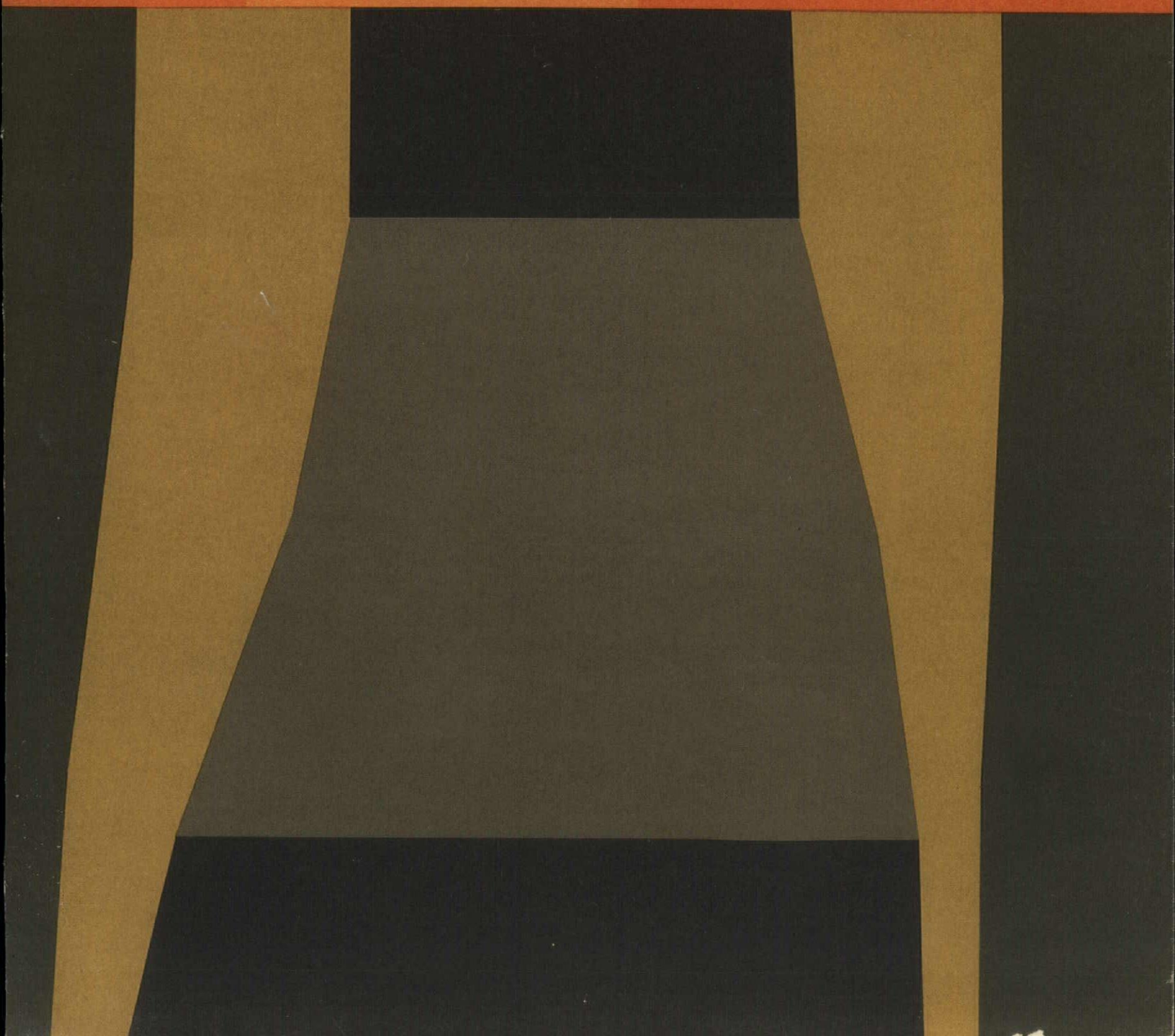
RCHITECTURAL FORUM THE MAGAZINE OF BUILDING APRIL 1964

FORUM



W. S. TYLER **elevator entrances and cars** are flanked by glass mosaic walls in the Libbey • Owens • Ford Glass Company Building in Toledo.
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PUBLISHER'S NOTE

With this issue the editors present their fifth annual survey of the "100 Largest Architectural Firms in the U.S." (see page 14). This will be followed in May by the 100 Biggest General Contractors and in July by the 100 Biggest Corporate Building Clients. Over the years these three lists have proved to be some of the most sought-after articles among FORUM's 63,000 subscribers, judging from periodic reader interest surveys and requests for reprints.

Obtaining dollar volume figures for these lists from contractors and clients is relatively easy; most of them look at building primarily as a business matter. The architects are another story; many of them feel, quite properly, that architecture is an art as well. And some decline to participate on the grounds that bigness (or "business") can easily get confused with quality (or "art").

Our survey must look at the 100 biggest architects purely from a business viewpoint; obviously, volume should not be equated with quality of work. As in other fields, quantity sometimes threatens quality:

1. As every principal of a growing architectural firm knows, bigness can mean loss of control over design. Also, it can be hard to find talented designers willing to work in large offices.

2. Some big firms have gotten that way by placing primary emphasis on service to their clients, with design a secondary concern.

3. Others have grown by specializing in buildings that demand far more engineering and production know-how than architectural skill. There are many exceptions where quality and quantity happily go together (see below).

To the best of our knowledge, no one has ever dared to compile a list of the 100 *best* architects. It would be not only inappropriate but pointless for our editors to attempt such a list because they are constantly evaluating the best architectural work in every issue of the magazine. In feature articles the editors make value judgments on the quality of the architecture they publish, but their lists of the 100 biggest are published strictly as news—in the magazine's *News* department.

During the last three years, the work of some 300 architectural firms has been featured in FORUM. Many of these firms are small, young, up-and-coming ones; some of them may advance to important commissions with FORUM's encouragement. Some of the firms are very large and well-established ones, for there are, of course, a handful that are responsible for a prodigious number of good buildings.

On the basis of a 3-year page count, the work of the following 25 firms (in alphabetical order) has received the greatest amount of editorial space in FORUM:

Anshen & Allen; Edward L. Barnes; Marcel Breuer & Associates; Caudill, Rowlett, Scott; Mario J. Ciampi; Curtis & Davis; Ulrich J. Franzen & Associates; Victor Gruen Associates; Harrison & Abramovitz; Hellmuth, Obata & Kassabaum; Victor A. Lundy; Mies van der Rohe; C. F. Murphy Associates; I. M. Pei & Associates; Paul Rudolph; Eero Saarinen and Associates; Sert, Jackson & Gourley; Skidmore, Owings & Merrill; Edward Durrell Stone; The Architects Collaborative; John Carl Warnecke & Associates; Warner, Burns, Toan, Lunde; Harry Weese & Associates; Whittlesey & Conklin; Minoru Yamasaki & Associates.

Few would quibble that most of these 25 firms would appear on anyone's 100 "best" list. Yet it is significant that only 11 of these 25 firms are among this year's 100 biggest. Hopefully, the ratio will increase. —J.C.H. JR.

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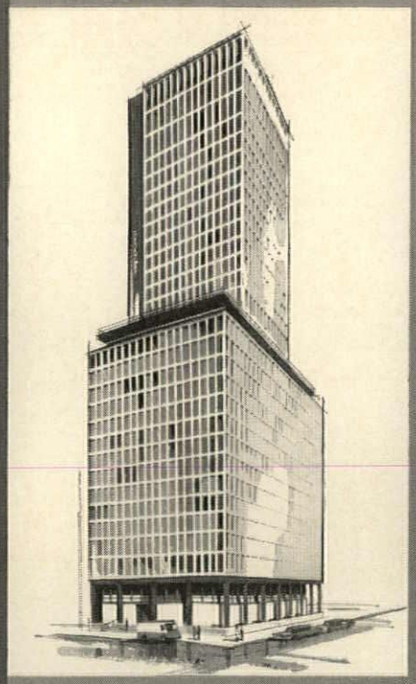

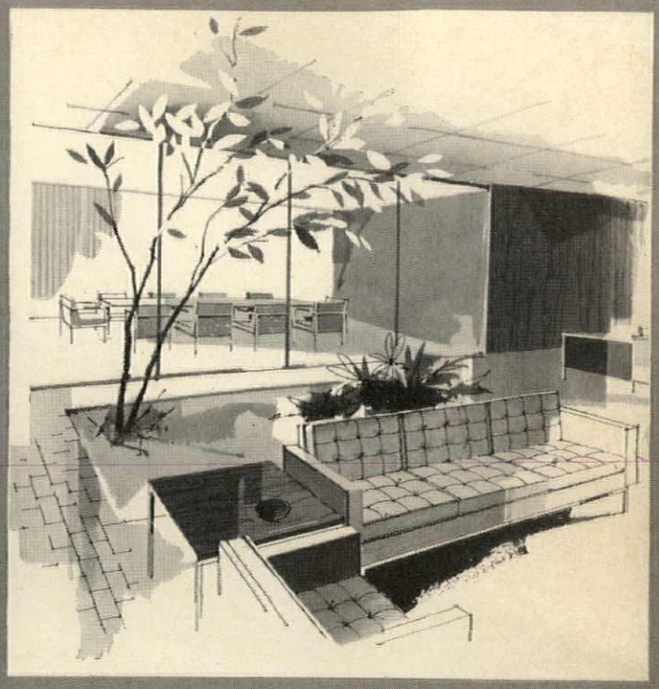

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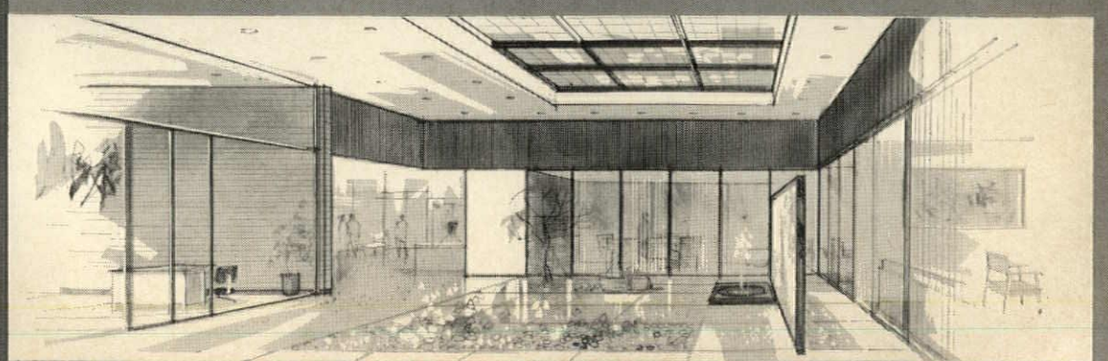

FOR LBJ's HOUSING BILL: MOSTLY CRITICISM

Housing's top brass (Slayton, left, Brownstein, Weaver) at hearings

WASHINGTON, D.C. — The President's Housing and Community Development proposal of 1964 is "the biggest and most dangerous housing bill which has ever been presented to Congress," said Senator A. Willis Robertson (D, Va.) speaking before the National League of Insured Savings Associations. FHA Commissioner Philip N. Brownstein, on the other hand, told the American Bankers Association that "some of the best-directed and most comprehensive tools for orderly urban development ever offered in our national history" are in LBJ's bill.

Last month, the hearings before the House and Senate housing subcommittees began to provide a practical answer to which side was winning out. Best guess: some of the bill's most ambitious proposals are going to have a very hard time getting through Congress.

Experienced Chairman Albert Rains (D, Ala.) of the House housing subcommittee thought that the 1964 bill would have "a tougher fight than the 1961 bill" — which squeaked through a crucial tally with only 18 votes to spare. Senator Joseph S. Clark (D, Pa.) observed in the upper chamber that "the bill that comes out of [the Senate] subcommittee might even be unrecognizable."

Reasons for this outlook were not hard to find. For one thing, the provision of the up-to-$50-million land mortgage insurance for developers of new communities was drawn up without consultation with private organizations in the field. Though HHFA Commissioner Weaver called it the "most significant new departure" in the bill, one after another of the associations testifying before congressional subcommittees pleaded lack of time to assess the provision.

For another thing, according to Rains, the bill contained "too many new ideas." The official increase of the nonresidential exception in urban renewal from 30 to 35 per cent (so that communities might strengthen their tax base with new commercial buildings) drew fire from anti-urbanists. Segregationists also attacked the scheme to purchase 25,000 existing units to supplement public housing's 30,000 regular units because it smacked of bringing Negroes into white areas.

Other critics, however, felt that the proposals did not go far enough. New York's Mayor Wagner urged that the authorization for public housing "be increased to 100,000 units a year" from the proposed 60,000. President Ira S. Robbins of the National Association of Housing and Redevelopment Officials said: "The several provisions that might be of considerable help in the war against poverty are scattered through the legislation in an unrelated pattern and . . . on too small a scale to really make the massive impact required."

Still other groups, mainly concerned with the cost of the new legislation, attacked it as being too grandiose. Said the National Association of Real Estate Boards' Lyn E. Davis: the proposal represents "a giant step toward the federalization of the communities of tomorrow."

What's ahead? It is most likely that while at least two of the bill's major features (land development and a Cabinet-level Department of Housing and Community Affairs) will be shelved, several others will be reduced in scale and otherwise changed to be enacted later this year. Among the features likely to be adopted: FHA-insured loans to developers to get properly planned sewer and water facilities in their subdivisions; the "land bank" idea whereby public bodies can acquire land, with federal help, before they actually need it; the urban renewal and public housing packages.

OTHER BUILDING NEWS

MOULIN

New Hartford Building (FAR 17.8:1); International Building (12.5:1)

FOR SAN FRANCISCO: A NEW FLOOR AREA RATIO

SAN FRANCISCO—This city's Board of Supervisors has voted to reduce the 20:1 floor-area ratio (FAR) in effect since 1959 to 16:1. Thus ends the latest chapter in a battle that has raged intermittently between San Francisco planners and builders for over a dozen years. The new regulation limits the bulk of new buildings in downtown San Fran-

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Unusual roof construction for NEW ALL CONCRETE GYM

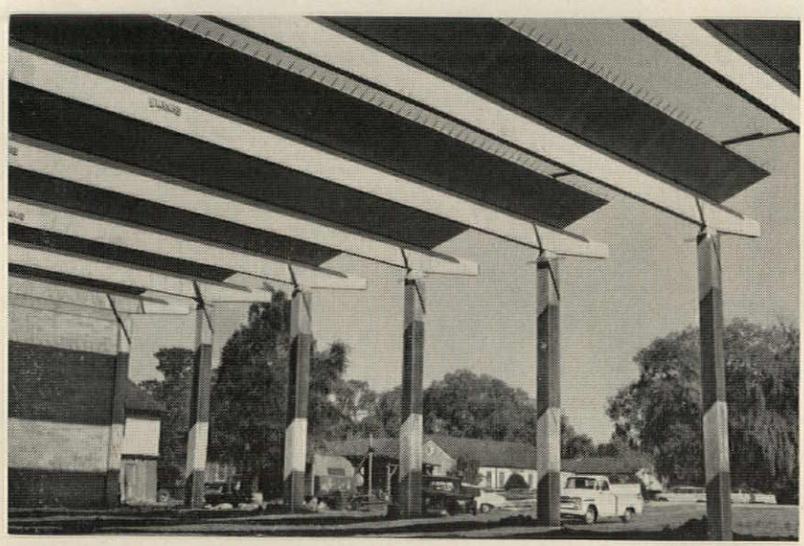
Fessenden High School gymnasium in Marion County, Fla. is an interesting combination of prestressed concrete, poured concrete and concrete masonry. Tapered ends of the Lin Y roof beams cantilever to support double Tee Beams covering a walkway.

Owner:
Marion County Board of Public Instruction, Ocala, Fla.
Architect:
Berry J. C. Walker, A.I.A., Ocala, Fla.
Structural Engineer:
R. O. Newman, Leesburg, Fla.
Contractor:
Thompson Brothers Construction Co., Leesburg, Fla.
Prestressed Manufacturer:
Dura-Stress, Inc., Leesburg, Fla.
Concrete Block Manufacturer:
Robinson-Scofield Lumber Co., Dunnellon, Fla.

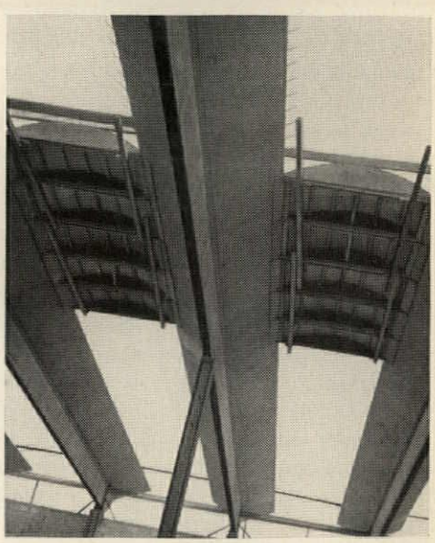
• Huge, prestressed "Y" beams, resting on cast-in-place columns, form the basic structure of this interesting high school gym roof. Cast-in-place parabolic arches between these beams complete the effect. Prestressed double Tee beams, supported from the ends of the "Y" beams, provide a covered walkway. And, the walls are painted concrete masonry units.

LEHIGH EARLY STRENGTH CEMENT BENEFITS EVERY MEMBER OF THE TEAM Dura-Stress, Inc. used Lehigh Early Strength Cement for the prestressed units in this building. Here, as in almost any concrete work, this cement provides important benefits for manufacturer, contractor and architect alike. Quicker re-use of forms. Earlier availability of units. Assured on-time delivery for smoother planning. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS



Eight prestressed Y beams are set in place on 16′ centers as the first step in roof construction. Each beam measures 105′ long and 8′ wide.



To complete the interesting form of the roof, 8′ wide parabolic arches are poured-in-place between the beams.

cisco so that for every square foot of site, 16 square feet of building area can be constructed.

The battle to prevent unregulated, downtown San Francisco from becoming a series of dark, airless canyons began in 1952 when the Planning Commission asked for an "optimum" FAR of 10:1 and was turned down by the Board of Supervisors under pressure from business groups and property owners. In 1957, the Planning Commission retreated to a 12:1 ratio—and lost again. Two years later, the 20:1 ratio was adopted after the HHFA told the city that it had to adopt *some* building bulk restrictions, or else face the loss of renewal funds.

Last year, when John F. Shelley was running for mayor, he came out in favor of a new, less bulky FAR. In January, after being elected, Shelley endorsed the Planning Commission's 16:1 proposal. Such groups as the Downtown Association, the Chamber of Commerce, the Real Estate Board, and the Building Owners and Management Association girded for another fight, claiming that the city would lose new builders if the restrictions were approved. This argument was neatly punctured in mid-February by the Bank of America, which plans to build a monumental new headquarters in the financial district. Reported the bank: "We can live with whatever density and height limits the Board of Supervisors imposes, including 16:1." The Supervisors set the new standards, are now considering meaningful bonuses for arcades, plazas, etc.

While the 16:1 ratio represents an important step forward for San Francisco, it is not a radical step. Other big U.S. cities have equal or lower FARs: New York has a 15:1 ratio, Los Angeles 13:1, Boston 10:1, and Philadelphia 8:1. Also significant is the fact that most of downtown San Francisco's major recent buildings did not use the full 20:1 ratio: the International Building, for instance, uses a 12.5:1 ratio, the Crown Zellerbach Building 6:1, the Hartford Building 17.8:1, and the Hilton Hotel 7.6:1.

SCHOOL EXPERIMENT GETS GREEN LIGHT

SANTA CLARA, Calif. — The School Construction Systems Development (SCSD) project (*News*, Sept. '63; FORUM, Feb. '64) last month overcame the last hurdle before going into actual construction: a law suit which threatened to delay the whole experiment—and cast doubt on the legality of performance specifications throughout the U.S.—was decided in SCSD's favor.

At issue was the contract for the interior partitions, one of the four integrated components which the project will use to build schools for 13 California districts. The lowest bidder ($2,273,400) was Virginia Metal Products Co., but the award went to the second lowest bidder ($2,330,000), E. F. Hauserman Co. Reason: according to the project evaluators, the Hauserman partitions met the detailed performance specifications more exactly than VMP's.

BONDAL PARTRIDGE

SCSD project and team-members Hoyenga, Ray, Ehrencrantz, Reid

When VMP was informed of SCSD's decision, the company threatened suit. The project leaders then rejected all interior partition bids, reconsidered the submissions, and announced four days later that they would re-award the partitions contract to Hauserman. VMP promptly took the case to the State Superior Court.

Because of the original rejection, argued VMP, the SCSD people could not legally re-award the contract. The company also contended that the bid specifications were too vague for competitive bidding. At stake in the latter point: the validity of all SCSD's components contracts.

Superior Court Judge Edwin J. Owens, however, has now ruled against VMP on all counts. The performance specifications, he said, were firm and precise, and constituted a reasonable basis on which to bid. Some 13 months of analysis and consultation with manufacturers had gone into the content and wording of the specs, indicating that if these were proven faulty, no performance specifications could ever safely be put out to bid.

With this important legal obstacle removed, SCSD prepared for the next step: the building of a full-scale mockup of a school on the Stanford University campus. After studying it, the school districts will begin construction in 1965. Some other school districts, however, are not waiting for the completion of the experiment. Dade County, Fla. and Clark County (Las Vegas), Nev. have already expressed their interest in setting up their own pojects.

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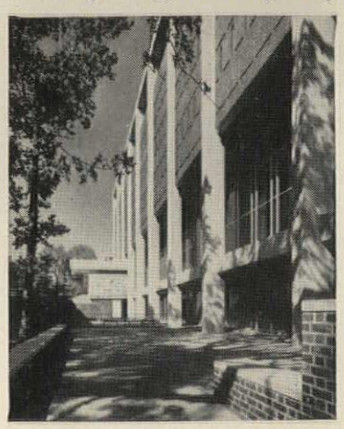
Tenzler Public Library in Tacoma

Beinecke (above); Van Pelt (below)



1964 PRIZE WINNING LIBRARY BUILDINGS

WASHINGTON, D. C. — No school library buildings were judged worthy of top honors, but two college libraries and one public library received First Honor Awards last month in the Second Library Buildings Award Program. Sponsors of the Program are the AIA, The American Library Association, and the National Book Committee. A jury (consisting of Architects Arthur Gould Odell, U. Floyd Rible, and David H. Condon, and library experts Dr. Keyes D. Metcalf, Hoyt R. Galvin, and Dr. Richard L. Darling) gave three Awards of Merit to school libraries, along with six to public libraries, and five to college libraries.

Receiving highest awards (photos, left) are the Charles Patterson Van Pelt Library at the University of Pennsylvania by Harbeson, Hough, Livingston & Larson; the Beinecke Rare Book and Manuscript Library at Yale University by Skidmore, Owings & Merrill (FORUM, Nov. '63); and the Flora B. Tenzler Memorial Library in Tacoma, Wash. by Russell N. Garrison.

Architects: Skidmore, Owings & Merrill

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Two of the award winners: Pepsi Building (above); Begrisch Hall (below)

BARD AWARDS JURY SELECTS BEST N.Y. BUILDINGS

NEW YORK—Only last summer, when the New York City Club could not find examples of civic architecture in this city worthy of its Bard Awards, it made no bones about saying so (*News*, July '63). Last month's awards—this time for buildings commissioned by *private* clients —were accompanied by a similar blast. Reported the jury: "The over-all standard of private architecture in this city [is] considerably below that of cities like Chicago, Boston, Philadelphia, San Francisco, and numerous others."

The jury was composed of Architects Edward Larrabee Barnes, I. M. Pei, with City Club Trustee Sidney W. Dean Jr., and FORUM Managing Editor Peter Blake.

The Albert S. Bard First Honor Award for Excellence in Urban Architecture was given to the Pepsi Cola Building on Park Avenue. Awards of Merit were voted to Manhattan's Cinema I and Cinema II by Abraham Geller and Ben Schlanger (FORUM, Sept. '62); Marcel Breuer's Begrisch Hall on the University Heights campus of New York University; and the Premier Apartment House in mid-Manhattan by Mayer, Whittlesey & Glass (FORUM, Dec. '60).

HOW WILL CITIES BENEFIT FROM REDISTRICTING?

WASHINGTON, D.C.—In ruling that each member of the House of Representatives must be elected from a congressional district roughly equal in population to other districts in the state, the Supreme Court was, in effect, giving cities and their suburbs more seats in Congress. This means that greater metropolitan areas will have the bigger voice in national affairs that they have been demanding for years. Probable result: more legislation that will help cities — things like aid to mass transit, larger urban renewal and housing programs, and new efforts to combat air and water pollution.

No Washington observers, however, expect really radical changes. One reason is that both Republicans and Democrats feel that they will gain the new seats. Another reason: the Court's requirement that "as nearly as is practicable, one man's vote in a congressional election is to be worth as much as another's" will change a lot of districts in most states, but very well may not change the composition of Congress overly.

Congressional Quarterly recently reviewed the situation in the House and found that of the 435 seats, 203 (47 per cent) are elected by rural districts, 103 (24 per cent) by cities, 50 (11 per cent) by suburbs, and 79 (18 per cent) by mixed areas. Some 32.9 per cent of the population of the U.S. now lives in central cities of more than 50,000 people, *CQ* found, 20.3 per cent in suburbs, and 46.8 per cent in the country. Final reckoning: a net shift of only 16 congressional seats would be necessary: six would go to cities, ten to the suburbs. (Rural areas would lose 12 seats, and mixed areas four.)

CQ's tabulation is hypothetical, of course; it is up to the states themselves to draw up new districts. But by last month, it seemed obvious from redistricting plans in Georgia (to give Atlanta another Congressman) and elsewhere that those city-oriented agglomerations called "Standard Metropolitan Areas" would indeed get more seats in the House.

SPAGHETTI ON THE MISSISSIPPI RIVER

ST. LOUIS—Below is Consulting Engineers H. W. Lochner & Co.'s considered solution to meeting *someone* (possibly another car) in St. Louis. It has been submitted for approval to the Illinois Division of Highways. Freeway levels, overpasses, underpasses, interchanges all snake up to a new bridge over the Mississippi River and to the Saarinen-designed Gateway Arch beyond.

Cost of the span and its approaches is estimated at $90 million, with the federal government picking up 90 per cent of the tab under its Interstate program, and Illinois and Missouri sharing the remainder. Approval of the spaghetti is expected this spring. The bridge will open to traffic in 1966. *continued on page 10*

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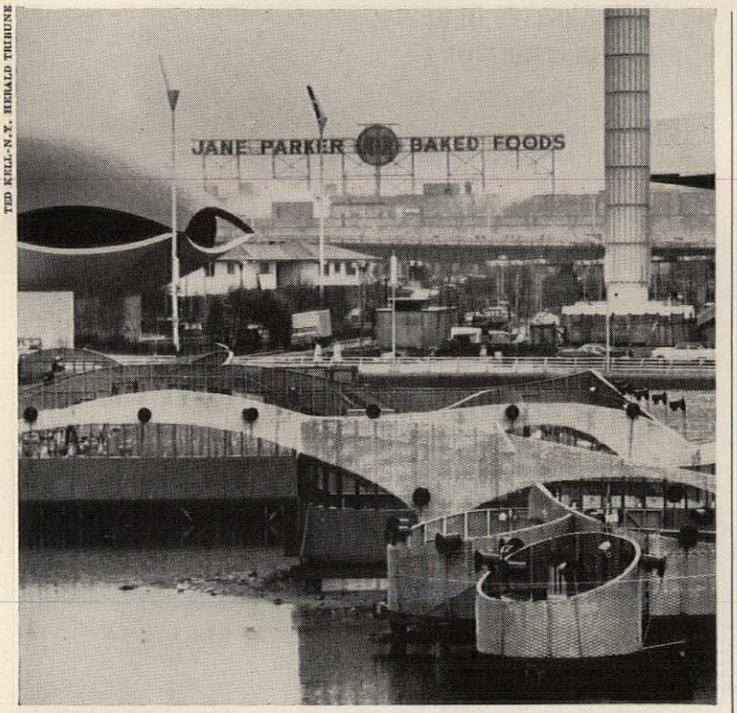
TED KELL-N.Y. HERALD TRIBUNE



The Fair refers to the enormous sign as a "baleful neon eye"

WORLD'S FAIR GOES INTO HOME STRETCH

NEW YORK—Opening date for the New York World's Fair is April 22. Will it be ready on time? Not quite, said Chief Engineer William Whipple Jr., adding that "eight or ten" pavilions (mainly in the International Section) will not make it.

Fair Boss Robert Moses was indignant: "General Whipple," he said, "is not an officer of the Fair, nor does he have any jurisdiction over construction by exhibitors." According to Bob Moses, only New York City's Hall of Science would miss the deadline.

Another exception, however, will be the $2.2 million World of Food Pavilion, right next to the Main Gate. Moses had tried to drum World of Food out of the exposition because it was lagging far behind construction schedules. The pavilion's promoters and tenants took the case into court, leaving their building looking distinctly undernourished. Last month, the State Supreme Court decided in the promoters' favor, and work immediately resumed on the World of Food. However, nothing short of a miracle is likely to get the pavilion ready in time for the April opening.

On a happier note, the Fair announced that its advance ticket sale was the "biggest in box-office history." Already collected: $35.2 million, or 28 million fair-goers. The money goes to retire $3 million in 5 per cent bonds (due August 1), and to pay off some $30 million in 6 per cent bonds (due August 1, 1966). This leaves the Fair in good financial shape, with only $24 million in debt to New York City for permanent improvements to the fairgrounds, and with an unspecified amount spent on the Fair Corp.'s own construction program (roads and buildings). Much of this debt will be paid by continued ticket sales (adult admission: $2), the rest by land rentals.

While the Fair's biggest problems are being licked, some small ones remain. Sample: a bakery near the fairgrounds erected a 60-foot-high 265-foot-long illuminated sign one year ago to dazzle Queens residents, motorists—and coincidentally fair-goers (photo). Moses' countermove: a shield of "artificial shrubbery and balloons," tall enough to black out the mammoth billboard. Upshot: another case for the State Supreme Court.

EXPERTS DISCUSS LOW-INCOME HOUSING PROBLEMS

NEW YORK—Public housing officials, redevelopment men, and architects met in this city last month to discuss ways of improving low-rent housing. There was little of the usual buck-passing; architects did not harp on the low fees and antiquated standards that generally go hand-in-hand with such projects, and the officials did not expound on the dreary design of past housing. Everybody was there to learn—and what each heard most about was environmental planning.

Boston Housing Agency Administrator Ellis Ash asked for fresh approaches to total design. The real problem, he said, was tackling the "environment of the culture of poverty," adding that the architect alone cannot handle the problem of environment.

Architect I. M. Pei agreed. Whole communities are involved in the "war on poverty." To get better low-income housing, said Pei, improved building methods must be developed. "There has been little or no progress in this field for 30 years," he stated. "Standardization of building components has to come in in a big way without sacrificing living standards." Architect Albert Mayer illustrated what a better environment means with specific examples of successful (as well as unsuccessful) projects. He was followed by Geoffry Lawford, President of the New York Chapter of the AIA, who praised HHFA and FHA for recent efforts to improve working conditions for architects. The AIA's recommendations for more progress in the future: simplification of bureaucratic procedures; better communications so lessons from good projects in one area of the country might be learned in another area; more research in public housing; and a "pace-maker" project in each of PHA's regions.

J. W. GUILLOT

A STREETCAR NAMED CANAL

NEW ORLEANS — The Canal Street streetcar line, one of this city's most pleasant ways of transit, on its way out. The electric streetcars will be replaced by diesel buses despite persistent, fierce opposition from conservationists. Right now, the wide center island along which the streetcars run is being cut down to broaden the roadway.

New Orleans Public Service, Inc. (NOPSI), a private organization which operates the city's transit facilities, proposed the changeover last year. NOPSI says it wants to provide one-vehicle, air-conditioned service from the Mississippi River to Lake Pontchartrain (the streetcars go only half way), also wants to remove the overhead electric lines and lightpoles—and keep the fare down to its present ten cents.

Canal Street residents immediately protested that the heavy buses would shake their homes and pollute the air with exhaust fumes. Neither of these pleas nor the deep concern of other conservationists impressed the City Council. After several days of public hearings, it voted 6-0 to allow the changeover. Subsequent political maneuvering by various streetcar proponents also failed.

Streetcars Desired, Inc., which has been behind the protest from the beginning, played its highest card a few weeks ago. It collected 10,000 signatures of registered voters asking for a change in the City Charter. The City Council accepted the petition—and took no further action. Mayor Victor H. Schiro, however, said that he would ask for a straw vote on the streetcar controversy in July. Outlook for the conservationists: bad.

HOW TAX LAW CAN AFFECT BUILDINGS, ARCHITECTS

WASHINGTON, D. C. — Some economists have called the new tax bill the most "dramatic" piece of economic legislation in a decade. It is certain to spur more building—but since its eventual passage was assured late last year, most forecasters took the impact of the tax cut into account in predicting and planning for 1964.

For building investors, an old tax loophole is now narrowed, if not closed altogether. From now on when a building is sold in less than ten years it will lose that portion of any "accelerated" depreciation benefits (which used to be taxed at capital gains rates, but now will be treated as ordinary income) that it had taken in excess of straight-line depreciation. Internal revenue's retroactive "recapture" of these extra benefits will start at 100 per cent and decline 1 per cent a month from the 20th to the 120th month of ownership (ten years). For any sale after that the owners will be taxed at more favorable capital gains rates.

The provision will thus curb wheeler-dealers, who used to be able to buy a building, take full advantage of accelerated depreciation features (by starting the building's depreciable life over again), and then sell it before the carrying charges became heavy. The provision, in other words, encourages use of the traditional straight-line depreciation.

For architects and other professionals whose incomes fluctuate from year to year, the tax bill provides some relief: such self-employed individuals can average out the big income of a single year as if it were spread out over five years. To be eligible for this procedure, however, the windfall year must be one-third larger than the average of the prior four years, and must be at least $3,000 more than this average.

FHA COMES OUT FOR ART

WASHINGTON, D.C. — Last month, that hard-headed public agency, the Federal Housing Administration, changed its underwriting policy to include artworks in apartment buildings.

In general, FHA will give credit of up to 1 per cent of estimated cost for murals, mosaics, and sculpture — preferably by living American artists. FHA demands that the art be considered as part of the real estate to be eligible as part of the mortgage security. It also insists that the artwork be thought beneficial enough to tenants to justify the rentals to support their cost. FHA will review all proposals on matters of art, reserving the right to reject those which do not conform to its general criteria.

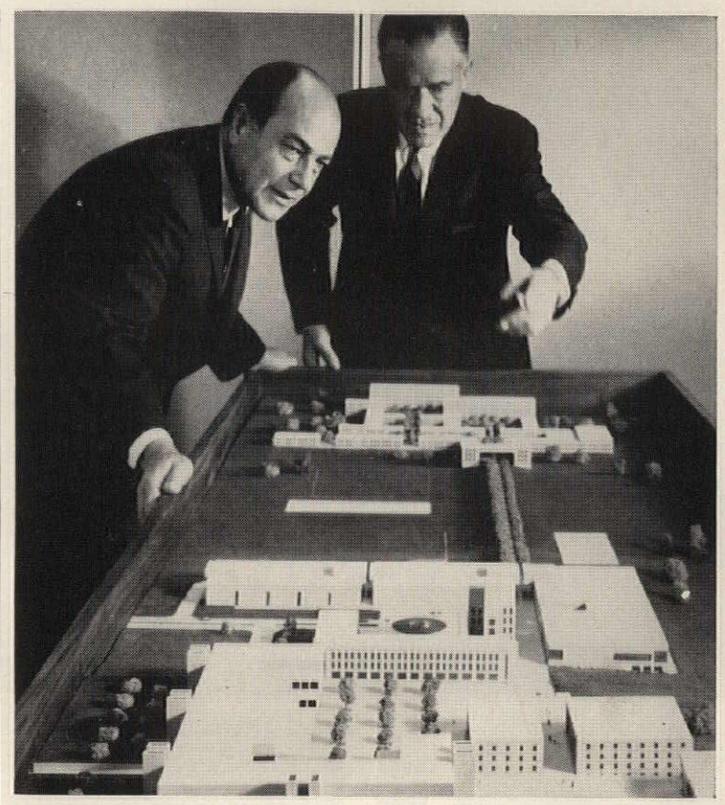
GRAND JURY INDICTS AGC UNDER ANTI-TRUST ACT

NEW ORLEANS—A legal hassle that will set important precedents is developing in this city. Involved are the local chapters of the Associated General Contractors of America (AGC) and the AIA. At issue: violation of the Sherman Anti-Trust Act.

According to a federal grand jury, the AGC forbids its members to bid on any job in which the client deals directly with subcontractors. By following this procedure, the indictment charges, some prime and specialty contractors have been prevented from freely competing for $80 million worth of construction annually.

In reply, the AGC claims that this procedure has been in use for over 20 years, and that the federal government has condoned it. Moreover, says the AGC, the system places responsibility for the execution of a construction job squarely upon the shoulders of a single contractor. Thus the owner, in case of a dispute, can deal with one person rather than with a series of subcontractors. The local AIA gets into the act, because it, too, feels that the single-contract method is best.

Outlook: a long, hard battle in the courts.



RIT Trustee Arthur Stern, President Mark Ellingson, and campus model

ROCHESTER INSTITUTE UNVEILS NEW CAMPUS

ROCHESTER, N. Y. — Last month, the Rochester Institute of Technology released its plans for an entirely new, $53 million campus. Some $19 million will go directly into a series of new buildings designed by some of the best-known architects in the U.S.

The Institute decided to move from its existing, 13-acre downtown campus to meet growing enrollment. Alternate downtown sites proved too costly. Moreover, a state highway had been planned right through the middle of the present campus. So a new location—1,300 acres just 5 miles from Rochester—was picked.

The new campus will provide facilities for 4,700 day and 10,000 night students (double present enrollment). To create a "vital" setting, RIT called in Landscape Architect Dan Kiley. To design the new buildings, RIT commissioned Edward Larrabee Barnes for the dormitories; Hugh Stubbins & Associates for two arts buildings; Harry M. Weese & Associates for the library and general studies building; Anderson, Beckwith & Haible for two science structures; and Eero Saarinen & Associates for five entry court buildings. Construction starts in spring, 1965.

1964 STARTS WITH BOOM

WASHINGTON, D. C.—The figures for the first two months of 1964 show that nearly every type of construction is well ahead of last year's comparable period. Highlights: all nonfarm residential building (including houses) registered an 11 per cent increase over 1963; private nonresidential building is up 10 per cent, with factories leading the way with a hefty 25 per cent increase.

This last figure jibes with the results of a new Securities and Exchange Commission survey of spending plans by business. Total expenditures for new plant and equipment will probably reach $43.2 billion this year. This represents an expected increase of $4 billion (10 per cent) over 1963.

continued on page 13

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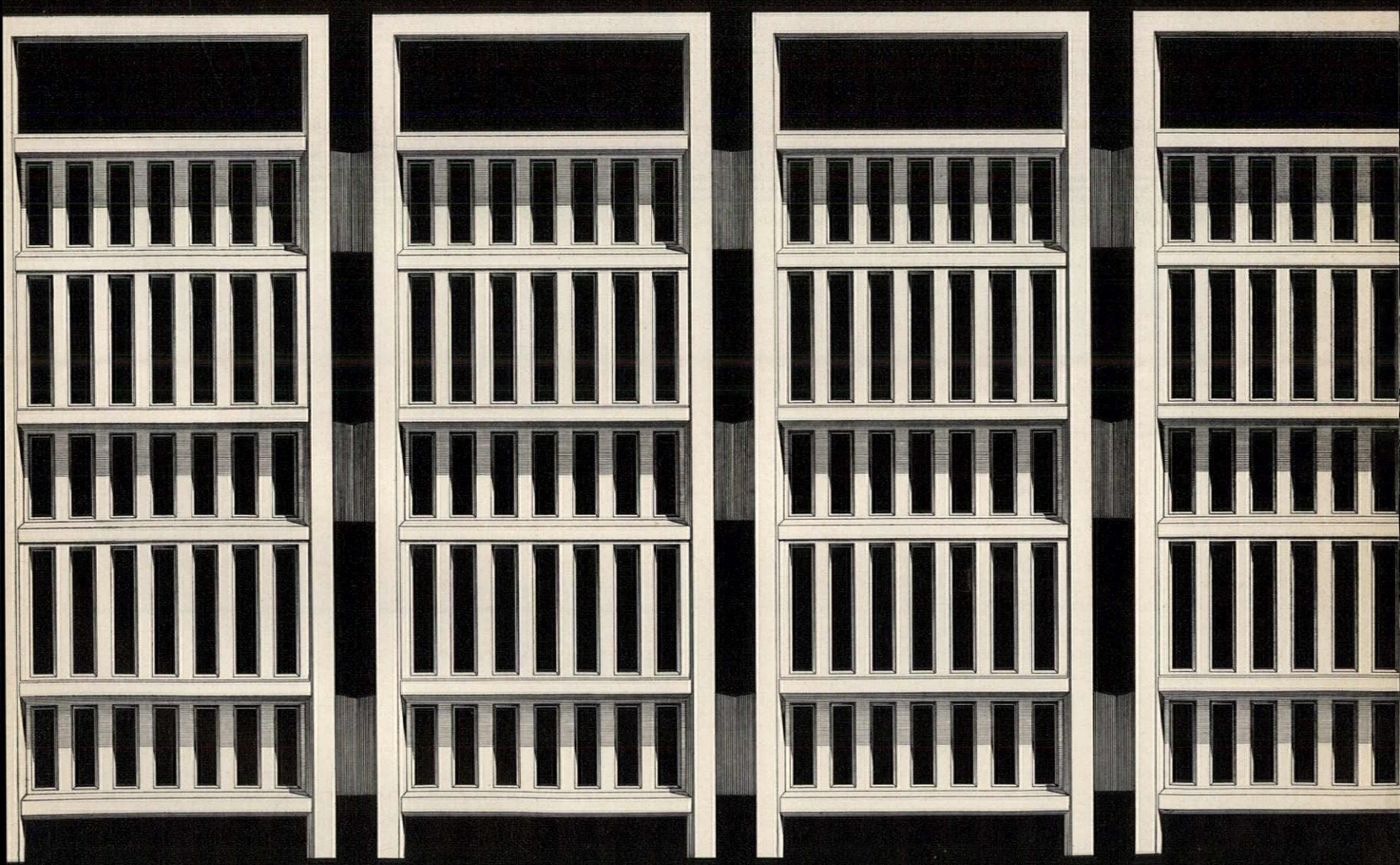

A screen-wall application of Schokbeton demonstrating its design plasticity and dimensional precision. Each element is three stories high and weighs 8½ tons. Bellevue Hospital Parking Garage, N.Y. City / Architect: Associated Architects and Engineers / Contractor: Gerace and Castagna / Schokbeton by Eastern Schokcrete Corp.

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continued from page 11

QUOTE . . . UNQUOTE

"San Francisco gives you, somehow or other, an instant impression of urbanity. The seams of her stockings are always straight, her manners are invariably polished, and there is nothing sour or curmudgeonly in her tone of voice."—*Author James Morris.*

"[In Chicago] the vast expanse of Michigan Avenue is now fittingly closed in by two honky-tonk signs: Pepsi-Cola at one end and Coca-Cola at the other—the alpha and omega of the American way of life."—*Critic Lewis Mumford.*

"The misery of housing may despoil a community as an open sewer may ruin a river."—*Supreme Court Justice William O. Douglas.*

"The dominant image of our city can best be described as bland, unimaginative, even crass and materialistic. It suffers, as much of the U.S. does, from our pioneer rejection of our European cultural heritage. The result has been a style of community life one poet described as 'midwestern profane.' "—*Columnist Hubert Meeker.*

"We have built our utopias and found them wanting. In fact, we have found them perfectly awful. Only dated and cranky architects like Niemeyer and Le Corbusier who are being paid by the underprivileged nations to indulge themselves in orgies of planned discomfort and depersonalization refuse to admit that we are going very, very wrong indeed."—*Poet Kenneth Rexroth.*

"It is no good spending half our time dolling up the beauties of our heritage if the other half is spent constructing dull, drab architecture and manufacturing outdated designs." —*Lord Snowdon.*

"Too often in low-income federal housing there is a sorely needed human quality missing. This quality of taking individual needs into consideration is notably present in privately developed housing communities."—*Builder Samuel J. Lefrak.*

BOB CAMPBELL

TEMKO TO STUDY ENVIRONMENT

FORUM Consultant and *San Francisco Chronicle* Architectural Critic ALLAN TEMKO has been named to direct a research project at the University of California, Berkeley. Financed by a $60,000 Twentieth Century Fund grant, the study will investigate "environment crisis in the U.S. brought on by anarchic urban expansion." The study, with its recommendations, will be completed in 1966.

ALINE SAARINEN IN CARACAS

President Johnson, who has come out "unabashedly in favor of women," last month called on ALINE B. SAARINEN, author, critic, and widow of Architect EERO SAARINEN, to be a member of the President's special delegation to the inauguration of Venezuela's new president, RAÚL LEONI. Other members of LBJ's delegation included Secretary of the Interior STUART UDALL; Latin American Expert Dr. Hector Garcia; and Connecticut State Treasurer Gerald A. Lamb. Fine Arts Commission member Saarinen also found time to address students at the local university on art and architecture in the U.S.

AIA HONORS AND AWARDS

After announcing that its 1964 Gold Medal would go to PIER LUIGI NERVI (*News,* Mar. '64), the AIA followed with its other major awards: British Sculptor HENRY MOORE will get the Fine Arts Medal; Sculptor-Muralist JAN DE SWART, the Craftsmanship Medal; Landscape Architect LAWRENCE HALPRIN, the Allied Professions Medal; Designer (and one-time FORUM Managing Editor) GEORGE NELSON, the Industrial Arts Medal; and Photographer BALTHAZAR KORAB (some of whose work appears on page 102), the Architectural Photography Medal.

The 1964 Citation of an Organization goes to the Educational Facilities Laboratories, Inc. of the Ford Foundation.

The Architectural Firm Award for "demonstrating the principles of shared responsibility for producing work of superior quality" goes to THE ARCHITECTS COLLABORATIVE of Cambridge, Mass.

The first Collaborative Achievement in Architecture Award was voted to the many people involved in the creation of the Seagram Building in Manhattan, its plaza, and its restaurant, The Four Seasons. Among the collaborators: Architects MIES VAN DER ROHE and PHILIP JOHNSON, Structural Engineers SEVERUD-ELSTAD-KRUEGER, General Contractor GEORGE A. FULLER CO., Furniture Designers KNOLL ASSOCIATES, Landscape Designers KARL LINN and CHARLES MIDDLELEER, and Acoustical Consultants BOLT, BERANEK & NEWMAN.

ADVISERS FOR JFK LIBRARY

Last month, 18 distinguished architects, artists, and designers accepted the invitation of Mrs. Jacqueline Kennedy to serve as an Advisory Committee on Arts and Architecture for the John Fitzgerald Kennedy Library in Boston, Mass. Just who will design the $10 million building on the banks of the Charles River will be announced after the Committee develops an architectural program for the library, perhaps later this month. Besides its Chairman, WILLIAM WALTON, who also heads the Fine Arts Commission in Washington, D.C., the Committee includes American Architects PIETRO BELLUSCHI, LOUIS KAHN, I. M. PEI, MIES VAN DER ROHE, HUGH STUBBINS, PAUL THIRY, BENJAMIN THOMPSON, and JOHN CARL WARNECKE, along with Designers HENRY DREYFUSS and GEORGE NELSON, and Landscape Architect HIDEO SASAKI; it also includes Foreign Architects ALVAR AALTO, FRANCO ALBINI, LUCIO COSTA, SVEN MARKELIUS, SIR BASIL SPENCE, and KENZO TANGE.

ERWIN LANG

CANDELA RECEIVES HON. PH.D.

In Albuquerque last month, the University of New Mexico awarded an honorary degree to Mexican Architect and Engineer FELIX CANDELA, citing him for his pioneer work with over 250 concrete thin-shell structures in Mexico and the U.S.

BRIEFLY NOTED

Judging the entries in the 1964 Awards Program of the Prestressed Concrete Institute will be Architects RICHARD M. BENNETT, AIA President J. ROY CARROLL, and last year's first prize winner MAURICE ROBILLARD, with Engineers G. BROOKS EARNEST and S. KENNETH JOHNSON.

Among the newly elected members of the prestigious National Institute of Arts and Letters are Architects LOUIS I. KAHN and RICHARD NEUTRA. Also chosen to the Institute's Department of Art were Sculptors CHAIM GROSS and THEODORE ROSZAK (who is a member of the Commission of Fine Arts), and Painters HANS HOFMANN, and EUGENE BERMAN.

100 LARGEST ARCHITECTURAL FIRMS IN THE U. S.

The sixties promise to be a prosperous period for architects if the construction boom revealed in figures for last year's 100 largest architectural firms continues. Repeating the 1962 pattern, the 100 top-volume firms were responsible for $4.5 billion worth of buildings put-in-place or 7.2% of the $62.5 billion* total U.S. construction for 1963.

The volume of 51 firms came from the design of a single building type. Educational facilities showed the heaviest concentration of building specialization among architects, with 21 firms reporting their highest percentage of work in schools and colleges to satisfy a fast growing need. (Ralph Calder & Associates of Detroit attributed their *total* volume to this category.) Fifteen firms attributed the greatest percentage of their volume to office and industrial buildings, and another 15 designated their highest volume in residential buildings—apartments, hotels, and motels. William B. Tabler concentrated his entire design effort on hotels and motels, but only one firm—Cohen, Haft & Associates—reported 40% or more for one- and two-family houses. Ten firms did their heaviest volume designing medical facilities—hospitals, clinics and institutions, and six firms reported most of their work in retail buildings—stores, shopping centers and restaurants.

Nuclear research increases

Indicative of an increasing demand, government-commissioned structures (for space exploration, nuclear research and development, and defense) were frequently mentioned in other categories. Mackie & Kamrath reported 33% governmental work, and Giffels & Rossetti ascribed 25% of last year's volume to space and nuclear construction. One firm reported that a small fraction of its miscellaneous design volume consisted of creating family fallout shelters.

Of the firms responsible for the remaining assortment of building types, only Smith, Smith, Haines Lundberg & Waehler reported over 50% for a civic center, telephone buildings and research laboratories. Other firms, among them Victor Gruen Associates, specified that at least 20% of their work dealt with urban renewal and redevelopment projects.

A prison and a penitentiary accounted for 10% or more of the design volume of two firms: Brown & Guenther and Chapman, Evans & Delehanty.

Three firms in the top-dollar category—Welton Beckett & Associates, Harrison & Abramovitz, and Charles Luckman Associates—are involved in designing pavilions for the New York World's Fair.

Predictably, the big cities with their heavy concentration of capital investment, have the largest number of the big firms: New York City alone has as many big-volume firms (22) as the next three cities combined: Chicago (9), Los Angeles (8), and Philadelphia (5). Twenty-two states, including Hawaii, are represented by at least one firm.

There are 24 newcomers to this year's list (marked by asterisks in the adjoining table) as opposed to 11 last year; of these, nine did their largest volume in educational buildings, five in residential and five in offices. Brown & Guenther was the only new name to enter the top bracket with a volume of $75,000,000 or more.

For the year 1963, the 100 biggest firms contain a total number of 2,299 registered architects, i.e., approximately 9.1% of all registered architects in the U.S. These firms average 22 architects and 20 engineers, ranging from four architects to 163, and from no engineers to 220. Twenty-six firms employ more engineers than architects.

Although foreign building design is not included in the accompanying tabulations, 16 firms reported a total of $118 million; five firms in the top volume range accounted for approximately half that amount.

Hopeful of continued economic growth, more than one-half of the 95 firms that estimated their volume for 1964 expect to do an increased amount of work this year; 26 expect to do less; and eight expect no change. The hoped-for net average increase is 6.3%.

Survey in fifth year

This year marks the fifth of FORUM's annual reports of the 100 biggest architectural firms. Looking backward, it is interesting to note that in 1958, when the survey was initiated, only 270 architects were sent questionnaires; for this year's directory, more than 700 firms were contacted. The highest volume reported for 1957 was $250 million; last year's highest reported figure was $191.4 million.

Conversely, the smallest volume in 1957 was $15 million while the reported lowest figure for 1963 was $19.5 million. In 1958, firms were listed according to dollar volume. Although this year's candidates were asked to fill out signed questionnaires stating the actual dollar volume for building construction put-in-place, firms have been listed alphabetically within six volume ranges. Thus it is natural for firms with varying volumes to be side by side in the same category. This year, as in the past two years, Erdos & Morgan, a consulting market research firm handled mailing and tabulations.

FORUM believes that several firms, notably Eero Saarinen & Associates, Skidmore, Owings & Merrill, Emery Roth & Sons, Kahn & Jacobs, and Eggers & Higgins, could easily have qualified for the listings; they were not included because of insufficient data. A. M. Kinney Associates, owing to the kind and the complexity of the work performed, submitted only partial data. Daniel, Mann, Johnson & Mendenhall, because of the range and diversity of their work—regional planning, feasibility studies, etc.—are ranked according to a FORUM estimate.

Next month FORUM will publish the 100 Biggest Building Contractors in the U.S. to be followed in the July issue by the 100 Biggest Building Clients.

*This figure is a FORUM estimate based on Bureau of Census data and does not include highways, waterworks, and other nonbuilding construction.

Construction put in place	Professional staff†		Type of Construction as a per cent of 1963 Total							
Firm (home office)	Architects	Engineers	Offices	Educational	Industrial	Residential††	Medical	Retail	Other	Forecast '64%
$75,000,000 or more**										
Welton Becket and Associates (Los Angeles)	98	35	30	9	1	21	8	10	21	+3
*Brown & Guenther (New York)	7	—	—	4	—	85	—	—	11	—15
Leo A. Daly Company (Omaha)	85	90	10	22	14	10	12	5	27	+7
Daniel, Mann, Johnson & Mendenhall (Los Angeles)	56	50	na	na	na	na	na	na	na	na
A. Epstein and Sons, Inc. (Chicago)	48	73	8	6	58	4	12	2	10	nc
Ferrenz & Taylor (New York)	21	2	1	23	—	—	75	—	1	—22
Gerber & Pancani (Newark)	8	8	—	—	—	80	—	10	10	+15
Giffels & Rossetti, Inc. (Detroit)	22	147	—	3	56	5	7	—	29	+12
Harrison & Abramovitz (New York)	35	2	90	5	—	—	2	—	3	+14
Lockwood Greene Engineers, Inc. (New York)	18	58	2	5	91	—	2	—	—	+13
Charles Luckman Associates (Los Angeles)	163	16	23	11	10	19	7	23	7	+8
Albert C. Martin and Associates (Los Angeles)	25	34	18	12	38	2	10	15	5	—7
Samuel Paul & Seymour Jarmul (New York)	6	1	—	1	—	96	—	1	2	nc
Smith, Hinchman & Grylls (Detroit)	38	64	20	18	18	2	23	1	18	+30
Sverdrup & Parcel and Associates, Inc. (St. Louis)	19	220	5	5	78	—	1	—	11	nc
The Office of Max O. Urbahn (New York)	29	7	5	20	35	9	25	—	6	+11
$60,000,000 to $75,000,000										
Cohen, Haft and Associates (Silver Spring, Maryland)	16	—	2	1	—	56	—	—	41	+32
Ellerbe and Company (St. Paul)	112	140	15	18	1	3	62	—	1	+12
Victor Gruen Associates (Beverly Hills)	40	19	10	—	—	10	—	60	20	nc
Albert Kahn, Inc. (Detroit)	22	33	11	5	60	—	13	—	11	+12
Morris Lapidus Associates (New York)	8	—	8	1	—	89	1	—	1	—21
William Lescaze (New York)	7	—	65	—	—	30	5	—	—	—15
C. F. Murphy Associates (Chicago)	36	48	62	6	12	—	5	3	12	—13
Smith, Smith, Haines, Lundberg & Waehler (New York)	49	41	26	15	—	—	2	—	57	+13
Adrian Wilson and Associates (Los Angeles)	27	44	4	25	8	22	31	—	10	+17
$40,000,000 to $60,000,000										
Frank Grad & Sons (Newark)	23	7	42	9	28	—	4	2	15	+43
John Graham and Company (Seattle)	45	38	11	4	—	35	1	43	6	+9
A. M. Kinney Associates (Cincinnati)	20	90	na	na	na	na	na	na	na	nc
Vincent G. Kling (Philadelphia)	46	—	41	23	30	—	5	—	1	+8
Mills, Petticord & Mills (Washington)	14	15	20	10	25	20	1	7	17	+7
Perkins & Will Partnership (Chicago)	65	18	7	70	2	—	20	—	1	na
Robert and Company Associates (Atlanta)	na	na	—	15	40	5	30	—	10	+11
Sargent, Webster, Crenshaw & Folley (Syracuse)	28	10	5	68	8	6	6	1	6	+9
Schmidt, Garden & Erikson (Chicago)	40	31	6	4	10	2	75	—	3	—20
Shaw, Metz and Associates (Chicago)	23	12	11	10	23	56	—	—	—	—6
Sherwood, Mills and Smith (Stamford, Conn.)	23	1	2	81	2	—	7	3	5	—8
J. E. Sirrine Company (Greenville, S.C.)	5	55	1	5	84	—	1	—	9	+7
Thomas E. Stanley (Dallas)	18	7	74	2	1	19	—	2	2	—21
Edward Durell Stone (New York)	53	4	20	56	—	—	5	1	18	+31
$30,000,000 to $40,000,000										
*Aetron (Covina, Calif.)	6	124	10	3	87	—	—	—	—	+10
George L. Dahl (Dallas)	10	16	43	20	1	7	14	13	2	+46
Dalton-Dalton Associates (Cleveland)	13	21	10	30	30	—	10	5	15	+18
George M. Ewing Co. (Philadelphia)	23	31	12	17	21	11	28	6	5	—3
Flatow, Moore, Bryan & Fairburn (Albuquerque)	18	6	48	6	8	26	1	8	3	+33
Harbeson, Hough, Livingston & Larson (Philadelphia)	24	—	75	11	—	7	4	—	3	—26
Harley, Ellington, Cowin and Stirton, Inc. (Detroit)	24	18	40	30	15	—	5	—	10	+17
Kelly & Gruzen (New York)	23	6	—	20	—	58	10	1	11	+67
Charles H. McCauley (Birmingham, Alabama)	12	6	20	16	8	3	38	5	10	+6
William B. Tabler (New York)	9	2	—	—	—	100	—	—	—	—23
*Wank, Adams & Slavin, Office of Fellheimer & Wagner (N. Y.)	13	19	12	17	23	—	2	7	39	+1
*Weihe, Black & Kerr (Washington)	4	—	90	—	—	10	—	—	—	+4

*Newcomers to list of 100 since 1963 survey
**Firms are listed alphabetically within ranges given
†Registered architects and licensed engineers only
††Apartments, hotels, motels—does not include houses
na=not available
nc=no change

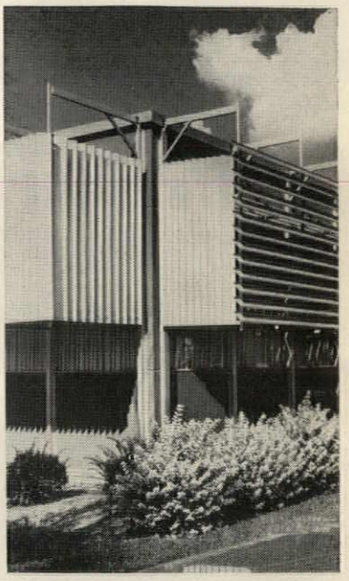
Construction put in place	Professional staff†		Type of Construction as a per cent of 1963 Total							
Firm (home office)	Architects	Engineers	Offices	Educational	Industrial	Residential††	Medical	Retail	Other	Forecast '64%
$25,000,000 to $30,000,000**										
*Architects Collaborative, Inc. (Cambridge)	35	—	67	30	1	—	2	—	—	+8
Ralph R. Calder and Associates (Detroit)	9	5	—	100	—	—	—	—	—	—27
Caudill, Rowlett & Scott (Houston)	30	10	5	73	—	—	2	—	20	+11
Chapman, Evans & Delehanty (New York)	15	3	5	40	2	30	4	—	19	+125
*Collins-Kronstadt & Associates (Silver Spring, Md.)	10	1	—	—	1	94	—	—	5	+17
*Fordyce & Hamby Associates (New York)	15	1	—	28	20	—	23	19	10	+41
Gehron and Seltzer (New York)	11	—	—	70	—	—	—	—	30	+2
*Robert Lee Hall and Associates (Memphis)	4	—	40	5	5	30	—	5	15	+8
Holabird & Root (Chicago)	20	25	40	24	12	1	1	—	22	—4
Frank L. Hope & Associates (San Diego)	9	7	10	20	30	—	20	1	19	—23
Hudgins, Thompson, Ball & Assoc. (Oklahoma City)	14	31	19	43	11	3	4	—	20	nc
S. J. Kessler & Sons (New York)	5	5	2	—	8	71	12	7	—	—35
*Kistner, Wright & Wright (Los Angeles)	14	8	2	88	8	2	—	—	—	nc
Lennox, Matthews, Simmons & Ford, Inc. (Indianapolis)	17	7	15	43	15	—	—	25	2	+35
Loebl, Schlossman & Bennett (Chicago)	22	10	30	8	—	17	12	30	3	+18
MacKie and Kamrath (Houston)	6	—	10	10	7	4	33	—	36	—13
Outcalt, Guenther, Rode and Bonebrake (Cleveland)	21	1	1	58	—	—	—	—	41	+10
J. N. Pease Associates (Charlotte)	16	19	25	9	46	5	12	—	3	+18
*I. M. Pei & Associates (New York)	40	—	15	25	—	60	—	—	—	+60
*Shaver & Company (Salina, Kansas)	12	1	2	69	1	2	19	—	7	nc
*Shreve, Lamb and Harmon Associates (New York)	9	1	86	1	1	—	—	—	12	+4
*Sorey, Hill & Sorey (Oklahoma City)	9	11	35	24	14	1	5	9	12	—30
Frederic P. Wiedersum Associates (Valley Stream, N.Y.)	5	4	—	95	1	—	—	—	4	+16
$19,500,000 to $25,000,000										
Abbott, Merkt & Company (New York)	7	20	—	—	10	—	—	90	—	+13
Ballinger Company (Philadelphia)	12	17	15	10	30	—	25	10	10	+13
John S. Bolles (San Francisco)	7	3	18	—	21	10	—	46	5	+36
Chatelain, Gauger & Nolan (Washington)	13	3	60	—	5	5	10	—	20	+24
*Daverman Associates (Grand Rapids)	21	15	3	55	5	1	8	—	28	—5
*deYoung & Moscowitz (New York)	8	—	—	18	—	8	70	—	4	—46
Fletcher-Thompson, Inc. (Bridgeport)	16	15	5	41	34	—	4	—	16	+15
Hellmuth, Obata & Kassabaum, Inc. (St. Louis)	28	6	24	21	—	37	3	5	10	+15
*Hertzka & Knowles (San Francisco)	14	—	88	1	—	1	—	—	10	—16
*Hirschfeld, Pawlan & Reinheimer (Chicago)	7	8	—	—	—	3	95	—	—	2	—24
Hunter, Campbell & Rea (Altoona, Pa.)	11	6	—	75	5	—	20	—	—	+24
James Associates, Inc. (Indianapolis)	13	6	—	84	—	—	5	1	10	—17
Kiff, Voss & Franklin, The Office of York & Sawyer (N.Y.)	29	2	4	2	—	3	85	—	6	+92
*Louis C. Kingscott & Associates, Inc. (Kalamazoo)	16	5	2	70	5	—	15	—	8	+14
Lankton-Ziegele-Terry & Associates (Peoria, Ill.)	10	5	10	39	14	8	15	2	12	—7
*Lemmon, Freeth, Haines & Jones, Ltd. (Honolulu)	7	—	14	4	6	59	15	1	1	—18
Loewenberg & Loewenberg (Chicago)	8	1	—	—	—	85	15	—	—	na
Lyles, Bissett, Carlisle & Wolff (Columbia, S.C.)	17	15	11	11	16	16	18	7	21	+5
*Reynolds, Smith and Hills (Jacksonville, Fla.)	21	56	26	28	21	4	11	1	9	+25
*Rogers & Butler (New York)	21	—	25	9	—	—	66	—	—	—16
*Howell Lewis Shay & Associates (Philadelphia)	16	6	3	79	14	3	—	—	1	—24
*Six Associates, Inc. (Asheville, N.C.)	11	7	7	28	25	4	20	5	11	+5
Stiles & Robert Clements (Los Angeles)	15	3	10	—	30	—	5	40	15	+59
Thalheimer & Weitz (Philadelphia)	16	8	10	20	20	10	15	25	—	+4
*John Carl Warnecke & Associates (San Francisco)	26	—	2	44	38	11	2	—	3	—5
Paul R. Williams and Associates (Los Angeles)	4	3	15	10	—	15	35	5	20	+28

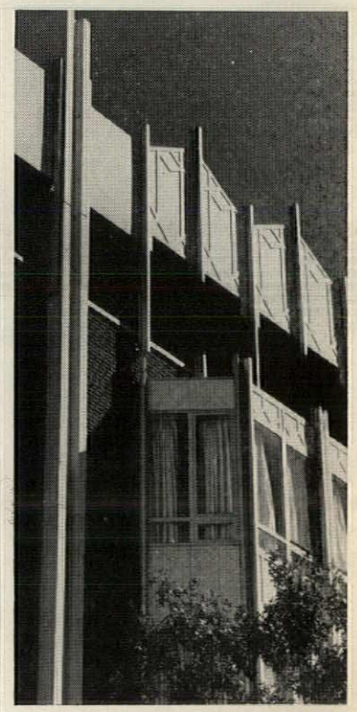
**Newcomers to list of 100 since 1963 survey*
***Firms are listed alphabetically within ranges given*

†Registered architects and licensed engineers only
††Apartments, hotels, motels—does not include houses

na=not available *nc=no change*

Northland Shopping Center (background) faces Reynolds' gold-screened office building across Eight-Mile Road





PHOTOS: BALTHAZAR

DETROIT'S ROAD OF GOOD INTENTIONS

The pictures at right represent more than just a catalogue of current architectural clichés. They show the end result of what started as a brave attempt to set a new pattern for roadside development in suburban Detroit.

