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the magazine of building

OCTOBER 1956



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NEW YORK CITY

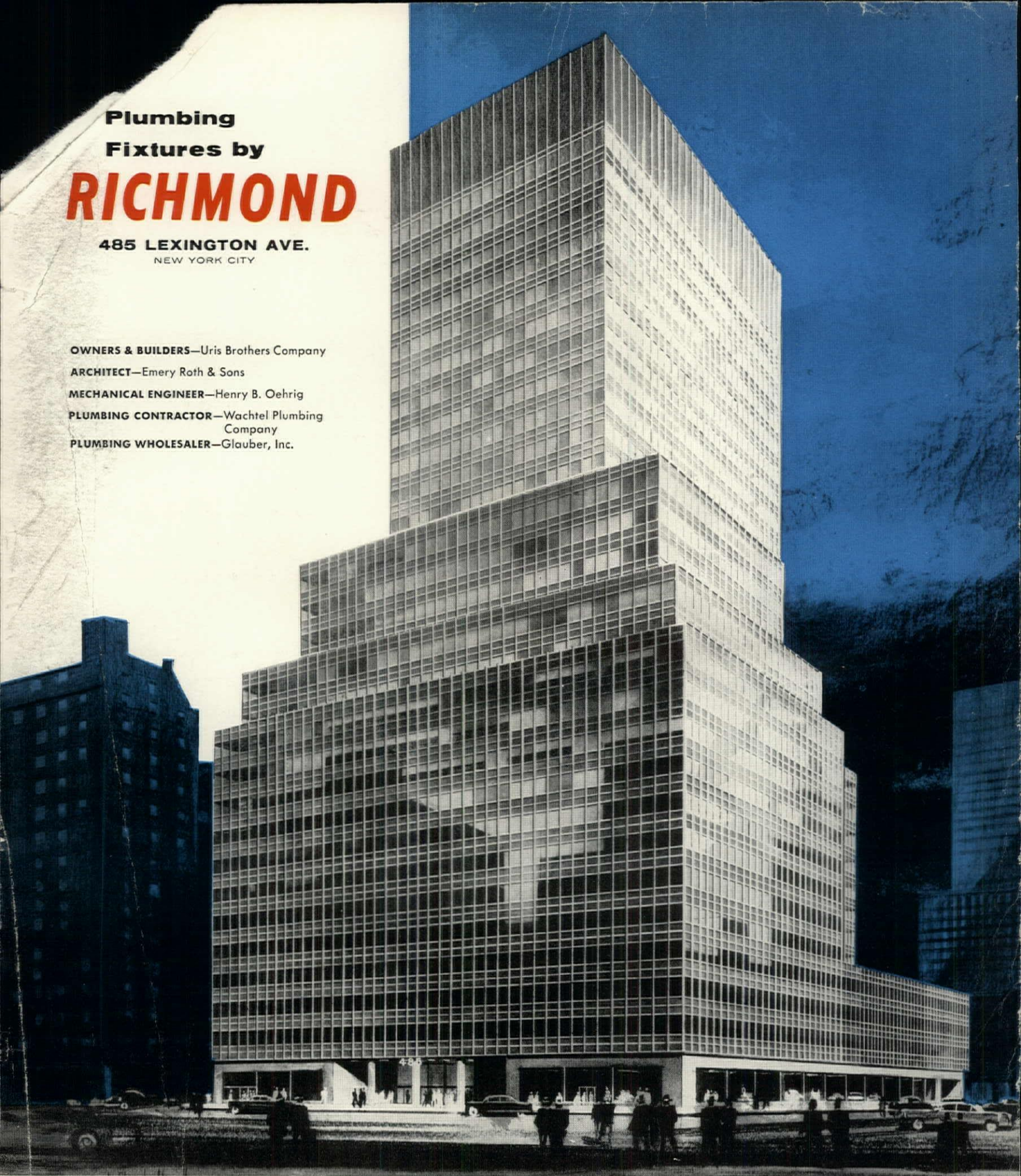
OWNERS & BUILDERS—Uris Brothers Company

ARCHITECT—Emery Roth & Sons

MECHANICAL ENGINEER—Henry B. Oehrig

PLUMBING CONTRACTOR—Wachtel Plumbing
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OCTOBER 1956

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SCHOOL COSTS

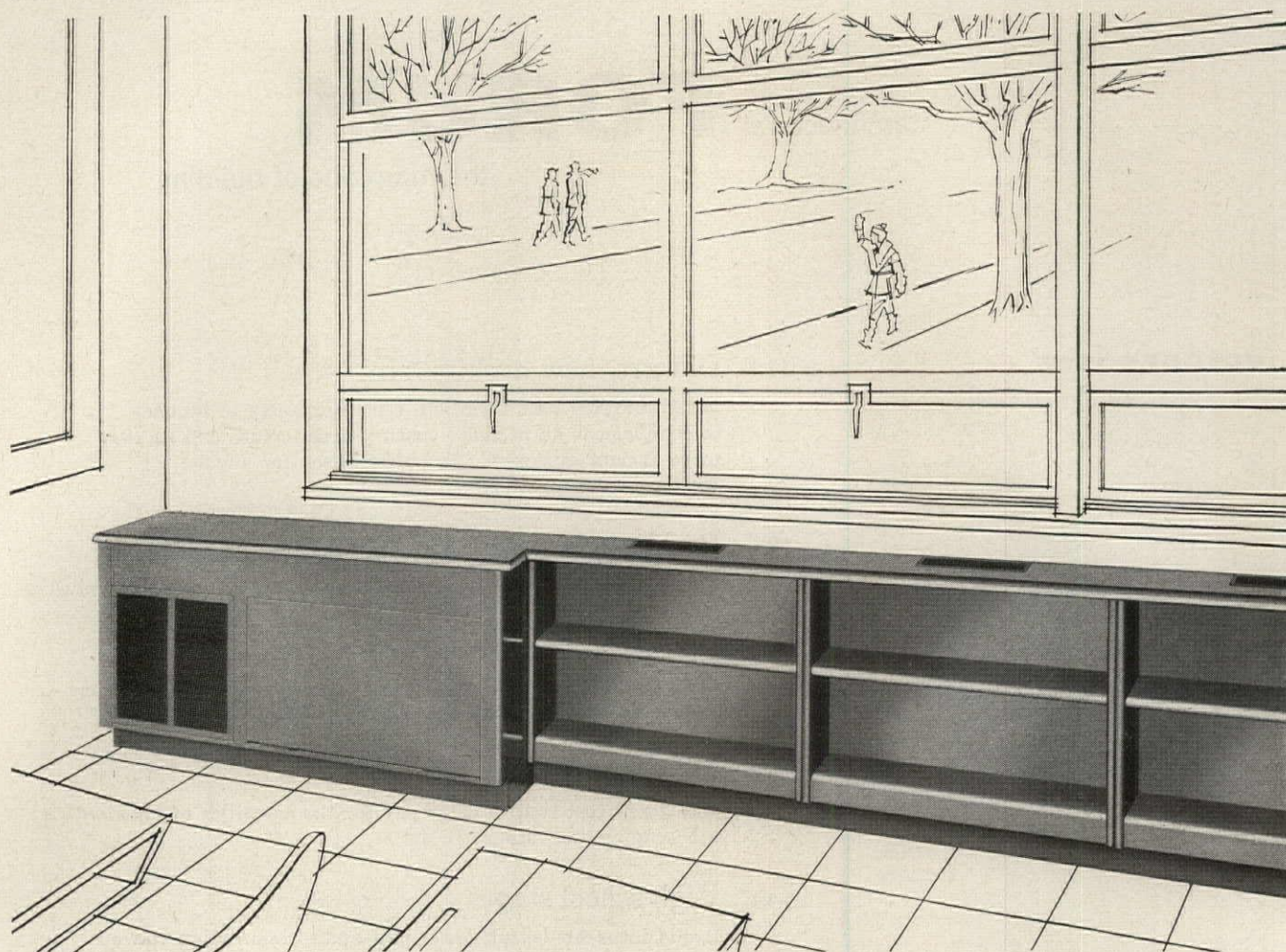
Cover: Children's tile mural in school at Taunton, Mass. The Architects Collaborative, architects. Ben Schnall, photographer

114 Editorial data (including masthead), subscription and advertising data

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VOLUME 105, NUMBER 4

Published monthly by Time Inc.,
9 Rockefeller Plaza, New York 20, N. Y.
Entered as second-class matter
at New York, N. Y.
Subscription price \$5.50 a year
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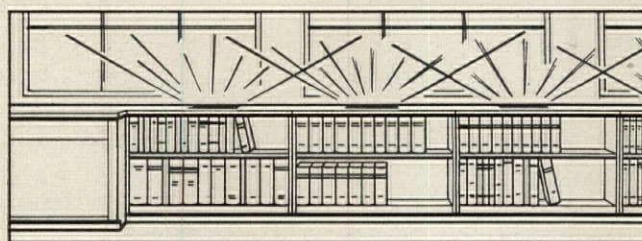
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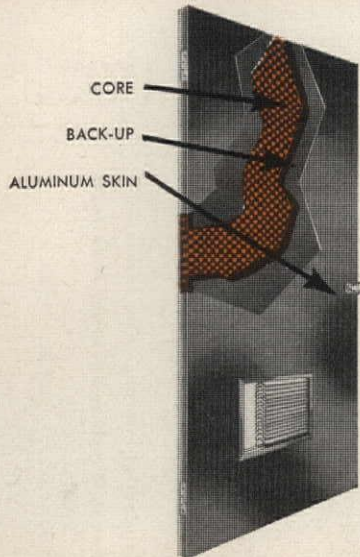
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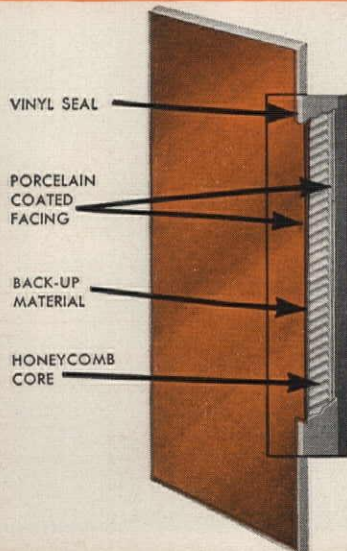
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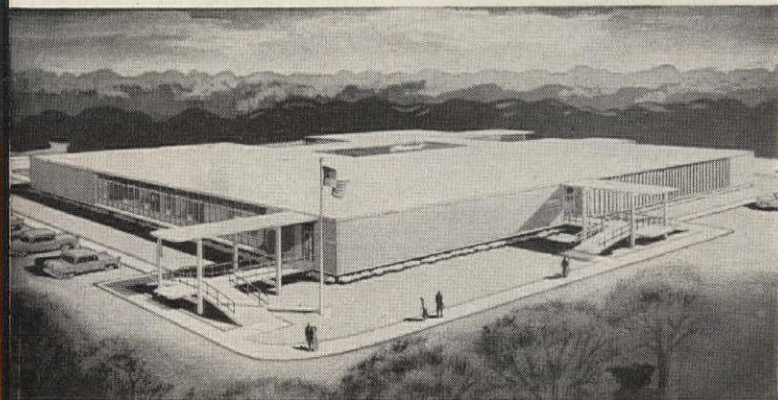
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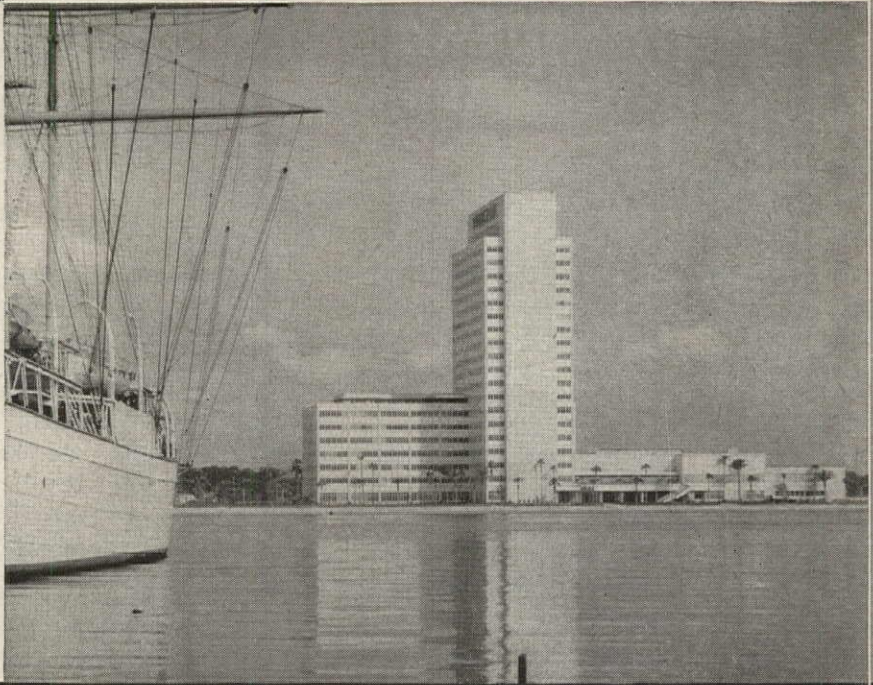
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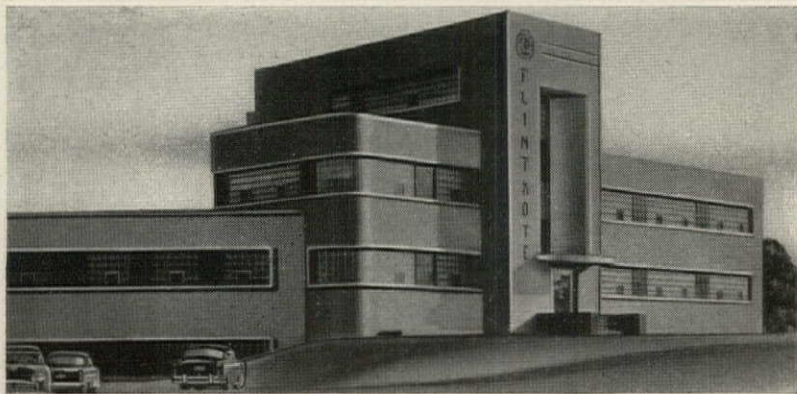
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Magney, Tusler & Setter, Architects

Prudential Insurance Co., Jacksonville
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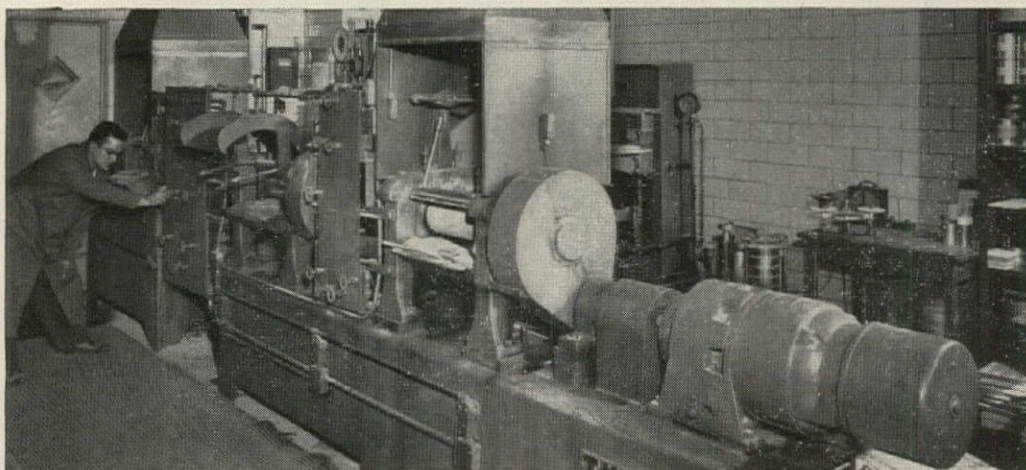




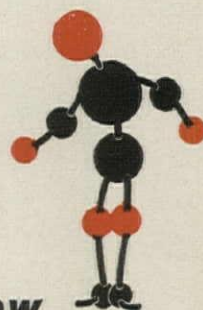


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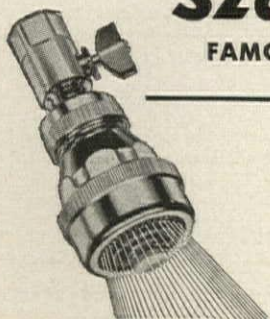
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PUBLIC BUILDING FINANCING

Integration crisis also complicates financing for new Southern schools

Minutes before bids were scheduled to be opened on Sept. 11 for a Davidson County, Tenn., school construction bond issue for \$3 million, to pay a maximum of 3% interest, it was withdrawn from the market. A \$600,000 issue of road and hospital bonds offered the same day by the same county drew six bids, and was sold to yield 2.9%. (This, however, was a higher quality bond, backed by the pledge of additional revenues of Nashville, instead of only county revenues.)

Officially, "tight money" was the reason the 25-year school issue was withdrawn, said county finance officer Judge Beverly Briley, and it will be offered again soon without its 3% maximum yield proviso. (Meanwhile county short term notes will be used to finance continued construction of several schools already under contract that these would have financed.)

Market observers, however, reported that no bids for the issue were in sight, anyway, and it really was withdrawn because of growing difficulty in the sale of many Southern school bond issues as a result of the troubled integration problem. Eastern and Northern bond houses, said observers, have become concerned about the possibility of future bond-payment taxpayers' strikes as an anti-segrega-

tion weapon in some school districts.

A further complication: as soon as Tennessee's legislature convenes again next year, pro-segregation members are expected to press bills to authorize abandonment of public schools to thwart integration. This would cloud still more the market for any new Tennessee school bond issue. Similar bills are under consideration in other states.

Variations on such complications in public school financing were anticipated in a number of Southern states as the start of the new school year focused attention on the integration problem throughout the South. In Virginia, in fact, there also were rumblings of a tax revolt as pro- and anti-integration forces drew their lines. There, however, it took a reverse twist. Segregationist Governor Stanley was urging enactment of state laws to withhold state education funds from communities that integrate their schools, either voluntarily or under federal court order. In retaliation, integration advocates hinted that they were considering a taxpayers strike—not over school taxes, but withholding their state income taxes if the legislature adopted any measures contrary to the principle of US Supreme Court integration rulings.

WASHINGTON REPORT

FHA '220' regulations still delayed; building becomes campaign issue

Long after FHA had issued revised regulations for all its other programs under the new Housing Act amendments, it still lagged in producing those for Sec. 220 urban renewal rental housing projects. As FORUM went to press, no agency officer would give any official statement on when they might be forthcoming, or any explanation for their delay.

Around the agency there were scowls over reports in the press that the regulations might deny apartment builders the 10% profit and risk allowance included in the new amendments, instead authorize only a sliding scale of allowances of lesser percentages (AF, Sept. '56, News). By latest accounts, the "sliding scale" plan had been scrapped. If the agency exercises its authority to set some lesser rate on Commissioner Norman Mason's certification that 10% would be "unreasonable," the reduced rate will apply universally to all new Sec. 220 projects. Now the great stumbling block to issuance of the regulations is reported to be what "overhead" allowances to give builders.

With Presidential Candidate Adlai Stev-

enson preparing to issue a series of comprehensive "reports," including one on the problems of "rebuilding of cities," observers speculated whether he would discuss the Title I program and the longstanding difficulties over Sec. 220 mortgages.

Hall denies contract charge. As the election campaign got into stride the Democrats took the offensive and produced the most initial headlines. On a serious note, Congressman Jack Brooks (Dem. Tex.), chairman of a House government activities subcommittee, released a report asserting that Republican Chairman Leonard Hall had given political "clearance" for a \$43 million government contract as part of the \$100 million expansion of the GSA operated Nicaro nickel plant in Cuba. This was recorded, said Brooks, in a memorandum of Randall Cremer, former executive vice president of the Frederick Snare Company, impounded by the subcommittee. In this memo it was stated that James P. Pinkley, a GSA official, had told Cremer that Hall's "clearance" was essential. It also described a purported meeting of

Cremer and Hall at which the GOP chairman "asked for information re support of the party." Eventually Snare was awarded the contract in a joint operation with Merritt, Chapman & Scott. Hall promptly denied the assertions of the Brooks report, saying: "I can't help what anyone writes in his personal diary. I have never cleared any contract, big or small, for work with the government. Any suggestion that I did is pure bunk."

On a lighter note, Democratic Candidate Estes Kefauver borrowed (and garbled) modern housing design for idiomatic purposes in one of his major addresses. Complaining that the White House had not been open to everyone equally under the present administration, Kefauver said: "The Republicans have run it as if it were a *split-level rambler*. During the election season, they let the voters in on the lower level . . . and on the upper level, the preferred citizens, the men of wealth and the great corporate managers confer and decide in isolated splendor."

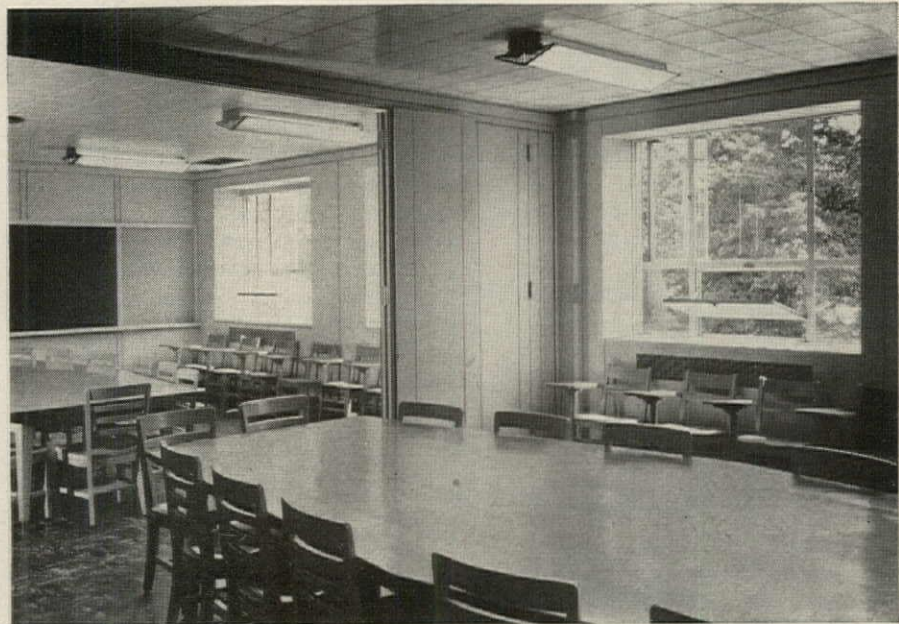
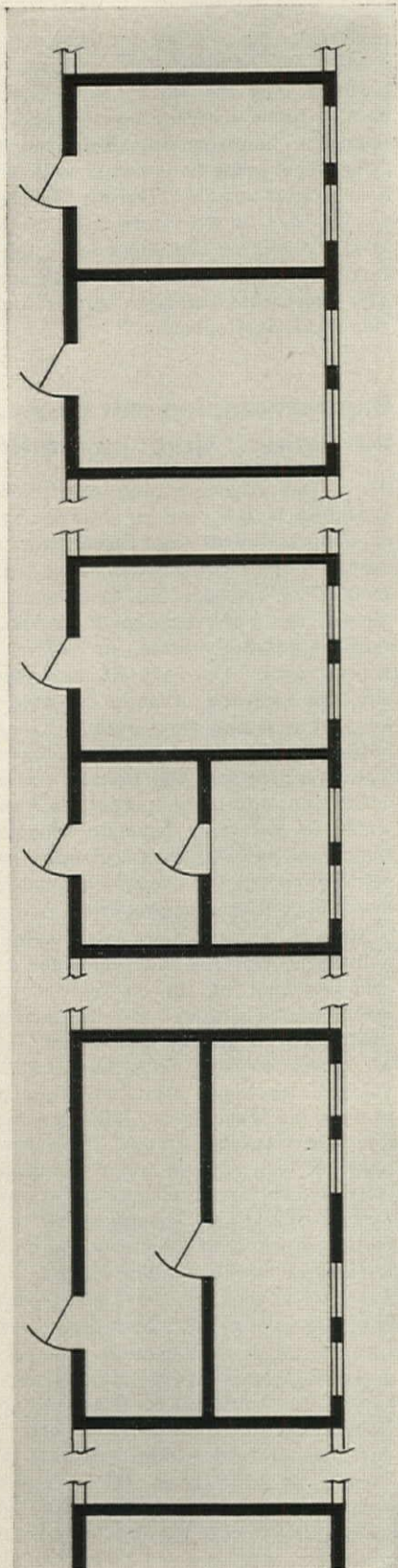
Capital rezoning row looms; Ike vetoes "spot" exemptions

As a last resort, zoning exemptions in Washington, D.C. can be obtained by Act of Congress. President Eisenhower, however, has opposed legislated "spot zoning." In 1953 he vetoed a bill that would have allowed the modernization of two nonconforming gasoline stations in District residential areas. On July 31 he vetoed a similar measure that Congress had adopted a second time over the repeated objections of the District's Commissioners. The President said the District has about 5,000 nonconforming properties, and it would be unfair to legislate benefits for individual parcels; such legislation would set a precedent for exemption appeals for every nonconforming property.

Meanwhile the District was heading into a lively controversy over plans for a general overhaul of its 35-year-old zoning ordinance. "Tentative" revisions and maps drafted by Planning Consultant Harold M. Lewis, of New York, have been provoking objections from many property owners, the Washington Building Congress and other business groups. These preliminary recommendations would establish off-street parking requirements downtown and tighten height, lot coverage and density regulations in both downtown and outlying commercial areas. Builder Morris Cafritz has claimed they will drive many prospective tax-paying downtown improvements into Maryland and Virginia suburbs and specifically block a \$15 million hotel and three office buildings costing another \$13 million in a junior Rockefeller Center type development he has been planning in the Temple Heights area. After reviewing public reaction to the "tentative" plans, Lewis will submit his final recommended ordinance revisions and maps to District officials Nov. 9. Last month, after the

continued on p. 12

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National Capital Planning Commission also had registered its opposition to the stringency of some of the Lewis proposals, it was reported that his reviewed-and-revised recommendations were being considerably "watered down." If not, real fireworks are expected next winter, when these specific proposals come up for public hearings and formal adoption.

