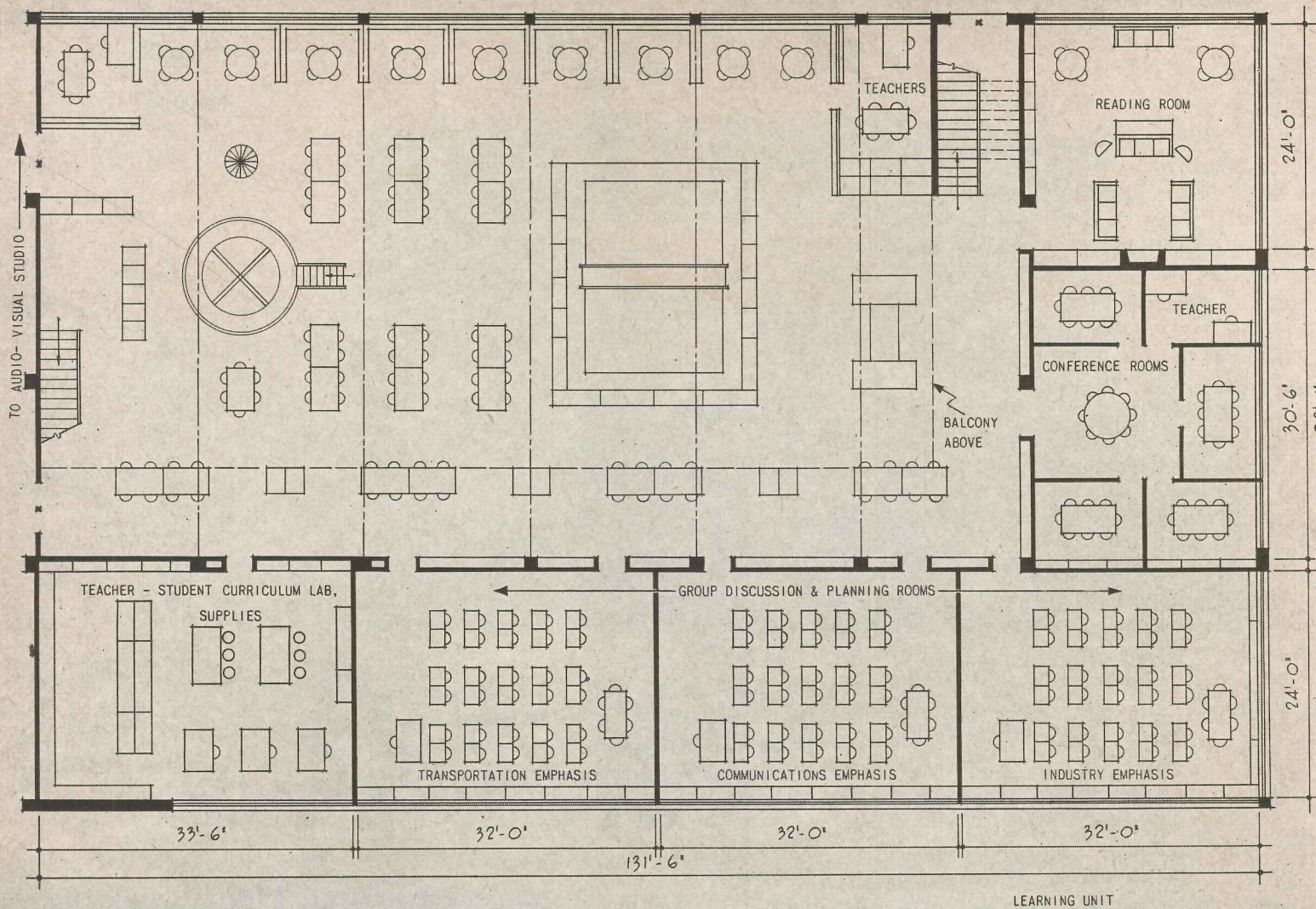
LEGGETT: There have been some comparisons of students from traditional high schools and students from "core" curriculums. The good students from each do equally well in college, it appears.

HARRIMAN: How about students who didn't go to college?

LEGGETT: There aren't any comparisons that I know of. Making them would be very difficult.



Joseph W. Molitor



How Far Should We Go?

Plans above show early concept of a social studies learning unit as developed by Engelhardt, Engelhardt and Leggett in cooperation with Harrison & Fouilhoux, Architects. Such a unit could function in manner described in text. In large room, circular form suggests a huge globe; rectangular form, a modeling pit for topographic models, etc., perhaps with a movable bridge spanning it to facilitate work. Several teachers would be needed for the 75 to 150 students accommodated.

CURTIS: I don't know that you can compare the facilities, either; schools have to differ according to their communities' needs. In my own district in Connecticut, we need more emphasis on shops than there is at Myers Park.

HARRIMAN: How can this kind of curriculum satisfy the demands for college entrance?

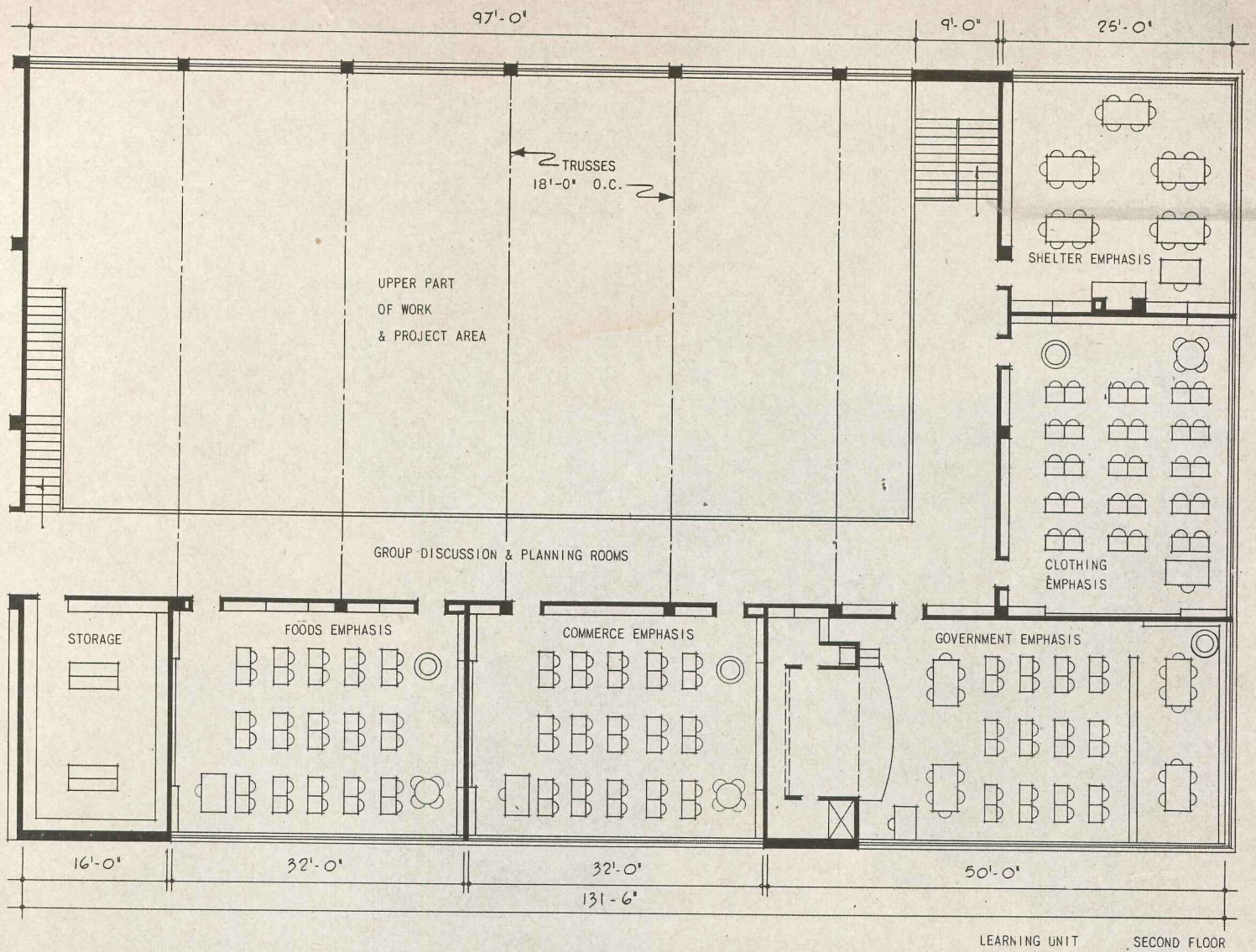
LEGETT: That is one of the difficulties; but it is being done in many places all over the country — California and Maryland, for instance.

FRENCH: The learning unit idea seems to demand a lot of space and equipment.

ENGELHARDT: We don't know yet that it would take more space.

LOPEZ: But, for instance, adding shop equipment to each learning unit would mean duplication, wouldn't it, and added expense?

MCLEOD: Can you eliminate shop facilities elsewhere if you put them in the learning units?



LEGGETT: The only real way to justify the increased amount of equipment is to make sure it is used by a greater number of students. Our purpose is increasing the richness of opportunity, I think, beyond what standard classrooms can possibly permit.

ENGELHARDT: One class I know of was studying the surface of the moon. To make a model, they brought half the shop and art department into the classroom.

LYLES: Why wouldn't a portable shop do?

ENGELHARDT: That might work, like the portable radio; it might also work for the unit's library. Ideally, though, I'd think the special facilities ought to be right at hand.

HARRIMAN: I admit I'm a little confused.

MCLEOD: Well, not to be an obstructionist, but can the requirements be more clearly defined?

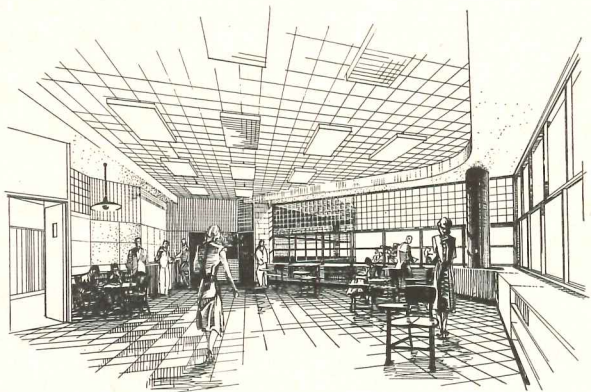
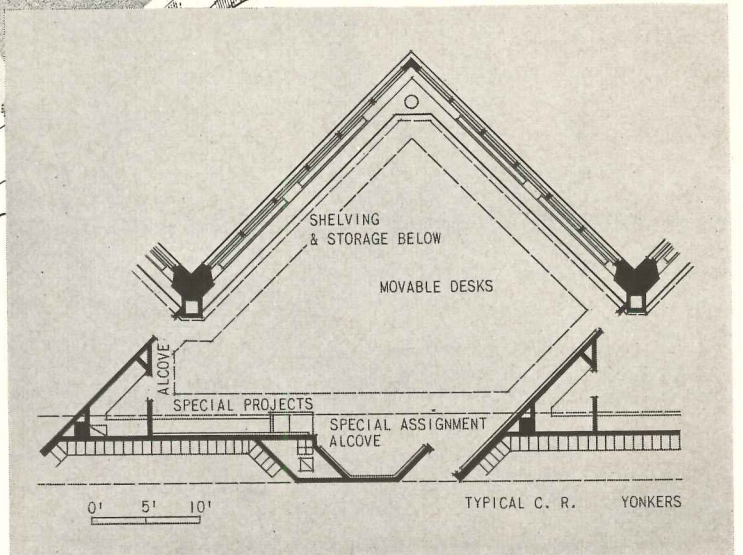
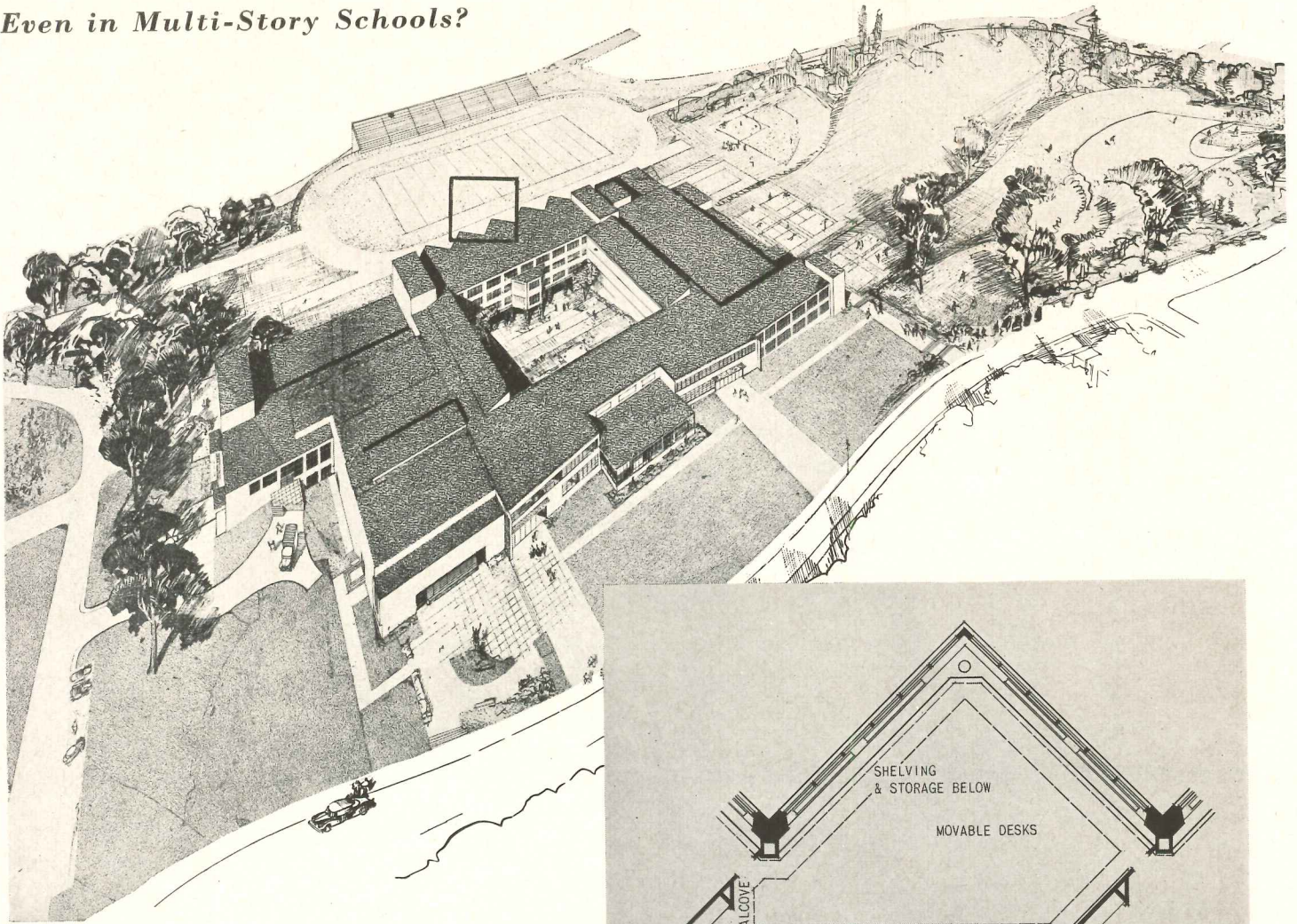
LEGGETT: What we've been discussing is the heart of the architecture.

LOPEZ: I see what he means. The program isn't completely formulated; it is a program for designing both the curriculum and the building. It's not in traditional form, but then it's not a traditional problem.

HARRIMAN: It is quite different from the conventional classroom idea.

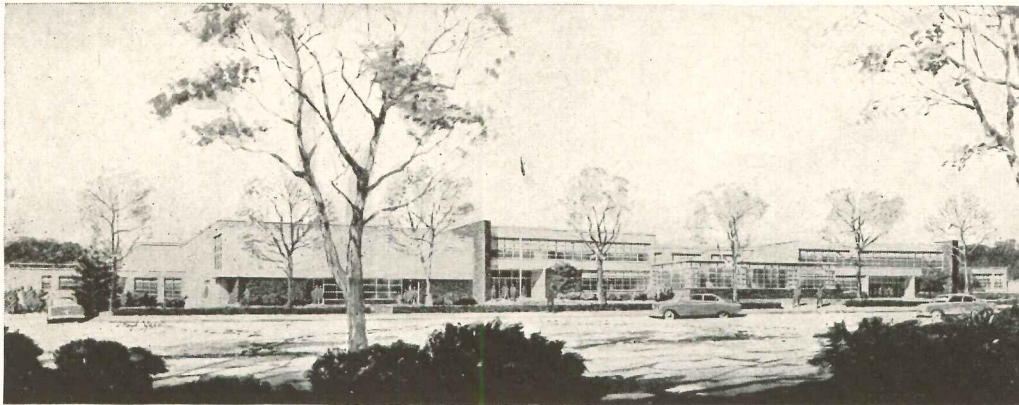
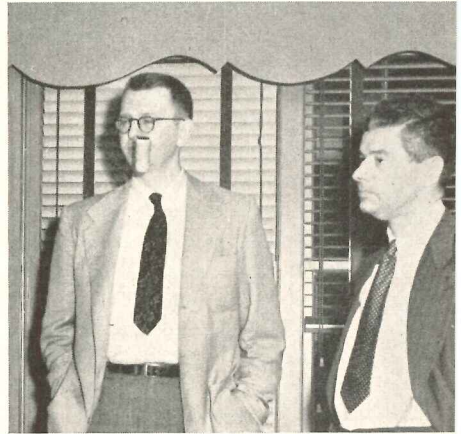
ENGELHARDT: Consider, too, that the faculty and the community at large have a great influence on the program. It may be all settled in words, but when the words become lines on paper, the lines that constitute a school building design, the community is likely to say: "That's not what we meant at all!" That factor, rooted in recognition or familiarity, is extremely important, more so to adults than to children, I'd guess. And maybe they'll be right, those who object. At our present state of development — and I'm talking about both the kind of theory we are discussing here, and the capacities of the general public, the teaching staff and students — we have to go slowly.

Even in Multi-Story Schools?

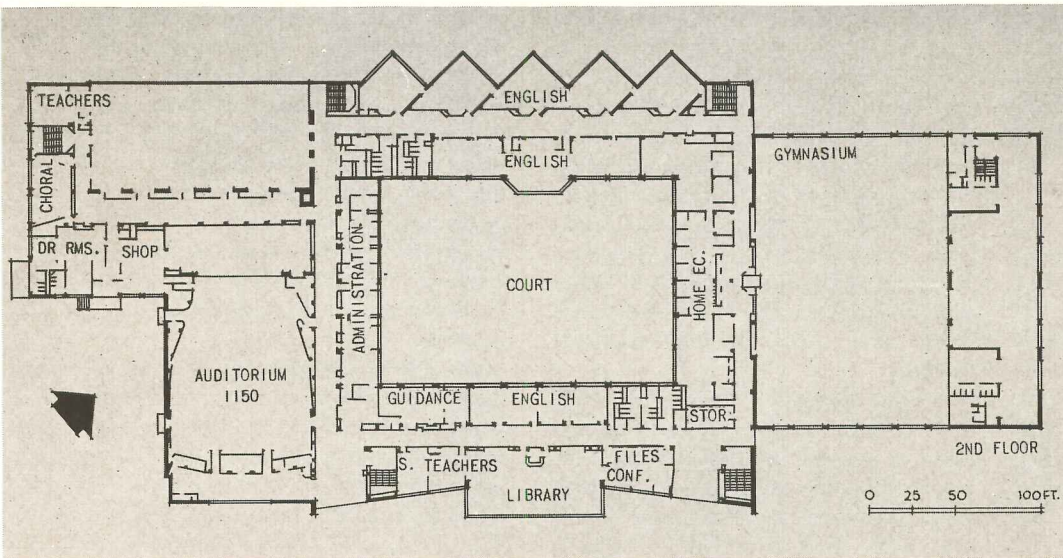


Southeast Yonkers, N. Y., Junior-Senior High School; Alfred Hopkins & Associates, Architects. Of the eventual whole shown in the air view, only the portion in the foreground is to be built now. Noteworthy are the future classrooms arranged saw-tooth fashion; These are conceived as laboratories in which numerous related activities can be undertaken

Photos at right: group in action in Charlotte, N. C. Top, inspecting outdoor science activities; next two, deliberating in hotel; bottom two, inspecting other schools in Charlotte



Above, portion intended for construction now; below, upper floor plan, Southeast Yonkers Junior-Senior High School. Site slopes to rear. First floor will contain classrooms, cafeteria, gymnasium around an open court which can double as an outdoor theater; loggia opening to lower grade can become stage



portions of this article are based on (1) extensive exposure tests and observations on houses made since 1922 by Forest Products Laboratory and (2) a survey* of some 60 exterior white paints on the market in 1950. Although the discussion of paint formulations is restricted to white paint, a large part of the article containing recommendations on preparation of surface, elimination of moisture beneath paint, frequency of repainting and application techniques applies to most colors

SELECTING DURABLE PAINTS FOR EXTERIOR WOOD

THE success of a painting job on exterior wood depends principally on the following factors:

1. Selection of a durable type paint which weathers gradually.
2. Maintenance of dry wood beneath the paint by controlling condensation and preventing rain water from getting behind the siding and trim.
3. Selection of favorable painting weather.
4. Proper preparation of the surface to receive the paint.
5. Proper application at not too frequent intervals.

The purpose of this article is (1) to provide guides for the selection of paint which will retain a good appearance for a reasonable number of years and (2) to explain the function performed by the principal ingredients of modern white paint.

Recommendations herein are based chiefly on a survey of 60 leading brands of white paint available on the market in 1950, together with information derived from paint exposure tests during the past 30 years under the supervision of F. L. Browne, Chemist, Forest Products Laboratory, Madison, Wis.

Paint Composition

The common ingredients of modern white paint for application to exterior wood are relatively few. Basically, exterior paints are a mixture of pigments, suspended in an oily liquid, called the vehicle. Pigments consist of white lead, zinc oxide, titanium dioxide and pigment extenders. Vehicles consist of raw or refined linseed oils, driers, bodied oils, and volatile thinners. By varying the amounts of these ingredients, an enormous number of paint formulas can

be produced. However, certain combinations of these ingredients have stood the test of time and are known to be durable.

It is important, in order that the painted surface be suitable for repainting, that the paint film retain its integrity and gradually weather or wear away by disintegration into fine dust-like particles (so-called "chalking") rather than by cracking, curling, or peeling.

No amount of repainting will remedy a paint coating that has cracked. On the contrary, tests show that repainting actually aggravates the condition. Overpainting, the building up of thick coatings by many applications of paint, often produces less durability than too thin a paint coating.