Nearly ten years ago, when Detroit's largest retailer, J. L. Hudson Co., built Northland shopping center, it had two things in mind. One was to bring new convenience, and new amenities, to the suburban marketplace. Designed by Victor Gruen, Northland (background, photo above) more than met that goal: it became the model for many shopping centers built in the ensuing decade.

Hudson's second objective was even more ambitious. The firm realized the value of having other commercial activities around its center—offices, banks, and research buildings—so it bought the adjacent 200 acres along busy Eight-Mile Road for later sale to other developers. And at Architect Gruen's urging, it determined to sell the land only to developers who would adhere to a master plan and use recognized architects.

One of the first of the new commercial buildings, the Reynolds Metals office building by Minoru Yamasaki (foreground, photo above), seemed to augur well for the area's future. As Northland's success spurred interest in the land, however, the pressures for its faster development became steadily more intense.

In the last three years, there has been a spurt of construction along Eight-Mile Road, producing the miscellany of buildings shown opposite. Most are the work of architects, but this fact is all that remains of Hudson's original intentions—no master plan has ever been enforced. The results seem to fall far short of the expectations of a decade ago.

Gruen, however, has become philosophical about such disappointments. "It shouldn't be held against a pioneer that only half the right things get done," he says today. "The great lesson of Northland is that the developer's modest hopes of the project's success, which tempted him to control adjacent development, have been more than realized. Perhaps, now, with the lesson behind us, we can carry the plan somewhat further in the future."

The Eight-Mile Road area, meanwhile, becomes more and more of a hodgepodge. It is no worse than most of new roadside America, but, despite the promise of its beginnings, neither is it much better.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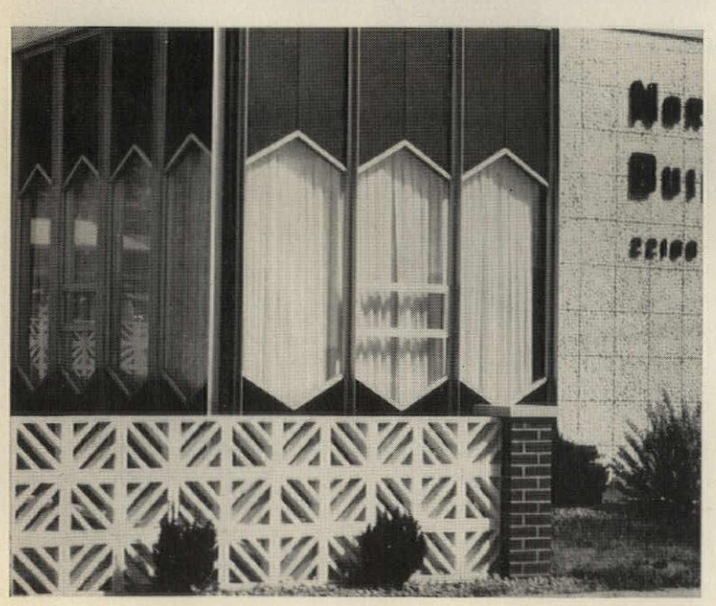

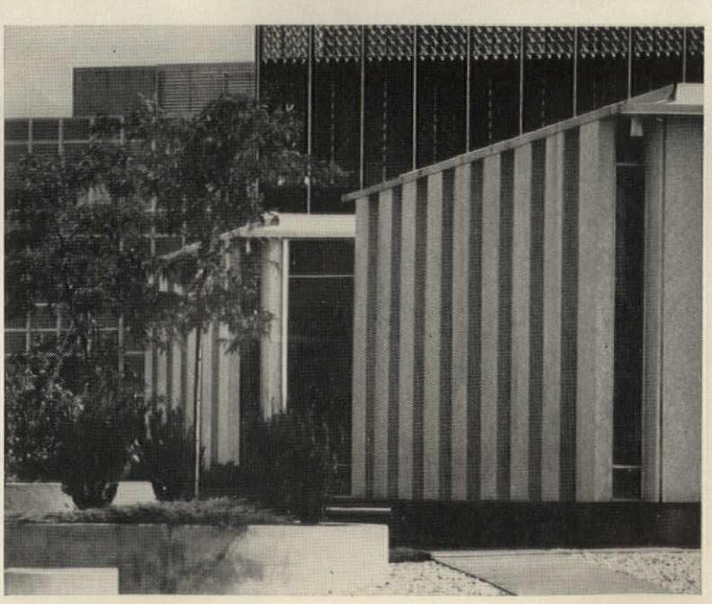

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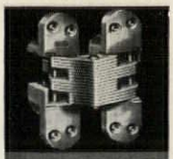

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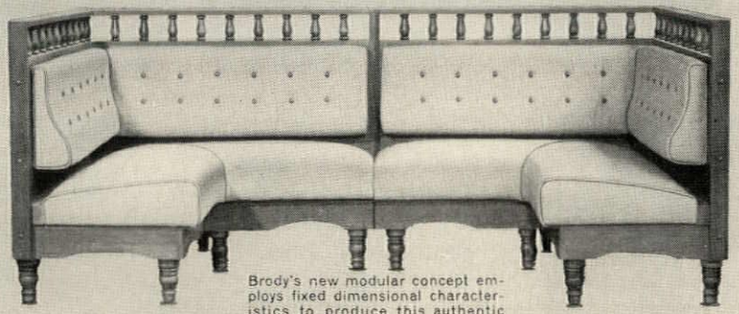

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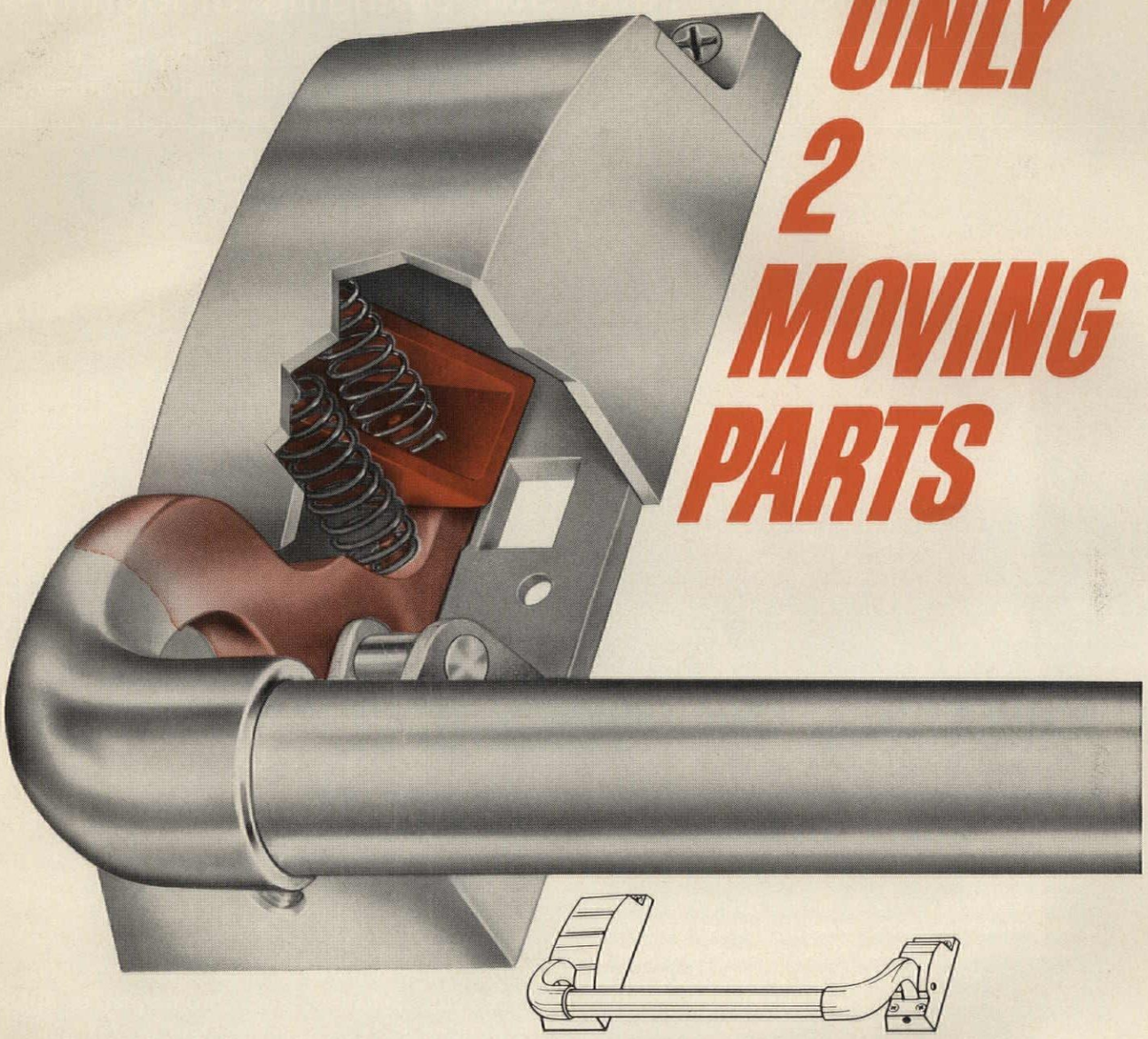

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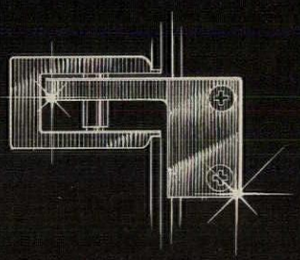
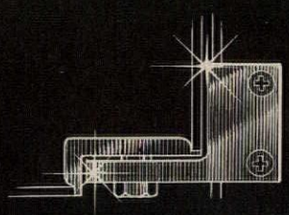
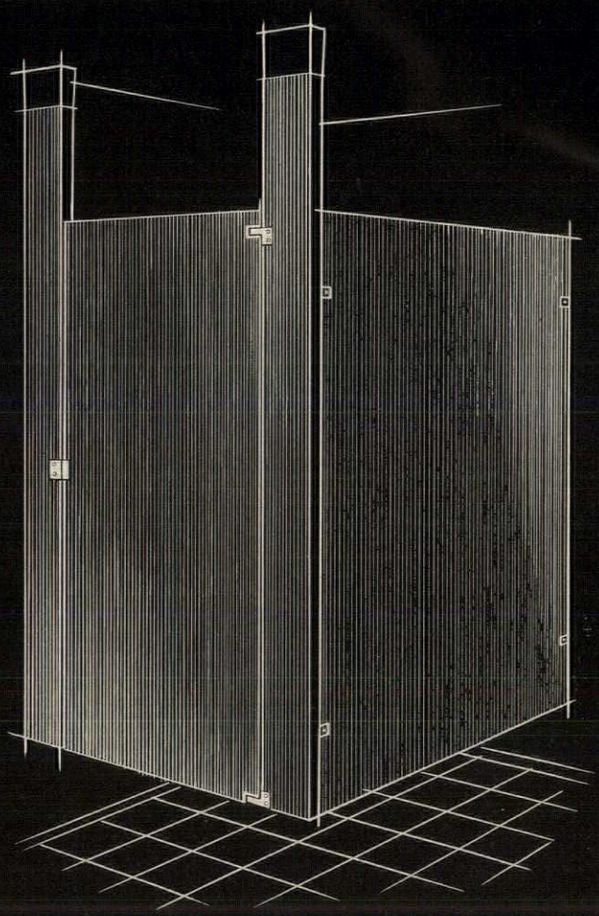


Mills Top Hinges — sturdy stainless steel pintle — rigidly supported at 3 points, locked to a channel reinforcement, **welded** to inside of door. Suspension arm of hinge bracket rides on this shaft, protected by pressure-fitted, life-time Molybdenum Nylon bushing.



Mills Lower Hinges — cam-to-follower true gravity type; adjustable; factory-installed; concealed within door. Top follower: square-locked, secured to **welded** steel reinforcement. Lower cam: molded to knurled, hardened stainless steel shaft which axially aligns cam and follower. Both are naturally-lubricated, life-time Molybdenum Nylon.



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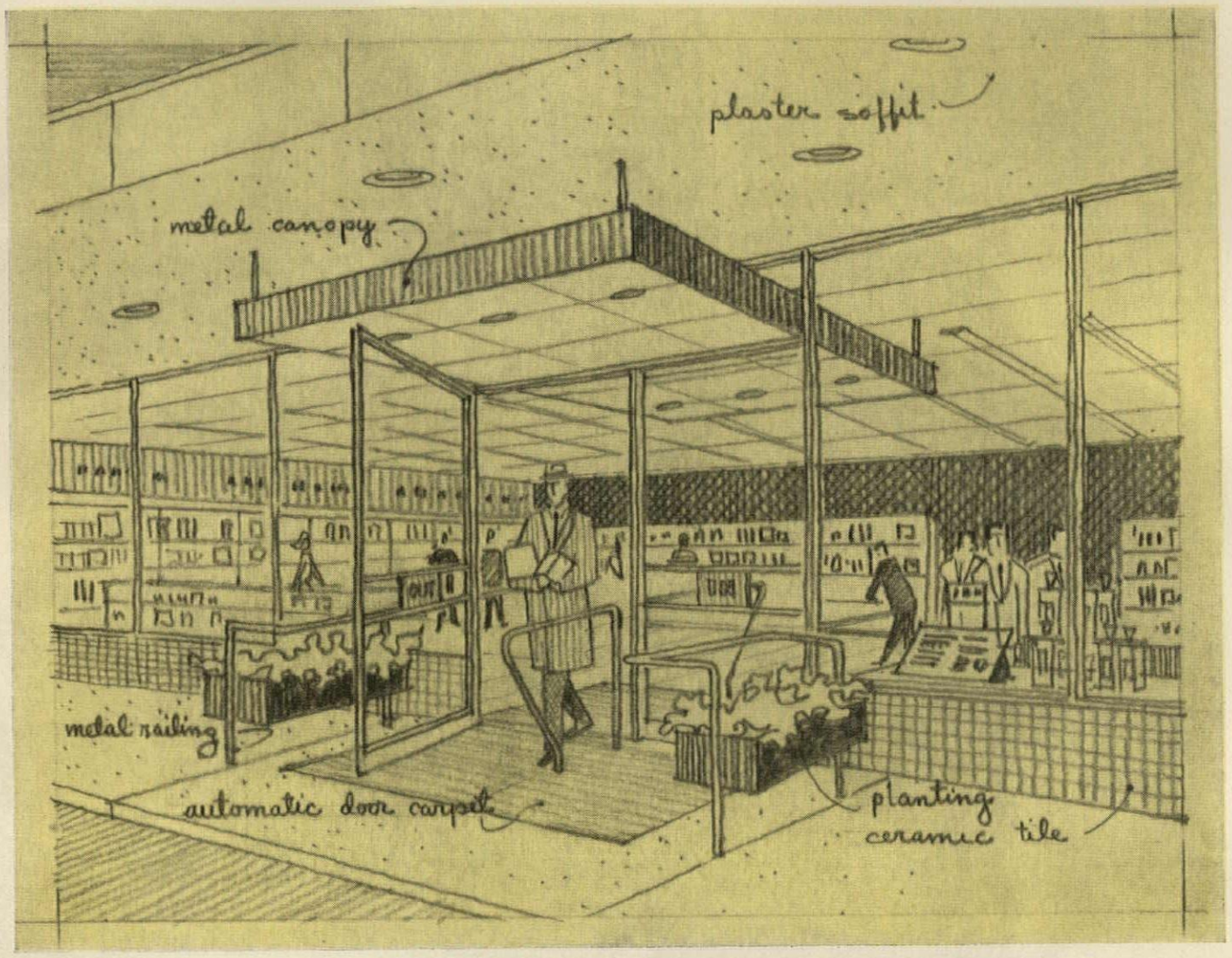

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Appl: Empire Roofing & Insulation Co.
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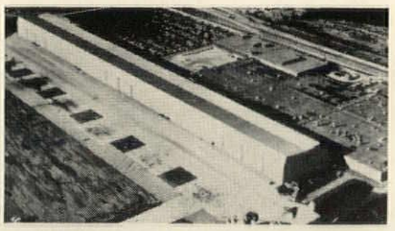
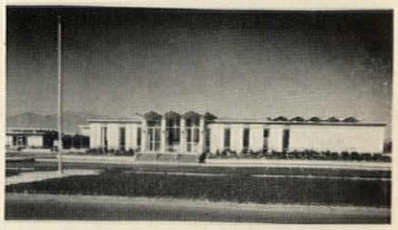


Northwest Airlines Main Overhaul Base
(St. Paul, Minn.)
Arch: Walter Butler Co.
Appl: Northern Placing Co.



Salt Lake County Juvenile Home and Court Complex
(Salt Lake City, Utah)
Arch: Beall and Lemoine
Appl: Utah Pioneer Corp.

R. L. Cousins High and Elementary School gymnasium (near Atlanta, Ga.)
Arch: Tomberlin-Sheetz;
Eng: Chastain & Tindal
Appl: Southeastern Roof Decks

Municipal Recreation Center
(Jacksonville Beach, Florida)
Arch: Tomberlin-Sheetz;
Eng: Chastian & Tindel
Appl: Southeastern Roof Decks

KTRK-TV station (Houston, Texas)
Arch: Lloyd, Morgan and Jones
Appl: Shelton W. Greer Co., Inc.

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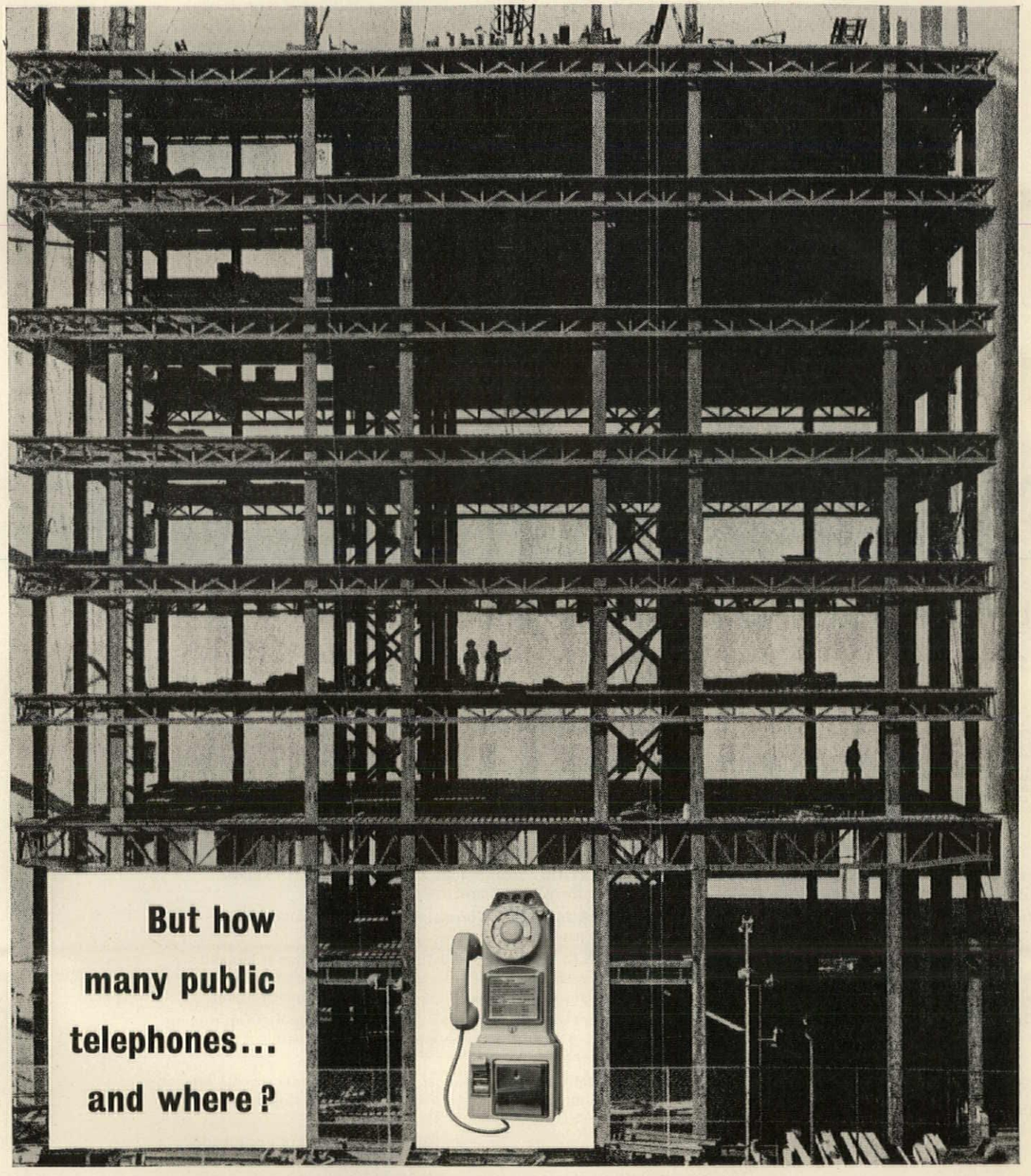

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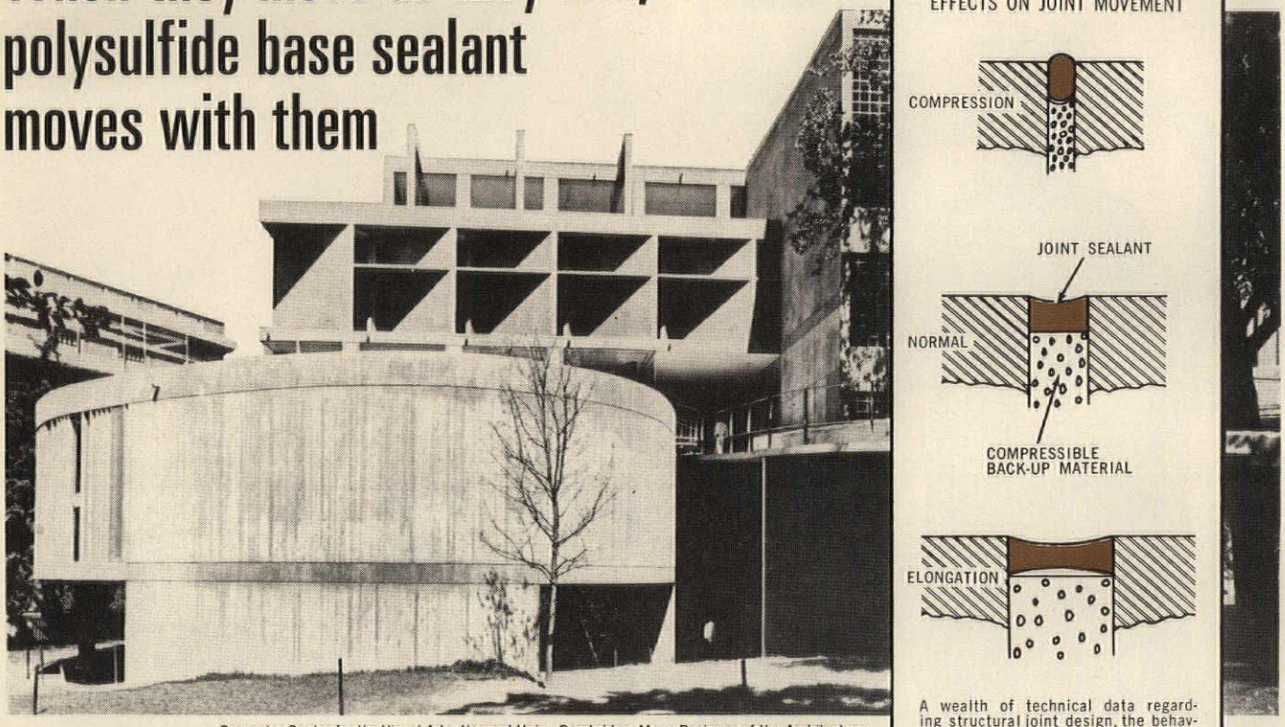

Carpenter Center for the Visual Arts, Harvard Univ., Cambridge, Mass. Designer of the Architecture: LeCORBUSIER OF FRANCE. Architects: SERT, JACKSON and GOURLEY, Cambridge, Mass.

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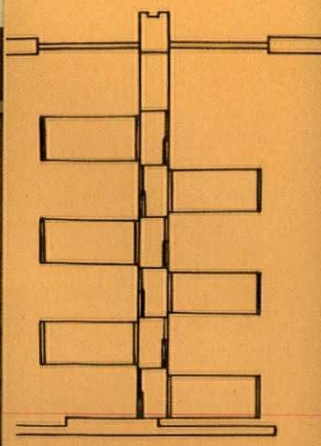
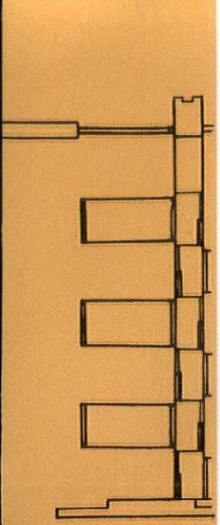
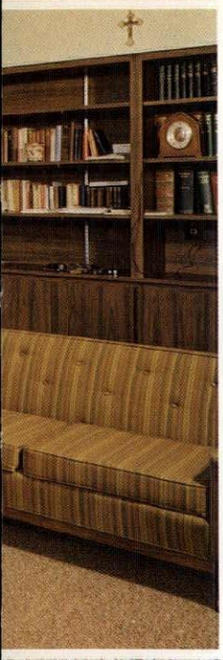


Construction innovation: Simmons built-in wardrobes form walls in Vianney Hall. Staggered back to back, the wardrobes divide the dormitory into 50 sections. Sturdy Simmons wardrobes hold their shapes through years of hard use.





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This De Sales Preparatory Seminary comprises an extraordinary, multimillion dollar complex of eleven interconnected buildings. Each serves an educational, recreational or living requirement of its 650 students.

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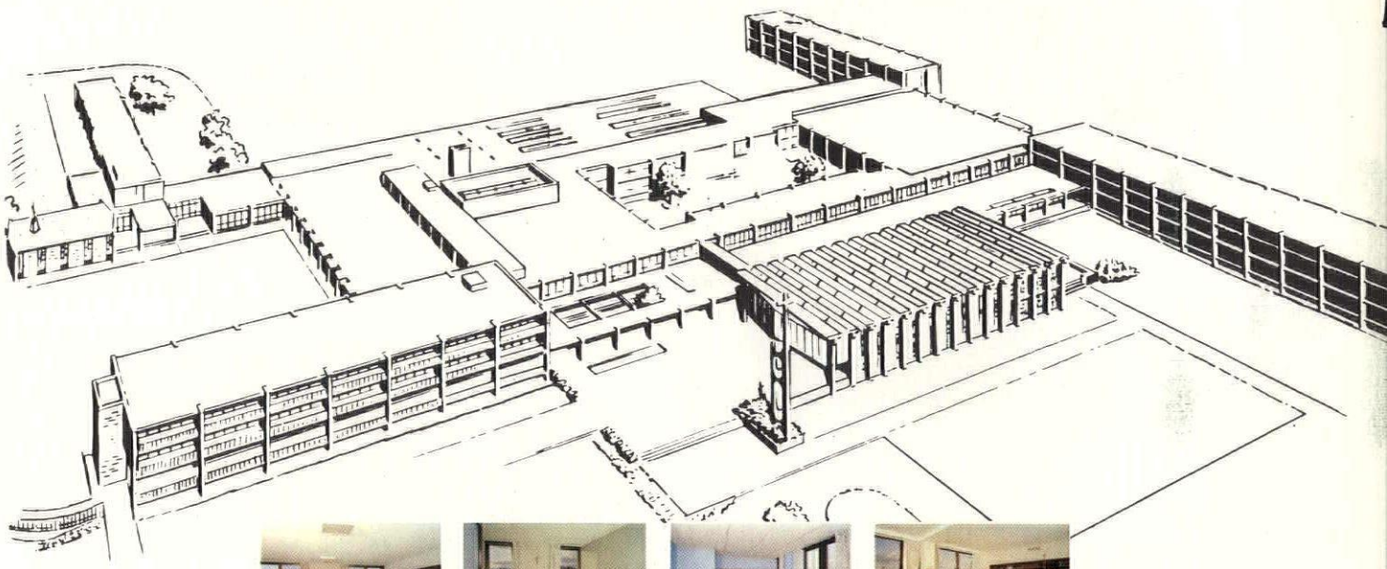
Simmons Dorm Line, Office Span® and upholstered furniture bring De Sales these benefits: Simmons units are adaptable—meet any space requirement. Simmons furniture will last—it's built and finished to stand up under active school living. Simmons furniture is good looking—combines clean lines and a variety of fabrics and colors to give warmth and individuality to every room.

Find out why more and more schools are choosing Simmons from doorway to dormitory. Write for free Simmons catalogs today.



De Sales Preparatory Seminary,
Milwaukee, Wisconsin
Architects:
Brust and Brust,
Milwaukee, Wisconsin
Interiors:
Corco, Inc.
Chicago, Illinois

In Vianney Hall dormitory, Simmons built-in wardrobes form walls between bays. These units won't sag or buckle and their Fiberesin surfaces resist nicks and scrapes. Simmons panel design beds finished with high-bake satin enamel, with comfortable Simmons mattresses.

Simmons Dorm Line units furnish the two-man college residence rooms in Aquinas Hall. These movable units permit modified room arrangements for individual needs. All offer sturdy welded steel construction. Fiberesin desk and dresser tops are practically damageproof.

Simmons upholstered furniture creates this warm, inviting look in a Proctor's Room at Aquinas Hall. Famous Comfortorc® construction assures years of seating ease and constant use. The desk, with rich-grain laminate top, is from Simmons Office Span group.

Father Leonard T. Busch, Vice-Rector of De Sales, enjoys the comforts of his attractively furnished room. Commenting on Simmons furniture, he points out, "Simmons gives us an important balance of values. It's durable. It's functional. And, very important, it's in good taste."

SIMMONS

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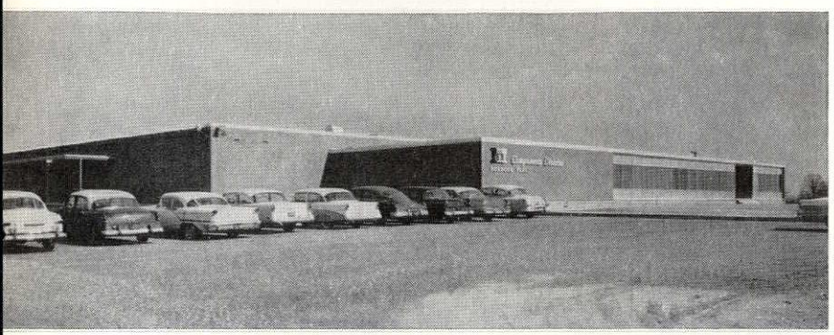
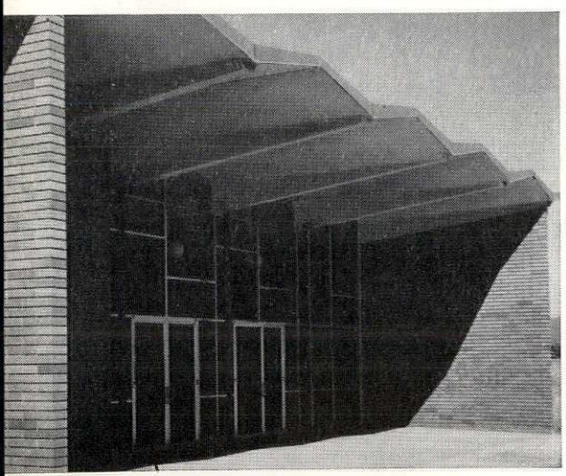
A GYMNASIUM IN MARYLAND—Maryland State Teachers College, Salisbury. *Architect:* Malone and Williams Associates. *General Contractor:* J. Roland Dashiells and Sons. *Masonry Contractor:* Webb and Turner, Inc. *Masonry Cement:* Pocohontas, Inc. and Webb and Turner, Inc.



A FACTORY IN VIRGINIA—I. T. T. Components Div. Plant, Roanoke. *Architect:* John D. Latimer. *General Contractor:* C. M. Guest & Sons. *Masonry Contractor:* Saunders & Divers. *Lightweight Concrete Block:* Webster Brick Co., Inc. *Ready-mixed Concrete:* Concrete Ready Mixed Corp. and Roanoke Ready Mix Concrete.

A BANK IN TEXAS—First State Bank Building, Abilene. *Architect & Engineer:* Boone & Pope. *General Contractor:* Rose Construction Co. *Masonry Cement:* C. C. Building Supply and South Texas Lumber Co. *Ready-mixed Concrete:* Childs Ready-mix Concrete Co. *Lightweight Concrete Block:* Texas Concrete Block Co.



A SCHOOL IN WASHINGTON—Vivian Sterling Junior High School, East Wenatchee. *Architect:* Rothe & Rothe. *Masonry Contractor:* Brown & Walker. *Masonry Cement:* Columbia Concrete Pipe Company.

Is masonry an art or a science?

There may be pure art in the architect's plan, and in the mason's craftsmanship... but science in the building materials gives their work permanence.

Lone Star Masonry Cement, used in the structures pictured, is a uniform, dependable product formulated for permanence and economy. Permanence is provided by its high water repellency, low shrinkage, and exceptional bond. The economy comes from a plastic, buttery mortar that clings tight, speeding the work and cutting down wasteful droppage and costly clean-up.

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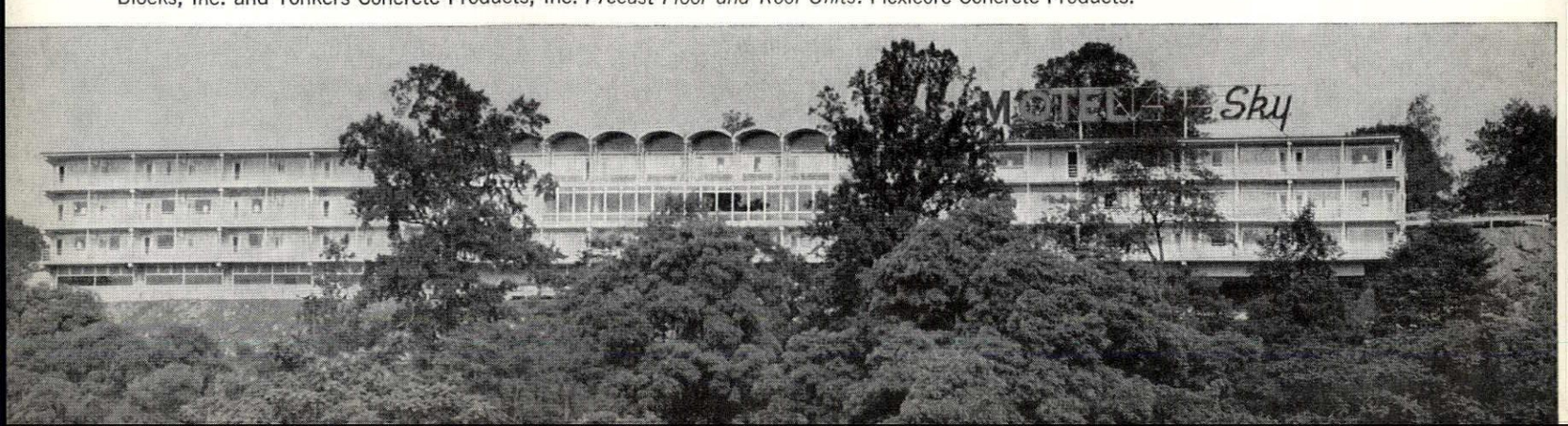
LONE STAR MASONRY CEMENT

A MOTEL IN NEW YORK—Motel in the Sky, Yonkers. *Architect:* Samuel Malkind. *General Contractor:* Anthony M. Fusco. *Masonry Contractor:* Elmsford Construction Co. *Ready-mixed Concrete:* Plaza Sand & Stone Corp. and Prime Concrete, Inc. *Concrete Block:* Castle Blocks, Inc. and Yonkers Concrete Products, Inc. *Precast Floor and Roof Units:* Flexicore Concrete Products.



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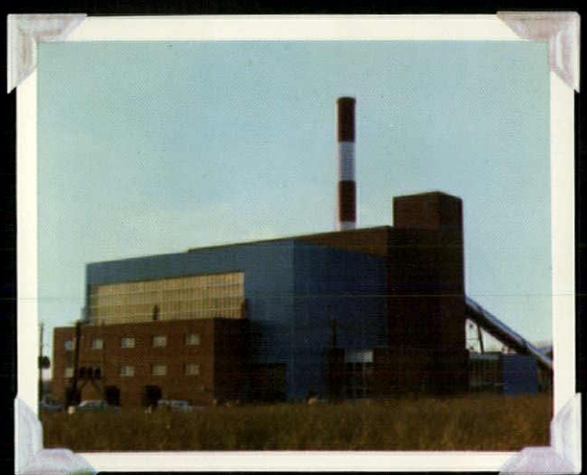
United Motors Service, Division of General Motors Corp., New Brunswick, N. J. *General Contractor;* Fred J. Brotherton, Inc., Hackensack, N. J.

Sears, Roebuck and Co., Greensburg, Pa. *Architects;* Kuhn, Newcomer & Valentour, Pittsburgh. *General Contractor;* Westmoreland Construction Co., Greensburg



McKee Run Generating Station, City of Dover, Delaware. *General Contractor;* Somers Construction Co., Bala Cynwyd, Pa.

Bekins Van & Storage Co., Falls Church, Va. *Architect;* John M. Walton, Falls Church. *General Contractor;* Earl J. Rosti, Falls Church

W. T. Grant Company store, Port Jefferson, Long Island, N. Y. *Architect;* Frederick Saphier, New York City. *General Contractor;* Reliable Construction Co., Bronx, N. Y.

North, east, south, west, all over the nation, you'll see Smith Walls on factories, warehouses, offices, schools, hangars, power plants, shopping centers, each with its own individuality. The wide range of color and configurations of Smith metal wall panels are in harmony with any architectural styling and compatible and enhancing in combination with other wall components of masonry and glass.

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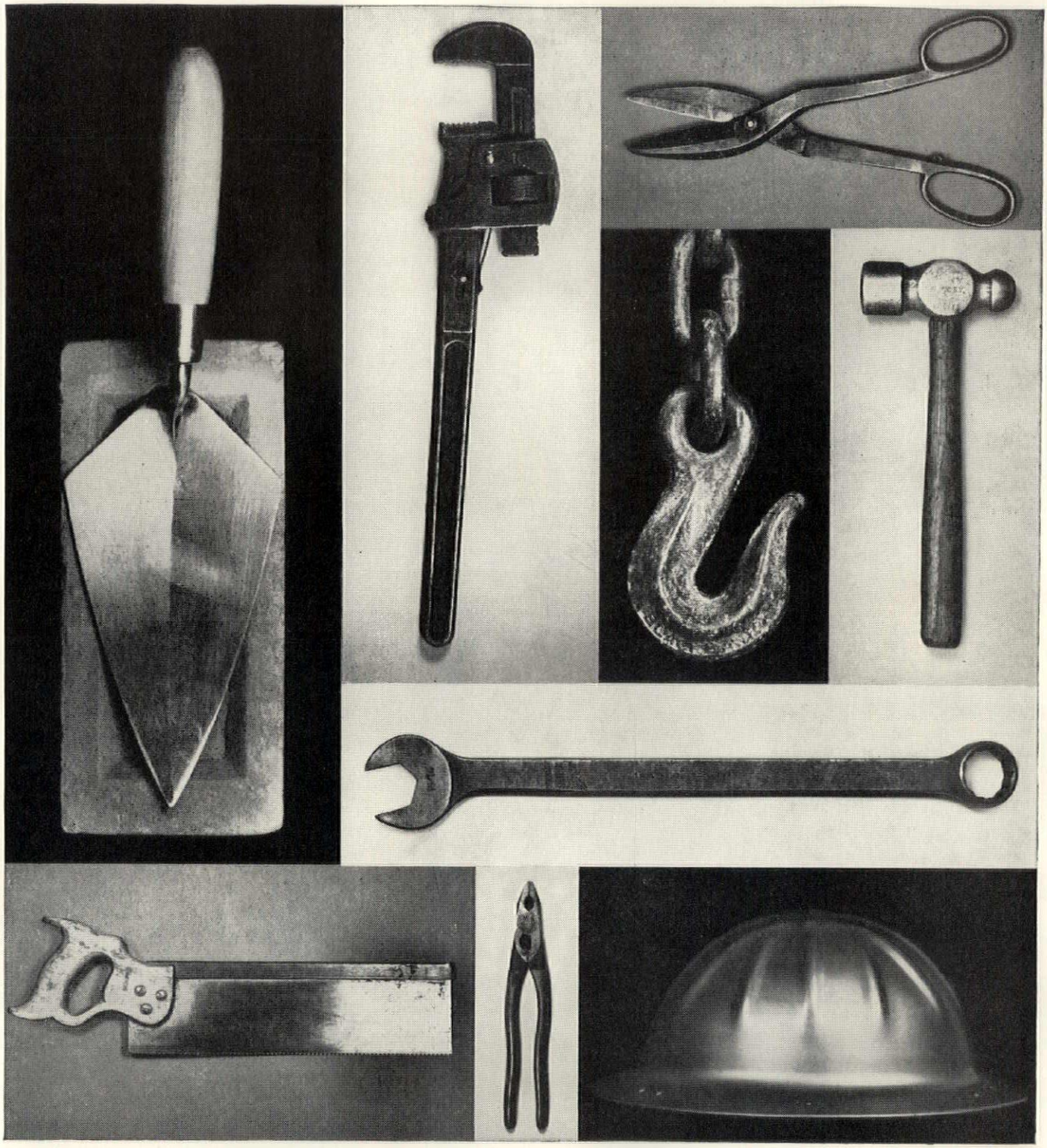

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You may qualify for the Peace Corps if you are skilled as a mason, concrete finisher, electrician, heavy equipment operator, roofer, sheet-metal worker or construction foreman . . . or if you are skilled in diesel repair, carpentry, mechanics, plumbing or any one of a dozen other trades and crafts.

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This means better service for present users; an expanded market for acrylic sheet; new sales and profits for fabricators and converters.

Since acquiring the ACRYLITE trademark, Cyanamid has devoted three years — and about $15 million to extensive product research and development,

and one of them is...

plant construction, and warehousing facilities.

Today Cyanamid's advanced laboratory and production facilities, its complete design service, its stringent quality control requirements are all playing important roles in the marketing of ACRYLITE. Already, new colors have been developed — new textures, new designs, new possibilities for wider use of the material. In fact, Cyanamid has expanded its ACRYLITE line from 3 thicknesses, 8 sizes and a single color to 15 thicknesses, 24 sizes and 50 colors . . . in less than a year!

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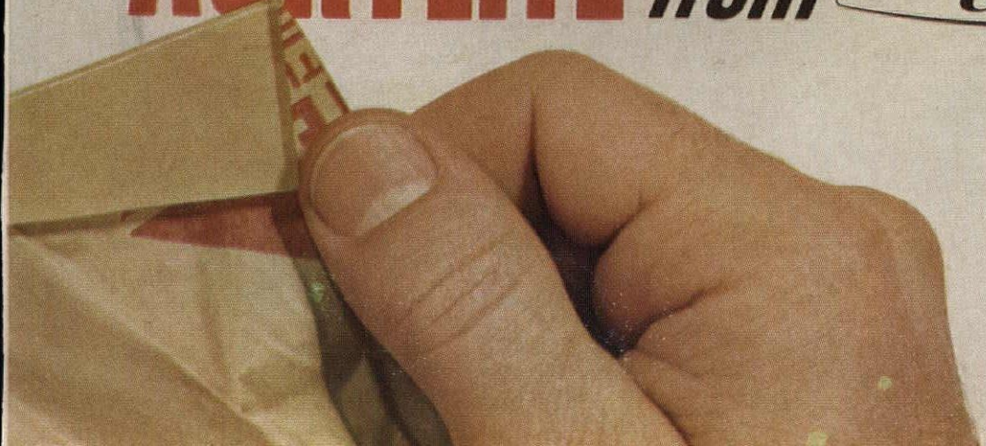
Major uses of ACRYLITE include: • indoor and outdoor illuminated signs • spandrel panels • industrial glazing • space dividers and partitions • safety shields • lighting diffusers and fixtures • skylights • boat and aircraft glazing • exhibits and displays • laboratory containers.

For complete information concerning ACRYLITE, write to American Cyanamid Company, Dept. 12, 5 Bay State Road, Cambridge 38, Massachusetts.

ACRYLITE *from* CYANAMID



The new architectural look in Electric Stairways by Westinghouse.

A new silhouette—trim, light, inviting—to enhance and brighten the mood of any building. Sleek glass panels. Handrails in decorator colors. And behind the scenes, precision Westinghouse engineering at work to guarantee smooth riding and reliability. For more information, write Westinghouse Elevator Division, 150 Pacific Avenue, Jersey City 4, New Jersey.

You can be sure if it's Westinghouse

One of a series of advertisements depicting Lummus' diversified capabilities.

LUMMUS BUILDS AT NEW YORK INTERNATIONAL AIRPORT

The tremendous increase in aircraft fuel consumption at New York International Airport necessitated the development of a distribution system more rapid, efficient and economical than the conventional tank truck delivery to aircraft now in use. The Port of New York Authority, developer and operator of the airport, designed a fuel tankage and underground distribution system which will deliver fuel via pipeline directly to aircraft loading positions at the various passenger terminals.

Having been awarded contracts totaling in excess of $12,000,000, The Lummus Company will construct this system to be completed by mid-1965. Work will include a 50-mile underground network of transfer pipes, suction lines and ramp hydrants for fuel distribution at the passenger terminals, erection of 40 storage tanks, construction of two pumping stations, demolition of two existing piers and construction of two new ones, and provision of a data control system for automatic control of fuel flow.

Among Lummus' current diversified construction activities are the spectacular "Fountain of the Planets" for the New York World's Fair, thermal electric power plants in Bogota, Colombia, and Dhuvaran, India, a steam generation unit in Bombay, India and an air-separation plant in Canada.

For domestic or overseas construction or construction management—consult Lummus.

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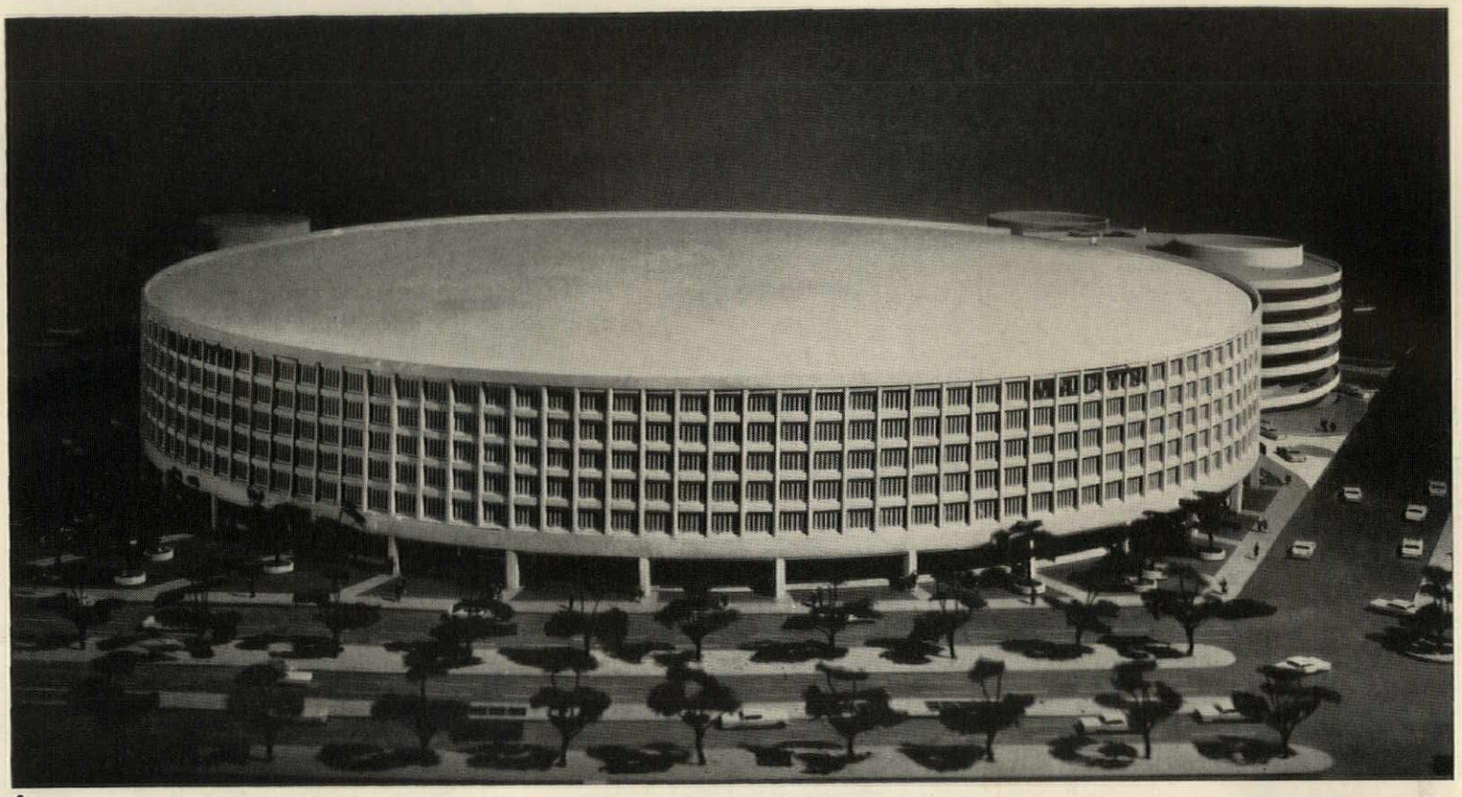

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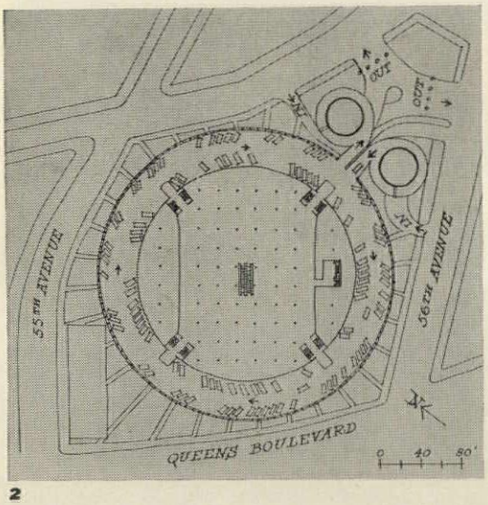

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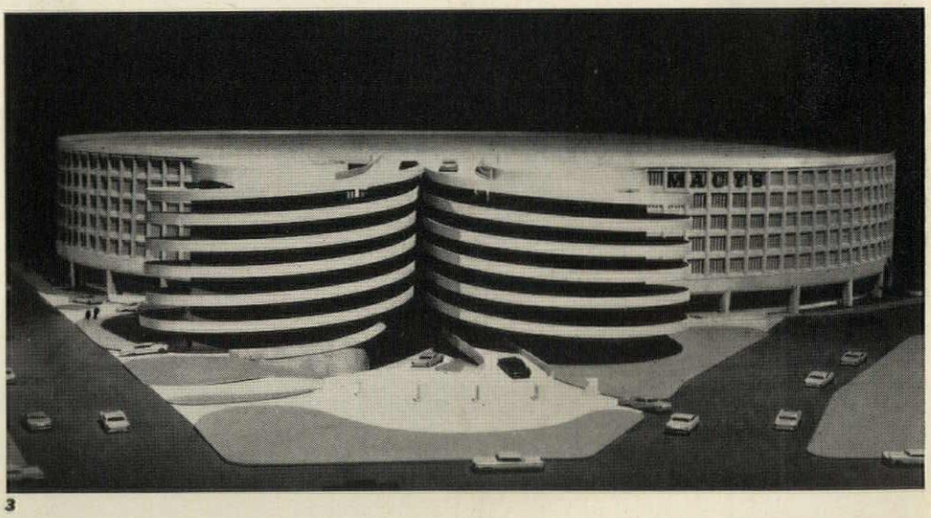

3

1. MACY'S PARK-AND-SHOP. The grille enveloping Macy's newest branch, in Elmhurst, N. Y., actually masks the garage that winds around the store. This unusual design by Macy's architects, Skidmore, Owings & Merrill, solves the parking problem common to suburban stores. As a by-product, it also eliminates the sea of cars that has become the branch store's hallmark.

Macy's Queens wraps each selling floor in two rings of parking, stacking 1,500 cars on six levels behind a grille left open to dissipate gas fumes. Theoretically, no car will be more than 75 feet from the department to be visited.

While easy parking was the prime consideration, the peculiar shape of the site **(2)**, made even odder by subtracting a rectangle Macy's doesn't own, imposed limits of its own. SOM and Macy's settled on a circle 426 feet in diameter as the best shape and size for the park-and-shop concept. The automobile ramps in and out **(3)** are helixes at the eastern edge of the site. During peak traffic periods, such as the end of the day, both helixes can channel traffic one way to speed departing cars. The cores of the helixes will contain mechanical services, leaving the big roof free for more parking.

Shoppers approaching on foot will cross a landscaped plaza to enter the store's five entrances, dispersed beneath a covered arcade. Within a radius of three miles, Macy's figures that there are 600,000 potential patrons, some of whom, such as the tenants in Lefrak City, live almost on the doorstep.

Initially, Macy's Queens will have three selling floors and a basement totaling 326,500 square feet. Later plans are to construct an additional floor and two more rings of parking. Selling floors will not be completely round: slices at opposite sides will be needed for stock rooms.

Exterior material of the big drum is to be reinforced concrete with a quartz aggregate, lightly sandblasted for texture. Construction starts this spring, with the opening scheduled for the fall of 1965. *continued on page 40*

NEW ORLEANS, LA.

NEW YORK, N. Y.

HOW TO BE RIGHT ON

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ATLANTA, GA.

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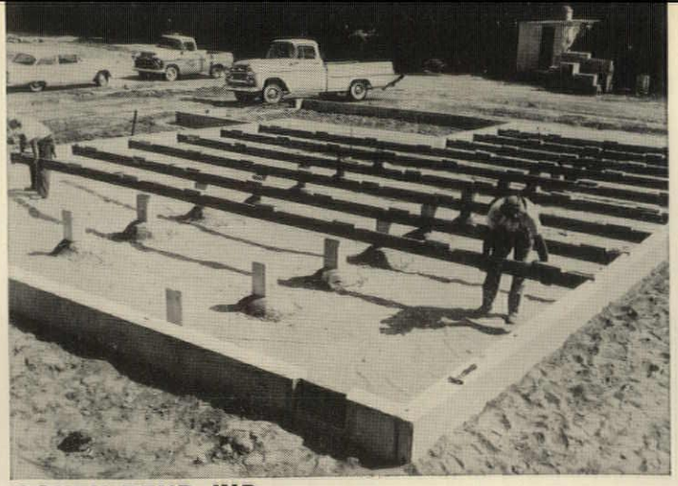
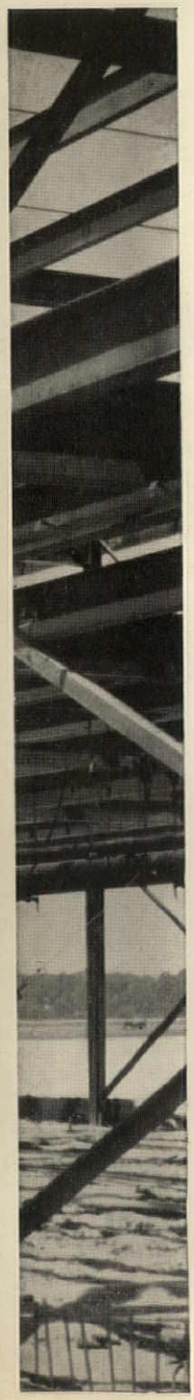


SOUTH BEND, IND.

THE JOB... SPECIFY J&L LIGHTWEIGHT STEEL STRUCTURALS



NEW ORLEANS, LOUISIANA

In-place cost of structural framing for Studio Arms IV, a luxury apartment in a New Orleans suburb, was 30% less than with conventional methods. The novel design called for Double Warren trusses fabricated with standard channels as top and bottom chords, and standard angles as diagonals. Junior Beam joists, spanning 24 feet, rest in the vertices of triangles formed by truss diagonals. Results: Lightness and ease of construction, less steel weight per square foot, saving of one foot of height per floor. Builder, Dominion Construction Corp., New Orleans; Design and Fabrication by Milan Engineering Co., New Orleans.

NEW YORK, NEW YORK

The architects wanted an unbroken stairway of 200 flights for the Time & Life Building in New York . . . the answer was lightweight Junior Channels for straight stringer sections, joined at the landings by 3/16-inch sheet that had been bent into a spiral on a brake press. To make the spirals look like part of the straight stringer sections, "dummy" flanges were cut from 12-inch Junior Channels that had been heated and shaped to match the spiral, and were welded in place. "This job could not have worked out so easily without the flexibility we derived from 12-inch Channels," says Mr. Robert Sexauer, Treasurer, Sexauer & Lemke, Inc., architectural metals firm that fabricated the stairs.

BALTIMORE, MARYLAND

In the 9-story 11 Slade Apartments, a Mullan Contracting Company project in Baltimore, secondary floor members (12″ Junior Beams and 14″ Light Beams) were embedded in reinforced concrete girders. These were formed with removable Junior Channels spanning between columns and supporting secondary beams. Cast iron "K-Clips" were then hooked over the top flanges of the Junior Beams, and plywood forms placed on the protruding ends of the clips. After curing of the concrete girders and the floor, K-Clip ends were knocked off, allowing the plywood forms to drop. Construction efficiency and reuse of forms saved considerable money and time—four days to complete a floor instead of the usual six. Architect, Joseph Foutz; Structural Engineer, Edward S. Klausner; Associate Engineer, Wallace & Gutberlet.

SOUTH BEND, INDIANA

Two men can easily install lightweight 6-inch Junior Beams, delivered cut to length, in brackets suspended on prestressed concrete foundation walls. Crawl space is designed as a plenum chamber with a plastic sheet, laid on the ground as a vapor barrier. Ductless heating is provided through registers in the sub-floor and finish flooring. Besides reducing detail work on the site, this method devised by Place & Company of South Bend saves an estimated 15 cents per square foot in construction of their 3-bedroom ranch homes.

ATLANTA, GEORGIA

"The 14-inch Light Beams proved to be most economical for the spans and loads involved," say the designers of Atlanta's modern air terminal. Light Beams are used extensively in the six protruding 2-story concourse sections that efficiently cope with heavy traffic peaks. Formed metal decking, serving as support for insulation and built-up roofing material, is welded to Light Beam purlins which also help support a maze of concealed piping. Further economy was gained by using Junior Channels as stair stringers. Designers were Robert and Company Associates, an Atlanta architectural and engineering firm.

Easily adapted to a wide variety of architectural designs, Lightweight Structurals help to reduce steel tonnage. They're easy to fabricate, raise and position, and this reduces labor costs. For more facts about lightweight structurals, call or write direct.

Jones & Laughlin Steel Corporation
3 Gateway Center, Pittsburgh 30, Pa.

J&L STEEL

2827

continued from page 37

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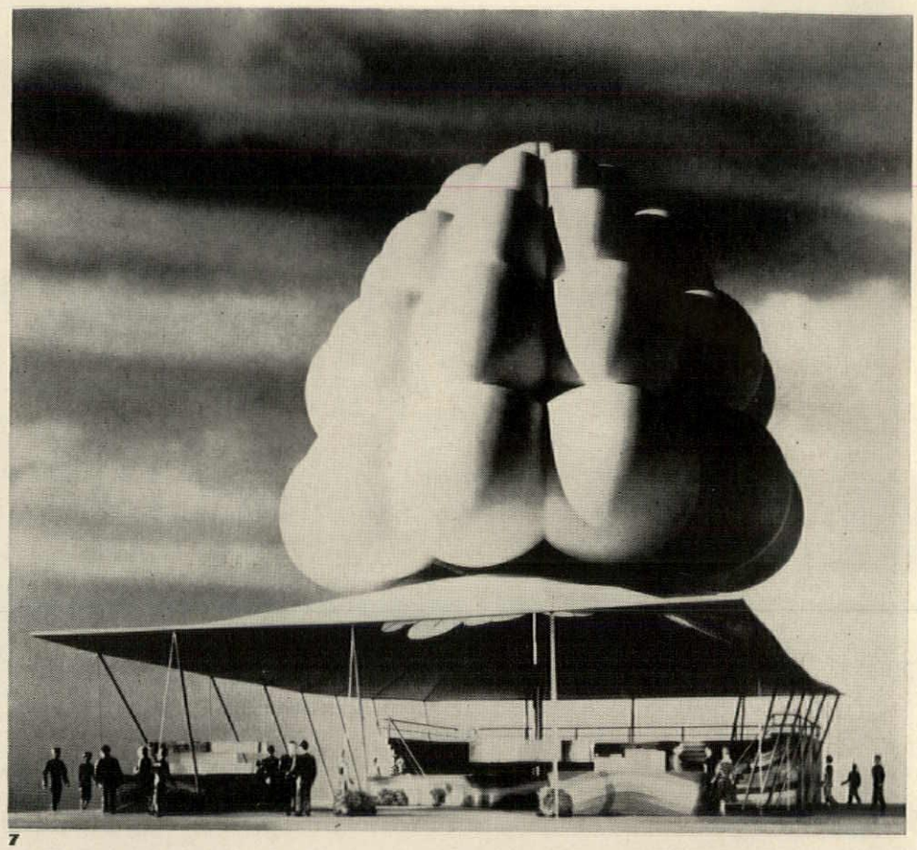

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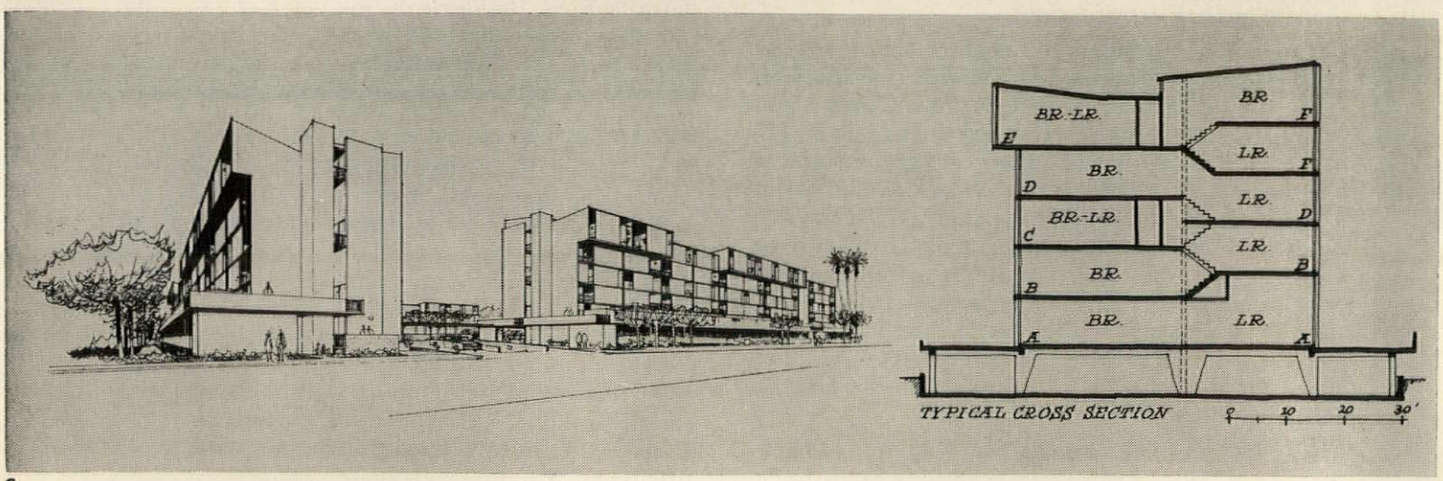

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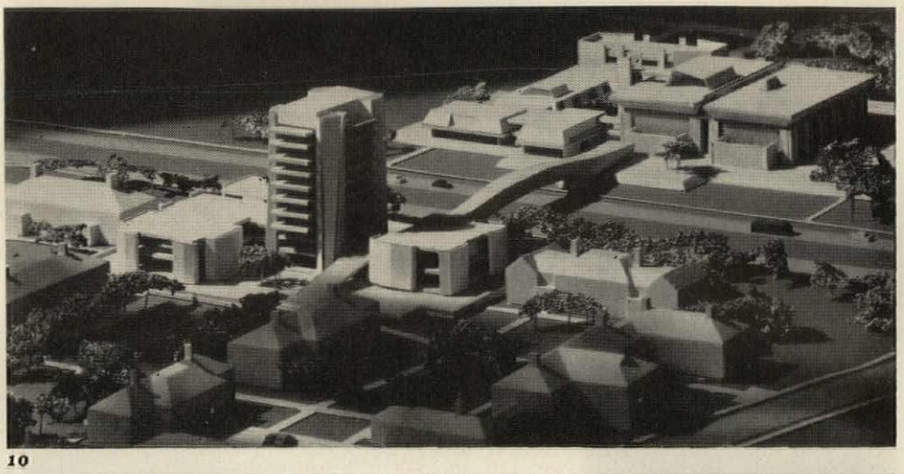
4. & 5. CALIFORNIA S&L. These two models show the beginning (4) of the Premier Savings & Loan Association in Orange, Calif., and its ultimate development (5) when it grows two more stories. Architects Ladd & Kelsey of Pasadena designed it so that the mechanical penthouse can be sliced off during construction of the next two stories and simply transplanted to the top. Columns and floors will be poured in place, the big window frames precast.

6. SANTA MONICA RENEWAL. Construction begins this month on the first segment of Santa Monica Shores, two 17-story apartment towers (FORUM, Aug. '63). This urban renewal project of 26 acres was awarded to the Kern County Land Co. and the Del E. Webb Corp. in 1961, and Welton Becket & Associates designed the complete project. The second phase, to begin shortly, is the variegated cluster of five-story condominiums shown above. They will offer several apartment layouts (see section), most of them split levels with bedrooms a half flight up or down from living rooms. Skip-stop elevators will serve each apartment from corridors on the third and fifth levels. The 11 buildings in this second section will be grouped around pleasant courtyards, and first-floor apartments will also have patio gardens. Condominiums in this group will sell in the $20,000 to $25,000 range for one- and two-bedroom apartments. The structure is to be of reinforced concrete, the side walls finished in stucco. Parking for 457 cars will be underground, the garage tops used for recreation.