Peelle Co. settles tax suit, will pay US \$900,000

After a three months' trial in New York federal court, the Peelle Co., of Brooklyn, N.Y., and Richmond, Ind., manufacturer of moving stairs and fireproof doors, agreed to make a payment of \$900,000 (against a government claim for \$953,000) for unpaid US corporation taxes, interest

and penalties for 1945 through 1949. Tax officers charged that the company defrauded the government through secret bank accounts, fictitious expenses and inventory devaluation.

Inquiry into the Peelle firm's tax deficiencies followed indictment of two of its former top officers for personal tax evasions in Feb. 1954: Secretary-Treasurer John W. Peelle, 68, who was fined \$7,500 and given a 30-day penitentiary sentence after pleading guilty to cheating the government of \$24,498 over a three-year period, and retired President Henry E. Peelle, who was declared "mentally incompetent," entered an institution, after being charged with evading personal taxes totaling \$494,685 during a similar period. Neither man has been active in company affairs since 1950.

URBAN RENEWAL

LA sets renewal examples; favors 'clearance' for large downtown area

Usually regarded as the nation's youngest and growingest major city, Los Angeles also has been setting examples for many older cities as a leader in bold and comprehensive urban redevelopment and modernization.

In June, for instance, its voters by almost a 5-to-1 majority approved a \$59.7 million bond issue for a vast airport improvement program. Following on preliminary plans by the architectural and engineering firms of Pereira & Luckman, Welton Becket & Assoc., and Paul R. Williams, the city will spend about \$49.6 million for a huge new passenger terminal complex on a 228-acre expansion of International Airport, about \$10 million

for improvements for its San Fernando Valley Airport, and more than \$500,000 for a network of heliports.

Rehabilitation vs. clearance. Last month, after considerable debate, the City Council faced up to making a major policy decision in a situation that poses a dilemma for many older cities: rehabilitation of declining and blighted areas, or their clean-sweep clearance and replacement with comprehensive, large-scale modern projects?

In this instance the council finally voted, 11-to-2, to give the green light to clearance and reconstruction, advocated by

the city's planning department and Community Redevelopment Agency, rather than rehabilitation, advocated by former NAHB President Fritz Burns and realty interests who have opposed public housing and federal subsidies for local redevelopment programs.

The project at issue involved the rectangular 136-acre Bunker Hill area, flanked by the city's growing Civic Center on one side, the central business district on two sides, and a freeway on the other. "Tentative" plans for the redevelopment agency prepared by the Pereira & Luckman and Becket offices and the Donald R. Warren Co. (see cut) contemplate reincarnation of this semi-slum, mostly-residential area as a \$150 million business, hotel-apartment and cultural trade and convention center. Under federal Title I provisions, the city would contribute about \$9 million and the US \$18 million to cover the writedown loss on resale of the site to private developers. On completion, the redevelopment agency estimates, the project would yield the city about \$1.7 million in taxes every year, compared with present revenue of about \$332,000.

At a number of hearings, the last one extending over three days, owners of some parcels in the area objected to the clearance proposals, insisted rehabilitation could save the area and eliminate the need for mass condemnation. When the council formally voted to approve the "tentative plan" on Sept. 6, it also ordered the building department to survey 300 structures in the area and report on the feasibility of a rehabilitation program. This looked mostly like a mere gesture, however. The principal effect of its main action was to authorize the redevelopment agency to contract for final plans and proceed with City-US Title I grant negotiations for the redevelopment—hardly a sensible or prudent action if it seriously entertained any idea that it still might order rehabilitation instead of redevelopment.



BUNKER HILL redevelopment in Los Angeles, in tentative plan, would have three main groupings of apartment buildings, commercial and office structures, and a cultural trade and convention center, each with its own elevated central plaza spanning depressed streets.

County music center. After many unsuccessful efforts to persuade the city or Los Angeles County to build a large convention auditorium and music center, a number of civic organizations were making much more progress this year with a plan for private, non-profit construction of such a \$50 million project with only nominal county government support.

In June, the Arthur D. Little Co. of Cambridge, Mass. (hired because it was far enough removed to assure impartiality), completed a location and general plan study for such a center under a \$185,000 contract with the County Supervisors. For this study the Little office had Boston Architects Shepley, Bulfinch, Richardson & Abbott draw schematic building plans, but when the project materializes local architects will probably be chosen to design each structure, possibly through competitions.

The County Supervisors approved the proposals in the Little report, and also contracted for this firm to make some supple-

mentary cost, parking and technical studies, and likewise agreed to pay for an appraisal of the large, 8-block recommended site estimated to cost \$15 million.

Charles S. Jones, president of Richfield Oil, is president of the private citizens' non-profit corporation that has been formed to acquire the property and build the project, which would then be leased to the county. Mrs. Norman Chandler, wife of the publisher of the Los Angeles Times is chairman of the board.

Los Angeles to vote Nov. 6 on height-limit repealer

By a 12-to-2 decision, the Los Angeles City Council last month had decided to put to public vote on Nov. 6 a proposed city charter amendment that would repeal the city's 150' (13-story) building height restriction and allow unlimited heights so long as total floor area does not exceed 13 times site area. The current requirement for one parking space for every 1,000 sq. ft. of floor area for commercial buildings would remain in force, but any parking area within a building, even above the ground floor, would not be counted in computing floor area-site ratios.

Officials of the City Planning Commis-

sion, who approved the referendum subject to the floor area-site ratio provision, expect many 20- to 30-story buildings may be erected if the amendment is adopted, but few higher than that, because of uneconomical construction and operating costs. (Earthquake safety was a factor in the 20's when the 150' limit was adopted—although just a few years later the city itself erected its 27-story City Hall. At hearings on the proposed change, architects and engineers pointed out that modern design and construction can now produce earthquake resistant buildings of virtually any height.)

The Los Angeles County Planning Board has approved a proposed ordinance along the same lines for county areas not a part of the city, but county supervisors will probably wait for the outcome of the city referendum before approving it.

Early this year, however, the council of Beverly Hills, entirely surrounded by Los Angeles, rejected a report recommending approval for ten-story instead of maximum four-story construction in that community's business district. Although buildings would still have been limited to a four-to-one floor area site ratio, the Beverly Hills council felt the construction of higher buildings would increase "the intolerable traffic situation."

LABOR

Union's boycott costs, fighting Kohler, pass \$8.5 million; no settlement seen

For its intensive nation-wide boycott against Kohler Co., Wisconsin plumbing manufacturer, started 13 months ago, the United Auto Workers union has already spent a staggering \$8.5 million and may spend millions more. Added FORTUNE, sister magazine of FORUM, after a look last month behind the scenes of this bitter, marathon dispute that started two years ago last April: "How much loss each side is prepared to take is not known. Each seems determined to go to the bitter end."

Rarely has a boycott been run on such a scale. The union's widespread "merchandising" program to persuade people not to buy has included radio and direct mail advertising, a full-time national "sales manager" and 12 full-time "salesmen" in territories that roughly parallel those of the Kohler sales organization. The main stumbling block encountered by the UAW, explains FORTUNE, has been the fact that "in the plumbing-supply field it is not the consumer, but the builder, the architect, or the plumbing contractor who usually has the say as to which company's products shall be specified."

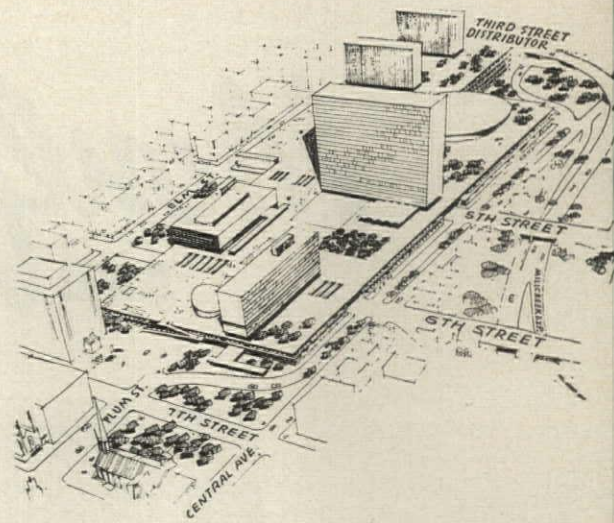
Other unions have tried to help the UAW as much as possible. But as President Peter T. Schoemann wrote to all plumbers' union members at one point: "You as an individual can help the Kohler workers by requesting your employers, friends and the purchasing public . . . not to purchase Kohler wares and equipment. I caution

you, however, that during the course of your employment you must handle and install all Kohler products. If you should refuse . . . such actions would be a secondary boycott in violation of the Taft-Hartley Act and other state laws. Likewise, you cannot and must not request employees of other employers not to handle and install Kohler products during the course of their employment."

The union claims Kohler production has been cut 40%, but the company says its business is close to normal. To prove its case the company, in June, took through its plant three trainloads of members attending the Milwaukee convention of National Assn. of Plumbing Contractors.

Kohler claims to have about 2,800 non-strikers at work, compared with about 3,300 workers before the strike, many of them on overtime. It also says it sells everything it can make, and earned more last year than in the strike's first year.

UAW, the nation's No. 1 union, would like to back out gracefully from the strike. Yet, if it admits defeat, it fears that some other management might be encouraged to get as tough as Kohler. Whatever happens, the boycott will leave both company and workers poorer, and a settlement will leave many unemployed (Kohler has taken on hundreds of new workers since the strike began). Admitted UAW's Donald Rand: "Even if we win, we lose."



CINCINNATI POST

Cincinnati studies plans for 8-block civic center

A new eight-block civic center for Cincinnati on a vast elevated, landscaped mall has been proposed in the City Council by City Charter (majority) members. It would stand two and three stories above street level and provide streets and parking space for 8,000 autos underground.

Four of the eight blocks are in a large slum clearance district just west of the downtown area. After a \$450,000 federal planning grant for the slum area is obtained, it is proposed to coordinate the new civic center into the total plan, and thus make it, too, eligible for federal Title I funds to help defray land costs.

In the preliminary plan above, prepared by Architects John A. Burdick and Otto Bauer-Nilsen, the center foreground building would be a new City Hall, and above it to the left a State Office Building. The large central tower would be a Federal Building, and the flat circular structure behind that a convention hall. Beyond that are two proposed private office buildings that would overlook the Ohio River.

Highway phase of Gruen plan adopted by Ft. Worth council

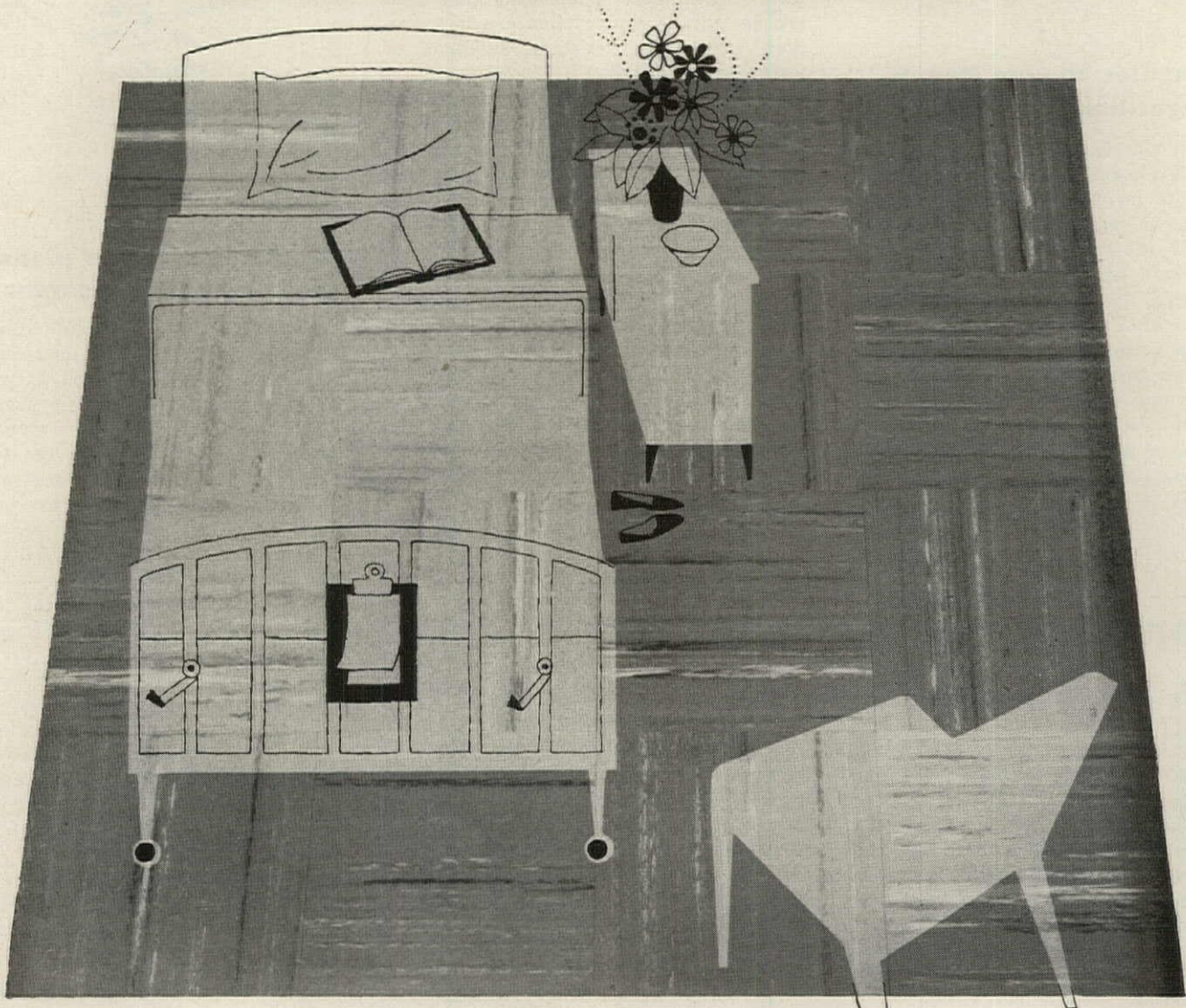
The plan for diverting traffic in downtown Ft. Worth, prepared by Architect Victor Gruen (AF, May '56) won official City Council approval on Sept. 20, only six months after its original public presentation. Council members unanimously approved a resolution making the traffic recommendations of the plan a part of the city's official highway system program, thus paving the way to have its downtown loop freeway adopted as part of the state's highway system, too.

If approved by state highway officials, the expressway portion of the redevelopment plan would be virtually assured of success, because the state would then provide almost \$22 million for its construction, and the city would only need to meet the estimated expense of about \$19.3 million for right-of-way costs. Action on the proposal was expedited by the city

continued on p. 17

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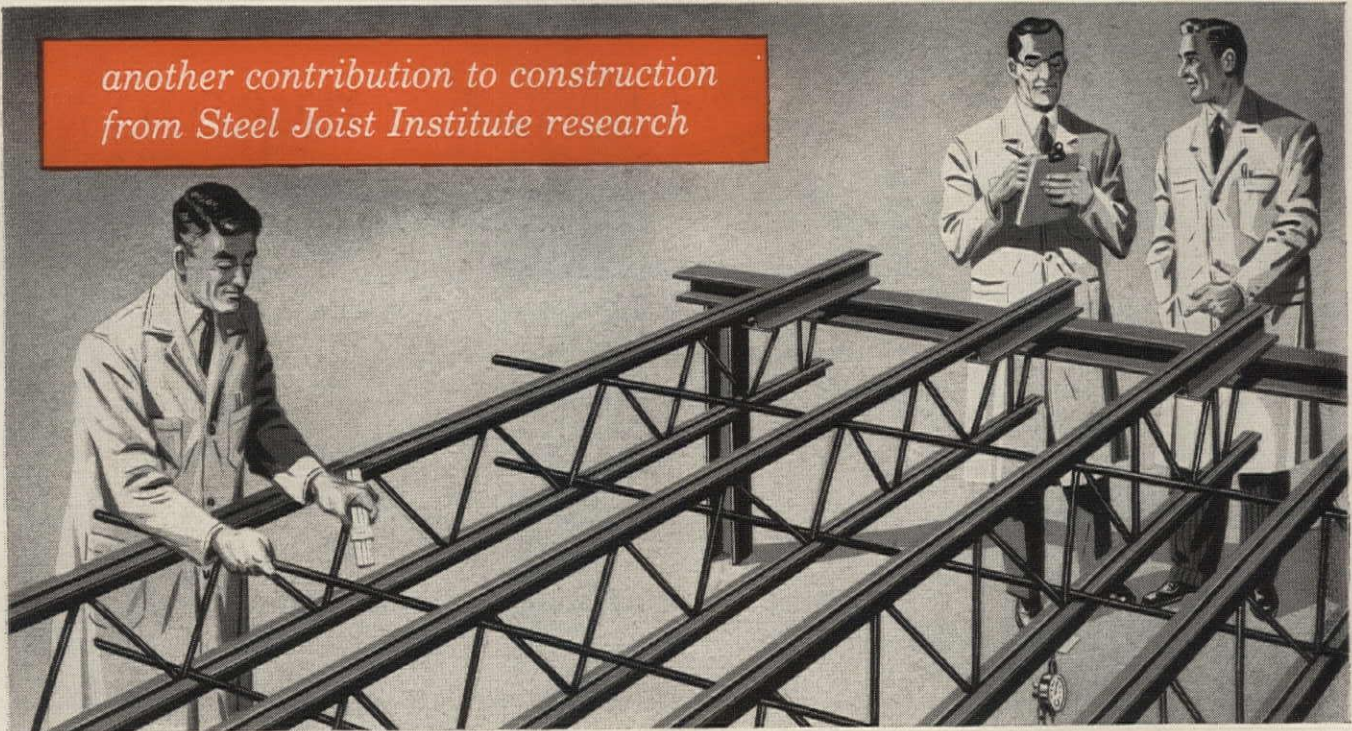
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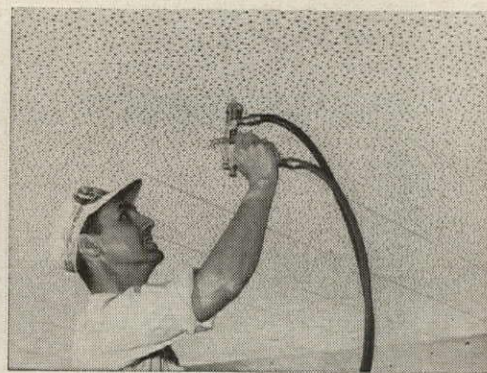
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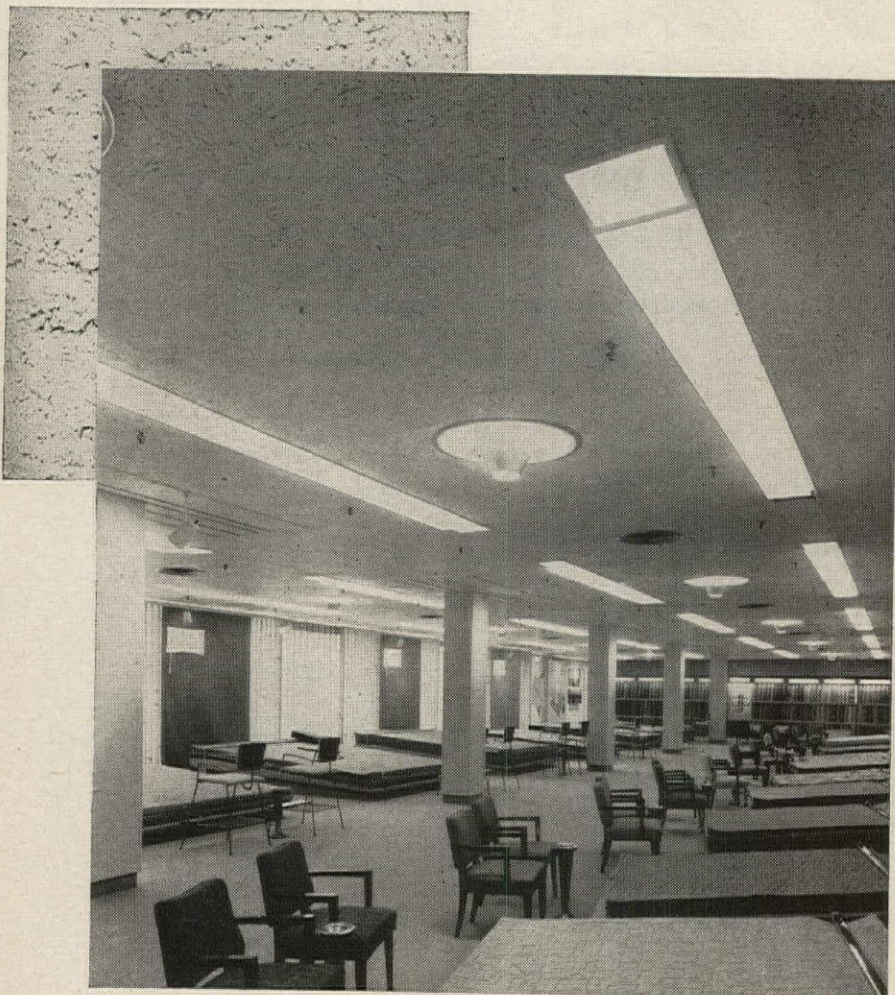


Vacuum cleaning with conventional attachments helps to keep Armstrong acoustical materials clean and new looking. A cloth slightly moistened with soapy water, or wallpaper cleaner, can also be used to remove most smudges.



Spray painting, using thin coats of oil-base paint, will not reduce the efficiency of Armstrong materials. Care must be taken to coat all bevels, perforations, and fissures. Materials can also be brush-painted, using a regular 4" brush.

MAINTENANCE . . . Do acoustical materials create cleaning or painting problems?



Clean, good-looking ceilings of Armstrong Travertone are vital to this showroom's distinctive décor. Simple, occasional maintenance keeps most noise-quieting ceilings smartly attractive for many years.

James Lee Carpet Company, New York, N. Y.

Today's acoustical materials generally require no more frequent or costly maintenance than ordinary painted ceilings. All Armstrong acoustical materials, for example, have smooth, pre-painted surfaces that can be cleaned or repainted as often as necessary without losing their noise-absorbing properties. Once installed, they become a permanent part of the building, need only occasional care.

When upkeep does become necessary, however, proper methods must be followed. Loose dirt should first be removed from the ceiling by vacuuming, with the nozzle drawn across the material in only one direction to prevent rubbing dust into the surface.

Smudges or clinging dirt can be removed by a slightly moist cloth, dampened in water and soapsuds. To keep moisture out of the backup pads in metal-pan materials such as Armstrong Arrestone, water and soapsuds should be applied with a sponge. Wallpaper cleaner or artgum is also ideal for wiping smudges from materials like Armstrong Cushiontone and Travertone.

All Armstrong sound-conditioning materials can be repainted by either brush or spray gun. Care must be taken, however, not to bridge or close up the noise-trapping perforations or fissures. Thin coats of a good grade flat oil paint are recommended.

For full maintenance data and other information on all acoustical materials in the Armstrong line, call in your Armstrong Acoustical Contractor. He can give you expert help in selecting the right acoustical material for any sound-conditioning job.

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council so Ft. Worth leaders going to a conference with state highway officials in Austin the next day could initiate their dealings with the state department that much sooner. State study and review

might take considerable time, but if state acceptance and funds are won, Ft. Worth civic leaders backing the plan anticipate clear sailing all along the line for further aspects of the redevelopment plan.

nonbearing spandrel or panel walls of incombustible material will be allowed, with openings as large as 70%, without any prescribed fire-resistance rating, for walls facing a street or open space at least 50' wide, or at least 30' from a party line; facing a street at least 40' wide, or 20' to 30' from a party line they must be at least one-hour fire resistive. When at least 10' but under 20' from a party line, openings cannot exceed 40% and fire resistance must be at least two hours; when more than 3' but less than 10' from a party line, openings must not exceed 20%. At 3' or less from a party line, no openings are allowed and fire resistance must be increased to three hours.

DESIGN

Wright sketches 510-story office tower, round, blue-roof Greek Orthodox church

Only a youthful, figuratively athletic architect could match the increasingly imaginative, accelerating pace being set this year by Frank Lloyd Wright.

Eighty-seven years old last June 8, and his vigor, travels and unusual projects all multiplying with his years, the Master of Taliesin casually announced a month ago a plan for his most staggering building ever: a Chicago office tower rising a mile high beside Lake Michigan. Nor was he spoofing, he insisted. He has sketched rough plans for such a 510-story, 5,280' structure for a prospective client, and is convinced such a "perfectly scientific, perfectly feasible" building could be erected—anytime anyone really decided to back it with the necessary financial wherewithal.

In a few weeks he would describe the proposed "cloudscraper" more fully, said Wright. A likely occasion: a dinner in Chicago on Oct. 17 to celebrate his 65th year as an architect and to launch the Frank Lloyd Wright Endowment Fund. Headed by Cary Caraway, a former Taliesin student now associate architect of the University of Illinois, this fund is endeavoring to raise \$4 million to carry on the Taliesin school founded and operated by Wright since 1932.

Tower apartments. More plausible, and more likely to materialize much sooner was another proposed FLLW Chicago tower announced in August. This would be a 50-story luxury apartment with glass and aluminum walls on floors cantilevered out from a reinforced concrete core. It would be 625' high, or 20' taller than the Board of Trade, now the city's highest structure. A wealthy investment house executive admitted that there had been discussions on erecting such a building on a site owned by his family, but said nothing tangible has come of them so far.

Wright's circular Guggenheim Museum in New York, and his semi-hexagonal, pyramidal-dome Beth Sholom synagogue in Philadelphia were both going forward this summer (AF, June '56), and last month two more of his unusual buildings seemed likely to move ahead before long.