The Pigments

The pigments in white exterior paint serve several purposes. Some, especially white lead and zinc oxide, are chemically active; they neutralize the acid produced by aging linseed oil which otherwise would seriously reduce the durability of the paint. Others, especially titanium dioxide, have great covering power or opacity, which is the ability to hide or conceal what is behind them. Others provide bulk and resistance to abrasion at low cost. They are often referred to as "extenders" since they reduce the amount of higher-priced lead, zinc, and titanium pigments needed.

During the past 50 years there has been a great change in the pigments used in exterior white paint. In 1900 nearly all house painting was done with pure white-lead pigments in raw linseed oil. White lead is probably the most chemically active pigment and by reacting chemically to neutralize the acid decomposition products of linseed and other drying oils it enables paint films exposed to the weather to retain their

toughness and flexibility for a longer period of time. White lead weathers by mild checking and chalking so as to facilitate normal maintenance repainting without the necessity for complete removal of old paint. It also makes the paint resistant to absorption of water.

Pure white lead paint remains one of the most reliable paints for maintaining its integrity even under rather adverse conditions but it is attacked by hydrogen sulphide fumes, which turn it gray in contaminated industrial atmospheres, is usually more expensive, and becomes more easily soiled by dirt than most paints made with a mixture of lead, zinc, and titanium pigments.

By 1920 many paint manufacturers had replaced a portion of white lead with zinc oxide. A pigment also chemically active, it is not affected by hydrogen sulphide. Also it acts as a fungicide to prevent the paint from mildewing. Addition of moderate amounts of zinc oxide produced a somewhat harder paint film which collected less dirt and grime, and chalked less freely than straight white lead paints. Tests indicated that replacing too much of the white lead with zinc oxide results in a hard, nonelastic paint film which tends to become brittle with age and weathers by cracking and curling instead of by slight checking or chalking. These lead-zinc (LZ) paints have now almost disappeared from the market.

By 1930 a new pigment, titanium dioxide, had begun to appear in many white paints. Titanium dioxide is a chemically inert pigment of great whiteness and opaqueness. Up until this time white lead and zinc oxide provided all of the opacity; they were used in larger proportions than necessary for chemical activity in order to secure opaqueness and the use of "extenders" was limited, since most of the commonly used extenders are virtually transparent in lin-

* Sponsored by the Housing and Home Finance Agency. The above article is abstracted from a paper prepared by William A. Russel of the HHFA technical staff and scheduled for early publication in the HHFA publication, Housing Research Quarterly (No. 5).

seed oil. Titanium dioxide, on the other extreme, is so opaque that it may be diluted with two to three times its volume of transparent pigments and still be as opaque as the lead and zinc pigments. The transparent pigments used for extenders are usually finely ground silica (sand) or some compound of silica, such as magnesium silicate (talc). Since they are chemically active pigments, a considerable saving in cost of pigments is effected and the more critical lead and zinc pigments are conserved without sacrificing opaqueness or covering power.

Titanium dioxide and the silicates commonly used as extenders are chemically inert. Unlike the lead and zinc pigments they cannot be counted on to neutralize the acid products generated by the aging of linseed oil. When used in moderate amounts they improve the covering power of the paint and enable it to retain a clean, white appearance without sacrificing durability. It is extremely important that they be used in moderate amounts and always in combination with sufficient amounts of chemically active pigments to neutralize the acid generated by the aging of linseed oil. Otherwise the paint will usually lack durability.

By 1950 the great majority of paint manufacturers were producing titanium-lead-zinc paints for sale as their first-grade, trade-brand paints. A survey of over 60 well-known trade-brand paints in 1950 reveals that approximately 75 per cent of the brands on the market were titanium-lead-zinc (TLZ) paints. Lead-zinc (LZ) paints, on the other hand, had practically disappeared from the market and accounted for only three per cent of those surveyed. Straight white lead (L) paints accounted for approximately six per cent of those on the market. The remaining 16 per cent were the leadless, so-called fume-resistant paints, often recommended for use

around industrial areas where hydrogen sulphide blackens lead pigments. This latter class contained titanium-zinc pigments (TZ).

The Vehicle

The vehicle for exterior house paint consists principally of drying oils; oils which oxidize and dry out to form tough elastic films when exposed to the atmosphere. The most important of these is linseed oil. Other drying oils, such as soy bean oil and tung oil, are used in varnishes but seldom in exterior house paint.

Either raw linseed oil plus necessary driers or so-called boiled linseed oil, in which the driers have already been incorporated, may be used. Raw linseed oil without driers hardens too slowly. The name "boiled" linseed oil is misleading because the raw oil is not actually boiled but is only slightly heated in combination with driers, such as soluble compounds of lead, manganese, and cobalt, until the driers dissolve in the warm oil to produce a slightly thickened oil which dries more rapidly. Paints having relatively large amounts of raw or boiled linseed oil are known to the paint trade as "oil rich." They are preferred for exterior paint applied to wood, since they produce a tough elastic film. When drying oils are heated to high temperature for a considerable period of time, they become thickened in consistency and are then called "bodied oils."

In addition to the raw boiled and linseed oils, a portion of the vehicle may consist of bodied oils and resins. These require additional volatile thinners to provide workability. A moderate amount of bodied oils usually improves the application properties by making the paint flow out smoothly without leaving conspicuous brush marks. But too much bodied oil changes the paint into an enamel and makes it much more diffi-

cult to apply. When present in too great a proportion, bodied oils reduce the toughness and elasticity of the film to the point where it becomes brittle and is unable to expand and contract with the seasonal changes of the wood, so that cracking and curling of the paint result.

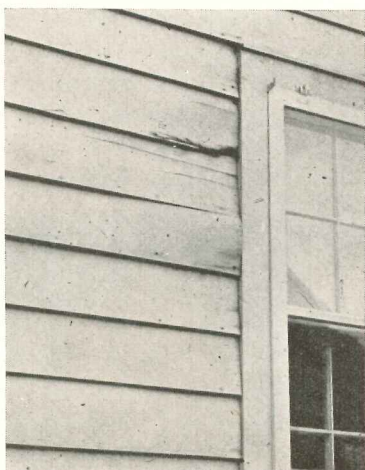
Paints containing large amounts of bodied oils and resins are known as "oil-restricted" paints and are often advertised as "enamelled," "quick-drying" or "resin-fortified" house paints. These oil-restricted paints are midway between oil-rich paints and enamels.

Modern Paint Formulas

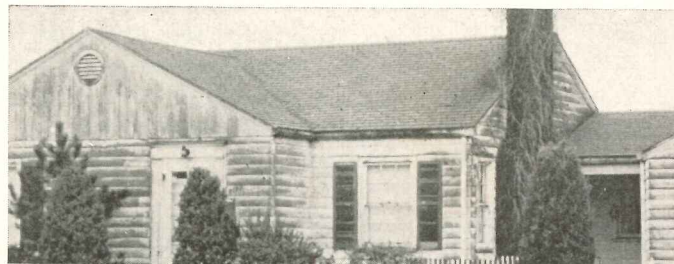
The formulas of the titanium-lead-zinc paints surveyed varied considerably. Formulas were averaged and the average formula is shown in Table 1.

Table 1

Average TLZ paint of 1950 (per cent by weight)	
Per cent total paint	
Total pigments.....	62.5
Per cent pigments	
White lead.....	26.2
Zinc oxide.....	28.8
Titanium dioxide.....	14.7
Extenders.....	30.3
	<hr/>
	100.0
Per cent total paint	
Total vehicle.....	37.5
Per cent vehicle	
Raw linseed oil.....	52.0
Bodied linseed oil.....	23.0
Thinner and drier.....	25.0
	<hr/>
	100.0



1 Durable paint will not correct this construction defect. Wood siding has rotted around improperly flashed window opening. House was painted four years before this photo was taken



2 Paint has eroded by excessive chalking causing failure. Since paint has chalked off the unheated garage (right) as well as heated house walls, improperly formulated paint is the trouble rather than condensation behind the wood

The Federal Government has prepared specifications* for the procurement of white exterior paints which are known from actual experience to have good durability:

One of these, Federal Specification TT-P-102 covers white, exterior, ready-mixed, titanium-lead-zinc paint.

Federal Specification TT-P-103 covers white, exterior, ready-mixed, titanium-zinc paint, a lead-free paint which is recommended for areas where hydrogen sulphide would cause white lead to turn gray.

Federal Specification TT-P-104 covers white, exterior, ready-mixed white lead paint.

Prior to World War II, there were only a few brands of oil-restricted paint on the market; the best brands of paint contained only a small proportion of bodied oil. Oil-restricted paints became general during the war due to a critical shortage of linseed oil. By 1948, when linseed oil began to again be in good supply, most manufacturers of good paint began to increase the unbodied oil content of their first-line paints. By 1950, some manufacturers had returned to oil-rich formulas, and most present-day, first-line paints show a trend back toward oil-rich formulas.

The balance of the vehicle is composed of thinners and driers. Volatile thinners are used in order to provide the proper consistency for easy application and to reduce the thickness of film so as to increase the rate of drying. The commonly used thinners are turpentine, which is distilled from the natural resin of pine trees, and a petroleum distillate known as "mineral spirits" which evaporates at about the same rate as turpen-

tine. Both turpentine and mineral spirits evaporate almost completely during the drying period of the paint. While turpentine was originally the favored thinner, mineral spirits are entirely satisfactory and are less expensive.

A comparison of the average formula of first-quality trade-brand titanium-lead-zinc white paints, as shown in Table 1 with Federal Specification TT-P-102, reveals that they are similar.

Formulas of paints which have been undergoing actual weathering tests at Madison, Wis., for fifteen years under various schedules of maintenance repainting were compared with the average formula. A paint which conforms approximately to the average industry formula for 1950 was found to be one of the more satisfactory of those published.

Research and experimentation in paint formulation continue, with new combinations of pigments being tried with new vehicles. Other methods of producing durable paints may be developed as our present knowledge is extended.

Priming Paint

A special priming paint is generally recommended by manufacturers for the first coat on new wood or where well-weathered old paint is to be repainted. It is important that the primer and the finish coats be compatible. A primer produced by one manufacturer should ordinarily not be used with the finish paint of a different manufacturer, since formulas may be different and the oils in the two paints may react adversely and cause poor adhesion of the finish coats to the primer. Zinc-free primers are usually preferred except for fume-resistant paint because their adhesion to the wood is usually better.

When it is impossible to get a recommended primer, a substitute primer can be made by adding one pint of linseed oil to one gallon of the finish coat paint in order to compensate for the oil which will be absorbed by the wood. It is also customary to slightly thin such a primer with not more than one pint of thinner per gallon to increase workability and penetration into the wood surface. Either turpentine or mineral spirits may be used for thinner.

Where fume-resistant titanium-zinc paint is to be applied, a lead-free primer is made by adding one pint of linseed oil to a gallon of the finish coat paint and up to one pint of turpentine or mineral spirits to increase workability and penetration into the wood surface. A primer for use with straight white lead paint is also made by adding one pint of linseed oil to a gallon of the finish coat paint.

Why Paint Fails

The mere selection of a durable type of paint will not insure a satisfactory or durable paint job. Even the best paint will not be durable where precautions are not taken to keep water from getting behind it. Fig. 1 shows wood badly rotted out around a window opening due to omission of flashing over the opening. A durable paint was applied to this house four years before the photograph was taken and is still sound even on the boards that have rotted.

If the paint develops water-filled blisters during the spring thawing season after a severe winter, the lack of durability may be due to condensation. Where such is the case, no amount of repainting even with the most durable type of paint will remedy the situation. The cause of the moisture could have been prevented by applying a continuous vapor barrier on the interior face of

*For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 10 cents.

Below: note cracking and peeling on both the heated wall of the house and also on the unheated porch gable, indicating that a short-lived paint was applied. The house was repainted about 18 months before the picture was taken

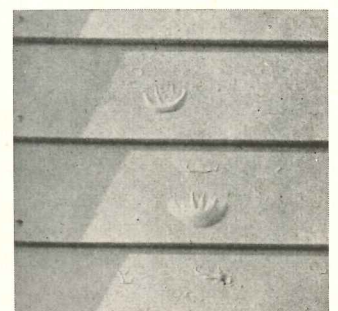
3



4

Left and below: effect of severe condensation on exterior paint. Wall (left) is pock-marked with bare spots where blisters have broken and paint has peeled (see closeup of blisters below)

5



the exterior walls or by elimination of excessive moisture in the basement or crawl space. Blistering due to condensation is usually most pronounced on the cold north wall of the house and leaves the wall pockmarked with bare spots which may be round, oval, or elongated in the direction of the grain as shown in Fig. 4. Where blistering is due to condensation, it usually occurs only on the exterior walls of heated rooms, seldom on unheated garages or open porches.

Cracking, scaling and peeling, or excessive chalking of the paint with no evidence of blistering, indicates that an improperly formulated nondurable paint has been used. It is usually more pronounced on the south side of the house where it is subjected to the direct rays of the sun and occurs equally on unheated and heated portions of the house indicating that it is not due to condensation.

Fig. 2 shows a home on which paint is chalking badly on both the house and the unheated garage after a short service life. The indications are that improperly formulated paints have been used of the type known to the trade as "painters' lines" which are manufactured down to a price in order to meet competition rather than up to a durable standard of quality.

Fig. 3 illustrates cracking and peeling on both the heated wall and the unheated porch gable approximately 18 months after the paint was applied.

It is, of course, sometimes difficult to determine whether lack of durability is due to improperly formulated paint or excessive condensation or a combination of both. When the lack of durability has been identified as improperly formulated paint, it is necessary to completely remove the old paint and start over again, or the repaint job usually will not be durable.

Building up thick coatings of paint by frequent repainting usually only aggravates the cracking and peeling, even when good paint is used, and may even result in blistering as shown in Fig. 6. Where early removal of a cracked and peeling paint job is too difficult, it is usually better practice to endure the unsightly appearance until its removal becomes easier. Repainting should not be necessary more frequently than four years in southern climates, or six or more years in northern climates where sunlight is less intense. Fig. 8 shows clearly the effect of too frequent repainting.

Weather Conditions

The surface of the wood should be dry. Finish lumber or siding should preferably be kiln dried. If the lumber or finish has become wet at least one week of dry sunny weather should precede the painting. It is best not to apply paint in cold, foggy or damp weather. The surface should be free of dew or frost and painting should not be done when the temperature is below 50° F. Summer or early fall, when the wood is thoroughly dry, is the preferable time to repaint.

Preparation of New Wood Surface

All pitch should be scraped or burned from knots and these places should be scrubbed with turpentine prior to painting. To prevent paint from peeling or being discolored over knots, these are often spot primed a day or two in advance of applying the first or priming coat of paint. Shellac and aluminum paints have been used for sealing knots but neither has proven entirely satisfactory. A new synthetic resin base knot sealer, known as formula WP578 was developed a few years ago for sealing knots in Western pines and firs, and

tests to date indicate it to be effective. The formula for this knot sealer is shown below. It is produced and recommended by a number of paint manufacturers. Knots should be sealed before the priming paint is applied.

WP578 Knot Sealer	Per cent by weight
Phenol-aldehyde resin spirit varnish	33 $\frac{1}{3}$
Polyvinyl butyral resin	3 $\frac{1}{3}$
Denatured alcohol	63 $\frac{1}{3}$
	100

Drying Time Between Coats

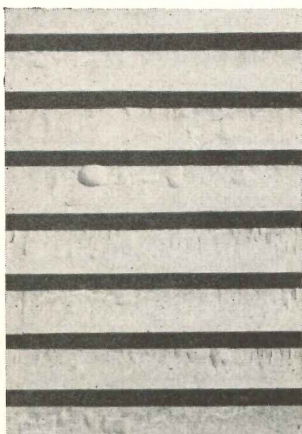
In clear warm weather, two or three days is sufficient drying time between coats. A longer time is required in cold or damp weather. Drying time should not be unduly long between coats, however, seldom more than two weeks. Unduly long drying time between coats can be as harmful as not allowing enough drying time.

Repainting

The procedure for repainting depends on the condition of the old paint. Where the paint is cracked and peeling, or where heavy coatings have been built up by previous repainting and have checked badly, it is recommended that all the old paint be removed either by burning it off with a torch or by the use of paint remover. The recommended procedure for repainting is then the same as that given above for new wood.

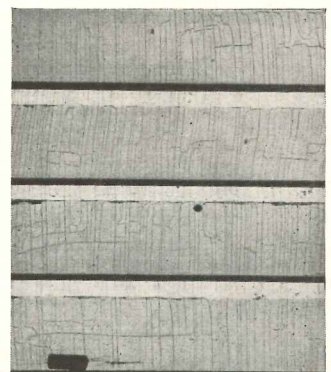
Where the old paint has weathered by chalking off, all loose paint should be removed by wire brushing or scraping.

6



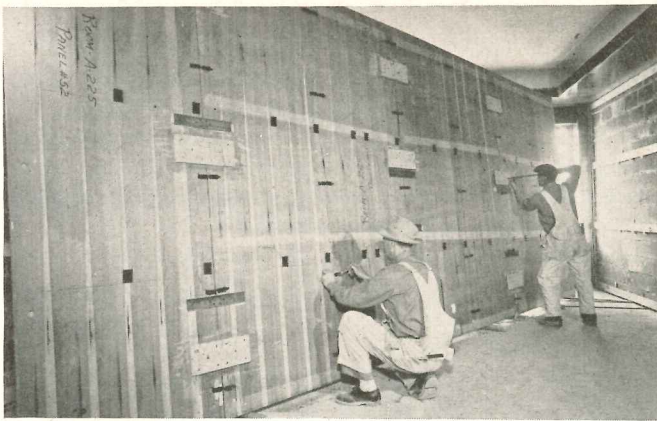
Left: siding of this 25-year-old house has been painted so frequently that an excessively thick coating has been built up, as evidenced by cross-grained cracking. Blisters also formed with last coat and were found to be caused by chemical attack of new paint on old and not by condensation. Right and below: excessive checking due to overpainting is clearly demonstrated

8

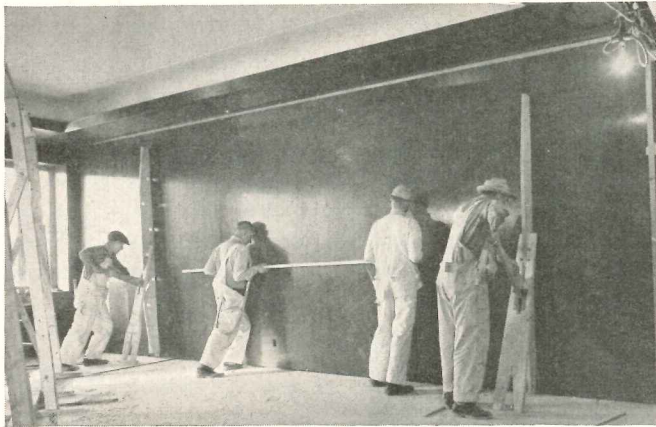


7





Above: prefabricated paneling is joined by splines and bolts; hooks on the panels match complementary hooks on wood strips which have been fastened to the rough block walls. Below: all paneling is jacked up until hooks interlock. Screws at the base and top secure panels to walls



COURTHOUSE WALLS, FURNITURE PREFABRICATED IN FACTORY

District of Columbia Courthouse, Washington, D. C.
Justement, Elam and Darby, Architects

UPWARDS of one million separate pieces of wood were prefabricated and prefinished under factory controlled conditions for the wood paneled walls and furnishings of the new \$18 million District of Columbia Courthouse.

All told, the Globe-Wernicke Co. of Cincinnati prefabricated furnishings and interiors for 21 courtrooms, 33 judges' chambers, six libraries, four hearing rooms and numerous rooms of smaller size. Besides the wall paneling the project included spectator benches, judges' rostrums, jury boxes, witness stands and clerks' desks and library furnishings.

Advantages of prefabricating the job according to Globe-Wernicke included (1) skilled craftsmen; (2) experienced supervision; (3) planned production line for greatest efficiency; (4) ideal working

AIRCRAFT FACTORY SPANNED BY EXPOSED STEEL TRUSSES

Fairchild Aircraft Division, Hagerstown, Md. *Fordyce and Hamby, Architects*

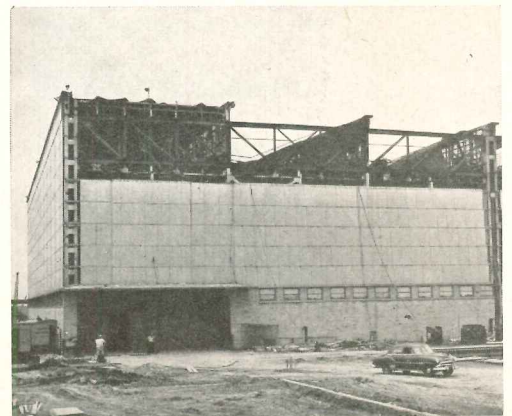
AS PART of a huge expansion program to provide additional facilities for the production of Flying Boxcars for the Air Force, Fairchild Aircraft has recently built a new production bay 200 ft wide by 765 ft long which features welded steel bowstring trusses with their top chords extended above the roof level. With this construction, which looks somewhat like a series of steel bridges, the whole production area is free of columns and there is less space to heat without any decrease in working

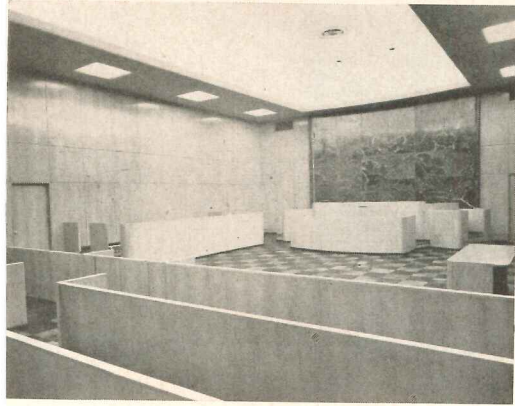
area. Welding was reported to have saved 15 per cent in the amount of steel needed.

An interesting sidelight was the erection process used to connect this new manufacturing structure with an existing one. The existing building was roofed by a series of saw-toothed skylights and it was desired to replace the saw-tooth trusses in groups of three by single trusses at the point where the bowstring trusses join the existing building.

The conventional method would have

been to use shoring placed on the floor to remove the saw-tooth trusses and install the new ones, but this would have taken up considerable manufacturing space and seriously restricted crane travel. Instead, so-called shoring trusses were installed next to the saw-tooth trusses, the saw-tooth trusses were removed and replaced by the longer ones, and then the intermediate columns were taken down. The "shoring trusses" remain in the structure to support the saw-tooth roof and the crane beams.