7. FAIR FLOWERS. An arresting sight at the New York World's Fair will be these sculptured balloons, rather like puffy cauliflowers, marking ten of the Brass Rail refreshment stands. Victor Lundy is the architect in charge, and Birdair Structures, Inc. engineered and built the balloons of woven glass fiber with a vinyl coating. They are supported by internal air pressure. The underneath canopy will be repeated on 15 more Brass Rails, designed by Vollmer Associates, but they will be balloonless.

8



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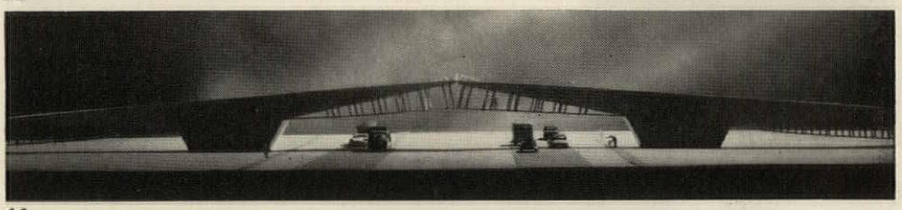

11

9

8. CALIFORNIA BANK. One of the first buildings to rise after the San Francisco fire in 1906, the Bank of California, N.A. (lower right in photo) still stands as a good example of the financial temples of that era. The bank recently announced plans to build a 20-story, $12.5 million tower, but will keep the original; the two will be connected through the lobby and a roof terrace atop the old building, at the foot of a 30-foot cantilever extending the floors of the tower. Anshen & Allen are the architects of the new tower, which will repeat the gray granite facing of the old bank.

9. BOSTON OFFICES. The first private building to go ahead in Boston's mammoth Government Center will be One Center Plaza, designed by Welton Becket & Associates. The outer curve of the 875-foot arc will face the new City Hall; the inner curve, on higher ground, will face Pemberton Square. Two wide flights of stairs will intersect the arc, providing public passage through to Government Plaza. Construction of the first third (right) begins immediately. Materials are to be cast stone for the projecting window frames and brick for the infill panels. Developer and builder: Beacon Construction Co.

10. & 11. LONG ISLAND CAMPUS. Forerunners of a campus expansion at Hofstra College, Hempstead, N.Y. are a tall library (10) and a bridge spanning the Hempstead Turnpike (close-up, 11). A new student center and additional buildings not yet developed are planned for the far side of the turnpike, on land that was formerly Mitchel Field. Architects Warner, Burns, Toan & Lunde made the library tower the transitional element between the comfortable neo-Georgian campus and the much bigger and more cosmopolitan college Hofstra is becoming. It is to be supported by tapered concrete pylons that will contain elevators and all other services. Card catalogs, general reading rooms, and periodicals will spread out on the lower floors. Massive pylons will carry the handsome bridge, with the open walkway suspended beneath the structure. END

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without protruding handles

Now, office file cabinets designed to the architectural trend for flush, crisp styling.

No protruding handles on the drawer fronts. Name card holders, concealed drawer release and drawer pulls are slightly recessed.

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Literature, photographs and architectural/designer price lists are available of the "4000" Trend Line. Write, Peerless Steel Equipment Company, Unruh & Hasbrook Ave., Philadelphia, Pa. 19111

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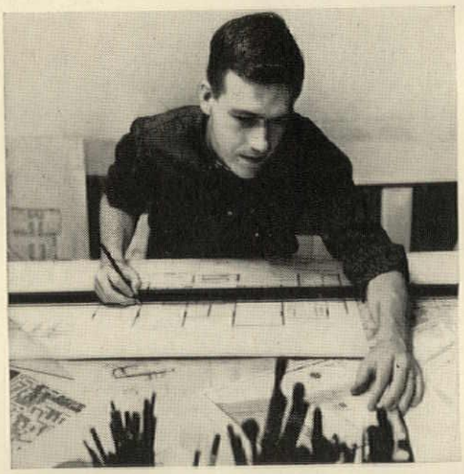
In anticipation and appreciation

Earlier this year, Pittsburgh Plate Glass Company, in cooperation with the National Institute for Architectural Education, announced a series of four undergraduate competitions for architectural students. ☐ The major competition is an assignment to design an underwater restaurant in a lagoon location. Three additional competitions, in the form of brochure presentations, cover the subject of glass in the areas of Materials and Methods, Structural Design, and the Historical Use of Architectural Glass. ☐ The response to these competitions has been so highly gratifying to date that this word of appreciation is in order. ☐ We especially wish to thank the NIAE for their efforts in arranging these competitions, and the imagination they have shown in determining the competition subject material. ☐ We appreciate deeply and sincerely the cooperation of the various architectural faculties in merging the competitions into their own current teaching programs. ☐ And, lastly, we congratulate those students in architectural schools across the United States who have elected to enter these competitions, which will be judged by the NIAE in June. ☐ Architecture is a demanding as well as a rewarding profession. The range of both its capabilities and responsibilities has never been higher than today. It is our hope that these student competitions will add substantially to the abilities the young graduate architect brings to his first professional assignments.



Elmer A. Lundberg, AIA, Director, Architectural Liaison

Students who have not yet enrolled in these competitions, and who still wish to do so, contact their instructor, or write to the National Institute for Architectural Education, 115 E. 40th St., N. Y., N. Y.

Pittsburgh Plate Glass Company

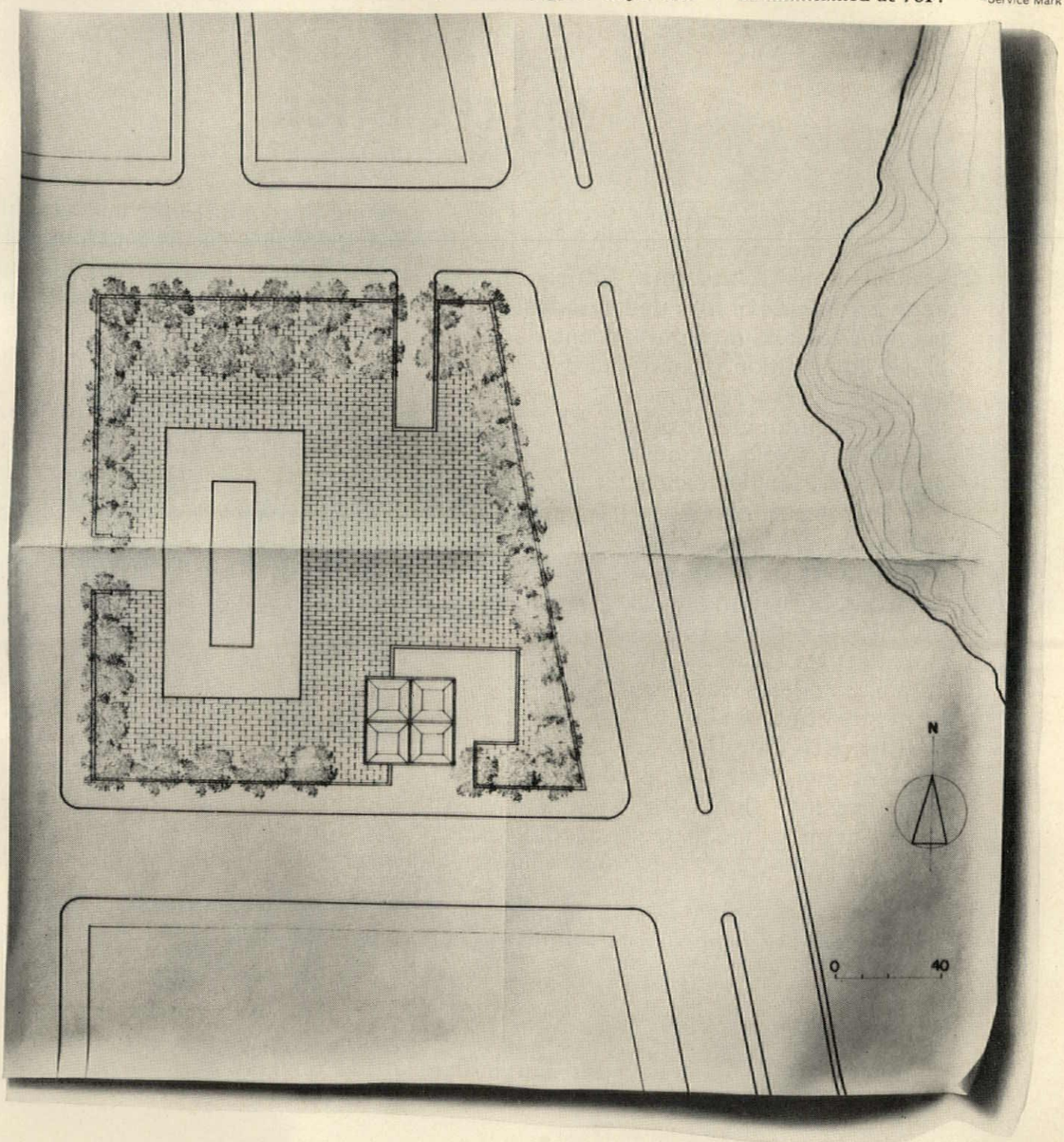
Glass Conditioning*

(a systematic plan for controlling indoor environment with PPG glass products)

Hypothetical Assignment: A projected office building in Chicago, facing Lake Michigan per client's request. Building dimensions: 300 feet high by 100 feet by 50 feet.

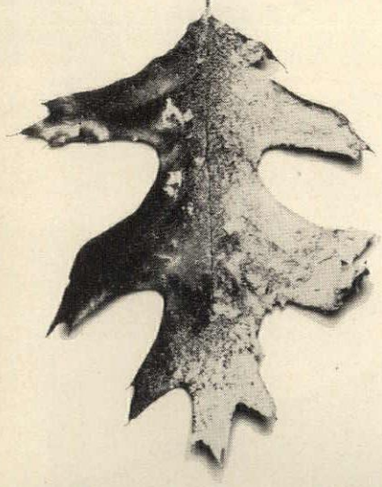
Site Conditions: Latitude subject to extremely low temperatures, severe winters with high winds, hot summers. Heating season: approximately 6300 degree days. Air conditioning season: 120 days of which 90 would have an average of 80F for a 12-hour air conditioning period. Indoor temperature to be maintained at 70F.

*Service Mark



Eastern Exposure Site Conditions: Direct morning sunlight, intensified by reflection from lake. Low winter temperatures combined with lack of sun, aggravating afternoon heat loss.

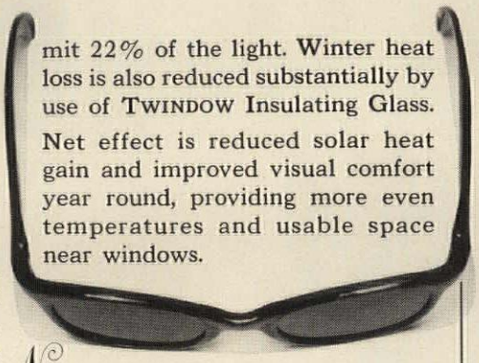
Glass Conditioning Recommendation: SOLARGRAY® TWINDOW® —TWINDOW Insulating Glass to reduce heat loss to a "U" factor of 0.6, significantly reduce downdrafts and cold areas near windows. ¼-inch SOLARGRAY Plate Glass transmits 42% of visible light (37% when combined with clear glass in a TWINDOW unit), to give natural daylight with substantial softening of sun and lake brightness.



Western Exposure Site Conditions: Strong afternoon sunlight in all seasons, with substantial indoor heat gain.

Glass Conditioning Recommendation: LHR(TM) 140 SOLARGRAY TWINDOW—LHR (Light and Heat Reflective) coating on air space side of the outdoor glass of TWINDOW will reduce heat gain to 90 BTU/sq.ft./hr. maximum, transmit 22% of the light. Winter heat loss is also reduced substantially by use of TWINDOW Insulating Glass.

Net effect is reduced solar heat gain and improved visual comfort year round, providing more even temperatures and usable space near windows.



Northern Exposure Site Conditions: Little sun exposure.

Glass Conditioning Recommendation: TWINDOW—to reduce heat loss and heat gain through conduction. Result: More even indoor temperatures, increased occupant satisfaction, and lower comfort maintenance costs.

Southern Exposure Site Conditions: Extensive sunlight, summer and winter, introducing solar heat gain as a factor which will be welcome in winter, but will significantly increase air conditioning requirements in summer.

Glass Conditioning Recommendation: SOLARGRAY Plate Glass—to reduce heat gain substantially during summer, and soften brightness in all seasons, while providing better control of indoor temperature and environment.

Human Factors: Personal comfort is, after all, the main goal of environmental control. To this end, Glass Conditioning produces pleasant working conditions by improving visual comfort and lessening seasonal extremes of solar heat and severe cold. Glass Conditioning, then, by providing both operating economies and a more attractive working atmosphere, will stimulate rentals and reduce turnover.

For more complete information on PPG Products for Glass Conditioning, consult the PPG Architectural Representative nearest you. Pittsburgh Plate Glass Company, Pittsburgh, Pennsylvania 15222.

LIGHT TRANSMITTANCE AND THERMAL CONDUCTIVITY DATA

		Visible Transmittance %	Thermal* Conductivity U	MAXIMUM** Heat Gain BTU/hr/sq ft
(PLATE GLASS)				
Regular	¼	88	1	200
Solex	¼	75	1	150
Solargray	¼	42	1	150
Solarbronze	¼	51	1	150
(SHEET GLASS)				
Clear	7/32	89	1	205
Graylite "31"	⅛	31	1	170
Graylite "61"	3/16	61	1	195
Graylite "56"	7/32	56	1	190
Graylite "14"	7/32	14	1	150
Graylite "52"	¼	52	1	185
(INSULATING GLASS—1" Metal Edge Twindow—½" air space)				
Clear ¼" Glass, both sides		77	0.6	170
with ¼" Solex, 1 side		65	0.6	115
with ¼" Solargray, 1 side		37	0.6	115
with ¼" Solarbronze, 1 side		45	0.6	115
with ¼" LHR Solargray, 1 side		22	0.6	90
with ¼" LHR Solarbronze, 1 side		25	0.6	90

*BTU/hr/sq ft/ degree F indoor-outdoor temperature difference.
**BTU/hr/sq ft/ for July 21 Design Day 40° N. 4 P.M. West Elevation.

PPG makes the glass that makes the difference

Remember Styrofoam.

OK. Now forget it.

Once a roof has been insulated with Styrofoam® RM brand roof insulation, you won't have to worry about that insulation again. Forget it.

And the same goes for Styrofoam FR for masonry walls. Or Styrofoam SB for slabs and foundations. Or Styrofoam anywhere.

But remember to specify Styrofoam next time you want an insulation that can't soak up water. An insulation that serves as its own vapor barrier. An insulation that won't rot, mold, deteriorate—ever.

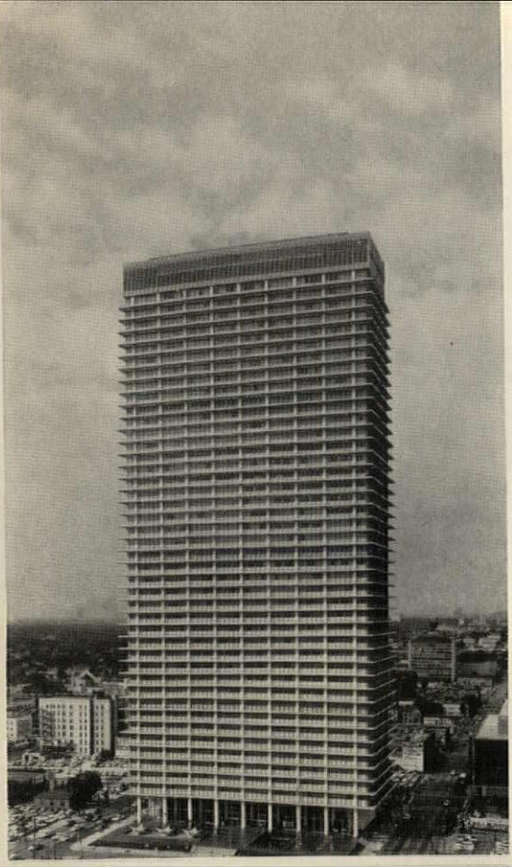
To help you remember Styrofoam, we've included some information in Sweet's Architectural File 10a/Do and 8a/Dow. Or you can write us. The Dow Chemical Company, Plastics Sales Department 1310LH4, Midland, Michigan.

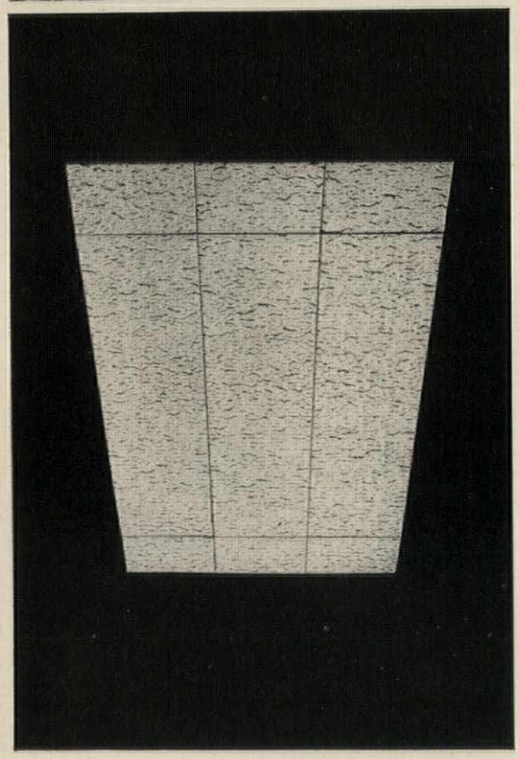
Styrofoam is Dow's registered trademark for expanded polystyrene produced by an exclusive manufacturing process. Accept no substitutes . . . look for this trademark on all Styrofoam brand insulation board.

DOW

More and more top architects are going Gold Bond

The Gold Bond difference: Acoustiroc withstood heat, rain and cold during construction at Humble Building





Owner: Humble Oil & Refining Company, Houston, Texas
Architect: Welton Becket and Associates, Houston
General Contractor: W. S. Bellows Construction Corp., Houston
Acoustical Contractor: Straus Frank-Shugart Company, Houston

The acoustical ceilings in the 44-story Humble Building were installed prior to heating and air-conditioning equipment. The weather turned alternately hot, cold and rainy. Condensation was heavy enough to actually saturate the ceiling panels. Open flame-type burners were then used to dry out the building. But the Acoustiroc ceilings were not affected—due to built-in stability achieved by an exclusive felting process that interlocks long mineral wool fibers. Acoustiroc did not sag, shrink or warp.

Each 56″ square module in the suspended ceiling is a self-contained unit with its combination lighting-air conditioning fixture integrated with two special tile sizes 14″ x 48″ and 8″ x 14″. This provided the desired flexibility in arrangement of lighting fixtures plus complete flexibility in partitioning and access to above-the-ceiling utilities. Acoustiroc has excellent attenuation and sound-absorbing qualities, and is noncombustible. It is available in a wide variety of sizes and patterns. Like to know more? Ask your Gold Bond® Representative for information. Or write Dept. AF-44, National Gypsum Company, Buffalo 25, New York.

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Gold Bond materials and methods make the difference in modern building

Cut building weight one-third with tubular steel

With its higher strength-to-weight ratios, structural steel tubing is finding more and more cost-cutting applications in office buildings, schools, shopping centers, and a variety of other structures.

Buildings erected with tubing will average 30% to 40% lighter than those employing conventional steel members. The lighter framework permits lighter footings and foundations. At the same time, tubular load-bearing columns allow one-third thinner walls for greater usable floor space.

Tubular steel is cut to length and fabricated before delivery to the jobsite. It can be welded by arc and gas welds, spot welding, projection welding, or brazing. Mechanical joining techniques include threaded joints, bolted and riveted joints, telescopic joints, compression joints, flanged joints, and T-joints.

To further increase the design and economic advantages of structural steel tubing, Republic has increased guaranteed minimum yield strength of ELECTRUNITE® Square and Rectangular Tubing by 36% over ASTM Specifications A-7 or A-36.

Detailed in the chart at right and in Republic's new ST-101 Specification, the higher strength can bring about substantial savings in overall costs. *You spend less money* to get needed bearing strength in columns, posts, lintels, spandrels, and other structurals.

FOR A COPY of Republic's informative, 52-page booklet—"ELECTRUNITE Steel Tubing for Structural Use"—send the coupon. ELECTRUNITE Structural Steel Tubing is available in rounds to six inches O.D., squares and rectangles in peripheries to 20 inches, and wall thicknesses up to .250-inch.

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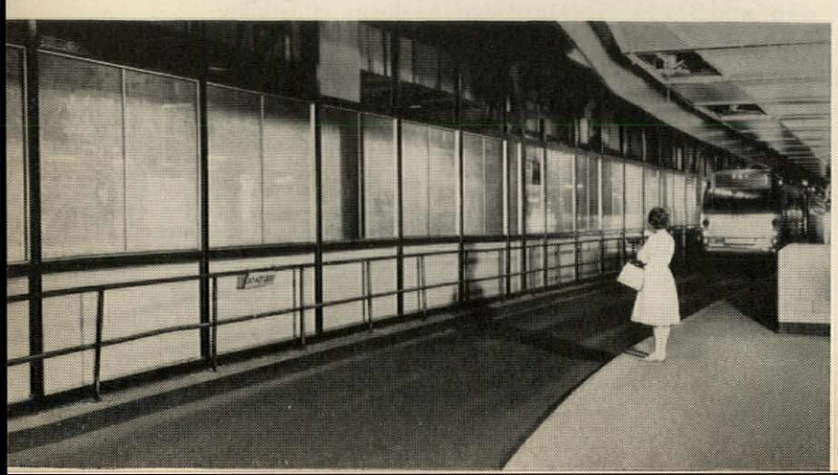
Port of New York Authority Bus Terminal. Square tubing is employed to frame glass and porcelain enamel sandwich panels which protect waiting passengers from bus exhaust fumes. Tubular framework extends from floor to ceiling and full-length along each 200-ft. long platform. Final tube fabrication was by White Plains Iron Works, Peekskill, N.Y.

Extensive service plaza building program. Square and rectangular steel tubing was picked for columns, beams, and spandrels in stations like the one shown. Flat sides of the tubing simplified fitting of glass, masonry, and curtain wall sections. Tubing was fabricated by The Austin Company—Designers, Engineers, and Builders.



Ford Motor Company pavilion at the New York World's Fair. Welton Beckett & Associates, Architects, used over 50 tons of rectangular tubing in the design of this pavilion. Tubing serves as framework support for glass panels enclosing the 235-ft. diameter, 56-ft. high rotunda.

Steel

Strong
Modern
Dependable

NEW REPUBLIC SPECIFICATION ST-101

		Grade A	Grade B	Grade C
Rounds	Tensile Strength, Min., psi.	45,000	52,000	60,000
	Yield Strength (.2% offset), Min., psi.	33,000	42,000	50,000
	Elongation in 2", Min., percent	25	25	20
Shapes	Tensile Strength, Min., psi.	60,000	60,000	70,000
	Yield Strength (.2% offset), Min., psi.	33,000	46,000	60,000
	Elongation in 2", Min., percent	25	25	10

ASTM A-7		**ASTM A-36**	
Tensile Strength, psi. for shapes of all thicknesses	60,000 to 75,000	Tensile Strength, psi.	60,000 to 80,000
Yield Point, Min. psi.	33,000	**Yield Point, Min. psi.**	36,000
Elongation in 2" Min. percent	24	Elongation in 2" Min. percent	23

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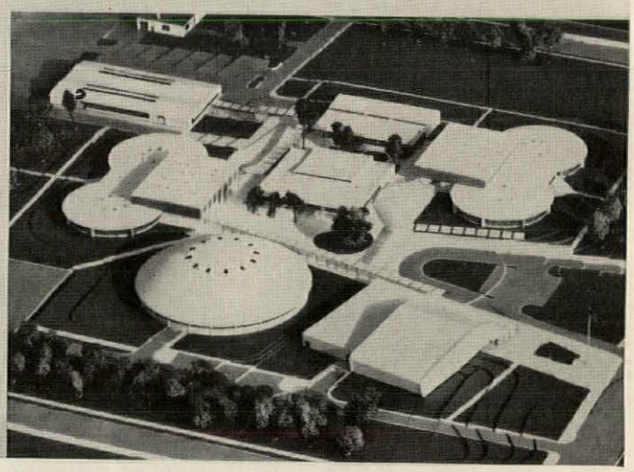

Your builders hardware man is a good man to know. His awareness of door closer requirements is your assurance of proper door control. His awareness of door closer styling is your assurance of attractive installations. He makes an important contribution to the building industry.

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Building Consultant: Arthur Read, Holland, Michigan
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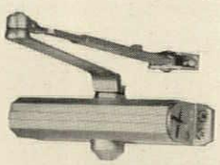
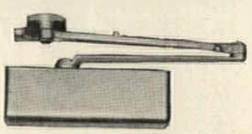
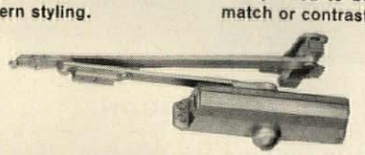


Series 1600 Tri-Style Closers—three unique mounting methods non-handed, 15% power adjustment and attractive modern styling.



Series 7000 Closers—with covers of wood to match door and room paneling, of aluminum to match door hardware and primed to be painted to match or contrast decor.



Series 6100 Uni-Trol—unitized door control—all five door control functions performed by this entirely new hardware product; only one installation at the door.

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Norton has the most complete line of rack-and-pinion door control on the market today. Closers that are flexible enough to be installed in any location and attractive enough to compliment any decor. And the Norton 80-year reputation for quality is your guarantee of dependability. 1070

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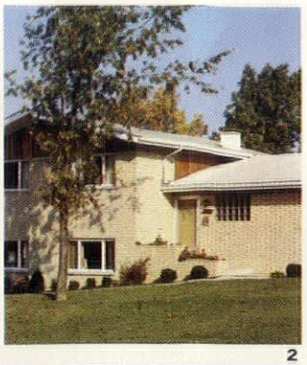
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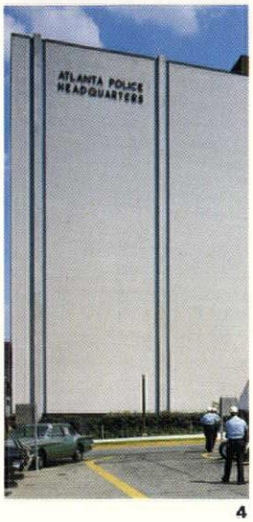

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8

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The finest holder available.

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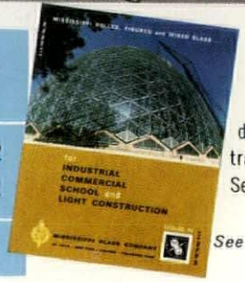
* Patent applied for

Central Library, City of Burbank, Burbank, California
Architect: Fickes & Fickes, AIA, Arcadia, California
Glazier: Downey Glass Company, Downey, California

Thick-ness	Approx. Light Transm'n	Weight Unpacked Lbs.-sq. ft.	Maximum Sizes
1/8"	84.5%	2.0	48 x 132
7/32"	82.0%	2.8	60 x 132

FREE SAMPLE ON REQUEST



NEW CATALOG
Contains pattern descriptions, light distribution charts, transmission data. Send for your free copy today.
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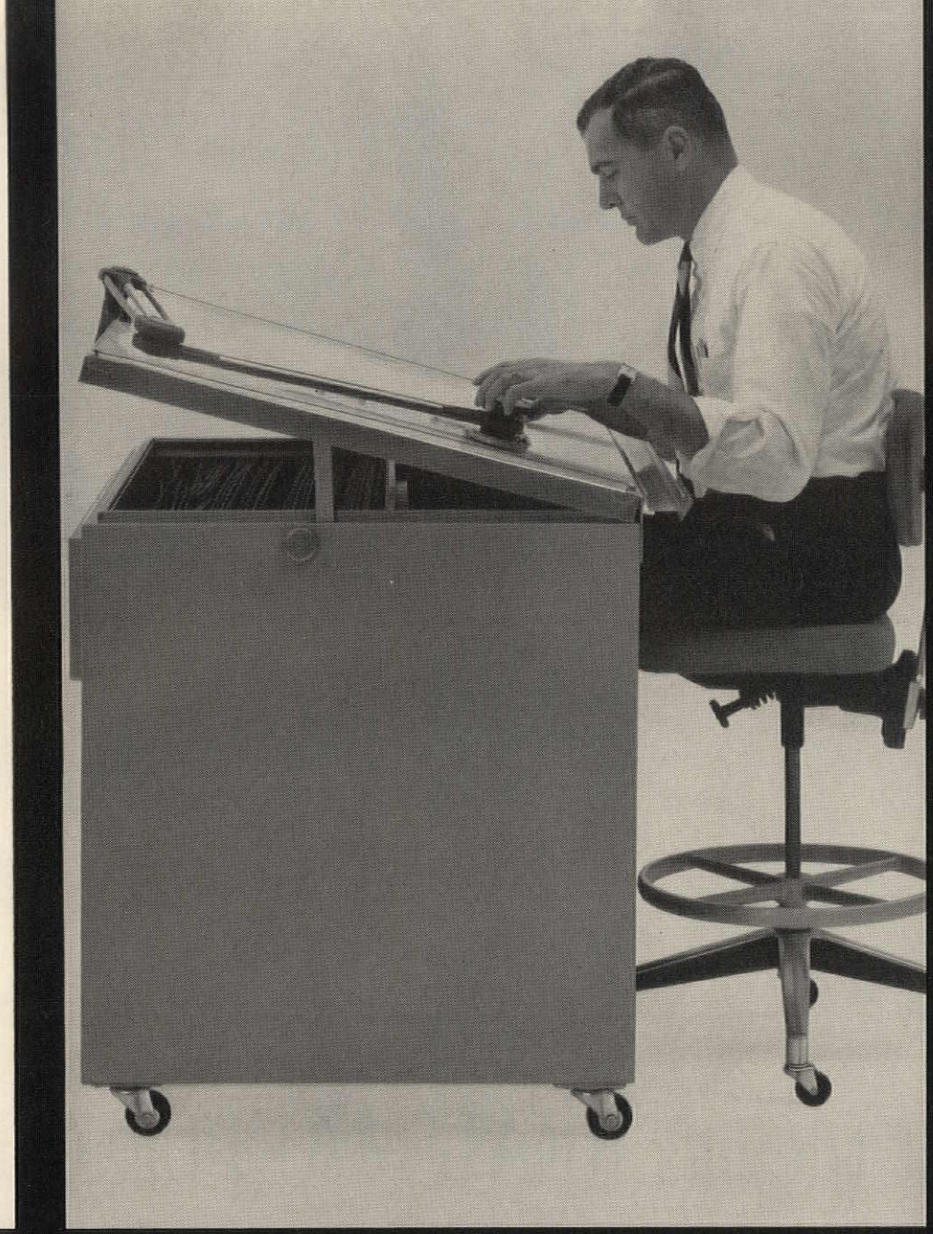

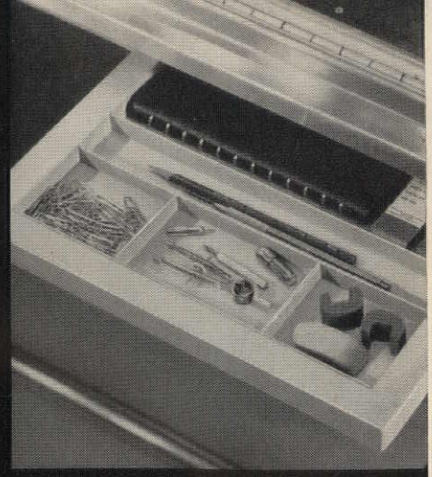

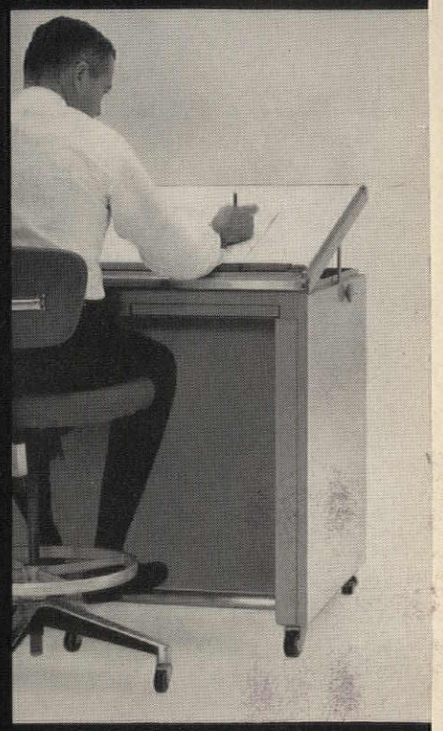

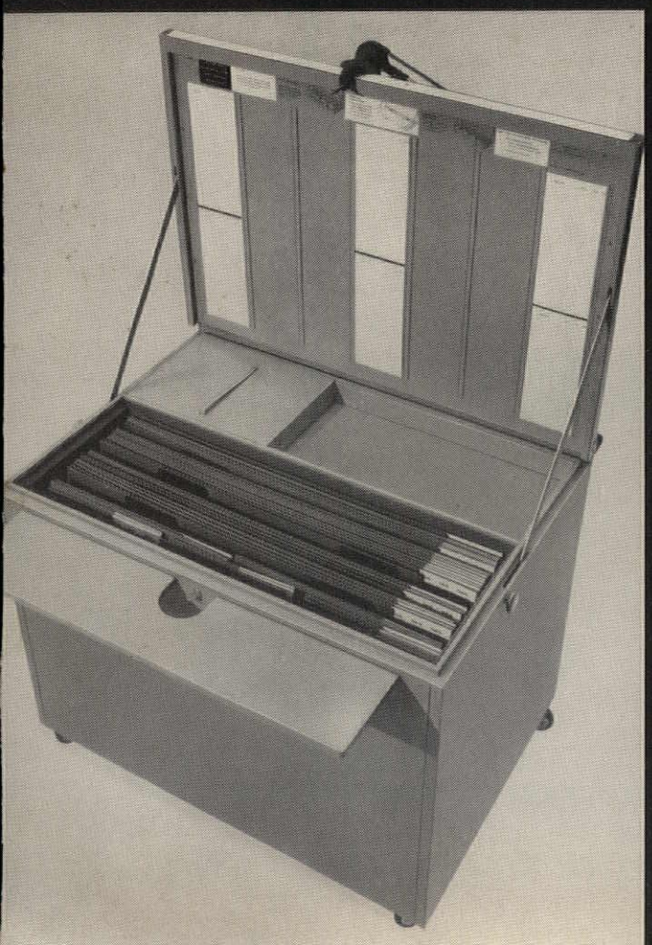

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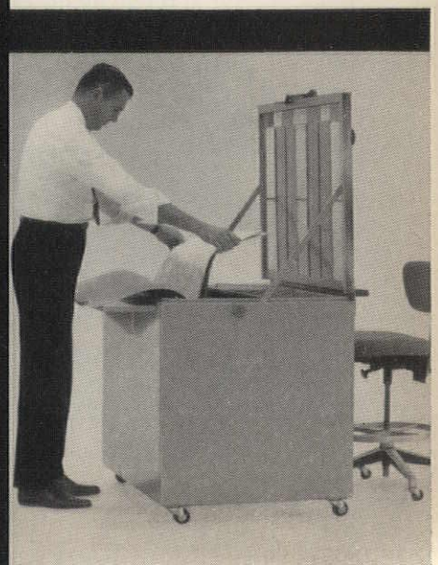

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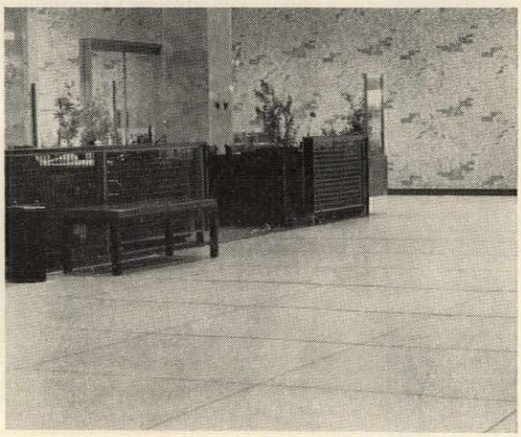
TERRAFINO's beauty is more than skin deep



This tile has a "memory" which shakes out indentations. Its lustruous surface resists dirt accumulation and scuffing. TERRAFINO can be washed with any type cleaner, on either side of the Ph scale.

TERRAFINO is quickly installed with an ordinary emulsion type adhesive. No special tools, grouts or glues needed.

TERRAFINO's standard color range includes 10 beautiful patterns. It is available in two sizes, 9" x 9" x ⅛" and 12" x 12" x ⅛".

Descriptive literature and samples are available on request.

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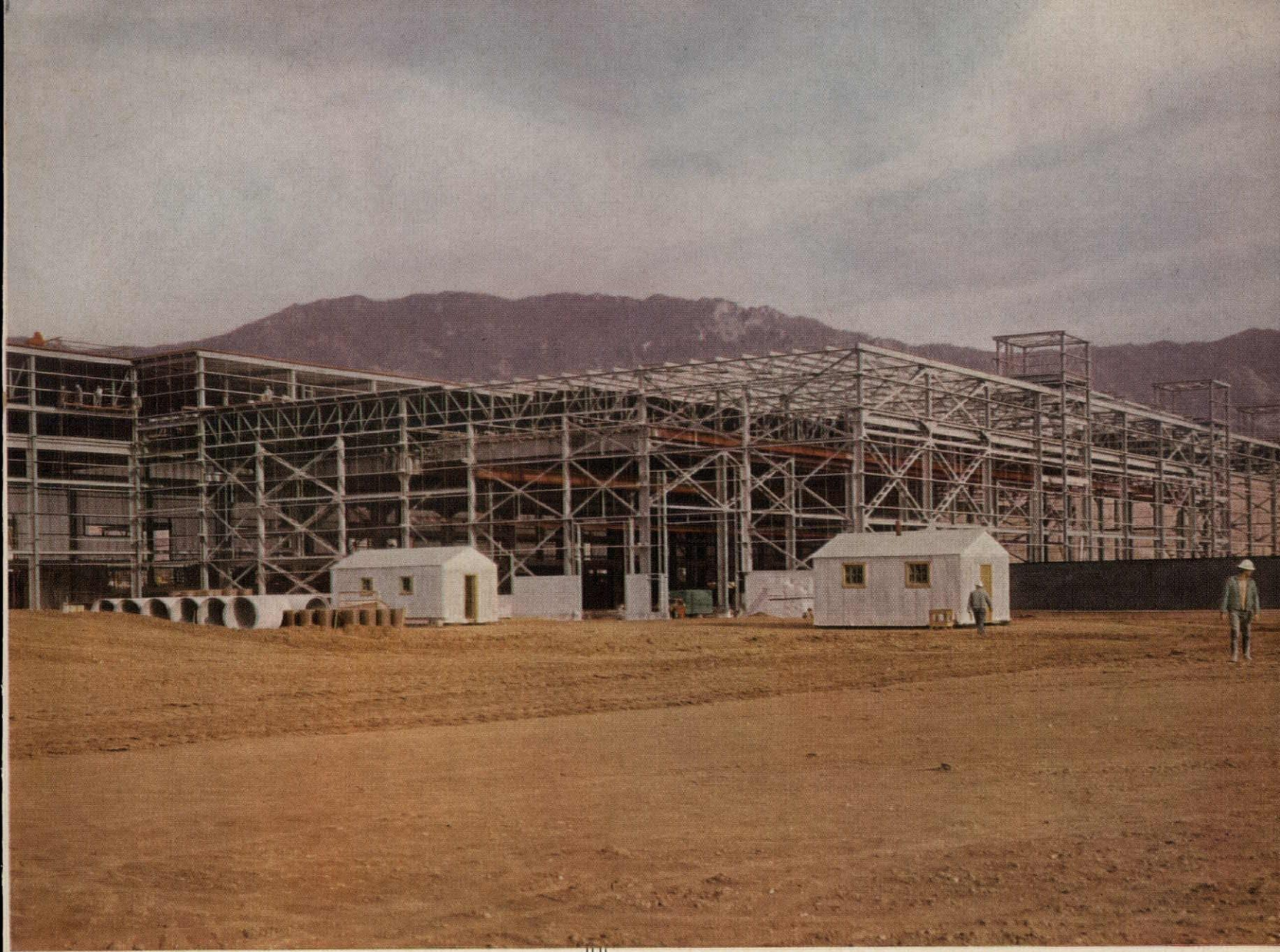

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Parsons-Jurden Corporation, engineers
The Ralph M. Parsons Co., contractor

Anaconda selects ALLIED

for 5,000 ton structural steel job

What else but structural steel for the support of heavy cranes and elevated bins used in concentrating copper ore? What else provides optimum efficiency at minimum cost...and goes up with so little fuss?

5,000 Tons of structural steel for The Anaconda Company's new concentrator building in Butte, Montana, were fabricated and erected by Allied Structural Steel Company and its Industrial Construction Division.

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Now--the vein-textured marble of ancient Italy...with nature's subtle shadings and stratifications...has been captured in all its beauty in Vinyl-Asbestos by Ruberoid. Here is a tile for those floor areas where distinction and design are important. Quality built for quality performance...Ruberoid's new TRAVERTINE Vinyl-Asbestos Floor Tile.

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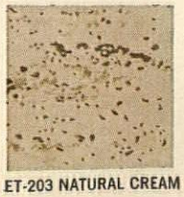
ET-203 NATURAL CREAM

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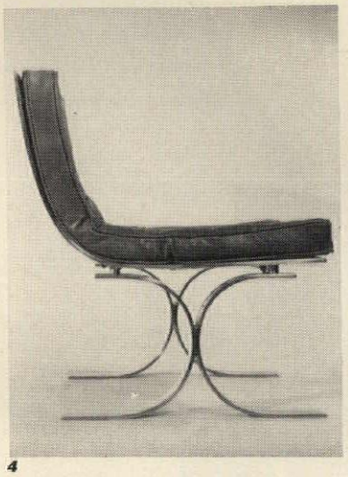

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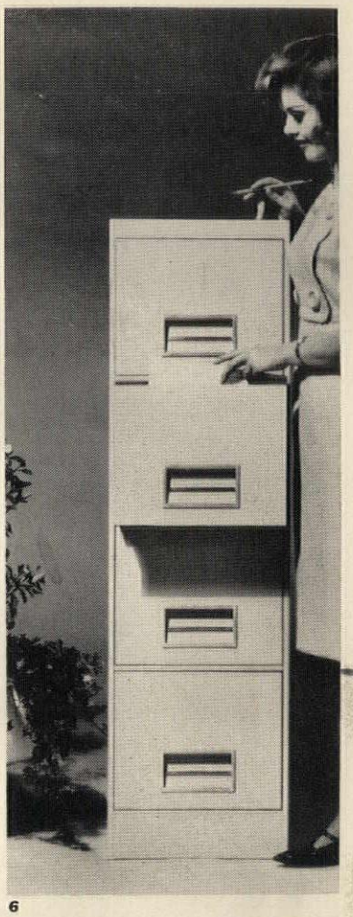

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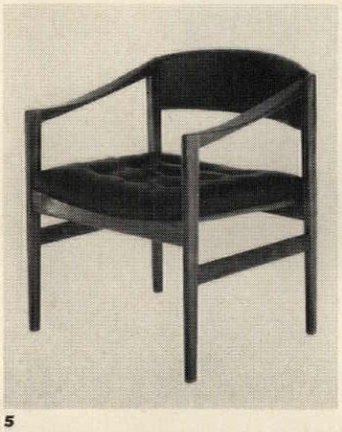

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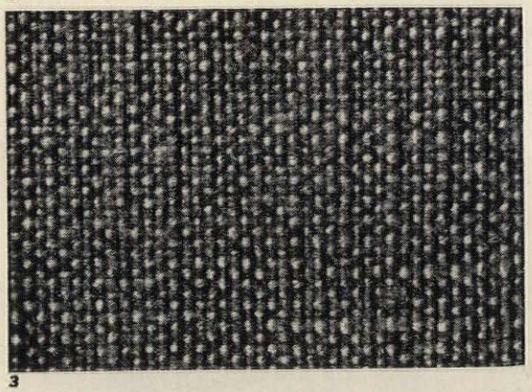

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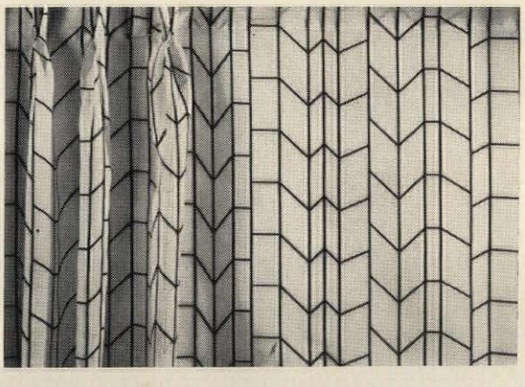

7

1. WALNUT DESK AND CHAIR. Stainless steel and oiled walnut are combined in this handsome desk from Janet Rosenblum Inc.,* designed by Carter Winter. The chair swivels from a cast aluminum or walnut base. Net costs: desk, $540 for the one shown, $415 in painted rather than stainless steel; chair, $105 in muslin.

2. DANISH DESK. Teak, oak, or wengé are the woods in which this desk is made for George Tanier Inc. It has a writing surface 5 feet long and 2¼ feet wide and shallow drawers cantilevered from the frame. Designers: Nanna and Jorgen Ditzel. Cost: $350, plus about $100 for the cane-bottomed chair.

3. NEW MILLER FABRICS. The photograph at left is Herman Miller's "Hopsak," an upholstery fabric of 100 per cent nylon, available in 26 colors. At right is an all-Dacron drapery fabric, "Graph," in three colors on white, the pattern repeated every 2 inches. Net costs: $13 per yard for Hopsak, 54 inches wide; $2.25 for Graph, 48 inches. Both designs are by Alexander Girard.

4. CURVY SLING. Architect Eric Defty's leather-and-chrome chair is intended to be a kindred spirit to Mies van der Rohe's Barcelona chair. The leather cushion curves over a steel frame laced with saddle leather straps. Available on order from the H. Balaban Carp Gallery and Lammert's, St. Louis. Cost: $450.

5. CONFERENCE CHAIR. Solid teak or walnut, hand rubbed to a glowing finish, forms the sculptured frame of this new conference chair from Dux, Inc., San Francisco. Foam rubber pads the seat and back, covered in leather or vinyl. Designer: Ray Zimmerman. Cost: $259 in black leather.

6. TRIM FILES. This tier of four file drawers, known as the "400 Trend Line Architectural File," is from a new series made by Peerless Steel Equipment Co., Philadelphia. Cost: $160 to $170.

7. SECRETARIAL SWIVEL. A new version of the Time Inc. furniture made by the Domore Chair Co., Inc., Elkhart, Ind. is this secretarial posture chair. The base and back stem are chrome-plated steel. Cost: $115 in muslin. END

*Unless otherwise noted, all firms are in New York City.

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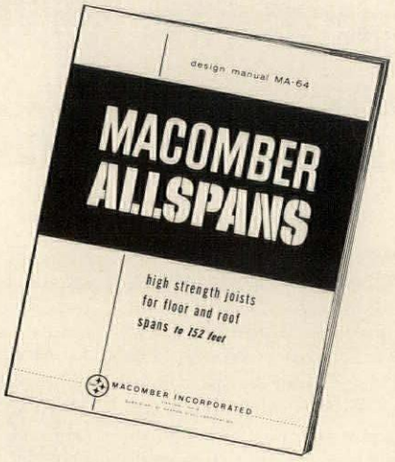
combine the strength of cold rolled steel with unparalleled design freedom

ALLSPAN® joists are without equal where long, strong open-web steel framing members are a must. You can span areas to 152 feet in width—column-free. ALLSPANS utilize nailable V-Section chords (patented) and tube webs cold rollformed from custom steels. ALLSPAN open-web design provides a freeway for conduits, ductwork and wiring. Metal roof deck may be attached by welding or nailing. Quality control of production is supervised by Pittsburgh Testing Laboratory inspectors. Write for our complete design manual.



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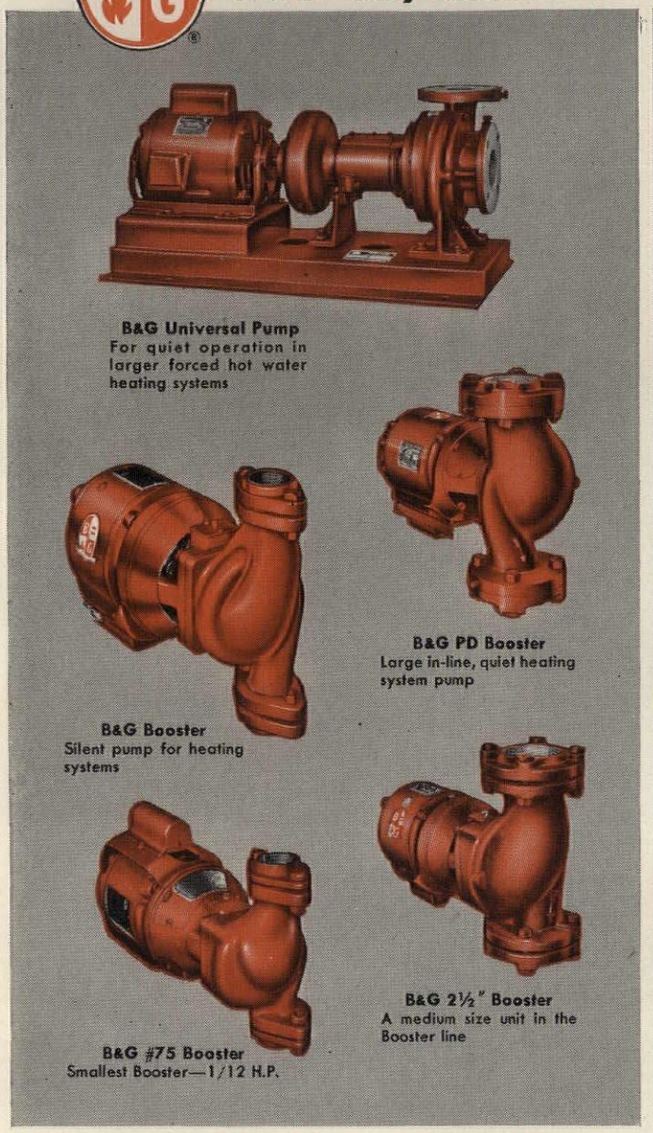

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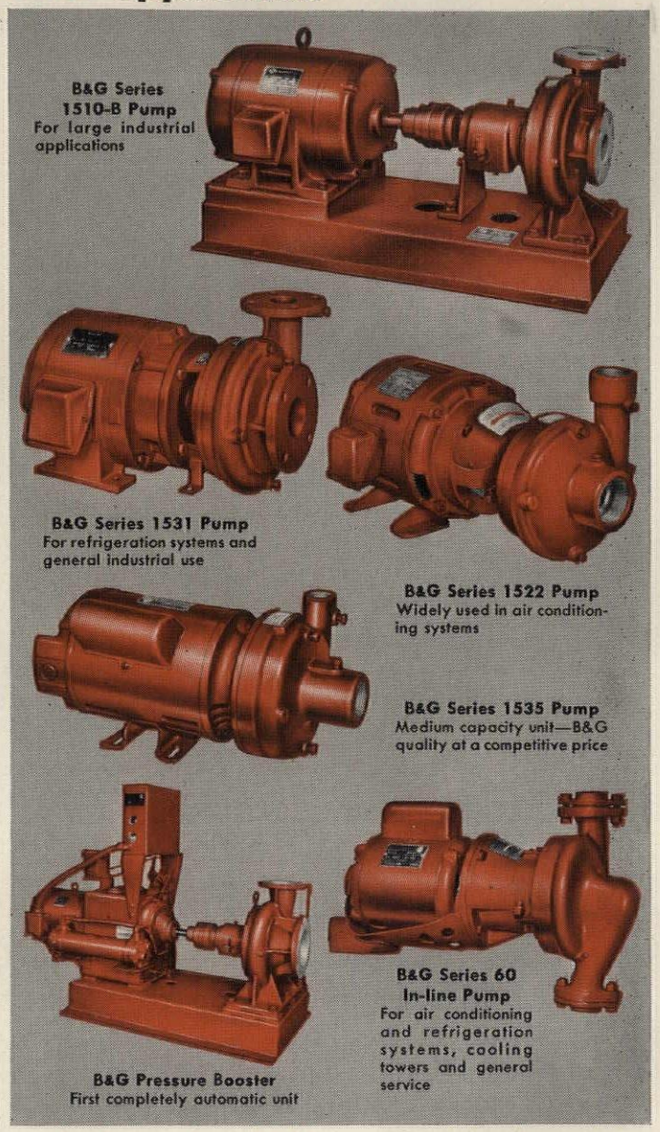

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For large industrial applications

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For refrigeration systems and general industrial use

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First completely automatic unit

EXTRA QUIET...FOR HEATING AND COOLING SYSTEMS

B&G pumps for this purpose are designed and built specifically to assure three things: First, *quietness* of operation...second, *dependable*, trouble-free performance...third, *long life*.

B&G heating and cooling system pumps are immune to trouble because foreign material in the heating system water cannot affect the bearings...unusual water conditions do not affect pump lubrication... today's higher design temperatures which frequently reach 240° are not injurious to the pump.

Nation-wide service is available, even in remotest locations.

EXTRA RUGGED...FOR INDUSTRIAL USE...PRESSURE BOOSTING

Where the extreme quietness required in heating and cooling systems is not a factor, B&G industrial pumps offer proved dependability and efficient performance.

Why these pumps give years of trouble-free service is evident from their design. Vertical split-case construction permits removal of the bearing bracket without disconnecting pipe line or motor leads. Special alloy steel shafts are super-finished and oversized to keep deflection at a minimum. Leak-proof operation is assured by the "Remite" mechanical seal which eliminates packing rings and gland adjustment.

A stock of most commonly used sizes is maintained near you for immediate delivery.

Your local B&G Representative is well qualified to help you with your pump selection problems. He is listed in the Classified Telephone Directory. Or write ITT Bell & Gossett Inc., Morton Grove, Ill. Dept. HZ-62.

ITT BELL & GOSSETT INC.
A SUBSIDIARY OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

Michigan Consolidated Gas Bldg.—Architects: Minoru Yamasaki—Smith, Hinchman & Grylls, Detroit. General Contractor: Bryant & Detwiler Co., Detroit. Windows: The Adams & Westlake Co., Elkhart, Ind.

This unusual window design was a challenge to the manufacturer. Stainless Steel came through–in strength, appearance and cost.

The architect's requirements called for strong, weather-tight, corrosion-resistant windows at competitive cost. Adams & Westlake produced them in nickel stainless steel from two roll-formed sections that were bent instead of cut.

The high strength of stainless steel reduces designers' and manufacturers' limitations by permitting the use of thinner gauge components—and brings costs close to those of competitive materials.

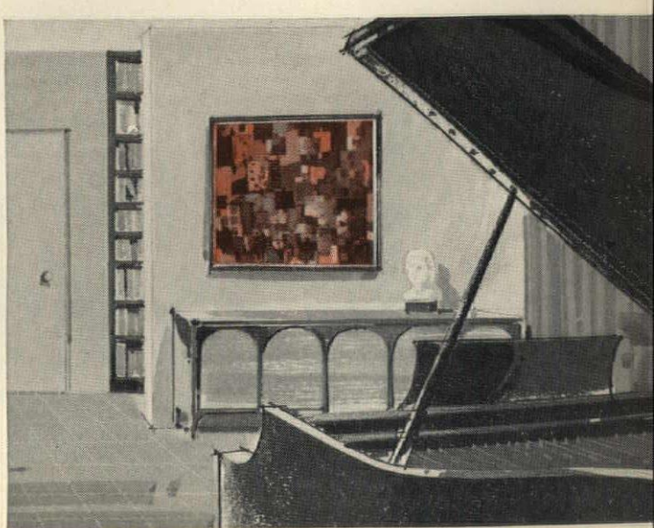
Stainless steel is economical over the years, too. It's solid stainless right through—maintains its gleaming, corrosion-resistant finish for life with a minimum of care. And its low thermal conductivity reduces heat losses in winter and heat gain in summer.

For further information on the many design advantages of nickel stainless steel and a list of fabricators, write for Inco's "Suggested Guide Specifications for Stainless Steel Windows."

The International Nickel Company, Inc. 67 Wall Street New York 5, New York

Hager creates for the Ornatologist

Where luxury is projected by traditional design, ornamentation must be rigidly disciplined. Architects who avoid ostentation yet make full use of the design freedom allowed deserve special identification. We call them *ornatologists* and entrust the use of the obviously artistic Modelé Hinge to their discerning judgment. This new hinge from Hager in a choice of rich finishes carries impeccable taste right to the doorway of traditional interiors. HAGER HINGE CO., ST. LOUIS 4, MO.



Hager

Everything Hinges on Hager

Steel for Strength

STRUCTURAL DESIGN **NEWS**

FROM BETHLEHEM STEEL

NO. 6

HOW DOES STEEL FRAMING COMPARE IN COST WITH OTHER MATERIALS?

Reports from all over the country prove that steel can produce savings in structures that once might have been more economical in other materials. Here are some examples:

A ST. PETERSBURG, FLORIDA, SCHOOL in the $800,000 class was originally planned in prestressed concrete. Re-design in steel is reported to have saved nearly $100,000.

A THREE-LEVEL PARKING GARAGE in Mount Vernon, New York, with approximately 140,000 sq ft of space, was designed in Bethlehem's V45 high-strength steel. It was completed in five months for $1,400 a car. A garage in a nearby community, designed in precast and prestressed concrete, took far longer to build and cost over $2,000 per car.

13-STORY BALTIMORE APARTMENT BUILDING was built with structural steel for $2.29 psf -- $.40 less psf than poured concrete. In addition, steel permitted faster erection during winter months, making possible earlier occupancy.

4-STORY LANCASTER, S. C., WAREHOUSE, was considered in prestressed concrete and in structural steel. Steel proved more economical. Further investigation proved that composite design in steel saved an additional $20,000.

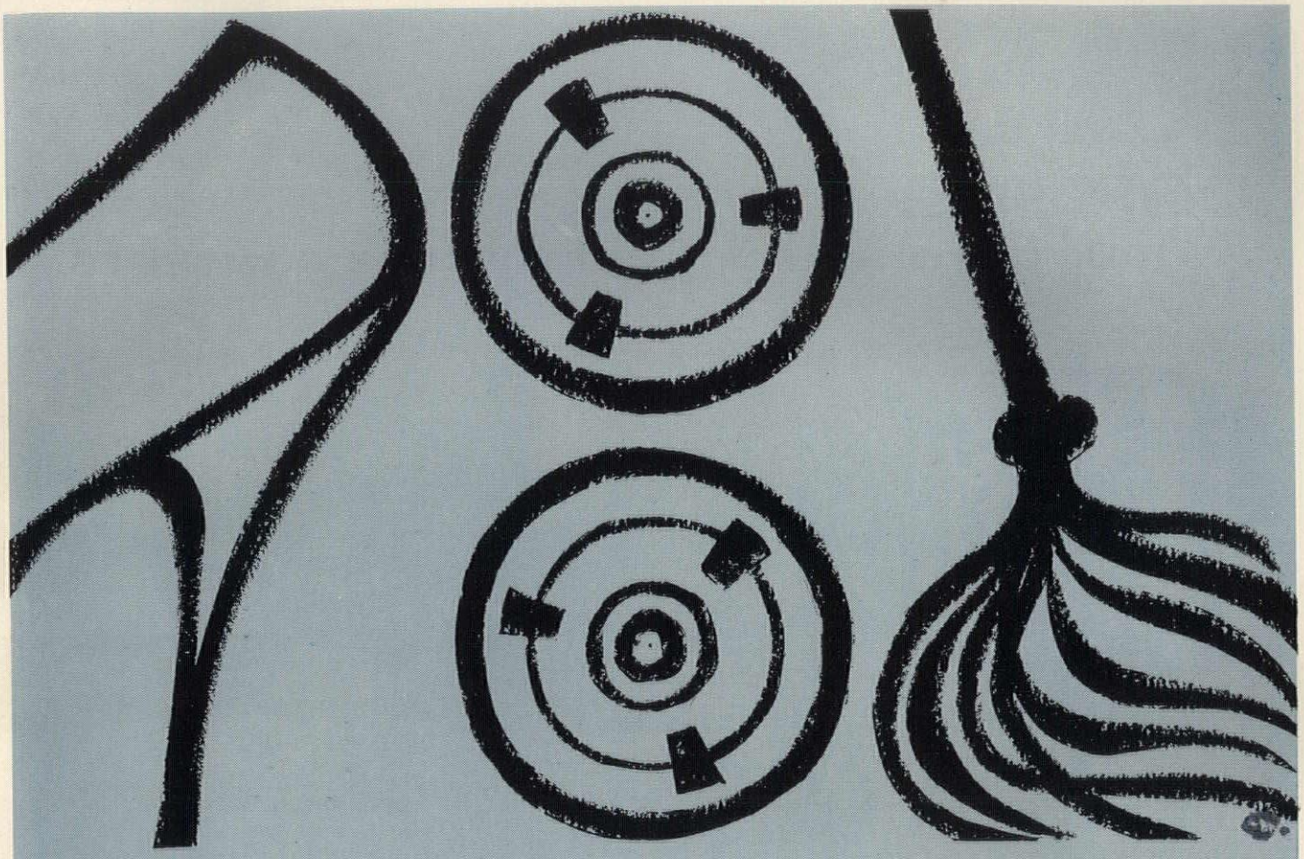
5-STORY CITY HALL in Allentown, Pa., was investigated in both reinforced concrete and structural steel. The steel estimate was slightly less than the alternative, and provided better solutions to such design features as cantilevered floors and curtain walls.

DON'T OVERLOOK THE LATEST DEVELOPMENTS IN STEEL! Increasingly popular composite, continuous, and plastic design in structural steel, as well as new products such as Bethlehem's economical, high-strength V Steels, offer dramatic savings to alert designers. Don't hesitate to call on steel fabricators for technical information and helpful tips.

(Names of the architectural and engineering firms responsible for the projects named above will gladly be furnished on request.)

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. Export Sales: BETHLEHEM STEEL EXPORT CORPORATION



Resists heavy impact and wear. G-E Perma-Kleen tile is a new, completely different type of flooring . . . a high-pressure plastic laminate with a super-hard surface that will **not** indent from weight or impact of furniture, equipment, or spiked heels. The non-porous surface is highly resistant to soil penetration, stains, and cigarette burns. Even scuff marks come off easily.

Provides ideal computer environment. Perma-Kleen Tile does not build static electricity charges that contribute to dust accumulation. And since no waxes or sealers are required, there is no wax flake-off or powder to contaminate delicate computer equipment and cause faulty triggering or costly downtime. This long wearing tile does not support combustion.

Drastically cuts maintenance costs. Only occasional damp mopping is required — no sealers, waxes, special cleansers, stripping equipment, or excessive labor as required to keep vinyl tile looking like new. The slight addition in the cost of the original floor (about 10%) is quickly amortized with maintenance savings, which then continue accruing for years.

This revolutionary new floor tile is available through leading elevated floor system manufacturers.

ANNOUNCING PERMA-KLEEN* TILE

a remarkable new surfacing discovery for elevated floors... from GENERAL ELECTRIC

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Send G-E Perma-Kleen Tile product data.

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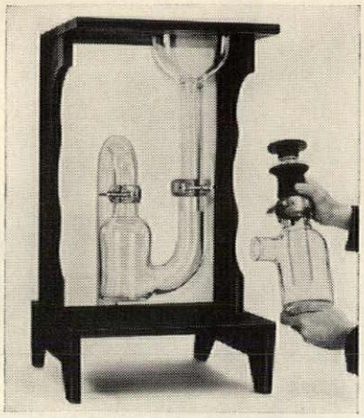
CORNING

PRODUCTS TO HELP YOU STRUCTURE CONCEPTS



Best of all, our drainline kits now cost 30% less.

You can save time and money by designing these underbench drainlines into your next laboratory.

The kits now cost about 30% less than field-assembled old-style parts and fittings. And they practically slip into place.

Units can be adjusted both horizontally and vertically to meet specific bench needs in the lab. The units include sink strainers, cup sinks, traps, and fittings with a minimum of four inches of adjustment at any adapter coupling joint.

All components which contact wastes are inert and highly resistant to corrosion.

Of course, this would be just one part of the PYREX® brand drainline which you can specify and forget in any lab.

Write for more information about the drainline, the underbench kits, or both. Or ask your laboratory equipment manufacturer about them.

Why put a heater on the ceiling in an office building?

To begin with, because floor space costs so much. Why waste any of it? Put the heaters on the ceiling.

Besides, it's more efficient to heat from the ceiling. CORNING® Electric Radiant Heaters flood the whole area with safe, clean, quiet, efficient *far* infrared heating energy.

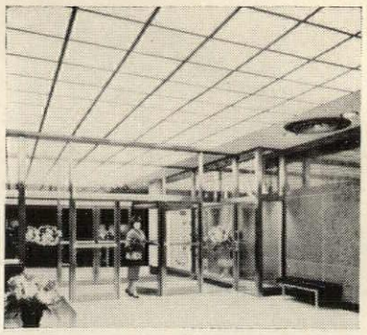
No desks or files or other equipment can block the heat when it comes from the ceiling. On the other hand, nothing can get overheated from being too close to the source.

You can put these 2′ x 4′ panel heaters *on* or *in* the ceiling with surface mounting or suspended T-bar mounting. No ductwork or blowers required.

You can paint and repaint them to blend with the décor of each room without affecting their heating performance.

Might not be a bad idea to put some in your own office . . . give yourself a chance to stay warm and get used to CORNING panels at the same time.

Talk to your electrical contractor and you'll find out just how little it would cost to use our heat and how fast he could install it.



The best of two glasses in one panel.

One of the most popular lighting glasses we sell is a hybrid. Our CRYSTOPAL™ panels give you a truly beautiful blend of crystal and opal glass.

We start with crystal base of exceptional clarity and add a goodly portion of one of our best opal materials. Formed into the surface of this unique combination is a low-brightness prismatic structure.