▶ In Milwaukee, the Greek Orthodox Church commissioned him to prepare final drawings for a circular church with concave auditorium floor and convex roof covered with blue tile (see cut). Main floor aisles would form a Greek cross, and above would be a circular balcony. Last month officials of the church were considering

whether to increase the diameter 4' or 5', which would boost seating from 600 to 800. Construction is scheduled to start next spring, after the church obtains a new site to replace the original one in the path of a proposed expressway. Estimated cost: \$500,000.

▶ In Madison, Wis., a reduced version of Wright's lakefront civic center (AF, Apr. '55) seemed almost certain to be under construction in 12 to 15 months. City Council has approved a contract with Wright to build a \$5.5 million structure including auditorium, exhibition hall, community center, little theater and art gallery, plus boating facilities and parking area. A \$4 million bond issue for the main structure already has been voted, and additional funds will be included in another bond issue.

Philadelphia ready to drop masonry back-up requirements

Approved by the city's building officials and awaiting only formal adoption by the city council last month was an amendment to Philadelphia's building code that would eliminate requirements for expensive masonry back-up behind exterior curtain walls. The impending regulations would automatically allow buildings designed with nonload bearing spandrel or panel walls without obtaining a variance.

Four-hour fire resistance will still be required for all load-bearing walls. But

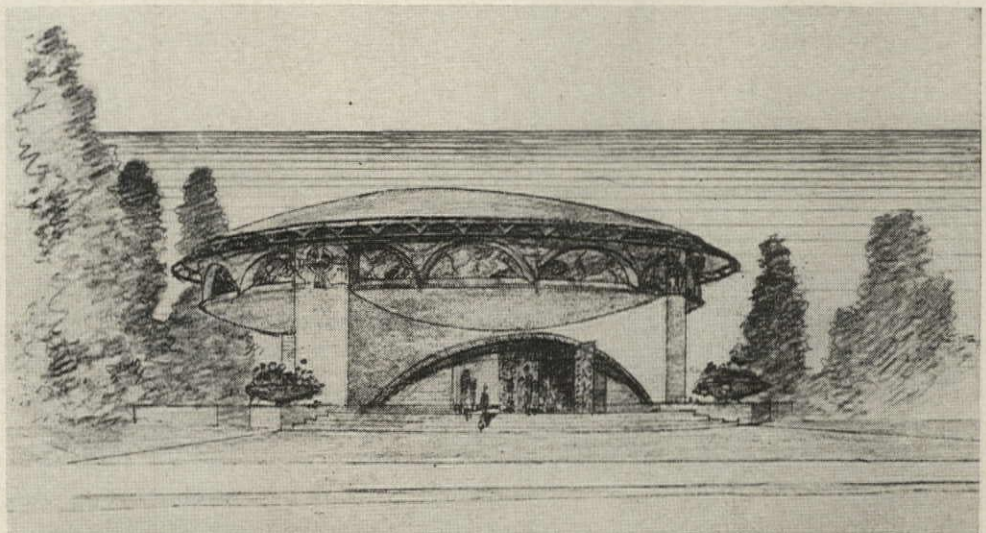
Brunswick awarded \$180,000 for furniture design piracy

Designers and manufacturers pondered last month the significance of a federal court decision that confirmed the validity of design patents on contemporary school furniture of the Brunswick-Balke-Collender Co., of Chicago, enjoined the Kuehne Manufacturing Co., of Mattoon, Ill., from producing any more similar furniture, and awarded Brunswick \$180,375 damages from Kuehne for appropriating and infringing on Brunswick's designs and patents.

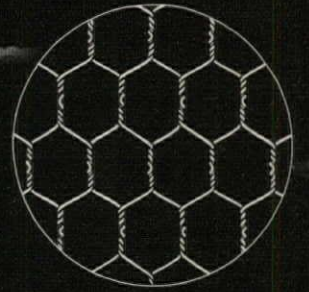
The designs at issue were those for the new classroom and institutional furniture Brunswick introduced in 1953. The patents on it were filed jointly in the names of Industrial Designers Dave Chapman, whose firm is design counsel to Brunswick, and Richard G. Reineman, production staff designer at Brunswick's Muskegon, Mich. plant, where the furniture was first produced. Chapman, former ASID president, received the 1953 Design Award Medal of the Industrial Designers' Institute for his part in developing this "first contemporary line of school furniture meeting today's advances in school training techniques and contemporary school architecture."

Judge John E. Barnes in US District

continued on p. 21

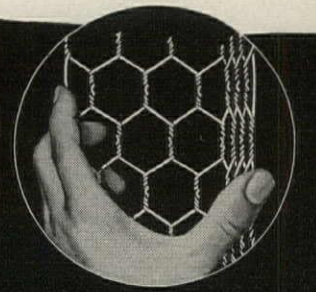


GREEK ORTHODOX CHURCH for Milwaukee by Frank Lloyd Wright. Three nonentrance quadrants between cruciform pedestal will be deep light wells for basement classrooms.

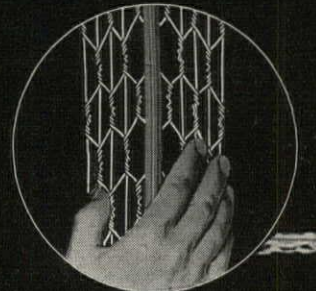


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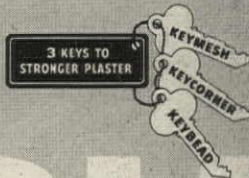


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Before you specify or build again, weigh these facts.

*Fire Test Results on various types of
construction by authoritative Testing Laboratories*

CEILING CONSTRUCTION WOOD JOIST FLOORS	ULTIMATE FIRE RESISTANCE	PROTECTION OF JOISTS
Exposed joists.	15 min.	None
Gypsum wallboard ½" thick finished with casein paint.	25 min.	15 min.
Metal lath, ¾-in. sanded gypsum plaster 1:2 for scratch and 1:3 for brown coat.	45 min.	12 min.
Gypsum lath, ½-in. of gypsum lightweight aggregate plaster reinforced with KEYMESH-type reinforcing lath.	1 hr. 38½ min.	36 min.

WALL CONSTRUCTION ON WOOD FRAMING	ULTIMATE FIRE RESISTANCE
½" fiberboard.	5 min.
Metal lath with ¾-in. sanded gypsum plaster.	15 min.
Tongue-and-grooved wood.	20 min.
¾-in. perforated gypsum lath with ½-in. sanded gypsum plaster.	30 min.
CEILING CONSTRUCTION STEEL JOIST FLOORS	ULTIMATE FIRE RESISTANCE
Ceiling unprotected.	7 min.
Ceiling of gypsum lath and ½" lightweight aggregate gypsum plaster.	55 min.
¾" gypsum lath covered with 1½" of gypsum plaster with lightweight aggregate.	1 hr. 43 min.
Gypsum lath and ½-in. gypsum plaster with lightweight aggregate reinforced with KEYMESH-type galvanized reinforcing lath.	3 hrs. 28 min.
¾" gypsum lath, reinforced with 20-gauge, 1" KEYMESH-type lath; then covered with only 1" of lightweight aggregate gypsum plaster.	4 hrs. 26 min.
STEEL COLUMNS	ULTIMATE FIRE RESISTANCE
Structural Steel, unprotected 10 sq. in. min. area of steel.	15 min.
Gypsum lath, one layer, ¾" perforated, ½-in. gypsum plaster mixed with lightweight aggregate.	1 hr.
One layer ¾-in. perforated gypsum lath, 1-in. thickness of gypsum plaster, 100 scratch, 100 brown, mixed with lightweight aggregate.	2 hrs.
Two layers ½-in. long-length gypsum lath, 1½-in. gypsum plaster mixed with lightweight aggregate. Lath wrapped with one layer 20 gauge galvanized 1-in. KEYMESH-type reinforcing lath.	4 hrs.

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Court in Chicago found that a line of school furniture introduced by Kuehne in 1955 was more like Brunswick's "than any other two lines of furniture that have ever been called to the attention of the court." Testimony had also shown that Kuehne had access to complete specifications and blueprints for the Brunswick line at one time, when Brunswick had requested it to bid on subcontract manufacturing of parts of the line. After the decision, Kuehne made no appeal.

Chapman hailed the court's decision as a milestone in the difficult and trying war against "design piracy"; it was the first time Judge Barnes had ever held a design patent valid. All furniture manufacturers

were not so impressed, however. Kuehne's misfortune, some suggested, was that it was shown it had access to the designs of the Brunswick organization before bringing out a similar line.

California architects advised to use school plan warnings

Last year the California legislature enacted a law providing that "all plans, specifications and estimates" for public schools become the property of school districts, and establishing a duplicate plans pool for the state education department.

Last month the California Council of Architects, state AIA organization, recom-

mended action by all members to protect themselves against possible claims and adverse publicity if damages or dissatisfaction arose out of reuse of their plans on other sites as a result of this law. On advice of counsel, members were informed they should stamp every sheet of the original tracings, and at least the title page of the specification, with a notation that the architect "does not represent that these plans or the specifications in connection therewith are suitable, whether or not modified, for any other site than the one for which they were specifically prepared . . . [and] disclaims responsibility . . . if they are used in whole or in part at any other site."

State Dept. announces five foreign building jobs

Latest foreign building design assignments disclosed by the State Department:

Paul Albert Thiry of Seattle, an embassy in Santiago, Chile.

Anderson, Beckwith and Haible and Campbell & Aldrich, of Boston, a chancery building for Taipei, Formosa.

Keyes & Lethbridge of Washington, an office building for Lima, Peru.

Harwell Hamilton Harris of Austin, Tex., an office building in Helsinki.

The architects Collaborative, of Cambridge, Mass., office building, Athens.

Sherlock, Smith & Adams of Montgomery, Ala., a "reproduction center" in Manila, where the US Information Service will prepare literature and publicity material for distribution throughout southeast Asia.

BUSINESS RELATIONS

Cooperative group in California shows how small offices can obtain big jobs

In fertile southern California last month a cooperative of small architectural offices, organized to handle the larger and richer projects none of them could hope to land individually, was busy on its first job.

The job would be a \$500,000 to \$750,000 remodeling and expansion of the San Pedro Community Hospital. Its company of talented designers, Project Architects, was composed of Maynard Lyndon, who serves as chairman, Dean Arthur B. Gallion of the USC school of architecture, A. Quincy Jones and Frederick Emmons, Douglas Honnold, John Rex and Raphael Soriano, who maintains an office in Los Angeles as well as in San Francisco. Structural Engineer Dick Bradshaw is also an associate.

Seeds for Project Architects were sown about two years ago in informal conversations among members, and the group was formally organized about a year ago. The factors that brought about the union were simple, Dean Gallion explains: "Small firms want to get big work, but want to remain small to retain their individuality and identity and don't want to be swallowed up. But obviously they can't cope with big jobs."

Each office of the loosely consolidated combine continues its regular practice, but when an attractive big job appears on the horizon they all go after it together. Some of those they sought before landing the San Pedro Hospital included the Los Angeles airport expansion program and the San Fernando Valley Presbyterian Hospital.

One of Project Architects' big selling points is the attention the principals in the firm can give to any job, says Dean Gallion. "This pleases those clients who are always afraid the principals of large firms engaged in numerous projects all the time will delegate their jobs to subordinates," he explains. The San Pedro job, he points out, had three principals of Project Architects at all the meetings with the hospital board, and two princi-

pals have been engaged with it steadily since the job started.

And how to account for Dean Gallion's membership in the cooperative, inasmuch as he is not a practicing architect? He was involved from the start because the original discussions took place in his office. He also feels that he is in a good position to sell the idea to clients, and that Project Architects can help the USC school of architecture. Its students will be engaged for some of the work they can handle, he explains, thus giving them "a chance to work with experienced architects."

Fire hits big design office, but hardly interrupts work

A devastating office fire left Architects Harrison & Abramovitz and staff undaunted, unperturbed and scarcely interrupted last month.

About 8:40 p.m. on Wednesday, Sept. 5, a cleaning woman discovered a blaze of unknown origin in the drafting room of the New York firm's second floor quarters in the International Building in Rockefeller Center. Soon seven pieces of fire-fighting equipment were on the scene, and firemen, who entered through the windows,

fought a 60-minute battle against burning drawings, drafting tables and other architectural office trappings.

Thursday morning the entire staff rolled up its sleeves to salvage whatever could be recovered from the shambles, before work crews started a rapid dewatering and repair job. By the following Monday morning, everyone was back designing and drawing as usual, although still sharing their quarters with painting and fix-up squads.

Many valuable blueprints, tracings and drawings were completely destroyed. Some charred papers were recopied by a special photo-tracing process; in other cases duplicates were made by recalling blueprints from contractors.



FIRE-WRECKED DRAFTING ROOM ON THURSDAY; EVERYONE AT WORK THERE AGAIN ON MONDAY

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Remarkable New Hides Completely

NEW **multi-vent** TROFFERLITE[®] THE DUAL PURPOSE FIXTURE WITH **8** OUTSTANDING ADVANTAGES

FOR ARCHITECTS . . .

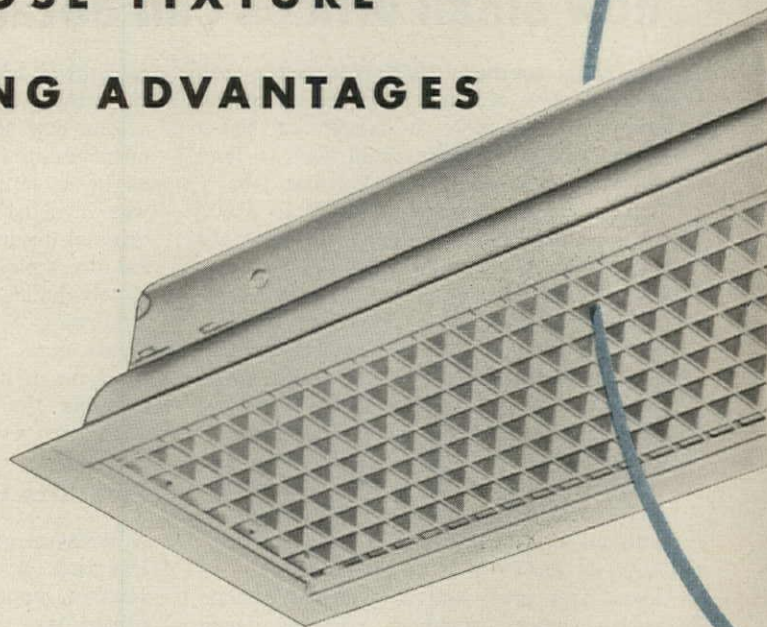
Insures clean functional ceiling design.

FOR ENGINEERS . . .

Simplifies planning.

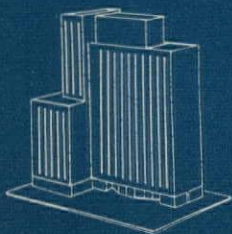
FOR CONTRACTORS . . .

Simplifies field installation.



1. Air is gently diffused downward using pressure displacement principle, instead of high velocity air injection. Results: *draft-free* air conditioning.
2. Fewer fixtures and fewer installations needed, because air diffuser and illumination are in the same fixture. Big savings!
3. Temperatures remain uniform throughout the room. The pressure displacement principle simplifies field balancing.
4. Makes in-progress or after-completion changes easy and economical, with little inconvenience.
5. No dirt smudges on adjacent ceiling materials.
6. Partitions can be moved without interfering with air conditioning efficiency. There is no "throw" or "blow" because air is gently diffused downward.
7. Clean ceiling design . . . only the modern light fixture shows in the ceiling . . . no air diffusers. Highly efficient units provide control illumination for any lighting situation.
8. Concentrate air conditioning where you need it, over "hot" spots (where people or machines are concentrated). Conversely, where minimum air conditioning is needed, fixtures can remain unattached to air duct, or shut off.

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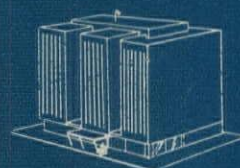
OFFICE BUILDINGS AND STORES



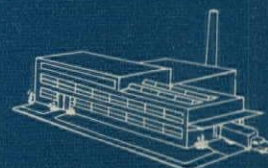
HOSPITALS



SCHOOLS

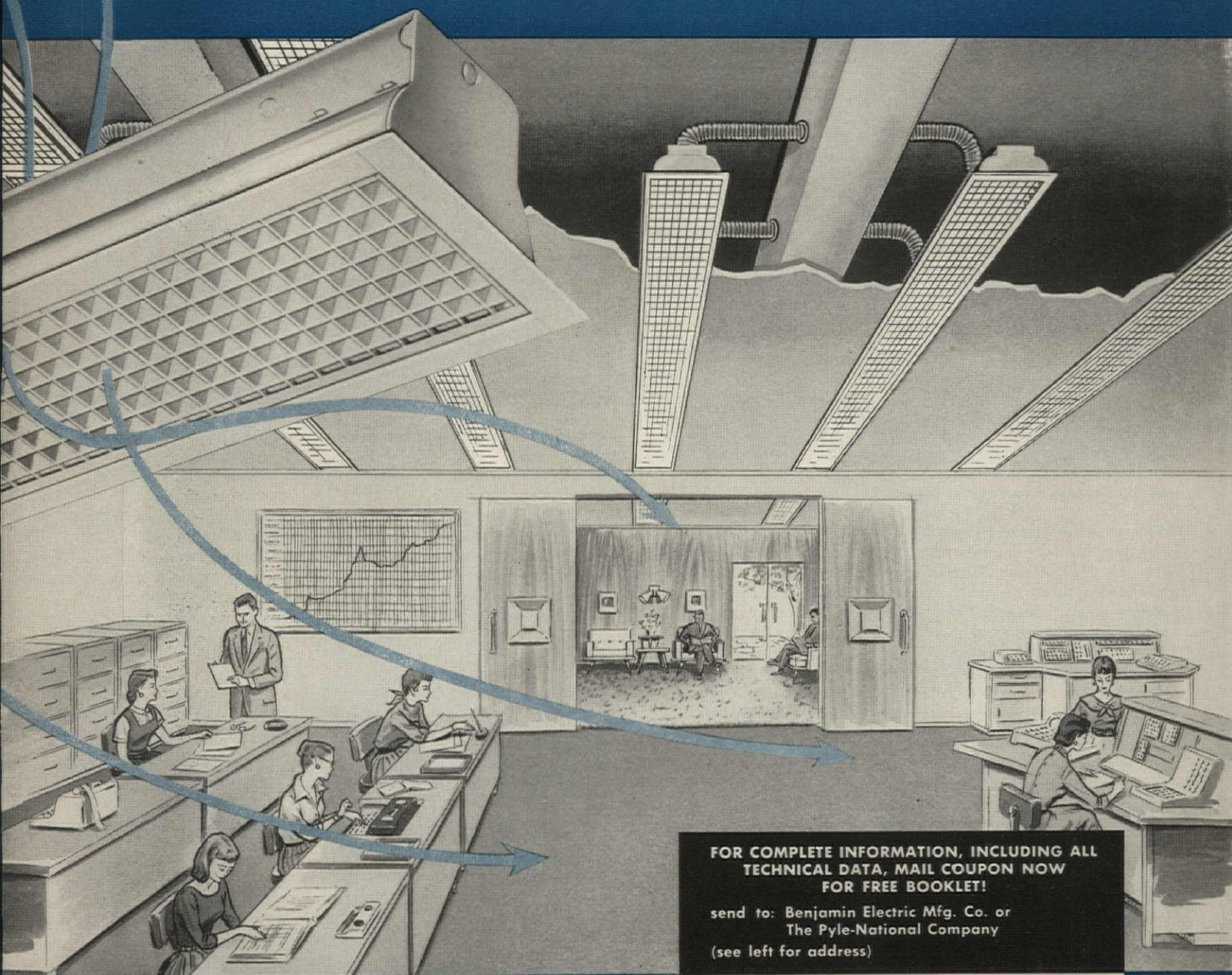


HOTELS AND RESTAURANTS



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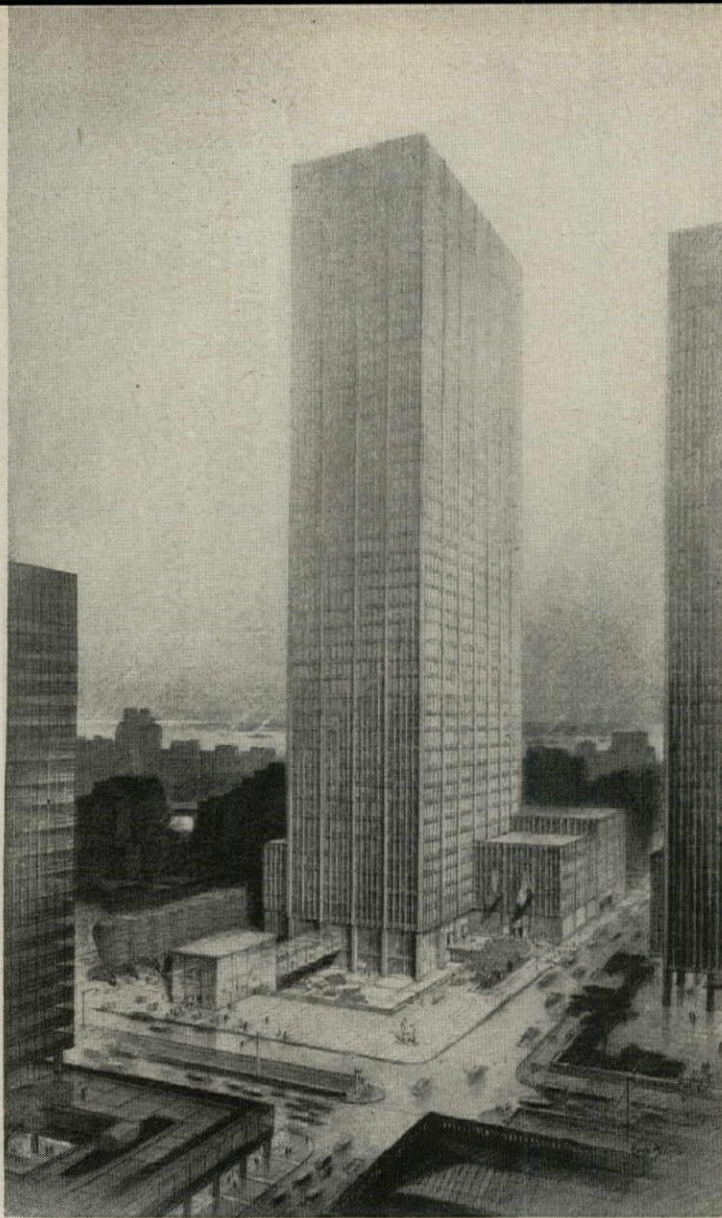
BENJAMIN ELECTRIC MFG. CO.

Des Plaines, Illinois

AND

The PYLE-NATIONAL COMPANY

Chicago 51, Illinois



ASTOR BUILDING TO FACE SEAGRAM, LEVER HOUSES

Vincent Astor planned to start clearing the site immediately for this "Astor Plaza" glass and metal 46-story tower to occupy almost the entire block across Park Ave. from New York's celebrated Lever House (l) and the new House of Seagram (r). This newest fashionable Park Ave. business

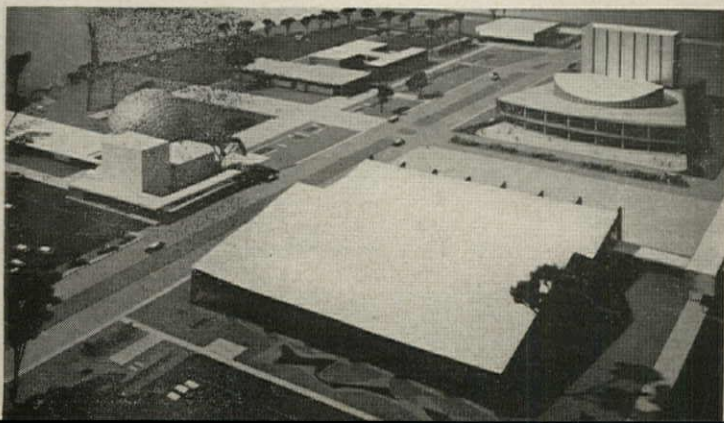
building was designed by Carson & Lundin, will have about 1 million sq. ft. of rental office space, and cost about \$75 million. It will have a helicopter landing on the roof, and a sub-basement garage for 400 cars. Its blockfront plaza will have a sunken garden, and exhibit glass house in front.

FLINT, MICH., COLLEGE AND CULTURAL CENTER

This \$20 million community center designed by Smith, Hinchman and Grylls will occupy a 36-acre site across a stream from Flint College. Among its diverse buildings, all related in site composition, will be a planetarium (dome at

left), a 3,000-seat, two-level auditorium with semi-circular stage and all theatrical presentation facilities (right background); also an art center, historical museum, transportation museum, carillon tower and restaurant.

LENS-ART

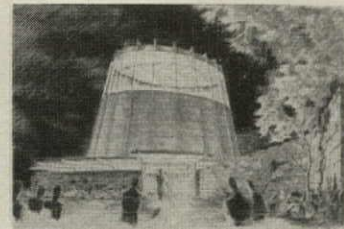


NEW BUILDINGS

A roundup of significant proposals

TENTLIKE SYNAGOGUE

The "chupe" or canopy, part of the ritual of Judaism, has been incorporated in the shape of this new synagogue designed by Architects Kelly & Gruzen, of New York and Newark. The tent effect is heightened by the use of



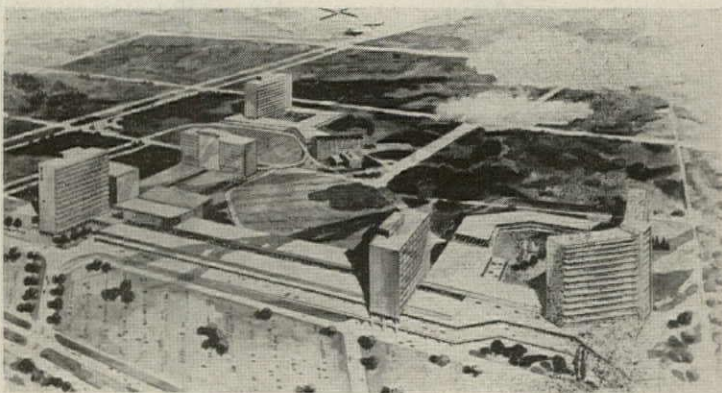
colonnades jutting like tent poles from the flat roof. Location: Englewood, N.J. Cost: \$400,000.