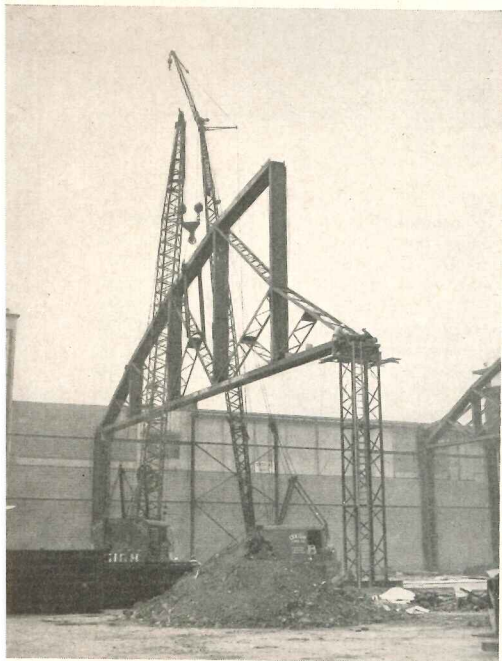


All furniture was precast, prefinished, bolted together and then knocked down for shipment to Washington, D. C. by truck

conditions; (5) close temperature control.

Each item of furniture was produced in sections from standard specifications, assembled in Cincinnati for final inspection, then knocked down with pieces properly labeled and shipped by truck to Washington for reassembly.

Upon delivery in Washington, sections of the wall were bolted together after they were assembled face-down on the floors of the respective rooms. Then the wall was jacked into place and hung on specially designed hooks which hold it firmly in place. The result is perfectly matched wood without visible joints.



Aerial view shows all camel-back trusses in place for the east factory extension; two trusses are on the ground for the north extension (truss being erected above). Photo left shows long truss replacing saw-tooth trusses

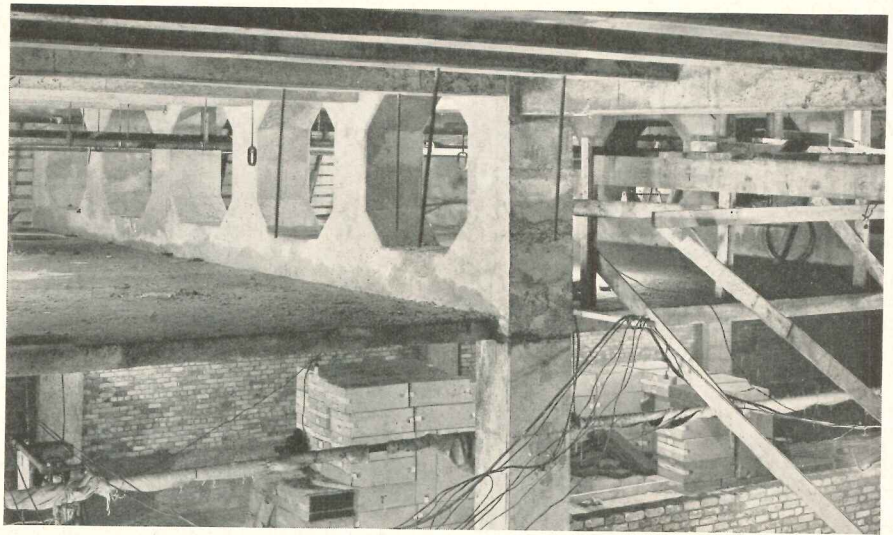
VIERENDEEL GIRDERS IN BOTTLING PLANT SUPPORT BOTH CEILING AND FLOOR

John Labatt Ltd., London, Ontario

Architects, Harley, Ellington and Day, Inc.

Associated Architects, John M. Watt & Associates

Structural Engineers, C. C. Parker & Associates



Trusses are spaced 22 ft on center. Span is 38 ft overall; depth, 8 ft 5 in. overall

REINFORCED concrete Vierendeel trusses were chosen to span the cellars of the Labatt Bottling Plant primarily as a result of the recent structural steel shortage in Canada. In order to avoid delay, reinforced concrete was used up to and including the first floor. Final design was governed by the following architectural and mechanical requirements:

(a) An unobstructed span of 36 ft-9 in. center to center of columns in the cellars.

(b) A heavy, insulated ceiling requiring support at a height of 13 ft-3½ in. above the cellar floor.

(c) A heavy first floor carrying a live load of 350 psf approximately 9 ft above the ceiling.

(d) A multiplicity of air conditioning and heating ducts, plumbing and process piping running in all directions between ceiling and floor.

(e) Exact size and location of ductwork and piping were not available to the structural engineer at the time design of the floor system was under way, but it was axiomatic that these services should be readily accessible for maintenance; the process piping, in particu-

lar, will be subject to possible rearrangement.

This last requirement made impractical the use of a deep concrete girder, sleeved for suitable openings. The span, the loads to be carried, and the necessity for free openings through the supporting member, dictated the use of a truss of some sort, preferably one in which diagonals would be of a minimum size, or, better yet, eliminated entirely. Use of a Vierendeel truss, therefore, was the logical solution to the problem.

Reinforcing in the truss, particularly in the bottom chord where tension exists, is quite heavy and in fabrication it was necessary to butt-weld, rather than lap, the bars. Heavy shear reinforcing is also required in the end and first interior vertical members. Verticals are haunched to meet the chords at a 45 degree angle.

This type of truss was conceived by Professor Arthur Vierendeel about 1890 in Belgium, so the truss itself is not new.

While this type of construction in reinforced concrete does not normally offer a great deal in economy or ease of construction, here the Vierendeel truss was the only satisfactory solution.



1

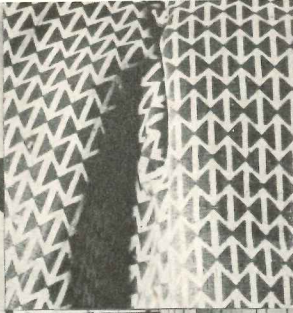


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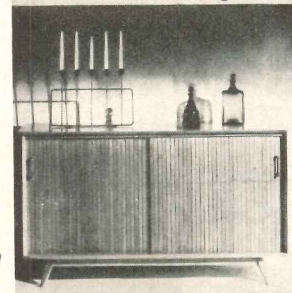
HOME FURNISHINGS MARKET UNVEILS NEW DESIGNS



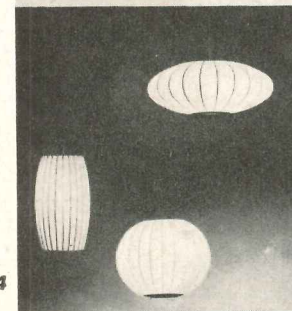
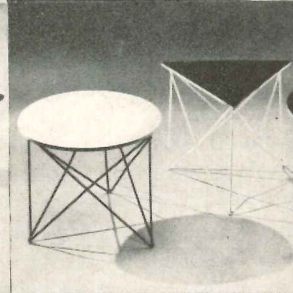
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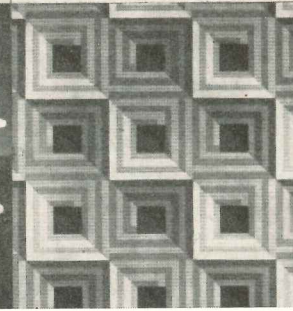
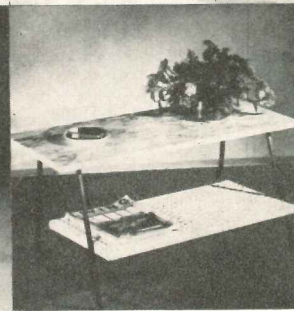
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9 10 11



12 13 14



Chicago's Merchandise Mart was the center of much activity during the annual winter home furnishings market, held Jan. 5th through 16th. Evident among the 1250 exhibits were influences from many foreign countries, including Japan, Italy, the Scandinavian countries and others. The trend this year was toward a blending of traditional and modern — resulting in softer, more graceful lines. In many cases, wood finishes were darker, contrasting to the current popular light background colors, and also to the very bleached wood finishes. Evident, also, was a reappearance of walnut and mahogany. New in the plastics field were dining table tops and chairs made of molded "Fiberglas," used with legs and bases of wrought iron.

A few of the items introduced at the market are shown on this page. Below is a key to the manufacturers.

1 Love seat, Birchcraft Casual Modern collection; T. Baumritter Co., Inc., 171 Madison Ave., New York, N. Y. 2 Woven cane headboard bed, "Sequence" collection; The Weiman Co., Rockford, Ill. 3 Woven rattan combined with wrought iron and glass; Ficks Reed Co., Cincinnati, Ohio. 4 Contemporary desk by Umanoff, walnut or birch; The Elton Co., 230 Fifth Ave., New York, N. Y. 5 "Double Triangles," hand-printed upholstery fabric with matching wallpaper by Alexander Girard; Herman Miller Furniture Co., 1 Park Ave., New York, N. Y. 6 Desk swivel chair by Umanoff, walnut or birch; The Elton Co., 230 Fifth Ave., New York, N. Y. 7 "Lines," another correlated fabric by Girard; Herman Miller Furniture Co., 1 Park Ave., New York, N. Y. 8 Edward Wormley designed sectional sofa; Dunbar Furniture Corp., Berne, Ind. 9 Buffet, Birchcraft Casual Modern collection; T. Baumritter Co., Inc., 171 Madison Ave., New York, N. Y. 10 "Clear" andirons by George Nelson; Richards Morgenthau Co., 225 Fifth Ave., New York, N. Y. 11 Black or white plastic tops on wrought iron or brass-finished legs; Richards Morgenthau Co. 12 Smaller scaled "bubble" lamps by George Nelson; Richards Morgenthau Co. 13 Coffee table by Tempestini, marble and wrought iron with wicker shelf; John B. Salterini Co., 510 E. 72nd St., New York, N. Y. 14 Grecian Key styling in Armstrong's Quaker Floor Covering; Armstrong Cork Co., Lancaster, Pa.

PRODUCTS for Better Building

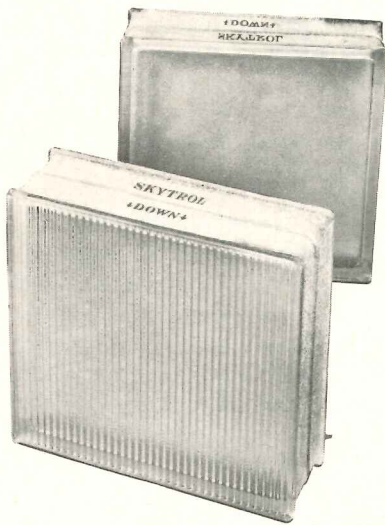
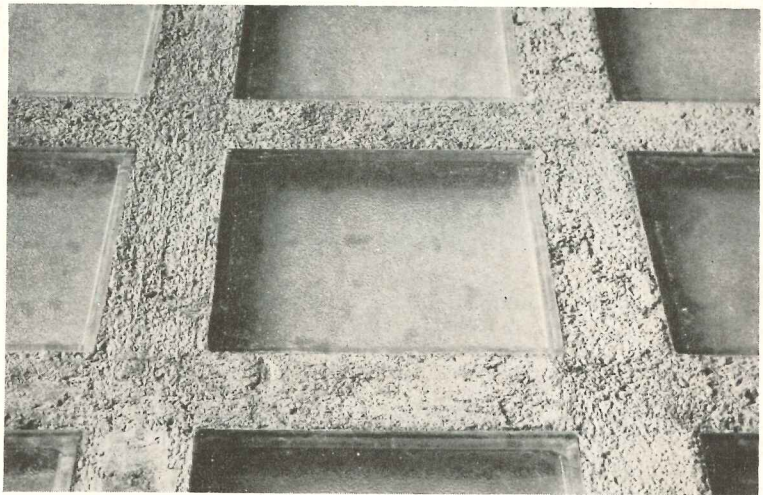
A NEW GLASS BLOCK IS DEVELOPED FOR SKYLIGHTS

Skytrol, a new system for constructing skylights with a specially developed partial-vacuum hollow glass block has been announced by the Pittsburgh Corning Corporation. On the basis of successful designs and installations by European architects of skylights using both ordinary glass block and standard wall block, the manufacturer set about developing a new 12 in. block especially designed for such applications. This block had to be planned to meet the severe daylighting conditions encountered in roof lighting and had to have an insulating value which would relieve the condensation problem and permit effective temperature control within the building.

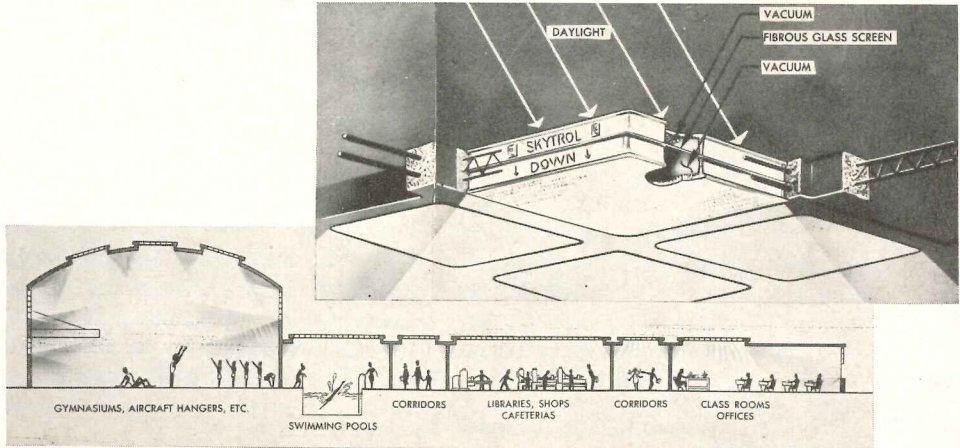
To accommodate the new skylight block, the manufacturer also developed a construction and installation system for use with it. This consists of a grid framework of welded steel trusses running in the load-bearing direction and, at right angles to these trusses, two $\frac{3}{16}$ in. diameter tie wires. These latter are run at the top and bottom through the trusses to form a series of grids, each of which accommodates a 12 in. block. Two $\frac{3}{8}$ in. diameter deformed bars are run continuously around the perimeter of the frame. When the blocks are in place over wood forms, concrete is poured and worked around them either by tamping or vibrating, then is screeded level with the top surfaces of the blocks, which are smooth and polished (the bottom surfaces are ribbed, to direct light). The blocks themselves are edge-constructed to provide a "key lock" concrete joint and are edge coated with a resilient plastic to improve bond with the concrete. When forms are removed, blocks, concrete and reinforcing steel all form an integral skylight slab.

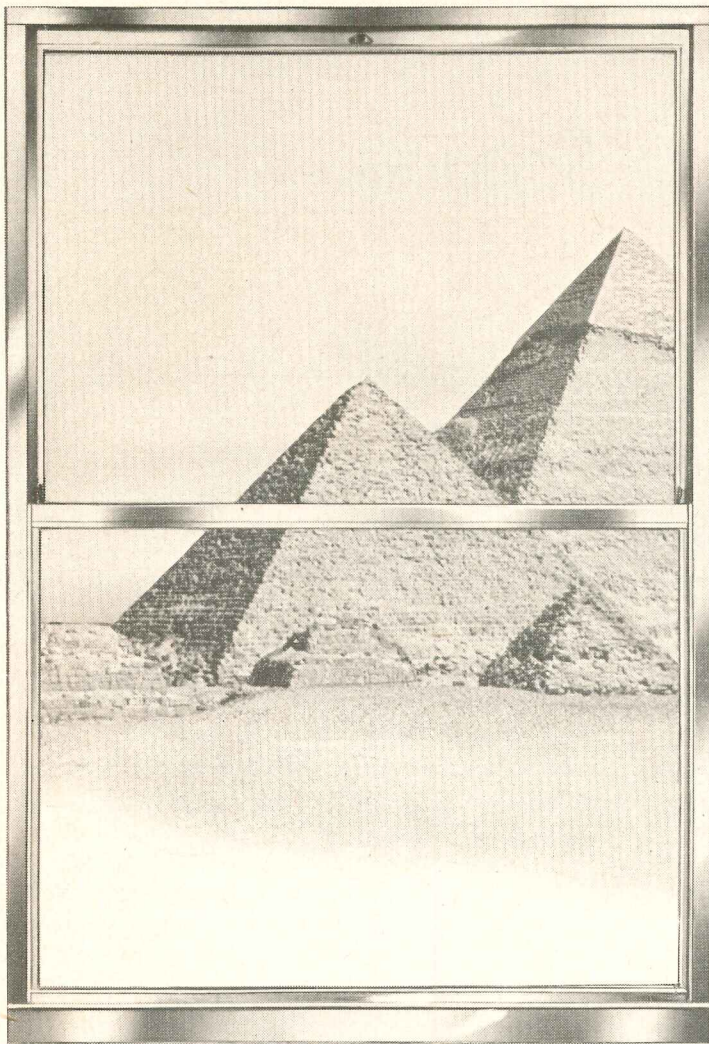
According to the manufacturer, panels detailed and installed as specified by his instructions will provide years of trouble-free, weather-tight service without requiring special maintenance.

(Continued on page 208)



Above: a closeup view of the exterior of a glass block skylight, showing the blocks and the poured concrete frame. Left: two of the specially-developed blocks. Ribbed lower surface is shown in foreground, smooth upper surface in background. Below, top: diagram illustrates construction of skylight system. Below, bottom: typical applications for the new skylight

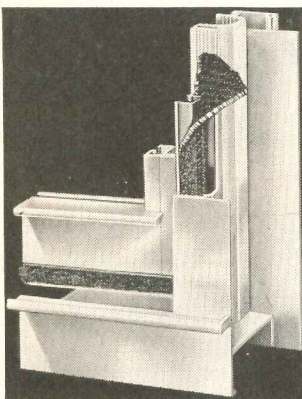




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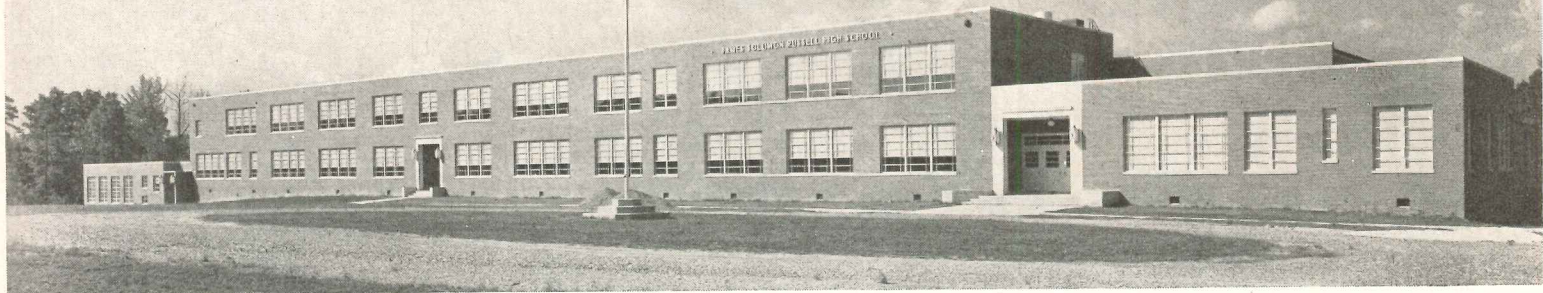
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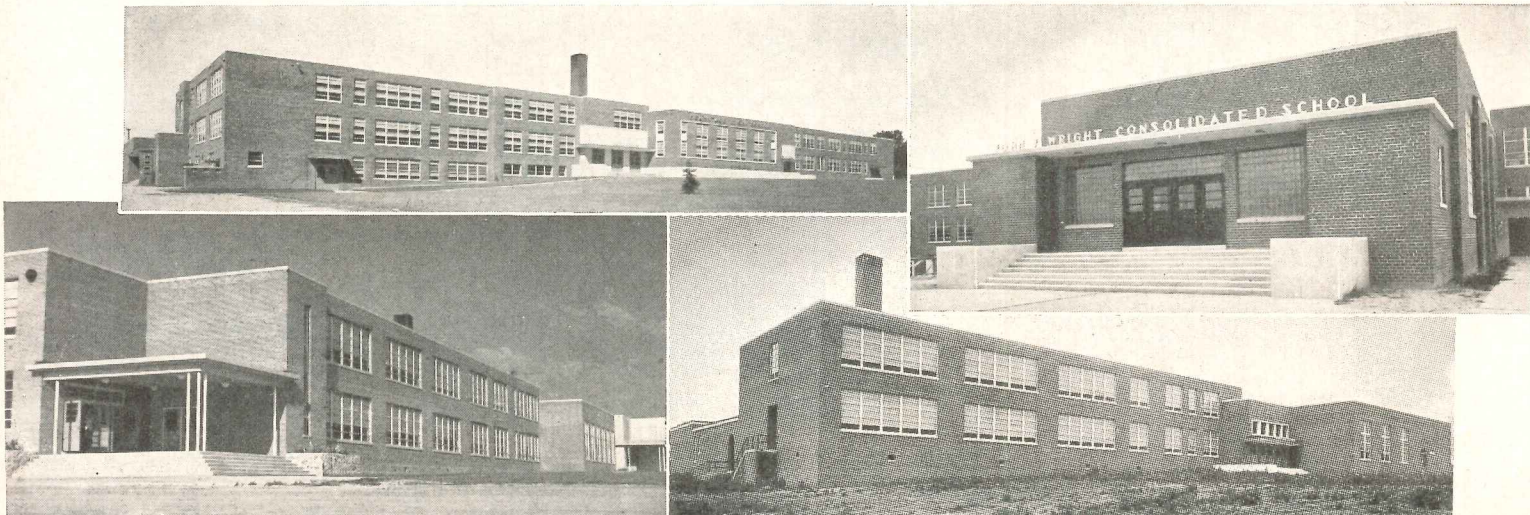
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“Controlled by the weather”

TOP LEFT: Hermitage High School, Richmond. Heating Contractors: W. H. White, Plumbing & Heating, Richmond. TOP RIGHT: John J. Wright School, Spotsylvania County, Va. Heating Contractors: W. J. Bloomfield & Son, Inc. BOTTOM LEFT: Montevideo High School, Montevideo, Va. Heating Contractors: J. H. Cothran Co., Inc., Altavista, Va. BOTTOM RIGHT: Union High School, Caroline County, Va. Heating Contractors: J. H. Cothran Co., Inc.