The result is a panel that combines the efficiency and light and color control of prismatic crystal with the softness and warmth of opal diffusion.

Consider CRYSTOPAL panels for your next lighting installation and see if they don't add a certain something to your rooms.

For more information on any product discussed here or any other Corning product made for architects and builders, please write to Building Products Department, Corning Glass Works, 9704 Crystal Street, Corning, N. Y. — *where today's developments become tomorrow's standards in the building industry.*

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CORNING GLASS WORKS

Architrac lets you standardize, lets tenants individualize.

With Architrac® double traverse sets, closing the room-side draperies also closes the outside drapery. (We do this by using ingenious interlocking master slides.) This gives a uniform exterior appearance and still allows tenants individual choice of color and design in room-side draw draperies.

Our recessed and ceiling mount Architrac permits another sort of standardization. The extruded track can be installed around the entire building perimeter, regardless of where interior partitions may be placed.

After tracks are installed, each unit can be partitioned to tenants' individual requirements. Then the component parts are inserted in the track. If partitions are moved, the component parts are easily repositioned allowing complete flexibility of office layout.

We supply Architrac in nine styles (cord and hand operated) for flush, recessed, flanged or bracket mounting. For details on our full line of Architrac drapery hardware, see Sweet's, section 18F/K1. For complete specifications covering Kirsch Architrac interlocking master slides and perimeter applications, write us. Ask, too, for our free catalog, price-estimation information and about our nationwide consultation service. Kirsch Company, 332 Prospect Street, Sturgis, Michigan.

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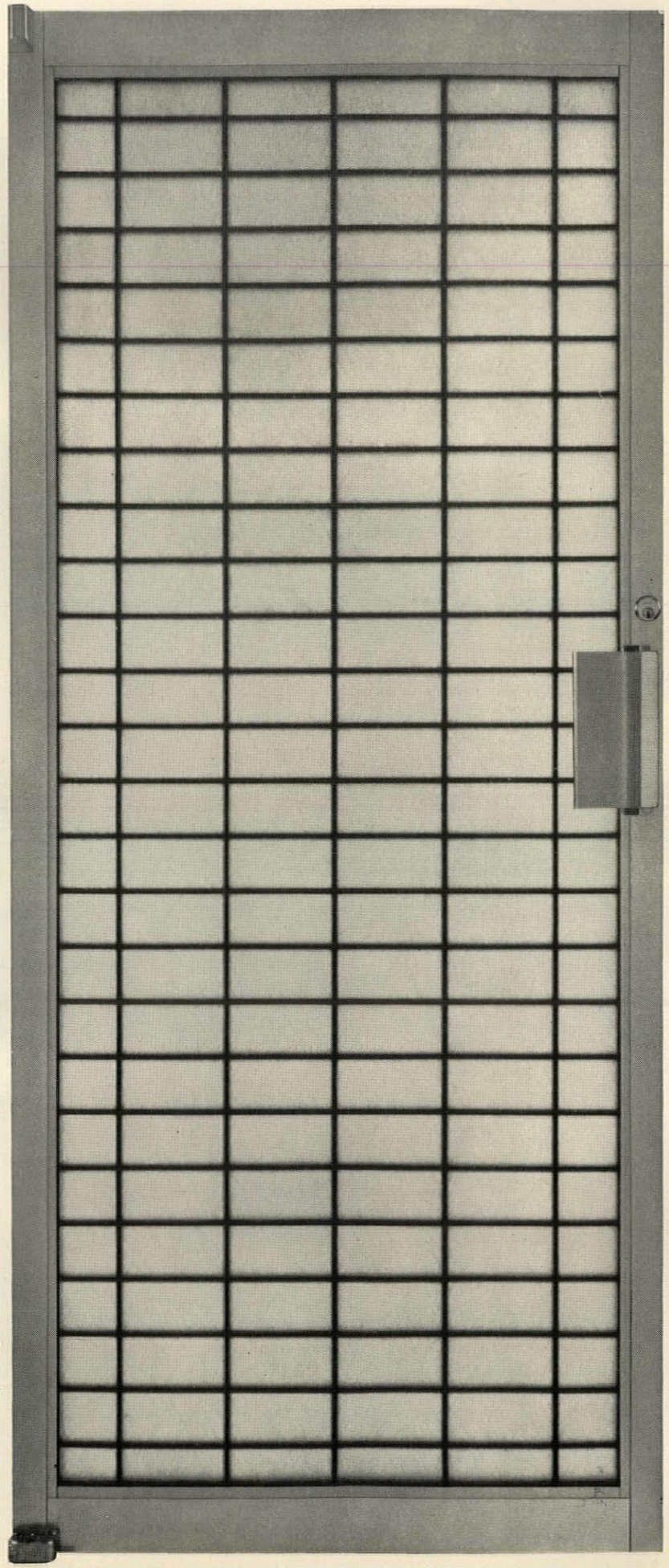
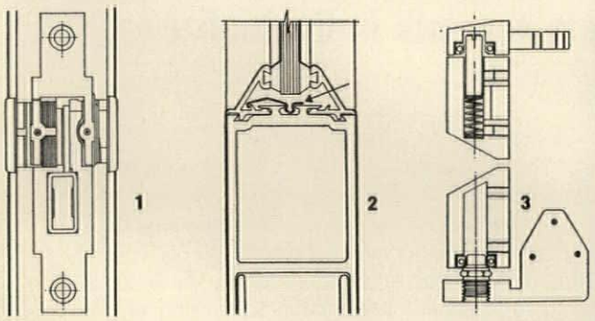
only Amarlite has the new Glidden Panelux door!



NOTHING COMPARES to the beauty and radiance of optional Panelux translucent sandwich door panels. They are acrylic modified polyester reinforced with continuous strand glass fiber . . . strong, stable, resistant to weather, water and impact! And, they compliment any material or texture. EXTERIOR and INTERIOR Panels have high thermal insulating qualities, and they are available in standard door sizes in a choice of 3″ x 3″ or 3″ x 6″ grid patterns. Custom sizes and color designs may be ordered. Get details from your Amarlite representative. Specify AMARLITE . . . **there's no equal!**

GET MORE IN A DOOR! 1 EXCLUSIVE AMARLOCK has new recessed cylinder eliminating gripping surface for unscrewing; extended bolt protection. **2 SECURITY CLIPS** . . . easily installed . . . prevent removal of exterior stops without proof of entry. **3 NEW PIVOTS** and butts have ball bearings and stainless steel pins.



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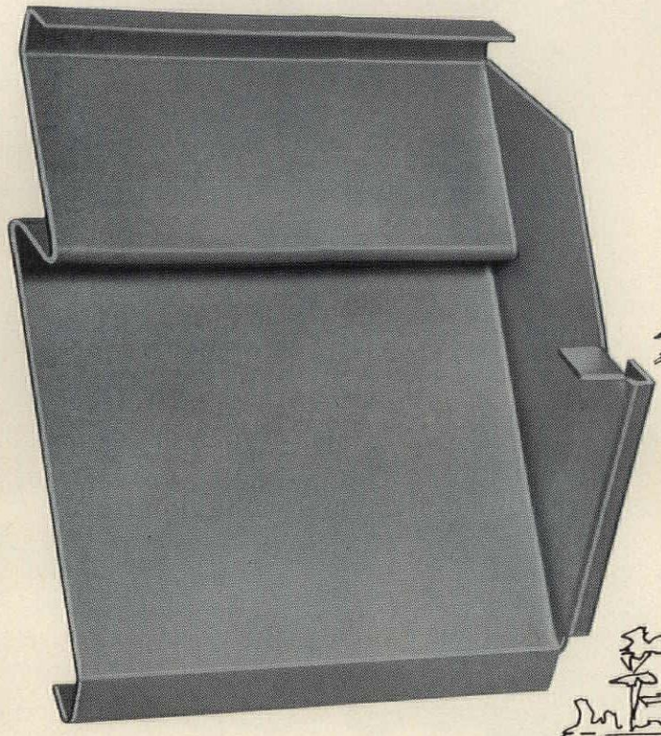
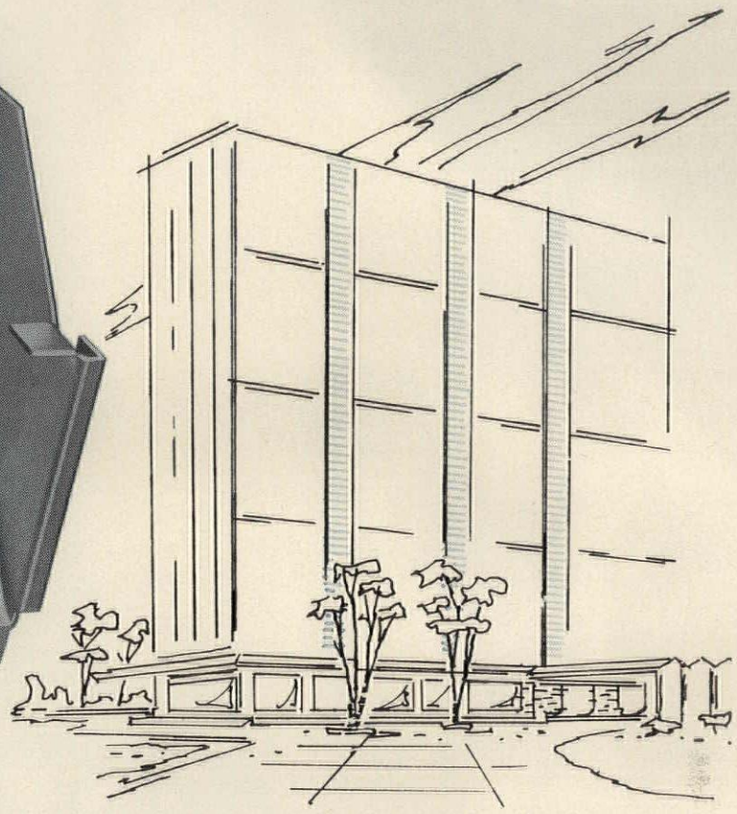
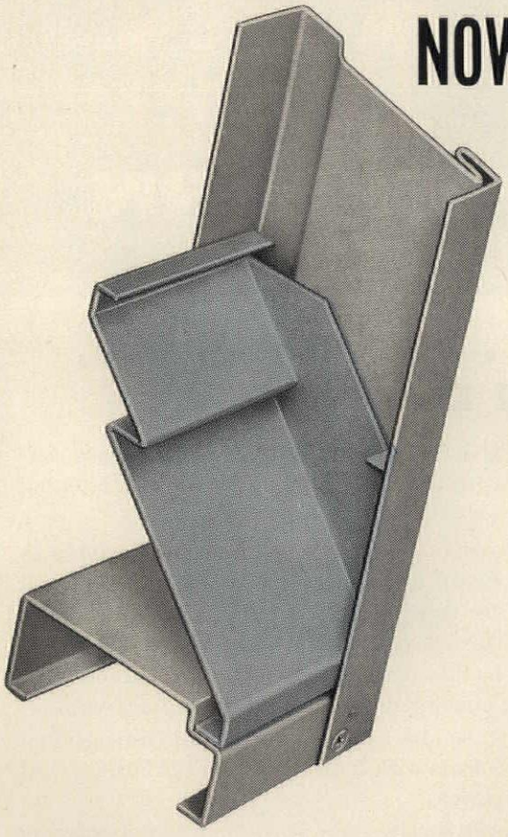




NOW...a true stormproof louver!



The vulnerable portion of a louver is where the blades connect to the jamb. A leak at this point can mean water in your building.

The illustration at the left shows how Walcon engineers have effectively eliminated the possibility of leakage by turning up the blade ends and interlocking them with the jamb. This patented feature also eliminates costly welding and unsightly riveting.

Quality features such as this one are prevalent throughout Walcon's complete louver line. Further information available upon request.

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. . . for INVISIBLE FRAME* . . . Frameless, and Metal Framed Doors

Now you can combine a pleasing appearance with high lighting efficiency. Featuring a new conical prismatic design, the Miller M-1 lens gives excellent lamp concealment with precise light control for low brightness and complete visual comfort. The M-1 is available in permanently clear acrylic plastic or a light stable grade polystyrene.

This interesting new lens pattern is available for three different door designs.

M-1 INVISIBLE FRAME DOOR is featured for use in the Miller Surfaceline and Versaline fixtures for surface or recessed mounting. This new door conceals or hides the metal frame . . . offers a clean rectangle of light with more light transmission from each fixture. The Miller M-1 Invisible Frame Door is completely self-supporting with positive metallic hinging and latching from either side.

M-1 FRAMELESS DOOR is offered exclusively in the Miller Grid-Line, a new line of fixtures designed specifically for mounting "in or on" grid-type ceilings. Complete absence of a metal door frame or visible hinges and latches means more light transmission from each ceiling opening plus enhanced lighted appearance.

M-1 LENS is also available for use in conventional steel framed doors with both the Miller Surfaceline and Versaline fixtures.

For complete specification, performance and ordering information on the new M-1 lens, write Dept. 113.

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WORLD TRADE CENTER

Forum: In the face of imminent disaster, we wish to appeal to the native intelligence of all sensitive people concerning the proposed erection of Yamasaki's twin towers ("World's Biggest Skyscrapers," March '64).

All good buildings throughout history fit their sites well; the concept of the twin towers is totally wrong. If they are erected, the whole of Manhattan will be thrown into a different scale and ruin what is now one of the most exciting spatial arrangements in the world.

If the Chase Manhattan building can be challenged for the destruction of Wall Street's consistency, then the twin towers will add the final touches to this fatal feat.

As Frank Lloyd once said, ". . . a doctor can bury his mistakes, an architect can only advise his clients to grow vines." How do we get the vines all the way up there?

THE CLASS OF ARCHITECTURAL DESIGN 112x

Ernest Andon	Richard Kalb	Michael Price
Norman Becker	Ronald Katen	Robert Radlein
Edgar Bermudez	Max Kawer	Henry Reiter
Jay Dostis	Frank Kirshenbaum	Israel Stern
Donald Fehringer	Walter Litvak	Michael Wolfe
Richard Jansen	Ernest Pospischil	Charles Wong

New York City — *College of New York*

Forum: The structures reminded me of a project you published some years ago by Harry Weese called the "poor man's skyscraper" (Jan. '62) which also featured supporting walls.

The plaza seems to be a dead end and does not open on its western edge to the waterfront, which is, after all, its reason for being. With the proposed Hudson River redevelopment now under study, this seems an oversight.

New York City — DANIEL B. KLEIN, *Housing and Redevelopment Board*

MAN AND ART AT YALE

Forum: It was with considerable surprise that I read the following statement in the February issue (Yale's Art and Architecture building): "At this point, says the architect, most contractors might have simply walked off the job, saying 'sue me.'"

We have been in the building business for 36 years, and we have had a number of jobs which were considerably sicker than the one in question. However, we have never yet walked off a job saying "sue me," [nor do we] know of a contractor who has. If you have any proof that I am wrong, I am certain that the Associated General Contractors of America would like to hear about it for consideration under their code of ethics.

WALTER W. LATHROP
Toledo, Ohio — *The Lathrop Co.*

■ *Both the architect quoted and* FORUM *obviously intended a figure of speech, not a reflection on the contracting industry*—ED.

Forum: Mrs. Moholy-Nagy's analysis of Mr. Rudolph's "splendid achievement" overlooks the esthetic discrepancy between the fortress-like feeling of his "béton brut" and the smooth elegance of his own office.

The A & A building displays a curious "double-think" attitude: (a) via a semi-handcraft treatment of concrete, the architect has created a complex celebration of the new affluence, as if for the historical record; but (b) for himself—to express that "chez soi" feeling of his own office—he has returned to the simplicity of the international purism of the '20s. (According to Mrs. Moholy-Nagy, the complex agitation of space and the multitude of details mark the start of the "long voyage home to architecture," and those "few faithfuls" who still believe in economy of action and simplicity, just seem to repeat "the old incantations.")

The 36 levels, the interior bridges, the array of old and new details, the roof-scape, etc.—in short, this new architectural abundance—make one think of Mies' IIT building, designed for similar purposes, and of Picasso's prophetic words: "One starts to get young at the age of 60—and then it's too late! Only then does one start to feel free; only then has one learned to strip oneself to one's creative simplicity."

JAN REINER
St. Petersburg, Fla. — *Architect*

Forum: I was especially pleased to see the tribute to Whitney Griswold's creative reign, and for the attention which Charles Solomon and his organization received.

KINGMAN BREWSTER
President
New Haven, Conn — *Yale University*

SCHOOL COMPONENTS

Forum: Your February issue contained an interesting and commendable report on the outcome of the First California Commission on School Construction Systems Development. As one of the four manufacturers normally engaged in the lighting field that carried through this demanding procedure to the bid stage, I was disappointed that you did not see fit to cover the "Lighting-Ceiling" category more thoroughly. You did state that it was probably the most demanding category of the four; I might add it was also the most frustrating from our point of view as a low bidder, eased into second place by Inland Steel Products' excellent entry which came up lower in cost when combined with their structural bid.

As one who participated, I can say with all sincerity that a project of this type deserves much better support from industry, particularly ours, than this one received. We were all offered a challenge to show what our companies could do. We are proud to have participated and would do it again.

ARTHUR W. SEGIL
Vice President
Chicago — *Luminous Ceilings, Inc.*

■ FORUM *regrets that space did not permit a full exploration of the many worthy systems which did not receive awards*—ED.

Forum: Being active in the field of prefabrication, I read the article "School Costs Cut by New Components" with interest.

A program of 22 schools with a total of 1.4 to 2.4 million square feet alone makes possible substantial cost reductions. It might reasonably be wondered whether the savings will result essentially from design features or mass purchase. This question has also been raised with regard to the CLASP work in Great Britain.

ROGER HALLE
Pound Ridge, N.Y. — *Architect*

ST. GALLEN SCHOOL

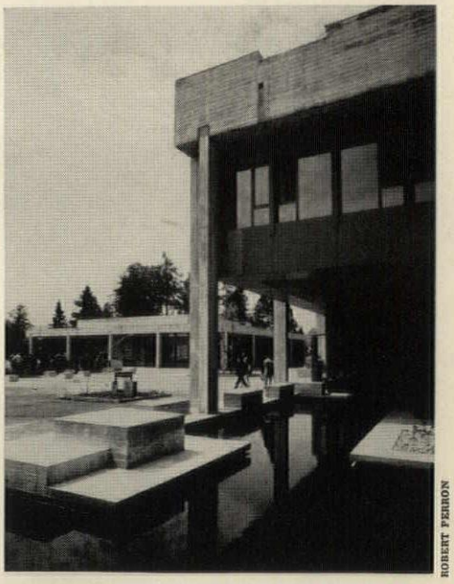
Forum: The Swiss school in St. Gallen (Jan. '64) is an excellent choice among recent European buildings of significance. This "lesson in concrete" certainly combines different aspects of concrete technology.

The philosophy that guides the site plan is wonderfully carried out in the individual spaces. The expression of the concrete seems to be mostly in its "skin," with the exception of the retaining walls. The prefabrication of the parts of the building strongly recalls steel or timber technology.

The use of board forms produces an agreeable unity of surfaces, yet its "craftiness" somehow appears incongruous with the structure's standardized techniques and rhythmic precision.

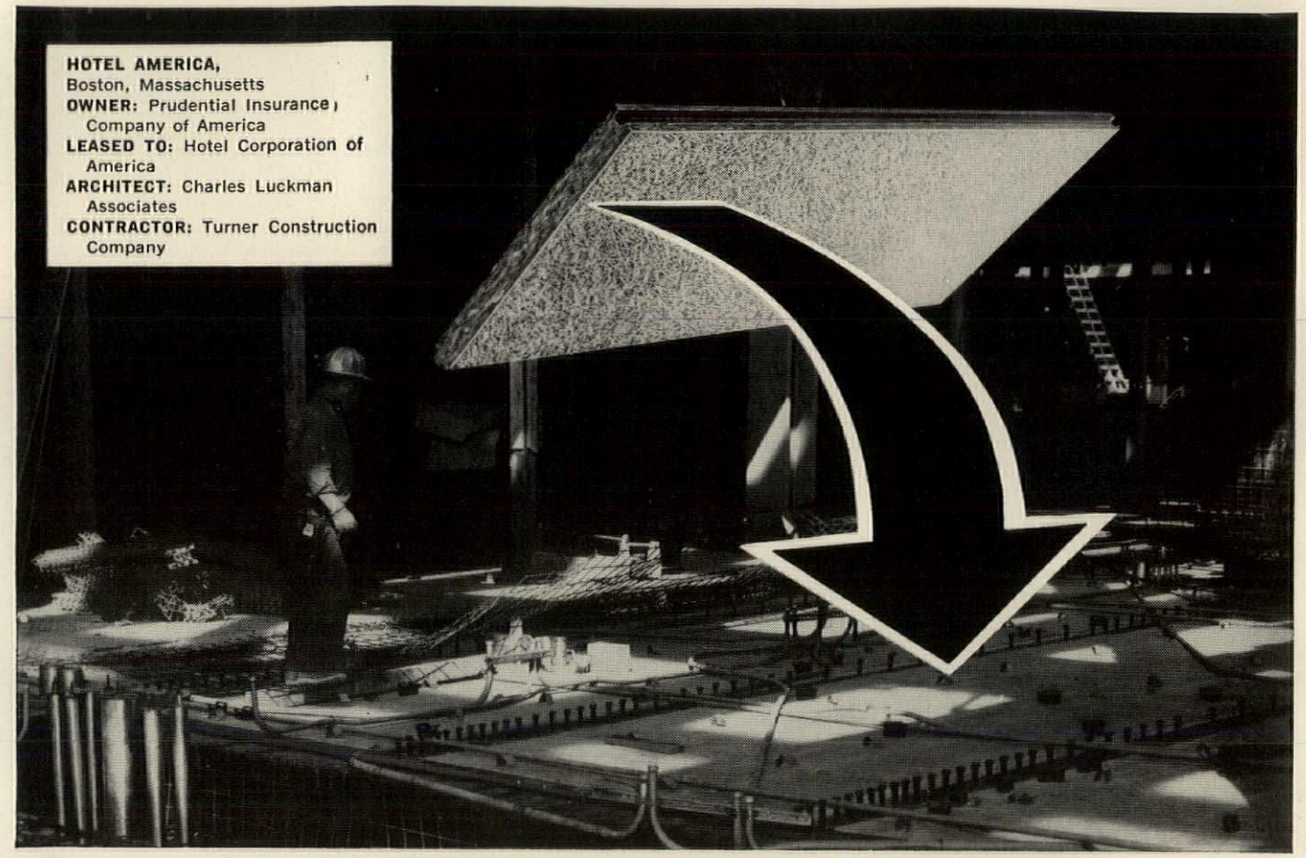
It is a great building, however, for its nobility of plan, for its richness of spaces, and for what it does architecturally for the community.

ROMALDO GIURGOLA
Philadelphia — *Architect*



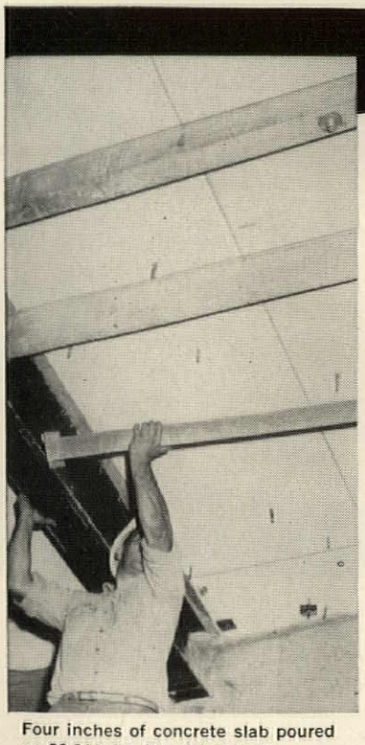
ROBERT PERRON

Forum: The St. Gallen school is a fine group of buildings with a clearly expressed modular unity, a beautiful articulation of diversified functions, and a sophisticated balance in the asymmetrical site plan. [But] the elegant "brutalism" appears very stiff and self-conscious, very academic indeed. Are the resurgent forces in architecture already exhausted? *continued on page 75*



THIS FORMBOARD STAYS PUT

...and the acoustical ceiling is in place



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STRUCTO-FORM formboard is composed of chemically treated wood fibers pressure bonded with portland cement. What better combination could there be than cement to cement? The top surface of air-spaced fibers bonds fast with reinforced concrete. And the underside can be left exposed as an attractive acoustical ceiling.

It's non-combustible. Acoustical. Insulating. Does a big job on temporary shoring or permanently supported by joists or bulb tees. Get the whole story from the INSULROCK products distributor/specialist in your area.

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One needs only to compare Le Corbusier's work to that of the St. Gallen team to see that the younger men are much more dead than one of the fountainheads from which they drink. The architects of St. Gallen relied on their knowledge of modern formulas, rather than on an understanding of forms. One illustration: post and lintel expression is appropriate to precast concrete, which implies a certain precision not expressed in rough finish. *Le béton brut* is primarily an expression of concrete placed *in situ* and implies a continuous structure, which is not very compatible with an expression of post and lintel.

Americans would do well to combine private and governmental means to develop our public (and private) institutions of learning as the Swiss do with such apparent success. We might also fare better if the selection of architects for any major public building were done by a competent jury in an open design competition. Finally, our environment would be enriched if public funds were allocated for art as an integral part of design.

VALERIUS L. MICHELSON
St. Paul, Minn. *Architect*

FHA AWARDS

Forum: Regarding "FHA Makes First Awards for Good Design" (*News*, Jan. '64), the "800" building mentions W. S. Arrasmith as architect. At the time this building was designed, and the working drawings prepared, submitted, and approved by FHA, our firm name was "Arrasmith and Tyler."

WILLIAM C. TYLER, JR.
Louisville, Ky. *Architect*

CORRECTION: In the *News* story on building research (Mar. '64, page 7), some of the first-run copies incorrectly carried a picture of Everett P. Palmatier of Carrier Corp. in place of the Institute for Applied Technology's Donald Schon. Our apologies.

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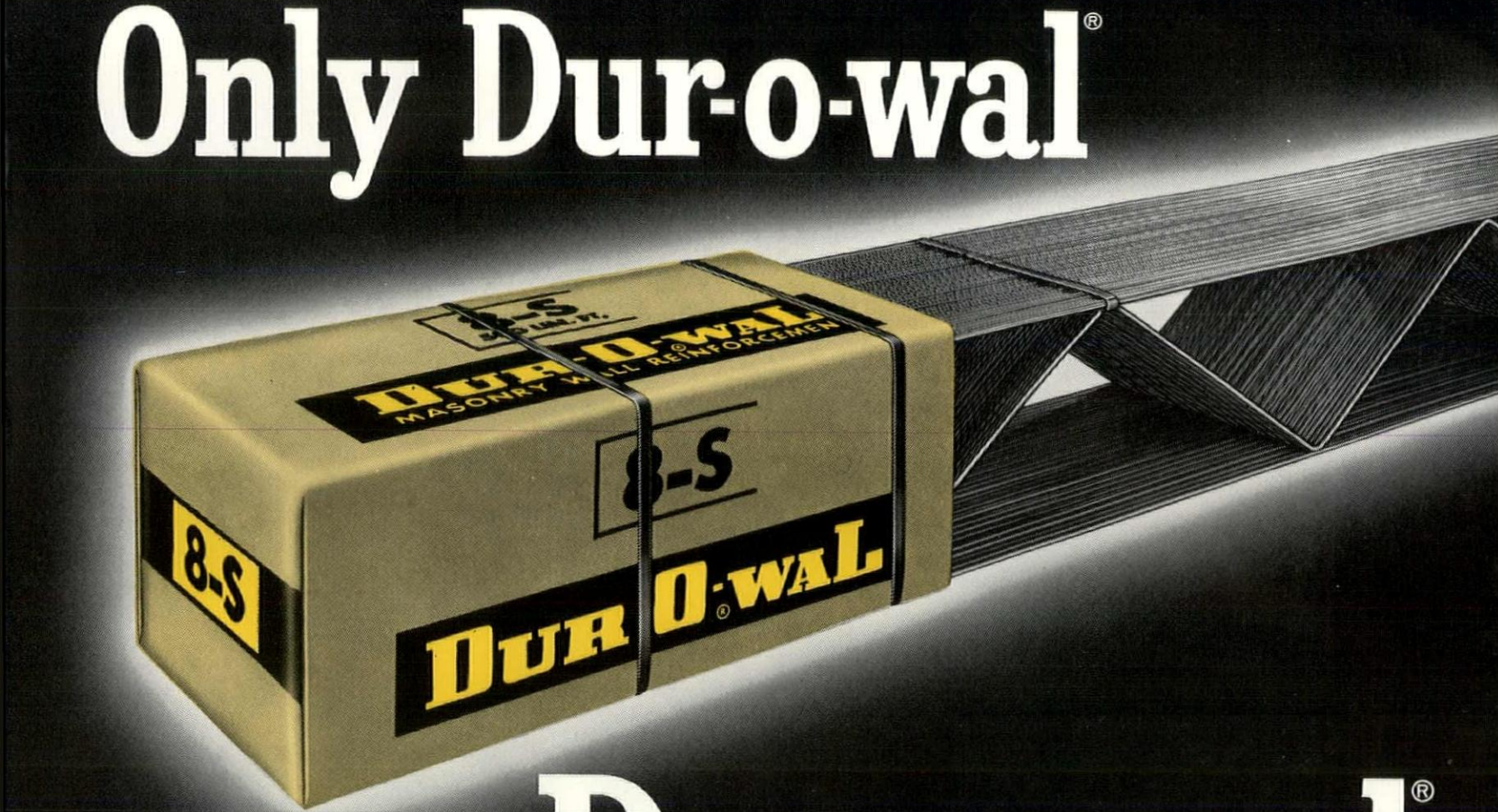

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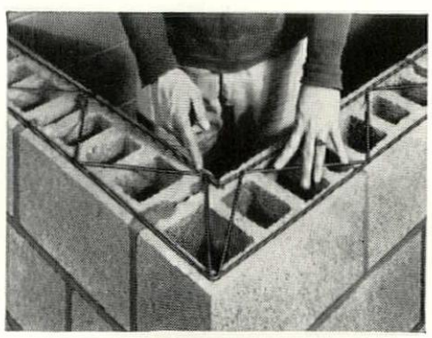

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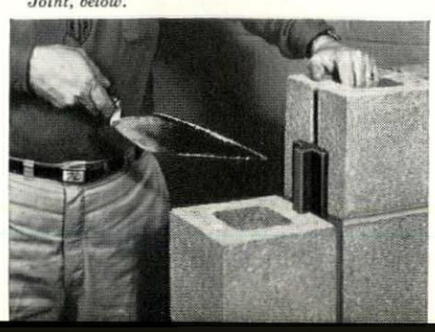

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Man with a shrewd lasso.

One sure signal of a masterful politician's technique is the tendency of his audience to ask each other warily, "Yes I heard what he *said,* but what did he really *mean?*". On this basis, President Lyndon B. Johnson must be enjoying the puzzlement which hangs like a haze about his housing message of January 28, soon to be up for Congressional action.

On the face of it, the message (whose provisions were reported in the March news section of this magazine) is almost a piously liberal declaration of intent to continue the current urban renewal program—not so pious, however, as to neglect the price tag: $1.4 billion for the next two years. The chief confusion has been caused by the provisions for assisting the financing of totally new towns. "Or does he mean the same old subdivisions?" is the querulous question. It is fairly clear the President does not; the quiet emphasis all through the message is on *planning*—on, for example, the practicalities of building realistic sewerage systems *before* building towns instead of just erecting more armies of suburban cesspools; and on the satisfaction in a well-made suburb, beyond the simple statistics of so many more dwelling units. Even included in the President's suggestions was the appropriation of funds to train more professional planners.

Most of the rest of the message may have sounded blandly repetitious of past housing goals, but a more careful examination revises that feeling. Consider the provision to reshape some of the proposed public housing. We have all been depressed by those gigantic, anti-architectural slabs of public housing which stand dumbly here and there about our cities. They have turned out to be little better than esthetic punishments for poverty. Professionals know these buildings are more the product of crippling codes and other local regulations than of the architects who produce the working drawings. The President's message simply suggests shifting some public housing out from under these regulations to older, rehabilitated buildings in existing neighborhoods—a very good thing, in that it avoids more bad architecture. Put strong in the message were the social aims of housing particularly in the "war on poverty." Unsaid, but certainly implied, was another fact of national life: urban renewal can succeed only by improvement of the relocation process. (Ask any mayor.)

The splendid opacity of the wording of the message surrounds another shrewd recognition of reality: it is not necessarily the laying down of proud new policies in Washington which genuinely determines the result of renewal. Instead it is the testing and interpretation of Federal policy out in the field—in the cities—which finally shapes the result. The President and his advisers have been wise in going back to the drafting board with many of the older federal provisions—to sharpen some of them, to liberalize others, and to suggest new ones only broadly, rather than in specific detail. And speaking of practical politics as we are, President Johnson must have been particularly pleased with the first Republican reaction to his message. Congressman William Widnall (R., N. J.) ranking member of the House special housing subcommittee, was placed in the position of objecting to the message because, in effect, it was not sufficiently liberal. With three colleagues, Rep. Widnall submitted an alternate proposal which differs slightly in approach but agrees in goals. The rancher from Texas is evidently not going to get all he asked from Congress, particularly in the matter of new towns. But he has not yet broken the loop in his lariat; it still is twirling nicely over Congress.

HOSPITALS: THE RACE WITH CHANGE

BY RICHARD A. MILLER

IF progress has complicated other building problems, it has hit hospital design with a vengeance. The hospital surgery, for example, was once a single room like the historic amphitheater at Massachusetts General Hospital (below). Today it is an intricate complex laid out to facilitate sterile technique, equipped with elaborate mechanical, communication, and monitoring networks, linked to laboratories and other rooms for anesthesia, recovery, and intensive care (opposite).

Yet radical as the innovations are, hospital architecture is being outpaced by still newer developments in medical care, from Betatron units to hyperbaric chambers. Program requirements, hard to pin down in the first place, change even as a new hospital is being designed. To complicate the matter further, any hospital building or modernization must also emerge from its own peculiar tangle of construction priorities, government and private financing, community planning controls, and mounting operating costs.

Little wonder that architecture often gets short shrift, and that hospitals can be among the ungainliest, if not the ugliest, of large buildings today. To understand why they are—and how they might become less so—FORUM explores 1) how hospitals grow, and how they might grow more rationally, with four case studies of expansion, pages 82-89; 2) how complex new communications networks are beginning to have a profound impact on hospital planning, pages 90-91; and 3) how a prototype of the future—the first new medical center to be built from scratch since World War II—evolved in the 17 years it was abuilding (pages 92-95).

From even this quick tour, it is evident that hospitals must be conceived and built on a much larger framework than they presently are. To make that frame-

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work possible, wholesale changes are called for in policy, planning, and design.

At this moment, most major U. S. hospitals are either raising money to build, planning to build, or actually building. Many are doing all three simultaneously, and will continue to do so for a long time to come. But all too few are building the right facility in the right place. Still fewer are sticking to an overall plan. And hardly any can afford to build in economy-sized chunks.

The trouble starts at the beginning—with money. Private philanthropy, which still accounts for most of a hospital's building dollar, is inclined to give money for specific parts of a hospital, and plaques are liberally scattered throughout public areas (fund raisers call these "opportunities for identification"). As a result, plans are sometimes contorted to provide memorial "buildings" or "wings," and the number of unused entrances and lobbies in U.S. hospitals is legion. Meanwhile, the increasingly important basic plant is often neglected. (Who, for example, wants to donate a telephone equipment room or safety and traffic headquarters?)

Government financing, unhappily, often contributes to planning contortions, too. The Hill-Burton program, which has made immense contributions to improving U.S. hospitals since World War II, worked well in the early days when the primary need was for small, discrete facilities outside the urban centers. But today, with its complex system of allotments based on often-shallow state plans, and with its cumbersome public bidding requirements, Hill-Burton financing tends to force hospitals to build in bits and pieces.

One hope lies in President Johnson's recent proposal for federal help to renovate urban hospitals. Three such bills are now before Congress; one should pass this year. But a remodeling job can seldom be pinned down neatly in bidding documents; a cost-plus, maximum-ceiling contract is often the cheapest way. Thus it is to be hoped that the

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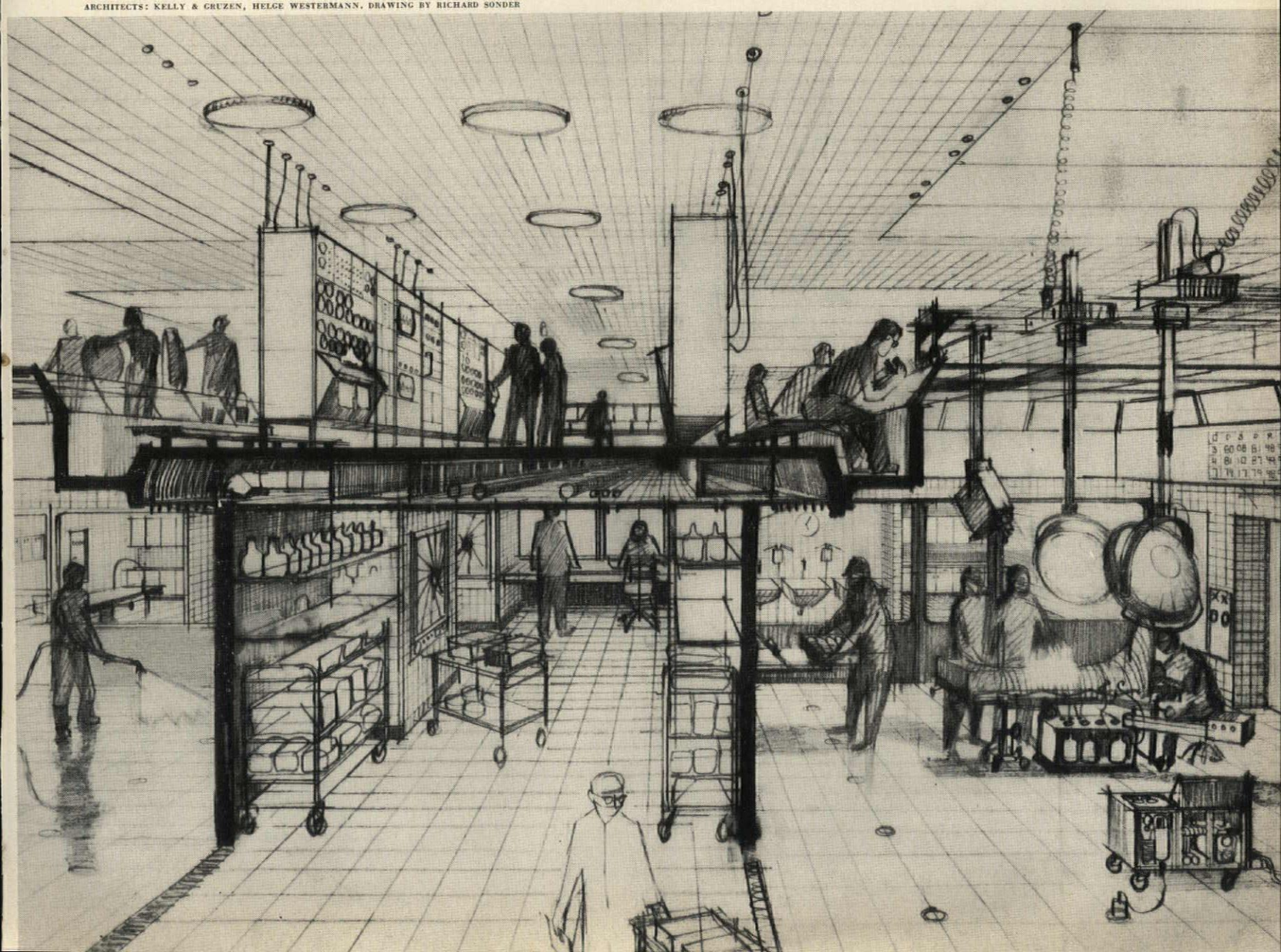
The contrast between the 19th century surgical amphitheater at Massachusetts General Hospital (opposite) and the prototype design for a surgical center of tomorrow (below) symbolizes the growth and change in hospital design. In the prototype study, central sterile work space is flanked by surgeries, to which patients are brought via perimeter corridors. On the service floor above are observation galleries, closed circuit television installations, and physiological monitoring equipment.

ARCHITECTS: KELLY & GRUZEN, HELGE WESTERMANN. DRAWING BY RICHARD SONDER



legislation will emerge with a more useful formula for protecting public moneys than the present public bidding rule. (The newer Health Research Facilities program, administered by the National Institutes of Health, is happily less encumbered; but, like Hill-Burton funds, its grants encourage hospitals to build to fit specific projects rather than overall needs.)

The actual purse strings of Hill-Burton are only part of the problem faced by hospitals which need modernizing. A larger problem is in getting help in fitting their plans to overall community plans.

Hill-Burton distributes funds according to state-determined hospital needs. As a direct consequence, networks of local, regional, and state planning councils and agencies are now established in all states. In too many cases, however, "planning" is a euphemism: dominated by existing institutions and health insurance plans, it is too seldom coordinated with general city planning or concerned with population trends, highway mapping, and urban renewal (despite the incentive offered by U.R.A.'s Section 112, which gives credits for hospital site expansion).

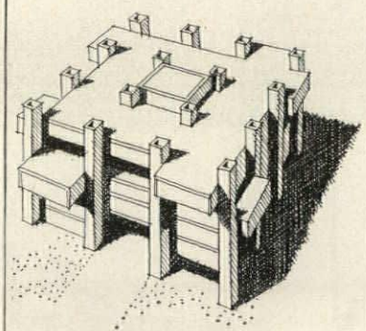
An even more serious indictment of most hospital planning agencies is their failure to maintain a proper evaluation of existing facilities and use it in determining fund allocation. State Hill-Burton agencies should insist that applications be supported with proper and up-to-date master plans. They should stop basing plans on the total number of hospital beds in a community and start being more concerned with the number of antiquated beds in institutions of poor caliber. In fact, generally declining occupancy statistics are distorted by good beds in bad hospitals and antiquated beds in good hospitals —the best hospitals still can't get enough beds.

The confused state of hospital planning and finance is likely to be compounded when two new federal programs get under way: aid for medical schools and aid for community mental health facilities. While each program provides essential, if minimal, assistance to these important aspects of the nation's health facilities, they may merely add to the confusion of bits and pieces unless steps are taken to integrate all federal programs.

The big, economy size

The need for integrated programs is becoming increasingly evident as the emphasis shifts to renovation. Perhaps as much as 75 per cent of the $1.65 billion going into hospital construction this year will be spent on existing institutions. In some cases, the emphasis on renovation is unwise, but most hospitals are too deeply committed to present locations—and too busy trying to satisfy immediate needs—to contemplate any long-range programs for new plants.

Contrary to common assumption, the most economical and flexible hospital is often the entirely new hospital on a new site.



With the pace of change picking up, big and flexible structures are called for (drawing above). Old buildings simply can't be revamped to fit this need. The logic is simple: hospitals with basic plants more than 20 years old need extensive new mechanical services before they can be fitted with up-to-date surgeries, X-ray suites, laboratories, central sterile services, computer centers (and a substantial part of hospital construction money is being spent in these areas). On patient-care units, too, mechanical services are generally inadequate and must be revamped before modern air conditioning, plumbing, electrical, and communications services can

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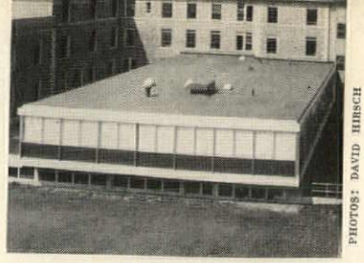
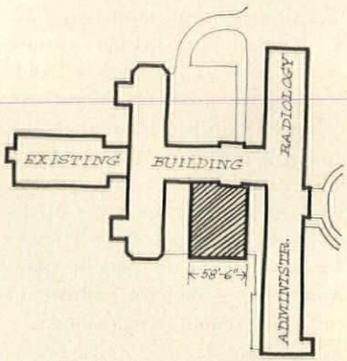


PHOTOS: DAVID HIRSCH

A NEW LABORATORY SET BETWEEN OLD WINGS



A crisp glass wall cantilevered out from a concrete base (right) allows the polite intrusion of new clinical laboratories into the center of The Community Hospital at Glen Cove, N. Y., where they tie in well with the existing plant. The architects, reasoning that elegant lightness was the best foil for the nondescript old buildings, kept the glass-spandrel and aluminum curtain wall to slim dimensions.

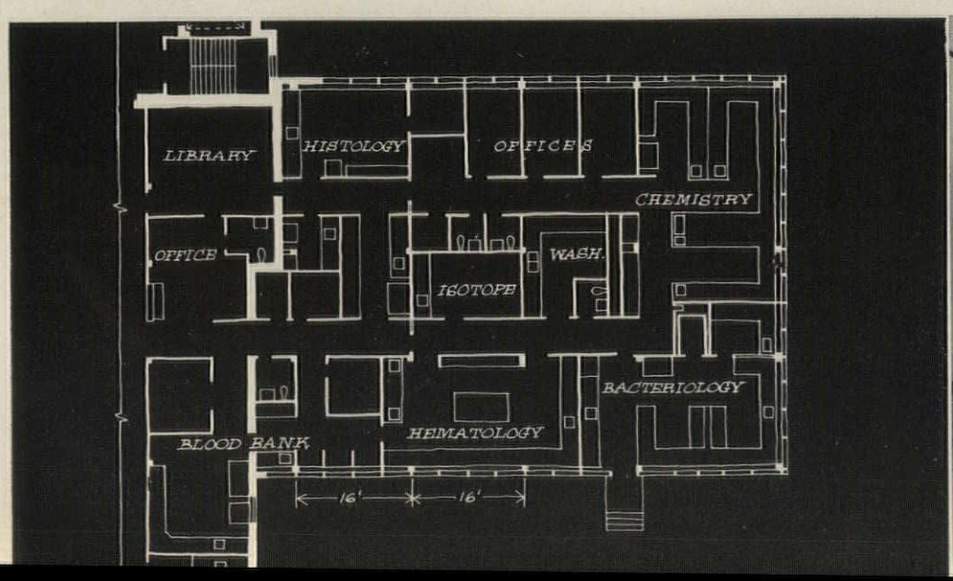
Part of a long-range plan for the hospital, the new labs and related offices are arranged around a core of utility, service, and storage rooms (plan, below right).

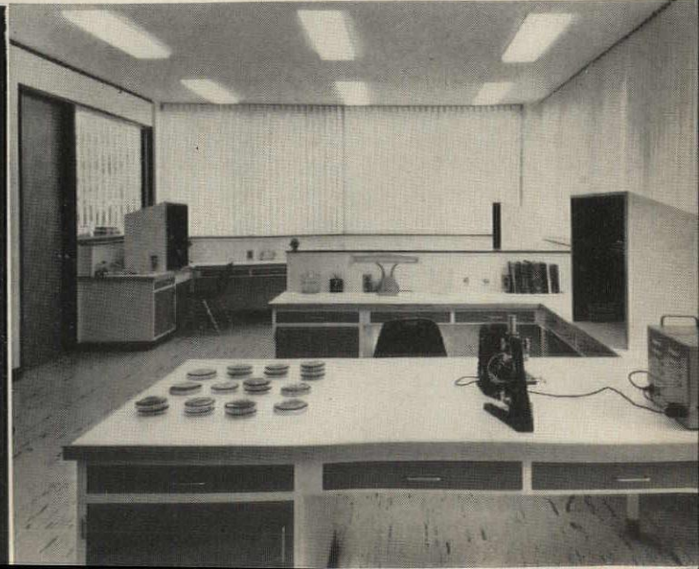
Careful detailing inside yielded uncommonly neat laboratories (lower photo). Stock casework is trimmed with special hardware; white plastic tops are edged in wood; door and drawer fronts are deep blue in white frames.

FACTS AND FIGURES

The Community Hospital, Glen Cove, Long Island, N.Y.
Architect: Helge Westermann (Joseph L. Russo, job captain). Engineers: Lev Zetlin & Associates (structural), Benjamin & Flack (mechanical and electrical). General contractor: Preston-Brady, Inc. Construction area: 5,540 square feet (new wing: 4,500 square feet; renovated connecting area: 1,040 square feet). Construction cost: $197,000 (includes fixed equipment). Cost per square foot: $35.50.

Glass spandrels and windows framed in aluminum (above) mark 4-foot module of labs and offices (plan below). Typical lab is shown below at right.





be brought to the patient's room.

Since mechanical costs run as high as 50 cents of every hospital building dollar, the useful shell of an existing building is less valuable than it might first appear to be. If extensive rearrangement of spaces is also needed, the re-use value of an existing structure can be reduced to 20 cents on the dollar—often less than the value of the land it occupies.

Yet despite its economic logic, the brand-new hospital is a comparative rarity in 1964. Not only is the kind of cash needed generally unavailable, but few hospitals are likely to abandon a new laboratory building or X-ray department added just last year.

Expansion makes most sense in hospitals ten to 20 years old, where the basic bed facilities are often quite adequate for extended use. Beds, however, are a small part of a hospital's equipment. Hospital construction money today is being spent on the research, diagnostic, outpatient, and ancillary facilities that can change a hospital into an integrated medical center. Not too many years ago, according to Consultant Edwin A. Salmon, hospital beds took 65 per cent of gross hospital space. Now, the percentage is almost exactly reversed: patient care units take closer to 35 per cent of the total space. Additions and renovations will provide most of the space for this shift.

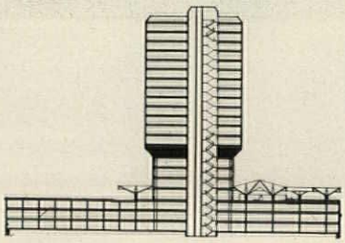
In providing this space, construction economy is often a secondary consideration in the view of administrators and trustees. Even when large hospitals and medical centers are committed to replace their facilities entirely at some future date, they are likely to spend hundreds of thousands of dollars each year satisfying immediate, imperative needs. As one research M.D. put it: "I don't care that we'll have a new hospital ten years from now. Ten years is probably one-third of my professional life and I'm not going to wait that long for adequate work space."

In the seemingly interminable time it takes to build a new institution (the N.Y.U. Medical Center took nearly two decades), a break-through in cancer research may come in a laboratory quickly remodeled at $60 or more per square foot. Many architects, unrolling soundly conceived long-range plans, have been brought up short against just such arguments.

Designed for remodeling

The implications of such dynamic forces are strongest for new institutions. A design that fixes functions in an articulated plan—whether of the campus or pavilion varieties—will not adapt easily to changing hospital needs. The only fitting solution may be an entirely new kind of hospital: a dense, multilevel structure of big, flexible bays served by clearly differentiated spaces for transportation of people and goods as well as mechanical and communications networks.

The need for such big spaces is greatest on the lower floors (commonly termed the "base"). Up above, where patients' rooms take over, space can be gathered into towers (connected perhaps by flying bridges) or consolidated to



provide terraces and step-backs—somewhat like a small city on a massive, man-made plateau.

Hospitals, in fact, are beginning to take such forms. The section shown above is of the recently completed 19-story Mercy Hospital in Baltimore, Md. (Associated Architects: Taylor & Fischer, Westermann and Catalano). It consists of a 140 by 115 foot tower over a three-floor service base nearly one acre in size. At Mercy, the long-range planning goes further than the big tower on a bigger base: large areas of the hospital were left as unoccupied "shell" space to be filled in later

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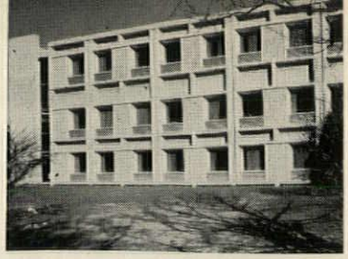
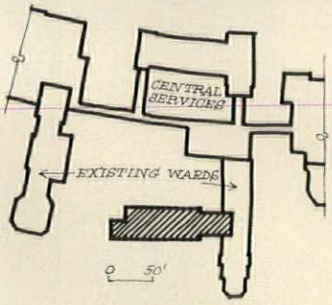


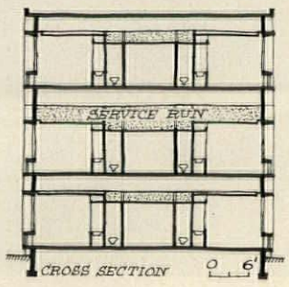
PHOTOS: PHOKION KARAS

PRECAST STRUCTURE FOR A NURSING WING



A handsome addition in precast concrete (right)—part of the overall expansion plan shown above—converted a single-corridor nursing unit at Boston's Peter Bent Brigham Hospital to a larger, T-shaped unit without increasing distances from nurses' station to the farthest patient room. The new wing contains 13 single rooms, new utility rooms, and a day room on each floor.

Because it is built almost entirely of precast concrete elements, the new wing could, if necessary, be partially salvaged and relocated as the hospital expands. The section (below) reveals the organized separation of mechanical spaces from patient rooms.

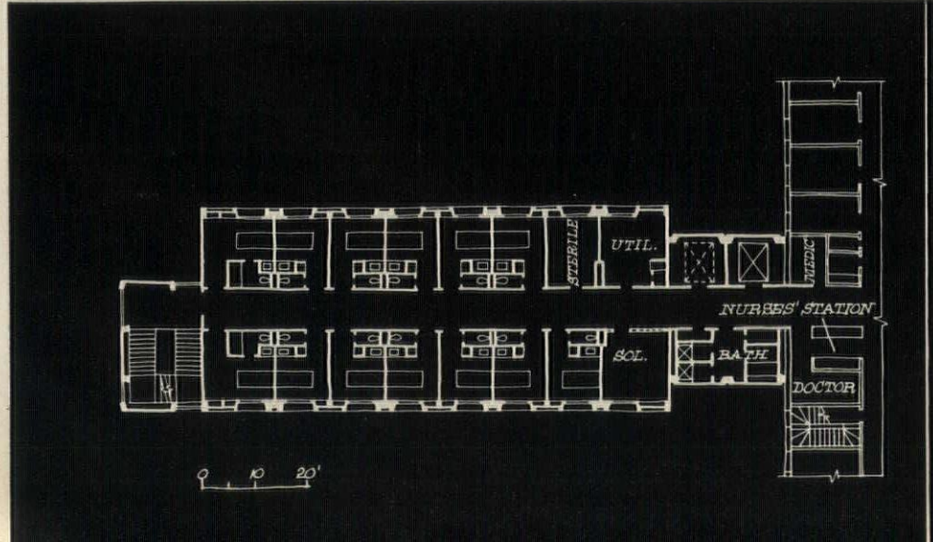


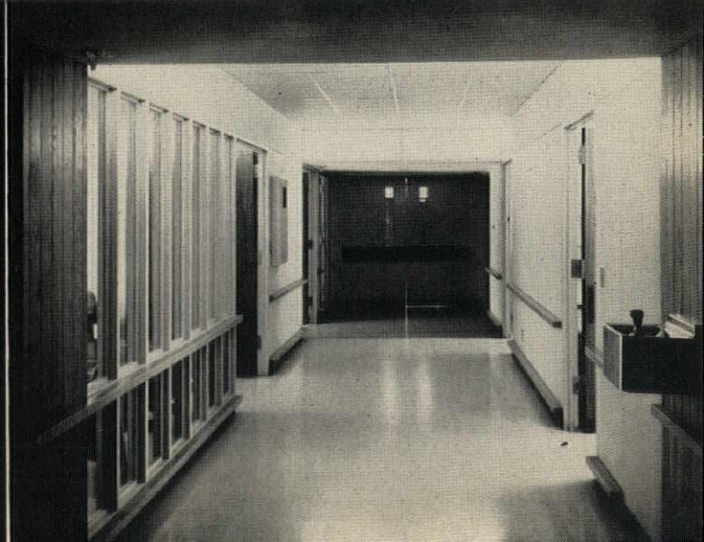
FACTS AND FIGURES

The Coolidge Pavilion, Peter Bent Brigham Hospital, Boston, Mass. Architects: The Architects Collaborative, Inc. (John C. Harkness and Jean B. Fletcher, partners in charge; Robert Eskridge, job captain). Engineers: Souza & True with David Yona (structural), Reardon & Turner (mechanical), Maguire Engineering (electrical). General contractor: Thomas O'Connor & Co., Inc.

Building area: 17,671 square feet (new: 15,279 square feet; renovated: 2,392 square feet). Cost: $664,418 (includes fixed equipment). Cost per square foot: $37.05.

Precast concrete wall panels (above) enclose a neatly organized private patient wing (plan below). First floor corridor is pictured below at right.





as hospital needs and financing may determine.

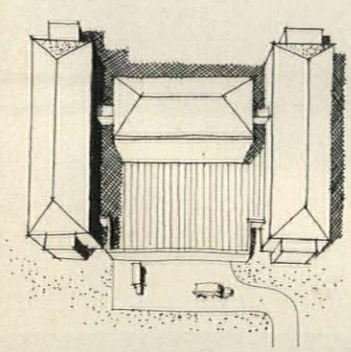
The advantages of big base floors need not be confined to large new hospitals, however. The laboratory addition to The Community Hospital at Glen Cove, N.Y. (page 82) was quietly shoehorned into a court flanked by existing hospital wings, thus adding space at the service level without adding to already extended walking distances.

Method 1: filling in

Filling in courts and between wings is not a radical notion. Many hospitals have done it if only because their sites were confined. All too commonly, however, the process is casual, with willy-nilly assignment of space. And corridors become tortuous.

The process can also be expensive. Without a careful study of existing foundations, the need for expensive underpinning may be discovered—too late. New structural columns usually must be set away from existing buildings and framing systems may become exceedingly complex.

But filling-in quite simply makes new space available near the heart of the hospital, where it is most desperately needed (drawing below). It can also



make the hospital a pleasanter place by leaving small areas for landscaped, open-air courts between buildings, and outdoor roof terraces on top of them.

As one advanced example, the master plan for Montefiore Hospital in The Bronx, N.Y. takes advantage of a difference in street elevations, eventually provides a new main entrance level above the present main floor, which will be filled in and extended as a base. Thus, relieved of all but staff and service traffic, it can become an efficient block for new functions.

Method 2: building out

The traditional way of adding to a hospital is by building a wing, as at Peter Bent Brigham Hospital in Boston (page 84), or Memorial Hospital in Worcester, Mass. (opposite). In each case, however, the wing was located carefully to keep the plant from becoming overextended. At Worcester, for example, the new wing stands between two older wings, which eventually will be replaced. Thus, a compact T-shaped hospital (also tied to an extensive base) will be the final result.

The critical question in attaching a wing to a hospital is: where should it be placed for maximum benefit? The answer depends on many factors. Most often the location of the elevators determines the spot, but sometimes a carefully placed wing will allow a single inefficient nursing unit to grow to two units, each equipped with a new nursing station and utility rooms, as at the Porter Hospital (page 88). Although it is obviously cheaper to stack new facilities in a single wing rather than scatter them throughout the plant in smaller patchwork additions, it is often difficult to find a good place to add a stack of varied functions so they connect properly with the existing building on each floor.

In fact, it is sometimes better to relocate functions entirely if this makes it possible to concentrate new construction in a single multistory wing. Generally, it is more practical to place the functions requiring extensive mechanical services in the new wing, and to use the old space for offices, patient rooms, or service and storage areas. (Laboratories, surgical suites, and X-ray facilities can become very expensive in remodeled space.)

It is also wise to stage renovation so that the hospital can operate with minimum interference during construction, which can drag out for two years or more. It is usually best to vacate

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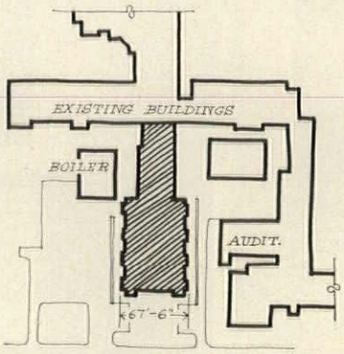
PHOTOS: JOSEPH W. MOLITOR

MASSIVE PIERS ENCLOSE UTILITIES AND BATHS



This sturdy brick and stone wing added to The Memorial Hospital in Worcester, Mass. is the first stage of a plan to rebuild the existing collection of structures. The four-story building can take two additional floors; similar pavilions are planned as replacements for flanking buildings.

The first stage houses research laboratories on the ground floor, pediatrics on the second floor, and bedrooms for medical and surgical patients on the third and fourth floors (plan, below right).

Exterior brick piers contain toilet facilities for the single patient rooms and mechanical services (lower photo). The nursing station at the core is strategically located to serve single rooms in the double-corridor wing and semiprivate rooms in the connecting link to the existing hospital.

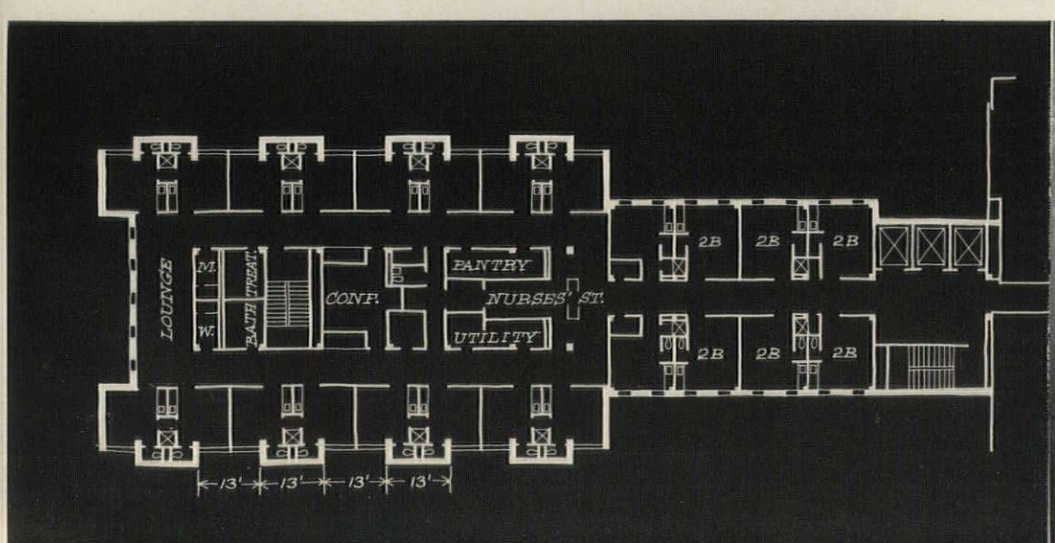
FACTS AND FIGURES

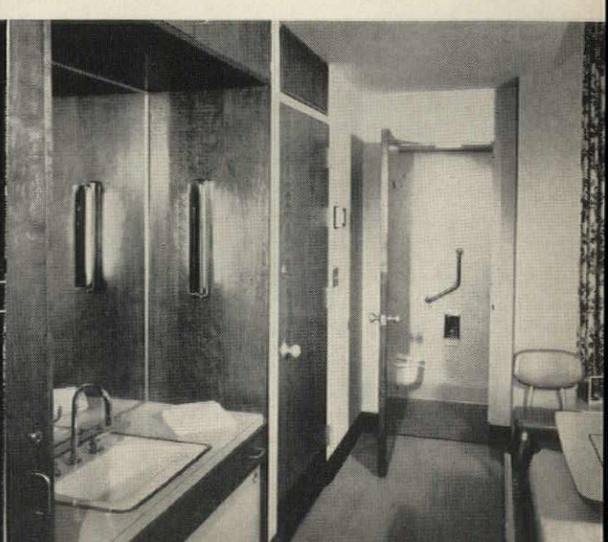
The Memorial Hospital, Worcester, Mass.

Architects: E. Todd Wheeler and Perkins & Will (E. Todd Wheeler, partner in charge; A. W. Murphy, project architect). Associate architect: G. Adolph Johnson, Inc. Engineers: Garfinkel & Marenberg (structural), Segner & Dalton (mechanical and electrical). Landscape architect: Finelli & Slack. General contractor: Daniel O'Connell's Sons, Inc.

Building area: 46,770 square feet. Construction cost: $1.48 million. Furnishings and equipment: $132,000. Cost per square foot: $31.

Big brick piers (above) carry utilities and patient toilets (plan below). Single room (below, right) has its own built-in basin, shower, and toilet.





space being remodeled or space adjacent to a new wing. This indicates a relocation of functions whenever possible. Thus, the building process is best planned like a game of musical chairs with minimum inconvenience at any one place.

Method 3: building up

The most common plan for hospital expansion—adding floors upward—is probably the most overrated. To add floors to old structures often requires extensive structural stiffening below. And even where relatively new structures get additional floors, the difficulties can be extreme. The most careful planning of structural and mechanical systems for expansion upward rarely proves out ideally. Generally, by the time the expansion takes place, changes in function and planning require relocation of mechanical stubs, and occasionally a structural plan needs to be revised. Careful—and adventurous—planning of the basic structure can help. But, even so, raising elevators and adding stops is expensive and inconvenient.

The most economical way to add by building up is to provide extra "shell" floors which can be finished out later. The difficulty is that shell floors require the preinvestment of funds which hospitals rarely have—and which neither Hill-Burton nor donors will provide. But careful planning of shell floors—and all-important basic mechanical equipment—can provide unoccupied expansion space for about one-third the cost of finished space. The money is usually well spent.

The continuing plan

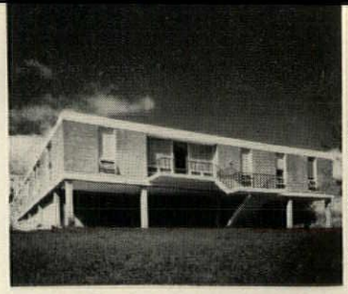
Regardless of whether a hospital is expanded by filling in, building out, or building up, it is essential that a continuously revised master plan accompany construction, and that space utilization, maintenance, renovation, and new construction be viewed as a single process.

In this process some fundamentals can be discerned:

- The master plan should schedule ultimate removal of all existing buildings. Every building has a more-or-less fixed useful life regardless of remodeling. To establish this life helps set remodeling policy.
- Capital programing should be planned on a long-range basis so that funds can be accumulated for construction in the largest, most economical chunks.
- Construction should be carefully staged to interfere as little as possible with hospital operation. This often means that functions should be relocated, leaving space vacated for major renovation.
- The master plan should provide an integrated structural and mechanical framework. In order to preserve flexibility, today's detailed space arrangements should not determine and freeze the ultimate form.
- In laying out interior spaces, hospital functions which can be easily relocated should be placed adjacent to functions likely to expand (example: locker rooms next to X-ray suites).
- Vertical circulation should be concentrated for maximum efficiency. Elevators in several locations can increase traffic and cause departments to be interrupted by through traffic.
- Plans should aim toward a large base structure for basic hospital services, for distribution of goods, and for circulation of patients, staff, and visitors.
- Separation of distribution and circulation patterns should be maintained, either on separate floors of the base or in separate corridors.