NBC "COLOR CITY" ADMINISTRATION BUILDING

In Burbank, Calif. NBC has started this three-story "Color City" administration building (l) adjoining existing blank-wall color television studios (r). Lift-slab construction is being used by the Austin Co., designers and builders, and

prefabricated walls are of glass and porcelain enameled aluminum. Other structures being erected at a total cost of \$6 million include an additional color studio, and a master technical control center for all NBC West Coast telecasts.

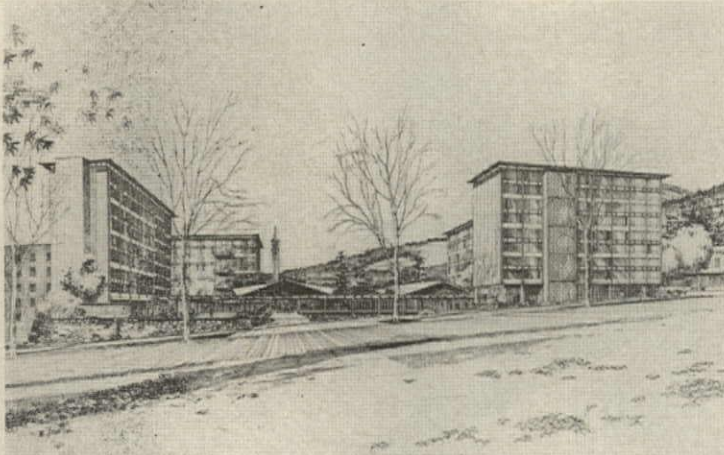


DALLAS HOTEL, DEPARTMENT STORE, COMMERCIAL COMPLEX

Four office buildings, a 1,000-guest hotel, medical center, department store, and parking areas for 15,000 cars, are planned for this \$125 million Exchange Park integrated commercial development that has been started on a 120-acre tract in Dallas. Braniff International Airways will occupy

one ten-story, 181,500 sq. ft. office building. The Exchange Bank & Trust Co., headed by Wm. A. Blakley, owner and builder of the entire complex, will occupy a large portion of a 14-story, 251,000 sq. ft. Exchange Bank Building. Architects, engineers, site planners: Lane, Gamble & Assoc.

announced last month



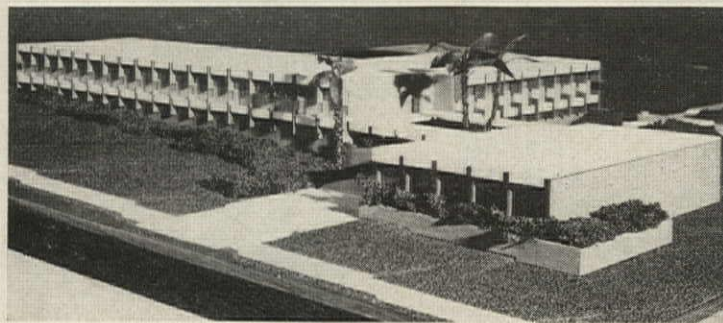
PRIZE-WINNING DESIGN FOR COLLEGE DORMITORY

Warnecke & Warnecke, San Francisco and Oakland architects, won a special design competition for an 800-student residence hall at the University of California, Berkeley. Their design, above, is divided into four units for 200 students each. Each unit will

have its own dining room and public room, but certain services will be common to all—library, kitchen, study rooms, and suites for the head residents. The idea behind the competition was to plan for smaller social groups of 40 to 50 students.

EVEN-TEMPERATURE LAB

To assure a constant temperature for special experiments in this Life Sciences Building to be started in January on the University of California's Riverside campus, Pereira & Luckman gave it extra wide vertical and horizontal sun baffles as an integral part of its design. There will be a two-story unit with bacteriology, biology, botany and zoology classrooms and laboratories, and an adjoining single-story,

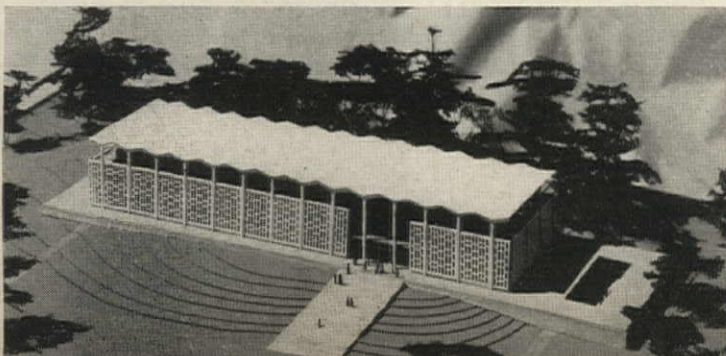


300-seat lecture hall for the use of all departments on the campus. The latter will include special exterior foyer space for displaying rare plants being used in experiments.

WINNER IN MEMPHIS ARTS CENTER COMPETITION

Eight Memphis firms entered a competition sponsored by the Memphis Chapter, AIA, to design a Fine Arts Center. The first prize plan, by William Mann and Roy Harrover, Architects, Leigh Williams, As-

sociate, groups an art academy, theater, and concert hall under one roof at an estimated cost of \$1 million. The judges noted that the colonnade's gracious sense of shelter is particularly appropriate to the South.



GENERAL MILLS OFFICE BUILDING, MINNEAPOLIS

Skidmore, Owings & Merrill designed this glass, aluminum and granite faced building in a parklike setting as the new headquarters of General Mills. The larger section will contain service departments, and an open-air inner court. General Mills executives will have their offices in the smaller building, with space for their cars, a cafeteria and a terrace.



ALUMINUM BIRDCAGE

The first geodesic dome on the West Coast will be a refuge for migratory birds. The idea of building an aluminum flight cage grew out of a series of lectures by Buckminster Fuller at the University of California. Five architectural students designed the cage for Oakland's Lake Merritt. Aluminum for it was donated by Kaiser Aluminum & Chemical Corp.

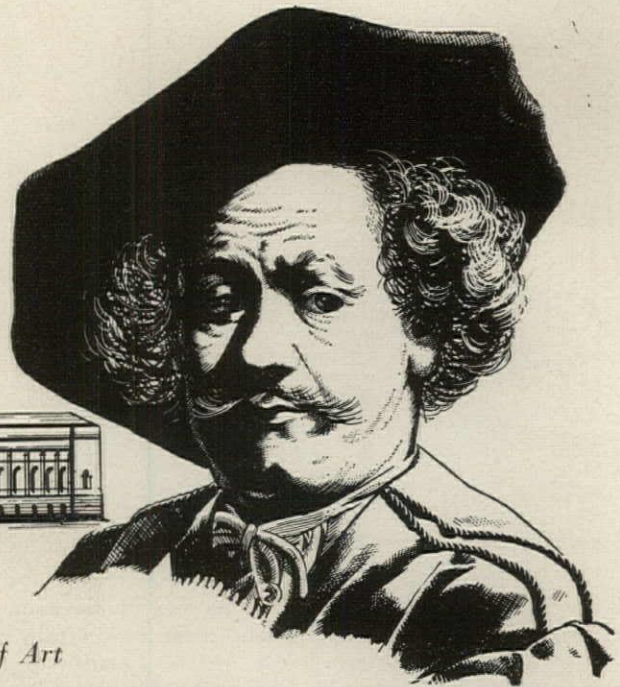


NEW HOSPITAL MAKES MONEY BUT NEEDS ROOM

Grossmont Hospital in San Diego County, Calif., was completed in July, 1955, but already has been outgrown. Pereira & Luckman, designers of the original building, have prepared plans for a three-story, 78-bed extension (fore-

ground) to be started late next year. The present hospital has operated in the black since its opening, and tax money ordinarily used to pay off deficits of district hospitals will be available for the enlargement if voters consent next month.

*"What a fortune
under one **ROOF!**"*



... an interview with the spirit of Rembrandt van Rijn, whose works of art are treasured and protected by the New York Metropolitan Museum of Art



Rembrandt? Well, well! We're honored to have you pay us a visit. What do you think of our *New Amsterdam*?

So different from my "old" one of 300 years ago! I can hardly believe my eyes at all the amazing things I have seen. Those sky-high buildings! Each one is a masterpiece in its own right!



Rembrandt . . . are you planning to look over your masterpieces at the New York Metropolitan Museum of Art? Many are worth about \$500,000 today.

What a fortune! Hope the roof doesn't leak! I'd hate to think of any damage to my "Old Lady Cutting Her Nails" or the "Portrait of Hendrickje Stoffels."



Don't worry about the museum roof, Rembrandt. It's *very* safe now. But you would have worried back in the 1930's. The roof *did* leak then . . .

And how I did worry then! Particularly when I saw attendants placing pails around to catch drippings during rain storms. What in the world was wrong?



In a nutshell, Rembrandt, the old roof was made of a material that just couldn't stand up against the punishment of weather, winds, and corrosive atmospheres. So the museum authorities immediately started a search for a roofing material that *would* give masterpieces *permanent* protection. A search that led to just *one* material, Monel® Roofing Sheet.

*Registered Trademark



You see, Monel nickel-copper alloy has all the qualities a roof requires. Monel sheet is rustproof, strong, tough. It withstands the corrosive atmosphere of industrial and coastal areas. Its low coefficient of expansion and high endurance reduce the chance of fatigue failure. So, thanks to Monel sheet, Rembrandt, you don't have to worry about your masterpieces again.

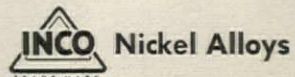


Well, sir, no wonder the world is a better place to live in today . . . with metals like Monel Roofing Sheet available.

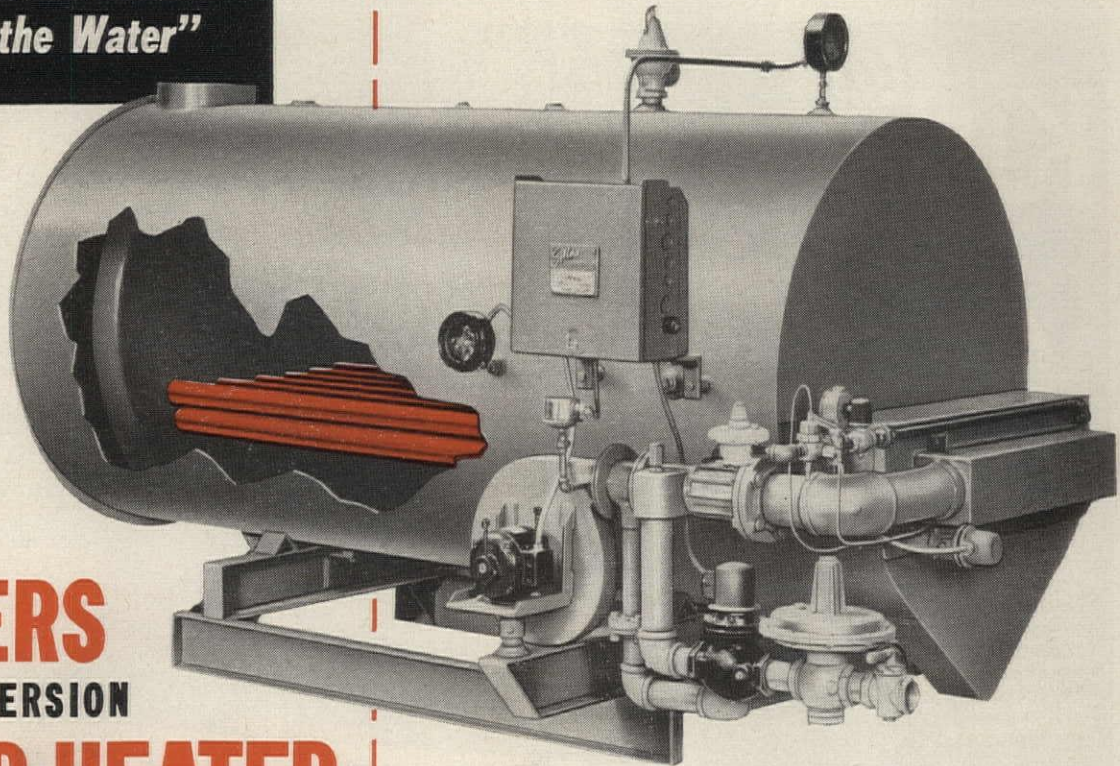
So figure on Monel Roofing Sheet when you take your base bids. If you would like assistance on specific jobs call on us at any time.

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Monel Roofing : . . for the life of the building



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"Inside the Water"*



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Sellers unique immersion firing transfers maximum heat. Firing tubes are copper clad outside to resist water corrosion. Hot gases passing turbulently through the tubes scour and scrub dead gases from inside tube walls. Input heat is uniformly distributed through externally and internally clean tubes—efficiency is high . . . operating costs are low.

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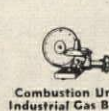
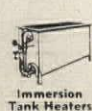
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FOR CHAMPIONSHIP POOL LIGHTING

Kirlin SYSTEM

BUILT-IN
Lighting

EXTRA WIDE ANGLE LENS
FOR WIDE DISTRIBUTION
OF LIGHT RAYS

In this Wyandotte (Michigan) Memorial Pool, Architect Robert Szoboda and Engineer Thomas Black decided on a light intensity on the water of 38 f.c. They specified Kirlin #1212 R-W —300 W fixtures which can be relamped from above the 20' ceiling.



USE THE CHAMPION OF LIGHTS

Pool at the Orchard Park (New York) Central School uses #1218 R-W 500 W Kirlin Fixtures in 22' ceiling to secure 14.2 f.c. intensity on water. Relamping from above ceiling. Architects: Harbarch, Swain and Clark; Engineers: Beman and Candee.



Kirlin #1212 R-W 300 W fixtures were used in the Allen Park (Michigan) High School pool. The architects, Eberly M. Smith Associates, secured 14 f.c. intensity uniformly on the water due to the wide angle lens even though fixtures border edge of pool for relamping from below.



First you want to get just the right amount of light on the water. But you must examine costs — installed cost — maintenance cost AND the cost of electricity. When the lighting for your pools delivers the desired foot candles at the lowest cost and does this year after year, you then have *championship lighting*.

Consider the many pools, large and small, lighted with the KIRLIN System, as typified by the three shown here. At least 70% useful light is delivered by each lamp due to the Alzak GlasSurfaced reflector and Kirlin prism lens. This has been proven time and again in many different types of installations. Light from the highest point possible and with extra wide distribution, utilizes the light more effectively . . . Maintenance is at a minimum because fixtures can be relamped as easily from above the ceiling as below. Shock resistant glass keeps down damage and replacement expenses. No part of the fixture dangles from the ceiling, which eliminates dusting and increases the apparent ceiling height. Fixtures also may have aluminum boxes and all parts are rust and moisture resisting . . . You score on installed costs, too. Regular rubber-covered building wire is run direct to the heat-insulated junction box. No asbestos is required.

Specify the KIRLIN System, Champion of Lights, for Championship Pool installations.

OTHER REASONS FOR SPECIFYING KIRLIN

- Made in all sizes — square or rectangular — and in Fluorescent.
- UL and IBEW Labels.
- In stock at leading wholesalers.
- Wide-angle or concentrating lens.
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DETROIT 7, MICHIGAN

BUILDING VOLUME: Increased public outlays keep total 1956 spending at record rate, about 2% above 1955 level

Thanks to accelerated increases in government outlays, total construction expenditures rose seasonally to an all-time monthly record of \$4,261 million in August (see chart and table), and for the first eight months of the year continued to run about 2% ahead of 1955's record spending pace.

Held down by the lag in homebuilding, private construction expenditures for the January-August period were less than 1/2% ahead of 1955 spending. Outlays for public construction, however, were 8% greater in August than a year earlier, and for the eight months period topped comparable 1955 expenditures by 6%.

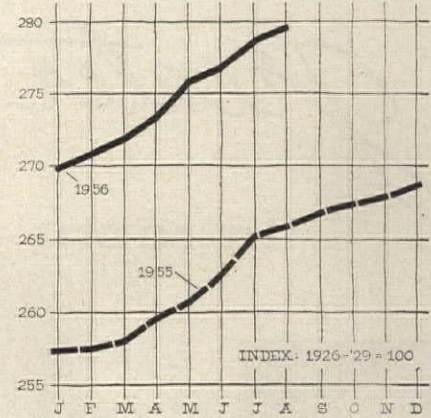
In individual categories, according to the preliminary estimates of the Commerce and Labor Depts., all-time records were set in August in outlays for new office and warehouse buildings, private industrial plants, public utilities, schools, highways, sewer and water works. Spend-

ing for new stores, restaurants and garages, however, declined 8% from July, although still 14% ahead of 1955 January-August expenditures.

(Workers employed in contract construction climbed 56,000 from July to August to a total of 3,345,000, reported BLS. This was 257,000 more than those at work in Aug. '55.)

New peaks ahead. There was no doubt 1956 total construction spending would surpass the record of \$43 billion set last year, and, in 1957, according to FORUM's annual forecast by Economist Miles Colean, the building industry will have its best year yet (p. 126). Total building outlays next year will reach almost \$47 billion, predicts Colean, with private nonresidential construction advancing about 6%, and public nonresidential about 4% over this year.

In a separate Commerce-SEC estimate of private enterprise plans for new plant and equipment spending last month, officials said this should reach about \$35.3 billion this year, compared with an earlier estimate of \$35 billion and 1955's record actual spending of \$28.7 billion. On a seasonally adjusted basis, new plant and equipment outlays are expected to reach a rate of \$36.3 billion annually for the third quarter of this year, and jump to a rate of \$38 billion in this last quarter.



CONSTRUCTION COSTS for nonresidential buildings rose from 278.7 in July to 279.3 in August, an increase of 0.2%, on the index of E. H. Boeckh & Assoc. Since the start of the year this index has risen 4%.

BUILDING COSTS: No signs of halt in steady uptrend

With the effects of the steel strike settlement beginning to show in building materials prices, various construction cost indices continued their uptrend from July to August with no signs of early stabilization.

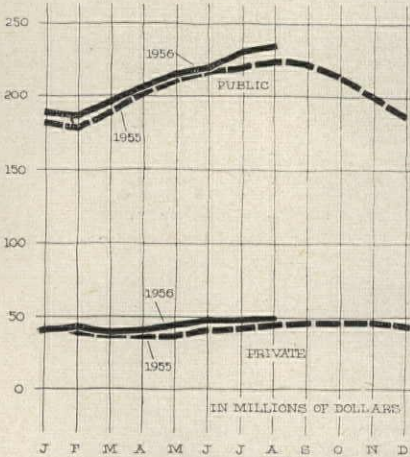
The composite index for nonresidential building of E. H. Boeckh & Assoc. moved up 0.2% (see chart), and in August was 5% higher than in Aug. '55. Over the period of a year Boeckh's index for new apartment, hotel and office buildings advanced 4.9%, and its commercial and factory building index 5.1%.

Sharper increases of 1.2% and 1.8% from July to August were registered on the *Engineering News-Record* construction and building indices, but for the 12 months since Aug. '55 these were up only 4.8% and 4.4% respectively. The American Appraisal Co. index rose 0.5% in August, when it stood 4.6% higher than a year earlier.

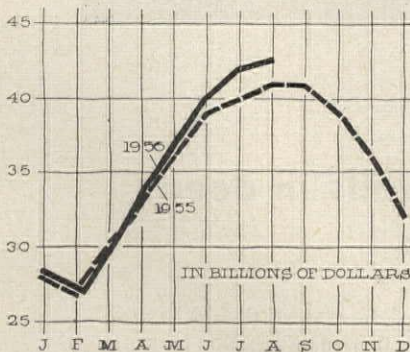
Costs, the mother of adjustments. Revising structural or financing plans to compensate for higher-than-expected costs was commonplace. In San Francisco, for instance, voters approved a \$3,275,000 bond issue last spring for an underground garage for the city's proposed Civic Center. But when bids were received in mid-summer, city fathers were staggered by the lowest figure, which was \$3,711,315, or almost \$500,000 over the combined budget for construction, architects' fees and contingent funds. Fearful that the public might not approve a supplemental bond issue, the city began efforts to scrape up the necessary difference from other funds. "Besides," said one official, "by the time we could put the thing to a vote we'd fall behind another half million."

But in California building contractors could still observe some less-fortunate cousins. State highway officials were having to adjust to a whopping 16% road-building cost hike there since Jan. 1.

TRENDS continued on p. 32



EDUCATIONAL BUILDING expenditures for the first eight months of 1956 totaled \$2,023 million, compared with \$1,933 million in the same period in 1955. Private school building was up \$35 million, or 10%, and public construction up \$55 million, or 3%.



TOTAL CONSTRUCTION expenditures in August set an all-time monthly record of \$4,261 million, or \$56 million above the former record of \$4,205 established in Aug. '55. (July expenditures, originally estimated at \$4,207 by the Commerce and Labor Depts., were revised to \$4,195 million.)

EXPENDITURES BY BUILDING TYPES

(millions of dollars)

	Aug. '56	1956	1955	%±
PRIVATE BUILDING				
Residential (nonfarm)	1,402	9,850	10,827	-9
Nonresidential	786	5,652	4,783	+18
Industrial	273	1,963	1,520	+29
Commercial	294	2,165	1,867	+16
Offices; lofts;				
warehouses	123	847	707	+20
Stores; restau-				
rants; garages	171	1,318	1,160	+14
Religious	70	473	469	+1
Educational	49	345	313	+10
Hospitals; institutions	28	203	234	-13
Public utilities	481	3,264	2,958	+10
*PRIVATE TOTAL	2,842	19,878	19,785	**
PUBLIC BUILDING				
Residential	23	165	177	-7
Nonresidential	386	2,659	2,896	-8
Industrial	39	280	586	-51
Educational	234	1,678	1,623	+3
Hospitals; institutions	32	202	226	-11
Military	134	852	812	+5
Highways	615	3,180	2,795	+14
Sewer; water	127	827	719	+15
*PUBLIC TOTAL	1,419	8,509	8,061	+6
*GRAND TOTAL	4,261	28,387	27,846	+2

*Minor components not shown, so total exceeds sum of parts.

**Less than one per cent.

Give your clients

greater freedom
in room arrangement



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The combination of light-directing glass block and vision strip keeps brightness at comfortable levels, provides vision and ventilation.



Acting as a daylighting team, the Toplite Panels and glass block provide sufficient daylight during normal days without need for artificial lighting.

Toplite Roof Panels supplement light from sidewalls in deep rooms or completely daylight windowless rooms

Now, near the windows, and far from them, good daylight can be everywhere. No longer is it necessary to confine close detail work to the area nearest the windows. Toplite Roof Panels permit daylighting of all building areas regardless of location or distance from exterior walls.

The prismatic glass units in O-I Toplite Panels "think" before they transmit the sun's rays. Needed North light and the soft low rays from the South are readily accepted. But rays from the high summer sun are rejected. Glare and heat of old-fashioned skylights are eliminated.

The complete story of this great new advance in efficient utilization of free daylight is available in a new booklet on Toplite Roof Panels. For your free copy, write today: Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AF-10, Toledo 1, Ohio.

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The American Brass Company's new publication, "Modern Sheet Copper Practices," received the highest award in its class—the Certificate of Exceptional Merit in the 1956 Building Products Literature Competition sponsored by The American Institute of Architects and The Producers' Council, Inc.

This new book shows suggested construction details and specifications which reflect the use of copper in current architectural design.

Easy to use. It opens easily, lies flat. The recommended practices and suggested specifications are on the page facing the drawing. Subjects are easy to find, as drawings are in a logical sequence according to type of detail.

Designed for the Architect, Specification Writer, Sheet Metal Contractor. The book is recommended as a practical guide with clear, brief suggestions for meeting everyday problems. Send for your free copy today.

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recommended practices—
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Architect Builder Sheet Metal Contractor

BUILDING MONEY: Tight credit boosts expenses but only curbs marginal projects; insurance loans show increase

Construction was feeling the effects of the tightest credit squeeze since the Depression. But except for homebuilding (automatically hobbled with 4.5% FHA and VA interest ceilings), the main effects were not reduced construction, but mostly a check on the volume of increased building, and higher costs for financing.

The problem that confronted the booming economy was not a decreased supply of money or credit, but rather a sharp increase in demand—an increase government monetary experts feared would be inflationary if it ballooned too big.

Increased realty lending. Homebuilders and some others complained loudly of lack of credit. But obscured by their noise was the fact that mortgage lending apparently was running ahead of last year's volume, rather than behind it. Institute of Life Insurance data, for instance, showed that supposedly tightfisted life firms invested 15% more in FHA mortgages in the first six months of 1956 than a year earlier, 4.7% more in VA mortgages, and 14% more in conventional mortgage loans, while their total investments increased only 1.4%. Reported the institute: "Mortgages were the largest single block of new life insurance investments in this six months, totaling \$3,446 million, \$344 million above a year ago."

From cities around the nation came these reports from mortgage officers of a number of the largest life firms explaining their efforts to stretch their funds:

▶ Los Angeles—"We are not chasing as hard as if the pressure were on us to get the money out. We are shooting at a little higher interest rate. Industrial loans have gone up $\frac{3}{4}$ % to 1% . . . home loans only about $\frac{1}{2}$ %. Rates will probably continue to firm upward."

▶ San Francisco—"We will turn down virtually all speculative ventures and any with the slightest chance of failure. Those who want to borrow at 4.75%, or for 22 to 24 years, will have small chance. We'll be giving loans at 15 or 18 years. We'd prefer a Sears to a hospital, certain types of apartments in better neighborhoods than redevelopment."

▶ Houston—"We haven't tightened up our requirements but we charge more interest for office building or industrial plant loans than we did 90 days ago. The office building loan that would have been 4.5% then is now 4.75% or even 5%."