RADIANT HEATING SYSTEMS FOR HOUSES - 20: ELECTRIC SYSTEMS

By William J. McGuinness, Professor of Architecture, Pratt Institute

PLANNING AND OPERATION

Radiant heating has a number of distinct advantages already discussed in TSS August 1951, Sheet 1. There is little difference in the performance of a good radiant system whether the heating medium is hot water or electricity. There are, however, several good qualities in the planning and operation of electric systems in preference to hot water systems when the relative cost permits the use of electricity. They are:

1. A switch and thermostat in each room makes control much easier and more compact than more bulky and costly controls of hot water. Individual control of rooms is seldom attempted in hot water radiant heating.
2. There is greater freedom of planning due to the elimination of pipes, utility rooms, fuel storage.
3. There is no need for drainage in cold weather when the house is left unoccupied and unheated.
4. Water leaks are eliminated.
5. Flue gas odors and the possibility of carbon monoxide poisoning are eliminated.
6. There is frequently a lower fire risk when low temperature resistance wires replace a fuse.
7. Faster response in the use of glass wall panels and prefabricated panels of thin material for ceiling installations.
8. No responsibility in ordering fuel.

Economy

Electric radiant heating is nearly always cheaper to install than hot water radiant. Sometimes the saving is very great. The cost of electric current is usually greater than the cost of gas or oil. Depending on the rate per kilowatt-hour in various localities the comparative cost of electricity for heating can vary from the same or slightly less than other fuels to a high level of two or three times as much. A careful comparison of original cost and of yearly expense for fuel, maintenance and amortization of debt must be made for a specific installation in a given location before a choice can be made on the

basis of cost. In favor of electricity are the following reductions in items of original cost or the amortization thereof —

1. Elimination of heating equipment such as boilers and burners and the fire-safe construction to house them.
 2. Omission of fuel storage equipment and enclosures.
 3. Omission of chimney and flue.
- Items of periodic expense that may be avoided by the use of electricity are —

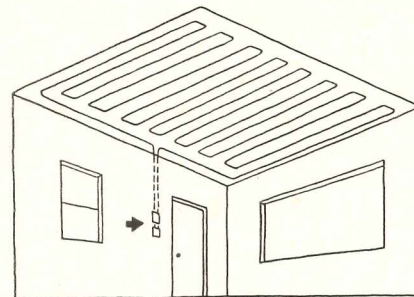
- A. Yearly cleaning and adjustment of heating plant.
- B. Service and replacement of mechanical parts.

Methods of Electric Radiant Heating

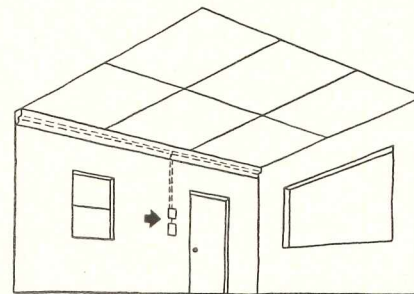
These may be grouped into four categories, see Fig. 20.

1. Electric cables in ceiling or floor
2. Prefabricated ceiling panels
3. Radiant glass or ceramic panels
4. Electric baseboard

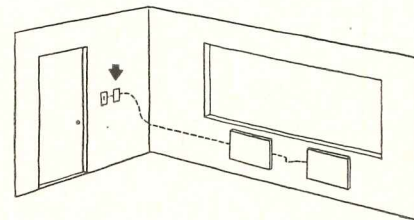
Fig. 20 — Methods of Electric Radiant Heating



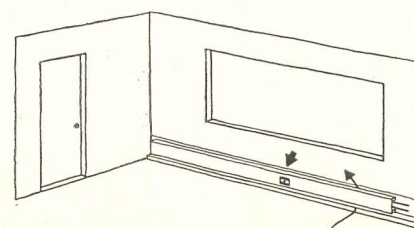
A.



B.



C.



D.

A. Electric Cables in Ceiling or Floor

Low-temperature, insulated heating wire imbedded in the plaster or in concrete floors and connected to the power source by normal wiring.

- Most invisible system.
- May be used in both ceiling and floor, and concentrated in cold spots.
- Low temperature and even distribution.

B. Prefabricated Ceiling Panels

A layer of rubber containing conductive material set between layers of phenolic resin and backed with asbestos board. Thickness 1/4 in. Similar construction in wall-paper thin material and other similar products available.

- Dry construction.
- Thin panel makes for fast response.
- Joints show.
- Low temperature and even distribution.

C. Radiant Glass Panels

Glass panels on the back of which an aluminum grid forms a resistance element for heating.

- Low thermal capacity assures fast response.
- Drapes must not cover.
- Good also as auxiliary panels in other heating systems.

D. Electric Baseboard

A convector type metal baseboard with resistance wires in the protected air space.

- Mostly convective.
- Drapes must not blanket air flow.
- Effective in reversing cold down draft at windows or cold walls.

↑ All four methods suitable to switch and thermostat control in each room.

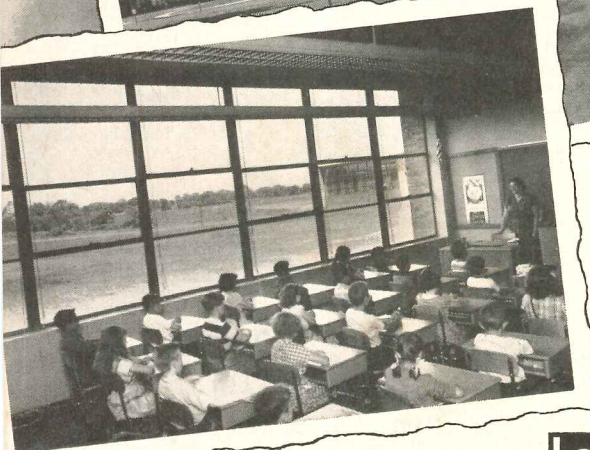
BENEDICT ADE
 ARCHITECT
 840 UNIVERSITY AVENUE
 ROCHESTER 7, NEW YORK

The high level of natural daylight admitted by the large Thermopane insulating glass windows in the Rush-Henrietta Central School provides excellent illumination throughout the classrooms all day long. On desks farthest from the windows we get light meter readings of 50 footcandles on bright days. That is well over the accepted American Standard Practice minimum of 30 footcandles. On sunshiny days, during periods of excessive brightness, light is easily controlled by means of venetian blinds and roof overhang.

Everyone is agreed that children love these bright rooms that seem almost to be part of the great outdoors. They don't feel shut in, but as free as the sky itself. Furthermore, the insulating glass helps keep desks near the windows as comfortable in winter as those next to the interior classroom wall.

The Rush-Henrietta Central School was built at a cost of 62 cents per cubic foot which, in comparison with most other public schools erected recently in this area, is quite low. Yet the building contains many refinements and modern improvements, such as radiant heat, ventilation, glazed tile wainscote in classrooms, corridors, gymnasium and locker rooms, terrazzo floors and metal acoustic ceilings in corridors, and insulating glass not commonly found in schools.

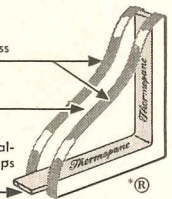
Benedict M. Ade



Two Panes of Glass

Blanket of dry air insulates window

Bondermetic (metal-to-glass) Seal* keeps air dry and clean



Thermopane Details

Thermopane* insulating glass with 1/2" of dry air hermetically sealed between two panes has twice the insulating value of single glass. This minimizes chilliness, drafts and heat loss at windows. Thermopane also cuts air-conditioning costs by reducing the amount of heat entering during summer. It cuts out 44% more noise than single glass.

Write for the latest literature on school daylighting, *How to Get Nature-Quality Light for School Children*. This brief booklet is factual, detailed, authoritative, written for architects. Also, write for the latest Thermopane literature for your file.

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DAYLIGHT WALLS

THAT DON'T OBSCURE VISION

RADIANT HEATING SYSTEMS FOR HOUSES—21: ELECTRIC SYSTEMS

By *William J. McGuinness, Professor of Architecture, Pratt Institute*

ELECTRIC CABLES IN CEILING OR FLOOR

The Method

Factory made units consisting of coils of resistance wiring with special insulation and connected to non-heating leads are used (see Table 8). In each room, one or more of these units are imbedded in the plaster ceiling or the concrete floor or both. They are connected in parallel through a thermostat to a room switch. Each room is served by wiring connected to a general load center where overload protection is provided. For the larger outputs higher voltage is selected resulting in a smaller current and smaller wires to serve the heating elements. The general electric service for lighting and other non-heating use joins the heating load center and is connected to the main house switch.

Material and Equipment Used

A manufacturer's list of available heating cables is shown in Table 8. They are made in various lengths to suit different conditions. It will be noted that all the cables have an output of precisely 2.75 watts per ft. of length. It is necessary only to select the necessary length to make up the room heat loss. Element out-

puts in Btu per hour may be found by the conversion factor of 1 watt equals 3.41 Btu per hour. The smallest and largest units have outputs as follows —

Unit 1	195 Watts	
		665 Btu per hour
Unit 15	2810 Watts	
		9600 Btu per hour

Small bathrooms frequently have an hourly heat loss of about 1200 Btu per hour and a large modern living room with much glass often has a loss of 30,000 Btu per hour. Thus small and average rooms will require one unit while large rooms may require as many as three or four, corresponding to the three or four coils of pipe or tubing in a large room heated by hot water radiant coils.

Special thermostats have been developed by manufacturers of equipment for electric radiant heating. Some of these when connected to two coils in parallel will operate one coil in mild weather at low output and connect the second coil under severe conditions for full output. Wiring from room controls to the load center is installed in accord with long-existing rules of the National Electric Code. The only variation from conventional wiring is that at some locations this non-heating supply wir-

ing passes in enclosed joist spaces directly adjacent to the heating elements. Here the wire and insulation must be selected to operate at temperatures higher than the usual house temperature. This higher temperature is assumed to average 50 deg Centigrade (122 F).

Underwriters' Approval

In the use of this equipment architects and engineers need to feel confident of its safety. The Underwriters' Laboratories have conducted tests and have given full approval when labelled products are chosen and installed in accordance with recommended practices. The following tests and their results are indicative of qualities needed for safety:

1. Physical Properties of Insulation

The special synthetic compound used as insulation on the heating element was found to be satisfactory in tensile strength and elongation.

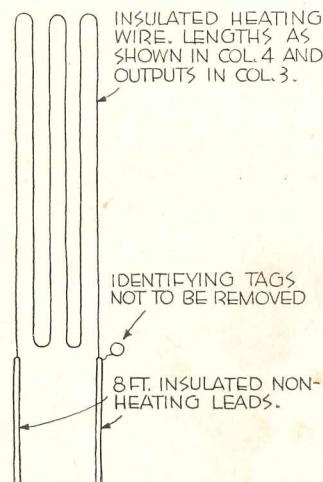
2. Electrical Properties of Insulation

Tests proved these to be acceptable in spite of the wetting processes of plastering and concreting.

Table 8. Typical Schedule of Heating Elements

1 Unit No.	2 Rated Volts	3 Rated Watts	4 Length, Feet
1	} 120	195	70
2		421	153
3		885	322
4		1120	407
5		1405	510
6	} 220	350	128
7		775	281
8		1620	590
9		2055	747
10		2570	935
11	} 240	390	140
12		840	306
13		1770	644
14		2240	814
15		2810	1020

Conversion Factor 1 watt = 3.41 Btu per hour



Units must be used as received from the manufacturer. Shortening the heating wire or the leads will void the approval by Underwriters Laboratories. Ratings, courtesy of L. N. Roberson Co., Seattle, Washington.

T I M E - S A V E R S T A N D A R D S A r c h i t e c t u r a l E n g i n e e r i n g

JUNIOR BALL ROOM



MODERN DOOR CONTROL

BY *LCN*

CLOSERS CONCEALED IN DOORS

HOTEL MUEHLEBACH,

KANSAS CITY, MISSOURI

LCN CATALOG 12-A ON REQUEST OR SEE SWEETS

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Neville, Sharp & Simon, Architects

RADIANT HEATING SYSTEMS FOR HOUSES—22: ELECTRIC SYSTEMS

By William J. McGuinness, Professor of Architecture, Pratt Institute

3. Factory Splices

The connection of the heating element to the non-heating leads was found strong, well insulated.

4. Input Test

The rated input was checked and found to be as stated.

5. Burnout Test

The heating elements withstood reasonable overloads and will not burnout if properly fused.

6. Mechanical Abuse Test

Considerable care is needed to protect heating wire and insulation during installation. Check tests are recommended during and after covering the wire.

7. Cracks in Concrete

Wire and insulation were not broken by cracking simulating normal settlement of a house. Only violent cracking damaged units.

8. Temperature Test

It was found that wires supplying the heating elements and located in the structure adjacent to the heated surfaces should be selected to operate in temperatures higher than room temperatures.

9. Resistance of Insulation in Place

When insulation was purposely damaged it showed as a bad condition while the plaster and concrete were wet but it improved as these materials dried out.

10. Locating Damaged Insulation

It is possible to locate damaged insulation of wires imbedded in plaster or concrete by a metal probe moving on panel surface.

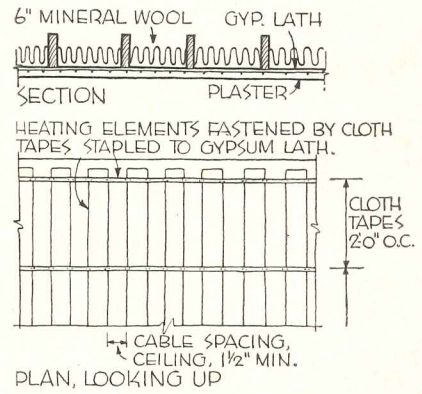
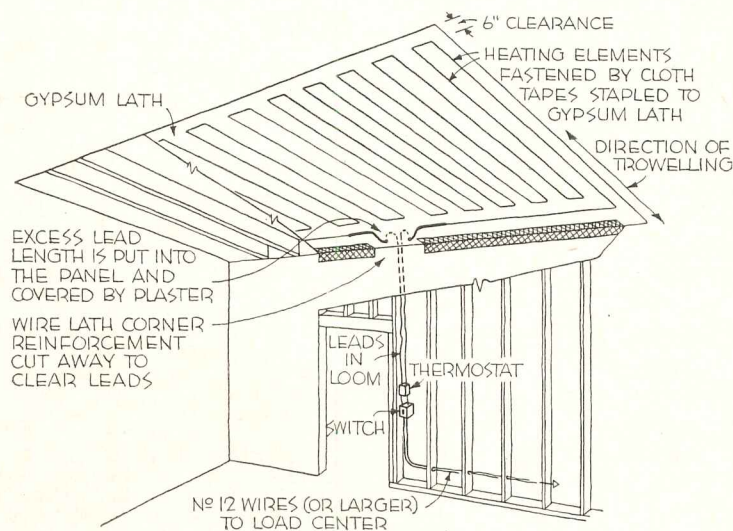
METHODS OF INSTALLATION

Fig. 21 illustrates typical methods of installing cables in ceiling or floor panels. In ceilings the 1/2 in. diameter heating element is held against gypsum lath by cloth tapes 2 ft on centers. Staples through the tape on each side of the wire hold both tape and wire against the lath. Excess lead length must not be cut off and may be attached to the ceiling like the heating wire and later imbedded in plaster. Leads run through protective covering known as loom to the

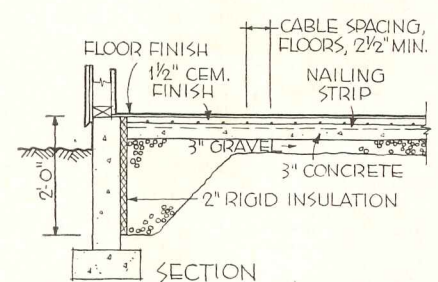
thermostat. Heating wires are usually kept about 6 in. clear of side walls and may be spaced evenly throughout the ceiling or concentrated in areas of greatest heat loss. All metal including metal lath corner reinforcement must be kept 2 in. clear of wiring. Plaster is applied in the direction of the heating wires and great care must be exercised to prevent damage to the wire or insulation. For insulation in the roof joist space above panels 6 in. of mineral wool is recommended.

Floor installations are made by fastening the heating wires to a concrete slab by cementing them in place or tacking them through cloth tapes to nailing strips imbedded in the concrete surface. The wires are then surrounded and covered by a 1 1/2 in. dense cement finish. Gravel below the slab and 2 in. of rigid perimeter insulation follow the usual radiant heating requirements for slab insulation. The leads that connect to the floor heating element can be run in rigid conduit. Round-edge bushings of insulating material protect the leads as they enter the metal junction boxes.

Fig. 21 — Installation Methods

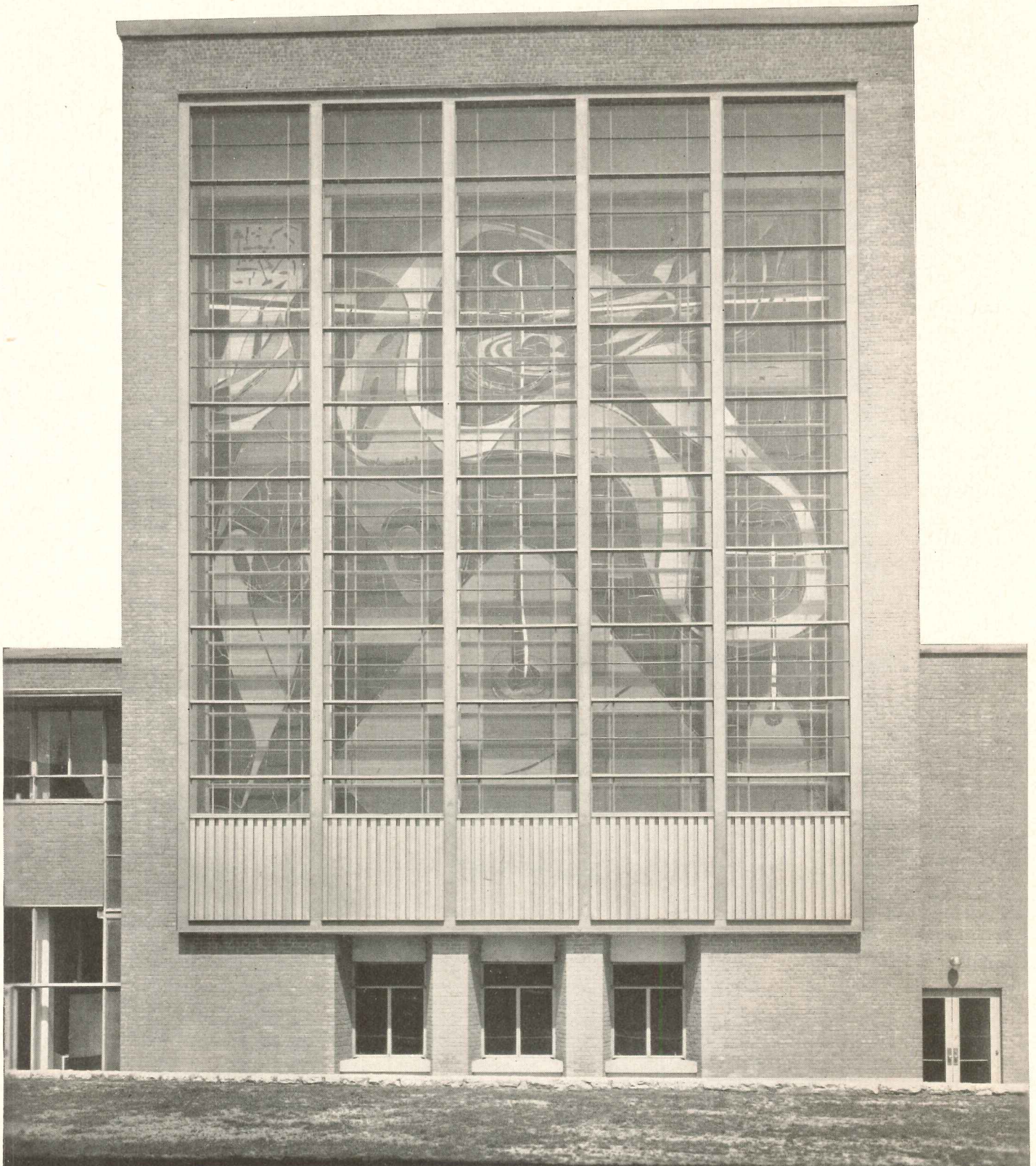


Ceiling details



Floor details

here's



proof...

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difference. Modestly, we hope, we give it mention here.

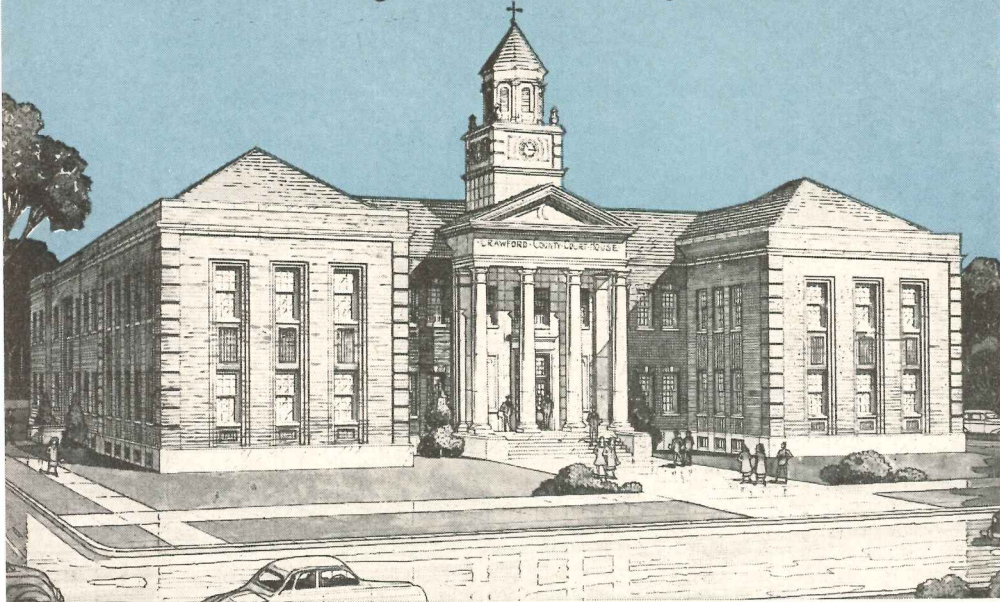
Architect Joseph D. Murphy with artist Robert
Harmon and stained-glass window fabricator Emil Frei had an
imaginative idea for a great window mural for St. Ann's Catholic
Church in Normandy, Missouri. But there was a design problem.
Working closely with Architect Murphy and contractor Oscar
Schneiderhahn, Ceco helped work out a solution. Steel was
recommended for the window with the outside frame and inter-
mediate mullions made up of heavy channels.

Ceco designed standard window sections to fit between the
channels. A mullion was provided consisting of 1/4" flat plate with
Ceco head and sill sections of intermediate design. Ceco standard
intermediate "T" muntins served as comes for the leaded glass.

But Ceco Engineering Service went further. Design of the rein-
forced concrete floor joists, employing Meyer Steelform construc-
tion, again provided savings in men, money and material. Ceco
also supplied reinforcing steel and all windows, screens and
screen doors. 



Pride of Crawford County, Pa.