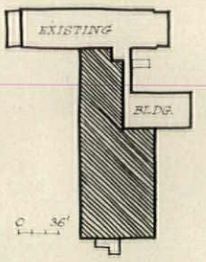
There is little doubt that better hospital buildings can make possible better medical care at lower costs. But the art of hospital design can keep pace with the rapid advances of medicine only if it is viewed in these broader terms.

Architect Richard A. Miller, a former Senior Editor of (and now a consultant to) FORUM, *is Senior Associate in the New York architectural firm of Helge Westermann. He is also an Adjunct Associate Professor at Columbia University's School of Public Health and Administrative Medicine.*



PHOTOS: DAVID HIRSCH

A HANDSOME EXPANSION OF AN AGING HOSPITAL



By strategically adding new space to old at The Porter Hospital in Middlebury, Vt., the architects gained two efficient new nursing units for roughly the price of one and a half.

The one-story, double-corridor unit (right) pushes out toward the Vermont hills from the existing main building. Absorbing a formerly isolated smaller pavilion (plan, below right) made possible efficient, enlarged facilities for maternity, pediatrics, and medical-surgical services organized around a core of utility and treatment rooms. One nursing station (lower photo) is in the core, another is in the old pavilion at the intersection of the corridors. At the end of the new building a solarium with sun terrace and an open exit stair provide links to the open country beyond. Portions of the old main building were remodeled for X-ray and emergency services.

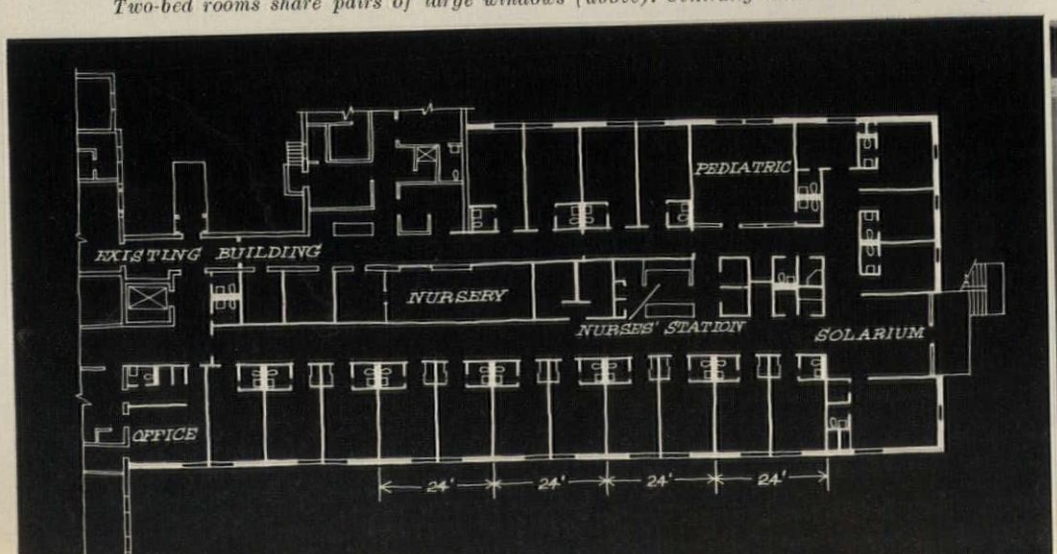
FACTS AND FIGURES

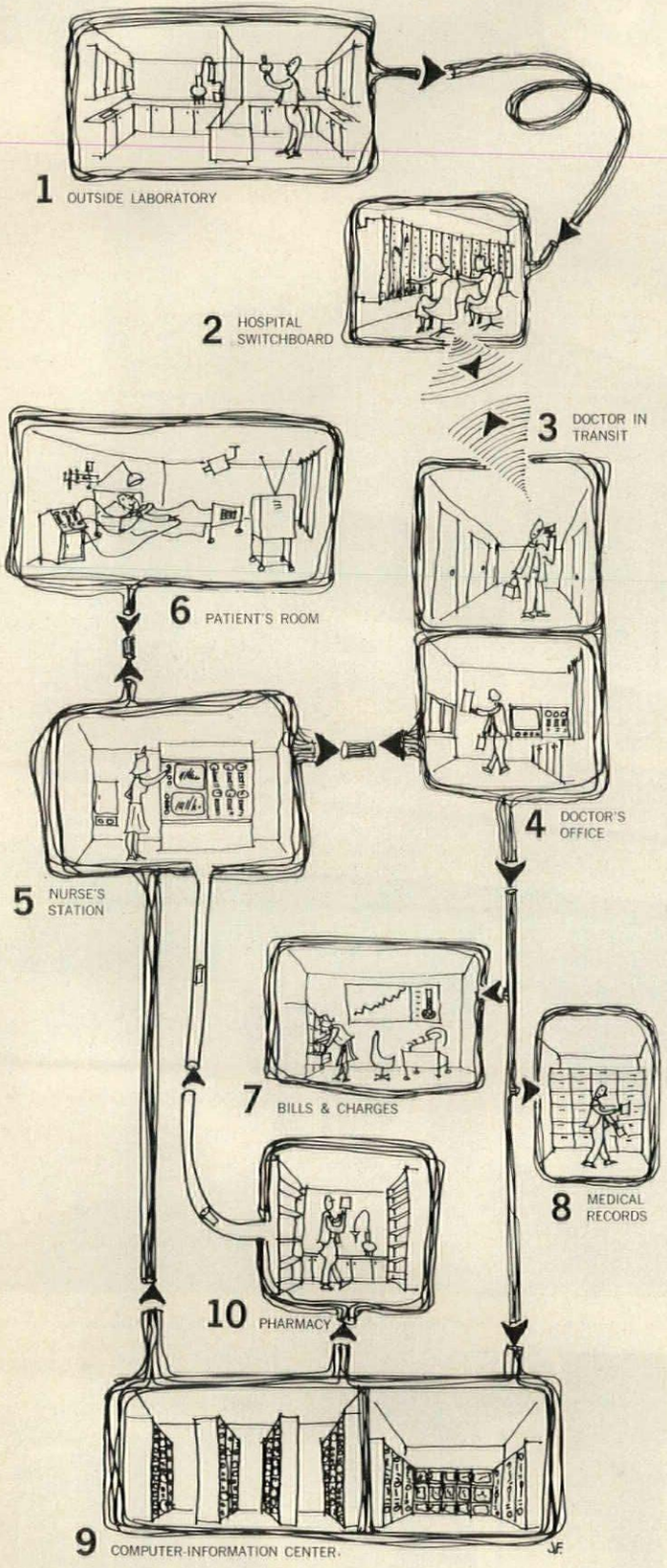
The Porter Hospital, Middlebury, Vt.

Architect: Helge Westermann (Robert Hyde Jacobs, Jr., job captain). Engineers: Lev Zetlin & Associates (structural), R.G. Vanderweil (mechanical and electrical). General contractor: H. P. Cummings Construction Co.

Building area: 18,000 square feet (new: 10,600 square feet; renovated: 7,400 square feet). Cost: $460,000 (includes fixed equipment). Cost per square foot: $25.50.

Two-bed rooms share pairs of large windows (above). Centrally located in the floor plan are two new nurses' stations, one of which is shown below.





ELECTRONICS: NEW FORCE IN HOSPITAL DESIGN

BY JAMES FALICK

A few years ago, the little tableau shown at left might have been dismissed as pure science fiction. But today it could very well happen in many major U.S. hospitals —and it is only one of the many possible sequences in modern medical communications that may radically change hospital design.

Our hypothetical episode starts at the top, where an outside laboratory technician (1) telephones test results on a patient to the hospital switchboard (2). The operator transmits the information to the patient's doctor through a tiny pocket radio he carries (3). The doctor goes to his office (4) to consult records before calling a nurse (5) on the hospital's intercom system; he asks her to check the patient (6) on closed circuit television and read his blood pressure and temperature remotely on the dials of a physiological monitoring console at the nurses' station. After she reports back on the intercom, the doctor writes out a program of treatment on a card, which he inserts into a special data-transmission device linked by cable to the hospital's computer information center (9), as well as to its medical records and accounting departments (7, 8). The computer tells the pharmacy (10) what medication to deliver and when, and transmits the doctor's treatment instructions to the nurse. The computer also selects any desired medical information and stores it for research and educational purposes.

The whole process described above can take place in minutes, enabling the patient to receive proper treatment quickly, and allowing the medical staff to move on to other pressing duties with a minimum of wasted motion and time.

Few hospitals, of course, are yet equipped with such an instant and all-embracing communications system. The expense is considerable, and so are the problems of using all the proliferating marvels of electronics. But the elements, in one degree of development or another, all exist:

"Pocket paging" now allows two-way communication between the switchboard and a staff member through a small radio receiver and transmitter about the size of a large wallet. It usually takes only a few seconds to locate and talk to personnel anywhere, even in a large complex of medical buildings. The cost averages about $125 for each receiver, which is less than the cost of most complete loudspeaker systems, including equipment, wiring, and installation. Pocket paging, moreover, reaches only the person wanted and does not disturb patients.

Telephone systems now allow staff members and patients to have their own telephones which act as inside lines as well as direct outside lines with private numbers. While not available in all areas, this "Centrex" system has been in use in Manhattan's Columbia Presbyterian Medical Center for about a year, and reportedly will cut in half the number of switchboard operators needed.

Physiological monitoring, only recently introduced, can measure as many as ten different body functions (blood pressure, temperature, electrocardiogram, electroencephalogram) on electronic devices by means of tiny sensory elements called transducers attached to the patient. These devices reproduce information on

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read-out equipment at any distance or location, allowing nurses, physicians, and members of the hospital's research and education staff to be constantly informed. (Some functions can be transmitted by radio, but the main system depends on cable.) Automatic alarms warn the nurse when preset danger limits of blood pressure, respiration, etc., are reached.

Since physiological monitoring equipment is quite expensive—up to $10,000 for each patient monitored—hospital administrators are weighing its advantages. Many small hospitals are considering it for intensive care or recovery rooms. Large hospitals and medical centers are already finding it a valuable aid in medical care, education, and research. The Perth Amboy, N.J. General Hospital, for example, last fall installed three portable monitoring units serving 15 beds as an initial step. And a major New York medical center plans to monitor any or all of the 100 beds in a proposed addition.

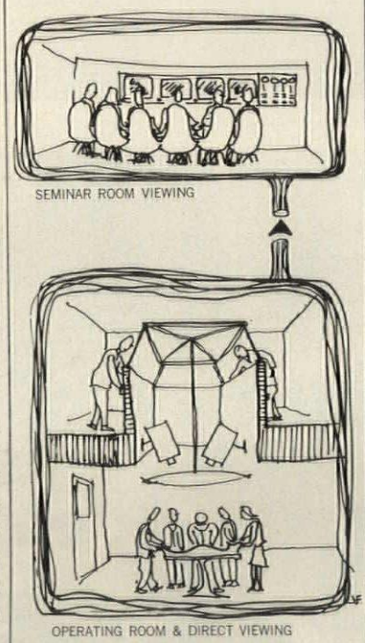
Closed circuit television systems are in growing use in hospitals, not only for education and entertainment, but for patient monitoring, and for security as well. Coordinated with audio-monitoring, information can be sent to receivers in many different locations simultaneously. TV equipment is portable, so it can be used in any part of the hospital on a 24-hour-a-day basis. The same camera can be used in the morning to conduct a maternity training class for new mothers, transmitting from nursery to bedside; in the afternoon to demonstrate new procedures from the X-ray department to a conference of radiologists; and at night to enable a small nursing staff to observe a large number of patients in scattered areas.

For medical training, a transmitted picture, unobstructed by doctors and nurses around a patient, can often give a closer view than amphitheater observation. In surgery a TV camera placed overhead can be remotely manipulated by students in a seminar to "shoot" any angle or closeup of the operation in progress (see sketches, below).

Not only can information be dialed at will, but it can be taped and replayed. Stored films of important operations or interesting cases can thus become a valuable new type of medical library.

Before long, two-way television may even let a doctor in his office "visit" a patient in the hospital, or a patient in isolation talk face-to-face with his family.

Data transmission equipment now allows records and other information once transmitted in written form by messenger or pneumatic tube to be carried directly from one location to another by cable. This can be done either within the hospital on special circuits, or through telephone lines outside the building. Messages, written on special forms, or spoken into new devices, are translated into electrical impulses and reproduced at another location. Data transmission devices being developed will become still more important for hospitals by saving the increasingly expensive time of technical personnel.



SEMINAR ROOM VIEWING

OPERATING ROOM & DIRECT VIEWING

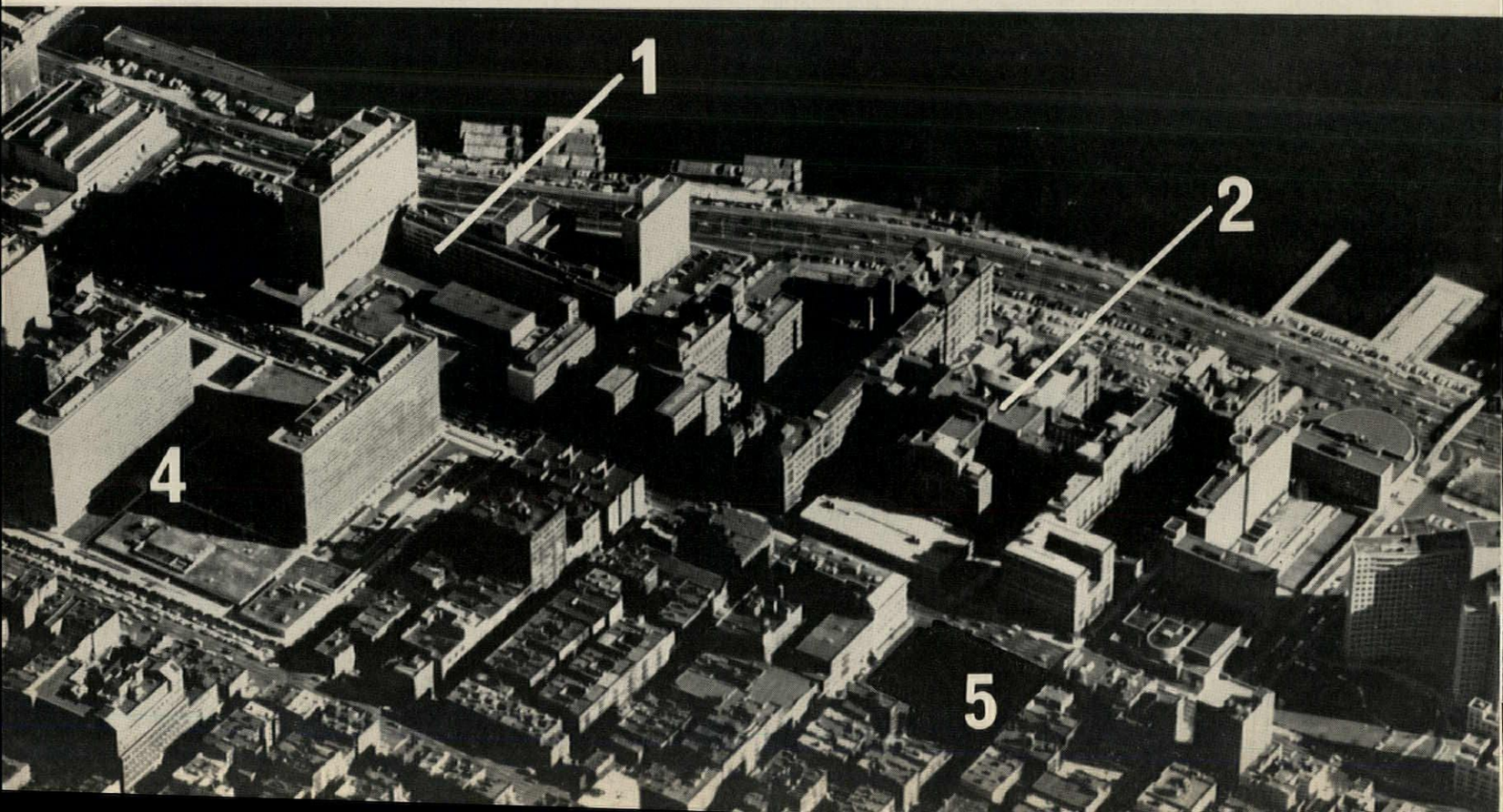
Computers are already being used in hospitals for medical records and accounting as well as for research projects. But as medical aids they can do a lot more than have a patient's bill ready within ten seconds of his discharge. Linked together in total systems, small-capacity computers, used for individual operations, can act as programmers to larger computers for larger projects. In this way, a computer center can become a major resource at the heart of the hospital—correlating, storing, and abstracting information at amazing speeds. Most hospitals will continue to rent rather than buy computers, since both their design and medical uses are changing rapidly.

As remarkable as these systems may seem individually, it is in combining them carefully that hospitals can realize the full potential inherent in each. To be able to operate at full potential, each system should have maximum flexibility built into it so that hospital administrators can adapt it to changing medical practices as well as its own most efficient use. Flexibility implies design on a modular basis to allow for future expansion, and for integration with other systems.

Combinations of systems, in fact, are beginning to form communications cores at the center of more than one hospital complex, with services spreading outward like tentacles. The implications for planning are, quite literally, widespread: closed circuit television, physiological monitoring, computers, and data transmission systems can operate over great distances; the need for one kind of space to be immediately next to a related space is less basic to hospital design than it once was. This means that spaces can become less specialized, and in fact interchangeable, if they are serviced uniformly so that any activity—be it medical care, research, or teaching—can "plug in" as needed and operate properly. Most communications systems can be provided in a vertical and horizontal pattern of duct spaces through which they can flow; future expansion and new systems can be accommodated by oversizing these spaces. Combined with mechanical and structural modules, these communications modules could transform hospitals into clusters of multipurpose cells as promising architecturally as they are medically.

This kind of flexibility can be more expensive to build initially. But hospitals tend to have a long life, and they must change as quickly as medical technology changes. Indeed, government support, through the Hill-Burton program, might well make special extra allowances for the building-in of flexibility to provide for future medical care, education, and research needs. This could be done by giving additional subsidies to designs that provide flexibility even at higher initial cost, and by establishing basic standards of space required as architectural guidelines.

The impact of communications, however, will not stop at the individual hospital's walls. One day the big medical centers in our cities may become simply the cores of whole integrated regional networks spreading out to satellite hospitals and clinics many miles away. Central medical records, stored and tapped electronically, may allow a patient to go to any outlying branch, and have his full medical history instantly available for proper evaluation and treatment. His local doctor may be able to use closed circuit television and physiological monitoring to consult on his health with medical-center specialists downtown. And research and education might benefit broadly too: medical centers could collect valuable information from greater sample groups of patients than has ever been possible before. END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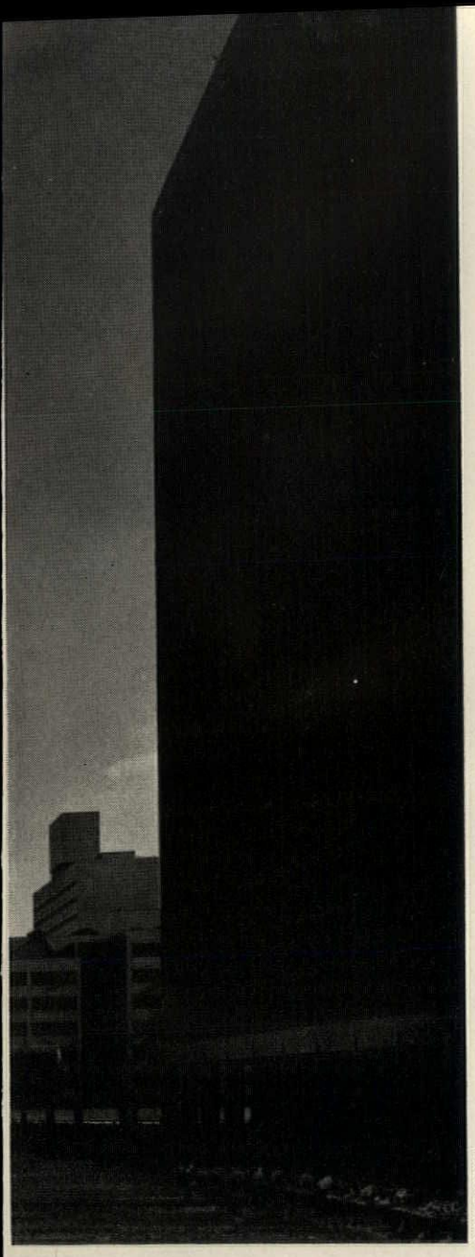


GEORGE CSERNA

FAIRCHILD AERIAL SURVEYS

THE HOSPITAL IN THE CITY: N.Y.U.'S GIANT MEDICAL CENTER

The new $50 million New York University Medical Center is the first major U.S. medical center planned and completed since the end of World War II. Linked to the City's older Bellevue Hospital next door, it is also one of the largest in America, with some 4,500 beds to draw on. But its significance has less to do with size than with these two facts:

- It represents a serious attempt by its designers, Skidmore, Owings & Merrill, to make architecture out of a building type that is seldom graced by more than a massive institutional look.
- It is a study not only in intricate medical planning but in large-scale urban planning as well.

SOM laid out the center as five architecturally unified buildings. From the left in the model photograph below, they are: the partly hidden Institute of Physical Medicine & Rehabilitation, the tall slab of the University Hospital, the long, T-shaped Medical Science building with the lecture rooms of Alumni Hall in front, and the small tower of the students' and nurses' Hall of Residence. The basic scheme called for all buildings except the hospital and the dormitory to be arranged in a "jack-straw" pattern of closely related pavilions forming a six-story base for teaching and research. The 600-bed hospital was then stacked on top, the dormitory joined at one end.

As the air view (left) suggests, the basic SOM scheme has been followed closely. (During the seemingly endless 17-year period in which the center was being built, however, some of the architectural details underwent inevitable change—see overleaf.)

Whatever architectural compromises were made, N.Y.U. has concentrated on sound planning. It has tried to make urban sense not only out of its own small, four-block site but out of a large area around it as well. The motives were not entirely altruistic: N.Y.U. needed, and still needs, a lot of inexpensive housing for its personnel.

Planning the neighborhood

To this end the University, in 1947, agreed with the City to coordinate redevelopment of the whole ten-block area between First and Second Avenues, running from 23rd Street to 33rd Street (4 and 5 in aerial view). This area, which was scheduled for slum clearance, was to be developed to provide related paramedical institutions as well as plenty of moderate-cost housing ($30 to $35 per room per month).

In the 17 years since, however, only three of the ten blocks have been redeveloped. On them stand the two handsome slabs of Kips Bay Plaza (FORUM, Aug. '61). But with average rentals of $65 per room per month, they are twice as expensive as the housing N.Y.U. had envisioned.

Happily, the prospects are brighter for the remaining seven-block area, Bellevue South. Under New York's new Housing & Redevelopment Board, this project will benefit from partial tax exemption and low-cost public mortgage loans, as well as controls on building costs. Bellevue South, now under review by the HHFA, calls for 2,050 units, one fifth of them to rent for an average of $18 per room per month, the remainder for under $30.

In planning its own five building complex, N.Y.U. and the architects first laid out each department as if it were an inde-

N.Y.U.'s new Medical Center (1 in airview, left) is part of a dense, 11-block-long institutional belt along Manhattan's East River. Its neighbors are Bellevue Hospital (2), the U.S. Veterans Administration Hospital (3), and the twin apartment towers of Kips Bay (4). A seven-block area south of Kips Bay (5) is slated for redevelopment as middle-income housing. Master plan (model photo, right) was followed with only slight modification.

pendent institution. From these separate studies, a common denominator emerged: a module roughly 20 feet square which could be multiplied or subdivided to accommodate research labs, offices, or patient-care units. All spaces are laid out on this module, with full mechanical services built in so that an office, for example, can be converted into a lab with a minimum of change.

Even before the center was completed, the loose arrangement of separate but linked buildings paid off in the redesign of the tall hospital slab. The tower was originally planned as a single-corridor, non-air-conditioned building. But once air-conditioning became economically practical, the advantages of a double-corridor system were apparent (plans, right): by making the floors shorter and fatter, and then dividing each into two nursing units separated by a back-to-back elevator core, the architects were able to cut down substantially the distance from patients' rooms to each nursing station (photo, below). This also allowed more

space for seminar rooms and laboratories bracketing the core. With the spread-out master plan, SOM could easily accommodate this basic design change without disrupting the center's overall organization.

It did, however, disrupt the design visually, producing a building twice as fat, 30 feet shorter, and considerably less elegant than the original thin slab. Moreover, the fact that the fatter building no longer reached out to the street opened the door for a small three-story building housing doctors' outpatient offices, tacked onto the lofty slab (left in photo, opposite).

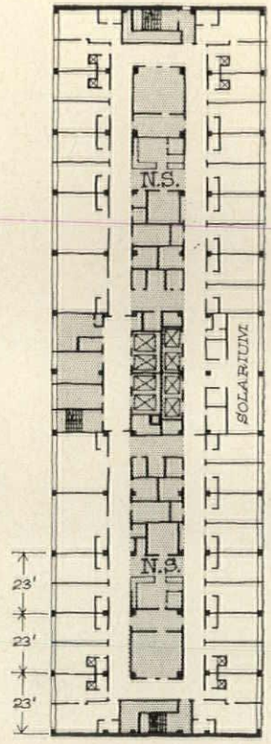
Still another dilution of the original scheme can be seen in the pattern of horizontal windows, one of SOM's earliest visual devices to unify the complex. With the strong horizontal sunshields on the hospital eliminated because of air conditioning, the façades suffer from glare inside and out, and from an inevitable jumpiness of the now-necessary window shades. And on the lower Medical Science building, a rash of protruding air conditioners advertises an earlier decision to do without central cooling there.

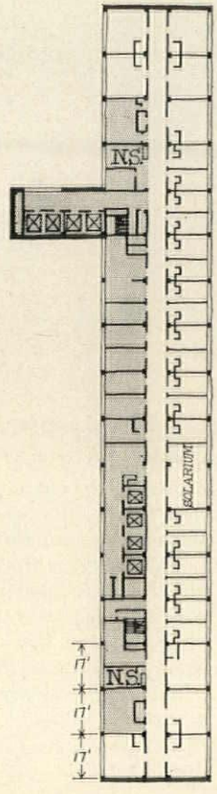
Overpurchase of land

N.Y.U. purchased its four-block site in parcels, bit by bit, for less than $10 per square foot—in an area where land is now being condemned for $25 per square foot. The university deliberately overbought land to allow for expansion; its wisdom is demonstrated by the fact that another major medical institution in New York, having exhausted its present site, is now buying adjacent land for $65 per square foot.

N.Y.U. has not come close to exhausting its site. The new buildings contain 1.25 million square feet, covering 32 per cent of the 11-acre property. Plans call for an additional 350,000 square feet (in research facilities), bringing the coverage up to 36 per cent.

In addition to having now the obvious pleasures of open space, N.Y.U. has provided for its future both in medicine and in the community. And it has provided well.

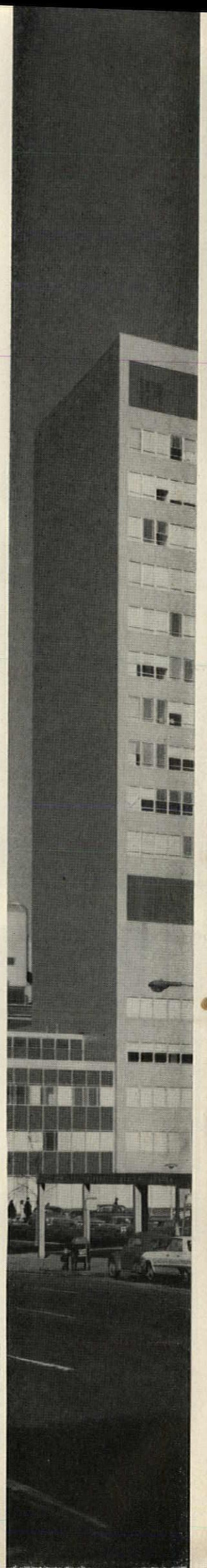




Hospital's double-corridor plan (above) cuts down distances between nurses' stations and patients and leaves space for labs and seminar rooms opposite the core. The original scheme (below) was based on a single center corridor in a thinner, non-air-conditioned slab.

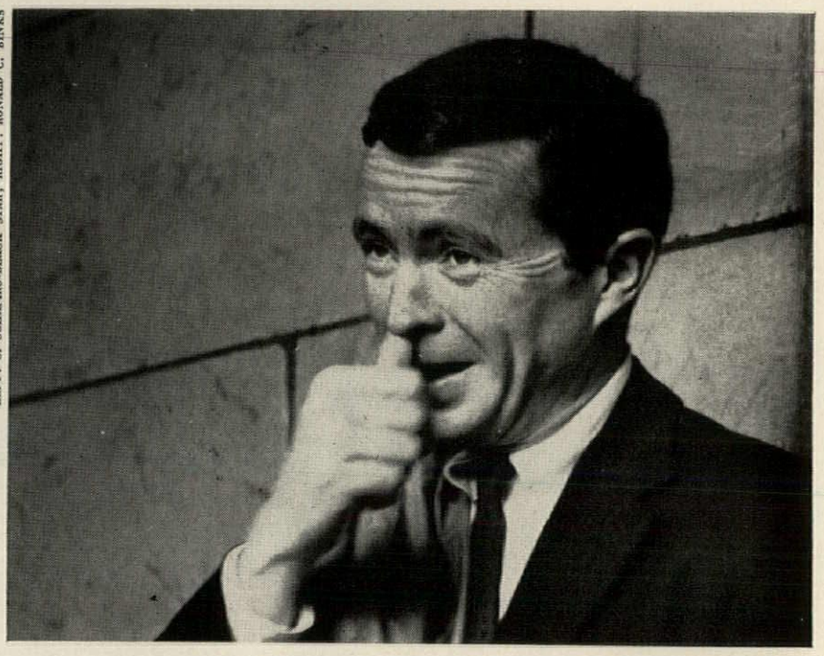
FACTS AND FIGURES

New York University Medical Center, New York, N.Y.
Architects: Skidmore, Owings & Merrill (partner-in-charge: Robert W. Cutler; project manager: Harold J. Olson; job captain: Stanley H. Pansky). Engineers: Seelye, Stevenson, Value & Knecht (structural), Syska & Hennessy, Inc. (mechanical, electrical). General contractors: John Lowry, Inc.; Cauldwell-Wingate Co., Inc.; James Stewart Co., Inc.; William L. Crow Const. Co.; HRH Const. Corp.
Total project cost: $50 million, including $5.5 million in site purchase and improvement, largely financed ($43 million) by private funds. END



PHOTOS: GEORGE CSERNA

Several months ago, Novelist Norman Mailer devoted two of his columns in Esquire Magazine to an attack on contemporary architecture. A condensation of Mr. Mailer's columns is reproduced below, with the author's permission. Next to this condensation is a rebuttal written at FORUM's request by Vincent J. Scully, Jr., Professor of Art History at Yale. Following these two statements are a few final words by Mr. Mailer, written in response to FORUM's invitation to him to have the last word.



LEFT: S. SCHAPIRO-BLACK STAR; RIGHT: RONALD C. BINKS

Mailer vs. Scully

Totalitarianism . . . has haunted the twentieth century . . . And it proliferates in that new architecture which rests like an incubus upon the American landscape, that new architecture which cannot be called modern because it is not architecture but opposed to architecture. Modern architecture began with the desire to use the building materials of the twentieth century — steel, glass, reinforced concrete — and such techniques as cantilevered structure to increase the sculptural beauty of buildings while enlarging their function. It was the first art to be engulfed by the totalitarians who distorted the search of modern architecture for simplicity, and converted it to monotony. The essence of totalitarianism is that it beheads. It beheads individuality, variety, dissent, extreme possibility, romantic faith; it blinds vision, deadens instinct; it obliterates the past. Since it is also irrational, it puts up buildings with flat roofs and huge expanses of glass in northern climates and then suffocates the inhabitants with super-heating systems while the flat roof leaks under a weight of snow. Since totalitarianism is a cancer within the body of history, it obliterates distinctions. It makes factories look like college campuses or mental hospitals, where once factories had the specific beauty of revealing their huge and sometimes brutal function — beauty cannot exist without revelation, nor man maybe without beauty. It makes the new buildings on college campuses look like factories. It depresses the average American with the unconscious recognition that he is installed in a gelatin of totalitarian environment which is bound to deaden his most individual efforts. This new architecture, this totalitarian architecture, destroys the past. There is no trace of the forms which lived in the centuries before us, none of their arrogance, their privilege, their aspiration, their canniness, their creations, their vulgarities. We are left with less and less sense of the lives of men and women who came before us. So we are less able to judge the sheer psychotic values of the present: overkill, fallout shelters, and adjurations . . . to drink a glass of milk each day. . . .

People who admire the new architecture find it of value because it obliterates the past. They are sufficiently totalitarian to wish to avoid the consequences of the past. Which of course is not to say that they see themselves as totalitarian. The totalitarian passion is an unconscious one. Which liberal, fighting for bigger housing and The literate magazines have an eerie record in art criticism. So the NEW REPUBLIC, whose literary reviews can hardly be surpassed, employs a critic of painting whose grasp of abstract art suggests a need for the services of a Seeing Eye dog, while the stalwart PARTISAN REVIEW, tough as nails so far as verbal hokum is concerned, was apparently happy to follow Reed and Bailey down the rosy trail toward sugar plum classicism a few years ago. Away from words or the movies, an inability to cope with constructed reality seems to overwhelm the literati, and they tend to fall feebly back upon the simple narrative esthetic for the visual arts that they learned at their mother's knee. Out of this compost strange flowers of criticism bloom, as when, for example, the NEW REPUBLIC encourages Getlein to equate Abstract Expressionism with the Eisenhower regime. (Too bad Franz Kline is gone. His reply to this would probably have run something like: "It makes you feel as if there were two guys in Massachusetts and none of them were you.")

Against this lunatic background these lazy, pot-boiling paragraphs by Mr. Mailer, though no less representationalist in bias, shine like pure gold. True enough, to equate modern architecture, which was banned by all the most totalitarian of the totalitarian countries, with totalitarianism, is historically speaking, the Big Lie at its most majestic. I should prefer to believe that Mr. Mailer is simply uninformed, and his articles do have that lovely loose quality which only pure indifference can provide. For example, the work of Wright, Le Corbusier, and Aalto — not, surely, to mention that of Lou Kahn — flatly contradicts everything, absolutely everything, Mr. Mailer has to say. Just read it in reverse and you've got it, especially that bit about destroying the past.

I mean, in reverse unless Mr. Mailer actually wants those schools to be Romanesque in style. Why couldn't they be? The answer, one supposes, is another question, such as: Why couldn't THE NAKED AND THE DEAD have been another CHANSON DE ROLAND? Maybe just a few old fragments could be built into them, though, like the Roman debris stuck on the walls of Italian apartment houses. Each piece might, as Mr. Mailer's comments suggest, be chosen for its peculiar emotional content, or, better yet, associational value. Children would get in touch with life and all through wounding contacts with them, like getting shots. It is an excellent nineteenth century idea; I should have said they had rather worked it out at the

MAILER (cont'd)

additional cubic feet of air space in elementary schools, does not see himself as a benefactor? Can he comprehend that the somewhat clammy pleasure he obtains from looking at the completion of the new school — that architectural horror! — is a reflection of a buried and ugly pleasure, a totalitarian glee that the Gothic knots and Romanesque oppressions which entered his psyche through the schoolhouses of his youth have now been excised? But those architectural wounds, those forms from his childhood not only shamed him and scored him, but marked upon him as well a wound from culture itself — its buried message of the cruelty and horrow which were rooted in the majesties of the past. Now the flat surfaces, blank ornamentation, and pastel colors of the new schoolhouses will maroon his children in an endless hallway of the present. A school is an arena to a child. Let it look like what it should be, mysterious, exciting, even gladiatorial, rather than a musical comedy's notion of a reception center for war brides. The totalitarian impulse not only washes away distinctions but looks for a style in buildings, in clothing, and in the ornamentations of tools, appliances, and daily objects which will diminish one's sense of function, and reduce one's sense of reality by reducing to the leaden formulations of jargon such emotions as awe, dread, beauty, pity, terror, calm, horror, and harmony. By dislocating us from the most powerful emotions of reality, totalitarianism leaves us further isolated in the empty landscapes of psychosis, precisely that inner landscape of void and dread which we flee by turning to totalitarian styles of life. The totalitarian liberal looks for new schools and more desks; the real (if vanishing) liberal looks for better books, more difficult books to force upon the curriculum. A high school can survive in a converted cow barn if the seniors are encouraged to read Studs Lonigan the same week that they are handed The Cardinal or The Seven Storey Mountain.

Yes, the people who admire the new architecture are unconsciously totalitarian. They are looking to eject into their environment and landscape the same deadness and monotony life has put into them. A vast deadness and a huge monotony, a nausea without spasm, has been part of the profit of American life in the last fifteen years — we will pay in the next fifteen as this living death is disgorged into the buildings our totalitarian managers will manage to erect for us. The landscape of America will be stolen for half a century if a Resistance does not form. Indeed it may be stolen forever if we are not sufficiently courageous to enter the depression of contemplating what we have already lost and what we have yet to lose.

SCULLY (cont'd)

time. Still, there could be a cave, maybe, and a house in a tree. . . .

Only, that is not all there is to Mr. Mailer's articles. One knows him from of old and, along even with those who like him least, trusts him somehow. He may have his moments of boredom, pose, and contemptuous oversimplification, but he is a serious man. Moreover, he is perfectly able to look at landscape and architecture and to draw valuable conclusions from what he sees. His succinct and beautiful lines on Japan in the novel mentioned above can show us that. So if we think of the bulk of American building at the moment and imagine Mr. Mailer as generally uninformed about the great modern architects but simply stumbling about through it all snapping his fingers and mumbling "Go, man, go," and similar incantations relative to his calling, and then, lifting his eyes by chance, what is he likely to see? Probably something exactly like what he describes: a dacron-suited building with a surface like "gelatin," of "a vast deadness and a huge monotony" — something, most of all, whether on Park Avenue or in Athens, or now not so far from Freshman Commons at Yale, which has thoroughly destroyed a place that was there before, so creating yet another of what Mr. Mailer describes in an exact and terrible phrase as "the empty landscapes of psychosis." Indeed, as we ream out the centers of our cities for redevelopment and more or less leave them as scaleless open spaces inhabited largely by parked automobiles, it may be that we are in fact imaging that "inner landscape of void and dread" to which Mr. Mailer refers. . . .

Consequently, I think that Mr. Mailer, with his fierce, restless, innocent artist's eye — flecked though it is by some neo-Romantic sunspots and pretentious motes — is more right than wrong in terms of what is generally to be seen around us. Indeed, I think that the architectural situation relative to humanity and the earth as a whole is a good deal more serious even than he seems to find it. "Totalitarianism" indeed! The locust and the lemming come to mind.

On the other hand, Mr. Mailer's penultimate polemic, which rises wheezing to its climax with the suggestion that "a high school can survive in a converted cow barn," surely supplies us with the answer for everything. It reminds me of a story which George Howe, that cynical pioneer, used to tell about the time when he was eight years old and got sick at the Boston Opera. The female relative in attendance removed him from the hall and straightened him out and said, "George, you must learn that everything worthwhile in life takes place in nauseating surroundings."

Moral: A little horseshit never hurt anybody. Look at Mailer.

Mr. Mailer winds up the debate with this response to Prof. Scully:

Our commodities are swollen in price by the false, needless and useless labor attached to them. Modern architecture is the child of this fact. It works with a currency which (measured in terms of the skilled and/or useful labor going into a building) is worth half the real value of nineteenth century money. The mechanical advances in construction hardly begin to make up for the wastes of advertising, public relations, building union covenants, city grafts, land costs, and the anemia of a dollar diminished by armaments and her taxes. In this context the formulas of modern architecture have triumphed, and her bastards — those new office skyscrapers — proliferate everywhere: one suspects the best reason is that modern architecture offers a pretext to a large real estate operator to stick up a skyscraper at a fraction of the money it should cost, so helps him to conceal the criminal fact that we are being given a stricken building, a denuded, asceptic, unfinished work, stripped of ornament, origins, prejudices, not even a peaked roof or spire to engage the heavens.

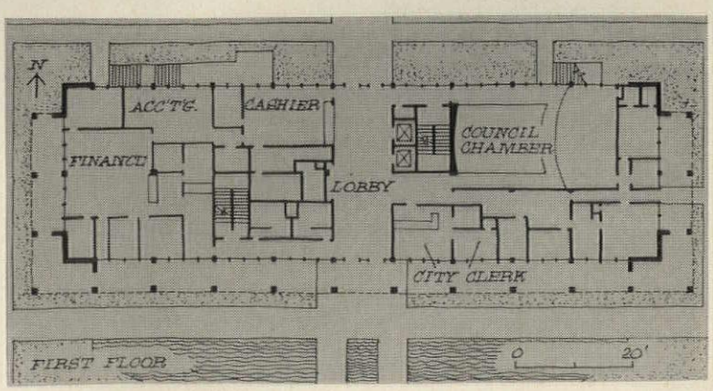
This lack of ornamentation, complexity, and mystery I choose to call totalitarian. Vincent Scully must have all but deliberately missed the point. If the classic totalitarian regimes, Germany, Italy, Russia, were programmatically against modern architecture — no matter. It should be obvious that in 30 years an esthetic movement can shift from a force which opens possibilities to one which closes them. Once totalitarianism is seen as a social process which deadens human possibilities, and therefore lets one accept my point that American totalitarianism (the repression having shifted from the force of the state to the power of the oppression which now takes place within each psyche), it is not too great a jump to declare that the Guggenheim Museum may be a totalitarian work of art, and the man who was, on a time, so imaginative as to design a house about a waterfall had taken, must have taken, a long foul route before his death to end with a construction as ill-intentioned as the Guggenheim. That museum shatters the mood of the neighborhood. Destroys its possibilities. More completely, wantonly, barbarically than the Pan Am building kills the sense of vista on Park Avenue. It is too cheap to separate Mafia architects with their Mussolini Modern (concrete dormitories on junior college campuses) from serious modern architects. No, I think Le Corbusier and Wright, and all the particular giants of the Bauhaus are the true villains; the Mafia architects are their proper sons; modern architecture at its best is even more anomalous than at its worst, for it tends to excite the Faustian and empty appetites of the architect's ego rather than reveal an artist's vision of our collective desire for shelter which is pleasurable, substantial, intricate, intimate, delicate, detailed, foibled, rich in gargoyle, guignol, false closet, secret stair, witch's hearth, attic, grandeur, kitsch, a world of buildings as diverse as the need within the eye for stimulus and variation. For beware: the ultimate promise of modern architecture is collective sightlessness for the species. Blindness is the fruit of your design. END

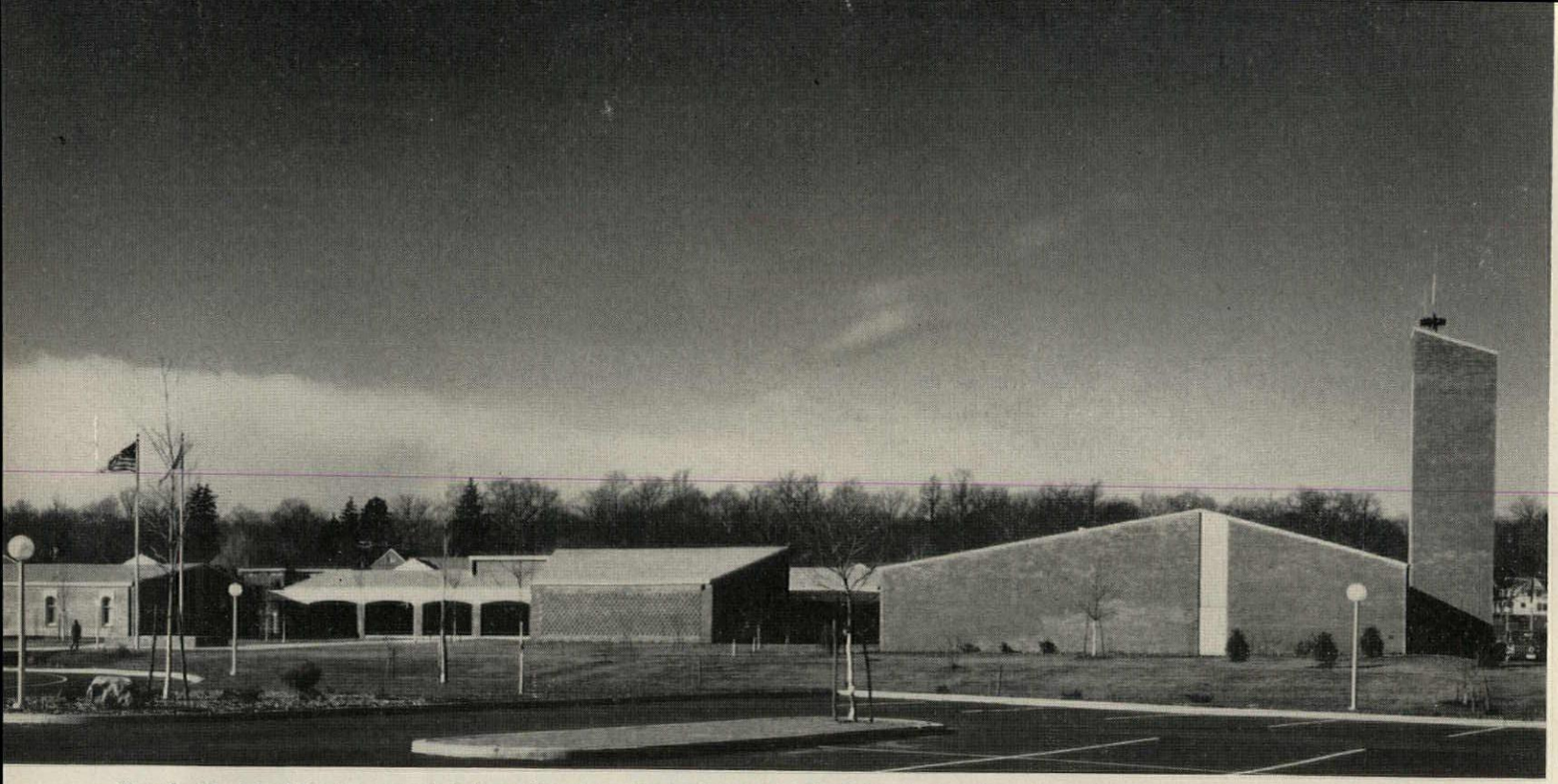
WHAT'S BEEN HAPPENING TO CITY HALL?

American communities, engaged in a minor municipal building boom, are rapidly changing the face of City Hall. In 1872, when Owego, N. Y. built the redoubtable structure above, City Hall was a monument to civic pride and rectitude. It still evokes nostalgia, except, perhaps, among those who have to work in the dark corridors behind its fortress-like red brick walls. But today, as illustrated by the new administrative seat of Fullerton, Calif., at right, City Hall is likely to be bright, inviting, and not at all boastful of its civic dignity. Actually,

LELAND Y. LEE

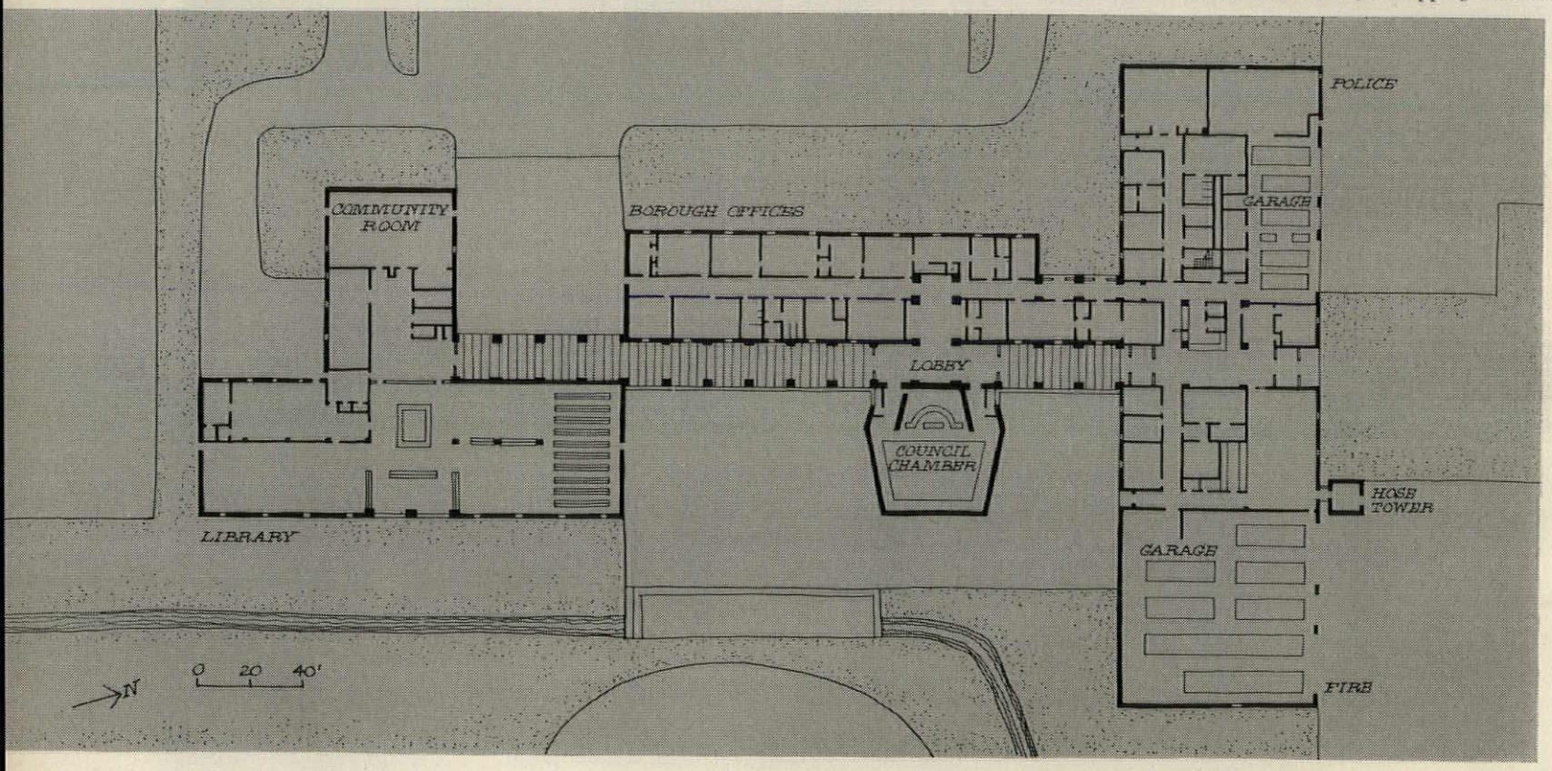
the symmetry and slender concrete arches of the Fullerton example, the work of Architects Smith, Powell & Morgridge, give it more monumentality than most of the current crop of municipal buildings, although even here the monumentality is of a weightless and unassuming sort. The building makes still another point about today's City Hall: it is a businesslike place, owing a debt to the efficiency of commercial architecture, with flexible office floors and public spaces put where they are most easily accessible (see ground floor plan at right). On the following pages are four other recent versions of City Hall, ranging from campuses of small buildings to compact multistory blocks, serving communities that vary in size from 5,500 to 450,000. All share some of the qualities that are described above, plus something more: there is scarcely a single gloomy corridor to be found among them.





ALEXANDRE GEORGES; OPP: LAWRENCE S. WILLIAMS

Tenafly Municipal Center sprawls informally across the landscaped park of its 14-acre site, adjacent to the suburban community's shopping district.



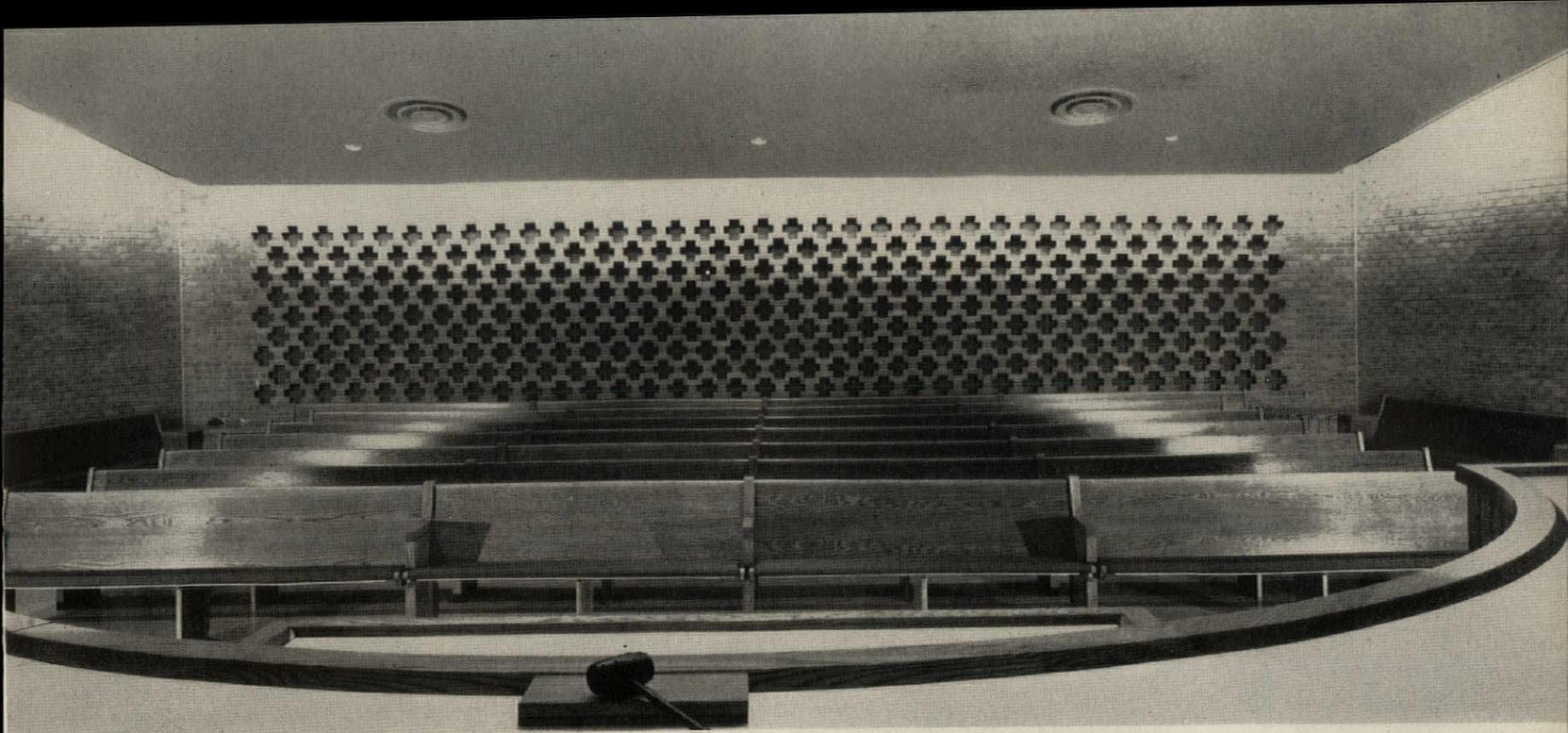
IN TENAFLY, NEW JERSEY: MODERN VILLAGE GREEN

In designing the 14-acre Municipal Center of suburban Tenafly, Architect Vincent Kling had in mind the character of a New England village green. The full range of municipal functions are thus distributed among four single-story buildings—library, offices, council chamber, and public safety, from left to right above—linked by a covered arcade. The 68-foot hose tower of the public safety building is the tallest structure in Tenafly, making the center its unrivaled focal point.

The four buildings are made of concrete block with a red brick veneer. They vary in size and shape, giving the complex a pleasantly random quality, but their strength is diminished by white masonry headers pasted above the windows and arcade columns. The windowless walls of the council chamber bear a cruciform pattern of bricks.

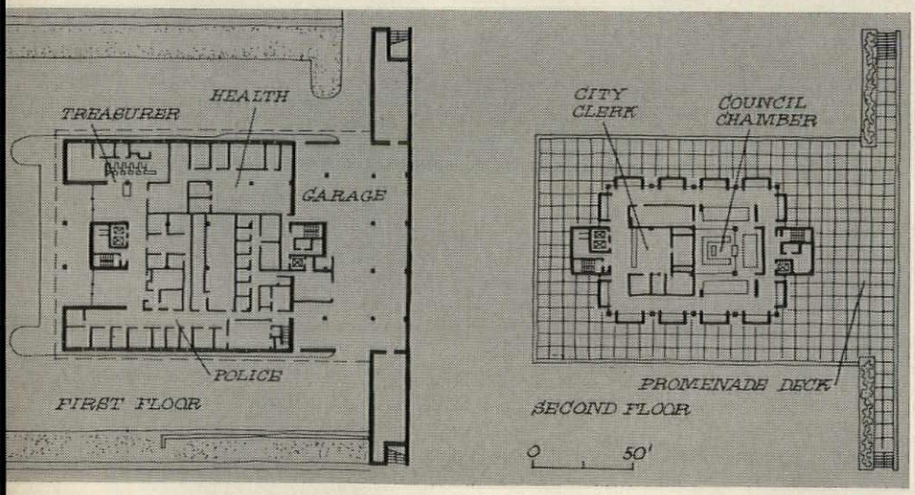
FACTS AND FIGURES

Tenafly Municipal Center, Tenafly, New Jersey.
Architect: Vincent G. Kling (Shirley Vernon, team designer). Associate architect for library: Ira Davey. Engineers: Severud-Elstad-Krueger Assoc. (structural), Meyers, Strong & Jones (mechanical and electrical). Landscape architect: Vincent G. Kling. Contractor: Mahieu Construction Co.
Building area: 49,270 square feet. Construction cost: $1.24 million. Unit cost: $22.82 per square foot.



Cruciform pattern of bricks is repeated on both the inside and outside walls of the council chamber, which opens from the long central arcade

Oversize first floor of the strongly massed Ann Arbor City Hall provides a ceremonial second-story terrace for the council chamber (below right)



PHOTOS: BALTHAZAR

IN ANN ARBOR, MICHIGAN: WIDENING OFFICE FLOORS

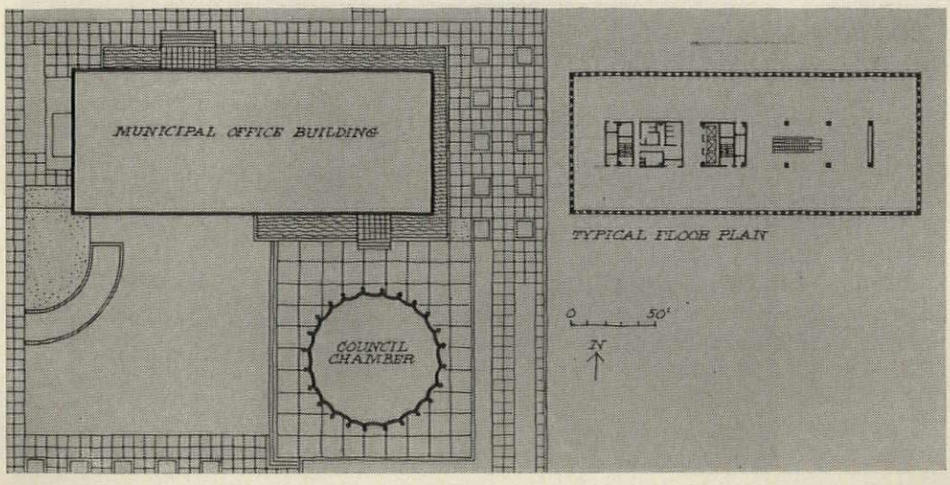
The upper floors of the Ann Arbor City Hall by Architect Alden Dow seem to sprout from either side of a great brick wall in the center. Actually, the floors are continuous, and the brick element has three parts: identical towers on each end, containing elevators, stairwells, and restrooms; and a connecting penthouse above, containing heating and cooling equipment. The twin towers penetrate the four-foot-deep concrete spandrels which hold plenums for the building's ventilating ceilings.

The police, treasury, and health departments, which do a great deal of public business, are on the building's ground floor (plan left), and the council chamber is on the second, surrounded by a wide promenade deck for exhibits and outdoor ceremonies. Office floors from there up get progressively wider, giving the building something of the look of a rectilinear Guggenheim Museum.

FACTS AND FIGURES

Ann Arbor City Hall, Fifth & Huron Sts., Ann Arbor, Michigan. Architects: Alden B. Dow Associates, Inc. Engineers: R. J. Davis (structural), Hyde & Bobbio, Inc. (mechanical and electrical). Contractor: J. A. Spence Brothers. Building area: 88,300 square feet. Construction cost: $1,727,008. Unit cost: $19.56 per square foot.

Windows of Phoenix Municipal Building are deeply recessed. Council chamber (right, above and below) is set like an ornament in the paved plaza.




BOB ADAMS

IN PHOENIX, ARIZONA: WHITE PRECAST FACADE

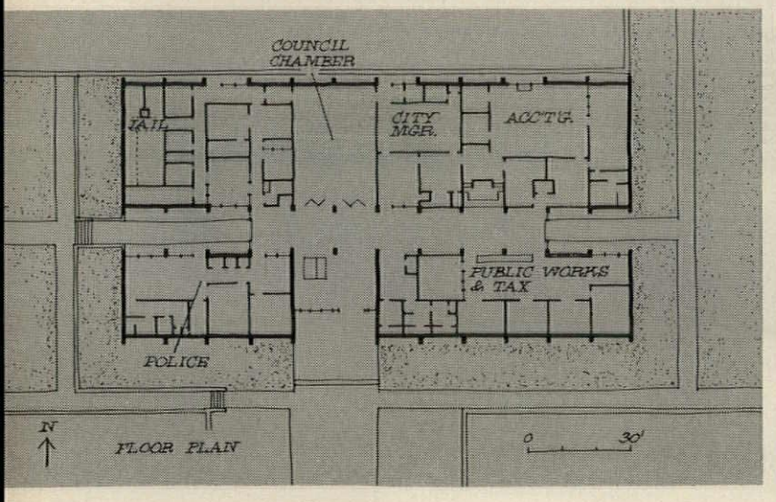
The nine-story Municipal Building in Phoenix could be a clean-cut commercial building, but Architects Varney and Haver have provided three clues to its public character: a broad plaza, which even the most generous commercial client could scarcely afford; a dignified arcade of flaring concrete columns at its base; and a separate circular council chamber, whose blank walls attest that it is not a bank.

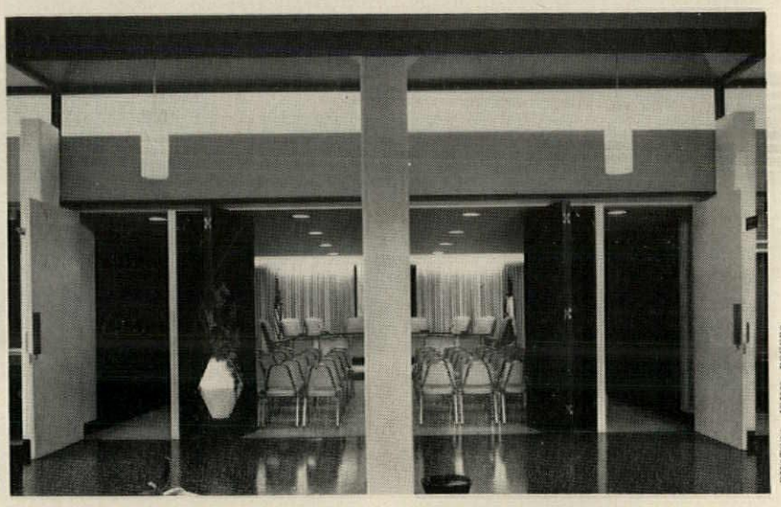
The arcade performs a non-visual function as well, shading the Municipal Building's ground floor from the hot Phoenix sun. The offices above have narrow gray glass windows in gleaming rows of recessed precast concrete frames. Exterior walls of the council chamber are exposed aggregate concrete panels, also precast, and the interior is richly finished in wood beneath the converging scallops of the roof.

FACTS AND FIGURES

Civic Center, Phoenix, Ariz. Architects: Associated Municipal Building Architects (Edward L. Varney Associates and Ralph Haver & Associates). Engineers: Charles R. Magadini (structural), Lowry & Sorensen (mechanical, electrical). Contractors: T.G.K. Construction Co. (office building), Dickmann Construction Co. (council chamber). Building areas: office building, 189,500 square feet; chamber, 10,000. Construction cost (both buildings): $4,336,099.19.

Main entrance of Mesquite's crisp City Hall (above) leads directly to the council chamber (below), whose folding doors open to the enclosed mall.





PHOTOS: JOHN ROGERS

IN MESQUITE, TEXAS: SKYLIGHTED INNER MALL

Architects Caudill, Rowlett & Scott solved the sun problem in the Mesquite City Hall simply by making its brick exterior walls very nearly windowless. The council chamber and municipal offices open onto an enclosed mall, illuminated by umbrella-shaped plastic skylights and shallow clerestories on the sides. The mall joins the building's two assymmetrical wings, and their concrete exterior columns become the mall's decorative interior posts.