▶ Chicago—"Our company's average interest rate last year was 4.5%. Now it's up to 5% and we're still not able to meet the demand. Yesterday we turned down a \$900,000 apartment building loan we would have granted a year ago. . . . It's not a shortage of money. It's just that demand exceeds supply."

Bankers concur. Nor were insurance executives alone in such views. Typical were these comments from leading commercial

bankers discussing the Federal Reserve's higher discount rate, and its effects on construction:

▶ Chicago—"For big corporations with long-range plans, there are no serious problems. They can get all the money they need—at the higher rate. We've seen some cutbacks, but no major ones. Most have been on items which the companies hadn't been very sure about in the first place. . . . We look for a sharper cutback in the first six months of 1957 than in the last half of this year. After all, if you're a big corporation and . . . throw-up a new \$1 million addition, you've long since passed the blueprint and planning stage now, and a quarter of a percent interest change isn't going to make you throw in the towel."

▶ Atlanta—"I don't think this increase will slow down expansions for large corporations that are reasonable and based

on good business judgment. It will slow down and knock out speculation . . . operations of the marginal man who plans expansions which are not too sound. It will also slow down the marginal financing plans of municipalities, those on the borderline as to whether there will be adequate revenue to support them."

▶ New York—State Controller Arthur Levitt deplored the fact that school districts that floated construction bonds for about 3% a year ago must now pay about 3.7% on new issues. The municipal bond market depends mainly on banks and wealthy individuals who benefit by purchasing tax-exempt bonds, he said, but with institutional credit curtailed, and "today's redistribution of income," there are "just not enough of the wealthier individual investors around" to absorb all municipal offerings. Commerce and Labor estimates, however, showed that private and public expenditures for educational construction were \$90 million greater than comparable outlays a year ago from January through August, and in August set an all-time monthly record (p. 29).

BUILDING MATERIALS: Higher steel costs affect prices for other items; unfilled structural orders reach record high

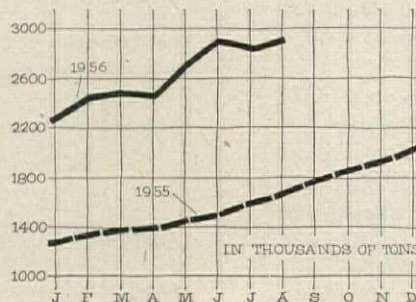
Production by the nation's steel mills climbed back to 100.1% of capacity last month, about six weeks after settlement of the steel strike.

But prices had climbed, too. Within the BLS index of average wholesale building materials prices, structural shapes rose 8.3% and helped boost the total index 0.7% (see chart). Further secondary increases also would occur in the index in the months ahead as producers of various materials and equipment passed along the higher prices they had to pay for the steel going into their products. International Harvester and Thew Shovel, for instance, announced price boosts up to 7% for their construction and materials handling equipment because of higher steel prices and other expenses.

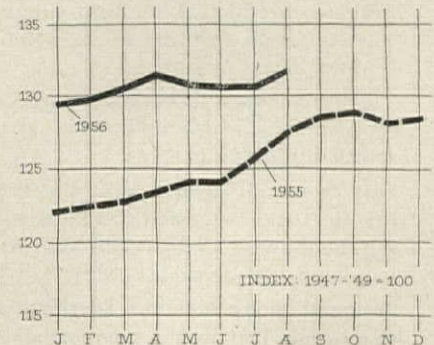
Looking for the best in a bad situation, the American Institute of Steel Construction noted that fabricated structural steel shipments dipped only to 165,470 tons in

July, compared with 138,267 tons during the shutdown in July, 1952. Through July, it added, cumulative fabricated structural shipments were still 16% ahead of last year's for the same period (although through June they had been 22% ahead). New contracts for structurals also declined during July to 288,166 tons, the first month they dropped below the 300,000-ton mark since April '55. New orders for the year's first seven months were still 22% above comparable 1955 orders.

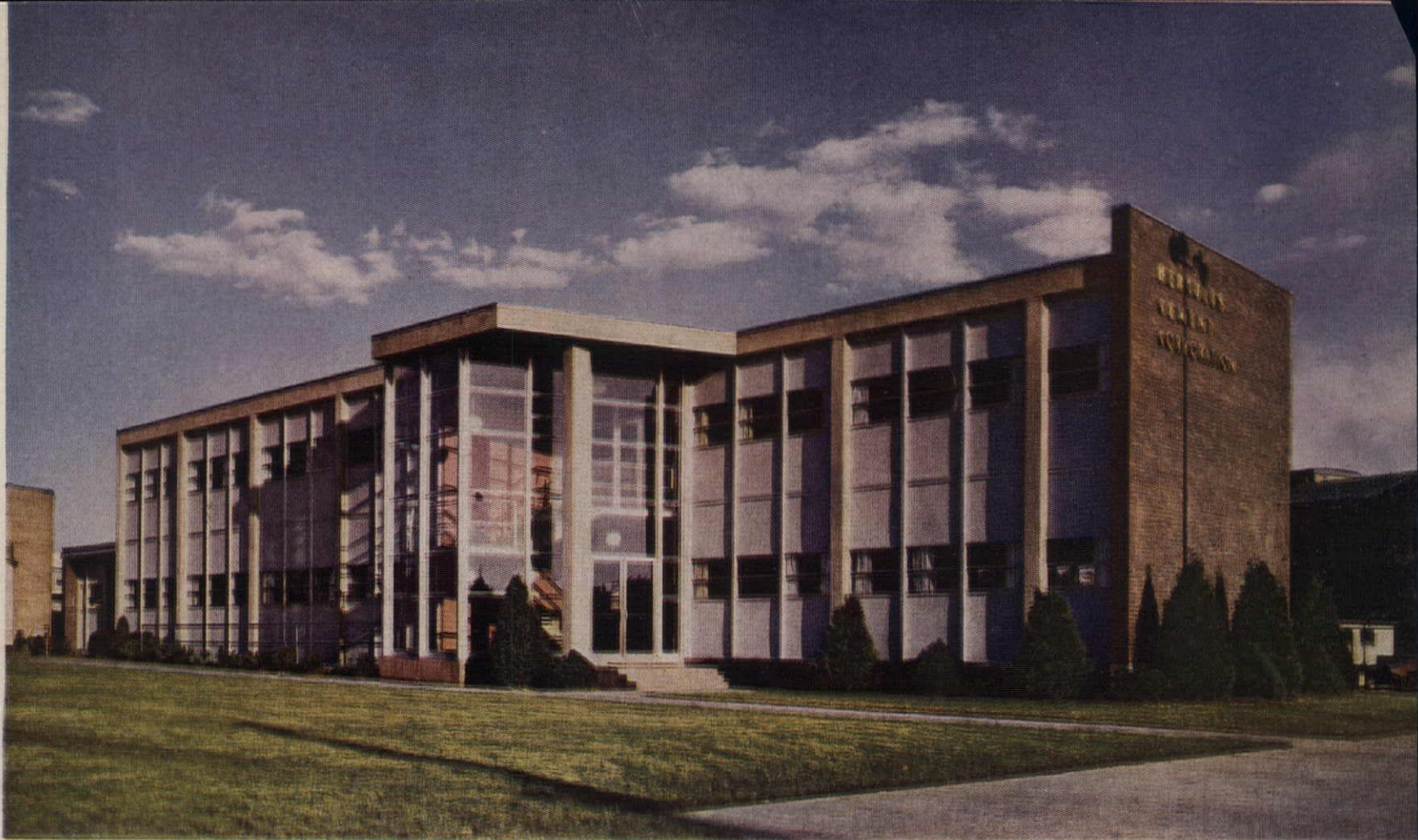
Because of curtailed shipments, unfilled structural orders climbed to record backlog of 2,903,725 tons (see chart), or a volume that would require peak production for 11 months at the rate of average monthly shipments from January through July this year.



STRUCTURAL STEEL unfilled orders on Aug. 1 stood at 2,903,725 tons, according to the American Institute of Steel Construction. The portion scheduled for fabrication in the four months up to Dec. 1 was 1,227,025 tons.



BUILDING MATERIALS PRICES turned upwards again in August to 131.6 on the index of average wholesale prices compiled by BLS. This advance from 130.6 in July was an increase of 0.7% in one month, and wiped out the decline from 131.3 that had taken place since April.



Hercules Cement Corporation Offices, Stockertown, Pa. Architects: Cronheim & Weger, Philadelphia, Pa. Contractor: E. C. Machin, Inc., Allentown, Pa. Lupton Type-H Curtain-Walls

**New
Design Horizons
with
Lupton Curtain-Walls**

Architect-designed Lupton Aluminum Curtain-Walls *make* the facade of this smart, modern building. While these particular walls are neutral gray, they could be as colorful as a sunset. They can be designed with a variety of window styles and panel materials, in almost any color or combination of colors, smooth or textured. Their decorative possibilities have no limit.

Through pre-fabrication of panels and windows, building construction was faster than by conventional methods, yet the walls are weathertight, weatherproof, insulated and offer a lifetime of service. Fabrication and installation were done under one contract.

If you haven't discovered the beauty, versatility and time-saving qualities of the Lupton Simplified Curtain-Wall System, do it now! You'll find additional data in Sweet's or write for the illustrated brochure that details this modern way to build.

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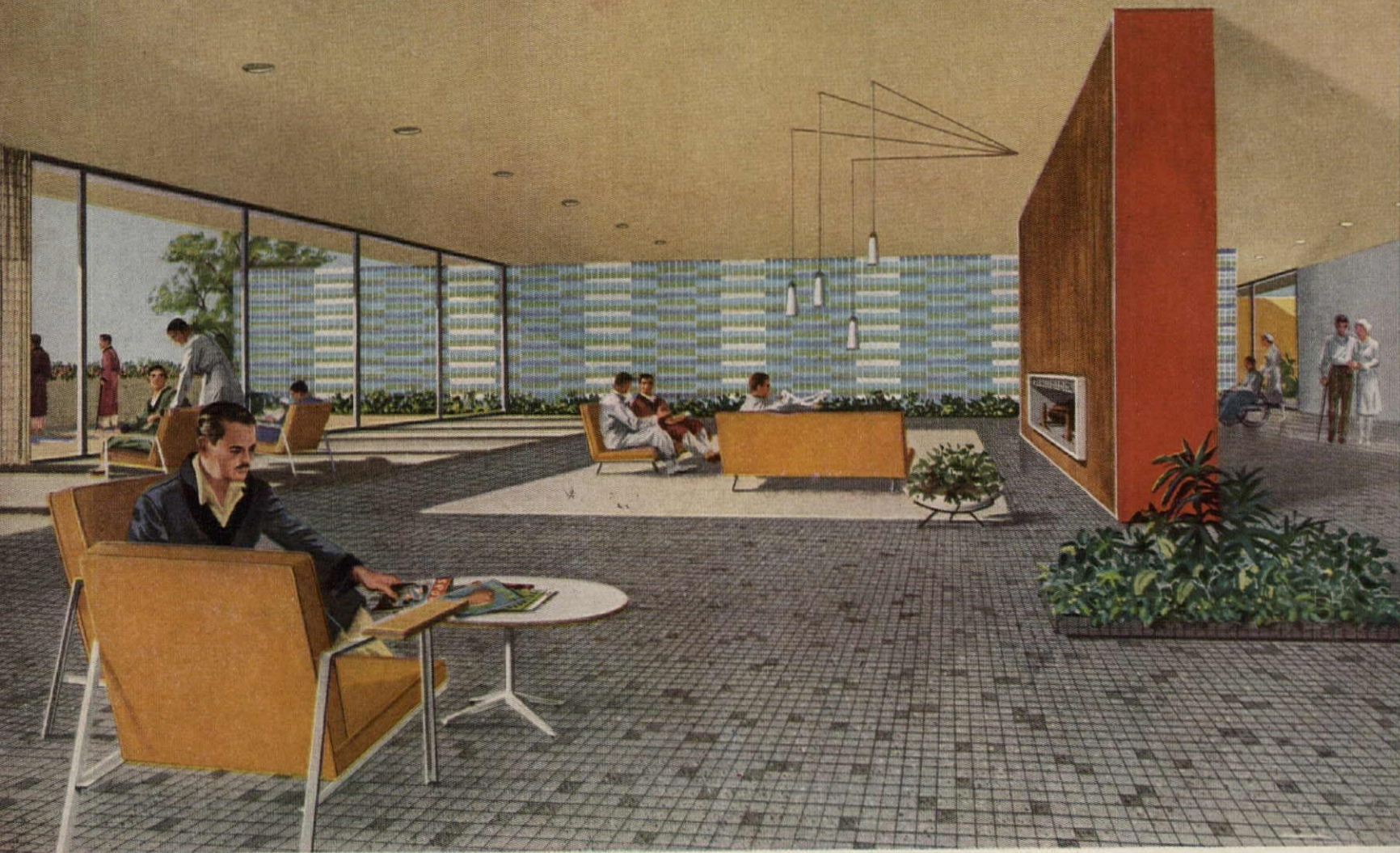
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Design for Hospital Solarium by Welton Becket, F. A. I. A. and Associates

**"CERAMIC TILE... A VERY SERVICEABLE MATERIAL
COMBINING FUNCTION, BEAUTY AND ECONOMY!"**

WELTON BECKET, F. A. I. A., AND ASSOCIATES
WB

A cheerful and relaxing atmosphere pervades this design for a hospital solarium by Architect Welton Becket and Associates. Ceramic tile fused beauty and function into a soothing custom effect with marked therapeutic influence . . . visible proof of the design flexibility made possible by imaginative use of standard ceramic tiles.

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The Modern Style is



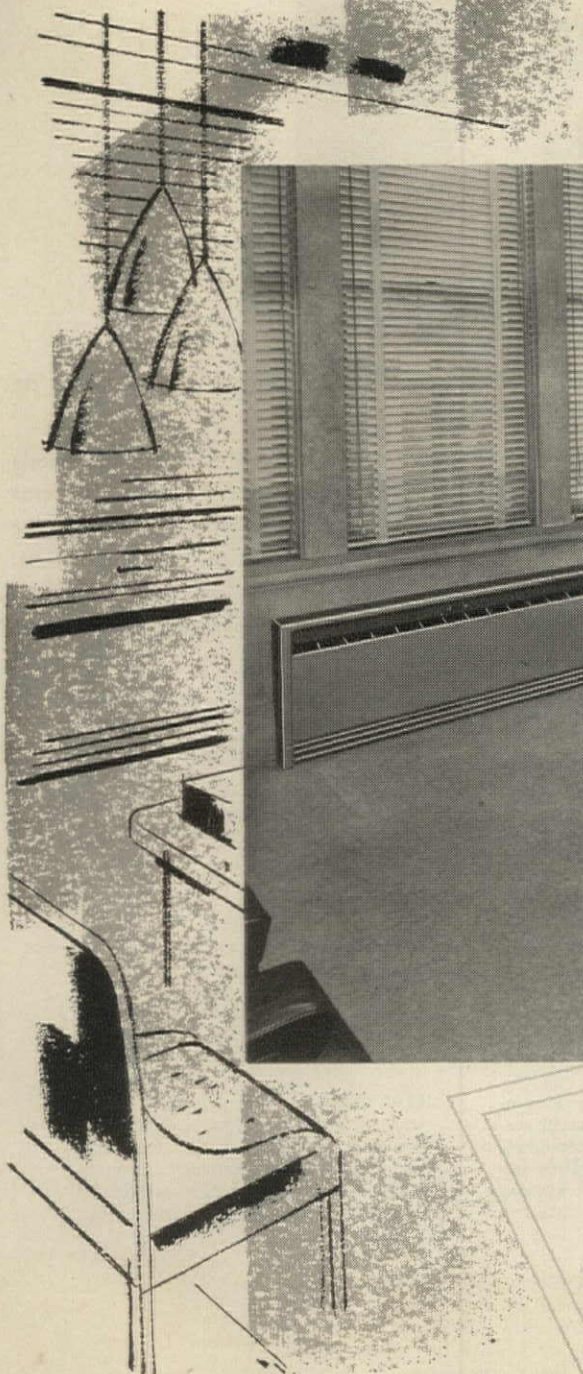
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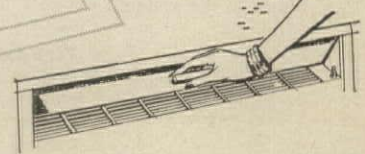
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TYPE SSAMR — *For smaller buildings.* sounds a distinctive alarm signal. For buildings where automatic location is unnecessary. Full supervision with trouble bell guarantees continuous protection.

TYPE SSAM — *City-connected* system sounds a coded signal within the building and also at the municipal fire headquarters, entirely automatically. Recommended particularly for large schools and institutions.

Maj. Gen. Emerson Itschner, 53, named Chief of Engineers;

Arthur Drexler succeeds Philip Johnson at Museum of Modern Art



ITSCHNER

CORPUS OF ENGINEERS

GOVERNMENT PROMOTIONS

Maj. Gen. **Emerson C. Itschner**, Asst. Chief of Engineers for Civil Works since 1954, was appointed Chief of Engineers to succeed retiring Lt. Gen. **Samuel D. Strugis, Jr.** Only 53, the youngest Chief of Engineers in more than a century, Itschner will supervise military and civil construction programs that exceed \$2 billion a year.

In a series of reorganization promotions and appointments for greater efficiency in its design, construction and maintenance programs, PBS Commissioner **F. Moran McConihe** made building management division Director **Charles A. Peters** an Assistant to the Commissioner, Deputy Director **William A. Schmidt** an Assistant Commissioner for Planning, and elevated Supervising Architect **Leonard L. Hunter** to Assistant Commissioner for Design and Construction. He brought in **David S. Phillips** as Assistant Commissioner for Management (from Internal Revenue), and **Lawson B. Knott Jr.**, as Assistant Commissioner for Acquisition and Disposal (from the Army Engineer Corps).

After a year as Acting State Architect, **Carl W. Larson**, of Loudonville, was named New York State Architect at \$16,000 annually by State Superintendent of Public Works **John W. Johnson**. Larson, 60, was associated with Warren & Wetmore, of New York City, for several years before joining the department in 1926.

EDIFICATION—EDUCATION

New York's Museum of Modern Art named **Arthur Drexler**, 31, as director of its department of architecture and design, succeeding **Philip C. Johnson**, who resigned in 1954. Drexler joined the department as curator in 1951, authored *The Architecture of Japan*, published by the museum last year, and with **Henry**



DREXLER

Russell Hitchcock coauthored *Built in USA: Postwar Architecture*.

Taking office as Ford Foundation president this month: Engineer and Educator **Henry T. Heald**, 51, formerly president of IIT, N.Y.U. and the American Society for Engineering Education. After graduating from Washington State College in 1923, Heald started work as a structural designer. In 1927 he joined Armour Institute of Technology as assistant professor of civil engineering, by 1938, when it had become IIT, was its president.

Yale University's new Professor of Mechanical Engineering and chairman of that department last month was **Newman A. Hall**, previously assistant dean in charge of the graduate division of N. Y. U.'s College of Engineering.

Through a grant from an anonymous practicing architect, Artist **Edward Millman** joined the department of architecture at Rensselaer Polytechnic Institute as visiting professor of art, primarily to teach graphics and basic design work to second year architecture students.

24—GOING ON 30?

When he reached November 30, would New York Architect and Construction Expert **Harris Hunnewell Murdock** find it just another milestone, or the end of a remarkable tenure in public service on behalf of the entire building industry?

On that day spry, 76-year-old Murdock, who has never let his age interfere with his work,



MURDOCK

will complete his fourth six-year term as chairman of New York's Board of Standards and Appeals. Twenty-four years on the job, and ready to go for 30, his retirement or reappointment awaited only the pleasure of **Mayor Wagner**, whose own father, the late Senator **Robert F. Wagner**, served long and diligently in Congress until he retired in 1949, at 72.

In his long career in design and construction, Murdock, FAIA-1943, was New York Building Congress president (1928-33), served on a state commission to revise the tenement house law, helped draft the multiple dwelling law, and was a governor of the New York Real Estate Board. Among the buildings he designed was the 27-story structure at the southeast corner of 42nd St. and Madison Ave., the first building erected under the city's original zoning ordinance adopted in 1916. After his appointment to the board in 1932, his former architectural office, Jardine, Hill & Murdock was disbanded during the construction hiatus of the thirties.

Whatever the Mayor's pleasure, Murdock's supervision of the board for almost a quarter century without serious criticism from the industry, from the public, or from politicians of any party, was a record any building official could envy, and only a rare successor would ever be able to approach.



MOREELL

ENGINEERING HONORS

Of the many old and new honors to be awarded at the ASCE convention in Pittsburgh this month, the one of top interest to the construction industry would be presentation of the 1956 John Fritz Medal to Admiral **Ben Moreell** (retired), board chairman of Jones & Laughlin Steel, former chief of the Navy's Bureau of Yards and Docks, organizer and commander of the "Seabees," and for a short postwar period president

of Turner Construction Co. This gold medal and certificate is a joint honor of the four largest engineering organizations—ASCE, AIMMPE, ASME and AIEE.

The winner of the first **Ernest E. Howard** Award for meritorious service in structural engineering and construction (named for the former ASCE president and partner of Howard, Needles, Tammen & Bergendoff): Professor **Ralph E. Boeck**, of Marquette University's department of civil engineering.

Chosen to receive honorary memberships, highest distinction awarded by ASCE: **George W. Burpee**, of Coverdale & Colpitts of New York; Prof. **Albert Haertlein**, associate dean of engineering and applied physics, Harvard; Maj. Gen. **Thomas M. Robins** (retired), US Army Chief of Engineers, 1939-45; **Ole Singstad**, of Singstad & Bailie, of New York; Prof. **Ralph B. Wiley**, head of Purdue's school of engineering.

DIED: **Sidney R. Baer**, 65, St. Louis department store owner, treasurer of Civic Progress, Inc. and a leader in community building and improvement programs, Aug. 25 in St. Louis; Engineer **Ralph H. Burke**, 72, designer and builder of the new O'Hare International Airport in Chicago, and engineer for many Chicago public works, Aug. 23 in Chicago; **Kelvin Cox Vanderlip**, 44, land developer and a vice president of Welton Becket & Associates, Aug. 21 in Los Angeles; **Ford Kurtz**, 71, president of the J. G. White Engineering Corp. and specialist in the construction of dams and hydroelectric plants, Aug. 9 in New York; Architect **Ernest Alan Van Vleck**, 81, designer of New York's Curb Exchange, upper 5th Ave. department stores and many suburban New York schools, Aug. 8 in St. Petersburg; Sculptor **Chester Beach**, 75, designer of many architectural groups, 1927-28 president of the National Sculpture Society, Aug. 6 in Brewster, N.Y.; **Edward G. Gavin**, 58, editor of *American Builder* since 1945, originator of National Home Week, former editor of *American Lumberman*, July 28 in Chicago of a heart attack.

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Modernization of Akron's oldest office building (Everett Building) included SelectTemp heating. Through an entire heating season the steam savings were 49.5%. This building uses district steam.

HERE ARE SOME OTHER TYPICAL SELECTEMP INSTALLATIONS



Mt. Assisi Academy, Lemont, Ill. "Controlling temperature in classrooms has always been a problem," says Architect Leo Strelka of River Forest, Illinois. "You have solved it with SelectTemp's individual room control. We are more than pleased."



College of Southern Utah chose SelectTemp heating for this new dormitory because of its thermostatic heat control in each room. Such control with any other system meant an extra expenditure of over \$14,000.

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PANORAMIC APARTMENTS, MONTCLAIR, NEW JERSEY

The temperature of individual rooms in this luxurious apartment building can be regulated by the occupants. With Iron Fireman SelecTemp neither overheating nor underheating disturbs the comfort of any tenant. In-the-wall cooling units provide the same room-by-room control of summer cooling.

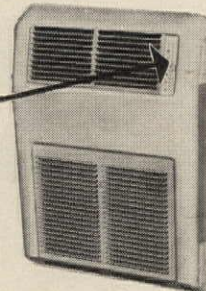
windows. They regulate the heat themselves. (3) There is no problem of heat distribution in an extended structure like a motel. (4) Steam is safe.

ADVANTAGES OF SEPARATE HEATING AND COOLING. In the Panoramic Apartments and Town & Country Motor Hotel shown on this page (both luxury type establishments) Iron Fireman SelecTemp heating has been combined with individual through-the-wall room cooling units—a perfect combination. Some advantages are: (1) Thermostatic temperature control in both heating and cooling, *with every room a zone.* (2) Low operating costs—no heating or cooling of unoccupied areas. Rooms can be quickly reheated or cooled. (3) No inefficient compromise in attempting to combine the conflicting characteristics of heating and cooling by using a single room outlet. (4) No cooling condensate drain lines to install and service. (5) No cooling towers nor cooling water costs. (6) Greater dependability and continuity of service.

SEND FOR MORE FACTS. Mail coupon for catalog, technical data and specifications.

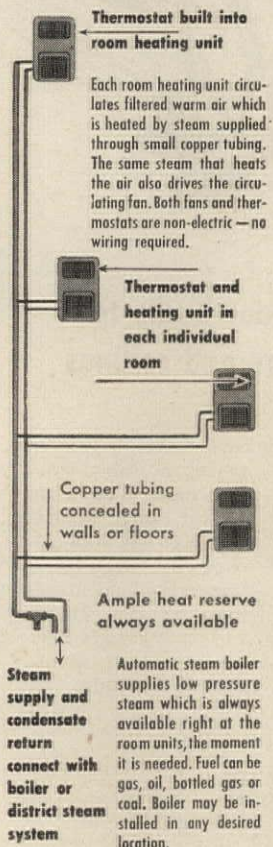
OCCUPANTS SELECT THEIR FAVORITE ROOM TEMPERATURES HERE

Room heating units, 18 inches high, are recessed 4 inches in walls, with only grille projecting. Unit shown has 12,000 Btu capacity. Other sizes (varying in width) have 6,000 and 18,000 Btu output.