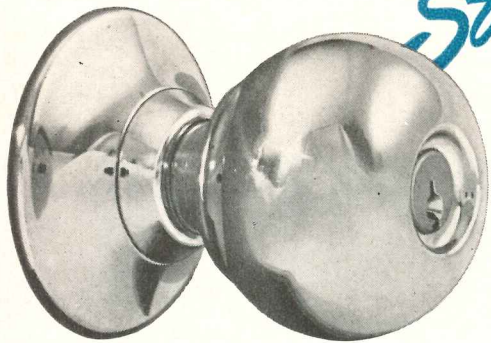
CRAWFORD COUNTY COURT HOUSE, Meadville, Pa., is being equipped throughout with Russwin builders' hardware — "Stilemaker" locks, fire exit bolts, door closers, door stops. **DEALER** — McEnery Co., Erie, Pa.

ARCHITECTS—Hanna & Stewart, Merchants Bank Building, Meadville, Pa.
GENERAL CONTRACTOR — L. H. Ludwig & Co., Inc., Falconer, N. Y.

... gets the advanced-design

"Stilemaker"

heavy-duty
lockset

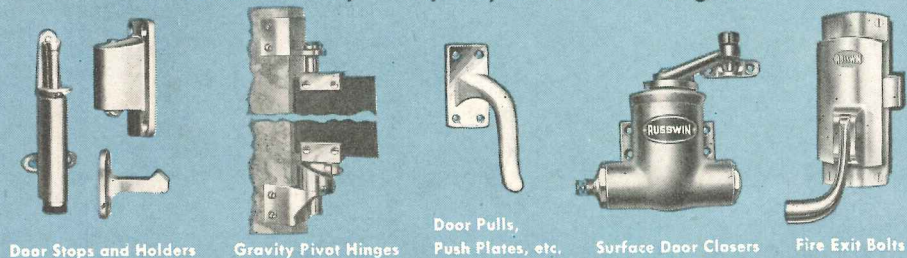


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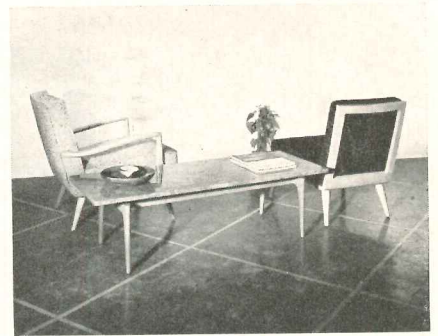
PRODUCTS

(Continued from page 197)

When they are subjected to cold rain, snow, hail or other adverse conditions after daylong exposure to hot sunlight, the blocks will reportedly resist a cold shock of 100 deg F without breakage. They also are said to have great impact resistance and structural strength. Other advantages cited for the new panel skylights include even, glare-free lighting, greater thermal insulation than that provided by ordinary skylights and effective condensation control. Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa.

Marble Topped Tables

Available in a variety of shapes and sizes, a group of *Lehigh* occasional tables features marble tops which appear to float over the bases. The marble may be obtained in a wide range of color variations — from whites to blacks and in



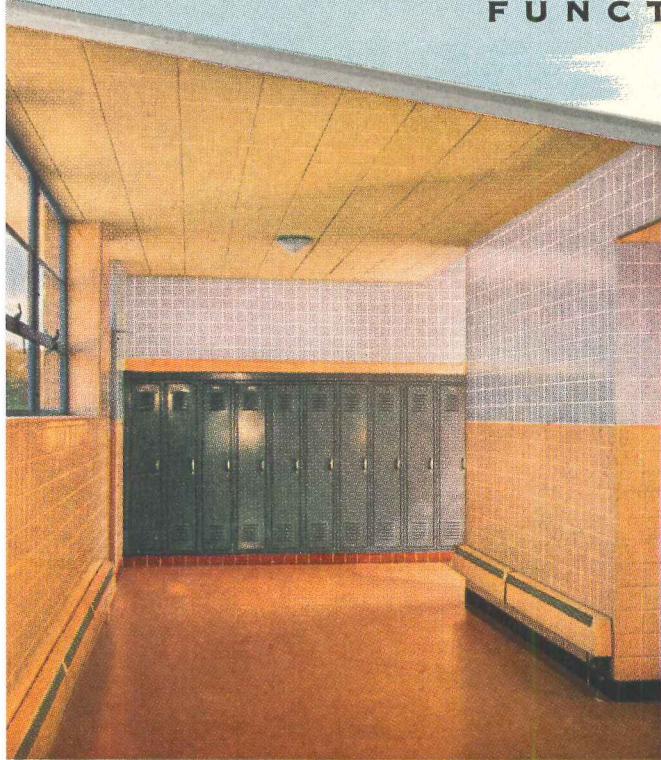
Marble topped tables on solid walnut bases come in a variety of colors

greens, pinks and browns — and the bases are made of solid walnut available in all finishes. Included in the group are cocktail tables, square, round or rectangular; end tables in two sizes; a square corner table and a bridge table. In addition, the tops may be obtained in wood, glass or a plastic laminate. Lehigh Furniture Corp., 16 E. 53rd St., New York 22, N. Y.

Bright new school theme

FUNCTIONAL COLOR

Suntile



Architect James A. Britton, A.I.A. (right)
Associate Harvey H. Hatheway (left)

Suntile Corridor, Highland Elementary School, Westfield, Massachusetts

You will find Suntile equally valuable in schools, hospitals, industrial plants, commercial or residential structures. Suntile colors are "fitted-to-function" by Faber Birren, nationally known color authority. Bright, stimulating Suntile colors aid light reflection—more neutral shades diminish glare, reduce eyestrain, fatigue. And Suntile also offers your clients all the time-tested advantages of real clay tile—permanence, fire-safety, ease of cleaning, low maintenance costs. Ask your Authorized Suntile Dealer for a free copy of "Suntile Color Recommendations," or write Dept. AR-3.

Architect James A. Britton reports:
"In Suntile we have found the answer to a recurring school design problem: how to provide an interior finish that combines desirable color and texture with durability and easy maintenance."
"Suntile's well-related colors made it possible for us to use one shade up to wainscot height and another above—both for better light reflection and added interest in corridors and other heavy-duty areas."
"We feel that it's a sound investment. The school children and the public are enthusiastic, and we've already been asked to continue the use of Suntile in our other school work."



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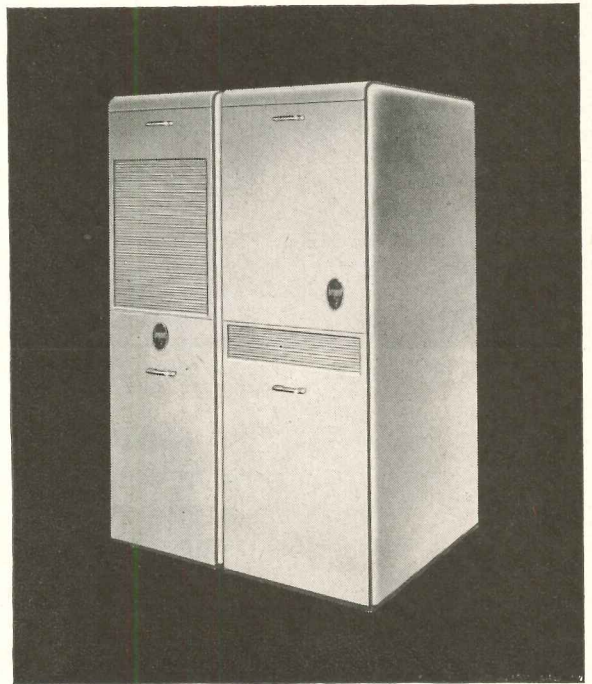
20% to 35% lower in cost! We're mass producing the "Twins" to bring the price way down—to make it possible for you to offer year 'round conditioning in moderately priced homes . . . to mass-market buyers! Moreover, you can offer . . .

Cooling initially—or later! The "Twins" are independent, matched heating and cooling units. You can install and show both units in your model home and offer, in the others, the immediate or later addition of cooling according to the convenience of the buyer. And you needn't worry about space because the "Twins" offer . . .

Unusually compact design! Using as little as $7\frac{2}{3}$ sq. ft. of floor space, you can tuck them away in a closet, alcove, utility room or a corner of the basement. And you have a wide range of combinations to choose from—gas or oil furnaces ranging from 50,000 to 175,000 Btu/hr and cooling units in 2, 3 and 5-ton capacities.

Get complete information on the "Twins" today. And ask about Bryant's supporting program to help you sell your homes. Contact your Bryant Distributor or write: Bryant Heater Division, 17825 St. Clair Avenue, Cleveland, Ohio.

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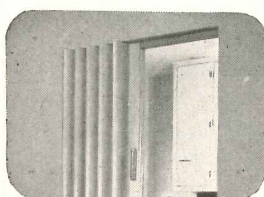
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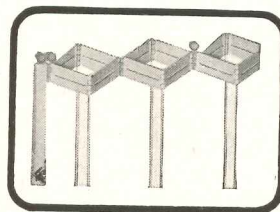
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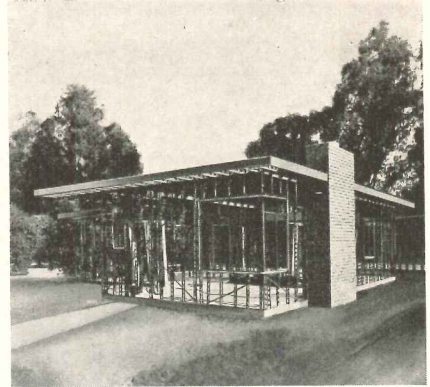
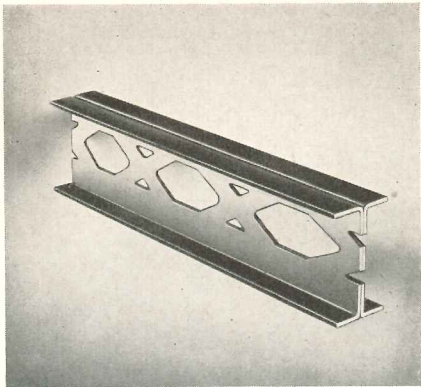
Address.....

City.....County.....State.....

PRODUCTS
(Continued from page 266)

Steel Construction For Smaller Buildings

A new line of cold rolled steel structural sections, *Lightsteel*, is said to permit for the first time the use of steel framework at low cost in the light building field. The sections include a complete range of studs, joists and acces-



Lightweight open web steel sections, left, are designed for construction of small buildings, such as that at right

sories for the erection of steel building frameworks, and are described as ideal for the construction of single and multiple residences, schools, industrial and commercial structures. The sections are fabricated from strip steel and have a double-trussed, open web design which makes possible light weight without sacrificing strength. This open web also simplifies the passage of wiring and piping through the erected studs and joists. Workmen can quickly fasten wires or clips through the openings and it is not necessary to drill the studs and joists in the field.

The sections are intended for custom design and construction and reportedly eliminate design restrictions imposed by prefabrication. At present, the line includes section sizes 3 1/4, 3 5/8, 4, 6 and 8 in. deep. These are precut to order in lengths up to 28 ft. Studs and joists are available in single and double form. The single stud or joist is a channel, while the double unit, manufactured by welding two single units back-to-back, resembles an I-beam in cross section. Supplementary structural track and bridging for use as top and bottom plates, bracing, sills, etc., are also being produced. These sections are similar in appearance and other characteristics to the studs and joists, but the track sections are slightly oversize to fit around the standard sections, and the bridging is slightly undersize to fit within the flanges of the standard sections.

The manufacturer describes the new sections as being easy to handle as wood or masonry construction. As for cost, he also reports that in some areas his 3 1/4 in. stud is lower in price than a wood 2 by 4. Penn Metal Co., Inc., 205 E. 42nd St., New York 17, N. Y.

(Continued on page 274)

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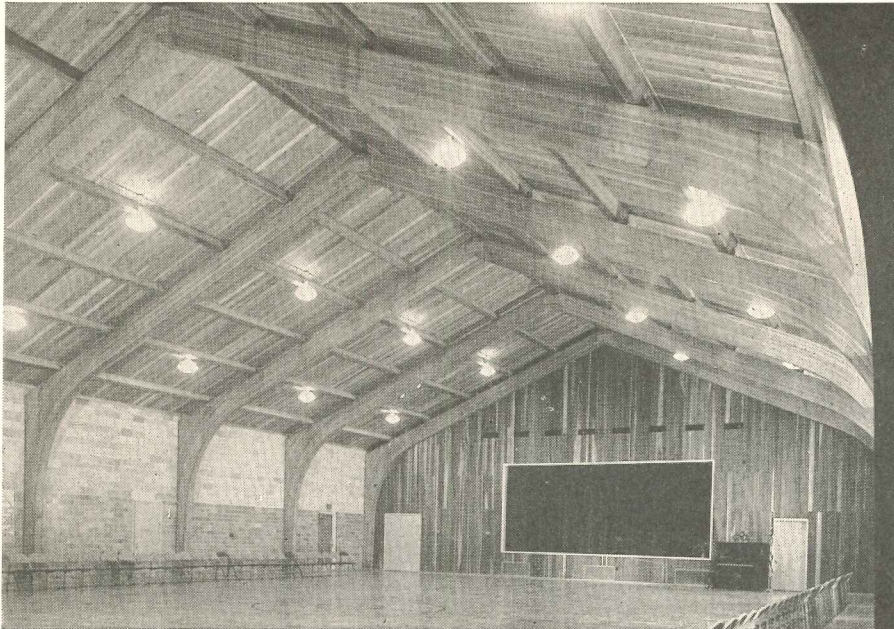
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9030 Imported CASTELL Lead—7B to 9H—with the same unique qualities that made CASTELL 9000 wood-encased pencil famous.

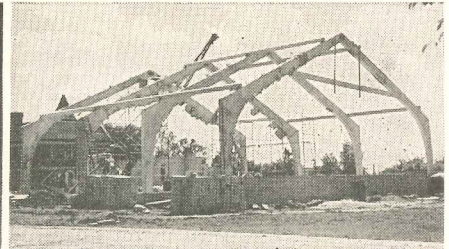
the drawing pencil with the Master Degrees

AW. FABER-CASTELL
PENCIL COMPANY INC. NEWARK 4, N. J.

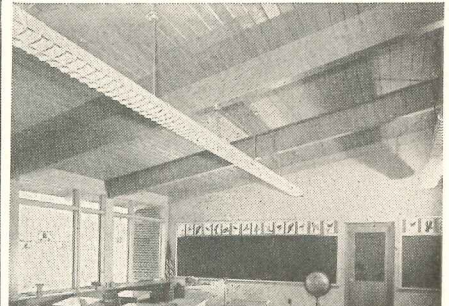
*Imported from West Germany



Because Rilco arches are factory cut and drilled for connection hardware, they can be erected quickly by the regular contractor crew, saving time and labor.



Elementary school gymnasium at Gladstone, Minnesota, designed by architects Ingemann and Bergstedt, St. Paul.



A classroom in the Goodhue County School, at Vasa, Minnesota, designed by architects Max and Gerald Buelow, St. Paul.

LAMINATED STRUCTURAL MEMBERS

Engineered by Rilco

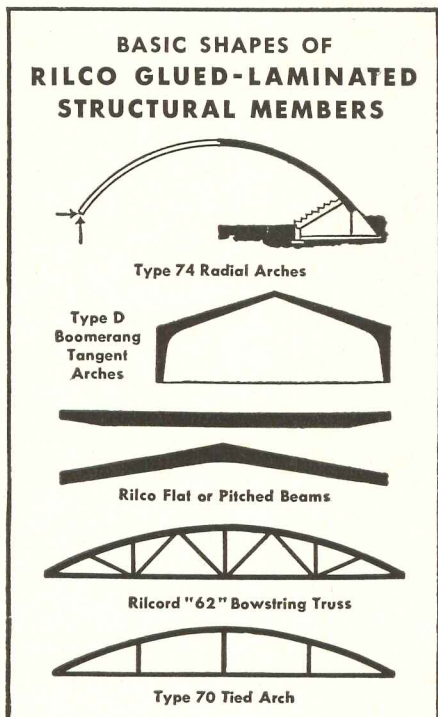
The luxury of wood is remarkably inexpensive with Rilco construction because erection costs are low. And the wide variety of basic shapes—plus special ones made to your specifications—permit many interesting designs for public or commercial buildings where clear span construction is desired.

These Rilco structural members are built up from selected, kiln-dried Douglas Fir laminations, bonded with the best structural glues. Each is designed for its particular job by Rilco's own engineering department.

Wood, contrary to popular belief, is a fire-resistant material. Being of relatively large cross section, laminated members are slow to burn. They do not quickly lose their strength under high temperatures and thus have definite advantages over other structural members. They are available to meet specific appearance requirements, such as architectural, industrial or structural finishes.

For architectural finish, they are surfaced, sanded, coated with wood sealer and wrapped to protect their smooth surface while in transit.

If you are planning a school or other large building, investigate the advantages of Rilco members—the dramatic beauty of fine wood, the strength and permanence of glued-laminated construction, and the greatly reduced labor costs. Rilco has a complete engineering staff and field representatives to give technical assistance on each job. And expanded production facilities assure prompt delivery. Write for our free catalog or, if you prefer, we'll be glad to have our experienced field representative call to discuss your requirements.



RILCO

Laminated PRODUCTS, INC.

"WORKS WONDERS WITH WOOD"

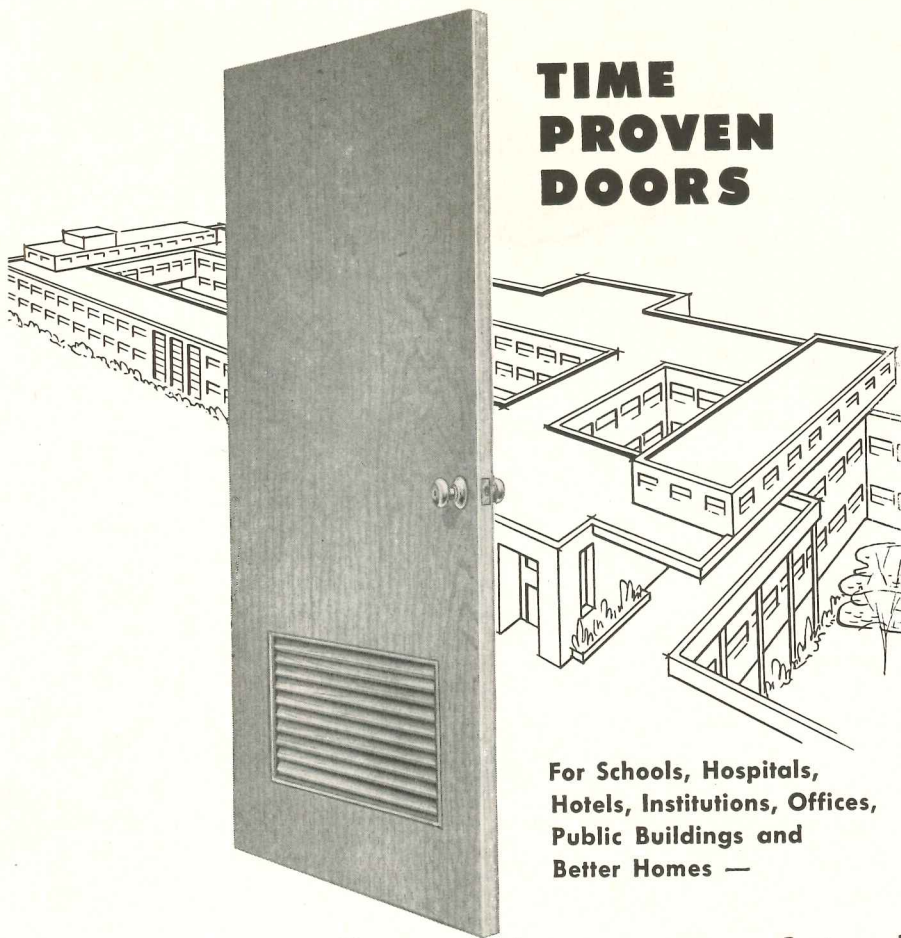
Rilco Laminated Products, Inc.
2518 First National Bank Bldg., St. Paul 1, Minn.

Please send me your new Commercial Catalog, containing basic design data and information on glued-laminated wood arches, trusses, and beams.

Name _____

Address _____

City _____ State _____



TIME PROVEN DOORS

For Schools, Hospitals,
Hotels, Institutions, Offices,
Public Buildings and
Better Homes —

SOLID CORE... Best under every condition!

Custom-Built FOR YOU!

You can specify HARDWOOD Doors with full confidence that they will meet your specifications because each is custom-made for your job.



When your plans call for doors that will withstand hard usage and severe abuse — you'll surely want to specify **HARDWOOD solid core Doors**. With them you get so many features not found in ordinary doors of lighter core construction — and, they're yours for so very *little* additional cost. **HARDWOOD solid core construction** gives you sturdier, longer-life doors that will withstand hard bumps and kicks without veneer "hole-thru" that results in costly replacements: it provides better room acoustics with more doorway sound resistance — and, assures additional safety by as much as half an hour in event of flash fires. *Time Proven* **HARDWOOD Doors** are made in three distinct types of core construction and faced with thin, medium or thick veneers to meet every job requirement. Consult **ARCHITECTURAL FILE 16c HA** or write for complete details.

RIVERBANK

Sound Insulating Doors

Stop noise from penetrating — insure privacy. The practical doorway closure for private offices, music, radio and TV studios; hospitals, schools and institutions.

OFFICES IN
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HARDWOOD PRODUCTS CORPORATION • NEENAH • WISCONSIN

THE RECORD REPORTS

WASHINGTON

(Continued from page 38)

five years if needs are to be met; *hospital building* — "could double its present annual rate of less than \$500 million a year for several years"; *airport construction* — "estimated to require nearly \$300 million a year for at least three years to catch up with needs."

COMPLETE 16 CHAPTERS OF AEC DESIGN CRITERIA

Sixteen chapters of design criteria have now been published by the Atomic Energy Commission, the agency said in its 13th semiannual report to the Congress.

The material, covering architectural, structural, heating and ventilating design as well as design considerations for specific building types such as administration buildings, laboratories, warehouses, utilities and other service facilities, are available only at AEC district offices and are not for distribution.

AEC reported the total U. S. investment in atomic energy plant facilities as of last June 30 was approximately \$3.5 billion. When construction for which funds have been appropriated is complete, the nation's capital investment in atomic energy will be about \$7.5 billion. Size of the current program is indicated in the report that costs for plant and equipment averaged about \$90 million a month during the last half of 1952.