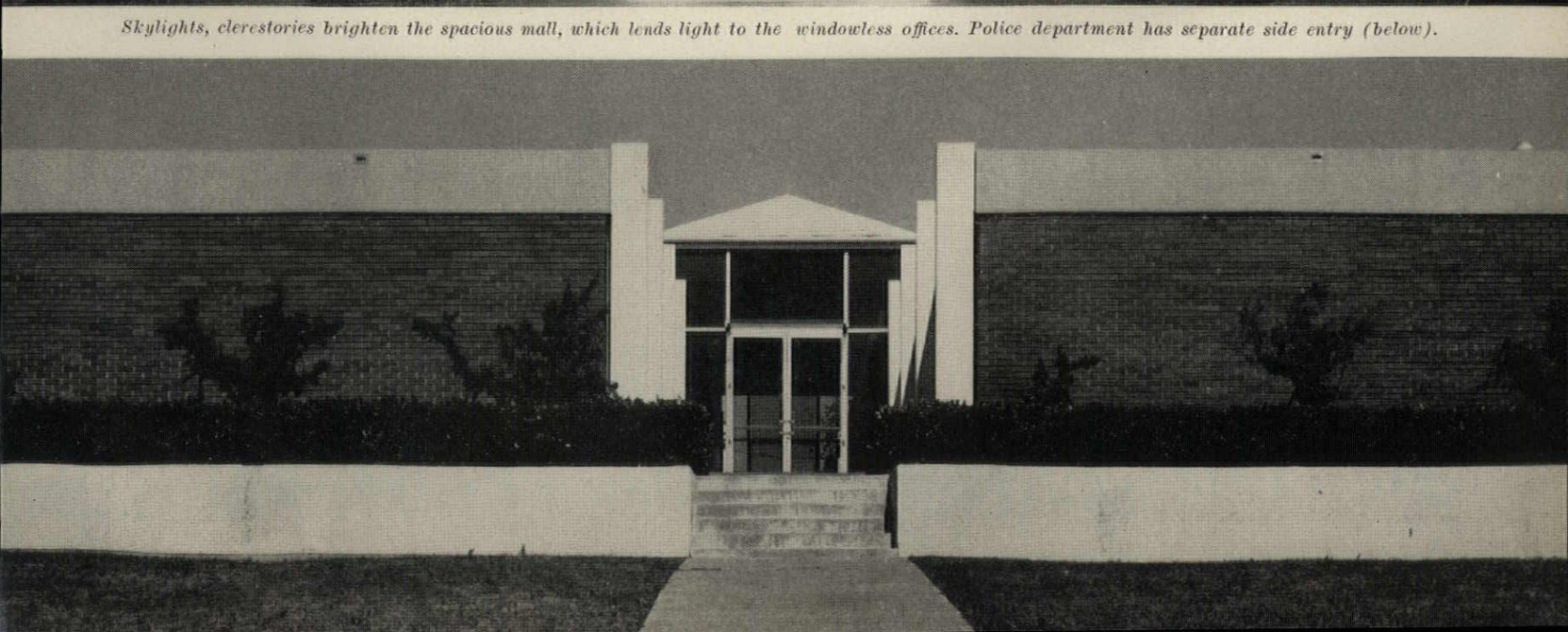
The tidily zoned plan places the council chamber on axis with the main entrance, with folding doors so that overflow crowds can be seated in the versatile mall. The police department can be entered from the side without going into any other part of the building. And utility bills can be paid by automobile, night or day, through a drive-up depository in the accounting office.

FACTS AND FIGURES

Mesquite City Hall, Mesquite, Texas.

Architects and engineers: Caudill, Rowlett & Scott (Virgil Dean, project architect; Charles E. Lawrence, partner in charge of design; Edward F. Nye, structural engineer; Joe B. Thomas mechanical engineer). Contractor: Miller & Norton. Building area: 10,305 square feet. Construction cost: $235,042.82, including equipment for the city jail and all site development. Unit cost: $22.80 per square foot.

Skylights, clerestories brighten the spacious mall, which lends light to the windowless offices. Police department has separate side entry (below).



What it takes to be a client:

5.

HOW TO TURN A SET OF PLANS INTO A BUILDING

Construction can be—and sometimes actually is—the happy climax to the entire lengthy process of creating a building. Construction also can be a nightmare of disappointment and discord, negating all the work that has gone before.

Whether construction is a climax or a nightmare will be determined, in part, by the client's earlier decisions and the architect's earlier labors: the care taken in the selection of the architect himself, of the consultants, and of the contractors; the realism of the design; and the precision with which the design has been reduced to plans and specifications.

And it will also be determined by the client's actions during the construction period ahead. The start of construction means changes in the relationship between client and architect, and it also means establishing new relationships—with contractors and building tradesmen. The client must know when to spend and when to save, when to authorize changes and when to stand pat, and, above all, when to take a hand in the building process and when to retreat behind the terms of the construction contract.

Experience is by far the best teacher in all these things. The only advice to be offered the first-time client, as construction begins, is (1) to keep his eyes wide open, and (2) to go by the book, insofar as possible. The trouble is that even the book is unclear on certain significant matters.

The architect administers, the contractor manages

The basic ground rules for the construction process can be found in the American Institute of Architects' newly revised *Handbook of Architectural Practice*, and in the so-called general conditions of AIA's standard building contract. Together, they form the closest thing to a common law for the building industry, codifying both tradition and practice.

One of the significant matters which they leave a bit muddy is what the architect himself does while construction is under way. They are quite specific about a number of his functions, spelling out what he is to do about change orders, shop drawings, certificates of payment, and other essentials. But the lack of clarity concerns the most crucial task of all, which is seeing that the building is built exactly as it was designed.

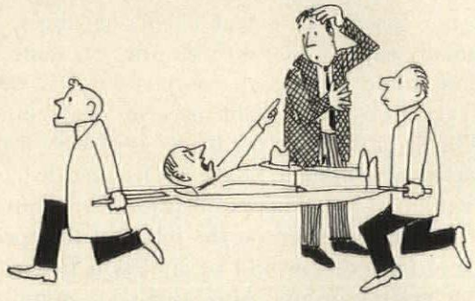
"In administering the construction contract," says Chapter 18 of the *Handbook*, "the architect determines in general if the contractor's work conforms with the contract documents." But then it goes on in the very next sentence, "The architect is not responsible for the contractor's failure to execute the work in accordance with the contract documents."

This seeming ambiguity represents an attempt by the architectural profession to establish a distinction so fine that it

This is the final article in the FORUM *series "What It Takes To Be a Client." The entire series of five articles shortly will be made available in the form of a special reprint.*

would do justice to a medieval philosopher—out of the justifiable motives of client-service and self-defense.

The architect's role in construction used to be described as "supervision" or "superintendence." The abandonment of these terms by AIA came in response to a series of court decisions in which the architect's construction responsibilities in the eyes of the law were steadily, and somewhat frighteningly, broadened. Individual architects were held liable for mistakes that were clearly the fault of contractors, subcontractors, and others; it began to seem that the architect could be sued if a



deliveryman tripped and broke his leg while bringing coffee and doughnuts to the carpenters.

The easy way out, of course, would have been for architects to disclaim any further concern with the contractors' work—after all, it is the builder, not the architect, who contracts to see that everything turns out as intended. But this would be an unacceptable abridgement of architectural services. For one thing, few conscientious architects want to give up some measure of control over the execution of their designs, except in unusual circumstances. For another, the concept of the architect as the client's independent agent, protecting the client's interests during the building process, is one of the profession's best counter arguments to the sales pitches of the package design and construction services.

Hence AIA's recourse to semantics, intended as a restatement rather than a change in the ways things always have been done. The term "construction superintendence" is donated to the contractor; it is he, says the *Handbook*, who is responsible "for delivering to the owner a project in full conformance with the contract documents." And it is the contractor who also has the duty of "management of the construction process."

Managing construction is much like managing any enterprise involving the production of goods. It entails such everyday managerial functions as the purchase and assembly of materials and components, the handling of personnel, and the coordination of a complex process according to a stated schedule of delivery. Not surprisingly, contractors have turned more and more to the methods of business and industry for management tools, from bar charts to the computerized critical path method of keeping the job going.

To maintain the analogy, the architect's relationship to the contractor is something like that of a member of the board of directors to the chief operating executive. The revised *Handbook* calls it "construction contract administration," a term which covers a multitude of functions.

The architect, to begin with, is the prime interpreter of the working drawings and specifications, establishing and maintaining the standards which the work must meet. He is the judge of whether these documents and standards are being followed, checking shop drawings of building components, approving samples of materials and equipment, and authorizing any necessary changes in the work. And he is the one who certifies progress payments to the contractor as the work proceeds.

He does these things by making "periodic" visits to the site, says the *Handbook*, introducing another unavoidable ambiguity. The meaning of "periodic" has to be worked out jointly by the client and architect on the basis of the particular situation at hand. Under a normal fee arrangement, on a normal size building, and with a normal lump-sum contract, it does not mean that the architect will camp at the job full time. Instead, he, his representative (often the same staff member who has seen the building through plans and specifications), or one of his consultants will try to be there at all crucial stages of the work.

There are many cases, however, in which full-time "administration" is indeed a necessity. If the project is large and complex, one or several permanent inspectors may be required. If it is awarded on a cost-plus basis, there must be continual auditing of man-hours expended and materials purchased. The client has the option of paying the architect extra for these extra services, or hiring his own inspector to keep an eye on things. The use of an inspector—sometimes poetically called the clerk of the works—can pay off handsomely, but he must be chosen with care and he should, in all cases, report to the architect. Otherwise, the client is only adding another strand to the already complicated web created by the various lines of authority over the job.

Lines of authority, from the client to the workmen

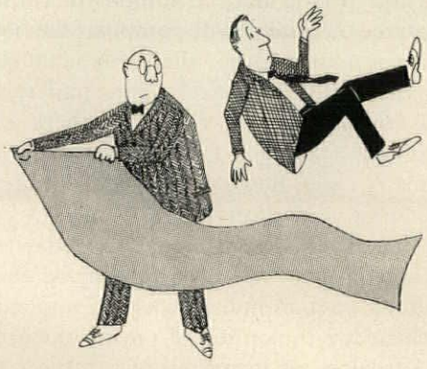
These lines of authority, somewhat paralleling the responsibilities outlined above, are spelled out in the general conditions of the contract, which place the client in the catbird seat. His responsibilities are few, although rather important—he provides the site and pays the bills—and his authority is ultimate.

The tricky part of the client's job is the delegation of this

authority to the architect and contractor. It is the client's money and the client's building, but he must rely almost entirely on his chosen agent (architect) and project manager (contractor) to see the job through. Should he take a personal hand in things, moreover, he can lose some of the construction contract's safeguards and guarantees—he, not the architect or contractor, can become responsible for defects in any parts of the work he has directed. The client, however, still has an ace in the hole: he can fire the architect any time, and he can dismiss the contractor for a variety of reasons, including tardiness or incompetence.

The authority wielded by the architect (or those reporting to him) is the delegated authority of the client. He can order the contractor to speed things up, to return substandard materials or building components, even to tear whole sections of the building out and start over, all in the client's name.

He is far from autonomous, however. He has a voice in the general procedures and even equipment which the contractor proposes to use on the project, but within these limits it is up to the contractor to manage things the way he thinks best. If the architect interferes unduly, he can unwittingly take on some of the contractor's legal responsibilities. And the client



can, at any time, pull the rug of authority out from under the architect's feet. Some contractors (and even suppliers) are highly skilled at circumventing the architect and establishing a direct relationship with the client. Once this happens—and if the contractor turns out to be unscrupulous—the client is at his mercy, with no one to blame but himself.

The contractor has authority over the subcontractors (except when a segregated contract is used) and over the workmen (within the sometimes narrow provisions of their union agreements). Otherwise, as one author of a contracting textbook has put it, he has "few rights and many obligations." He is responsible for completing the project on time, within the contract price, and, as previously noted, in accordance with the plans and specifications. Even if these documents are incomplete, or are incorrectly interpreted by the architect, the contractor can be stuck should something go amiss unless he registers a protest in writing during construction. He also has prime responsibility for safety on the job. If he has submitted a lump-sum bid, he must exercise these obligations come hell or high water. Small wonder that the cost-plus system is gaining in popularity among the contracting profession.

Even going by the book, then, the distribution of responsibility, liability, and authority during construction is a delicate balance. In practice, the human factor is all-important. More often than not, it alone is what makes the balance work.

Sore spots: craftsmanship, changes, and the calendar

Were it not for the fact that client, architect, and contractor normally share a desire to see the job done well, very few buildings would ever reach completion. For there comes a time on every job when problems arise that could pit one against the other, and then "the book" is of very little help.

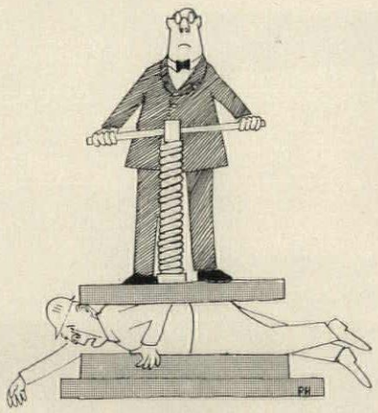
One area in which such problems frequently come up is quality of workmanship. The specifications are supposed to set the standards to be enforced on the job, but the specifications can only go so far—they would be endless if taken to the last fine point of craftsmanship. Also, there are some standards that neither words nor drawings can convey with precision. Specification of a certain texture in an exposed concrete wall, for example, may bring quite a different picture to the minds of the workmen than was in the mind of the architect.

Another sore spot can be the matter of changes and extra work. The source may be the plans and specifications themselves—the building process is bound to reveal gaps in even the most tightly drawn set of drawings and specs. Or it may be the architect, who finds that a detail that looked so masterful on paper looks crude and clumsy in place. Or it may be the client, who suddenly blurts out a long-suppressed feeling that he has always hated one kind of panelling, and would like another wood instead.

A third creator of crisis can be the calendar. The job is going swimmingly—and then comes a strike, a shortage of materials, a long spell of rain, or a virus that runs rampant

through the building trades. The client has made all sorts of plans—and established his budget—on the basis of a schedule which (he thought) allowed plenty of time for contingencies. The contractor has agreed to meet the schedule. But now the entire project has bogged down, and there is no telling when it will get going again.

Enter the human factor. The architect, when he finds sloppy workmanship, can rant against the decline of the building crafts, demand that the whole thing be done over, and hint darkly that he intends to blacken the name of the contractor unless the level of quality improves. The contractor, when he finds holes in the drawings or is asked to make a minor change, can tell the client that he expects to be paid for every extra minute his men spend on the job, and pointedly ask why the client didn't get a more realistic architect. The client, when he finds the job falling behind schedule, can squeeze



the last penny in penalties out of the contractor, even if it drives the contractor close to bankruptcy.

The result of such behavior—in each instance perfectly justified by the terms of the contract—is to make big problems out of little ones, and, quite possibly, to bring the whole project to a temporary halt. Fortunately, very few architects and contractors act that way, and the wise client emulates the restraint of the majority. His most effective safeguard is not a bond, or the authority to withhold payment, or any such device; it is the desire of most building professionals to do good work, and to maintain reputations it has taken years to build.

Once in a while, however, a major crisis is allowed to develop, and then it is time for arbitration. When the dispute is between client and contractor, it is the architect who is the arbitrator. This is the major difference between the architect-client relationship at this and at earlier stages. The architect is still the client's agent, but when the client and contractor disagree, the architect is expected to render an impartial, professional judgment.

Should the disagreement be a serious one, or should the architect himself be involved, it is common practice to resort to a more formal sort of arbitration. AIA offers a standard form of arbitration procedure, and a similar code issued by the American Arbitration Procedure Association is also sometimes used. Normally, a three-man board is appointed, whose members are familiar with construction practices, and this board decides the dispute after a full hearing of both sides. The most significant advantage of arbitration is that work can proceed pending the decision.

What to do before sending for the moving van

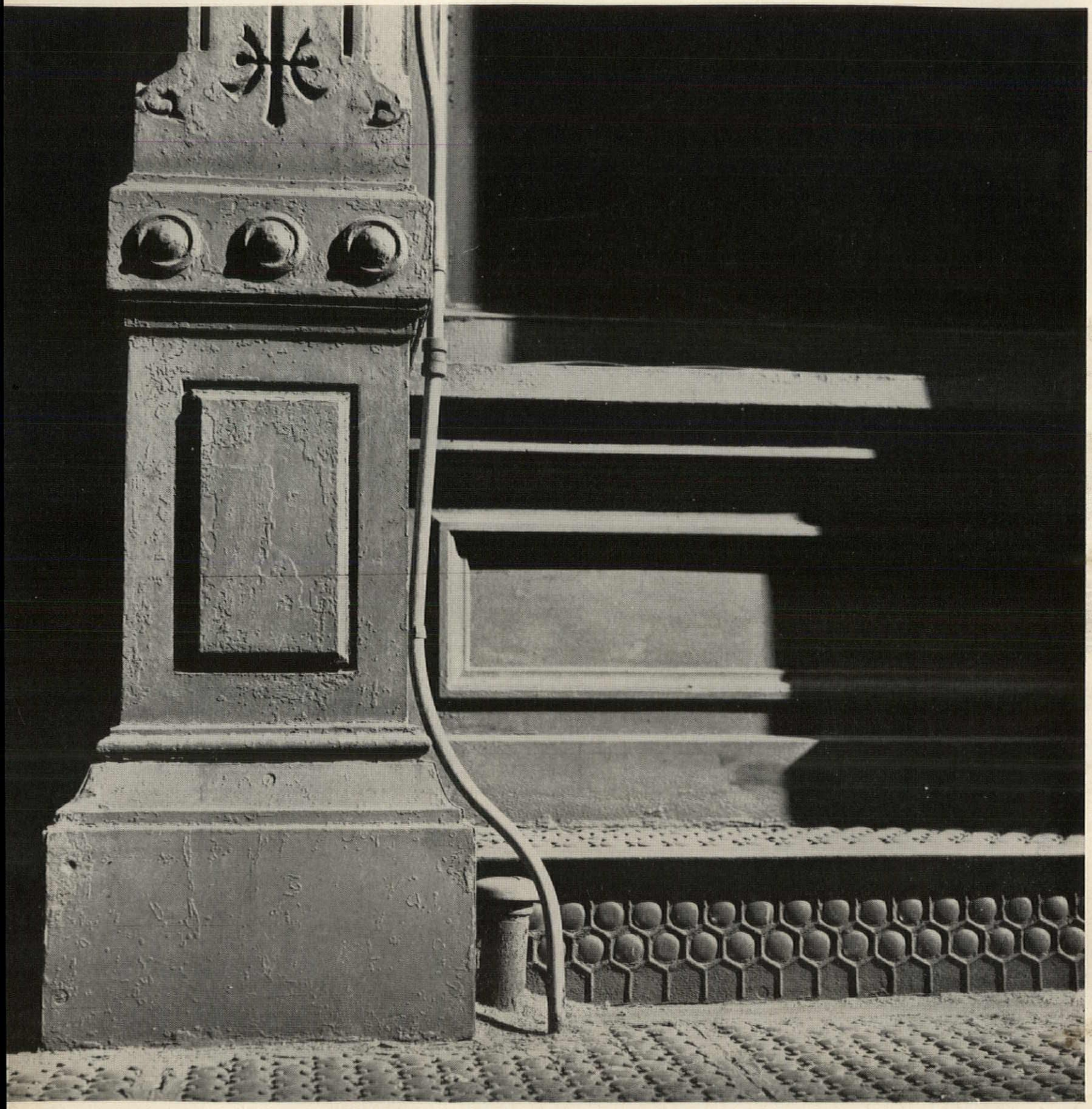
At some point during the latter stages of construction, the client is likely to wonder if the process will ever end. The shell of the building went up fast enough, but now the finish work seems to be dragging on interminably. Then he gets a call from the contractor: his men should be through in about ten days; the client can begin to make his moving plans.

Thus begins the ritual of closing out the project. The architect makes one last inspection, more searching than any that have gone before. If he finds deficiencies, they must be corrected; if not, he recommends to the owner that the contractor be paid in full and the building accepted. Sometimes, when the owner is in a hurry to move in, he accepts the building as "substantially completed," meaning that it is ready for use even though some work may remain to be done.

The amount owing the contractor on acceptance is the last of the progress payments plus the so-called "retained percentage." This is the amount which the client will have held back from earlier payments to the contractor; usually it runs between 5 and 20 per cent of the total. The retainage is a form of insurance that the contractor will not leave the job until the client and his architect-agent are fully satisfied.

Before the contractor gets his money, he is asked for a release absolving the owner from liens or claims from subcontractors, suppliers, or others. Otherwise, the owner might find his building attached six months hence because of a bill the contractor neglected to pay. If any liens or claims are outstanding when the building is accepted by the owner, they are deducted from the contractor's final payment. The owner also receives a warranty from the contractor for a set period of time, usually a year, after acceptance. Should the roof leak or the walls develop cracks during that time, the contract requires that the builder come back and fix things up.

The client, as careful readers will note, has just become the owner. The building is now, for the first time, entirely his. Next time he becomes a client again, he will be a wiser one, but next time may bring a new set of problems. For building is never easy, but neither is it ever dull. —DONALD CANTY



This column base, outside a warehouse at 20 Greene Street, *shows how freely the prefabricators of our Cast Iron Age departed from conventional neoclassical detail. Some of the applied ornament was designed to cover bolts used in assembly. Opposite: a row of cast iron fronts on Worth Street.*

In one nearly forgotten rectangle on the map of Manhattan, off lower Broadway, there stands a grimy collection of some of the most extraordinary buildings constructed anywhere in the past 100 years. These are the cast-iron-and-glass-faced commercial structures that were the standard American vernacular during the brief half-century after their inventor, James Bogardus, first patented this system of prefabricated building in 1850. Most of the structures shown here, in photographs taken for FORUM by Walker Evans, were assembled from more-or-less standard elements—columns, lintels, arches, etc.—available from manufacturers such as Daniel Badger, whose Architectural Iron Works supplied some of the earliest of these prefabricated metal walls. Their detail was neoclassical, and the only way to make certain, nowadays, that one is looking at a "genuine cast iron" façade is to spot one of the bolts used in the construction.

Today these façades are important to us as forerunners of 20th century building technology, for some of these structures have a higher percentage of glass than the ultramodern Seagram building uptown. Alas, though these samples of America's "metallic renaissance" are now revered by architects and historians, they are contemptuously ignored by many of their owners—some of whom have begun to "modernize" the stately façades with the trashy materials of the jukebox trade—or have simply torn them down, to make way for a nice big parking lot...

AMERICA'S CAST IRON AGE

At the corner of Broadway and Broome Street (above) stands a store designed by J. P. Gaynor in 1857. Although the 5-story building suffers from some neglect, it has not been seriously defaced by latter-day improvements.

462 Broadway (opposite) is a building with unusually graceful columns. Unhappily, the ground floor has been "modernized."


ARD
ANS

A VEST-POCKET SKYSCRAPER IN HOLLYWOOD

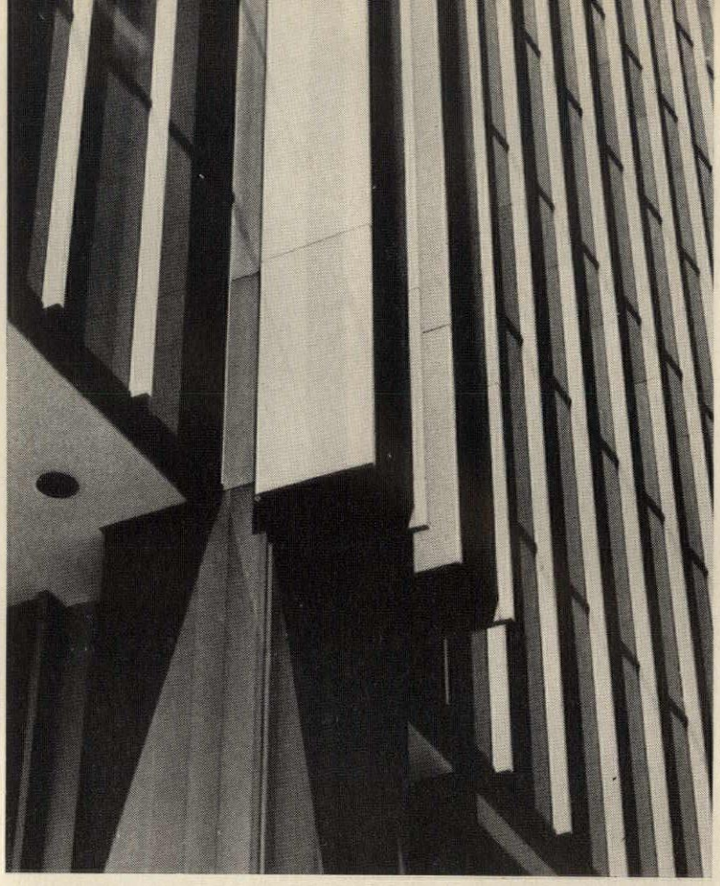
Rising out of the sprawl at its base like some tall exclamation mark, Hollywood's new Sunset-Vine Tower (opposite) is an improbable building on several counts:

- It is a skyscraper with pint-sized typical floors 72 feet square, containing only 4,200 square feet net.
- Its simple silhouette and the restrained sobriety of its gray glass and aluminum walls are a surprising and welcome exception in a city whose buildings tend to exotic shapes and bright hues.
- It is the only high-rise building for miles and, for the moment, the tallest in all Los Angeles.
- It carries its vertical ductwork on the outside, applied to eight perimeter columns (photo, right), thus eliminating space-consuming chases inside.

The 20-story shaft, set back from the busy intersection on a landscaped plaza, took its unusual dimensions partly from the nature of its rental market. Coming after a long dearth of speculative office construction in Hollywood, it was planned to attract the galaxy of small firms—advertising, public relations, talent agencies, and others—who serve television and motion pictures. But the most important reason for the tower's tall, lean look was the wish of the client, Los Angeles Federal Savings & Loan Association, to make it exactly what it is: the dominant landmark of the entire area.

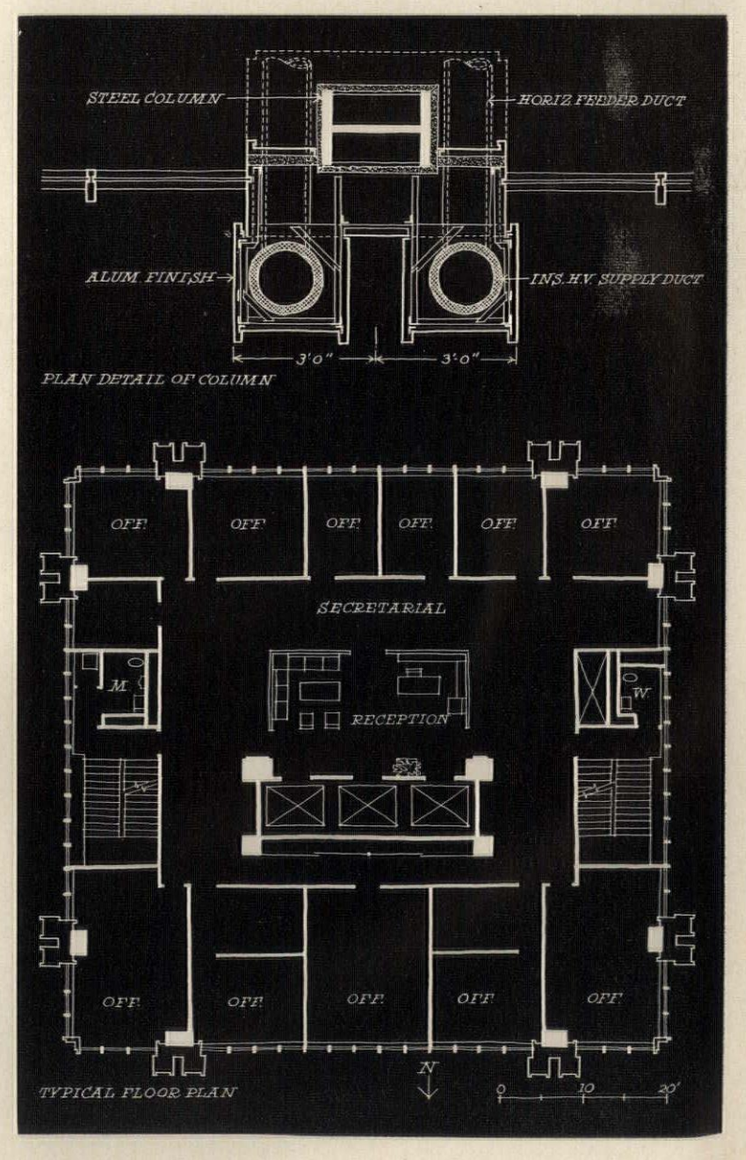
To squeeze the maximum rental area out of the tiny office floors (which have an efficiency factor of over 80 per cent), Architects Honnold & Rex applied the vertical ducts to the perimeter columns (see plan detail at right); the ducts are serviced by fan rooms on the second floor feeding up, and on the nineteenth floor feeding down. They and the narrow, closely-spaced aluminum mullion strips, both stopping short of the ground, give the building its strong vertical emphasis.

The 300-foot-high tower contains 16 tenant floors which rent for an average of $6 per square foot per year. The floors are column-free, with a central elevator core and two stair and toilet cores at opposite sides of the building (plan, lower right). Local codes,



PHOTOS: JACK LAXER

Paired vertical ducts were applied to perimeter columns (above and below)



The pure vertical thrust of the Sunset-Vine Tower (opposite), set off by a fountained plaza, contrasts with the tawdry low-rise buildings which surround it.

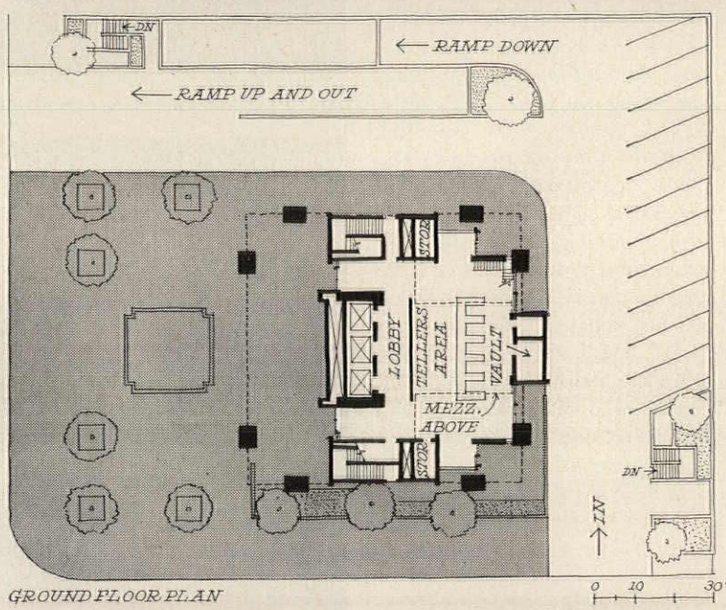
which require at least one smoke tower with direct access to the outside, were responsible for the placement of the stairs along the perimeter, but their position in the east and west walls also reduces air-conditioning loads.

The tower's structure is also unusual. There are eight perimeter columns, pulled back from the cantilevered corners. Pairs of these beefy columns (they are as wide as 56 inches on the first three floors) are joined by girders on each of the building's faces to form ladder-like, moment-resisting frames 20 stories high. All lateral loads are taken by these frames; the loads are transferred to them by the floor slabs. The slabs, which are composed of a 1½-inch corrugated steel deck and 5½ inches of light-weight concrete, also act as stiffening diaphragms against torsional movement.

Generally in shade, the recessed, solid base sets off the mass of the tower above. The base is even tighter in area than the office floors and has a total height of 38 feet. Yet shoehorned within it are a small tenant lobby; a customer service area for Los Angeles Federal; and, on a mezzanine, the firm's branch offices. The low mezzanine floats over the tellers' counters (photo, above right) and is reached by a stair to one side.

There is space for 11 cars on grade at the rear of the site. Most of the parking, in fact 40 per cent more than was required by law, is provided by three underground levels which were designed with one-way circulation to facilitate self-parking.

PHOTOS: JACK LAXER



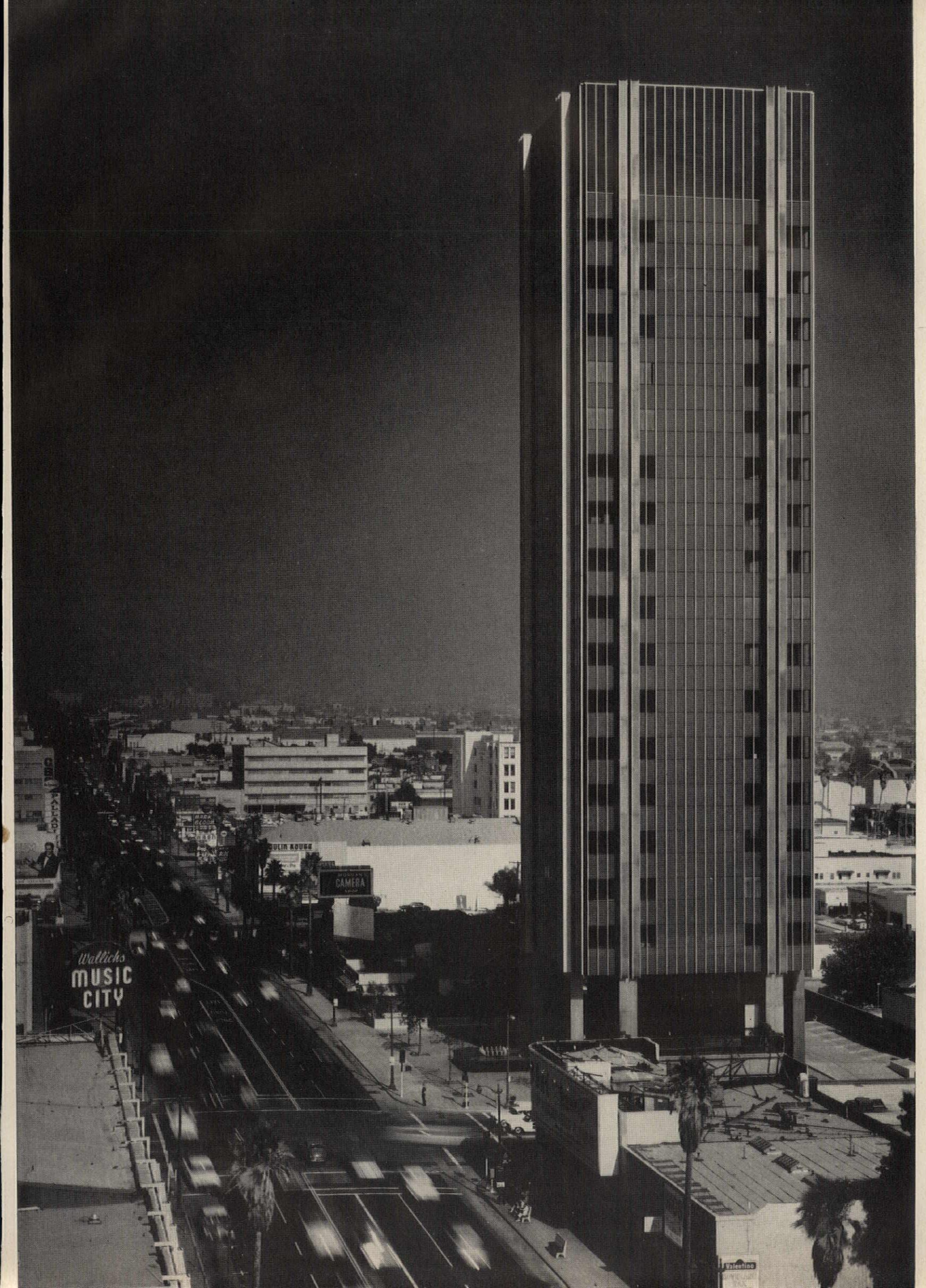
GROUND FLOOR PLAN

Branch offices for owner (photo, above) occupy part of recessed ground floor and mezzanine. Slender shaft is set back on a landscaped plaza (plan, left) over underground parking.

Typical tenant offices (photo, below) come with neat, movable partitions, full-height wood doors, and recessed fluorescent lighting in an acoustical tile ceiling.

FACTS AND FIGURES

Sunset-Vine Tower, 6290 Sunset Boulevard, Hollywood, Calif. Owner: Los Angeles Federal Savings & Loan Association. Architects: Honnold & Rex. Landscape architect: Robert Clark. Interior designer: John Follis. Engineers: Greve & O'Rourke (structural), Ayres & Hayakawa (mechanical), Frumhoff & Cohen (electrical). General contractor: Integrated Construction Co. Building area: 162,400 square feet (includes 67,400 square feet of underground parking). Construction cost: $3.8 million. Furnishings and equipment: $50,000. Fees: $160,000. Cost per square foot: $22.81.


Wallichs
MUSIC
CITY
CAMERA
MOULIN ROUGE
Valentino

A SPLIT-LEVEL SHOWCASE IN MANHATTAN

PHOTOS: GEORGE CSERNA

Behind the big arch at left is one of the most exciting stores in one of New York's most sophisticated shopping areas. At Design Research, Inc. (also known as D/R), shopping, as the saying goes, is fun—partly because of the handsome and intriguing merchandise, and partly because of the way the building has been remodeled. Among the things that make D/R such an interesting store is its multilevel plan—for D/R is a shop on seven levels, with a split-level system of stairs connecting the seven. One result of this split-level plan is an almost constant change in ceiling heights; another is a sense of spaciousness not normally found in an 18-foot-wide New York townhouse.

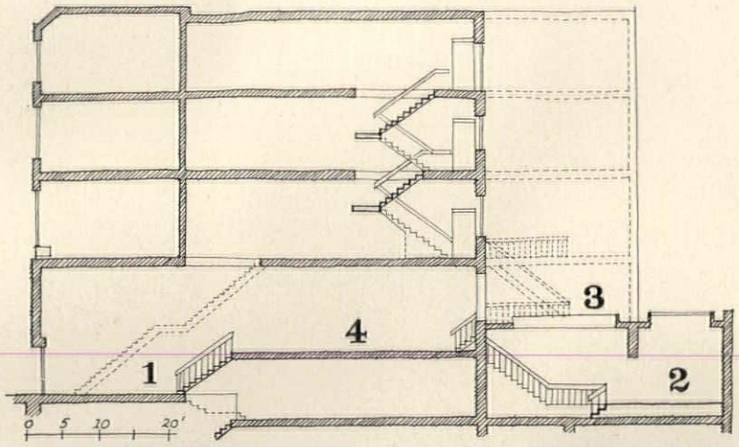
The interior of the store is in sharp contrast to the classical façade, which was left untouched.

Built in 1877, the structure was first a plush town house, next an art gallery, then a fashionable milliner's showroom, and, finally, another art gallery before D/R leased the building. Remodeling sometime in the past set the entrance and lobby at street level, putting the first floor several feet below grade and making a mezzanine out of the original first floor.

For D/R, the basic spaces inside were kept intact. An open stairwell was removed, and an enclosed fire stair leading directly to the second floor was put in above the stairs to the mezzanine (picture, facing page). The existing mezzanine was cut back to give more space to the

continued on page 120

Both the first floor and the mezzanine of Design Research, Inc. can be seen through the high arched display window (left). A reverse view of the entrance as seen from the front of the mezzanine is shown on the facing page.



entrance lobby. Throughout the store spot lighting is used. The walls are a white plaster, except for a few areas where the brick party wall has been exposed for contrast.

D/R is the brain child of Benjamin Thompson, one of the partners in The Architects Collaborative and new chairman of the Harvard Department of Architecture. His concern with the design quality of furniture and furnishings led him to open the original D/R store in Cambridge, Mass. (FORUM, Sept. '59). He approves all items for sale and personally picks out many of them.

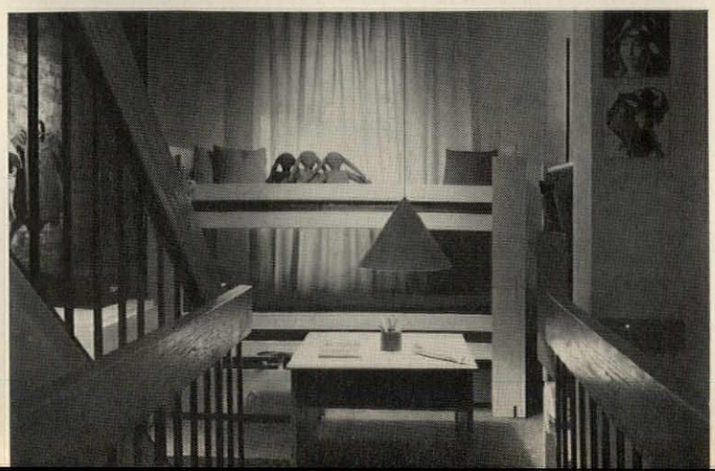
Most of the merchandise at D/R is imported, such as glassware and handscreened prints from Finland, handspun wool fabrics and rugs from Malta, and leather boxes from Italy. Among the American products are a down-filled sofa and chair group, a sofa-daybed, and butcherboard tables in a variety of heights, all designed by Thompson.

Finnish dresses, like the one in the front window, are part of the store's wares because Thompson believes that design is an "all-encompassing world" and that fashion is part of this.

PHOTOS: GEORGE CSERNA

From the entrance lobby (1 in section above) the shopper can go up to the mezzanine or down a few steps to the main floor. The down-filled sofas and chair were designed by Benjamin Thompson.

In the back of the main floor, three steps lead up to a small, skylighted room (2 in section) with special displays. Stairs at left lead to the mezzanine.



On the landing between the mezzanine and the second floor there is a small niche (3 in section) perfect in scale for displaying children's furniture. Brick party wall at left contrasts with drapery hanging on back wall. Furniture and accessories for cooking and dining are displayed on the mezzanine (photo opposite and 4 in section). Spotlights mounted on metal tracks are used throughout the store. END

FACTS AND FIGURES

Design Research Inc., 53 East 57th St., New York City. Owner: Design Research Inc.
Architect: Benjamin Thompson. Associate architect: Paul Dietrich. Mechanical engineer: Samuel Schiffer. Interior designers: Benjamin Thompson & Paul Dietrich. Contractor: Alfred Benzenberg.
Building area: 8,000 square feet. Remodeling cost: $77,000. Furnishings and equipment: $11,000. Square foot cost: $11, including equipment and furnishings.

Late last year, in Havana, on the occasion of the Congress of the International Union of Architects (U.I.A.), Diana Rowntree, an editor of the British magazine, **Architectural Design,** made a quick, on-the-spot survey for FORUM of the new architecture of Cuba since the advent of Castro. For familiar reasons, no U.S. architects attended the Havana meeting and few, if any, U.S. architects or other qualified U.S. judges of building, planning, and design have seen what has been built under Castro.

For that reason alone, FORUM is publishing this first-hand survey by an expert qualified to make such judgements and experienced at making them. Mrs. Rowntree's conclusions, like her judgements, are her own, and she has not attempted to measure the cost, in human terms, of the practical achievements of the Castro regime in the field of building. Except for some unavoidable condensation, Mrs. Rowntree's very personal account of those practical achievements as she saw them, is published herewith as she wrote it.—ED.

The new architecture of

CASTRO'S CUBA

BY DIANA ROWNTREE

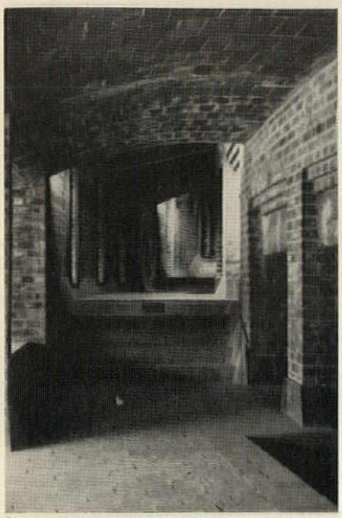
One cannot tour Cuba in a week. What I did was to talk to every Cuban, architect or otherwise, who came my way, use my eyes, and pour over the records of the photographic department at the Ministry of Construction. These findings were continually checked against those of other members of the Congress of the U.I.A., of all nationalities, and amplified by their findings.

I judge with English eyes. That is to say I am used to a building speed as slow as any in the world, to poor workmanship and to a somewhat defeatist attitude to environment. It so happens that the particular virtues of Cuban architecture today are speed, realism and a sense of infinite possibility. Make allowances if you like. On the other hand what better formula could you find for architecture, or any kind of creative art, than a combination of realism and a sense of infinite possibility?

Judging by the balance and excellence of their buildings, Cuba's architects seem to be of a high order. Some of them are immigrants from Europe fleeing the defeatist attitude I have mentioned. It is not easy to know whether to ascribe the quality of the work—both the crash program of essential building, and the superbly finished exhibitions put on for the Congress—to the talents and training of the architects or to the favorable climate in which they work. (By this I mean their ideal relationship to the society they serve.) Naturally the result of the revolutionary effort and the present period of creative enthusiasm is to form a united society, in which the architect's role is obvious: buildings are desperately needed.

Happily in this set-up, there is no one with the time to spare—either bureaucrat or tycoon—to interfere with the architect's activities. He therefore takes the whole responsibility for the esthetic character of his work, a rare if not a unique situation in the world today.

We did not expect to see a great volume of built work. We expected to assess the future architectural outlook according to the thinking of the architects and the organization set up to carry out Cuba's building program.



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The organization was impressive in itself. Building activity and the supply of materials were coordinated within a single ministry, which had, even at this pressing stage of development, set up a research department to take stock of mass-production techniques. The proof of its productivity and flexibility was to be seen everywhere: flats, hospitals, cooperatives, schools, universities and factories just as one would expect, though in greater quantities. The unexpected item was the New Arts Centre in Havana (1, 2, 3), an elegantly finished tour de force by Ricardo Porro, the most idiosyncratic work of art ever produced, I imagine, by a people's revolution.

The problem of being an underdeveloped country—"that tremendous limitation" as Castro described it in his closing speech to the UIA Congress—is the need to begin everywhere at once. Basic productive industries would seem to have obvious priority, but in an island with so few existing towns, such industries cannot start to function without new housing.

Nor can a state with Cuba's rate of illiteracy industrialize itself without a massive education drive. These vital questions of priority are reviewed annually by the Council of Ministers. I cannot help wondering if the impressive building output owes anything to the fact that the Minister of Construction, Captain Osmany Cienfuegos, is himself an architect; or to the fact that he is not yet 30?

Recently, the productive industries succeeded housing in priority of building; however, it was in the painful experience of the initial housing drive that the Cuban architects came to terms with the realities of their situation. Though there was no great architecture produced in Havana in the years before the revolution, the general standard was extremely sophisticated. So it was natural

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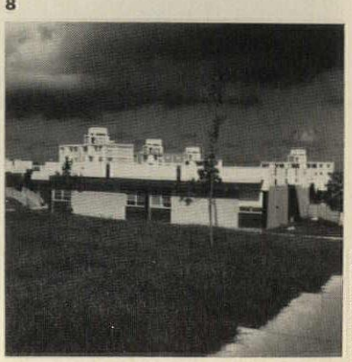

DIANA BOWNTREE

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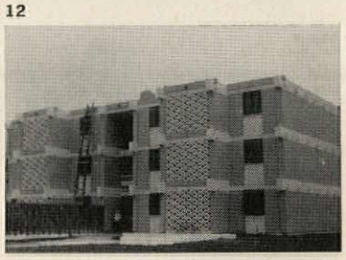

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for the revolution to start off its slum clearance program in the manner of a highly developed, rather than an underdeveloped nation, using the latest architectural and building techniques.

Havana del Este **(4, 5, 6, 7, 8)**, the dormitory neighborhood that lies between the eastern motorway out of Havana and the sea, is a high-density development that can stand comparison with any new town in the world that antedates the new British town of Cumbernauld. Havana del Este now houses 3,000 families with their schools, canteens and social and sports facilities. The spaces between the buildings are subtly, and extremely successfully, related. The planting is handsome, yet it takes into account the fact that many of the children brought there from the worst slums of old Havana had no experience of gardens or plants at all. Space standards in the apartments were higher than those current in Europe, and seemed ideal.

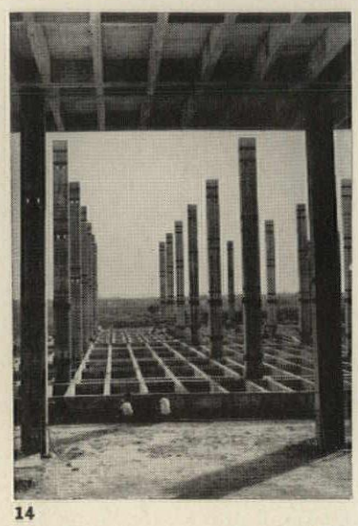
Havana del Este photographs extremely badly **(6)**. The density is so high that composite shots show a crowd of tall buildings, while intimate shots in the small enclosed spaces give no impression of the neighborhood's urbanity. The color too, so masterly in fact (with predominantly light tones but enough strong ones to keep it alive), gives a garish, patchy impression when reproduced in black and white. The detailed design of the buildings is very varied, without the unity of material or any obvious discipline of design as there is at Roehampton.

The variety of these color schemes does, however, disguise a strict unity of scale. There is also a unity of intention. As you walk round the place you notice certain details recurring in quite different designs: for instance, the articulation of the joints between concrete members, as though they were timber beams overhanging their posts. This underlying agreement of style and discipline of scale may account for the astonishingly general admiration for this project among the U.I.A. delegates from 60 nations.

A minor mistake at Havana del Este was the reliance on color washes on the concrete and rendered surfaces. This Cuban tradition is out of place in the new set-up. No modern society, certainly not an egalitarian one, can afford so much expenditure on maintenance. Havana itself is a city of peeling paint, and the Ministry's research unit is considering permanent finishes for the concrete which is now Cuba's basic building material.

Havana del Este proved to be outside Cuba's present economic "realities." This word occurs continually in Castro's thinking and it is equally evident in the buildings themselves, and in the variety and the appropriateness of the forms that are being tried. Tall buildings, for instance, need elevators, and since these must be imported, their use strains Cuba's balance of payments. So the attempt to build high-rise apartments as the highly developed industrial nations do, has been abandoned **(9, 10, 11, 12, 13)**. So, at the other end of the scale, has the attempt to build co-operatives at very low density in keeping with the farmer's traditional preferences. The farmers are reported to be accepting electric light and modern drainage as a fair exchange for their solitude. With three criteria to guide them —i.e., "that housing be functional, economical, and pleasant"— Cuba's architects are concentrating their energies on lowering standards of space and cost.

The research unit of the Ministry of Construction is systematically exploring ways of mass-producing housing, just as it experiments with ways of industrializing the production of railway sleepers, pylons and multistory stanchions of reinforced concrete. Since Portland cement is produced in Cuba, concrete is the most economic building material, although steel production is increasing. The elegant and extremely informative Construction Exhibition arranged for the U.I.A. Congress (which included Cuba's first home-built



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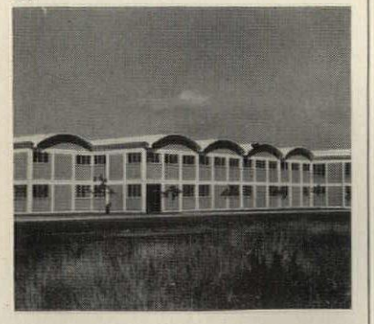

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portal crane) showed many housing solutions: large-panel construction for walk-up apartment blocks, buildings raised story by story with sectional concrete floors that interlock **(14)**, panel frames ready to be filled with blocks of local clay or bricks, and a pair of dwellings whose components can be assembled without mechanical aid . . .

Cuba's factories are neater than some of our free-enterprise industrial structures that have to compete to catch the eye **(15, 16)**. But architecturally, Cuba's new factories are nothing wonderful. I had the impression that the pick of the architects had been working on housing, educational building and resort building, which has a special significance in the revolutionary scale of values. In spite of the Cuban climate and the extent of the coastline, beaches, before the revolution, were the prerogative of the wealthy. So the development of "Peoples' Beaches" and resorts **(17, 18)** is a telling symbol of a new way of life. There are two present styles of resort building, the traditional thatched hut, usually circular, and simple concrete forms, usually barrel vaults or sweeping curves.

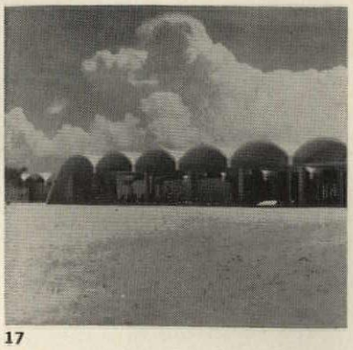
Every form of school is being built **(19, 20)**; nurseries, elementary schools, high schools, pre-university schools, universities, and technical colleges. The Technical University of Havana is one of the most interesting in terms of construction. It is going up quickly even by Cuban standards where construction time is often measured in days. A hydraulic system is being used here. The columns are built first, with the hydraulic gear attached to them. Then the seven floors are cast on the ground, in the form of box grids, one above the other. Next, the floors are hoisted into position. Finally, infill slabs are dropped onto the concrete grid.

The universal problem of providing modern educational opportunities for children from scattered farms and mountain homesteads is being tackled in Cuba by the creation of "School Cities" —complexes of boarding schools for children of all ages, with a total population of up to 20,000.

In the midst of this all-out production drive the Cuban architects managed not only to produce two beautifully finished exhibitions for the U.I.A. Congress, but even to have them really and truly finished for the opening. The Cuba Exhibition, which will be a permanent feature of La Rampa, is a cross between a woodland glade and a museum of social history. The Construction Exhibition, mentioned earlier, showed the range of projects that are under consideration and construction, to the music of a mechanical vibrator and the smooth motor of a great new crane. The organic looking concrete forms that provided the visual appeal were not thought up for the occasion, but are the components of prefabrication projects.

"We are babies at planning," one Cuban architect told me. And it is disturbing to see that for all the fresh architectural approach and business-like performance, this new nation may still repeat the mistakes of those nations whose industrial revolution preceeded the invention of the automobile. It is, of course, possible that the automobile may be obsolete before Cuba reaches the stage of prosperity where this machine becomes a major problem. Havana del Este, for instance, is planned on pedestrian principles, with a ring road for cars and limited service access.

But the idea that one day every one of the 3,000 households in this new development may own an automobile is being side-stepped, for so many problems are more pressing. Nevertheless, building new communities at the speed they are doing, the Cubans will be very unwise to dodge this consideration much longer. If the automobile lasts another century the Cubans will find themselves in the same muddle that older nations are in now. END



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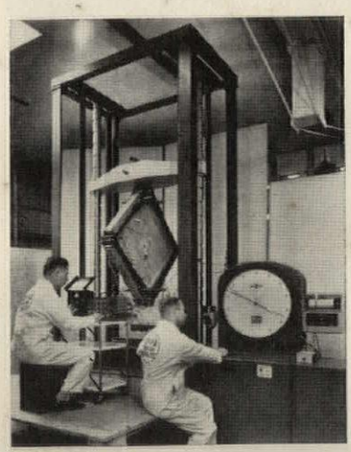
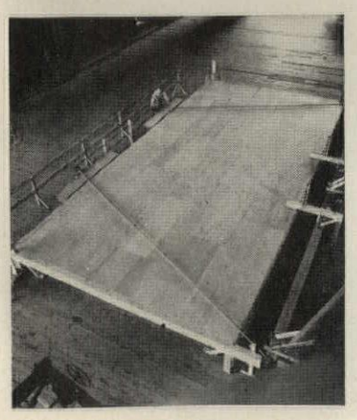
PLYWOOD: NEW SHAPES YIELD NEW STRENGTH

The plywood supporting the scalloped roofs of the little lakeside pavilion at left is behaving in a significantly different manner than most of the 2 billion square feet that went into U.S. commercial, industrial, and public buildings last year. Its behavior, moreover, points the way both to more efficient use of plywood's inherent strength, and to more imaginative shapes for plywood components.

The key to all this is simply turning sheets of plywood so that structural loads, instead of being taken on the flat sides of the panels, flow through the edges. In the pavilion, part of the desert new town of California City, Architects Smith & Williams upended plywood panels and cut them into a series of umbrella-like arches. The panels thus act as structural diaphragms, resisting stresses through their breadth rather than just their thickness.

Turning the panels also gives architects a wider range of space-enclosing forms to work with, as shown by the pavilion, the church at right, and the two buildings on the pages which follow. As knowledge of the behavior of plywood diaphragms increases, so does the freedom to try new shapes without exceeding the limitations of the material.





Testing for reliability

The idea of using plywood this way can be traced all the way back to studies made in the 1940's by the U.S. Department of Agriculture's Forest Products Laboratory. But its development into a usable tool of design was largely the work of the Douglas Fir Plywood Association's extensive research and testing program. This program, in fact, has a good deal to do with the plywood producers' record as the fastest growing major industry in the U.S. during the past decade.

Begun in the late 1930's with a few men in the basement of an office building in Tacoma, Washington, DFPA now has an 85-man technical staff and a battery of advanced testing equipment (left). The first significant result of its efforts was the gradual evolution of a series of reliable formulas to predict the complex behavior of plywood in a wide variety of configurations. Subsequently, DFPA's research produced a whole vocabulary of plywood structural forms—box beams, folded plates, stressed skin panels, plywood gussett trusses—that can now be used as confidently as a standard beam.

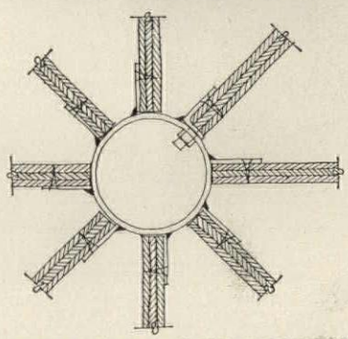
As these standard components found their way into thousands of structures, information on their behavior was fed back to the DFPA laboratories. It is this experience-based information that has made more complex, freely formed structures possible.

Fabricating the shapes

To aid in the application of this research, plywood fabricators throughout the U.S. have joined in support of a quality control agency, Plywood Fabricator Service Inc., that certifies components to be plant fabricated to DFPA standards. When the units are large and complex, however, they may be more easily assembled in the field, using relatively simple joining details.

For example, the eight vertical sheets that cantilever out from the columns of the Smith and Williams pavilion and church are attached by welding along a steel plate that is fastened to the bearing edge of the plywood with screws (see detail at right). The larger brackets, those used in the church, cantilever some 18 feet from the support. They are made up of several sheets of 1⅛-inch thick plywood joined with both factory-made scarf joints and shiplap field splices. To further stiffen the web of plywood, 5-inch-wide flanges made up of four layers of ⅜-inch plywood were laminated in a curve and attached to it at top and bottom.

The California City buildings clearly demonstrate the edge-loading principle, but their design puts only modest demands on its potential efficiency. The folded forms shown on the following pages are more complex in their behavior, combining the strength of the flat sides and edges of plywood panels to extract the most enclosure from the least material.



DETAIL SHOWING PLYWOOD WEBS FASTENED TO COLUMN

Umbrella-like structural units of Architects Smith and Williams' California City church are tied together with 4 by 4 wood struts (top). Detail (center) shows connection of plywood webs to column. Units shade stucco walls (bottom).

PHOTOS: BEN SCHNALL

BIG PLYWOOD TRIANGLES ROOF TEMPLE SANCTUARY

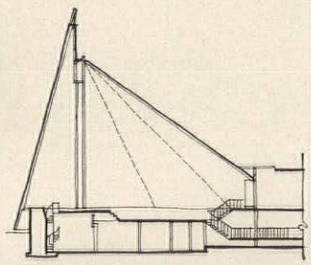
The 12 enormous triangles that were stacked together to roof the sanctuary of the Sinai Reform Temple in Bayshore, N.Y. are probably the largest plywood components ever made. At their base, the units follow the outline of Architects Edelman and Salzman's Star of David plan. But then they soar upward at six different angles to form an irregular pinnacle some 42 feet above the floor of the bema (drawings, right).

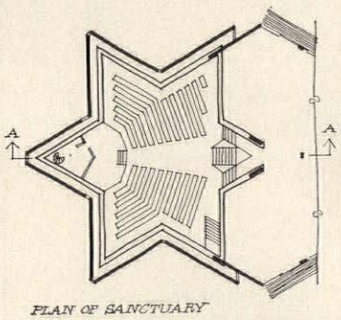
The panels of this complex folded plate roof, for which structural engineer was John Mascioni, were far too large to be transported to the site from a fabricating plant (the longest has a 72 foot chord). Instead, they were built up on three simple work platforms a few yards from the foundation (photo, bottom right).

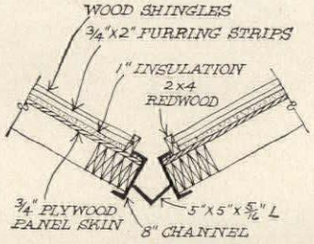
The intricate geometry of the roof made it necessary to calculate the true sizes of the panels to an accuracy of one ten-thousandth of a foot. And although a two-inch clearance was specified at the intersection of the panels (see detail), the builder had to hold construction tolerances to 1/16 of an inch for each unit.

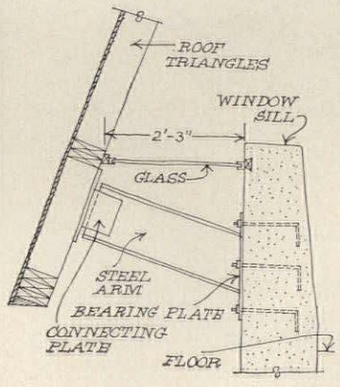
To meet these close tolerances, the fabricators, Weldwood Structures, Inc., had the boundary members of the triangles laminated from carefully selected Douglas Fir in a West Coast plant. When these were joined in the field they formed an extremely accurate jig for the attachment of the grid of 2 by 6 stiffeners and ¾-inch plywood cover.

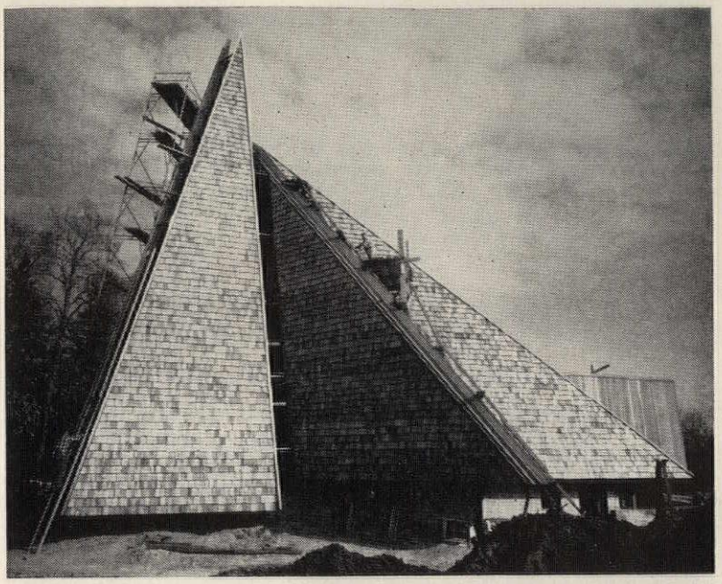
Two cranes were used for the delicate erection job. While one crane supported the steel compression ring set atop a light scaffold, the other swung the panel onto the bracket supports that were designed to make the roof hover over the foundation (detail, bottom right). Then adjacent panels were joined by welding a steel angle into the space between the channel-shaped edge members of the panels. The critical test of the calculations and workmanship came when the last panel was swung into place. It fit.



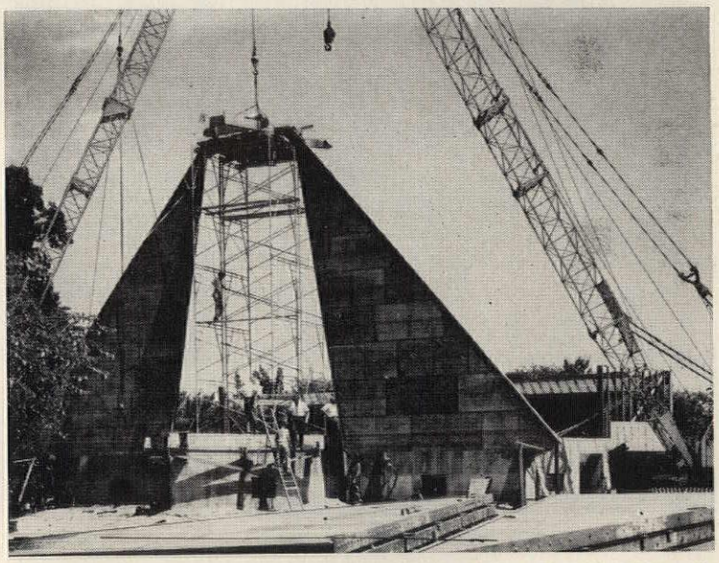




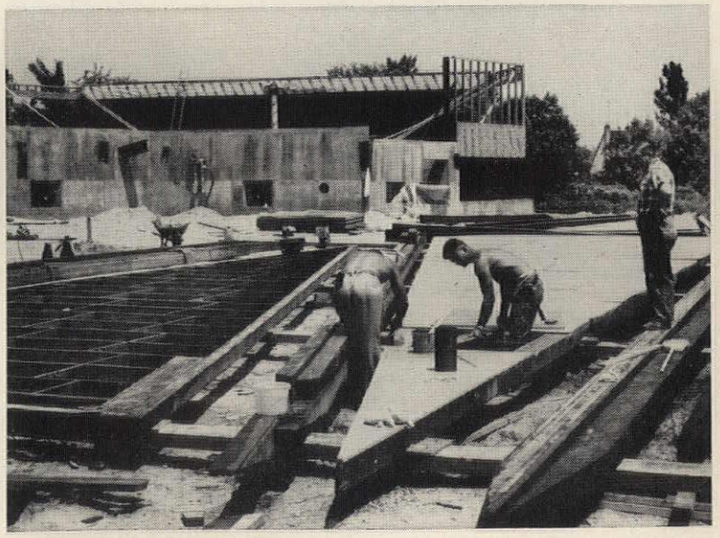




After all 12 components were in place, roofers applied cedar shingles



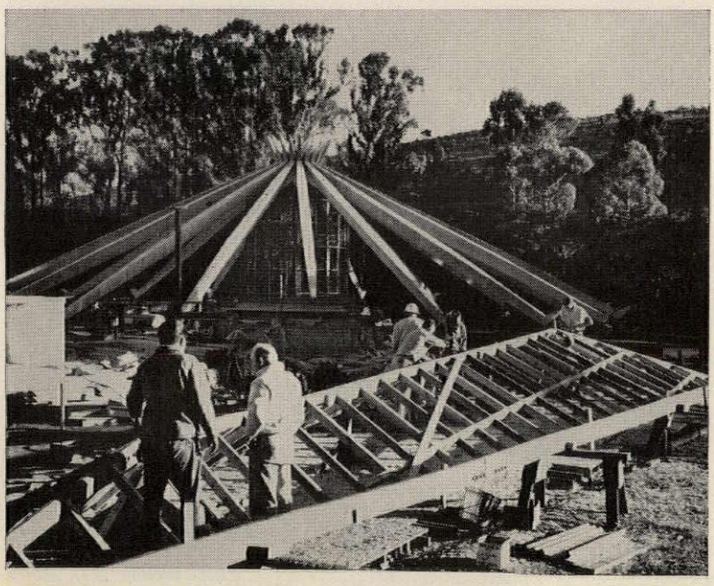
One crane holds compression ring while another lifts units from jig

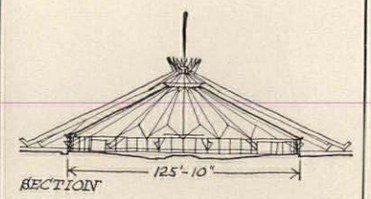


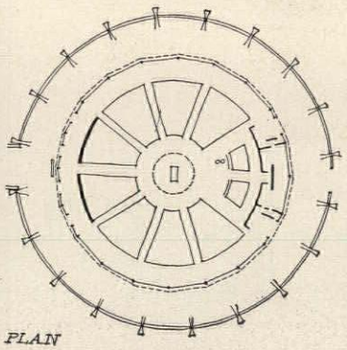
KARL H. RIEK

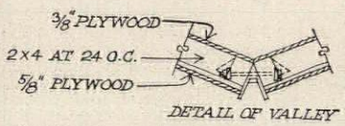
In nearly completed structure, plywood roof hovers above glass walls

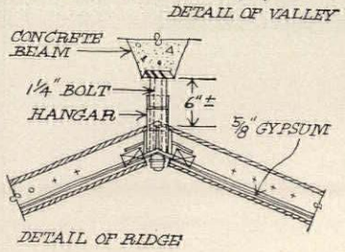
All 20 segments of multifaceted roof were made on same jig (below)

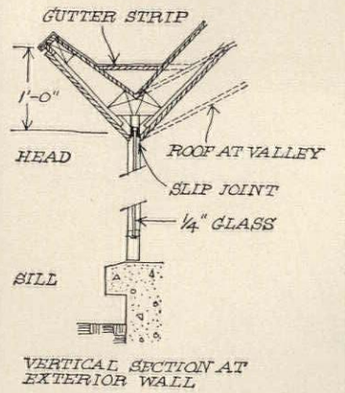












FACETED PLYWOOD ROOF FOR CALIFORNIA CHURCH

Because they span 176 feet, the slender beams that make up the festooned ring of structure around St. Peter's Church in Linda Mar, California are precast concrete. But a search for the most effective enclosure for this church-in-the-round led its designers (Architects Mario Ciampi and Paul Reiter, Structural Engineer Isadore Thompson) to the system of multifaceted plywood components shown on these pages.