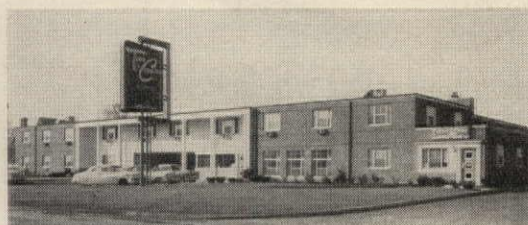


Virginia Avenue Baptist Church, Atlanta, cuts heating costs in new educational unit. With the Iron Fireman SelecTemp system the offices can be heated throughout the week, and individual rooms heated when needed for mid-week meetings, without heating the entire building.

HOW SELECTEMP WORKS



SelectTemp will heat the new wing of the Blanchard Valley Hospital, Findlay, Ohio, designed by Wilbur Watson Associates, Cleveland. In addition to room-by-room temperature control, SelecTemp's non-electric fans and thermostats insure safety in operating and other rooms.



Hundreds of motels throughout the United States and Canada are enthusiastic users of SelecTemp heating. The luxurious Town & Country Motor Hotel near Akron, Ohio, uses SelecTemp heating in combination with in-the-wall cooling. Each guest is in complete control of his own comfort. Firestone & Cassidy, Akron, Ohio, Architects.

SelectTemp HEATING
EVERY ROOM A ZONE

For every size and type of building —hotels, motels, apartment houses, schools, churches, office buildings, institutions, hospitals and homes.

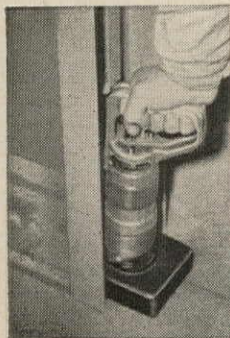
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With the Remington Stud Driver you can take on every stud-fastening job—light, medium and heavy-duty—and save time and money on each of them! Compact tool sets up to 6 studs per minute. Handles both 1/4" and 3/8" diameter studs, needs no outside power source. Shown below are three of many Stud Driver applications.



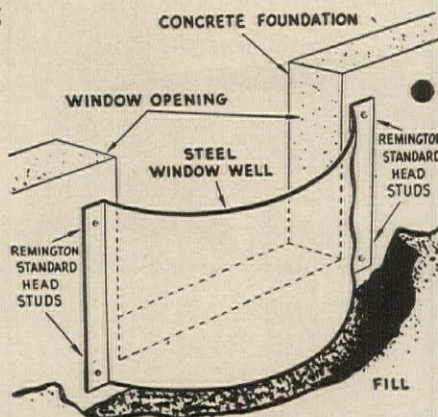
Fastening door bucks to concrete floors and ceilings



Set door buck in place, plumbed and shimmed. Use Stud Driver with special guard to set floor anchor clips with Remington S-21 standard-head studs. Bend ceiling struts into position and secure with S-21 studs.

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Place wood runners on chalk lines. Using standard guard or Remington GS-21, fasten 2 x 4 runners to the concrete floor or ceiling with Remington S-27 standard head studs.



Installing cellar window wells

After the concrete forms are removed, position the steel window well and anchor it with the cartridge-powered Remington Stud Driver. Use four Remington S-21 standard-head studs. Compact Stud Driver easily fits into confined places and can be operated with one hand if necessary.

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DATES

"New York City School Buildings: 1806-1956," special exhibit through Jan., Metropolitan Museum of Art, New York City

Smithsonian Institution Traveling Exhibits, Oct. 1-22: "Landscape Architecture Today," Iowa State Teachers College, Cedar Falls; "Architectural Photography," Dept. of Architecture, Univ. of Florida, Gainesville; "San Francisco Bay Region Architecture," Yale Art Gallery, New Haven, Conn.; "A Half Century of Architectural Education," School of Fine Arts, Philadelphia; "German Architecture Today," AIA, Washington, D.C.; "Contemporary Finnish Architecture," Lawrence Art Museum, Williamstown, Mass.

Mortgage Bankers Assn., annual convention running concurrently with exhibit of building, industry and services, Oct. 8-11, Conrad Hilton Hotel, Chicago

Federation of Sewage and Industrial Wastes Assn., annual convention, Oct. 8-11, Hotel Statler, Los Angeles

US Civil Defense Council, annual conference, Oct. 9-12, Biltmore Hotel, Atlanta

Noise Abatement Symposium, annual meeting, Oct. 11-12, Hotel Sherman, Chicago

California Council of Landscape Architects, annual convention, Oct. 12-14, Biltmore Hotel, Santa Barbara

Sanitation Maintenance Show & Conference, Oct. 14-16, Coliseum, New York City

Curtain Wall Construction Workshop, Oct. 15-16, Building Research Institute, Hotel Willard, Washington, D.C.

American Gas Assn., annual convention, Oct. 15-17, Atlantic City, N.J.

American Society of Civil Engineers, annual convention, Oct. 15-19, William Penn Hotel, Pittsburgh

American Title Assn., golden jubilee convention, Oct. 17-20, Fontainebleau Hotel, Miami Beach

Fifth Annual Conference for Architects, Dept. of Architecture, Univ. of Illinois, Oct. 18-20, Urbana

Architectural Woodwork Institute, convention, Oct. 18-19, LaSalle Hotel, Chicago

continued on p. 44



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Leave the grunt-and-groan test to the wrestlers. All we want to point out is: strength and durability of a folding door hinge primarily *on the hinge*. Rods and pantograph parts are important, of course. But it's the hinge that takes the stress and strain of suspension and operation. The stronger the hinge, the more durable the door. That's why FOLDOOR designed the exclusive, 5½" Multi-V hinge—and uses it in every FOLDOOR made. This hinge is structurally solid, without cut-out "soft" spots. It provides extra rod support. It contains more *working* metal, inch for inch, than any other folding door hinge known. And because it is "stubbier," it's bound to be extra rigid. Combined with FOLDOOR's unique multipoint hinge-to-rod welding—heavy track—special trolley wheels—this Multi-V hinge assures the durability you demand on *any* installation. Ask your FOLDOOR Distributor. He's listed under "Doors" in the yellow pages.

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FIRM _____

ADDRESS _____

CITY _____ STATE _____

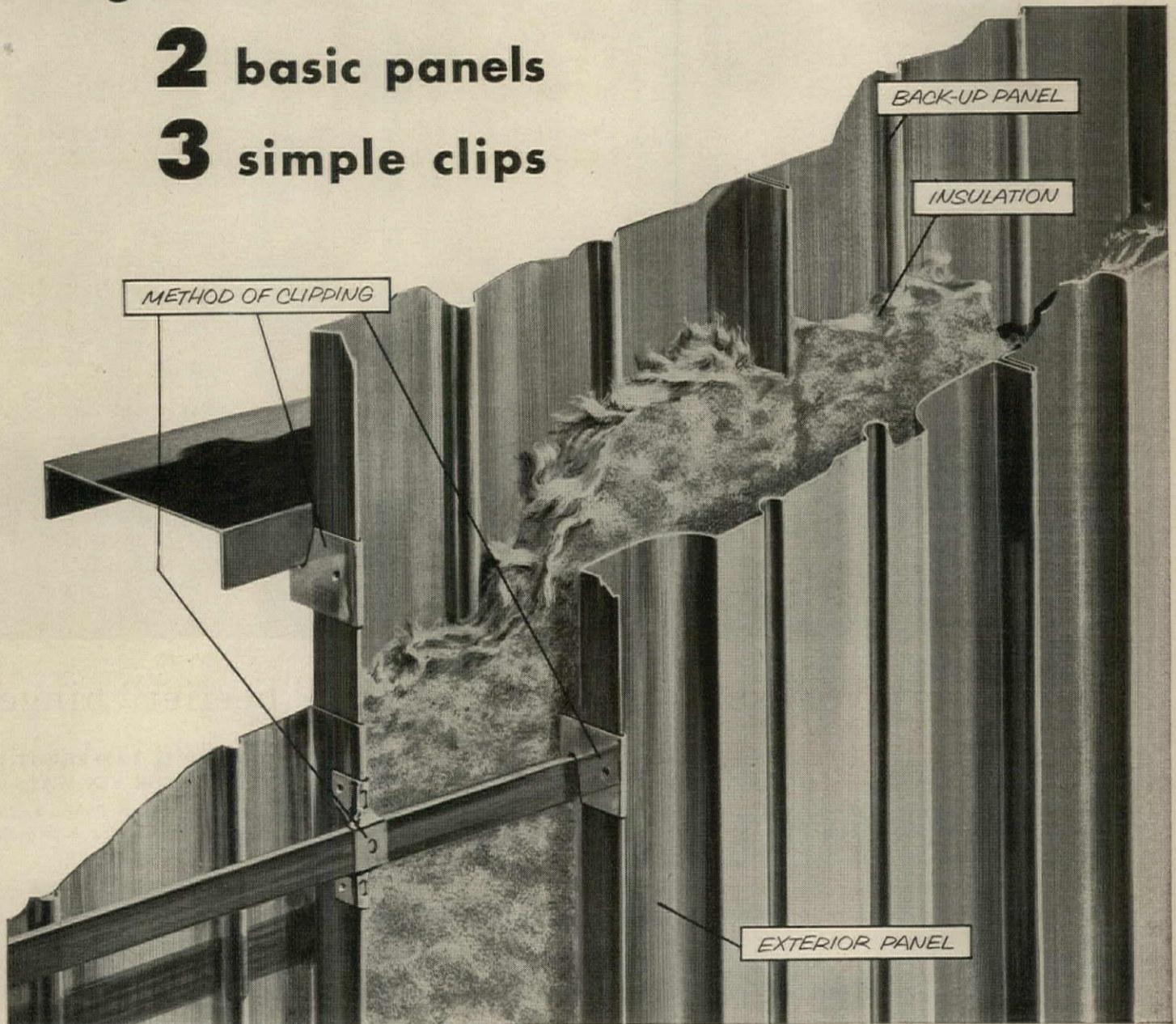
Enclose a complete building

with new **Stran-Satin Curtain**

using **1** tool

2 basic panels

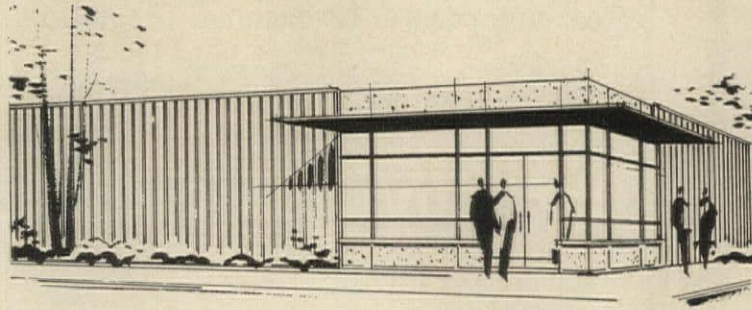
3 simple clips



The new Stran-Steel curtain wall system with exclusive *Stran-Satin* combines a satin-smooth finish, free of spangled patterns, with the protection of a noncorrosive zinc coating. You get the low cost of steel, plus the eye-appeal of far more expensive materials. Stran-Steel curtain wall system consists of two basic panels and has a simple field erection assembly technique. Panels

are never pierced or marred by bolts, screws or rivets. By using special clips and a crimping tool, you get a smooth, leakproof surface. This assembly technique provides a modern method of wall or fascia construction for industrial, commercial, recreational, school, hospital or other public buildings. And buildings go up fast so other trades can begin work sooner.

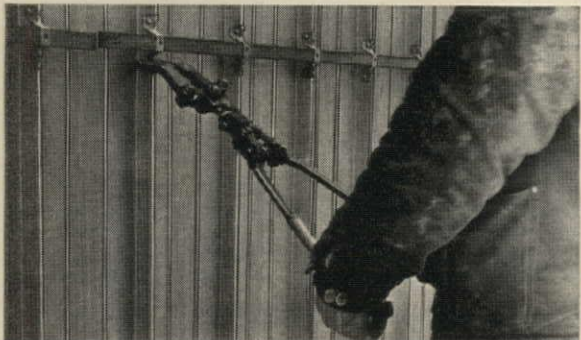
Wall System



Stran-Steel curtain wall is a quality product designed to meet strict architectural requirements.



Back-up panel is clipped to horizontal girts of the building's framework. At the joints, the panels overlap and interlock.



Ten-foot steel bars are clipped horizontally and are on 4-foot centers. The clips are crimped to provide a permanent assembly.



Noncombustible insulation is inserted between the back-up panel and the steel bars.



Exterior panel is clipped to 10-foot bar and crimped in place. Next panel overlaps and covers clip for an unbroken surface.

EXTERIOR PANEL

Exterior panel is heavy gage steel with *Stran-Satin* finish. Continuous lengths up to 54 feet can be furnished in three gages—18, 20 or 24.

BACK-UP PANEL

Back-up panel is also available up to 54-foot lengths in three gages with exclusive *Stran-Satin* finish. Offset construction eliminates metal-to-metal contact increasing insulating efficiency and reducing condensation.

INSULATION

Sections are designed for 1½-inch batt-type insulation. With a "U" factor of 0.14, this panel has the insulating efficiency of a 16-inch masonry wall.

Here's where you can get more information:

Atlanta 3, Ga., 206 Volunteer Bldg.
 Cleveland 15, Ohio, 20950 Center Ridge Rd.
 Detroit 29, Mich., Tecumseh Rd., Ecorse
 Houston 5, Tex., 2444 Times Blvd.
 Minneapolis 4, Minn., 708 S. 10th St.
 Kansas City 16, Mo., 1322 Burlington
 San Francisco 4, Calif., 235 Montgomery St.
 Washington 6, D.C., 1200 18th St., N.W.



STRAN-STEEL CORPORATION

Ecorse, Detroit 29, Michigan • A Unit of

NATIONAL STEEL CORPORATION

For complete details on this new Curtain Wall Panel call your local Stran-Steel Architectural Products dealer or mail this coupon.

Stran-Steel Corporation
 Ecorse, Detroit 29, Michigan

- Please send literature described above.
- Please have your representative contact me.

Name _____

Company _____

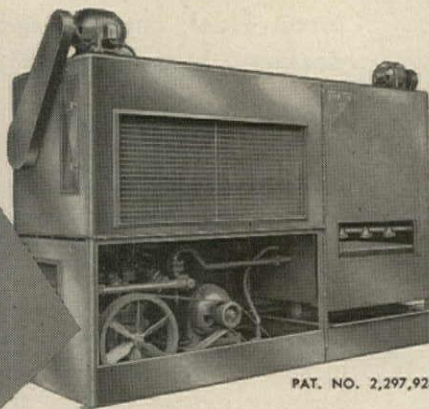
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City _____ Zone _____ State _____ N

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- COMPLETELY PACKAGED for maximum economy in installation and operation.
- COMPLETELY FLEXIBLE to meet any special load conditions or space requirements

GOVERNAIR has been building completely packaged air conditioning units longer than any other company in the field. Today, this valuable experience gained, in making hundreds of different types of installations, can benefit you on nearly any type of job you may be planning.

For, only GOVERNAIR offers the installation advantages of compact one-unit design . . . combined with our manufacturing flexibility that enables you to successfully meet unusual load conditions, space or multi-zone requirements.

Added to this is the GOVERNAIR reputation for quality-engineered, longer life products . . . designed to operate at maximum efficiency and economy. Write for full information.

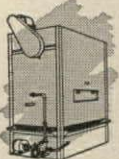
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CONDITIONERS



EVAPORATIVE
CONDENSERS



COOLING
TOWERS



UNIT
COOLERS



BLAST COILS
FOR HEATING
AND COOLING

DATES *cont'd.*

National Assn. of Housing & Redevelopment Officials, annual convention, Oct. 21-24, Statler Hotel, New York City

American Standards Assn., annual convention, Oct. 22-24, Hotel Roosevelt, New York City

American Concrete Institute, annual regional meeting, Oct. 24-25, Sheraton-Mount Royal Hotel, Montreal

"Louis Sullivan and the Architecture of Free Enterprise," special exhibit, Oct. 25-Dec. 2, Art Institute, Chicago

American Institute of Steel Construction, Inc., annual meeting, Oct. 29-Nov. 1, Greenbrier Hotel, White Sulphur Springs, W. Va.

Society for Experimental Stress Analysis, annual meeting and exhibit, Nov. 1-2, Deshler-Hilton Hotel, Columbus, Ohio

Michigan Society of Architects and Univ. of Michigan College of Architecture and School of Education, conference on school planning, Nov. 1, Ann Arbor

National Assn. of Real Estate Boards, annual convention, Nov. 11-16, Jefferson Hotel, St. Louis

Structural Clay Products Institute, annual convention, Nov. 12-14, Boca Raton, Fla.

National Paint, Varnish and Lacquer Assn., annual convention, Nov. 12-14, Hotel Statler, Los Angeles

National Hotel Exposition, Nov. 12-16, Coliseum, New York City

American Society of Mechanical Engineers, annual meeting, Nov. 25-30, Hotels Statler and McAlpin, New York City

AIA Regional Meetings: Gulf States, Oct. 7-9, "Architecture for the Nuclear Age," Lookout Mountain Hotel, Chattanooga, Tenn.; Calif. Council of Architects, Oct. 10-13, Yosemite Lodge, Yosemite Natl. Park; Western Mountain region, Oct. 19-20, Hotel Utah, Salt Lake City; New York State, Oct. 25-27, Lake Placid Club, Lake Placid; Texas, Oct. 31-Nov. 2, Corpus Christi; Florida, Nov. 8-10, "Planning for the Automobile," Seville Hotel, Miami Beach; Mid-Atlantic and Penn. Society of Architects, Nov. 14-16, Hershey Hotel, Hershey, Penn.

V-LOK Gets a School Under Roof Faster, Reduces Erection Costs

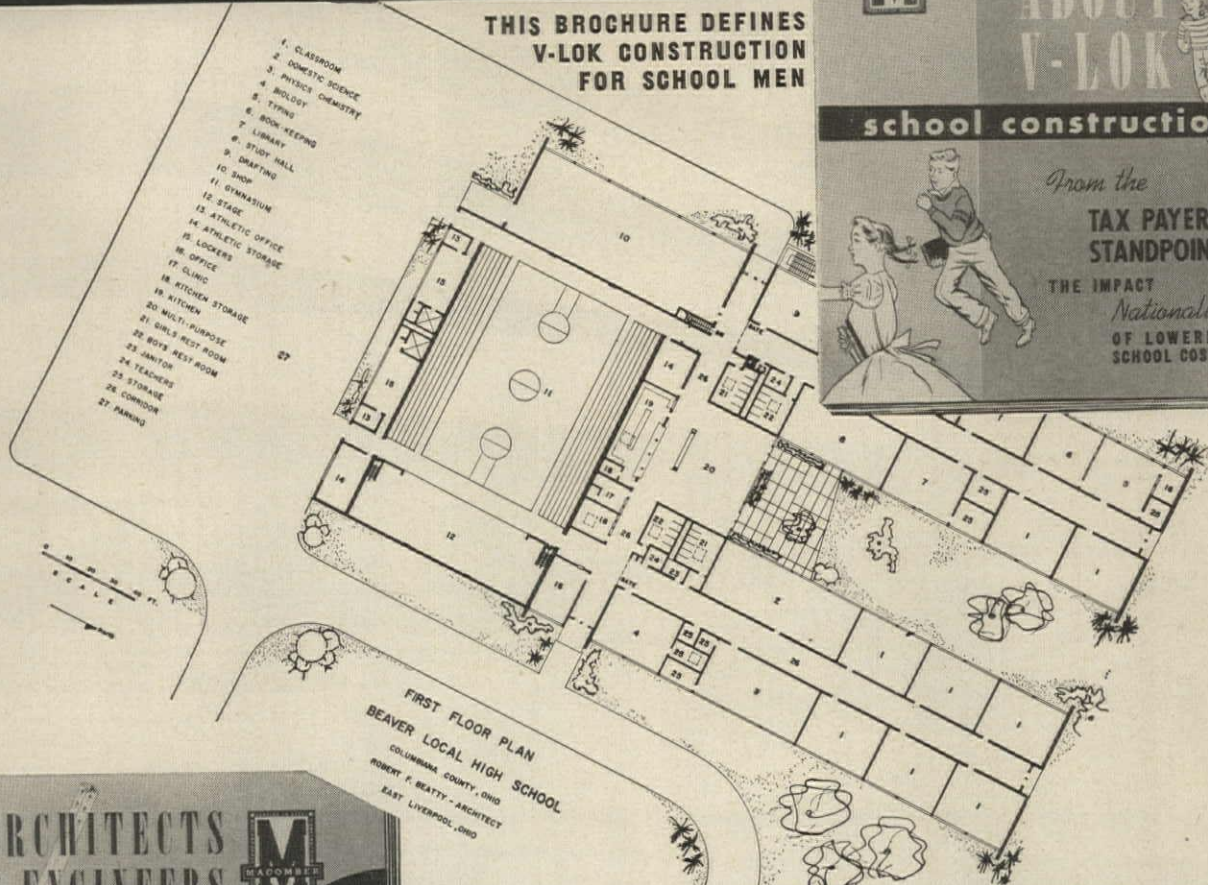
THIS BROCHURE DEFINES V-LOK CONSTRUCTION FOR SCHOOL MEN



FACTS ABOUT V-LOK

school construction

From the TAXPAYERS STANDPOINT THE IMPACT OF LOWERED SCHOOL COSTS



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V-LOK provides a simple, fast erection method of steel framing a school. With the steel frame erected and the building roofed in a matter of days, every other operation is speeded up. A school designed for V-LOK—or conventional framing changed over to V-LOK—is the greatest single step the Architect and School Board can take to reduce school costs and advance occupancy date. Your General Contractor who erects ONE V-LOK school will be the first to ask for another V-LOK job. Add up the many plus values you are assured when you design and build with V-LOK and you have the one, complete answer to the school situation. Do you have our V-LOK literature?

THIS DESIGN MANUAL WILL BE A DEFINITE AID IN DESIGNING ANY SCHOOL PLAN

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The U. S. Department of Defense Military Personnel Records Center at St. Louis is one of the 20 largest buildings in the world. With more usable square feet of floor space than the Empire State Building, it is second only in size to the Pentagon among all government buildings.

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Wm. C. E. Becker, Structural Engineer . . . ELECTRICAL CONTRACTOR: Mack Electric Co. . . . GENERAL CONTRACTOR: Fruin-Colnon Contracting Co. & Peter Kiewit Son's Co.

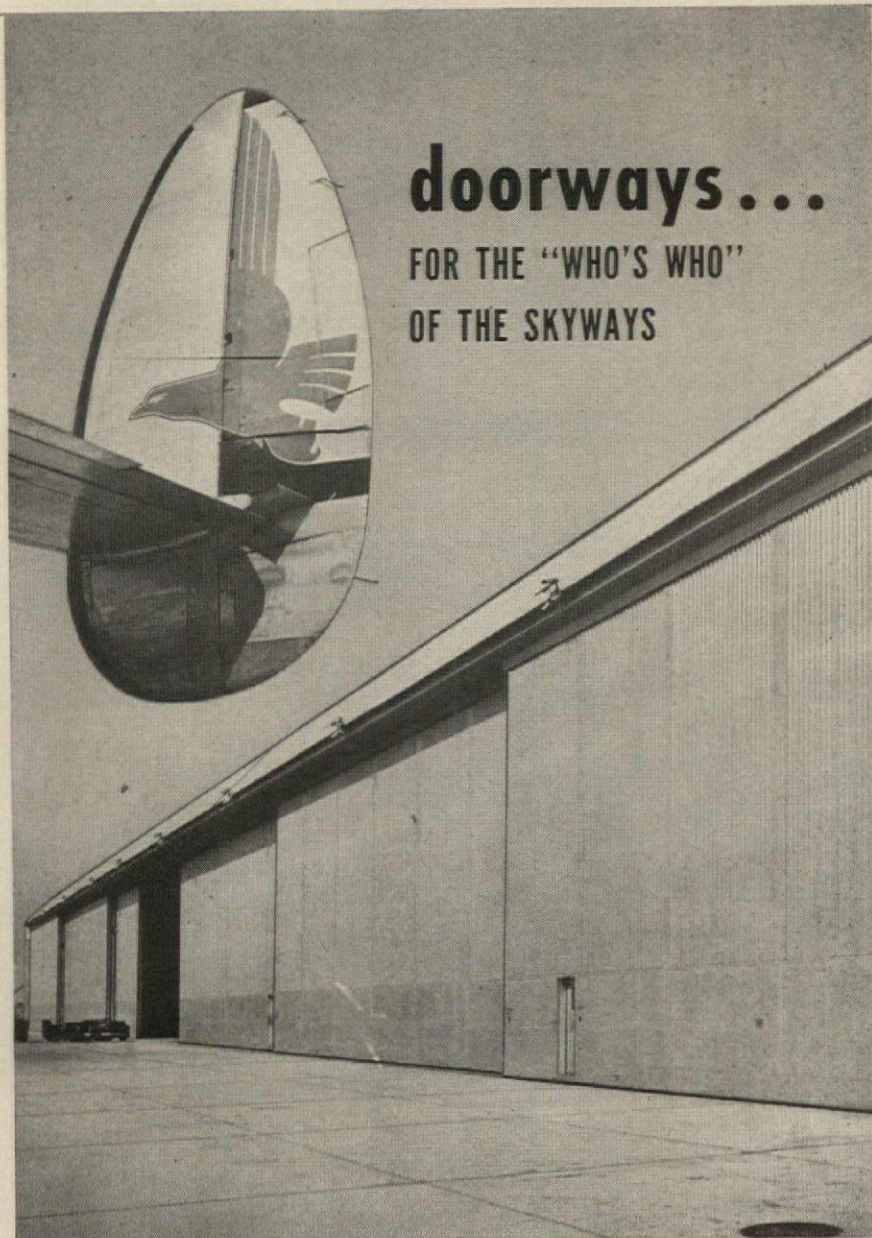
lighting by Day-Brite makes the big difference



Typical corridor area lighted with Day-Brite fixtures. Note uniform illumination over entire corridor length.



Huge record-storage area, especially arranged for vertical lighting of files with Day-Brite fixtures.



doorways...