Announce New Plant

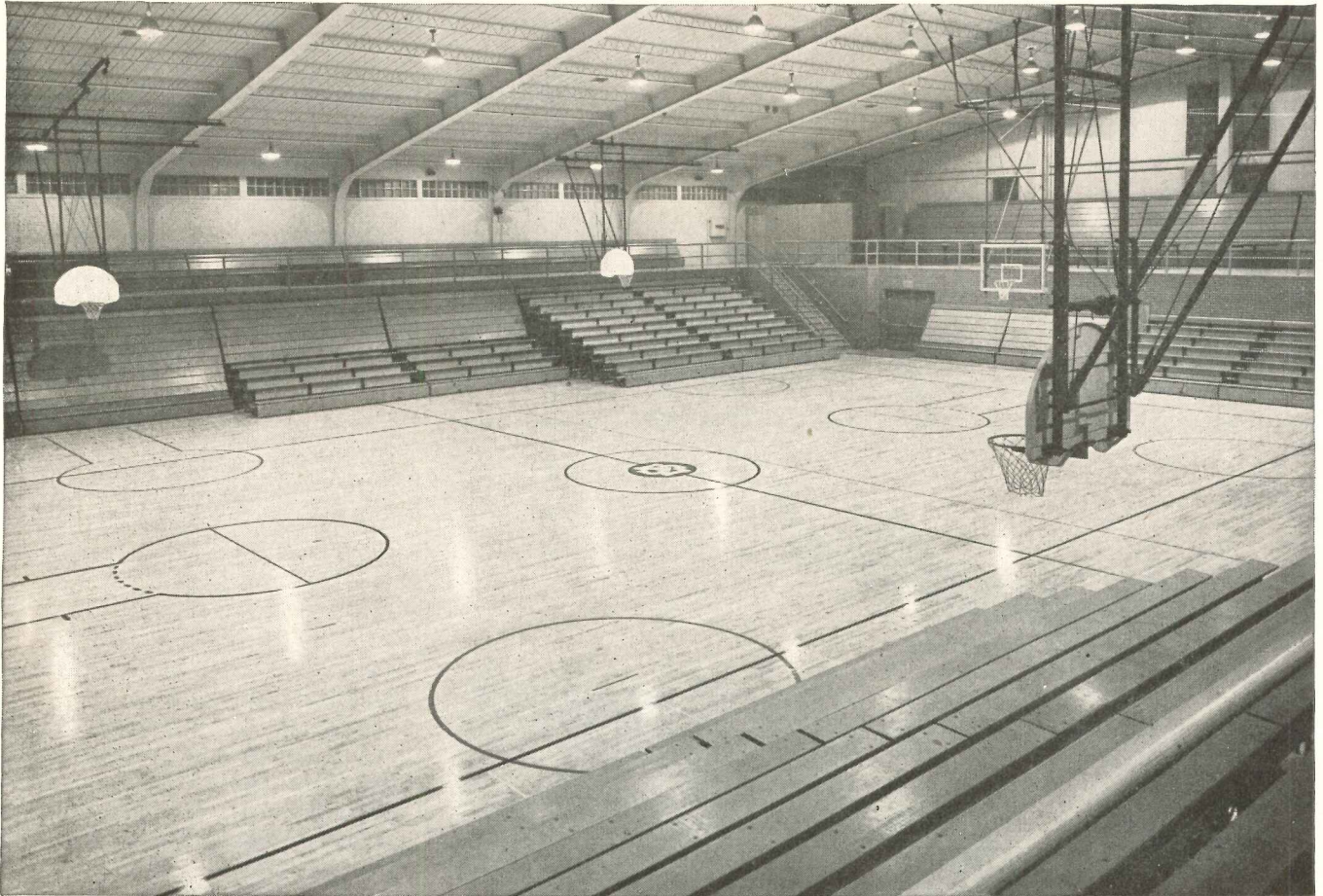
AEC also announced late in January selection of a Fulton County, Illinois, site for a new explosives processing and assembly plant. The new plant will not manufacture radioactive material.

The Fluor Corporation Ltd. of Los Angeles is architect-engineer for the project.

VANCE REPORT URGES STANDBY ARMS PLANTS

Standby plants and assembly line equipment for vital military production rather than further extensive stockpiling of military items was the recommendation to the office of Defense Mobilization of the Special Advisory Committee on Production Equipment headed by Harold S. Vance, chairman of the Board

(Continued on page 292)



St. Mary's High School, Phoenix, Ariz.—Lescher & Mahoney, architects

On Main Floor, Balcony... All Around the Gym

Universal Roll-A-Way Stands Assure Safe and Comfortable Seating Plus Valuable Extra Floor Space Whenever Needed

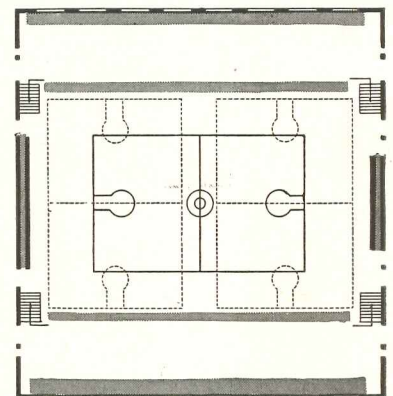
With today's building costs at such high levels, the plans for any gymnasium should provide maximum seating facilities and maximum useable floor space in minimum area. Such requirements often seem "impossible" to meet, yet they are actually easy... the *Universal* way!

The modern gymnasium illustrated above is a good example. With *Universal* Roll-A-Way Stands on both main floor and balconies, ample seating facilities are provided for basketball games and other school events. But, when not in use, these stands may be rolled back to the walls on both levels... providing approximately 5,000 feet more floor space for practice courts and other

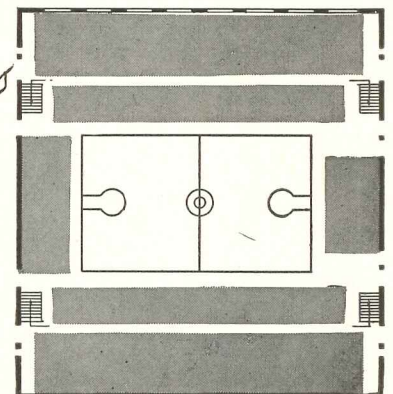
gymnasium activities. Carefully engineered and custom built to meet individual specifications, Roll-A-Way Stands are ideal for large capacity or small. They are compact, yet roomy and comfortable... neat and attractive... exceptionally strong and safe.

Improved vertical filler boards enclose Roll-A-Way's entire understructure from front view, add more rigidity to seat boards, make the complete stands even stronger and more substantial. Because of their centered positions, these filler boards do not interfere with spectators' leg room... permitting feet to be drawn back under seats in normal positions. Comfort is assured!

Investigate Roll-A-Way Stands today. Write for latest catalog, list of *Universal* installations, and working scale blueprints of two-level seating.



Typical plans showing (above) large floor space with stands closed; (below) stands open.



UNIVERSAL BLEACHER COMPANY
606 SOUTH NEIL STREET • CHAMPAIGN, ILLINOIS

THE RECORD REPORTS

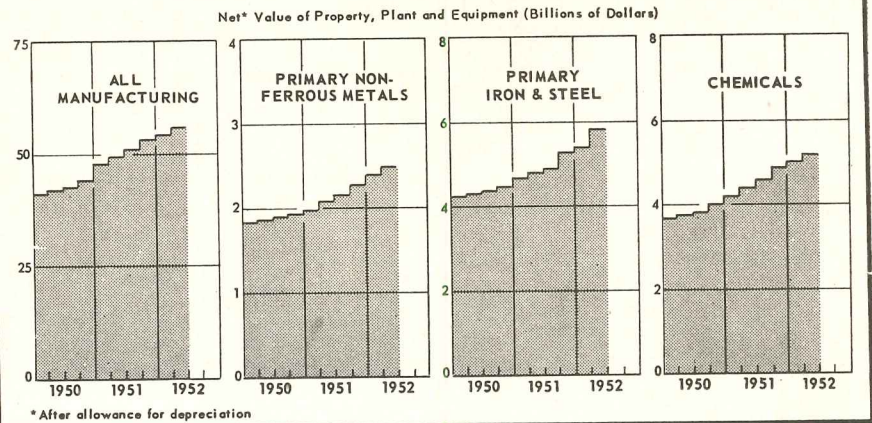
WASHINGTON

(Continued from page 288)

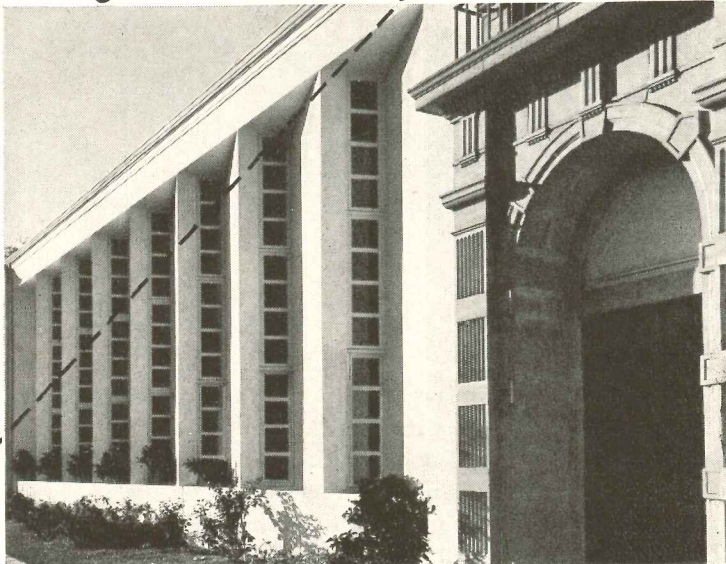
and president of the Studebaker Corporation.

The committee advocated spending at least \$500 million a year for the next 10 years on such standby facilities. The Department of Defense had a \$500 million item in its 1954 budget — now

Record growth of industrial strength has taken place since Korea



Unequaled



FOR DEPENDABLE PERFORMANCE

In every climate...in every weather condition...in every type of structure from single family residences to luxury hotels, schools, churches and hospitals, Gate City Wood Awning Window dependable performance has been proven over the years.

"You can Specify Gate City with Confidence"

Gate City Perma-Treated
WOOD AWNING WINDOWS

Pioneered by GATE CITY SASH & DOOR CO.

"Wood Window Craftsmen Since 1910"

Refer to
SWEET'S FILE
17c-Ga

Member of the
Producers'
Council, Inc.

Write Dept. AR-3, P. O. Box 901, Fort Lauderdale, Florida

How industry has expanded to meet the challenge of the cold war: chart from the Eighth Quarterly Report to the President by the Director of Defense Mobilization

under revision — to take care of the beginning of such a program.

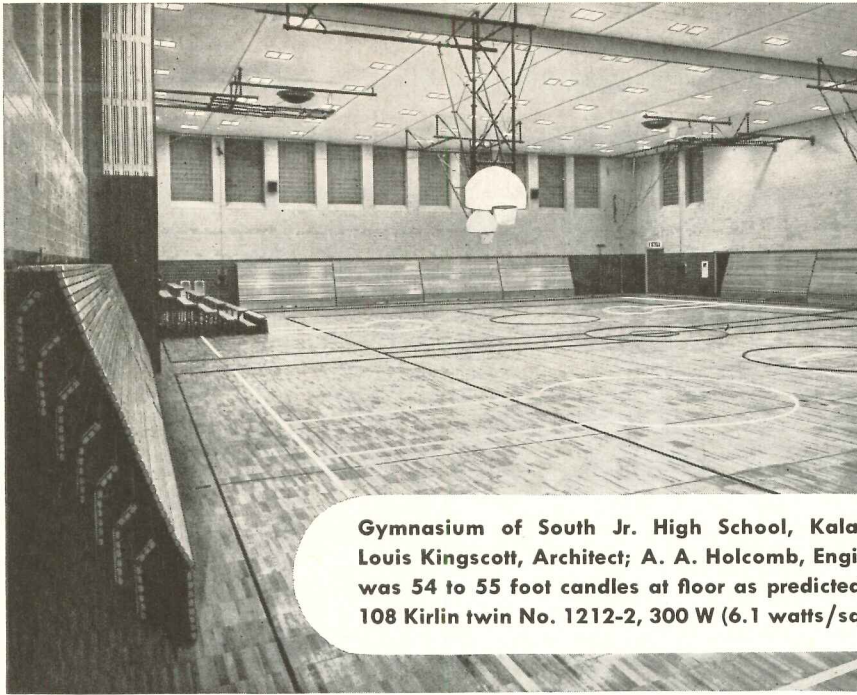
While the committee concentrated first on machine tools and similar long-lead-time items, its report stressed that the recommendations should be applied to the production equipment industries as a whole. It advocated as a first step the determination of amount and character of additional capacity required.

ROUNDUP

- Reorganization, like budget-cutting, is in the air. A bill introduced in the House by Rep. Hoffman (R-Mich.) would transfer to a Building Construction Service to be created in the Department of the Interior (1) all the civil works functions of the Army Corps of Engineers; (2) the Public Buildings Service of the General Services Administration; (3) the hospital construction program of the Veterans Administration; (4) community services (now in the Housing and Home Finance Agency); and (5) civilian airport construction (now in the Civil Aeronautics Administration).

- New planning standards for three-story barracks for enlisted men, prepared as part of the first phase of the program to develop joint planning standards for all the armed forces, were ready last month for approval of the Defense Department's Construction of Coordinator, Frank Creedon, who is directing the ambitious effort to standardize the construction practices of the three services. Standards are expected to be issued

(Continued on page 296)



Kirlin

... built-in

METHOD of LIGHTING

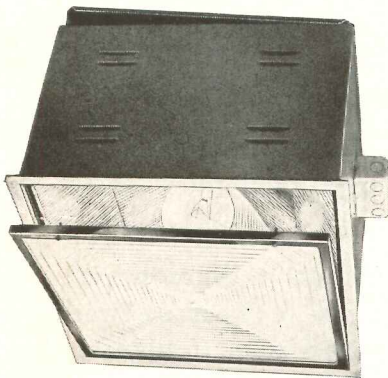
WITH WIDE ANGLE LENS FOR WIDE DISTRIBUTION OF LIGHT RAYS

Gymnasium of South Jr. High School, Kalamazoo, Mich. (North Jr. is duplicate). Louis Kingscott, Architect; A. A. Holcomb, Engineer. After one year, measured intensity was 54 to 55 foot candles at floor as predicted by Kirlin Catalog 55, pp 16. Used were 108 Kirlin twin No. 1212-2, 300 W (6.1 watts/sq. ft.) at approx. 10' centers on 25' ceiling.

Delivers Greater Lighting Efficiency

due to Alzak glass-surfaced aluminum reflectors and KIRLIN prism lens.

It was proven on this job, and on many others, that the efficiency tables in the KIRLIN Catalog are correct—although higher than the IES Handbook tables for conventional recessed lighting.



Installation costs are less with Kirlin fixtures. Regular building wire, such as rubber covered, is run direct to exclusive heat-insulated junction box. No asbestos wire is needed.

- Made in all sizes—square or rectangular—and in Fluorescent.
- Hinged rust-resisting doors in die cast frames suitable for outdoor locations.
- Wide-angle or concentrating lens.
- UL and IBEW Labels.
- In stock at leading wholesalers.

Your client secures many advantages when you specify the KIRLIN Method. The wide distribution of light rays illuminates vertical surfaces, as for example in this gym it lights the sides of the basket balls and soft balls. There is more useful light from the lamps. (Light concentrated downward like rain lights only the TOP of a ball—in an auditorium or theater it emphasizes the bald heads.)

With the KIRLIN Method, nothing dangles from the ceiling to collect dust, an important factor in the home or office as well as in a gym. When equipped with shock-resisting lens nothing breaks when the ball hits the ceiling. Fixtures can be re-lamped from above the ceiling. Lighting maintenance costs are much less.



KIRLIN "No-guard" EXITS use shock-resisting glass. Hinged, flush with wall.

For home use too—the Kirlin Lighting Method beautifies all rooms in the house.

Specify the KIRLIN Method of Lighting and earn the gratitude of your clients. Catalogs and AIA data file on request.



The KIRLIN Co. 3435 E. JEFFERSON AVE.
DETROIT 7, MICHIGAN

NOW . . . a new, more beautiful, more durable, more sanitary treatment for walls and ceilings

Bickford's, Inc. Meat Cutting Room, Long Island City, New York. Architects: Brown & Gunther, Con. Engineer: Douglas L. McIntyre



ALUMISEAL WITH ALUMISATIN FINISH

U.S. Pat. App. For Reg. U.S. Trade Mark

To the unsurpassed insulating features of heavy gauge ALUMISEAL may now be added the satin-like quality of ALUMISATIN finish, providing an unequalled treatment for walls and ceilings where the highest degree of beauty, cleanliness and durability are desired with positive control of humidity, moisture-vapor and temperature.

ALUMISATIN finish is achieved by applying to heavy gauge Alumiseal sheets a heavy adherent coating of aluminum oxide integral with the surface of the metal.

ALUMISATIN finish is intrinsically hard, and its smooth, impervious surface offers substantial resistance to wear and the collecting of dirt. It can be readily cleaned with mild soap and water.

ALUMISATIN finish offers the added advantage of economy in maintenance, for the permanence of its beauty eliminates the need of periodic painting or refinishing. For further information, write:

We recommend applications in rooms, corridors, etc., in such projects as:

Hospitals	Restaurants
Schools	Dairies
Research & Experimental Laboratories	Meat Storages
Bakeries	Super Markets
Commissaries	Grocery Warehouses

Alumiseal Corporation
383 Madison Avenue, New York 17, N. Y.

Please send me your Technical Bulletins and report on heat meter tests:

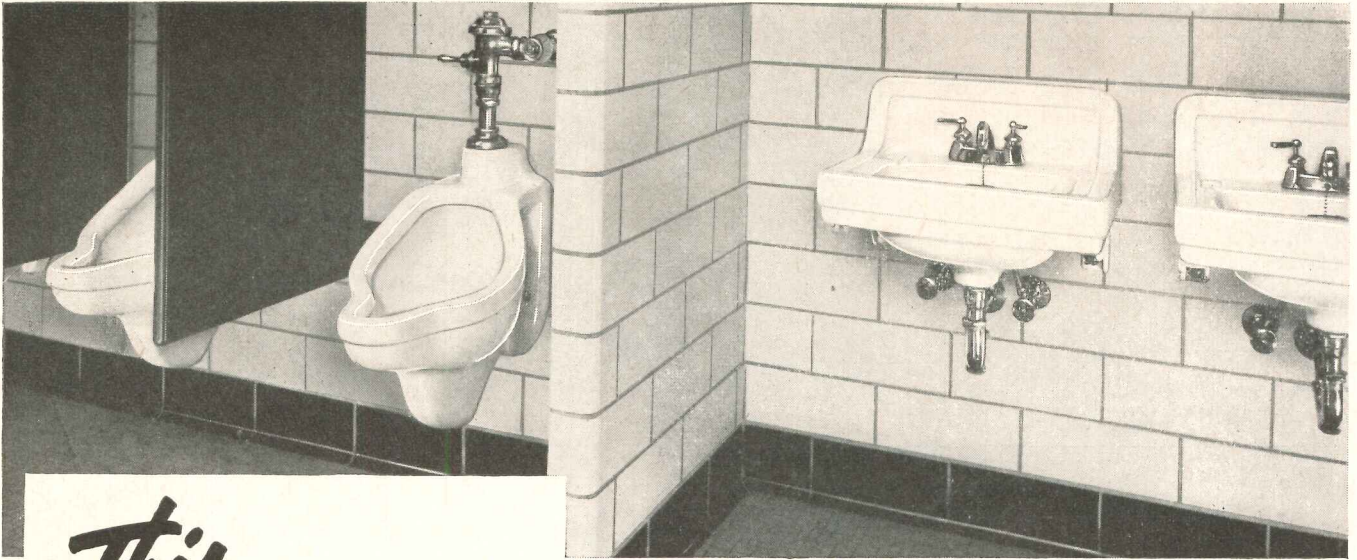
Name.....
City.....
State.....

AR

ALUMISEAL CORPORATION

383 MADISON AVENUE
NEW YORK 17, NEW YORK

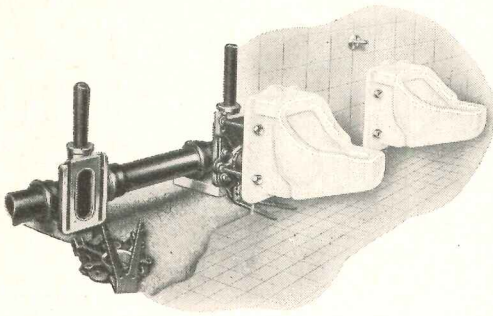




This Combination

gives you wider latitude in planning rest rooms

ZURN ENGINEERED carrier systems relieve the wall of all the load! There is a Zurn adjustable wall closet fitting or carrier for every wall-type plumbing fixture—lavatory, toilet, urinal, sink, and fountain.



SHOWN ABOVE is the new wall-type model of the famous Sanistand fixture—a urinal especially designed for women by American-Standard. Made of genuine vitreous china and available in gleaming white and a variety of colors. Fits standard toilet compartments.

AMERICAN-Standard off-the-floor plumbing fixtures

INSTALLED WITH AND SUPPORTED BY

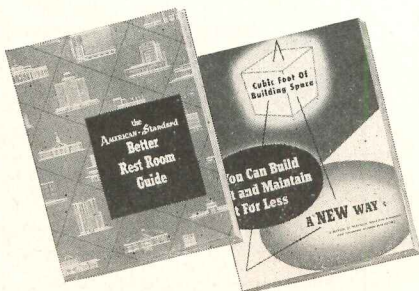


Engineered Carrier Systems

THE architectural and structural advantages of wall-type plumbing fixtures for rest rooms are sound . . . and many. Planning such rooms around completely bare floors gives you greater freedom of design. Furthermore, rest room floors that are intact and free of obstructions create a pleasing effect of spaciousness. They look more modern . . . and, because they are easier to keep clean and maintain, they stay modern through the years!

Yes, American-Standard wall-type plumbing fixtures installed with and supported by Zurn engineered carrier systems insure against the untimely obsolescence of the rest rooms you plan. In addition, this time-tested combination permits you to lower ceilings, use less space for walls, and use practically any type of floor construction. Your foresight also saves your client money on construction material, time and labor! For a comprehensive discussion of modern rest room ideas, write for the helpful booklets shown below.

Send for these FREE BOOKLETS



American Radiator & Standard Sanitary Corp.
Pittsburgh, Pa.
J. A. Zurn Mfg. Company,
(Plumbing Division) Erie, Pa.

American-Standard, Dept. AR-33, Pittsburgh 30, Pa.

Please send me the 2 booklets: "BETTER REST ROOM GUIDE" and "YOU CAN BUILD IT FOR LESS A NEW WAY."