Each of the 20 segments of the folded plate structure is suspended from a concrete beam at only two points (see details at left). This arrangement reduces to a minimum the amount of structural material required for both the beams and the roof deck. None of the roof load is brought into the center section of the sloping beams where it would produce the greatest amount of bending stress (section, left). And the diaphragm stresses in the plywood sheets are tensile rather than compressive since they are supported from above. Plywood has a greater reserve of strength in tension than in compression.

The resulting structure is so efficient that only 3/8-inch plywood was required for the skin. The stiffeners, which span 20 feet across the widest part of the components, are only 2 by 4's.

The contractor, Pacific Coast Builders, fabricated the components over a jig on the building site (photo, bottom left). To be sure each unit would be exactly the same size, the first one made was taken apart and used as a template for the others.

The problem of construction tolerance was virtually eliminated by the method of connection. Because of their shape, the units could be moved up or down along the long 1¼-inch supporting bolts until they locked together like the stones of an arch. When the right height was found, the bolts were welded to a steel plate in the component. Finally, adjacent components were fastened together with bolts every 2 feet along the valley edge members.

THE EARTHBOUND FEET OF ANTAEUS

Beauty was something that hardly got mentioned publicly by modern architects or periodicals over many years. To say that nobody cared would be false. Yet a great deal of ugly stuff was built, as happens when new ideas are being worked out. "Functional" ones.

Today is more sophisticated, and younger editors are able to rave about a new university building about which it is agreed that there is no importance in whether it works or not. But it is called beautiful, melding as it does the handsome manners of Wright (pre-1920), Corbu, Kahn, new brutalists, and its author Paul Rudolph; while historians think they are able to cite still more distant formal sources.

The historians would be more convincing if they could point also to precedents of *meaning*. For such a building seems to stand at the end of a line, not a beginning. Meaning has become diffused.

There is of course a fine survival possible to a building with so grand a counterpoint and so rich a presence. Like Gothic churches at the end of their period, it may enter history. For a few buildings in every age step out of the time-frame in which they were built and into a more or less "eternal" present, in which it does not matter whether the use of Versailles was cruel or whether Athens was destroyed by the Acropolis or France nearly bankrupted by her cathedrals.

Generally speaking, however, those buildings stand best which reflect their period's growth lines. They leave an account not only of forms but of beliefs to which the stones gave proclamation: form *and* content.

In terms of content, I find two kinds of architectural imagination, one bent toward magnanimity, one toward revelation. I never did like the usual description of the conflict of our times in terms of beauty vs. "functionalism." For functionalism is only the bare bones of something bigger—magnanimity, with its own kind of handsomeness. It was magnanimity that gave the age of science its appeal: the promise of control; it would be benign provided men were good enough.

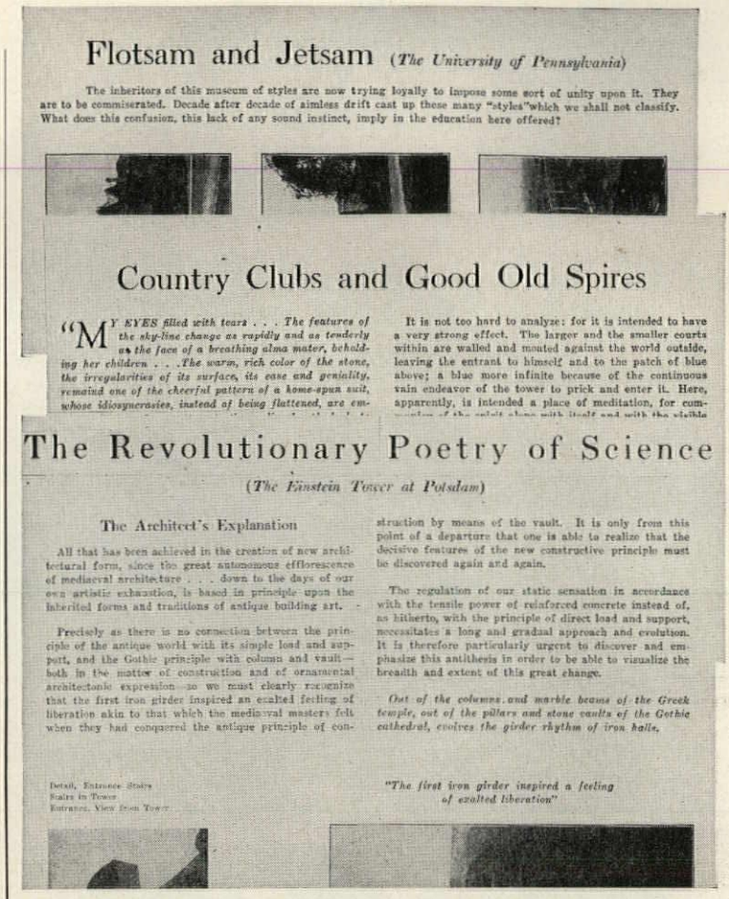
But William Jordy recently pointed to a leap made by the early Le Corbusier. Corbu liked cars, ships, planes, not just because they function well but because "these are the things that *move* us." So his translation of their kind of form into architecture was not so much functional as symbolic, bent less to service than to revelation, celebration.

Today that faith in magnanimity is gone, along with the belief in an imminent social advancement; fear rules instead. So forms alone remain out of the great upheaval, and happy compositions remain, and architects hasten to adapt them and fit them in with their universities' earlier eclectic leftovers.

And that is where, 40 years ago, I came in, for in the student magazine on which I started my architectural voyage I called these earlier products of sentiment and mannerism "flotsam and jetsam."

Is it not time that we overcame our fear, and seized our souls, and went ahead? Sure death awaits the "West" on the fear-ridden path that it now takes. For the West now threatens the world with total destruction through science but refuses to apply and to proclaim in its art what science has given it as benign powers. It is said that American chemical companies right now could turn out housing for Africa by the mile, at a cost not much above mud huts, though really sanitary. To be sure, these would not yet be esthetically "interesting." But this would not only house the primitive nations; it might wow them. For it would be a most inviting architecture of total habitation. If such magnanimity could be shared, not "given," it would greatly overcome our ill repute as science's "bomb-carrying devils."

Back in the 1920's I learned of the need that architecture has for statesmanship, and a chief exponent was Lewis Mumford, once a great mentor (though only three years older). Yet as he took the high road (and I was among the many who took the low) I began to develop a real skepticism about those who subject whole ages to scorn out of philosophical principles—including Mumford's phobias about the "machine age." For architecture is complex and tricky, and yields sudden, unexpected human triumphs; but it reveals many of its tougher secrets only to those who run its daily errands.



Flotsam and Jetsam *(The University of Pennsylvania)*

The inheritors of this museum of styles are now trying loyally to impose some sort of unity upon it. They are to be commiserated. Decade after decade of aimless drift cast up these many "styles"which we shall not classify. What does this confusion, this lack of any sound instinct, imply in the education here offered?

Country Clubs and Good Old Spires

"MY EYES filled with tears . . . The features of the sky-line change as rapidly and as tenderly as the face of a breathing alma mater, beholding her children . . . The warm, rich color of the stone, the irregularities of its surface, its ease and geniality, remind one of the cheerful pattern of a home-spun suit, whose idiosyncrasies, instead of being flattened, are em-

It is not too hard to analyze: for it is intended to have a very strong effect. The larger and the smaller courts within are walled and mouted against the world outside, leaving the entrant to himself and to the patch of blue above; a blue more infinite because of the continuous vain endeavor of the tower to prick and enter it. Here, apparently, is intended a place of meditation, for cum-

The Revolutionary Poetry of Science

(The Einstein Tower at Potsdam)

The Architect's Explanation

All that has been achieved in the creation of new architectural form, since the great autonomous efflorescence of mediaeval architecture . . . down to the days of our own artistic exhaustion, is based in principle upon the inherited forms and traditions of antique building art.

Precisely as there is no connection between the principle of the antique world with its simple load and support, and the Gothic principle with column and vault—both in the matter of construction and of ornamental architectonic expression—so we must clearly recognize that the first iron girder inspired an exalted feeling of liberation akin to that which the mediaeval masters felt when they had conquered the antique principle of construction by means of the vault. It is only from this point of a departure that one is able to realize that the decisive features of the new constructive principle must be discovered again and again.

The regulation of our static sensation in accordance with the tensile power of reinforced concrete instead of, as hitherto, with the principle of direct load and support, necessitates a long and gradual approach and evolution. It is therefore particularly urgent to discover and emphasize this antithesis in order to be able to visualize the breadth and extent of this great change.

Out of the columns and marble beams of the Greek temple, out of the pillars and stone vaults of the Gothic cathedral, evolves the girder rhythm of iron halls.

Detail, Entrance Stairs
Stairs to Tower
Entrance, View from Tower

"The first iron girder inspired a feeling of exalted liberation"

Like the mythical giant Antaeus, the creative architect is intrinsically earthbound, and, from time to time, out of being bound to earth and time, he develops unexpectedly constructive powers. So too the critic who sticks close can learn much more than he teaches. I have had innumerable surprises that keep me from being a pessimist. Things that seemed never to want to yield on general principles would suddenly yield to architects' daily *trying*. Fulcrum points would be found, unexpectedly.

As Paul Valéry set forth in his essay, *Eupalinos*, architecture lives only in the present day or slightly ahead of it; the roots of architecture are in the ground literally; its materials come from there; no matter what doubts the architect may entertain, or what hopes for a distant future, he has no choice but to act, here and now, and his action constitutes a *statement*. His building says something, and says it in hard materials in physical combinations which, once in place, listen to no further explanations.

It is in that daily life that journalism too must live. The reader has the good luck that space is not left on this page for bragging about bits of earthy leadership through journalism, especially in the new realms of urban architecture. So too there is left no space for a defense of journalism for being scattered.

And we editors all go out as we came in—whipping boys for architecture's sensationalisms. Our best recollections are of times when we helped prepare a path for a greater or lesser genuine triumph.

To younger journalists all good luck, and one belief: the time is here again when architecture should establish greater contact with people by the million. And this pen will keep on exploring.

Douglas Haskell

K-12 BY K-S-H IS READY. SO UNIQUE IT WILL BE THE NEW "STANDARD"

We have good reasons for being so enthusiastic about K-12! You see, it's our new lens that's superior to K-5 which has been the most widely imitated panel in lighting for many years. K-12 will cost you less but it will provide even better light control. The K-12 pattern is as simple and basic as K-5 but the prisms are square on a diagonal axis. It transmits as much or more light but still maintains excellent low brightness . . . glare-free at the luminaire and working surface. Hides the lamp image better, too. In ⅛" polystyrene or acrylic.

The lens represents only a small fraction of lighting costs, yet it controls the total result. Specify K-Lite by K-S-H. Available from most major fixture manufacturers.

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The radiant ceiling panels of the IRC System are finished in baked enamel for easy cleaning. There are no floor-mounted, wall-hung, or window-sill units to clean or to get in the way.

ENVIRONMENTAL CONTROL IN HOSPITALS

Designing to meet a medical facility's special conditions of temperature, humidity, air cleanliness and circulation

The environmental requirements of today's hospital increase the demand for total air conditioning. Thirty years ago, air conditioning a hospital was big news. In fact, air conditioning *anything* was new and exciting; the concept of a controlled indoor environment had just dawned.

Many basic ideas now common in air conditioning practice were born in that period. Force-fed by the pressure of great building programs, they matured and were refined into highly efficient systems. But they had their limitations.

The vast volume of air used to heat and cool a large building required extensive mechanical equipment and ductwork. Wet refrigerating coils had a bad habit of accumulating and propagating airborne contaminants. These deposits tended to develop into colonies of bacteria and other micro-organisms which passed into the air stream during the system's operation.

Great strides were made by filter designers to reduce this hazard. But one weakness of the filter remains: it has to be serviced regularly and faithfully by human beings — and is subject to consequences of their vagaries.

Need for a New Approach

The basic ideas of the 1930's were great in their day, but we are now in the mid-1960's. The need now is for an up-dated approach to hospital comfort control — one that takes into account the special conditions of the hospital.

Designing an air-conditioning system to satisfy these particular requirements differs from designing for other building types. Problems indigenous to hospitals are:

(1) The need for 100% exchange of air.

(2) Complete control of airborne contamination.

(3) Temperature, humidity, and air movement favorable to a patient's health and comfort.

(4) Cleanliness and ease of maintenance.

(5) Economy—both in first cost and in operation.

There is a new awareness of air conditioning as a contributing factor in sanitation, as well as comfort. Obviously, it is inconsistent to spend time and money to create aseptic conditions in surgery and other critical departments by sterilization methods and then permit contaminating influences to exist in the air conditioning system.

Growth of New Technics

Technological advances over the past decade have placed at the disposal of the hospital architect new equipment, methods and procedures that are capable of improving environmental conditions in medical facilities — at the same time, contributing to economy of installation and operation.

One of the newest developments is the Inland Radiant Comfort System. Here is a completely new concept in total air conditioning specifically designed for the needs of the hospital.

This system combines three widely accepted, proven components into one engineered design: (1) a radiant-acoustic ceiling, (2) a chemical air conditioner, and (3) a cellular steel floor. Because of the integrated design, each component assists in the functioning of the others.

100% Exchange of Air

The arguments for and against using only *outside* air as an air-conditioning source, instead of recirculating *inside* air, are academic. If it weren't for its record of excessive costs (*until now*), everyone would prefer to start with outside air, condition it, feed it into the patient's room, then exhaust it. Outdoor air, by action of the sun and massive dilution, usually is less contaminated than recirculated air, both given the same degree of filtration.

Recirculating inside hospital air is a touchy procedure completely dependent upon filter efficiencies which can be variable, due to maintenance problems. Equally or more hazardous is to attempt flushing air completely in some parts of the hospital and not in others, depending upon balanced pressures to prevent cross-contamination.

No one prefers these compromise measures. They were forced upon hospital designers by the high cost of conditioning the large volumes of air required by conventional, all-air systems. To add the cost of conditioning outside air was to prohibit it.

This is no longer so, with the Inland Radiant Comfort System for hospitals. By efficiently handling only a small amount of air, the IRC System introduces 100 per cent outside air throughout the hospital and does it at no extra cost.

This contrasts with conventional air conditioning systems which generally are based on the principle of using large quantities of air, most of it recirculated. Decontaminating air in large quantities not only is impractical, but the fan horsepower to move such air adds to the expense of operation.

With Inland's modern system, it is practical to exhaust all air without recirculation. The air can be decontaminated very effectively, because of the small amount used.

Radiant Panel Ceiling System

The inherent advantages of radiant-acoustic ceiling panels help to make this new Inland technology a sound approach to hospital air conditioning.

As its name implies, the radiant-acoustic ceiling heats and cools by the principle of radiant heat transfer and, at the same time, provides acoustical control to the room space.

Acoustical treatment is simple. Perforations in the aluminum panels, with glass-fiber insulation above, give this ceiling system an excellent acoustical rating — noise reduction coefficients as high as .90. Sounds disturbing to a restful atmosphere, e.g., the extra noise level during visiting hours, are dampened.

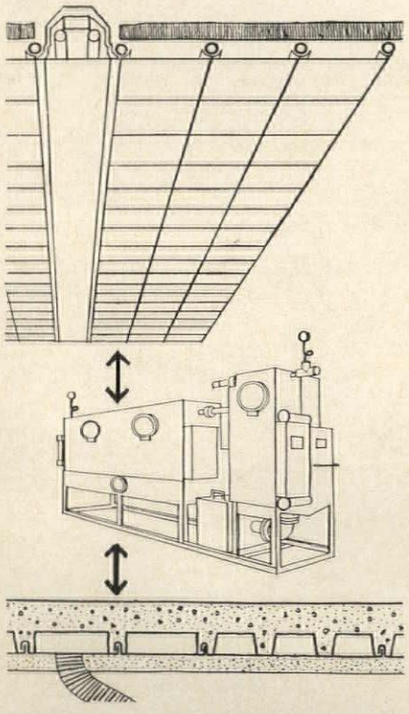
The radiant-acoustic ceiling acts as a single, wall-to-wall heat exchanger — heating when the thermostat calls for heat, and cooling when circumstances require. The ceiling heats in the same manner as the sun. Low-frequency waves of heat energy travel in straight lines from the ceiling to every part of the room, bathing all surfaces in warmth.

This steady, gentle comfort is patient-oriented. Physiologists have determined that more than one-half of our body heat is lost by radiation. Therefore, the most practical method of maintaining comfort is to control the rate of heat gain or loss by radiant means.

Here's where radiant heating is ideally suited to the needs of a hospital patient. It bathes his body in continual warmth, free of drafts. Even without a blanket, the rate of his body heat loss is kept at a uniform rate throughout the day and night. Because radiant heating is not dependent upon moving air to raise room temperature, there are no hot blasts from registers, no strong convection currents.

Radiant cooling obeys the same physical law of radiant energy transfer as radiant heating, but in reverse. Now, the ceiling is made cool and it absorbs heat from all surfaces in a room, including a patient's body. The human body loses heat most comfortably through radiation, without chilling drafts.

Only ventilation is required of the air system. Ventilating air is supplied at low velocity and held to desirable humidity levels.



The Inland Radiant Comfort System is made up of three basic components, carefully engineered to work together more efficiently than any one of them could work alone. The components are not new to architects and mechanical engineers. They are: (1) a radiant-acoustic ceiling, (2) a chemical air conditioner, (3) a cellular steel floor (optional in hospital construction).
All three of these components have long records of successful performance as individual products. It is the way in which they are used together.— in integrated design — that accounts for the efficiency of the IRC System: The radiant ceiling handles virtually the entire heating and cooling loads in the hospital. The chemical air conditioner controls humidity and purifies the air. Reduced air volume makes it possible to use the cellular steel flooring for air distribution, eliminating tons of ductwork.

Chemical Air Conditioning

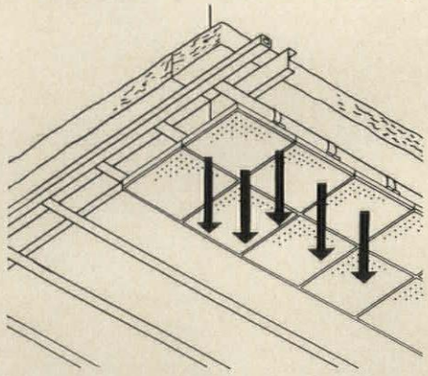
Chemical air conditioners have long been recognized as superior devices for controlling humidity and air purity in operating rooms, recovery rooms, and other critical hospital areas. In the integrated design of the Inland Radiant Comfort System, a Kathabar® Chemical Air Conditioner* treats the hospital's entire ventilation-air system.

Air is conditioned by a spray of lithium chloride. This traps up to 97 per cent of all airborne impurities.

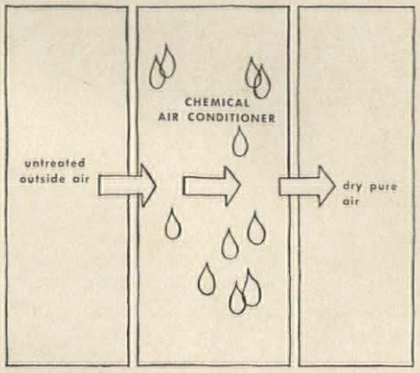
Conventional air conditioners use refrigeration coils to cool and dehumidify the air. For many years, these wet coils have been recognized as breeding places for colonies of bacteria and micro-organisms.

Trouble arises when matter from these colonies blows off into the hospital's air stream. Elaborate filter systems have been designed to remove this contamination from the air, but their complete effectiveness frequently has been questioned. Hospital administrators, bacteriologists, and others have been shocked at the contaminating effect of conventional air conditioning systems.

*Surface Combustion Division, Midland-Ross Corp.



The radiant-acoustic ceiling acts as a single, wall-to-wall heat exchanger. Heating and cooling are accomplished by means of aluminum panels attached to grids of water pipes hung in the manner of a conventional suspended ceiling. Hot or cold water is circulated through these pipes to heat or cool the panels. Heat loss and noise are reduced by an acousti-thermal blanket.



Chemical air conditioning removes the latent (humidity) load from incoming outside air. A non-vaporizing solution of lithium chloride with a great affinity for moisture is sprayed into the air stream. Condition of the air as it leaves the dehumidifier at a specified humidity level depends upon (1) solution concentration and temperature, and (2) temperature of cooling tower water.

Substantial Construction Savings Possible

Where hospital plans include a steel frame, significant savings in construction costs accrue from the IRC System's third basic component, a cellular steel floor.

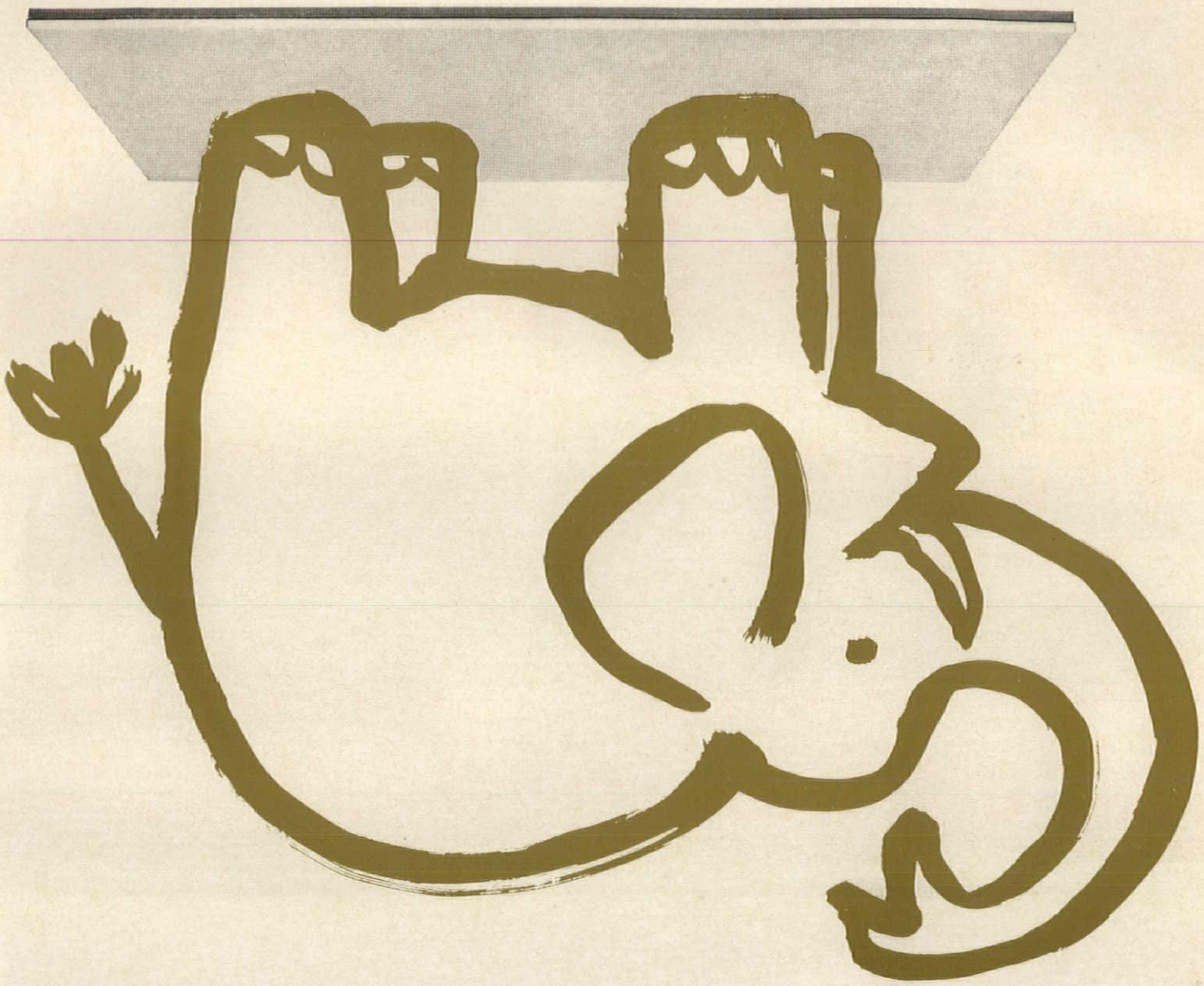
Ventilating air is carried through cells in Inland Celluflor, eliminating tons of expensive ductwork. This not only saves money on materials and labor, it reduces the space required between floors. This can drop the total height of a multi-story building by as much as 5 per cent, without sacrificing a cubic inch of interior space. Obviously, there are consequent cost savings all down the line — including savings on the foundation, since building weight shrinks with the height.

There are other advantages to consider here, during the planning stage of a new hospital: The greater erection speed of steel-frame construction. The flexibility of electrification made possible only by a celluflor steel floor.

Breakthrough in Hospital Comfort Control

Of great importance to the hospital architect, the Inland Radiant Comfort System delivers all of its advantages well within the budget for an ordinary hospital air conditioning system. Key to its economy is its concept of three basic components working together. By balancing the high performance of these components through careful engineering, the IRC System saves on both first cost and operating costs.

Further information is available in a new brochure, "Breakthrough in Hospital Comfort Control." Write for your copy today. Address Inland Steel Products Company, Engineered Products Division, 4031 West Burnham Street, Milwaukee, Wisconsin 53201.



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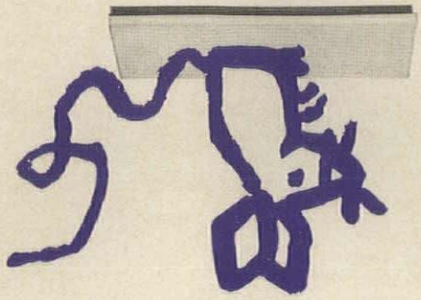

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†Material only replaced without cost to owner by Owens-Corning Fiberglas, provided installation was on mechanical suspension systems by an approved Fiberglas contractor under normal temperature and humidity conditions.

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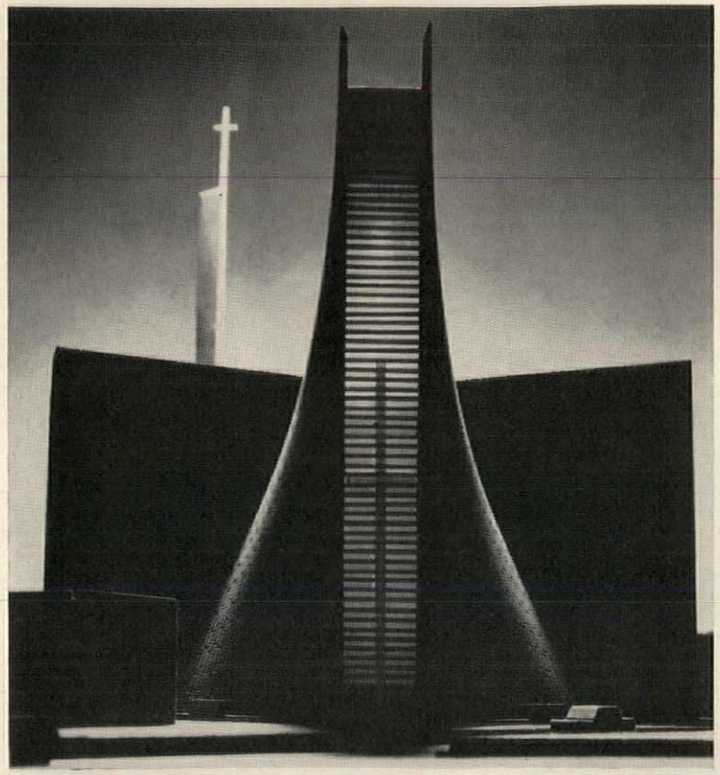
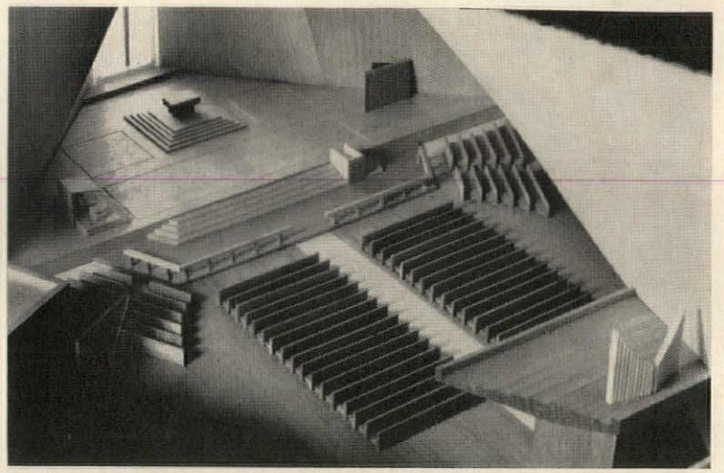
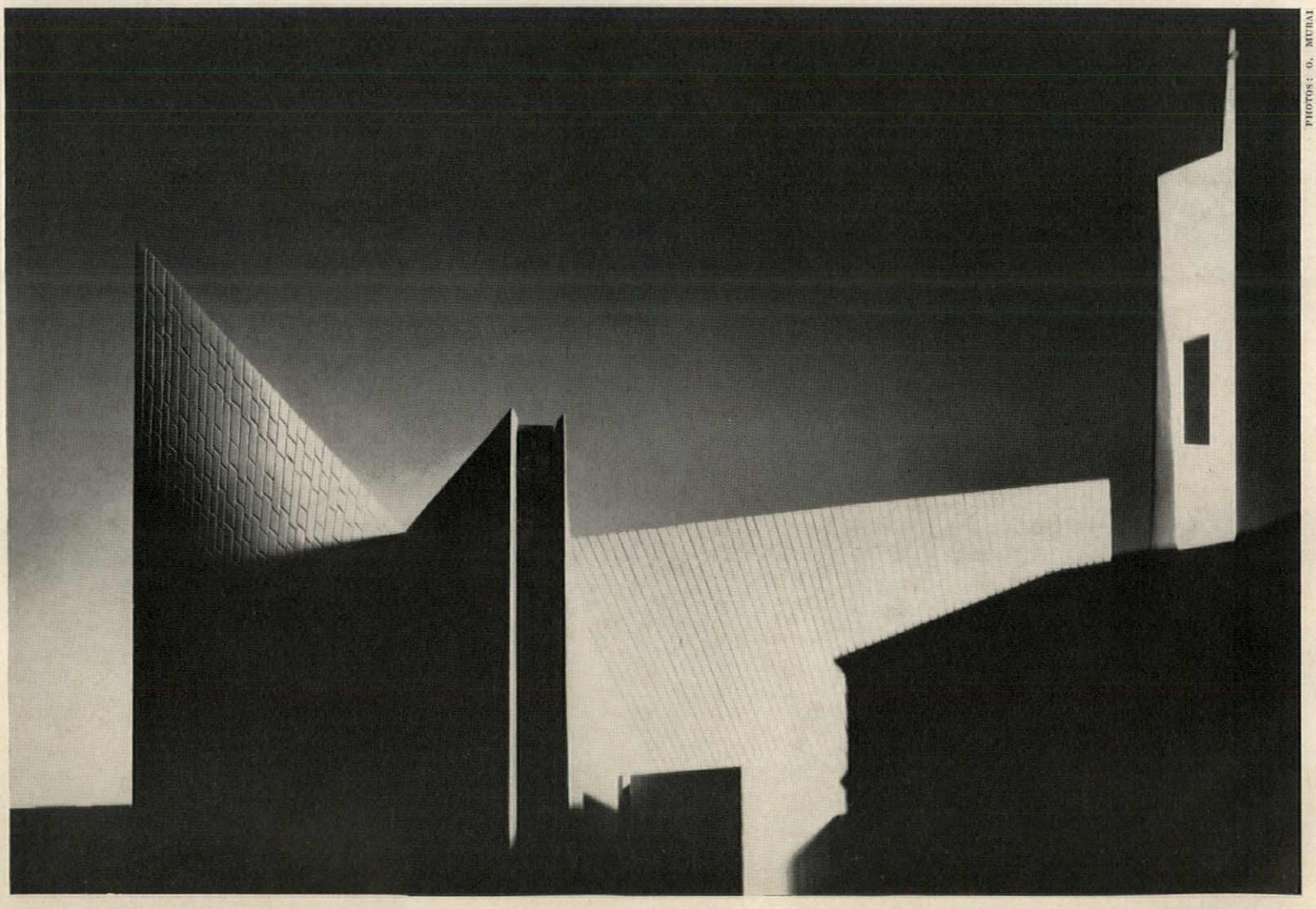




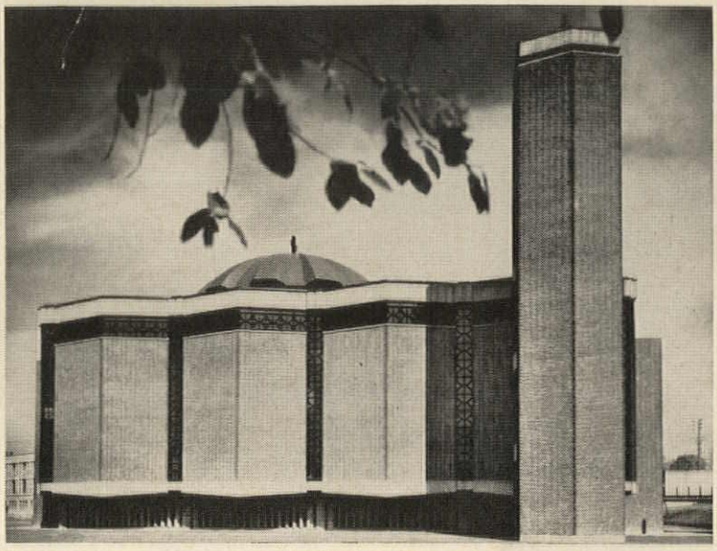
TANGE CATHEDRAL. In his competition-winning design for Tokyo's new Catholic cathedral, Kenzo Tange has turned away from his characteristic concrete bluntness in favor of a serene composition of sweeping shells. The shells do not quite meet as they converge, and the spaces in between are filled with glass (protected by shutters). From the air, the effect will be that of a giant, luminous cross. Inside the curving walls is seating for 800, grouped close around the altar, and standing room for 1,000 more. On each side of the long branch of the cross will be low, blocky chapels. Nearby will be the bishop's house, a monastery, a convent, and a school. Construction is expected to begin this year.



PHOTOS: O. MURAI

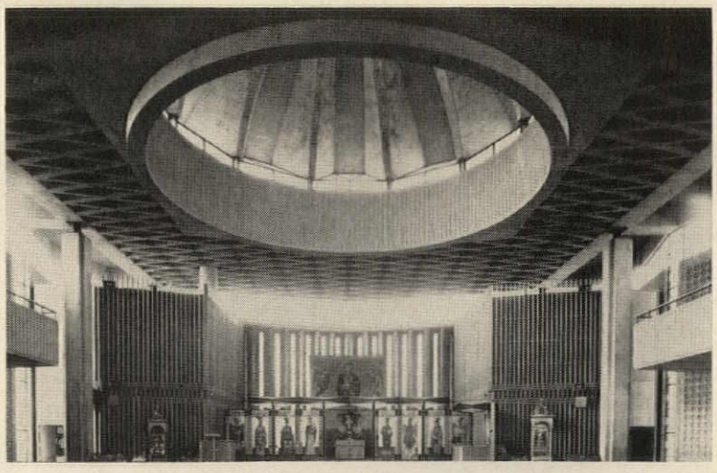
SIMPLICITY IN FINLAND. The white limed brick walls of the Imatra burial chapel in Tainionkoski, Finland, shine from behind the tall pine trees on all sides. The chapel itself is a simple square room whose roof is given a two-way slope by finely crafted wood framing members (left). Circulation has been sensitively worked out: entrance is to the left of the bell tower (extreme right, below), leading through an open courtyard to the chapel's foyer or, adjacent to it, a private room and a sheltered second courtyard for mourners. Architects: Jaakko Kontio and Kalle Raike.

PHOTOS: EVA JA PERTTI INGERVO



HANS SAMUELWITZ

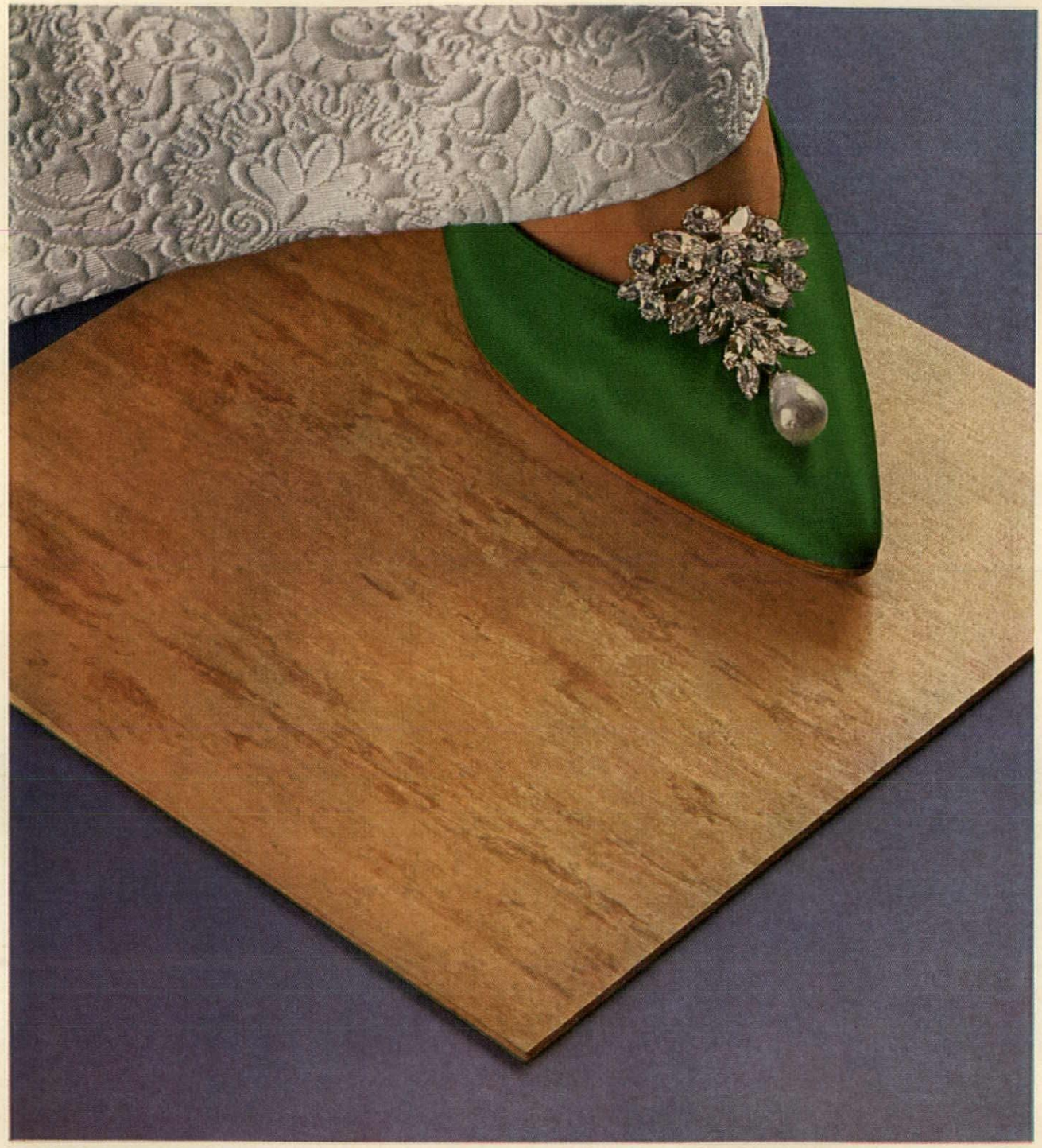
ORTHODOXY IN MONTREAL. This new Greek Orthodox church in Montreal follows the traditional rectangular shape topped by a dome. Architects Affleck, Desbarats, Dimakopoulos, Lebensold, & Sise have departed from tradition in the cantilevered lamella roof with its hexagonal pattern, in placing the dome at the center rather than above the transept, and in the serrated brick walls.



MARCEL CORBEAU

INGENUITY IN GERMANY. The laminated wood arches that frame the Lutheran Church of the Redeemer in Klettham, Germany, swoop inward as well as upward. The result is a graceful, self-bracing structure. The arches are tied at the top and bracketed to rails just above the red brick, nonbearing walls at the sides. All wood members were prefabricated, and were erected without scaffolding in only 14 days. In pleasant (and liturgically sound) contrast to this soaring roof, the altar and pulpit are solid and plain. A bell tower (left) stands inside a brick enclosure next to the open-air choir platform. Architect: Hans Busso von Busse. END

PHOTOS: SIGRID NEUBERT



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Ruberoid T/NA 200 conforms to *any* roof shape, lets you design a roof to be much more than a roof. For complete details, write us at the address below.

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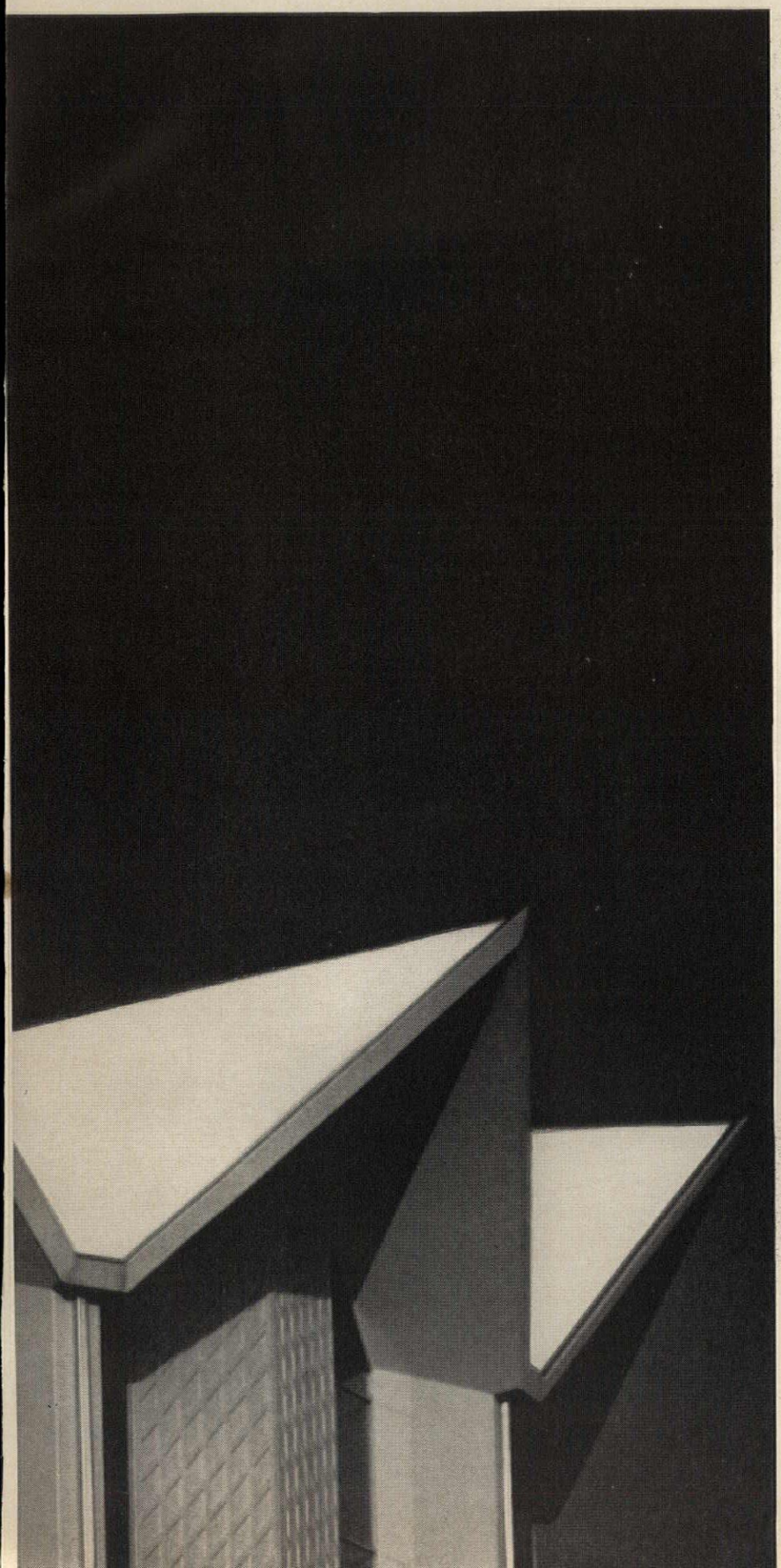

A SINGLE PLY OF ROOFING SOLVED THE PROBLEM of making this church stand out and be seen from afar. The design called for a brilliant, lastingly white roof, but conventional roofing materials were unsatisfactory.

Either they were not white enough, or their whiteness deteriorated over a period of years, or they could not be installed on the steeply pitched and intricately shaped roof.

A single ply of Ruberoid T/NA-200† solved all these problems. Its surface of Du Pont TEDLAR* PVF film has whiteness that remains brilliant, even after years of exposure. T/NA-200 was easily installed with conventional roofing techniques. It will fit any roof, no matter what its shape or angle.

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More and more architects are specifying TEDLAR as the finish on roofing and siding for their new designs. Du Pont Film Dept., Box 402-B, Wilmington, Delaware 19898.

St. Aloysius Gonzaga Church, Cincinnati, Ohio.
Architects-Engineers: L. P. Cotter & Associates, Cincinnati, Ohio.

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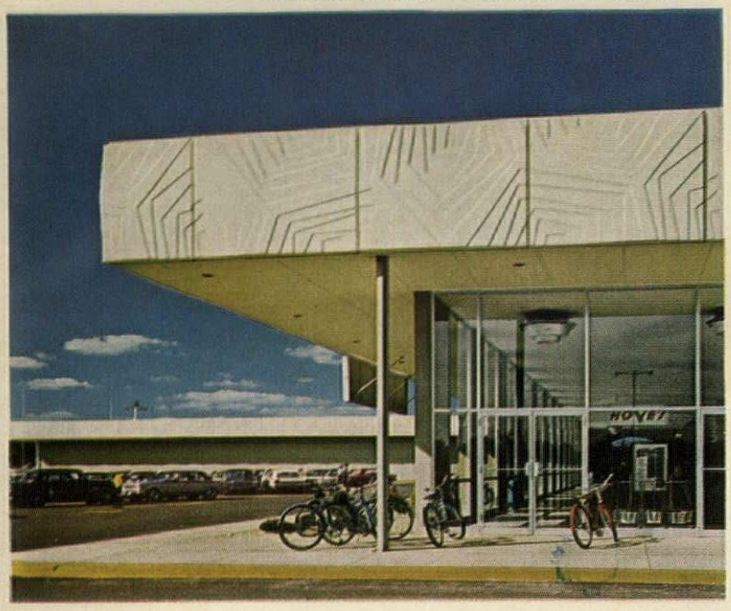
Har-Mar Mall Regional Shopping Center, Roseville, Minn.
Architects: Thorsen & Thorshov, Inc., Minneapolis, Minn.



Montgomery Ward store, Apache Plaza Shopping Center, St. Anthony Village, Minn.
Architects: Thorsen & Thorshov, Inc., Minneapolis, Minn.

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Plexiglas

Parke-Davis & Company building, Cherry Hill, N.J.
Architects: Alexander Ewing & Associates, Philadelphia, Pa.

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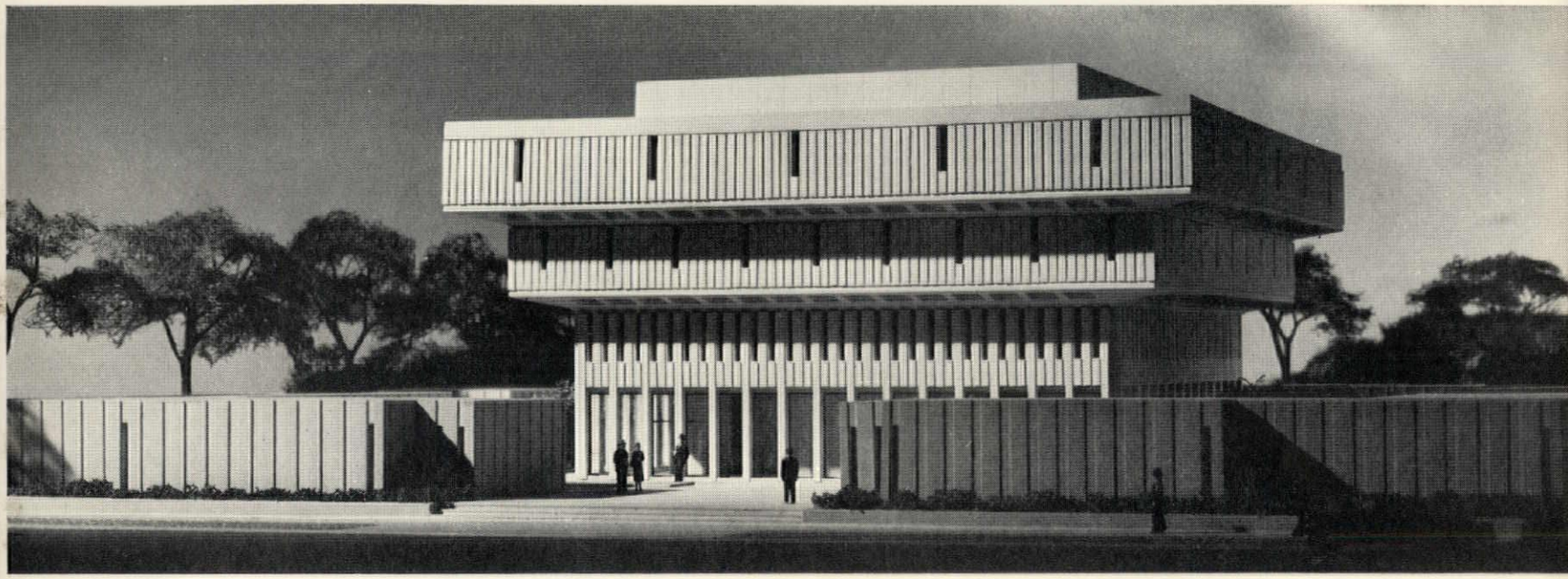
Shapero Hall of Pharmacy, Wayne State University, Detroit. Architects: Paulsen, Gardner and Associates. Oildraulic passenger elevator.



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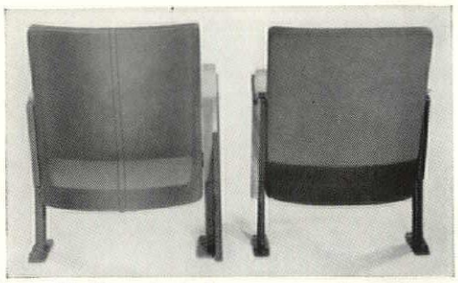
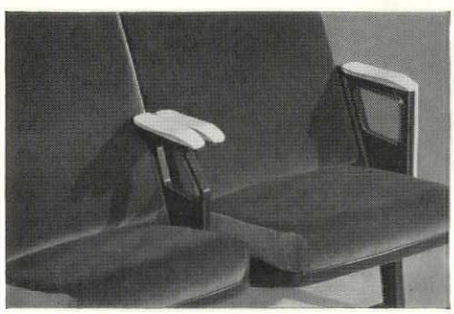
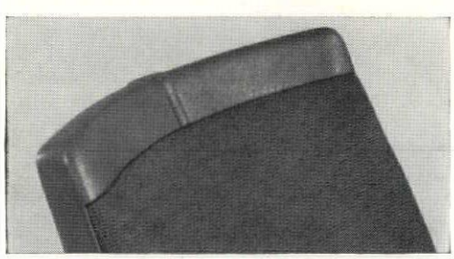


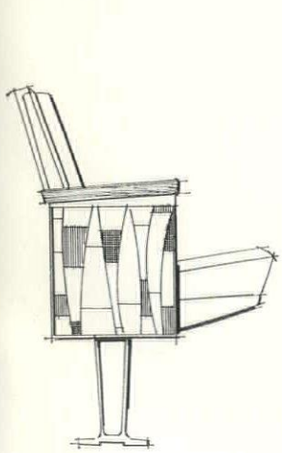
The Stellar chair has a very long back to protect the seat from feet. There are three variations of the Amerflex® plastic back, two of the upholstered back.

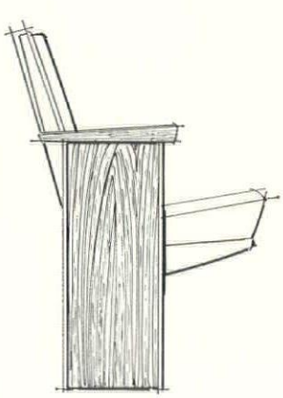


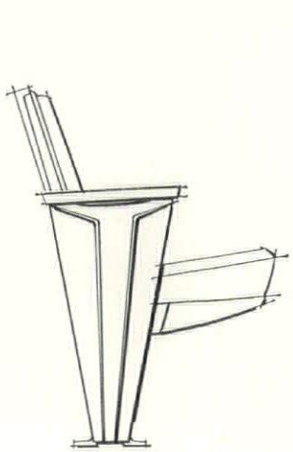
Single or double armrests are available. You may choose either type.

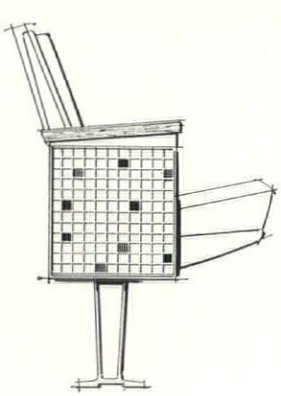


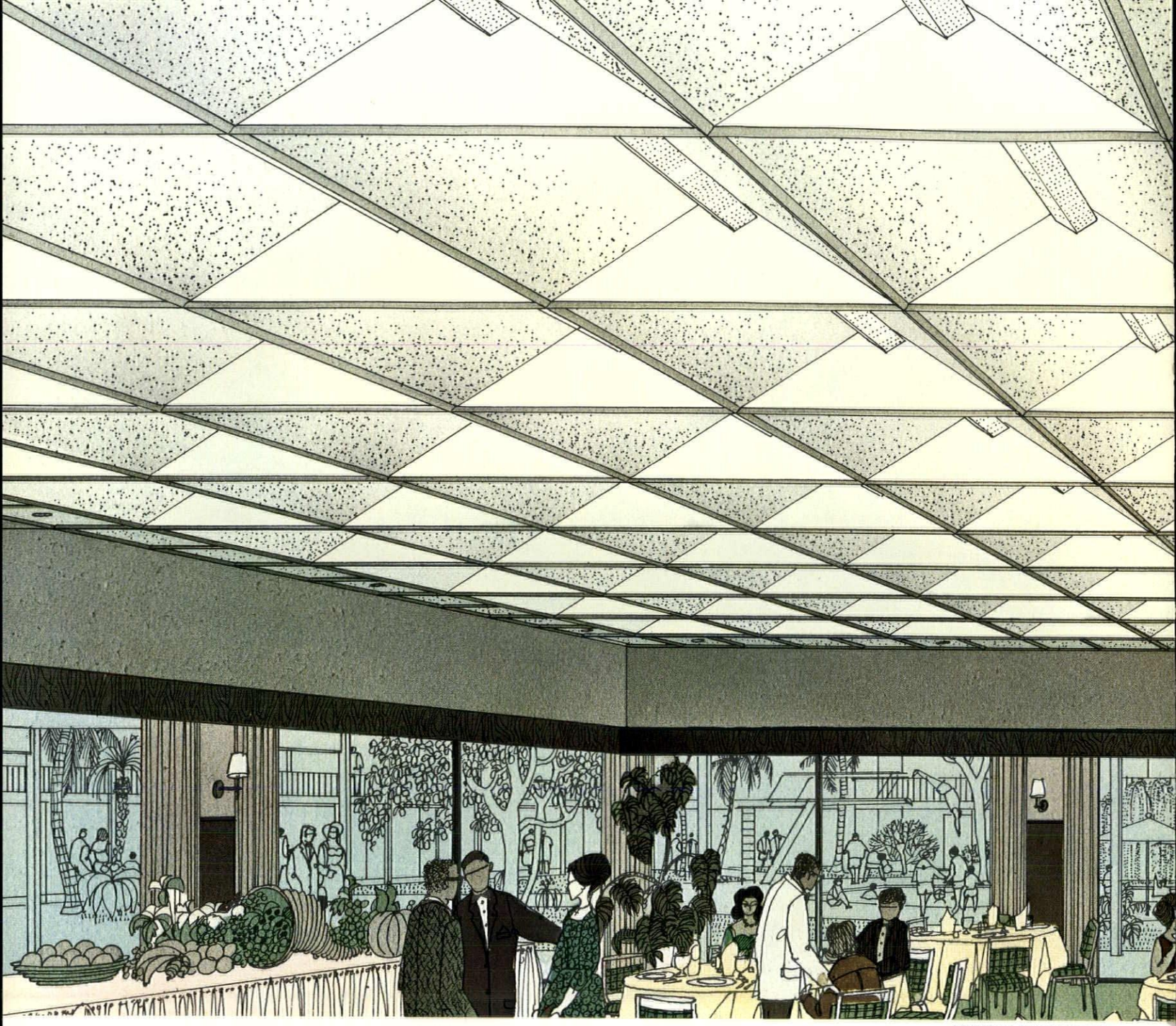
Exclusive Soil-Guard (optional) of solid-molded plastic protects upholstery at top of the chair back.











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At work in New Orleans: THE Armstrong LUMINAIRE CEILING SYSTEM

Armstrong takes five ceiling functions and creates the first totally integrated ceiling system.
The Armstrong Luminaire Ceiling System is already at work in schools, restaurants, stores, and offices from coast to coast. Here at the Cypress Room in the New Orleans Hilton Inn, it delivers uniform, draft-free, conditioned air year round and helps quiet the large, multi-purpose room—even with largest groups. Using two-lamp fixtures, the system provides the room with a minimum illumination level of 160 footcandles at the work plane. Equally important, it helps give the room its striking good looks.

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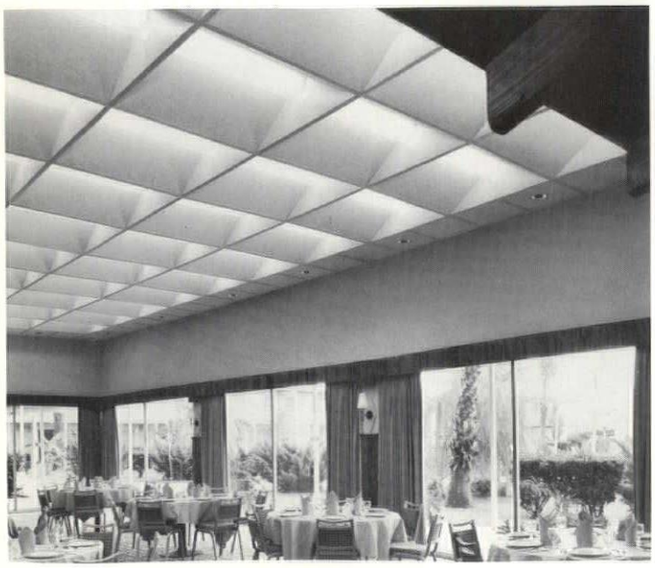
The module configuration directs all light downward, boosting lighting efficiency 10% over conventional recessed troffers. The circulating air inhibits dirt build-up on lamps, cools them, too. Result: longer lamp life, higher light levels. Air movement also makes the ceiling virtually self-cleaning. Maintenance factors are improved, too. Even shielded, as here, lamp cleaning and replacement are fast and uncomplicated.

This visually exciting Armstrong Luminaire Ceiling gives new drama and comfort to the Cypress Room at the New Orleans Hilton Inn.



CREDITS: Hilton Inn, New Orleans, La.

Architect:
George A. Saunders, New Orleans

Mechanical Engineer:
Edward H. Sanford & Assoc., New Orleans

Consulting Engineer:
Edward J. Yoerger, New Orleans

General Contractor:
Hogan Bros., New Orleans

Structural Engineer:
Walter E. Blessey, New Orleans

Ceiling Systems Contractor:
Belou and Company, New Orleans

MORE INFORMATION: For complete data, information and specifications on the new Armstrong Luminaire Ceiling System, contact your local Armstrong District Office or Armstrong Ceiling Systems Contractor. For a free illustrated portfolio and photometric data, write Armstrong Cork Co., 4204 Rooney St., Lancaster, Penna.

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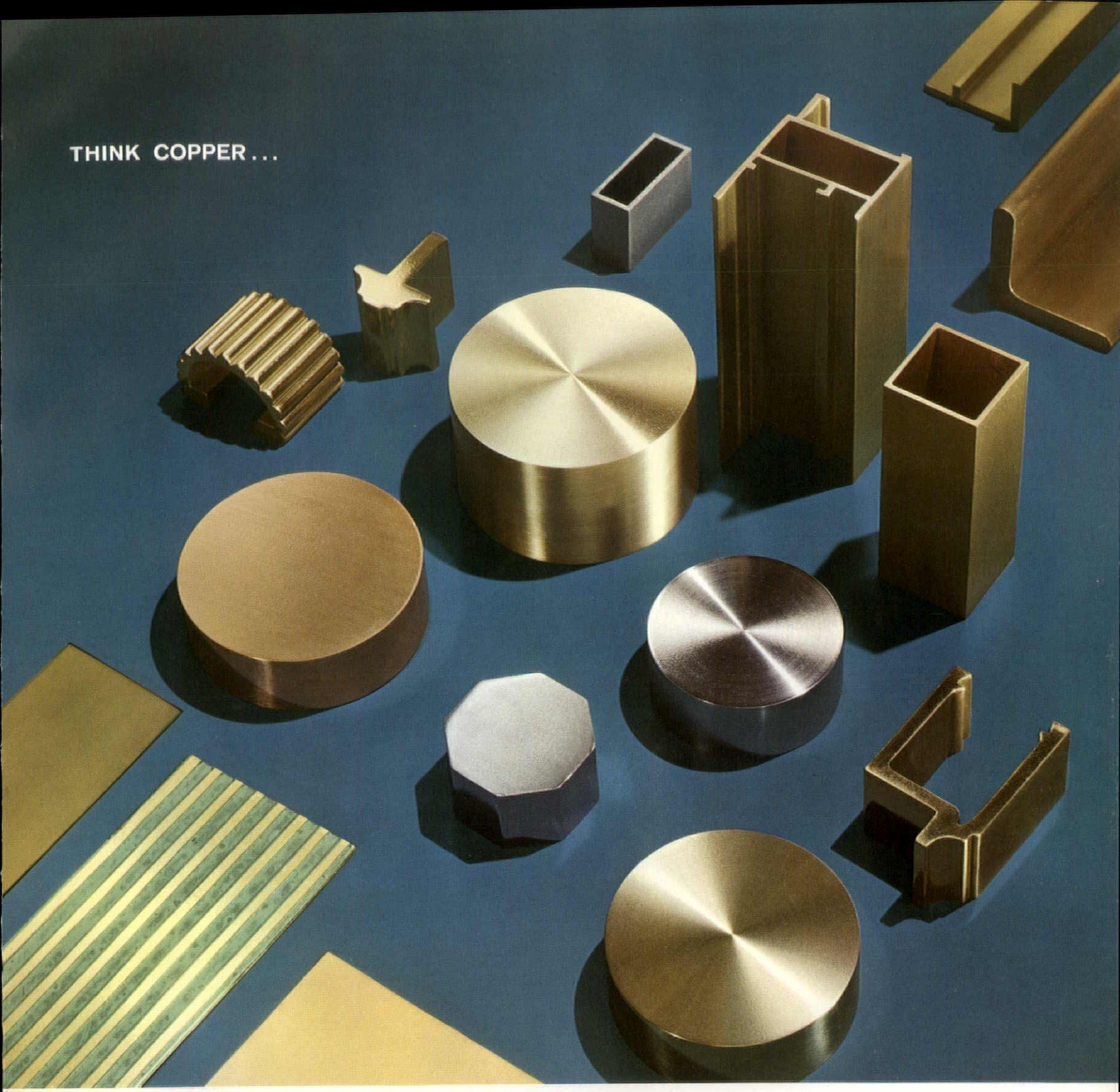

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North Carolina State Legislative Building. Architect: Edward Durell Stone, New York City. Associate Architects: Holloway & Reeves, Raleigh, N. C.