FOR THE "WHO'S WHO"
OF THE SKYWAYS

Hangar #9, New York International Airport. Planned and built for Eastern Air Lines by New York Port Authority. Contractor: Cauldwell-Wingate Co. International-built hangar doors provide two openings, each 33 feet high and totaling 461 feet in width a combined entrance area stretching the length of some 1½ average city blocks.

INTERNATIONAL-BUILT DOORS for aircraft hangars and industrial plants alike are designed to assure these two prime advantages: (1) Fast, easy operation under any climatic conditions. (2) Lifetime weather-tightness. Sound reasons why more and more major names in American aviation and industry are served by doors "tailor made" by International.

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(KNOCK 'EM DEAD)

Let us pause briefly and contemplate the peaceful summer season now behind us; for there is little peace to come in the months ahead. The shopping season is coming up, the frantic months, the grim autumnal passion of the great American market, October, November, December, when the merchants mobilize to drive hordes of Christmas customers up and down Main Street with whips of tinsel. *Noel, Noel*, and elections too!

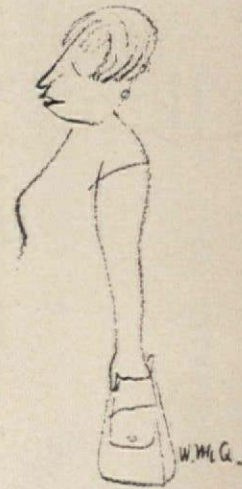
This year the shopping treatment, the numbing, has started early, perhaps with an architectural press release which came in just as summer began to wane:

"RADICAL DESIGN OF MARTIN'S
IN GREAT SOUTH BAY CENTER
EMPLOYS NEW USE OF SPACE

"The man responsible for the building and interior design of \$250,000,000 of some of the country's plushiest stores and hotels has just completed a two million unit which advance viewers say will top his previous talents in creating shopping appeal for women.

"Morris Lapidus, famed architect of the Fountainebleau, Eden Roc, and American Hotel in Miami Beach, has departed radically from orthodox merchandising concepts in his design of Martin's, opening August 10th at Great South Bay Shopping Center, Babylon, L.I.

"According to Fred Zeitz, Martin's president, the architectural aim was to create a free flow of customer traffic that would enable the customer to move almost unconsciously from one department to another."



(CLASSICS I)

Fit company for the beautiful Milan Museum conversion by Belgiojoso, Peresutti & Rogers in Italy (shown elsewhere in this issue) are some photographs shown recently in *Architettura* of postwar restorations of bomb-battered Italian architectural treasures, evidence that fine workmanship—and respect for fine workmanship—continue strong on the Mediterranean.

PARENTHESES



Apse of Padua Church



Church of S. Francesco, Bologna



Town Hall in Bologna

(CLASSICS II)

Thinking of buying a new model car this year? Appalled by the latest *glit* and *zoom* from the Detroit-designing ateliers?

Here are three of the numerous architects across the country who have, with loving care, sought out fine designs in automobiles. The first, Morgan Yost, of Yost & Taylor in Kenilworth, Ill., is one of the foremost US classic car collectors: "At present I have ten old cars—or is it eleven—mostly Packards, my speciality.

The engineering and workmanship of these cars are superb, with the magnificent Twelves of the Thirties as the finest example.

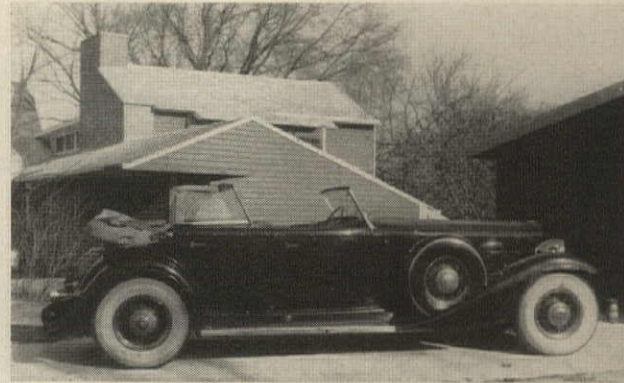
"Back when they and I were younger, I owned a number of Packards, since become Classics—a 733 roadster, a 740 phaeton (dual cowl with six artillery wheels!), a 900 convertible, then a series of sedans, I think 15 Packards in all. Young men are too inclined to be practical so I reluctantly sold those beautiful cars as children came along. I have since employed private detectives to try to locate the phaeton with no success. A reward is still out. I sold it in 1939 when it had but 22,000 miles on it, absolutely mint, and it was still in use at the start of the war so it could easily be around somewhere.

"When I threw away the practicality of youth a few years ago I searched for a Packard phaeton to fill the vast and empty void. Through a New York Times ad I located a 1933 Twelve Dietrich Sport phaeton, model 1006 (1). After paying too much for it, I drove it home from New York by way of Washington D.C. Vapor-lock stalled the car in the tunnel through the Allegheny Mountain on the Pennsylvania Turnpike, holding up the traffic of the nation for an agonizing time. A friendly trucker pushed me out like a porpoise before his load of fish began to spoil and just as the big red wrecker-ambulance-fire truck arrived to yank us out. Opening the hood vents solved the trouble and I rolled home at a steady 60—though I confess I shot it up to an easy 75 once or twice to amaze some modern bathtub pilots. These Twelves are absolutely quiet, have monumental acceleration and a top speed adequately better than 100 mi. per hour. This 1930 Packard boat-tail speedster (2) is also a rare model, a straight Eight using the large engine on a short wheel base, a sports car of its day."

Out in California, John Lyon Reid cherishes a rare jewel among cars (3 and 4), a 1938 Jaguar S.S. (Standard Swallow) 100.

On the East Coast Stan Sharp, of Ketchum, Gina & Sharp drives an almost new classic, a 1954 Rolls Royce Silver Dawn (5).

"If you keep it 10 or 12 years it isn't really expensive transportation," he says. "But that's not why I bought it. It's a pleasure. When we get out of one of those rough school-board meetings, it's a joy to get into it and drive away."—W. McQ.



(1)



(2)



(3)

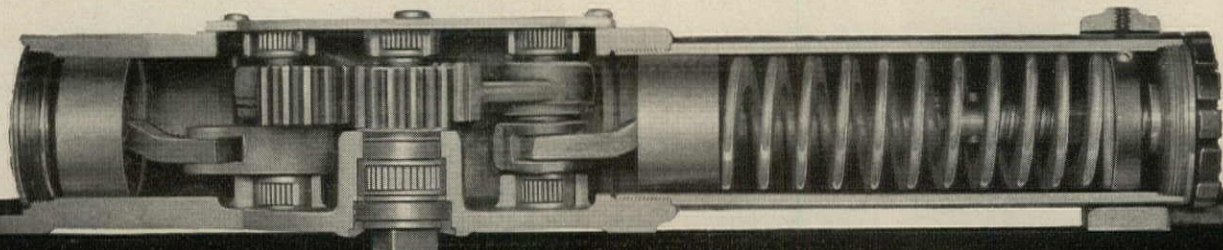


(4)

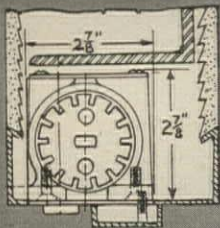


(5)

IN A TIGHT ^{head} JAMB?



no problem with **RIXSON** OVERHEAD concealed DOOR CLOSERS

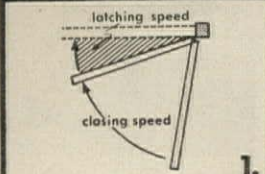


fits in 3" square with room to spare
(inside dimension of head jamb)

overall only 2 7/8" x 2 7/8" x 17" long

The most compact of all concealed overhead door closers. Ideal for installations where modern shallow head jambs are specified.

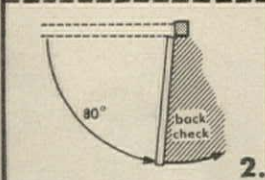
ALL the controls are built-in...



1.

1. two closing speed adjustments

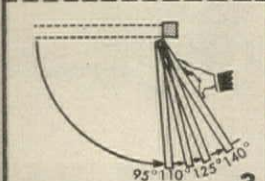
The closing speed from open to approximately 15° is controlled by one adjustment and the latch speed from 15° to closed position by another.



2.

2. hydraulic shock absorber (back check)

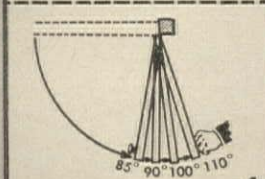
At approximately 80° a hydraulic resistance starts to slow down or check the opening action of the door. Hydraulic back check optional.



3.

3. spring cushion door stop

Door is "cushion stopped" at choice of any one of four factory-set positions 95°, 110°, 125°, or 140°. Stop removed for wider openings to 160°.



4.

4. built-in door holder

Where specified—built-in to hold door at choice of 85°, 90°, 100°, or 110°.

Three sizes for center hung and butt hung installations.

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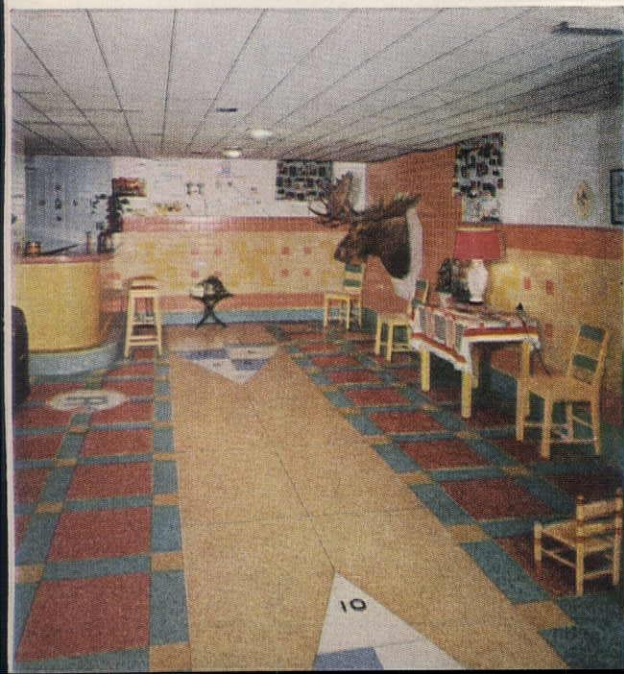
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Specify any design you wish, in virtually any combination of colors — Terrazzo, marble-hard and concrete-durable, is versatile as your imagination. Free AIA Kit upon request to the National Terrazzo and Mosaic Association, 711 Fourteenth St., N.W., Washington 5, D. C. Catalogued in Sweet's.

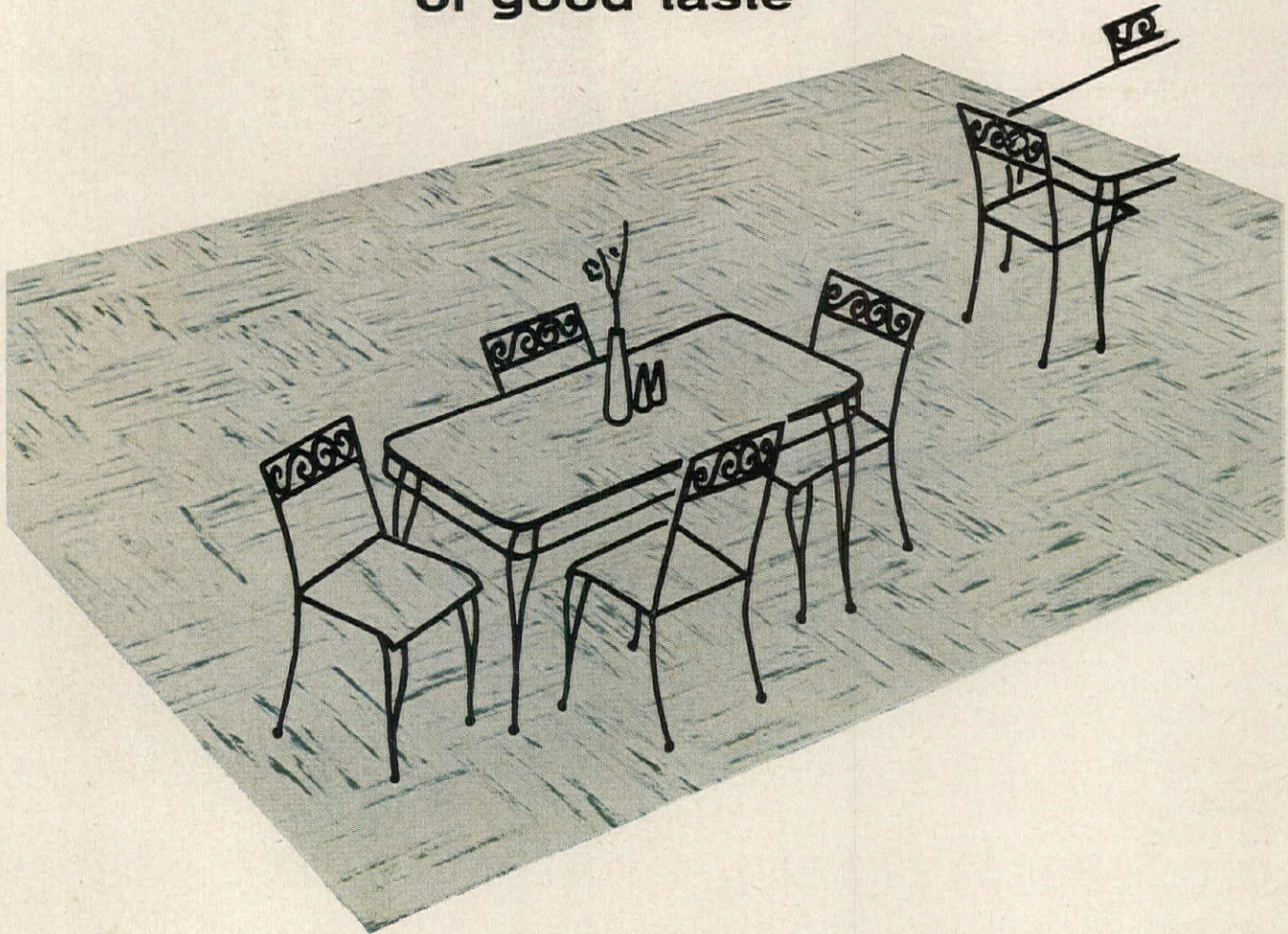
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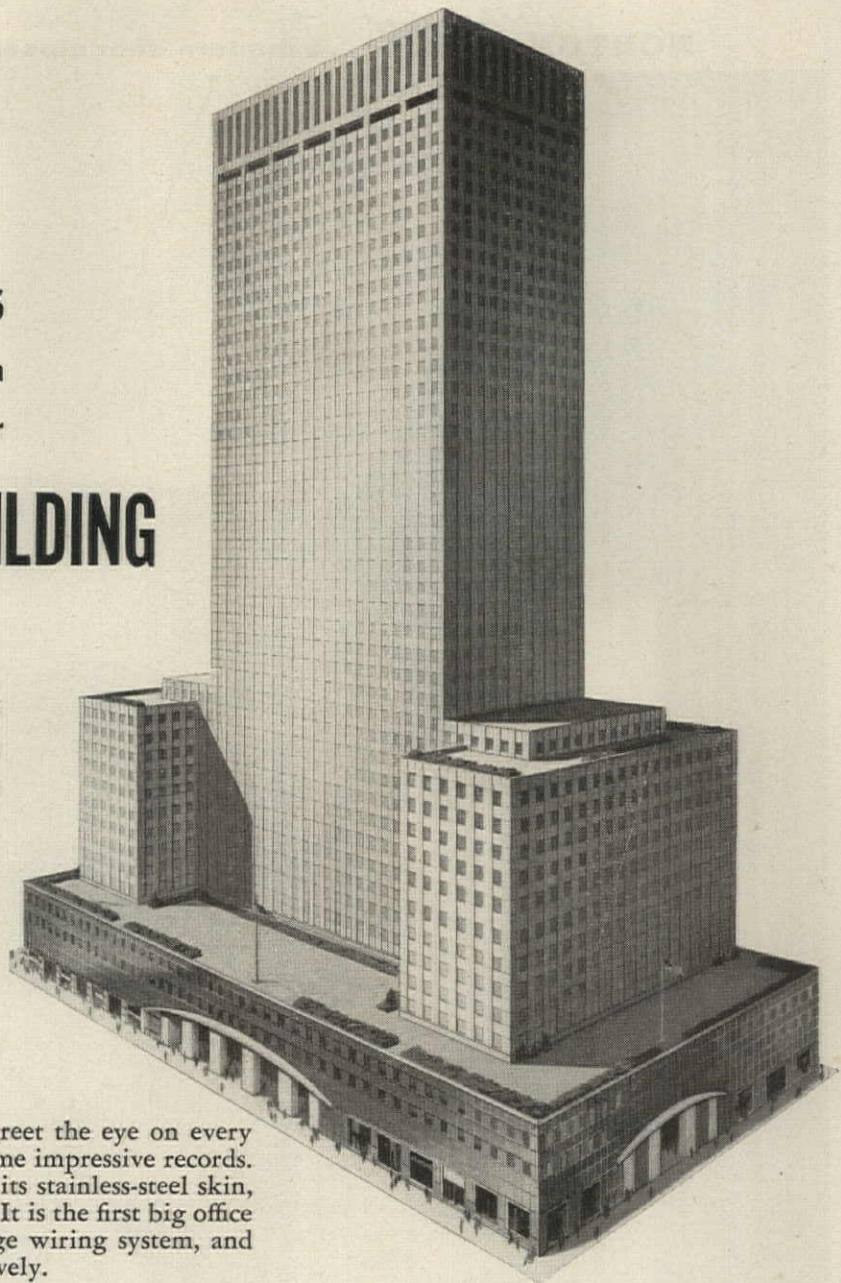
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in giant network serving
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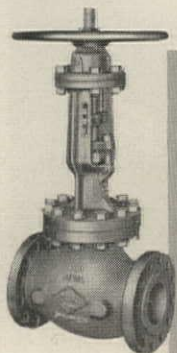
In an area where news-making structures greet the eye on every side, the new Socony Mobil Building sets some impressive records. It is New York's biggest in 25 years. With its stainless-steel skin, it is the world's largest metal-clad building. It is the first big office building in New York to use a high-voltage wiring system, and the first to use self-service elevators exclusively.

In choosing Jenkins Valves, however, the builders followed a familiar precedent. They took the same future-minded view of operating economy as the planners of so many of the other notable buildings that shape Manhattan's famous skyline . . . who also specified Jenkins Valves.

For new installations, for all replacements, let the Jenkins Diamond be your guide to lasting valve economy. Jenkins Bros., 100 Park Ave., New York 17.

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General Contractor: TURNER CONSTRUCTION CO.
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A DAILY "POPULATION" of 10,000 office-workers requires, for modern standards of comfort and convenience, piping comparable in volume and variety to that of some cities. The thousands of Jenkins Valves chosen for reliable, efficient, and safe control of major systems in this complex network include Iron Gates and Checks on the main city water supply; Cast Steel Gates with motor operation for remote control on fire lines; and Bronze Valves of all patterns on water, oil, air, and gas lines.



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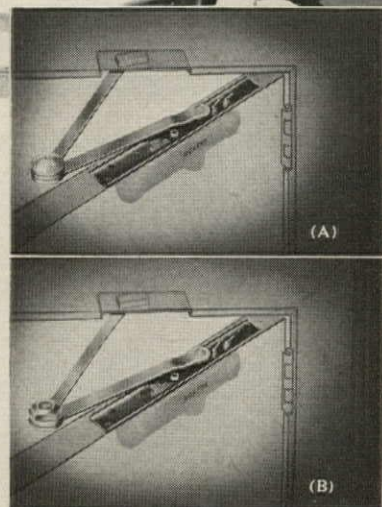


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You can be sure of complete harmony of design between doors and door closers when you specify *Norton Inador*. You can also be sure your clients will receive all the reliability, durability, low maintenance and precision workmanship so characteristic of all Norton Door Closers. For fully illustrated descriptions and engineering data on this and other models, consult the current Norton catalog. Write for one today if you don't already have a copy.

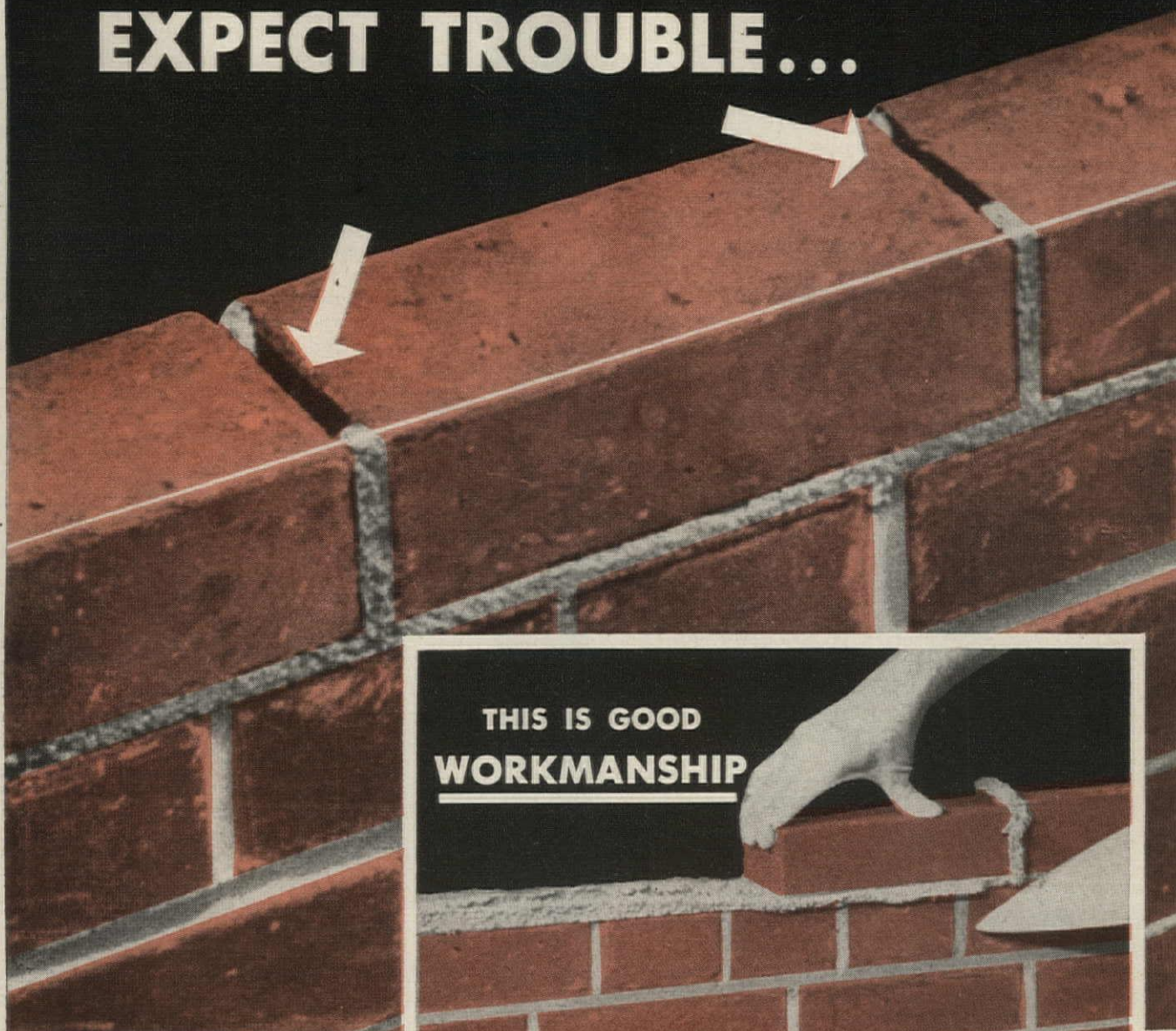
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DOOR CLOSERS Dept. AF-106, Berrien Springs, Mich.



The complete INADOR mechanism is concealed in a mortise in top rail of door ... 4 sizes to meet every need ... all models available with (A) regular arm or (B) holder open arm.

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EXPECT TROUBLE...



GOOD workmanship is one of the most important factors in preventing leaky brick walls.

Good workmanship includes filling the bed joints and head joints—wetting the brick—and backplastering the face brick.

Expect trouble when mortar is dabbed only on the corners of the brick, even when the head joint is slushed.

Because it is so workable, Brixment makes it easy for the bricklayer to use

**THIS IS GOOD
WORKMANSHIP**

enough mortar to completely fill the joints, and still lay the brick easily and accurately to the line.

Brixment mortar has greater plasticity, higher water-retaining capacity and

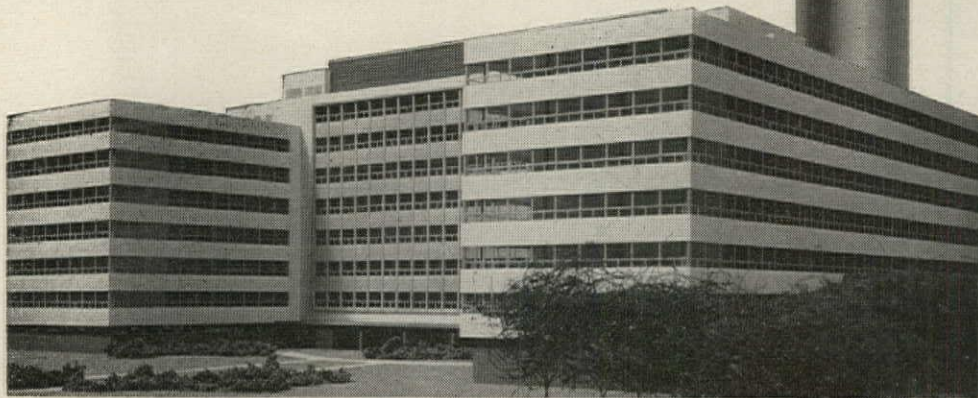
bonding quality, greater resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

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will outlast the
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State Office Building, Springfield, Illinois
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Supervising Architect: Louis H. Gerding
Associate Architect: Lankton and Ziegele
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The new Illinois State Office Building in Springfield was constructed in "H" type design at a cost of about \$11,500,000. It has a combined area (all floor space) of about 10 acres . . . eight floors plus a basement. A branch post office and a cafeteria are included. Entire building is air conditioned.