Name Title

Company

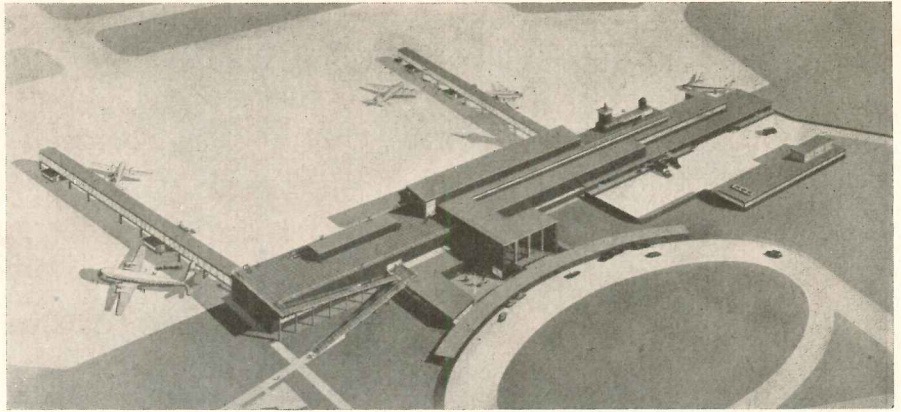
Street City State

THE RECORD REPORTS

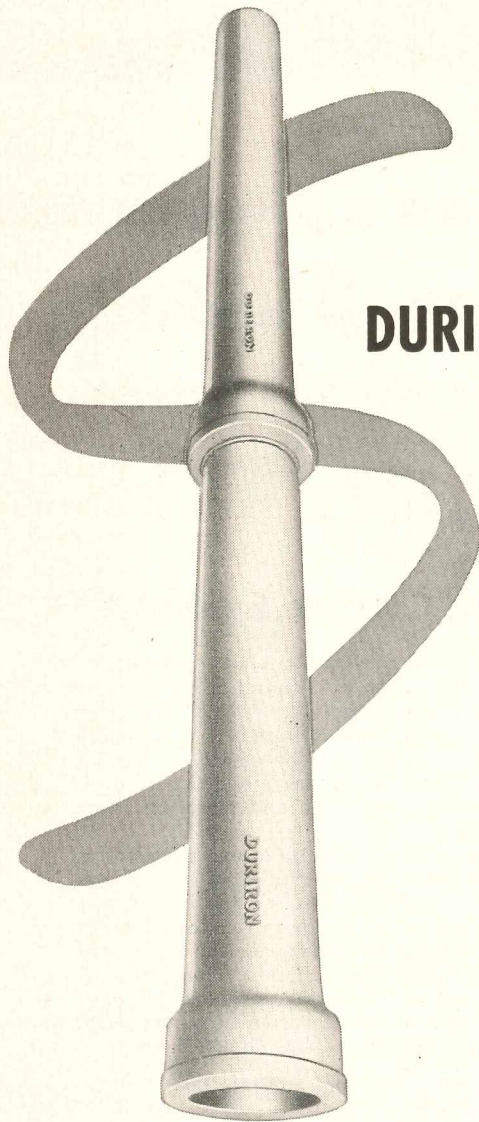
(Continued from page 330)

BUILD NEW TERMINAL AT PHILADELPHIA AIRPORT

Philadelphia is building an \$8 million new Terminal Building for its International Airport. Carroll, Grisdale and Van Alen are the architects; A. Ernest D'Amby, mechanical engineer. Construction is under the general supervision of the



New terminal building at Philadelphia's International Airport is nearing completion at a cost of \$8 million



**Dollars for labor?
Same as with
cast iron soil pipe**

DURIRON ACIDPROOF DRAIN PIPE

The fact that Duriron is installed by ordinary plumbing methods at no added cost is important, of course. But that's only half the story. In most installations where corrosive wastes are to be handled, the first cost of installing Duriron Drain Pipe is the last cost. Duriron, a high silicon iron alloy, provides resistance to corrosion, erosion and abrasion throughout the entire thickness of the pipe wall. It will generally outlast the building in which it is installed. Available also in standard fittings. Write for Bulletin PF/1.

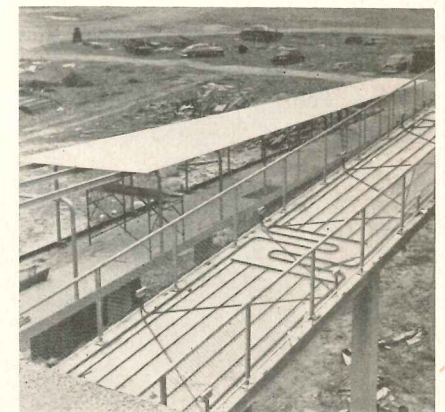
THE DURIRON COMPANY, Inc., 405 North Findlay St., Dayton, Ohio
Available from stock in principal cities

city's Bureau of Engineering, Surveys and Zoning.

An important feature of the building plan is the use of "fingers" similar in appearance and in function to marine piers. In addition to providing a partly sheltered area for craft loading and discharging, they are designed to make it possible for the passenger to board or leave his plane without once stepping out into the elements. Future plans call for the space between the terminal and the plane to be bridged by means of electrically-operated telescoping gang-planks, completely enclosed, with a maximum extension of 40 ft.

An outdoor ramp (see photo below) leading to the observation deck is expected to relieve much of the congestion that results from having to funnel passengers and visitors through the same area, since it completely bypasses the interior of the building.

Pedestrian ramp being built for terminal has snow-melting system of wrought iron pipes to keep 10 per cent slope hazard-free for visitors the year around



(More news on page 334)



WHETHER YOU ARE REMODELING OR BUILDING...

be sure and take advantage of both quality and economy found only in...

Plantation Shutters

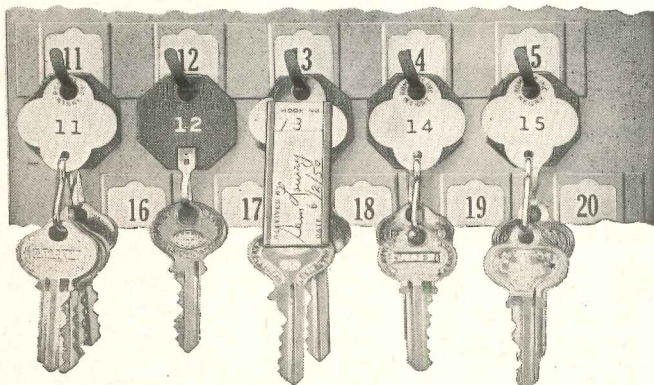


Photograph illustrated features shutters hung on a steel casement window. When installing shutters on a window of this type hanging stiles are furnished.

Shutters available in any size, shape or style. Large variety of colors or wood finishes... also unfinished.

Write for complete information

DEVEREUX
PRODUCTS CO.
1725-M BERKELEY ST.
SANTA MONICA, CALIF.



Cure Key Troubles with

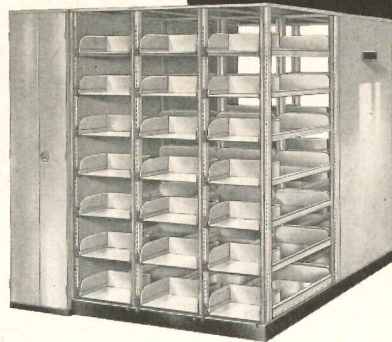
TELKEE
Moore Key Control
A METHOD FOR FILING AND CONTROLLING KEYS

- Any key instantly available — lost keys never a problem
- Neat, compact metal cabinet — easy to set up and operate
- Expansion unlimited
- Control by secret code

Attach to your letter-head and mail today

P. O. MOORE, INC., Dept. A-10
300 Fourth Ave., New York 10, N. Y.
I would like to have, without obligation, literature describing your product.
Name.....
Address.....
City, State.....

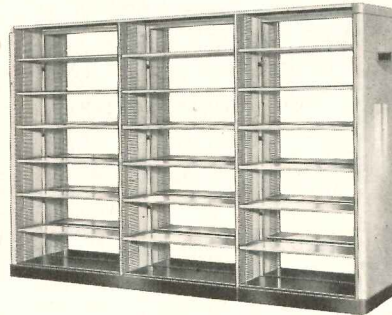
for steel
library stacks
it's *Hamilton*



Absolutely new—

Hamilton Compo Stacks

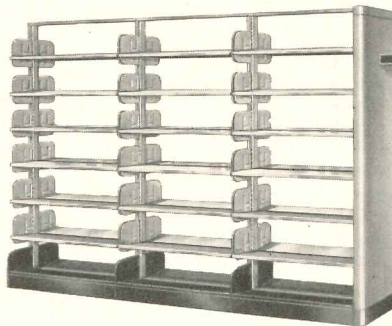
Only Hamilton offers the Compo Stack, an entirely new type of book housing which utilizes a smooth operating drawer type shelf in place of stationary shelves. This ingenious equipment greatly increases stack capacity and utility, makes possible entirely new efficiencies in library operation. Be sure to get further information on Hamilton Compo Stacks.



Functional smartness—

Hamilton Continuous Upright Stacks

Hamilton Continuous Upright Stacks are used in many of the country's finest libraries. All stack compartments accommodate shelves of various depths for greater flexibility. Simple, speedy vertical adjustment of shelves in 1/2" increments insures minimum space waste between shelves, maximum book storage. Closed ends enhance smart, modern appearance.



High on utility—

Hamilton-Standard Stacks

Hamilton-Standard Stacks owe their popularity to a number of unique, patented efficiency features. Shelf depth adjustments, and shelf height adjustments in 1/2" increments can be quickly and easily made. Shelves can be sloped, upward in lower rows, downward in upper rows, to facilitate title scanning. Rounded edges and closed ends eliminate abrasion hazards, create a smart, modern impression.

Whenever your plans involve library facilities you're apt to find a wealth of worthwhile assistance in Hamilton's free Library Planning Service. For further information, write to—

Hamilton Manufacturing Company

Two Rivers, Wisconsin

32 WIN AWARDS IN \$22,900 CRANE IDEAS COMPETITION

Crane Company's national architectural competition for new ideas in bathroom, kitchen and utility room design has produced 32 prizewinners whose total take in awards amounted to \$22,900. The winners, representing 18 American cities, included 14 architects, 12 architectural students and one professor, three draftsmen and two designers.

Award-winning designs were chosen

in four categories, with bathrooms in two sections — one for houses costing under \$25,000 and one for houses over \$25,000. Awards included four first prizes of \$3000 each, four second prizes of \$1500 each, four third prizes of \$750 each, and 19 honorable mentions of \$100 each.

There were not many design surprises among the entries, although the jury did report it detected "a definite trend par-

More Than A Trend . . . Seaporcel Is Permanent



Any Old Building Can Look as Smart and Modern as This!

TO TRANSFORM an old building into a strikingly modern structure follow the nation's leading architects in the swing to SEAPORCEL porcelain enamel.

LOOK AT this building (above), though no mere black and white picture can do it justice! Yet BEFORE Clifford A. Lake, Pittsburgh architect had it rebuilt with a SEAPORCEL exterior, it looked "sick" and "weather-beaten" . . . badly in need of an overall face-lifting.

The bulkheads, coping and window trim, as well as the upright letters now appear in a soft red terra cotta finish . . . with piers, fascia and sign in unobtrusive buff terra cotta.

WHILE LENDING STYLE and dignity to the structure, there is no question of the recaptured realty value of this restored property.

Write today for copy of the Seaporcel idea brochure showing numerous sample installations.

SEAPORCEL METALS, Inc.
28-02 Borden Ave., Long Island City 1, N. Y.
complete A. F. of L. Metal
Fabricating & Enameling Shops

For interiors as well
as exteriors
SEAPORCEL Porcelain Enamel
is the most notable advance
in Architectural design

Fabricated in any shape,
form or section; rounds, com-
pound curves, flutings, reed-
ings, etc. Obtainable in such
versatile textures as "Terra
Cotta," in Semi-Matte or
Glass finishes; also our new
"LEATHORCEL" (simulated
leather) finish.

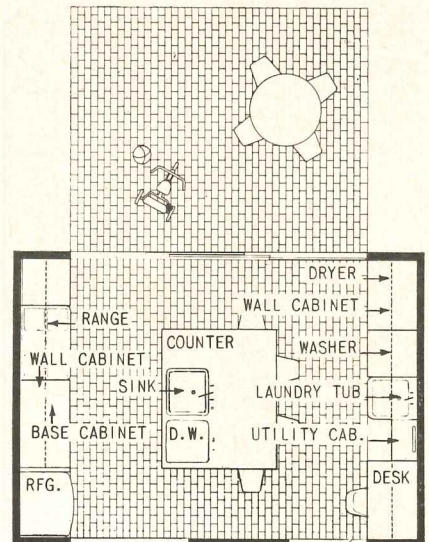
Also manufactured on the
West Coast by
SEAPORCEL PACIFIC, Inc.
1461 Canal Ave.
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SEE OUR
CATALOG IN
SWEETS

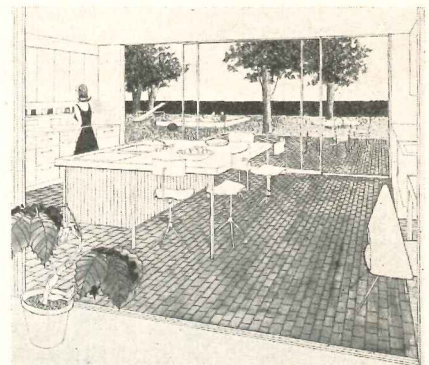
Seaporcel

ARCHITECTURAL
PORCELAIN ENAMEL

Complete Engineering and Erection Departments • Member: Porcelain Enamel Institute



First-prize kitchen design by Richard C. Brigham, Boston architect, was lauded by jury as "simple, direct, compact and practical." Aid to child-play supervision was also noted



ticularly among the baths for homes costing over \$25,000 toward a health use such as sun lamps and exercise areas, in many cases with an adjacent garden."

Portions of all first-prize-winning boards are shown here.

Second- and third-place winners by divisions were:

Bathrooms for low-cost houses up to \$25,000 — second prize, A. M. Richardson, 36, a professor of architecture at the University of Illinois, Champaign, and former chief of design for Skidmore, Owings & Merrill, Chicago; third prize, John J. Kewell, 38, Eugene Kinn Choy, architects, both of Los Angeles.

Bathrooms for houses costing more than \$25,000 — second prize, Joseph R. Fogliani, 27, architectural student at the University of Washington, Seattle; third prize, James Henneberg, 23, architectural student at the University of Illinois, Navy Pier, Chicago.

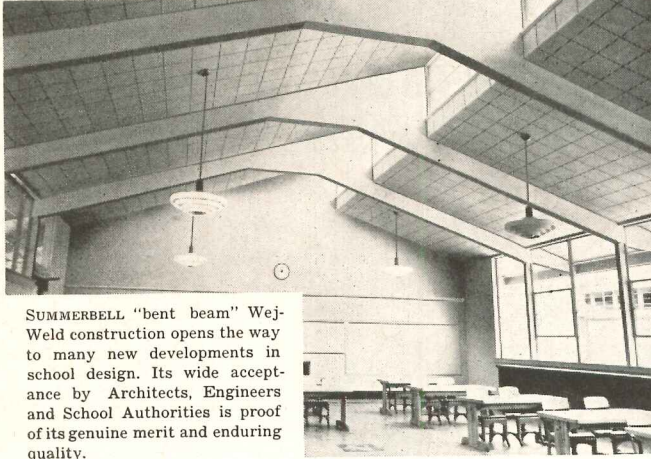
Kitchens for houses in any price range

(Continued on page 336)



Summerbell for SCHOOLS

Elementary School, Santa Paula, California.
Architect, R. S. Raymond.
Structural Engineer, R. J. Valentine.
General Contractors, Barringer & Bolke.
Note clerestory windows made possible
by "sawtooth" design.



SUMMERBELL "bent beam" Wej-Weld construction opens the way to many new developments in school design. Its wide acceptance by Architects, Engineers and School Authorities is proof of its genuine merit and enduring quality.

Glued Laminated Construction • Summerbell Bowstring Trusses
Lamella Roofs & All Types of Timber Structures

For quality, economy and satisfaction, specify SUMMERBELL

Summerbell ROOF STRUCTURES

825 EAST 29TH STREET • BOX 218, STATION "K" • LOS ANGELES 11

DUNHAM FIN-VECTOR RADIATION

Heats "just right" at any height

Any height above four inches from the floor is "just right" with Dunham Fin-Vector along outside walls.

Materials used provide rapid heat transfer. Choices of pipe and fin sizes and fin spacing assure adequate heat.

Easy to Install

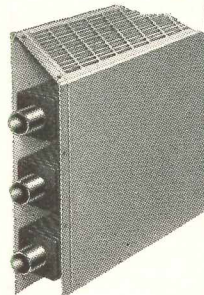
Fin-Vector is light in weight, needs few supports, requires little on-the-job cutting, speeds assembly.

Three cover designs available with complete line of accessories to form tight, sturdy, "finished" looking installation.

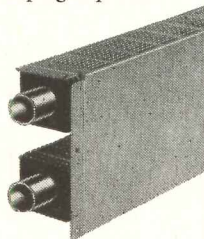
For further information write to Dept. 26 for File 1256-61.

C. A. DUNHAM CO.
400 W. Madison St. • Chicago 6, Illinois

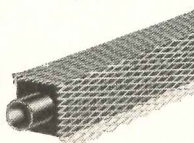
DUNHAM



Sloping Top Cover



Flat Top Cover



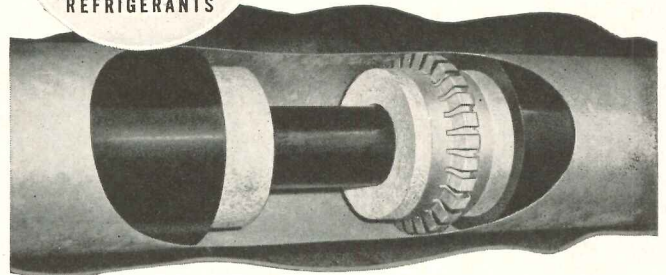
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● D. I. P. is the *only* pre-sealed insulated conduit that does not depend on a metal jacket for protection from moisture, leakage and corrosion. A 1" layer of asphalt is the waterproofing protection. Deterioration of the metal casing underground is of no concern. Years of service and even complete submersion do not harm D. I. P.

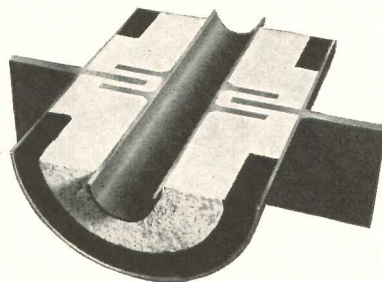
● By design, Durant's Patented Supporting Ring allows asphalt to flow through openings during fabrication to encase the ring. Water or moisture cannot possibly pass through support points to the insulation or pipe.

● Durant's Patented Insulated Anchor eliminates contact between anchor plate and pipe; reduces heat loss; provides insulation which eliminates corrosive electrolytic action.

Many other advantages come with D. I. P.—such as low cost installation, for D. I. P. does not require concrete tunnels, slabs, rollers, drains or supports underground. D. I. P. does not require external casing-welding, nor does it need additional protection for

superimposed loads—such as under roadways or railroad tracks. Steam pressure to 1000 psi.

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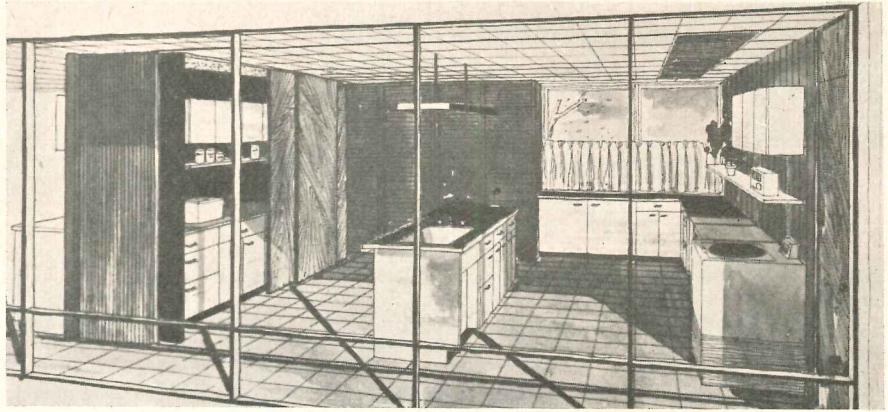
Representatives In Principal Cities

THE RECORD REPORTS

(Continued from page 334)

— second prize, Bernard H. Bradley, 37, architect, of Holabird and Root and Burgee, Chicago; third prize, John Ridley, 40, architect, of Chapin, Johnson and Ridley, engineers and architects.

Utility rooms for houses in any price range — second prize, Dick Raggi, 28, a draftsman for the firm of Shaw, Metz and Dolio and an architectural engineering graduate of the University of Illinois,

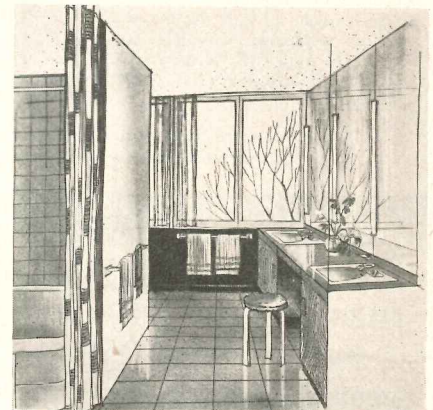


First-prize utility room design by Donald Panushka, architect, a draftsman with Eero Saarinen and Associates, Bloomfield Hills, Mich.: "comprehensively designed"

Imagine

ROLLER SKATING
ON YOUR GYM
FLOOR!

THEY DO ON THIS
SEAL-O-SAN FLOOR
AT EARLHAM COLLEGE



First-prize bathroom design for under \$25,000 house by J. A. Curtis, M.I.T. architectural student: "best and most practical solution for a home with one bath"

"this floor has received almost brutal treatment . . .

. . . between the time it was finished with Seal-O-San last fall and the time the photograph, below, was taken, it has been used for roller skating, dancing and dinners in addition to the usual routine of games on the floor. A week before the picture was taken 900 persons were served dinner in the Field House. Afterwards the chairs and tables were removed from the floor so everyone could dance. The fact that our Field House

is surrounded by a gravel parking lot and people track gravel and grit on to the floor adds to the maintenance problem. However, the Seal-O-San floor stood up under this treatment and, as the photograph indicates, is still in top notch condition."

John H. Sweitzer

John H. Sweitzer, Manager
Physical Plant and Purchases
Earlham College, Richmond, Ind.