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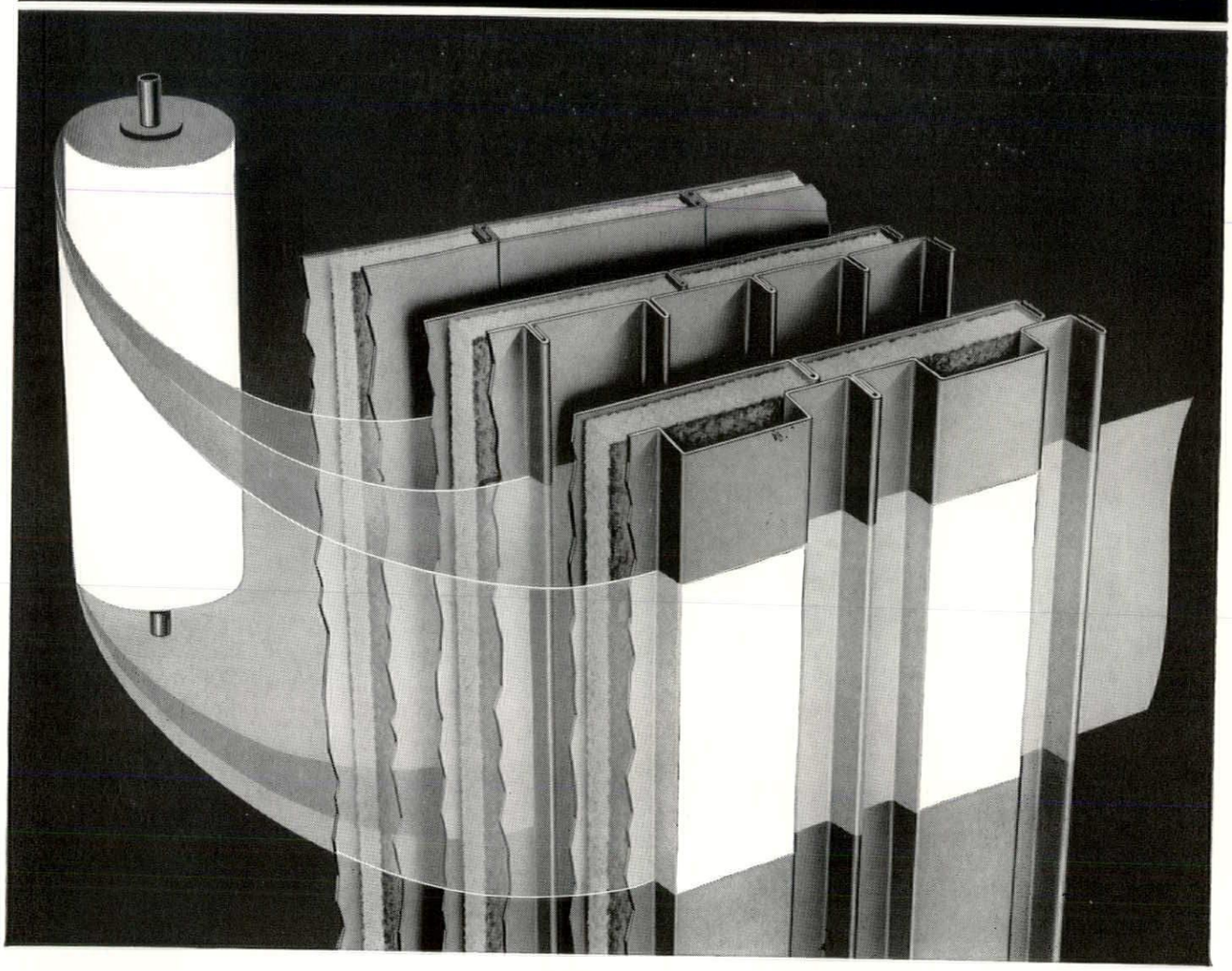

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Maybe for 25 years. That's TEDLAR* PVF film, DuPont's protective exterior surface that is bonded to building products for no-care maintenance. It's durable, good looking and weather resistant. It's thoroughly proven and economical over the long haul. And it's now available on all Mahon insulated-metal Curtain Walls having exterior panels of aluminum.

Mahon Fiberglas-insulated Curtain Walls have long offered functional advantages—erection to 60 ft. in height without a horizontal joint, invisible vertical joints, easy installation and low cost. And architects find a wide choice—in types, construction, metals, textures and finishes—for maximum design freedom in meeting project criteria.

It is indicative of Mahon's *competence* with metal building products that they are now using TEDLAR as one other means of better serving the construction industry. Find out how this *competence* helps you. Write for literature or better yet, talk it over with a Mahon architectural representative. The R. C. Mahon Company, 6565 E. Eight Mile Road, Detroit, Michigan 48234.

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MAHON

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PERKINS & WILL DESIGNS THE SCHOOL OF THE CITY

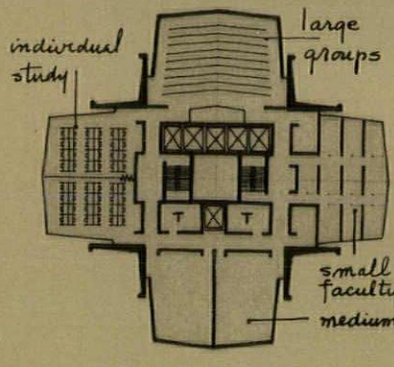
The city generates this exciting high school and community college.

Six compact school units, each on four floors for 480 students, are arranged vertically in a tower. The commons floor of each school group is served by its own elevator. In the low-rise building, and underground, are spaces for the specialized facilities which serve all six schools . . . administration, large assemblies, physical education, laboratories and shops, utilities and parking.

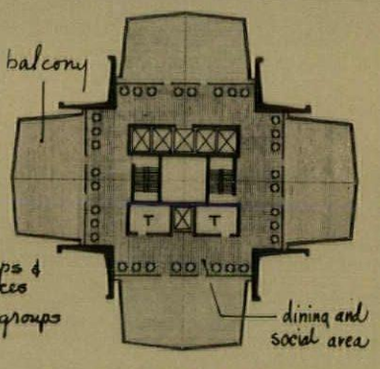
As in skyscraper office buildings, services for this urban school tower are concentrated in a central core with surrounding space open and flexible to accommodate the varied and changing educational program needs of today and tomorrow.

The tower, symbol of the city, identifies the school as a center for both student and adult. It occupies only 2 acres of valuable land.

Perkins & Will partner, Charles William Brubaker, A.I.A., suggests that this design will prove a thought-provoking challenge to all school space concepts based upon today's widespread 50-acre suburban school.



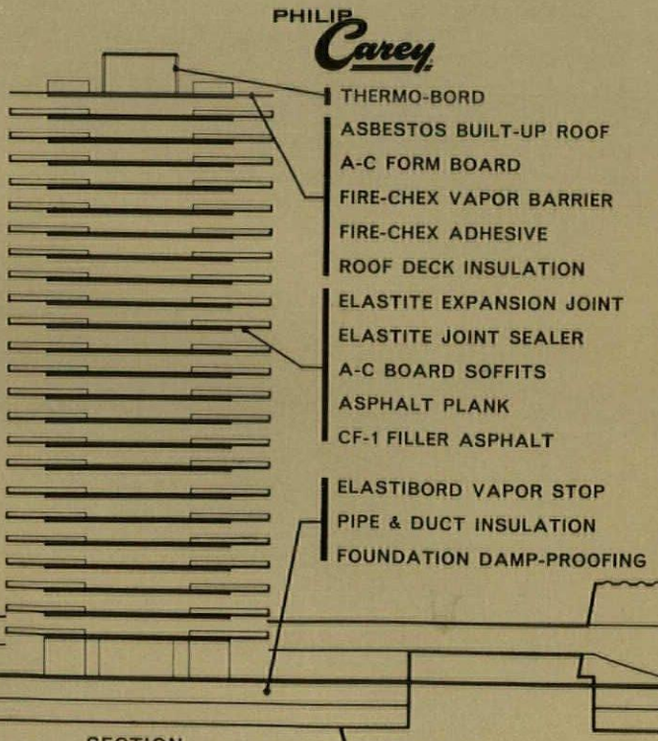
INSTRUCTION FLOOR



COMMONS FLOOR

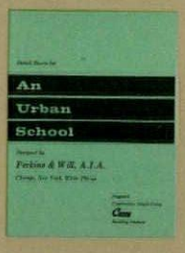
The Philip Carey Mfg. Company is delighted to sponsor the presentation of this design prophecy to the architectural and educational professions. It is surely a stimulating key to the solution of a major problem faced by many of our cities. As they progress to better use of expensive urban land, architectural thinking of this high order can give real meaning to urban revitalization.

Throughout this school structure, many well-known Philip Carey building products can be specified with assurance. This is true both on the visible structural surfaces and in those hidden areas which determine the long life of a low-maintenance building.



SECTION

In addition to the Carey products listed at the left, much convenience can be built in with Miami-Carey bathroom cabinets, framed mirrors and steel access doors.



WRITE US for your personal file folder containing developed construction details of this Perkins & Will project, incorporating many Carey materials.

THE PHILIP CAREY MFG. COMPANY
CINCINNATI 15, OHIO

PHILIP Carey®

Board room of South Miami Federal Savings & Loan Association, South Miami, Fla. The Weldwood Algoma-Grade Architectural Paneling is faced with half-round-cut veneers of afrormosia, lot-matched. The Weldwood Algoma doors used in this installation, but not shown, are also faced with afrormosia.

Spice your designs with unusual woods

(here's afrormosia for a starter)

Afrormosia, as you might suspect, is an African wood. It has some resemblance to teak and is at times used as a substitute. But it stands on its own character—an interesting grain pattern, often with a mottle figure, and a soft brown color.

For unusual color, take a look at bubinga. It varies from pale to deep flesh color with thin purple lines—with a straight or broken stripe, and mottle or shell figure.

For fresh ideas to spice your designs, browse through the library of fine veneers for Weldwood® Architectural Paneling. The selection is constantly changing. But at any particular time, you'll find a wide variety of woods with unusual character. You may see such woods as afrormosia, East Indian laurel, orientalwood, teak with a rare figure. You'll usually find bubinga, makore, flamboyant rosewood, and zebrawood.

And there's an easy way to do your browsing. Simply decide the general character of the wood you want and talk to a United States Plywood Architects' service representative. He'll assemble samples of currently available veneer flitches that might meet your requirements—having the length and quantity you need. You can examine them in your own office, at your leisure.

For more information about Weldwood Architectural Grade Paneling, about the species usually available, figure characteristics of wood, send in the coupon at the right.

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An accent of blue at the Golden Gate

Panels of nonfading Glasweld echo the color of sky and deep water on this striking new high-rise apartment

The new Royal Towers overlooking Telegraph Hill in San Francisco (shown under construction), offers some of the most spectacular views in the country—the Bay, the mists boiling over the hills, and sunsets at the Golden Gate.

The architect found Weldwood® Glasweld® panels the perfect choice for this type of construction. Their soft, attractive colors are permanent. The panels remain optically flat in appearance and are unaffected by sun, salt air—even San Francisco's delightfully changeable weather. They need no maintenance other than the occasional washing you'd give windows. And Glasweld is 100% incombustible (UL rating 0-0-0).

Versatile Glasweld can be used in any curtain-wall system and is available as a facing for insulated sandwich panels or single thickness window inserts.

For complete information about Glasweld, check the coupon on the back of this page.

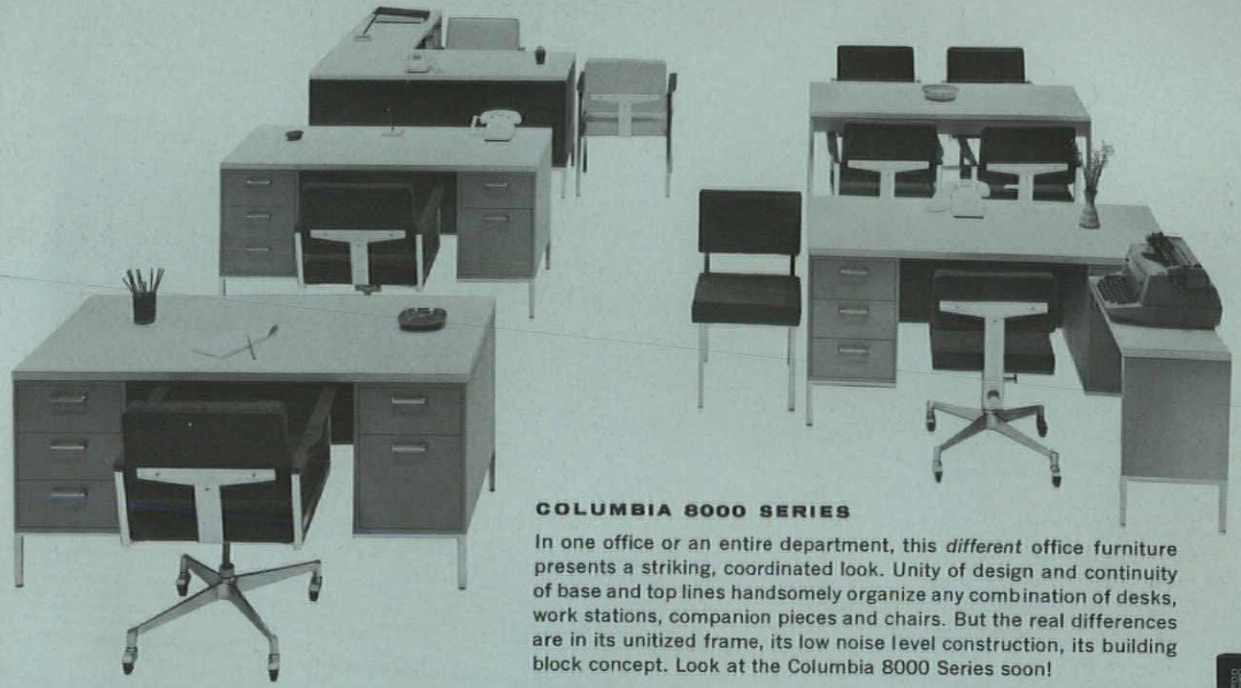
Owner-developer: Belle Haven Realty Co.
Architect: Barbachano, Ivanitsky & Associates, El Cerrito, California

Weldwood
GLASWELD

A product of United States Plywood

Look at it this way...

. . . or look at it this way



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In one office or an entire department, this *different* office furniture presents a striking, coordinated look. Unity of design and continuity of base and top lines handsomely organize any combination of desks, work stations, companion pieces and chairs. But the real differences are in its unitized frame, its low noise level construction, its building block concept. Look at the Columbia 8000 Series soon!

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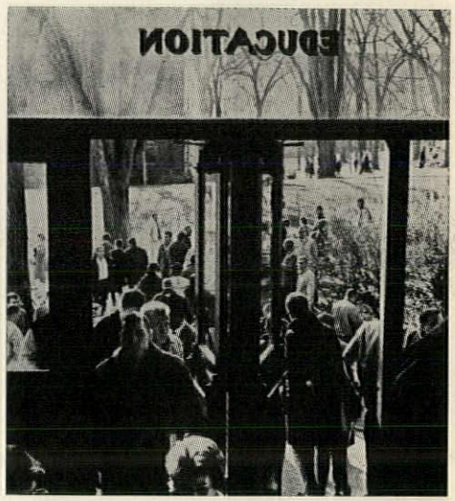
BRICKS AND MORTARBOARDS. A Report from Educational Facilities Laboratories Inc. on College Planning and Building. Published by Educational Facilities Laboratories, 477 Madison Ave., New York 22, N.Y. 166 pp. 10" x 9". Illus. Single copies available without charge.

CAMPUS PLANNING. By Richard P. Dober. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. 314 pp. 11" x 9". Illus. $25.

These two books are intended to prepare all concerned with college and university building for a crisis just ahead. EFL's *Bricks and Mortarboards* is for "the people who make basic decisions affecting the future of American higher education—college trustees, lawmakers, potential donors. Consultant Richard Dober's *Campus Planning* is primarily for building professionals.

The crisis is the doubling of college enrollments forecast for the decade ahead. There are now just over 4 million college-level students in the U.S.; according to EFL, there will be 8.5 million by 1974.



Moreover, *Bricks and Mortarboards* finds campus development lagging behind even the demands of today. The colleges are building at a record rate of $1.2 billion a year. It should be more like $1.9 billion—and even that presupposes a 20 per cent increase in the efficiency of using existing campus facilities.

EFL is worried about where this money will come from, but it also raises questions of how well it will be spent. The purpose of *Bricks and Mortarboards*, then, is to "help insure that an unprecedented national investment in facilities for higher education will produce buildings that serve rather than stifle higher education in the crucial years ahead."

EFL's technique has been to hire professional writers, rather than professional planners, to report on classrooms, laboratories, libraries, dormitories, and campus planning as a whole. One result of this approach is that the book is thoroughly researched and highly readable. Another, less fortunate re-

sult is that it is uneven in the depth and sophistication of its conclusions.

The unevenness is most noticeable in the treatment of problems and solutions. On the whole, the problems are stated clearly and completely: probably nowhere else has so much program information on college buildings been put together in one place (in this aspect, the book is every bit as useful to architects as to the "decision-makers"). In citing solutions, however, the authors frequently place undue emphasis on novelty and ingenuity.

A good antidote for any misconceptions this might generate is *Campus Planning.* Dober, who has served as consultant to such institutions as M.I.T., Harvard, and Drake, also has put a good deal of program data into his book, but his strong point is the analysis of both buildings and plans. He conveys a welcome sense of the *wholeness* of architectural and planning problems. He also adds the dimension of history: his first 42 pages review the development of campus planning in the U.S. from Harvard's Old College (1638) to Herbert Baumer's Antioch science building (1929).

Dober's work is, in the best sense of the term, a textbook. It is detailed, comprehensive, and current. It may seem elementary at times to those experienced in campus planning and design, but that is probably all to the good. Such experience is not particularly widespread at the moment, and the accelerated rate of college building is sure to bring a great many architects and others into the field for the first time.

This, in fact, is the great value of both these books. The kind of shared expertise and guidelines developed for school design in postwar years is still generally lacking at the college campus level. The two volumes fill some large gaps, and it is to be hoped that others will follow. The time for preparation, as EFL points out, is extremely short—D.C.

THE MOSAICS OF JEANNE REYNAL. By Dore Ashton, Lawrence Campbell, Elaine de Kooning, Bernard Pfriem, Parker Tyler, and Jeanne Reynal. Published by George Wittenborn Inc., 1018 Madison Ave., New York 21, N.Y. 111 pp. 11" x 8½". Illus. $15.

Mosaicist Jeanne Reynal has reached the conclusion that the medium of mosaic "is an art whose essential quality is texture and luminosity. This comes from the fact that the tesserae are placed in the cement so that they can reflect the smallest light. . . . A wall clothed in mosaic thus becomes a presence."

This quality was achieved by the artists of Byzantium, who made mosaics *in situ* by inserting the colored tesserae into the wet butter coat. During the Renaissance, mosaics copied paintings and the tesserae were glued into place atop a reverse drawing, then applied to the wall. The paper was stripped

continued on page 166

off, leaving the tesserae in an even plane unable to catch the light.

Miss Reynal was trained in the reverse technique, but she now prefers to use the direct method. Pictures of many of her mosaics are shown, including what she describes as her "crowning experience," a free-standing concave wall, 30 feet high and 20 feet long, that stands in back of the altar in the chapel of Our Lady of Florida in Palm Beach, Florida (above). The wall was commissioned by the architect, Paul Damaz, then of the office of Brother Cajetan J. B. Baumann.

The book also contains a short history of mosaics, illustrating some of the more famous ancient works, and fascinating pictures following Jeanne Reynal through all the steps involved in both methods of making mosaics.

DIE BIBLIOTHEK DER TECHNISCHEN HOCHSCHULE STUTTGART 1962. Published by the library of the Technische Hochschule (Institute of Technology) Stuttgart, Germany, edited by Manfred Koschlig. 265 pages. 7¼" x 9¼". Illus. Available from publishers for $9.50.

This unusual book, deservedly voted among the 50 most beautiful made in Germany last year, is another volume commemorating the peace. It is the story of the library built at the Institute of Technology in Stuttgart to

replace the building which was destroyed by bombing in the summer of 1944. Not only was the major cost of the structure contributed by the Max Kade Foundation of New York, but architectural inspiration is

attributed to the handsome library at Georgia Institute of Technology by Architects Bush-Brown, Gailey & Heffernan (FORUM, Mar. '55).

Architect Hans Volkart and his assistant, J. K. Zabel, designed their spacious building after a study trip to America in 1957 which was arranged by the U.S. Library of Congress. It is one of the most advanced libraries in Germany; and its beginnings are traced from 1830, when the collection was first begun, to date. The text is in German, with no translation.

EARLY BYZANTINE CHURCHES IN MACEDONIA AND SOUTHERN SERBIA. By R. F. Hoddinott. Published by St. Martin's Press Inc., 175 Fifth Ave, New York 10, N. Y. 263 pp. 9½" x 12". Illus. $49.

Archaeologists have uncovered a rich store of early Byzantine churches in Macedonia and Southern Serbia. The author reports on many of these discoveries, their interrelationships, and their significance to all of Byzantium. This is the first time detailed information has been generally available: until now much of the basic material has been published only in Greek or Serbo-Croat and scattered in archaeological journals, many out of print. The book contains nearly 300 photographs taken by the author, including 12 in color, and has three large fold-out maps.

RUMANIA: PAINTED CHURCHES OF MOLDAVIA. Preface by André Grabar. Introduction by Georges Oprescu. Published by the New York Graphic Society, Greenwich, Conn. 13" x 19". Illus. $18.

In the Rumanian province of Moldavia, there are 14 small country churches whose exterior walls were completely covered with Byzantine-style murals in the 16th and 17th centuries. Six of the churches are displayed in 32 full-page color plates. The murals, mostly showing Biblical scenes and processions of saints, are extraordinarily beautiful; so is this book, the 19th volume in the UNESCO World Art Series.

CATHEDRALS AND ABBEY CHURCHES OF THE RHINE. By Ernest Gall. Translated and adapted by Olive Cook. Published by Harry N. Abrams, Inc., 6 W. 57th St., New York 19, N.Y. 178 pp. 8" x 11". Illus. $15.

The Rhineland has more medieval cathedrals and abbey churches than any other part of Germany, and Mr. Gall does a fine job of tracing them from early Christian days through the Baroque period. Fifty buildings are shown in 200 illustrations.

CHURCHES AND PUBLIC BUILDINGS. By Helen Mary Petter. Published by Oxford University Press, 417 Fifth Ave., New York 16, N.Y. 96 pp. 6½" x9 ". Illus. $2.20.

A superficial treatment of English churches and public buildings since Stonehenge, with amateurish pen-and-ink drawings of some typical structures and details.

continued on page 169

Dimensions of tomorrow . . . in today's locksets from Sargent

Here's a new twist on the old continental lever handle — a style resurgence which smartly complements contemporary architecture . . . it sets the fast styling pace for a whole line of sophisticated locksets from Sargent. MagnaLock, the T-zone, torque-resistant bored lock . . . IntegraLock, combining the best features of both unit and mortise locks . . . modern mortise locks with an endless variety of sculptured, screwless trim — all available in brass, bronze, aluminum and stainless steel — or colorful fired copper or DuPont Delrin® in lustrous finishes . . . one or more perfect for your type of structure.

In addition to these heavy duty locksets, Sargent also leads in the design and manufacture of quality, high fashion door closers, exit devices and other safety hardware — your single source of responsibility for all your requirements. See your Sargent hardware supplier, or write Sargent & Company, New Haven 9, Connecticut. In Canada, Sargent Hardware of Canada Ltd., Peterborough, Ontario.

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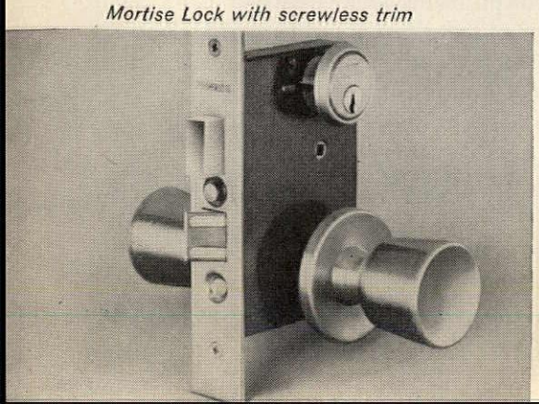
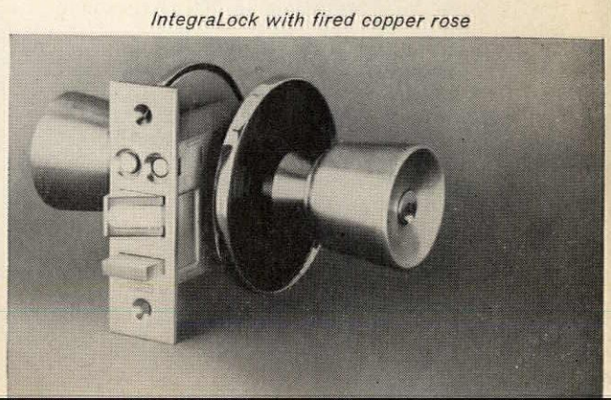
Mortise Lock with screwless trim



MagnaLock with Delrin® knob

IntegraLock with fired copper rose



continued from page 167

DESIGNING FOR THE DISABLED. By Selwyn Goldsmith. Published by the Royal Institute of British Architects, 66 Portland Place, London W1, England. 236 pp. 8½" x 12". Illus. £2.10s.

This handbook uses diagrams with dimensions to show how building details, including lighting levels, spaces needed for wheelchairs, and special built-in fixtures, should be planned for the physically impaired and the elderly. Most of the information concerns housing, but much of the material can be adapted for other types of buildings as well. The author has included a highly useful glossary of pertinent medical terms, and an extensive bibliography on all aspects of his subject.

THE ARCHITECTURE OF THE ITALIAN RENAISSANCE. By Peter Murray. Published by Schocken Books, 67 Park Ave., New York 16, N. Y. 268 pp. 9" x 6". Illus. $10.

The book is too small, there aren't enough pictures, and the captions don't give architect's names. But these are common complaints, and in this case trivial. Dr. Murray traces the course of the Italian Renaissance in a thoughtful and fascinating way. He is at his best when discussing the mannerists, and the eight pages of Giulio Romano's Palazzo del Te in Mantua are alone worth the price of the book.

THE ARCHITECTURE OF ENGLAND. By Doreen Yarwood. Published by B. T. Batsford Ltd., London, and G. P. Putnam's Sons, 200 Madison Ave., New York 16, N.Y. 672 pp. 7½" x 10". Illus. $20.

This was clearly a labor of love: the author visited all the extant buildings she discusses and made over 1500 drawings, to which the 64 full-page black-and-white photographs and six color plates are only supplementary. The drawings have the distinct advantage of showing the original buildings without additions or defacements. In an effort to include almost everything built in England since prehistoric mud huts, however, the book has become a catalogue. Some buildings illustrated are scarcely mentioned in the text, moreover; and drawings and text are rarely together.

TRADITION OF JAPANESE GARDEN. By Sutemi Horiguchi. Published by The Kokusai Bunka Shinkokai, Tokyo. Distributed by East West Center Press, Honolulu 14, Hawaii. 186 pp., with 140 plates, 8 in color. 11½" x 11½". $15.

This handsome book consists of a 14-page discussion of the various types of Japanese gardens, followed by the plates, many of them full page. It ends with brief but detailed notes on the individual plates.

The photographs are outstanding. The short text, however, is confusing and seems strangely disjointed, possibly because of poor translation. This suspicion is strengthened by the book's curiously abbreviated title.

OLD NEW ENGLAND CHURCHES. By Elise Lathrop. Published by the Charles E. Tuttle Co., Rutland, Vt. 170 pp. 7½" x 10½". Illus. $5.

Drawings by H. T. Welsh show many of the churches built during Colonial days and the early years of the Republic, while the text tells of some of the hazards and amusements of church-building—and church-going—in those times. This is a new edition of the book, identical to the original, which was published in 1938.

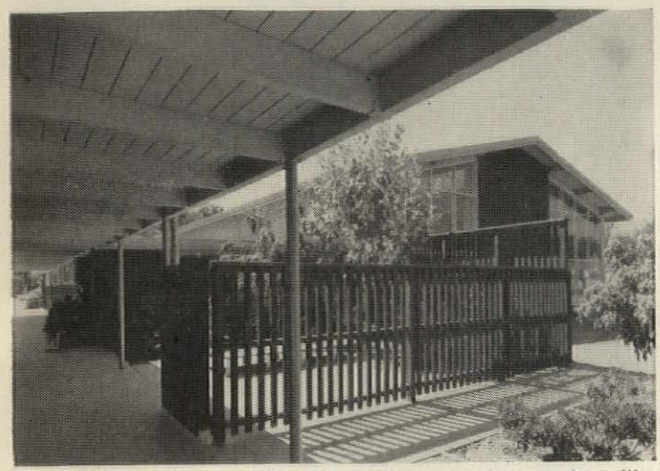
THE LAROUSSE ENCYCLOPEDIA OF BYZANTINE AND MEDIEVAL ART. Edited by René Huyghe. Translated from the French by Dennis Gilbert, Ilse Schreier, and Wendela Schurmann. Published by G. P. Putnam's Sons, 200 Madison Ave., New York 16, N.Y. 416 pp. 8¼" x 11¼". Illus. $17.95.

More than 1000 illustrations accompany the detailed text that covers the art and architecture of Europe, the Near East, India, and the Far East. This is the second of four volumes in the "Art and Mankind" series.

Wood invites guests into Dinah's Motel, Palo Alto, Calif. Strong vertical lines, in posts, planked siding, railings, and screens, add visual height to this low structure. Campbell & Wong & Associates, architecture and planning.

For neighboring structures that differ in purpose

design with the freedom of WOOD



In California's Pacheco School, wood creates both a homelike environment and an exterior most compatible with neighboring dwellings. Reid, Rockwell, Banwell & Tarics, architects and engineers.

UNICOM MANUALS 1 & 2: "Design Principles" (122 pages) and "Fabrication of Components" (248 pages), graphically detailing the UNICOM method of house construction, are available at nominal cost to those associated with or supplying the home building industry. For free booklet describing UNICOM, write to: UNICOM, National Lumber Manufacturers Association, 1619 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Whatever their differences . . . schools, commercial buildings, and homes of wood will always complement one another. Wood's structural versatility permits the most daring designs for gymnasiums or garages, provides comfortable environments perfect for people. Its economies let you plan within the framework of a budget, without compromising the design of your structure.

Wood is a sound choice for keeping noise to a minimum, a solid selection for insulation against the rise and fall of temperatures. Its many species, tones, and textures give you further advantages in creating unusual effects with visual warmth. Wood is easily maintained through years of wear, readily remodeled for necessary expansion. It's quick to adapt to new systems of planning such as UNICOM, the uniform method of modular dimensioning. For more information on designing more freely with wood, write:

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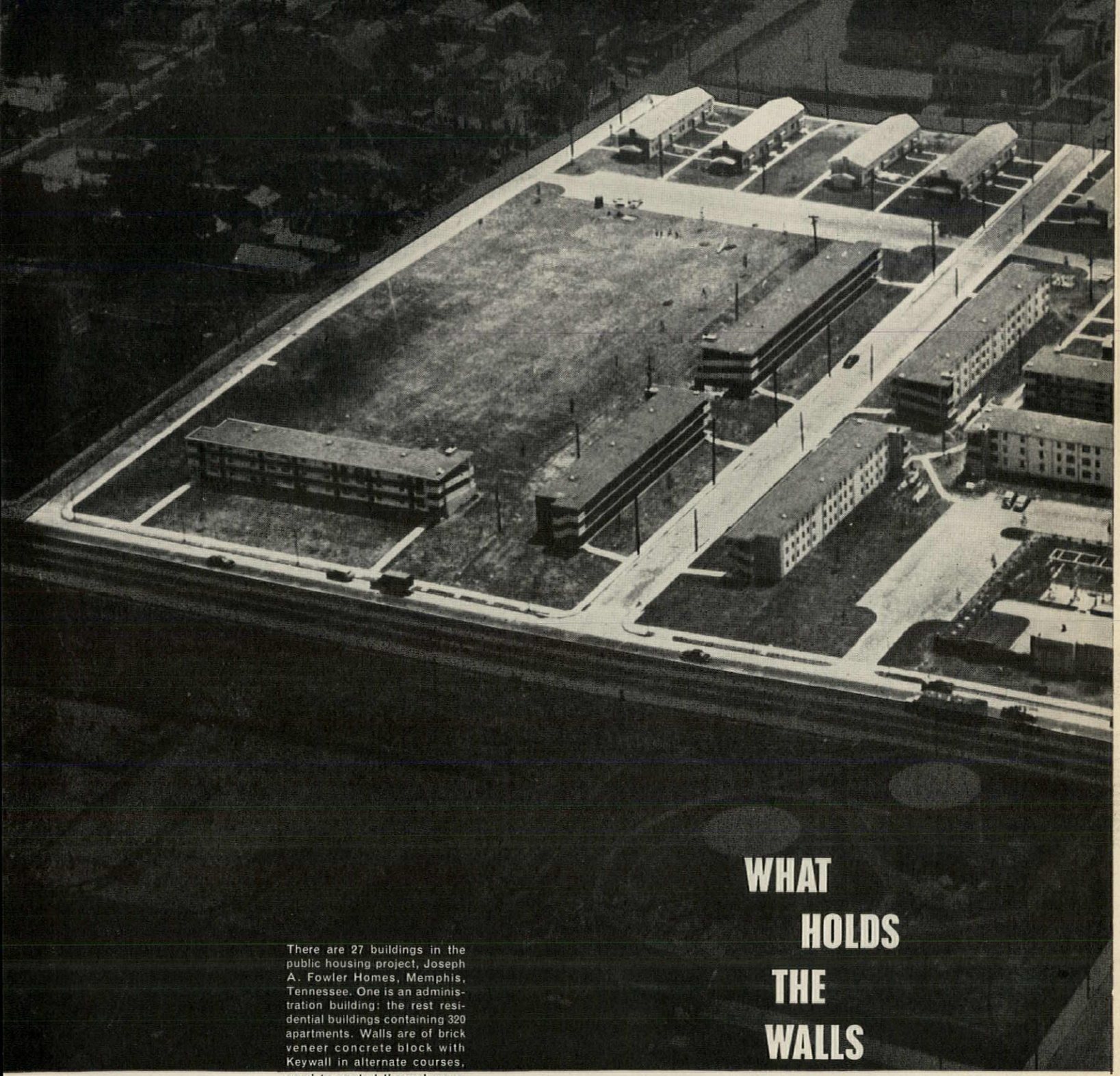
Wood Information Center, 1619 Massachusetts Ave., N.W., Washington, D.C. 20036

nlma

find the better way with **wood**

Used lavishly, wood makes this house at home on its wooded site. Vertical boards panel both inside and outside walls. Contrasting finishes are most effective. Architect: Joseph Esherick, A.I.A., San Francisco.

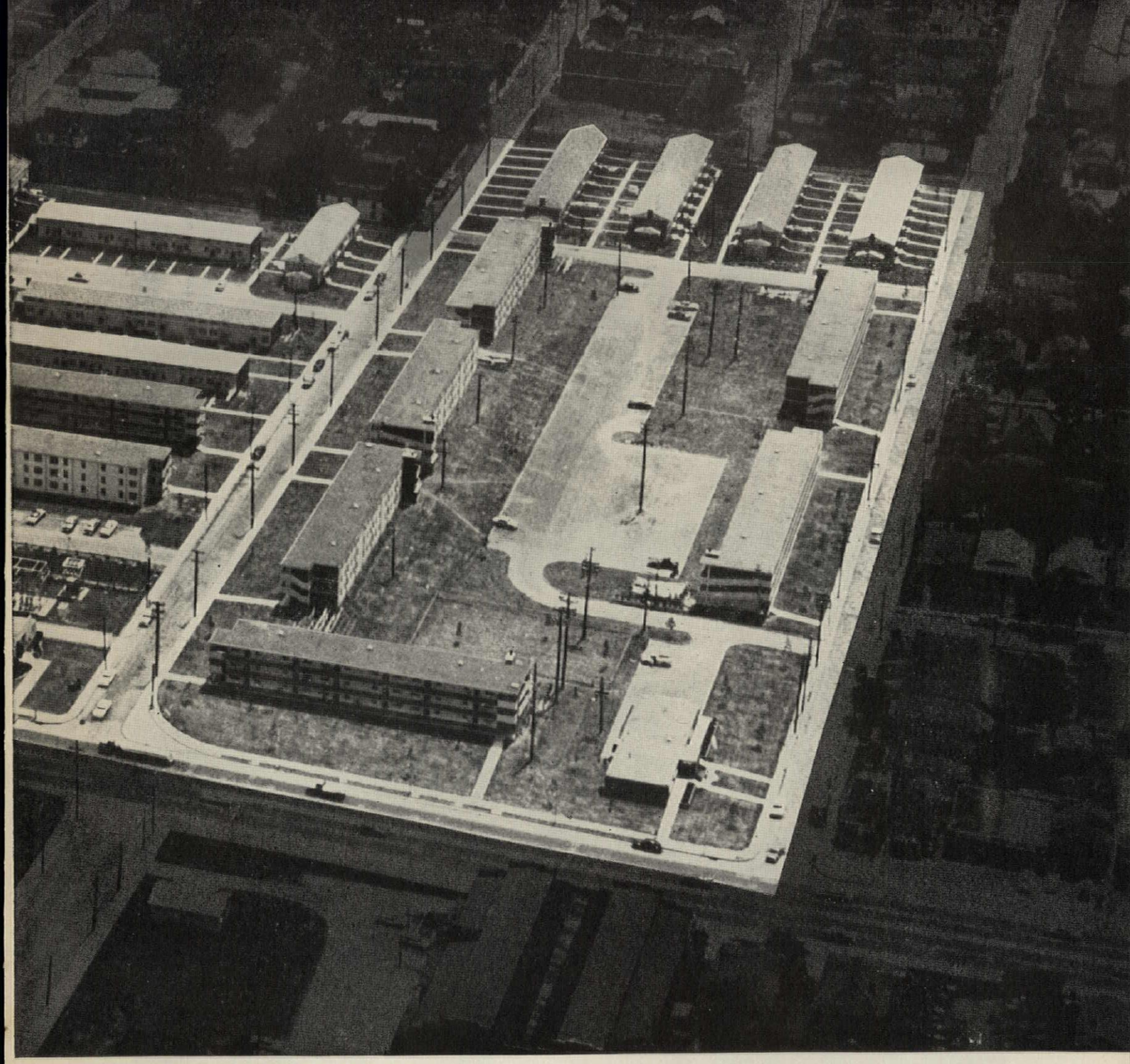


WHAT HOLDS THE WALLS OF THE JOSEPH A. FOWLER HOMES TOGETHER?

There are 27 buildings in the public housing project, Joseph A. Fowler Homes, Memphis, Tennessee. One is an administration building: the rest residential buildings containing 320 apartments. Walls are of brick veneer concrete block with Keywall in alternate courses, used to control thermal movement and to serve as a brick tie. Interior walls are of rock lath plaster utilizing Keycorner and Keystrip as reinforcement.

ARCHITECT:
Charles S. Peete & Associates, Memphis
GENERAL CONTRACTOR:
McDonough Construction Co.
of Atlanta, Georgia
MASONRY CONTRACTOR:
Memphis Masonry Company, Memphis
PLASTERING CONTRACTOR:
F. M. Gravier Plastering Co., Atlanta

KEYSTONE STEEL & WIRE COMPANY • Peoria, Illinois



mortar and Keywall (what else?)

It's a coincidence you should ask about the advantages of Keywall. You can see from the tight pattern that it gives you more mortar locks with block (and/or brick).

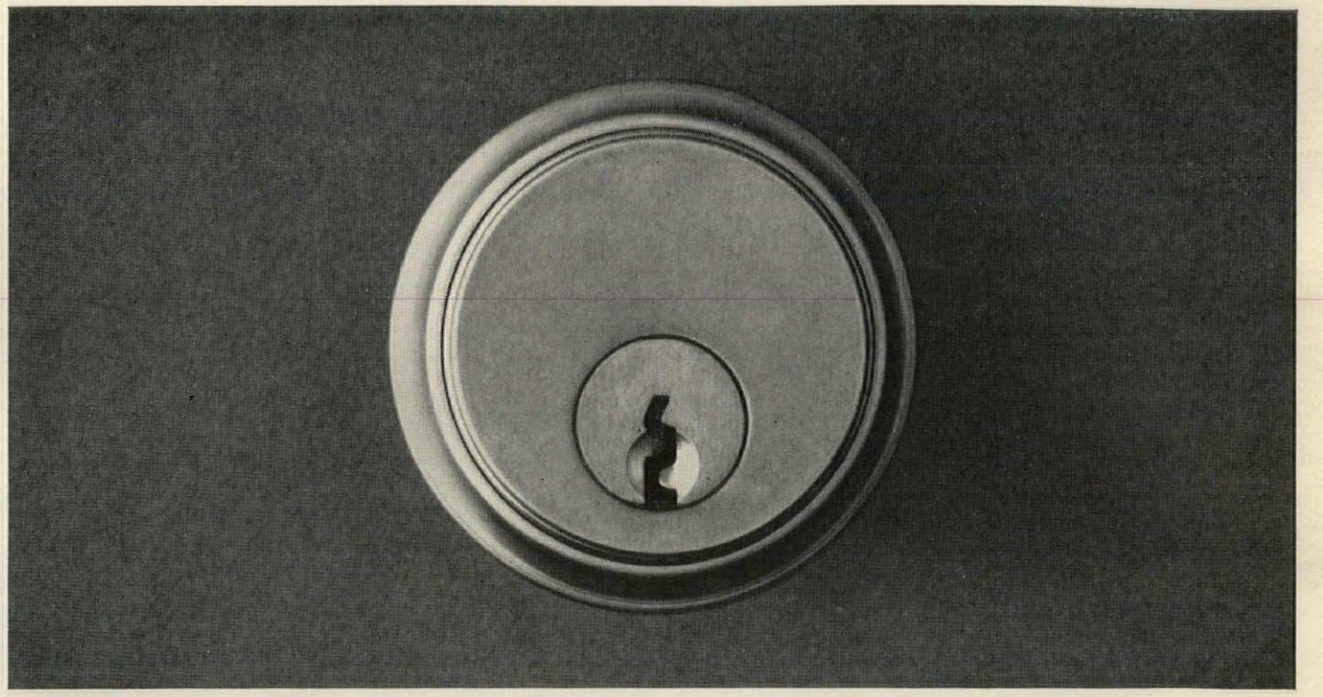
Which in turn controls shrinkage and thermal movement better, resulting in greater crack resistance.

And because Keywall comes in rolls, masons lay Keywall in place more easily and quickly.

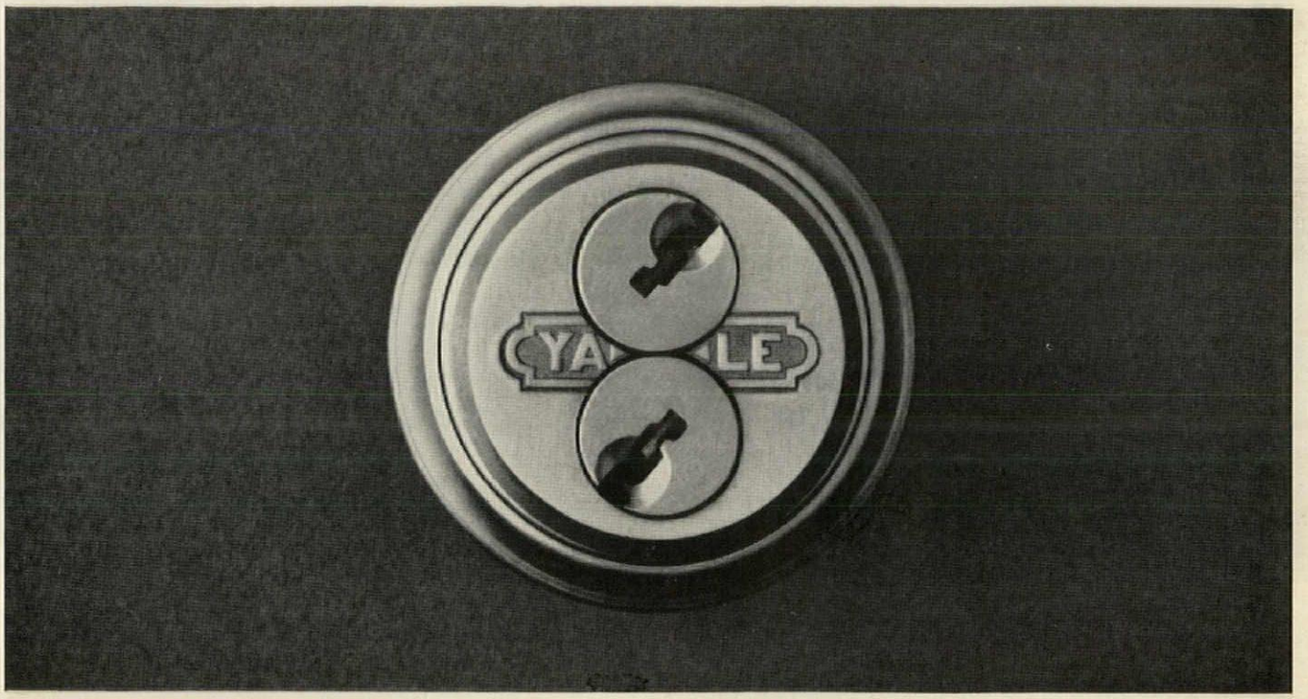
You might think that you would have to pay more for a masonry reinforcement with such advantages. Not so.

MORE LOCKS TO THE BLOCK with Keywall . . . because of the tight-woven pattern, it is impossible for any one strand of Keywall to be subject to the strain of more than two square inches of a block's thermal movement or shrinkage. By dividing the strain into such small segments, Keywall provides greater crack resistance.

MAKERS OF KEYCORNER • KEYSTRIP • KEYWALL • KEYMESH® AND KEYMESH PAPERBACKED LATH • WELDED WIRE FABRIC • NAILS



Master keying was complicated...



until Yale simplified it.

Why put the master-key plug and the change-key plug in the same cylinder? For simplicity's sake. Simplicity is the key to security in master keying. • The bicentric cylinder (a Yale exclusive) allows a wide range of master keying without reducing the almost unlimited number of secure changes possible in the change-key plug. The need for discing is eliminated. Result? A more secure, more flexible lock system. • Bicentric cylinders: another example of Yale leadership in lock design.

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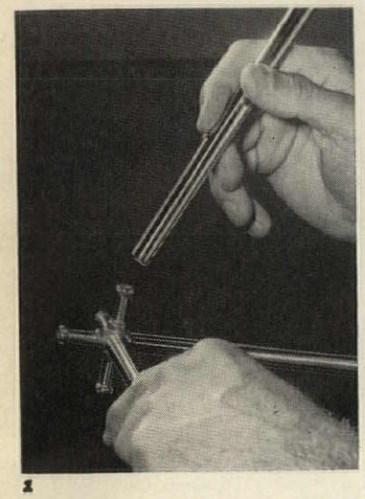

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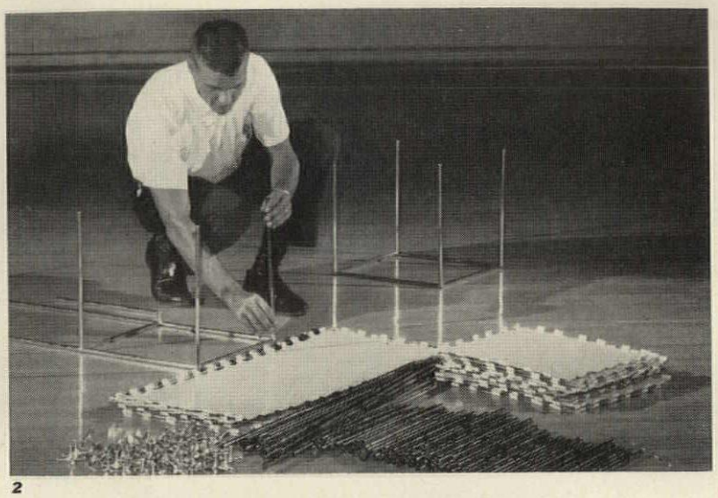

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3

MODULAR EXHIBIT SYSTEM

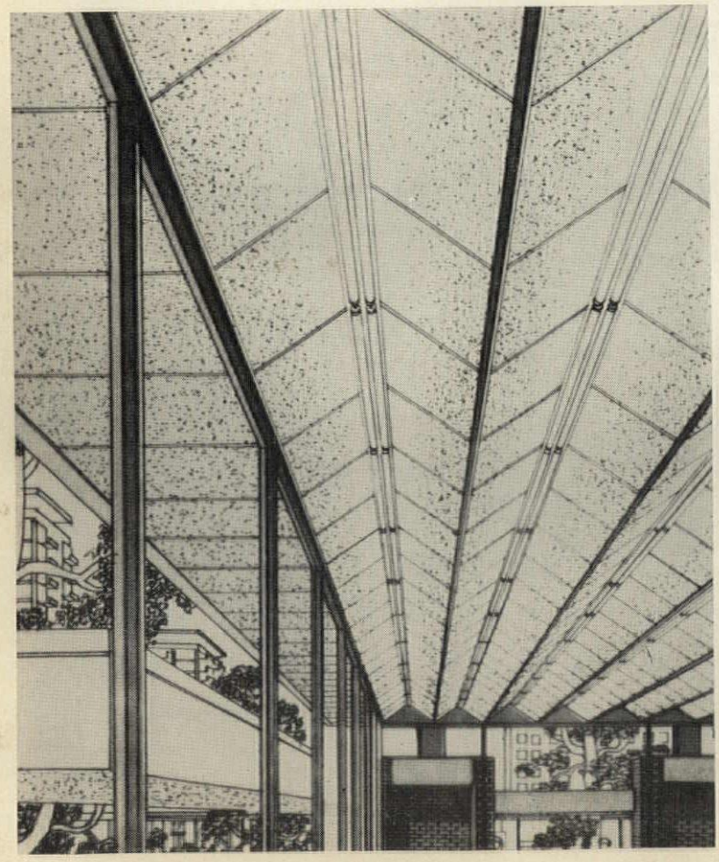
System Abstracta is a modular structural system for exhibits and displays, based on a few simple components that can be combined in seemingly endless ways. It was designed by Danish architect Poul Cadovius and is manufactured here by the Nissen Corp.

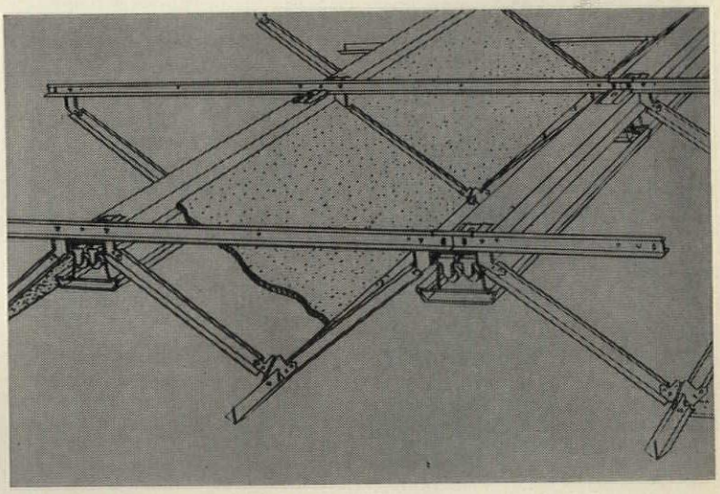
The key element in this system is, of course, the connector (1), which looks like a stray jack from a children's game. Depending on how it is to be used, the connector supplies anywhere from two to six legs which slide into metal tubes. The other major component is a steel panel that hooks around the tubes to make shelves or to enclose parts of the structure. There are other parts to the system, such as floor levelers, plastic tips, and hangers of several kinds, which are useful accessories, but the first three are basic.

Assembly begins with connecting horizontal layers and then building them up with vertical supports (2). Bigger systems are usually built in sections and then joined horizontally (3).

The system's module is 5 inches, and all components are multiples of 5, up to a maximum panel size of 15 by 35 inches. System Abstracta may be ordered in kits which range in price from $125 to $325 or in cartons containing 100 pieces of each component.

Manufacturer: Nissen Corp., 930 27th Ave. S.W., Cedar Rapids, Iowa.





NEW INTEGRATED CEILING

The Armstrong Luminaire ceiling introduced last year (*Products*, Oct. '63) is now offered in a new version, the *B-48*, that costs less to install, having fewer parts. The metal triangles bracketing each module have disappeared: instead, the new ceiling has continuous troughs (see drawing, left).

Another difference is the change in module dimension from 50 to 48 inches. Because of this change and the continuous runs, one industrial lighting fixture 96 inches long can be used to light two modules. Two lamps and a shield may be used if desired (above).

In other respects—acoustical control, uniform air distribution, lighting efficiency—the new ceiling offers the same performance as the introductory Luminaire.

Manufacturer: Armstrong Cork Co., Lancaster, Pa.

continued on page 178

Italic line indicates advertising agency

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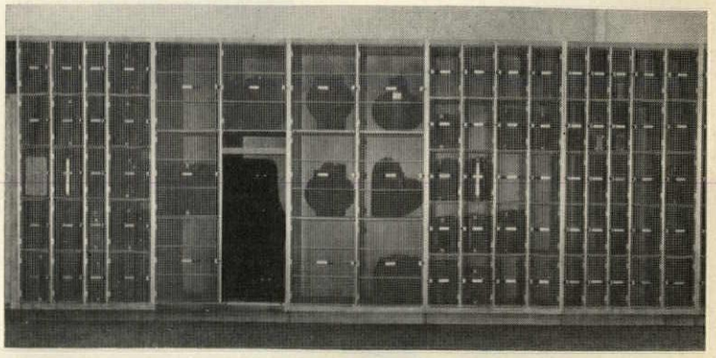
FORUM: *essentially different—for readers... and for advertisers*



MUSIC STORAGE

This handsome array of cabinets fills one wall of a prototype school band room in the new Conn Music Center, Elkhart, Ind., where C. G. Conn Ltd. displays the musical instruments it manufactures. The storage units, known as *Multiplex,* were designed and made by the nearby firm of Mutschler Brothers Co., and they corresponded exactly with the maximum size case for each kind of instrument. There is space on the wall, too, for music and for band costumes, the latter hung in big closets at either end of the instrument cases.

All Multiplex units are made of hardwood with a clear scuff-resistant finish. The doors are metal grilles, their edges bound in rubber to eliminate any noise from banging.

A storage wall roughly twice the size of the one shown, in which 241 instruments and 250 uniforms, hats, and choir robes could be filed away in orderly fashion, would cost about $19,000.

Manufacturer: Mutschler Brothers Co., Nappanee, Ind.

SMALL AIR RIVETER

A new cast aluminum riveting gun from United Shoe Machinery, the *PRG 520 Pop Riveter,* weighs only 3½ pounds, yet it sets rivets of large enough dimension for field erection of curtain walls, installation of duct work, and shop assembly of steel and aluminum panels.

Air-hydraulically powered, the PRG 520 sets rivets of about ⅓- to ¾-inch "grip" (the thickness of the two elements to be fastened), depending on the rivet selected. It costs $145 f.o.b.

Manufacturer: Fastener Division, United Shoe Machinery Corp., Shelton, Conn.

GERMLESS CEILING

A bacteria-free finish, Armstrong's newest addition to acoustical ceilings, is said to reduce the bacteria count by more than 90 per cent, and to be particularly effective against staphylococcus areus. The full name of the new ceiling is the *Armstrong Self-Sanitizing M-90 System.*

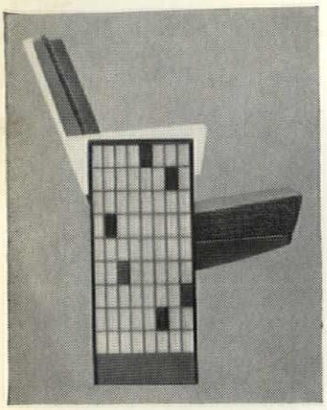
M-90 is a chemical substance in white vinyl latex paint that not only kills bacteria but also prevents their future growth for an indefinite period. In addition to the obvious market for germ-free ceilings in hospitals and medical laboratories, Armstrong expects to sell it to food processing plants, institutional kitchens, cafeterias, and restaurants.

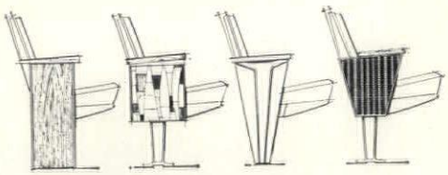
In order to maintain its effectiveness, the M-90 finish must be vacuumed periodically to remove surface dust and dirt, but it does not need to be washed. The new finish is offered as lay-in panels for suspended ceilings in 24 by 48-inch Minaboard and Acoustical Fire Guard Panels, and in 12 by 12-inch squares of Fire Guard Tile. Costs: Minaboard, 40 to 50 cents per square foot, installed; Fire Guard, 60 to 90 cents.

Manufacturer: Armstrong Cork Co., Lancaster, Pa.

continued on page 180

DESIGNER'S CHOICE





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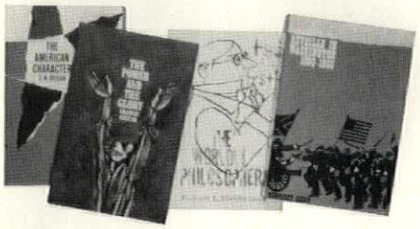

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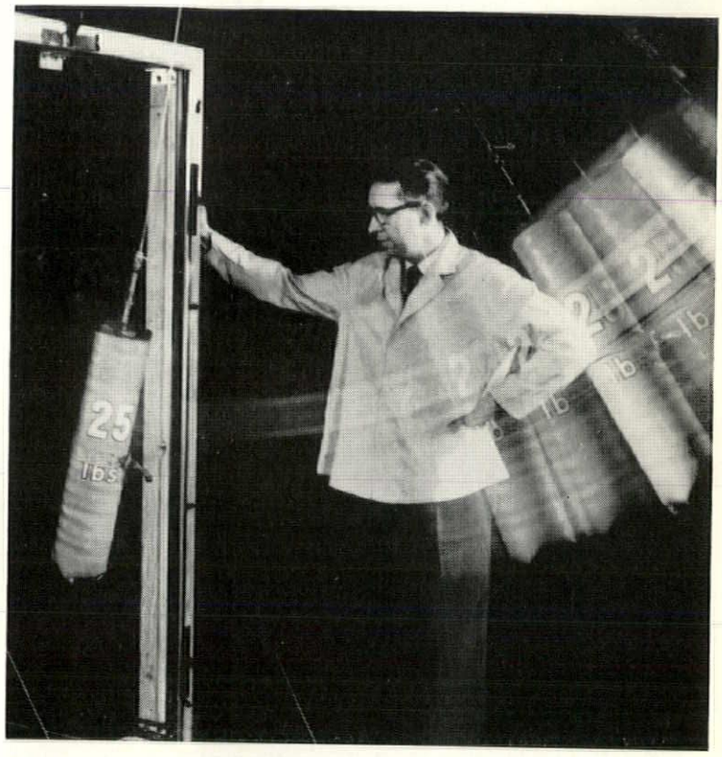


TOUGH, BRIGHT GLASS

The dramatic photograph above demonstrates the impact resistance of *Herculite K,* a new tempered glass from Pittsburgh Plate. By means of a new thermal tempering process in which the glass slides horizontally on a cushion of air instead of being held vertically, PPG produces flatter, stronger glass in thinner dimensions than it has ever made before.

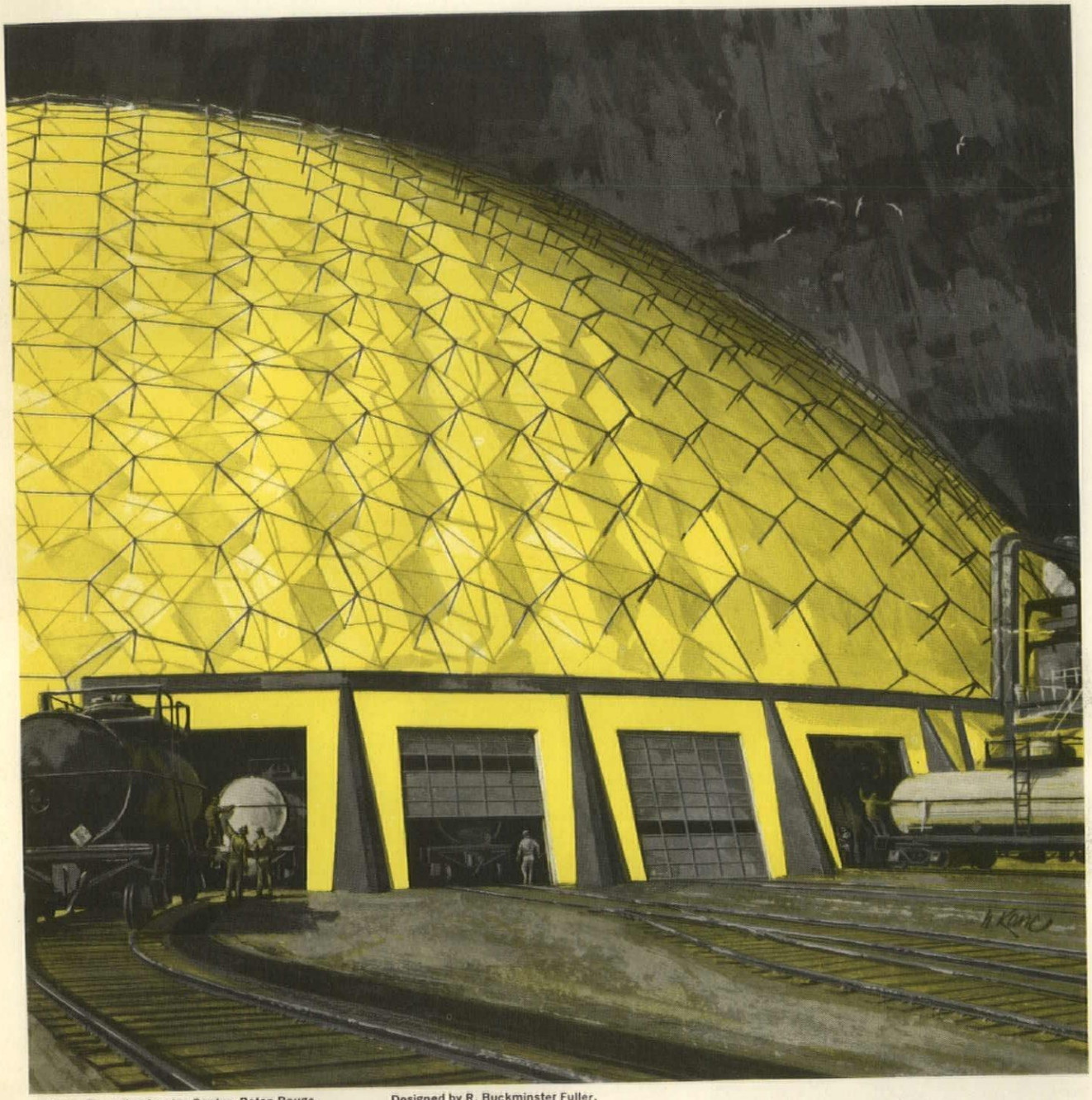
The sample in the photograph, impervious to a 25-pound weight dropped from a height of 8 feet, is 3/16-inch thick, and ⅛-inch sheets soon will be commercially available. Herculite K is intended for sliding doors, school windows, and shower enclosures. Thermal tempering makes it three to five times stronger than regular glass, PPG says, but is no guarantee against ultimate breakage. Should it break, the sheet crumbles into small, comparatively dull pieces to prevent injury. Still thinner glass, Herculite II, has been developed for the F-111 supersonic military fighter; it is only 1/10-inch thick, yet is about ten times as strong as regular glass. Architectural applications have not yet been explored.

Another new PPG product is the first float glass made at a new plant in Cumberland, Md., under license from Pilkington Brothers Ltd. of Great Britain (*Products,* Oct. '62). A sample of the best plate, compared side by side with glass made by the less expensive float process, can't be told apart even by glass men, PPG says, though to the expert eye the float sample has more brilliance than the polished plate. PPG plans to sell it at about the same price as plate on grounds that it is equal in quality. It is available in limited quantities.

Manufacturer: Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 22.

PREVIEW

Reduced costs for concrete construction may result from experiments the U. S. Department of Agriculture is undertaking. Compounds of linseed oil and an emulsifier, sprayed over fresh concrete, form a film that prevents water from escaping as fast as it does in untreated concrete, allowing time to develop to full strength. The same spray treatment works on cured concrete to prevent spalling and scaling. Linseed oil compositions developed by William L. Kubie at the Northern Utilization Laboratory in Peoria, Ill. are being tested at Kansas State University under a USDA contract. END



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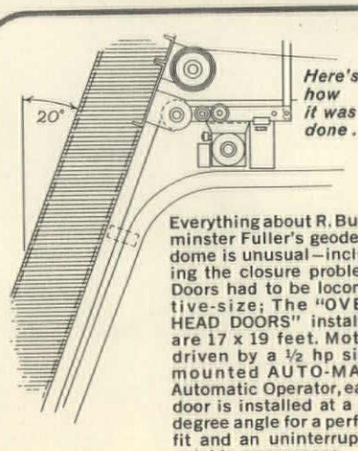

Here's how it was done . . .

Everything about R. Buckminster Fuller's geodesic dome is unusual—including the closure problem. Doors had to be locomotive-size; The "OVERHEAD DOORS" installed are 17 x 19 feet. Motor-driven by a ½ hp side-mounted AUTO-MATE Automatic Operator, each door is installed at a 20-degree angle for a perfect fit and an uninterrupted outside appearance.

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