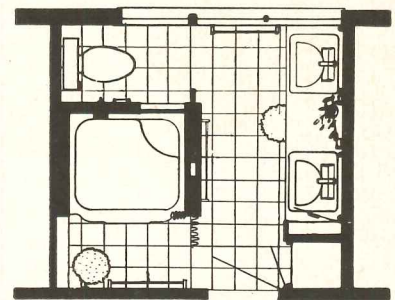
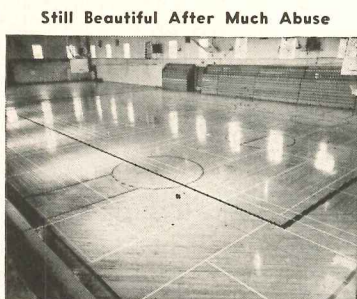
Ask for Folder on Gym Floor Finishing

Seal-O-San®

GYM FLOOR FINISH

HUNTINGTON LABORATORIES, INC.

Huntington, Indiana Toronto, Canada



Champaign; third prize, Arthur A. Gorrell Jr., draftsman-designer for Kern Smith, Carlsbad, N. M., and architecture graduate of U. of N. M.

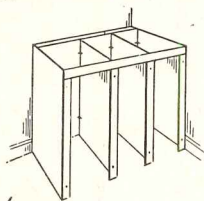
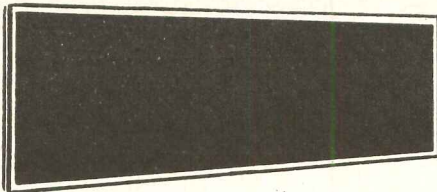
Honorable mentions were awarded as follows:

Bathrooms for houses costing up to \$25,000 — Terry Tong, 31, designer, San Francisco; Cesar A. Pelli, 26, graduate student, University of Illinois, Cham-

(Continued on page 338)

Check the Advantages of Natural Slate

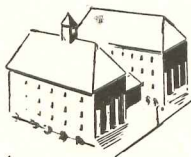
FOR BLACKBOARDS



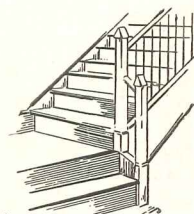
✓ Toilet partitions



✓ Laboratory tables



✓ School roofs



✓ Stair treads

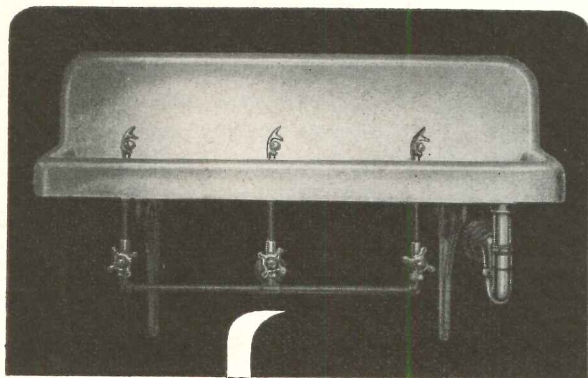
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ADDRESS _____

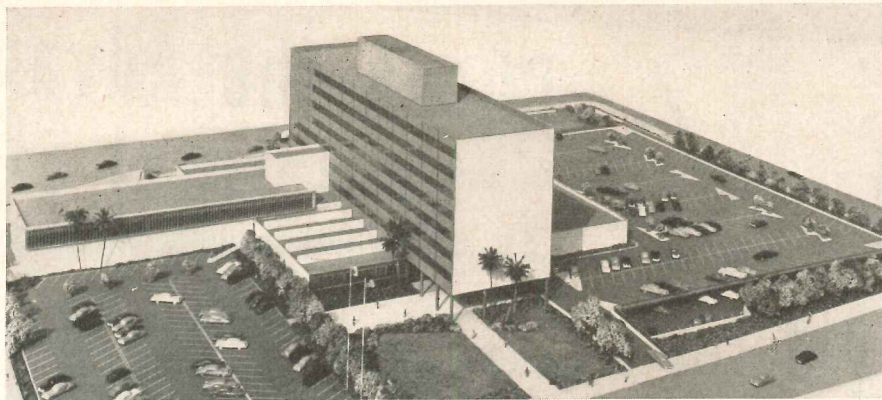
CITY _____ STATE _____

THE RECORD REPORTS

(Continued from page 338)

CENTRAL POLICE BUILDING PLANNED FOR LOS ANGELES

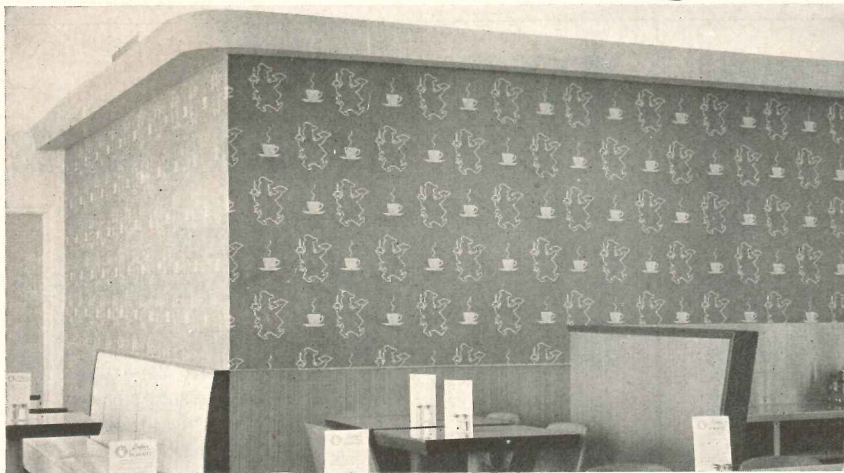
The Los Angeles Police Facilities Building, planned to bring all the various divisions of the municipal police department under one roof, has achieved distinction in civic annals before construction is even begun — the low bid



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The new police building, with total floor space of 398,000 sq ft, will be on a Civic Center site already owned by the city. It will cover a full city block

tendered, \$6,142,548, was more than \$2 million under the proposed city budget for the structure. Welton Becket and J. E. Stanton are associated architects.

The building, to have a total floor space of 398,000 sq ft, covering a full city block, will be located on a Civic Center site already owned by the city, lying north of First Street between Los Angeles and San Pedro Streets and running through to Market Street.

Police Aim: Integration

All the various departments of the municipal Police Department — now scattered among half a dozen different buildings, often miles apart — will be brought together in the new building; exceptions are a few geographical patrol divisions. The hope is for a closer integration between departments than ever was possible before.

On the first floor of the eight-story structure will be business offices, the information center, communications, traffic division, offices of the Police Commission, a completely-equipped auditorium and stage for "show-ups" and a jail for initial booking procedures.

The felon prison and the Record and Identification Bureaus are on the second floor. The third floor will be occupied by the Detective Bureau. The remainder of the building houses various police bureaus and business offices. The eighth floor will have an employe cafeteria and lounge.

Garage service and parking facilities for more than 850 police cars will be provided by a combination ground and deck area.

Construction will be steel and light-weight concrete.

(More news on page 342)

Stylon
handprints on wall canvas

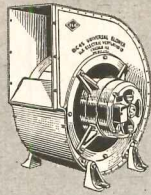


school ventilation

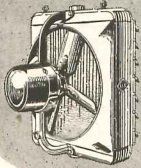
powerful, quiet,
trouble-free



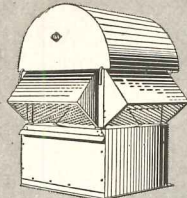
Self-Cooled Motor
Propeller Fans



Direct-Drive or Belted
Centrifugal Fans



Steam, Hot Water,
Gas, Electric
Unit Heaters

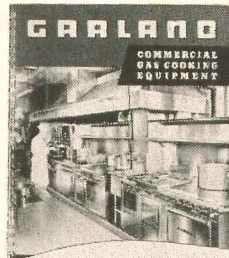


PRV Power Roof
Ventilators

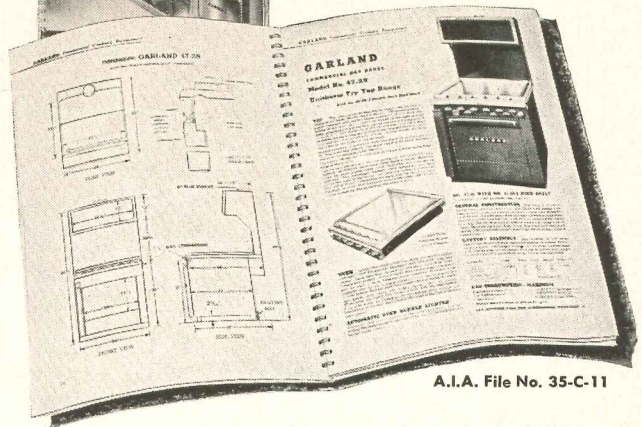


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STRENGTH
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LOWER MAINTENANCE

WITH

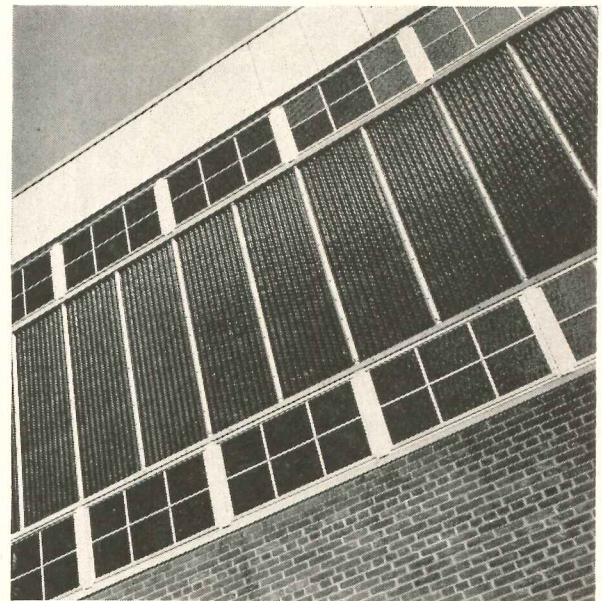
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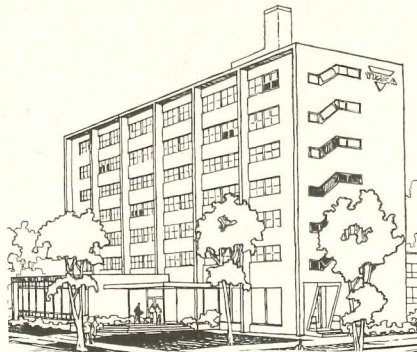
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THE RECORD REPORTS

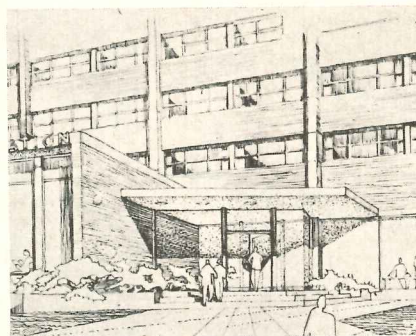
(Continued from page 356)

UNIVERSITY "Y" BUILDING UNDER WAY AT WISCONSIN

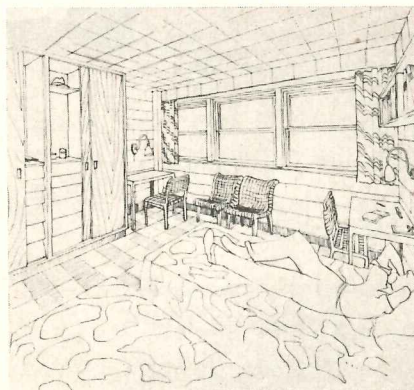
The Young Men's Christian Association of the University of Wisconsin has started the building shown here: four floors are being built in the first phase; it is hoped the other three can be added soon. Exteriors are concrete, white and red brick; interior finishes include exposed red brick, painted concrete block, natural wood and plaster.



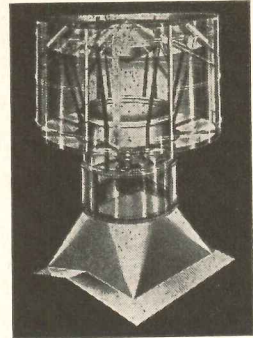
Proposed university Y.M.C.A. building



Above: sketch of the main entrance;
below: typical dormitory room



It Ventilates by **GRAVITY**



and Ventilates by **POWER**



PROVIDE ECONOMICAL TWO-WAY VENTILATION WITH BURT FREE-FLOW FAN VENTILATORS

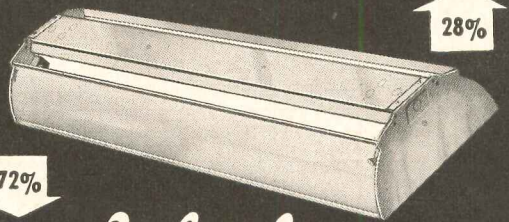
Many structures do not require full time power ventilation. For them, Burt's Free-Flow Fan Ventilator is both economical and efficient because it supplies all normal exhaust needs by gravity. But, when greater exhaust is required, its Axial Flow Burt Airfoil Fan accelerates almost six times the removal of extra heat and impurities. It provides positive controlled ventilation. See Sweet's for further details or write for Bulletin SPV-10A.

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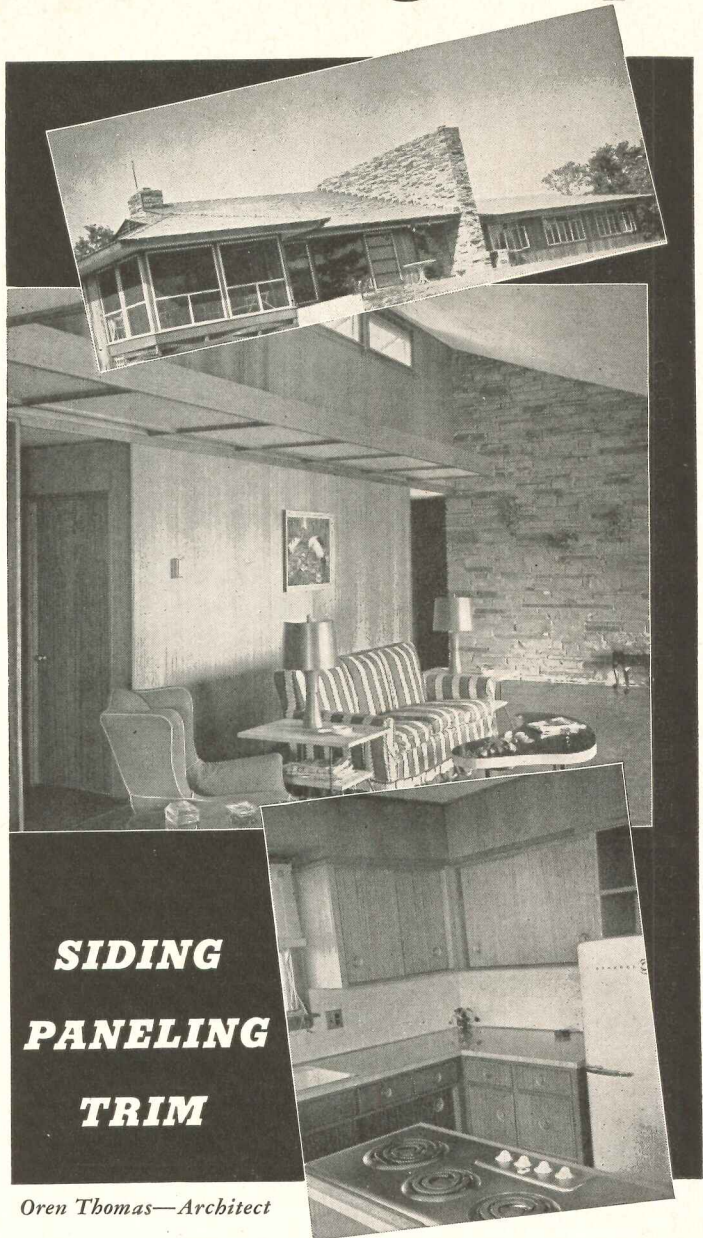
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Oren Thomas—Architect

This modern, Riverton, New Jersey home is constructed primarily of stone, glass and Philippine Mahogany. Used extensively outside and inside, this fine hardwood blends with the other building materials to create a home of outstanding beauty.



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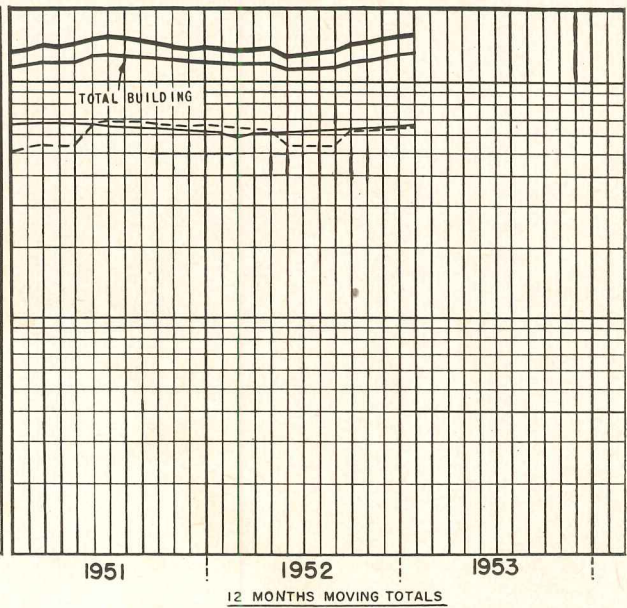
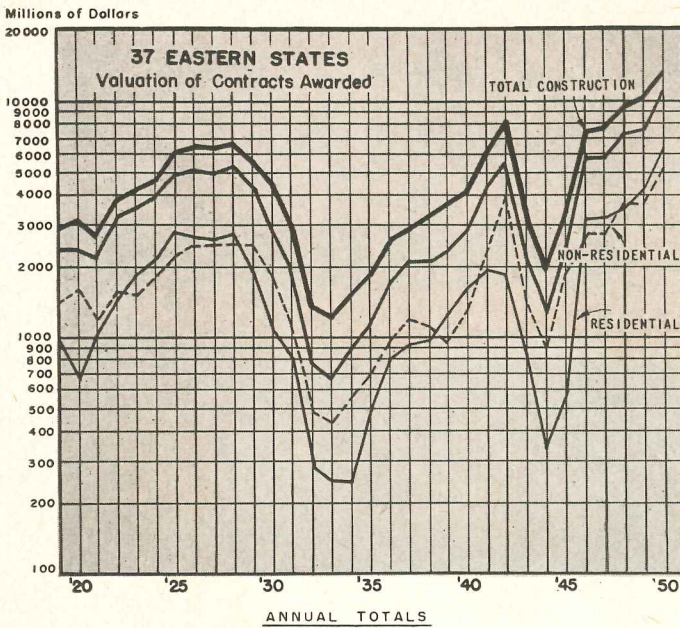
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CURRENT TRENDS IN CONSTRUCTION

Charts by Dodge Statistical Research Service

THE RECORD REPORTS

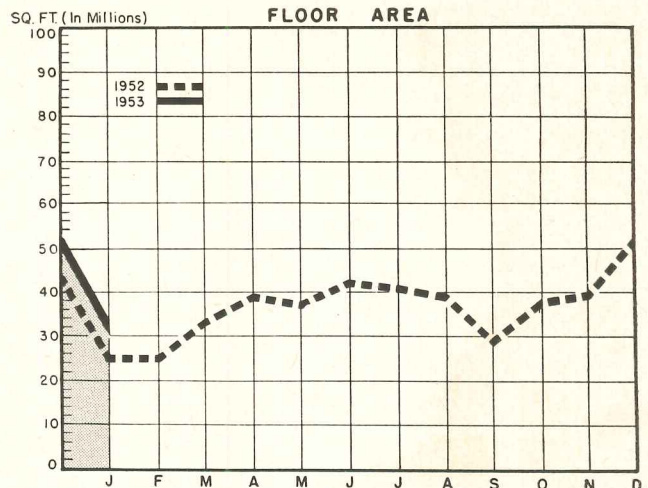


COMMERCIAL BUILDING UP SHARPLY OVER 1952

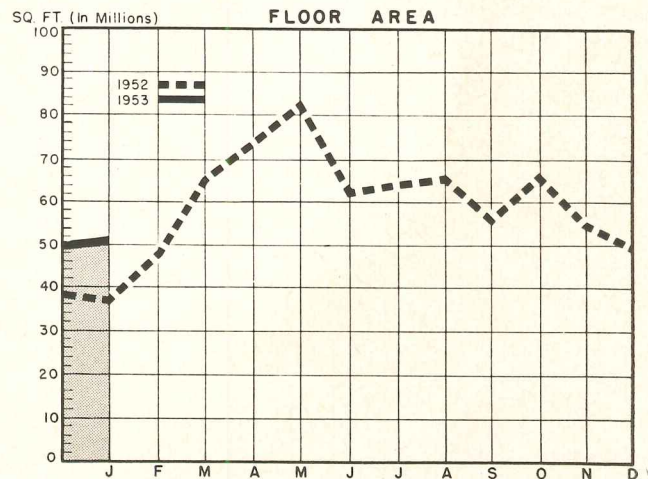
Favorable factors in U. S. construction, such as the long-awaited reductions in controls and shortages, still continued to have the upper hand in the early part of 1953. January contract awards in the 37 Eastern states for non-residential building (floor area) were up 30 per cent over 1952. Residential awards were up 36 per cent. Outstanding was the level of the commercial building category in January: here volume was 89 per cent above January 1952.

Apartment buildings, hotels, churches, and social and recreational buildings all showed increases over 1952. Educational and science building continued at a high rate. As was anticipated, there was a decline in the valuation of manufacturing building, although not enough to offset the increase in other types. Although public works construction in January continued at about the same level as last year, some question about its future was raised by the request of President Eisenhower for economy cut backs in Federal work. If Federal cut backs were to be accompanied by similar reductions by states and cities, it might have an important bearing on the future volume of the public works and utilities classifications.

NON-RESIDENTIAL BUILDING (37 EASTERN STATES)



RESIDENTIAL BUILDING (37 EASTERN STATES)



School & College Building Construction 1939-52
(37 Eastern States)
(Floor Area—Thousands of sq ft)

Year	Annual Total	Monthly Average	1952	Monthly Total
1939	31,310	2609	Jan.	7036
1940	21,915	1826	Feb.	7444
1941	20,843	1737	Mar.	7984
1942	26,319	2193	Apr.	8119
1943	9,329	777	May	9431
1944	6,608	551	June	7634
1945	7,507	626	July	7566
1946	17,161	1430	Aug.	9441
1947	34,984	2915	Sept.	5878
1948	60,846	5070	Oct.	7945
1949	72,731	6061	Nov.	7731
1950	102,734	8561	Dec.	11450
1951	99,743	8312	1953	
1952	97,659	8138	Jan.	7001