Downspouts, drains and waste lines are all Clow I. P. S. (threaded) Cast Iron Pipe—which is corrosion-proof, requires no replacement, no upkeep. Installation is fast, economical, permanent. Clow I. P. S. Cast Iron Pipe has same O.D. as steel pipe . . . plain or threaded ends . . . 3, 4, 5, 6, 8, and 10" sizes in 18' random lengths. NEW SIZES 1 1/2" in 8-10' lengths; 2" in 10-13' lengths. Also available with integral calking hub on one end (other end plain) in 18' random lengths 3, 4, 5, 6, 8 and 10" sizes.

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LETTERS

THE REAL ESTATE OPERATOR

Forum:

Your article about the real estate operator (AF, Aug '56) was of interest.

Our country has been developed by speculators in land from the early companies of Gentlemen Adventurers who opened up the continent in colonial times to the contemporary builders of satellite and suburban communities. Critics of land speculation wouldn't be here if some one hadn't been willing to take a chance.

Our checkerboard plan of platting has proved itself the best. It is indefinitely expansible and can be made beautiful. Our finest modern buildings are being built on the same principles in three dimensions instead of two. One great difficulty with European cities now that they are growing rapidly is that their ground plans are not expansible.

HERBERT U. NELSON, secretary
American Real Property Federation
Washington, D.C.

Forum:

The introduction of suburban centers with big signatories acting as bell-cows and the very important factors of tax angles and depreciation have helped to relegate the old-style real estate broker to relative obscurity. But let us not disparage the judgment of real estate brokers who not only dreamed of building cities, but created many situations and landmarks which are an integral part of our national history.

After viewing realty operations in a metropolitan city for more than 50 years, I am sure that men who had instinct and vision, rather than the professional appraisers with the schoolbooks and slide rules, were the great factors in working out the destiny of areas and neighborhoods and were responsible for the patterns of profitable undertakings.

I respect statistics as such, but I still rely on the forecasting brains of men who have proved that they possess the thing the world calls "savvy."

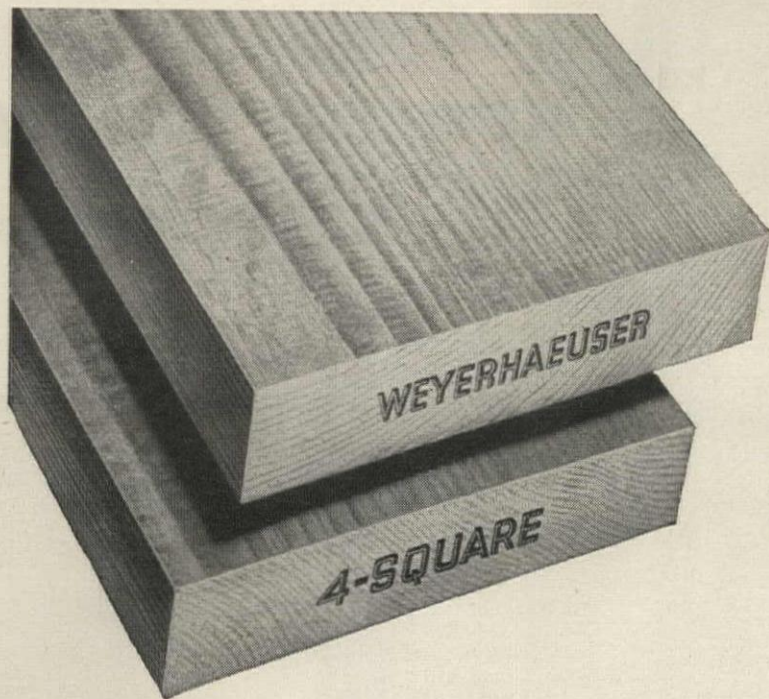
HENRY BRODERICK
Henry Broderick, Inc., real estate
Seattle, Wash.

Forum:

I disagree with some of your conclusions. Architects are almost as much to blame as are real estate operators for the lack of land planning and proper structural design in city and suburb. They should have raised their voices in protest generations ago, when the trend toward haphazard zoning and structural design first manifested itself.

The original speculators in land were certainly not the professional operators we know today. They were village merchants, blacksmiths, doctors and other leaders whose high earnings provided them with surplus cash to "invest" in local land. As landlords they cared little about the

continued on p. 62



This brand name
also means...

Kiln-dried Lumber

Here are some of the reasons why
architects specify seasoned lumber

Dimensional stability—Because it is scientifically seasoned *before* surfacing to size, kiln-dried lumber is pre-conditioned to resist dimensional changes. The name “Weyerhaeuser 4-Square” on lumber is assurance of proper seasoning.

Easier to handle and work—Because kiln-drying removes excess moisture, seasoned lumber is easier to handle and process. The drying also gives the cellular structure of the wood more uniformity, which improves workability.

Strong and durable—Kiln-drying greatly increases the four strength properties of lumber (bending strength, vertical strength, stiffness, and hardness) by the firm “patterning” of the

wood cells and fibers.

Takes and holds finishes—Seasoned wood holds paint remarkably well—and prolongs the decorative and protective life of the finish.

Important facts for architects—Because it means reliable quality—because it has been widely advertised for many years—the Weyerhaeuser 4-Square brand name is well-known to the public . . . a mark of sound building value.

Architects can specify Weyerhaeuser 4-Square with confidence because this lumber is scientifically kiln-dried, precision-manufactured, properly graded and carefully loaded for shipment. It is available in many species and grades, in commons and clears.

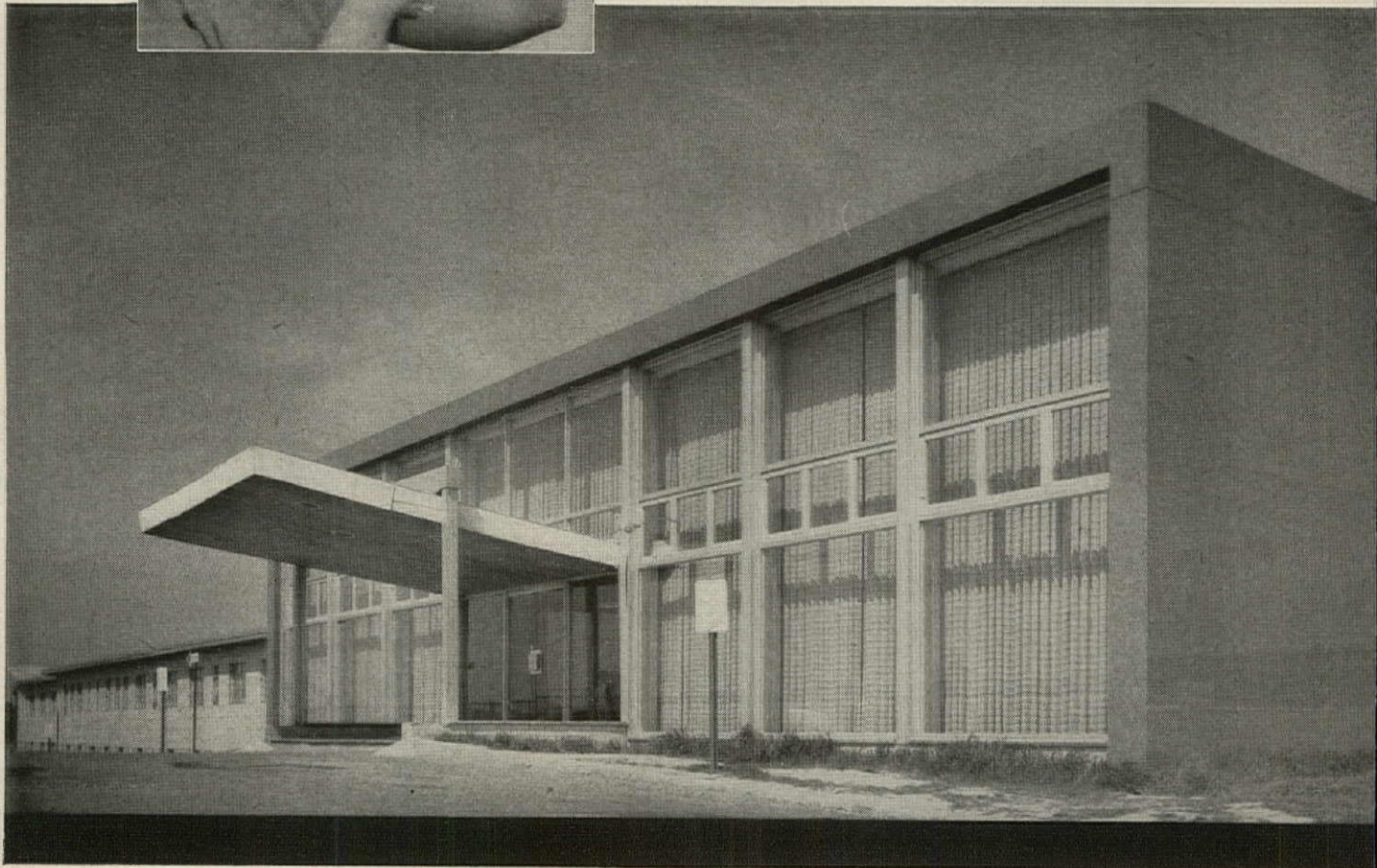
Weyerhaeuser Sales Company

ST. PAUL 1, MINNESOTA





KEWANEE "CRUISING PASSES CRITICAL



■ In a hospital there can't be the slightest margin of error. Nowhere else is equipment required to pass such critical tests. Mr. Howard A. Palestine, Manager of Mid-Island Hospital, Bethpage, Long Island, puts it this way: "Like all hospitals, ours operates 24 hours a day, 7 days a week . . . and we do it with the help of such dependable equipment as Kewanee Boilers. It was the reputation which KEWANEE has built up over the years which prompted us to specify that this type of boiler system be used." Rated on nominal capacity, Kewanee Reserve Plus Rated Boilers with 50% extra built-in power, fill normal requirements in stride. Yet, they can be stepped

up instantly to produce additional power needed for emergencies—for fluctuating loads. They provide for expansion too. Here you get "cruising speed" boiler operation with greater efficiency—lower fuel and maintenance costs . . . less stress and strain, plus constant protection against breakdowns and repairs. There's no necessity to operate at full speed all the time. In addition, "cruising speed" operation means you get much longer boiler life. So select Kewanee Reserve Plus Rated Boilers. You can be sure of dependable service, with savings in money too. KEWANEE BOILER DIVISION OF AMERICAN-STANDARD, 101 Franklin Street, Kewanee, Illinois.

"SPEED" BOILER OPERATION TEST AT MID-ISLAND HOSPITAL

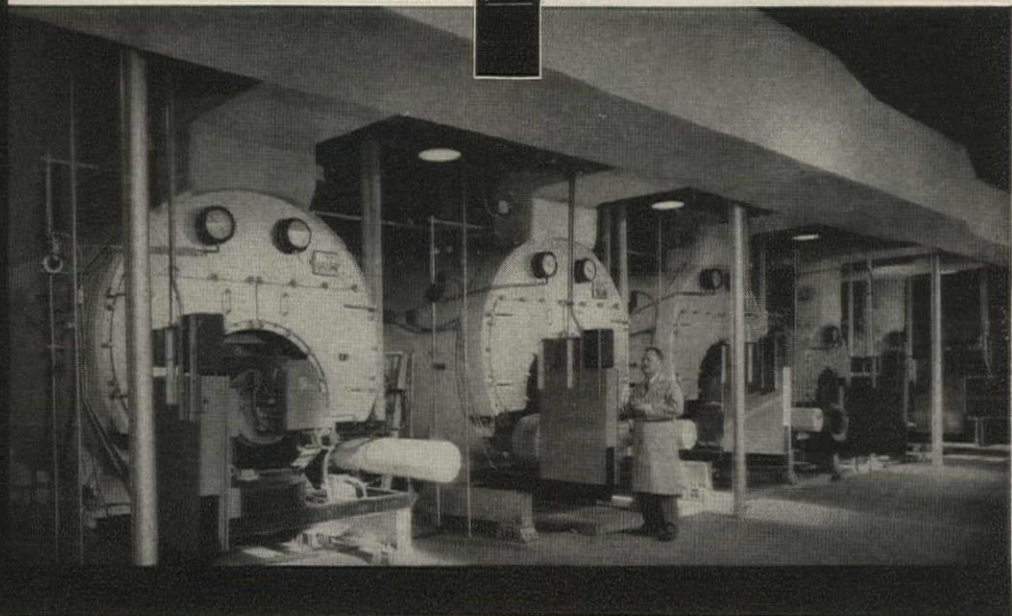


Reception room and admitting desk of Mid-Island Hospital.



The spotless kitchen where appetizing meals are prepared.

KEWANEE
reserve plus rated



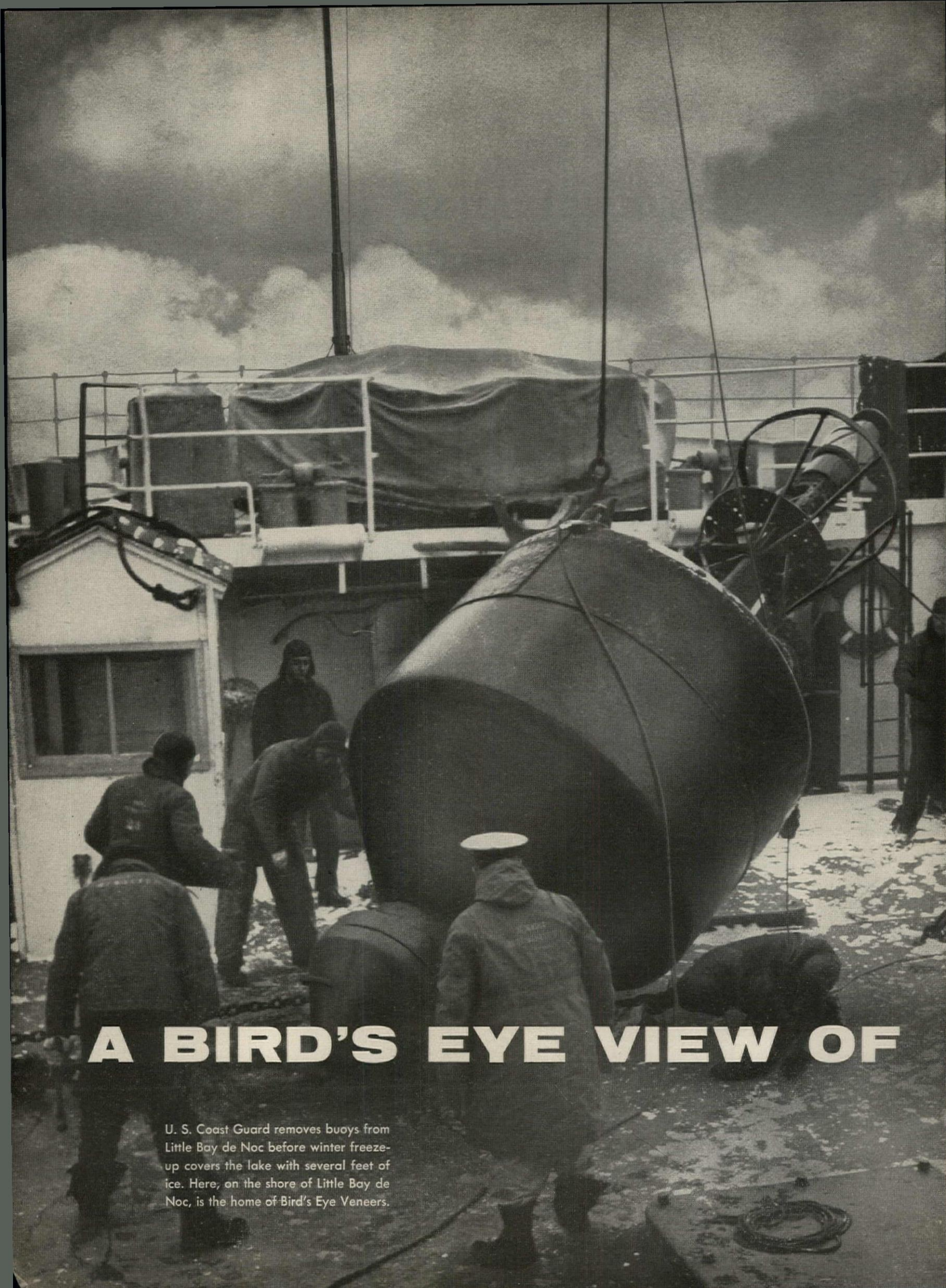
Here are five Kewanee Boiler-Burner Units which provide 'round the clock dependable service at Mid-Island Hospital.

Mid-Island Hospital, Bethpage, Long Island, New York. Designed, engineered and constructed by Will N. Clurman Associates, New York, N.Y. Architects: Gloster & Gloster, Rockville Center, New York.

AMERICAN-Standard

KEWANEE BOILER DIVISION





A BIRD'S EYE VIEW OF

U. S. Coast Guard removes buoys from Little Bay de Noc before winter freeze-up covers the lake with several feet of ice. Here, on the shore of Little Bay de Noc, is the home of Bird's Eye Veneers.



Up here at the northern end of Lake Michigan, we take winter pretty seriously. For our friends, the Coast Guardsmen in the picture, falling thermometers mean raw days out on the lake, fishing their great warning buoys out of the water. And to us, here at BIRD'S EYE, winter heralds the approach of our favorite annual exposition — the Chicago Furniture Show.

Actually, we're always preparing for this show, all year 'round, turning out those rich and varied veneers which are the recognized hallmark of truly fine furniture. But it's the Big Show that gives us our Big Thrill . . .

Again this winter, for all to see, the world's leading furniture makers will display their most prized merchandise — with one thing in common: authentic, dependable hardwood veneers by BIRD'S EYE.

Designers specify hardwood veneers because no other material can ensure so much richness, warmth and quiet elegance in a piece of furniture. Manufacturers insist upon them because the natural beauty of these real veneers, cut by BIRD'S EYE'S skilled artisans from premium northern hardwoods, cannot be successfully imitated, copied or substituted. That's why you, too, should

Demand genuine hardwood veneer when you buy furniture.

WINTER OPERATIONS

BIRD'S EYE VENEER
SINGLE PLY VENEERS  ALL NORTHERN HARDWOODS

BIRD'S EYE VENEER COMPANY

Escanaba, Michigan

On the Shore of Little Bay de Noc

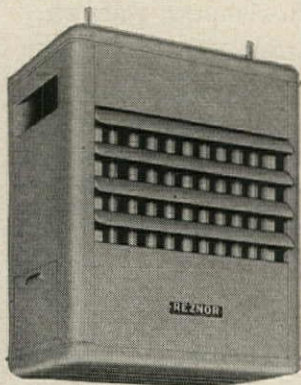
"We like Reznor gas unit heaters because initial costs are low; our clients prefer them because they're so inexpensive to maintain and operate"



"We're convinced that Reznor gas unit heating is the best heating investment for a wide variety of commercial and industrial buildings. Under the right conditions, no other system can approach it for performance. Under any conditions no other system can approach it for economy."

"We found that the cost of the necessary Reznor gas unit heaters compares very favorably with the cost of any other type of heating equipment of the same total capacity. And with Reznor, the equipment cost is total cost. There are no registers or radiators, no expensive piping or duct work to buy. That means real savings on installation cost, too. To install a Reznor gas unit heater you just suspend it, make simple gas, electrical and vent connections and move on to the next one. That's real economy . . . it helps stretch budgets."

"Our clients like Reznor heaters for other reasons, too. Reznor heaters not only save money in the beginning, they keep on saving year after year. Reznor heat is instant heat . . . there's no need for costly stand-by firing. With on-the-spot Reznor heat, there's no heat lost in transmission. And with each Reznor heater operating independently, there's no need to heat areas which aren't in use. All this adds up to substantial savings on fuel. Reznor heaters require no operating labor. And maintenance costs are practically zero. All Reznor heaters require is a simple cleaning once a year. It's no wonder that our clients who have tried it once want Reznor heating in their next building."



Remember, there is no equivalent for Reznor gas unit heaters. Be sure you have complete information on these fine heaters at your fingertips. Write today for your free catalog or call your nearby Reznor distributor. You'll find him listed under "Heaters-Unit" in the yellow pages of your telephone directory.

REZNOR
 THE WORLD'S LARGEST-SELLING
 GAS UNIT **HEATERS**
 REZNOR MANUFACTURING COMPANY
 40 Union Street, Mercer, Pa.

LETTERS *cont'd.*

form, symmetry or structural refinements of their holdings. The professional operators who came later might be excused if they seemed less concerned than architects about correcting these evils.

But while we are trying to place the blame for this indifference, what about our City Fathers, who permitted streets to bend or terminate to suit the whims of politicians or influential private citizens?

I do not suggest that operators and brokers are entirely blameless in the haphazard development of towns and cities. Perhaps they could have done more, but I knew many professional real estate men who regarded structural eyesores as a constant challenge to their initiative and skill and who wouldn't rest until they were replaced by improvements in keeping with the local trend.

Criticism cannot alter the basic fact that widespread indifference brought about the present lack of the esthetic in structural design and control. Perhaps cooperation among all interests may still do some good.

WILLIAM J. BREDE
 New York, N.Y.

Forum:

Your article's light tap on the wrist so far as the architects are concerned and the heavy blows inflicted upon the real estate developer are unjustified.

You did not mention the Urban Land Institute, its Community Council and the constructive advice given to both architects and developers through this Council. You also made no mention of the Building Planning Service of the National Assn. of Building Owners and Managers, which for 30 years has been available and has been used by owners and architects for the purpose of combining the practical and the esthetic in modern structures.

Realtors throughout the nation are prominent in city planning boards and in many instances are making valuable contributions in the matter of zoning.

CLARENCE M. TURLEY, realtor
 St. Louis, Mo.

Forum:

Your article on "The Real Estate Operator" is an accurate summary.

GRAHAM ALDIS
 Aldis & Co., real estate
 Chicago, Ill.

Forum:

I liked your article and think it touched very salient points not generally recognized by the public.

It is undoubtedly true that realty men are the architects of their future cities, lay out its streets as they subdivide, build its homes and promote many downtown and industrial improvements. Prior to 1910, before the idea took root that the responsible elements of the real estate business must be joined together to assure more responsible action in city growth, it

continued on p. 66



new dimension . . .

in fixture value with **THE *new* SMITHCRAFT FINISH**

Smithcraft now adds a new dimension in fixture perfection. The new Smithcraft painting process consists of the finest and most modern Bonderite and Baked Enamel Finish combination in use in the lighting industry today.

In addition to its superior appearance, the new Smithcraft finish has these outstanding qualities:

Adheres firmly to metal — Stays white indefinitely, without yellowing — Provides positive resistance to chemicals and heat — Resists abrasion because of optimum hardness — Reflects a maximum percentage of light

Because the new Smithcraft finish possesses all these attributes to a greater degree than ordinary finishes, it produces many important new benefits for owners and users of lighting . . . better appearance, better lighting qualities, easier maintenance and longer, trouble-free life.

All the units in the complete and diversified line of Smithcraft commercial and industrial fixtures are now finished with this new process. Typical is the Sheraton (shown above) . . . a trim, modern unit, only 3 1/4" deep; the Sheraton is ideal for low-ceiling applications. It is available for two and four-lamps in 4-ft. and 8-ft. lengths. Plan to use the Sheraton in your next school, store or office design.

Ask us to send you the current Smithcraft catalog — it is a compilation of the newest and most functional fluorescent fixtures in use today



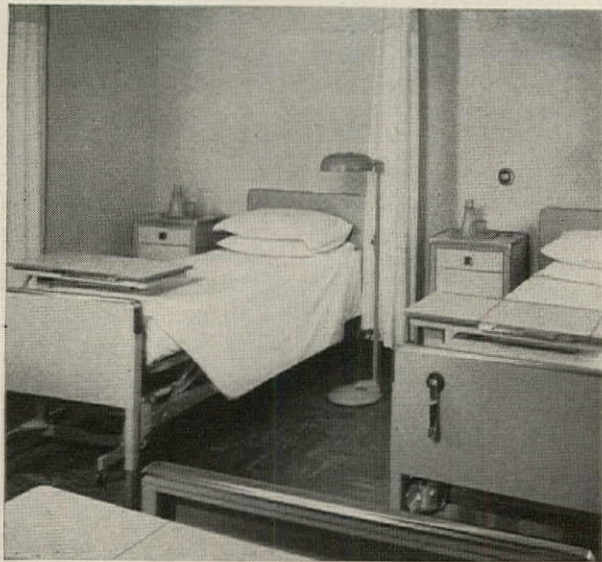
Smithcraft
LIGHTING
CHELSEA 50, MASSACHUSETTS

America's finest fluorescent lighting

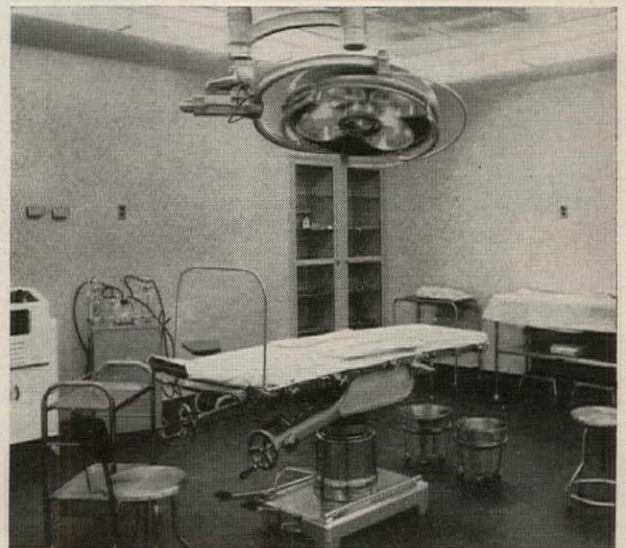


Low-cost New Jersey hospital shows how

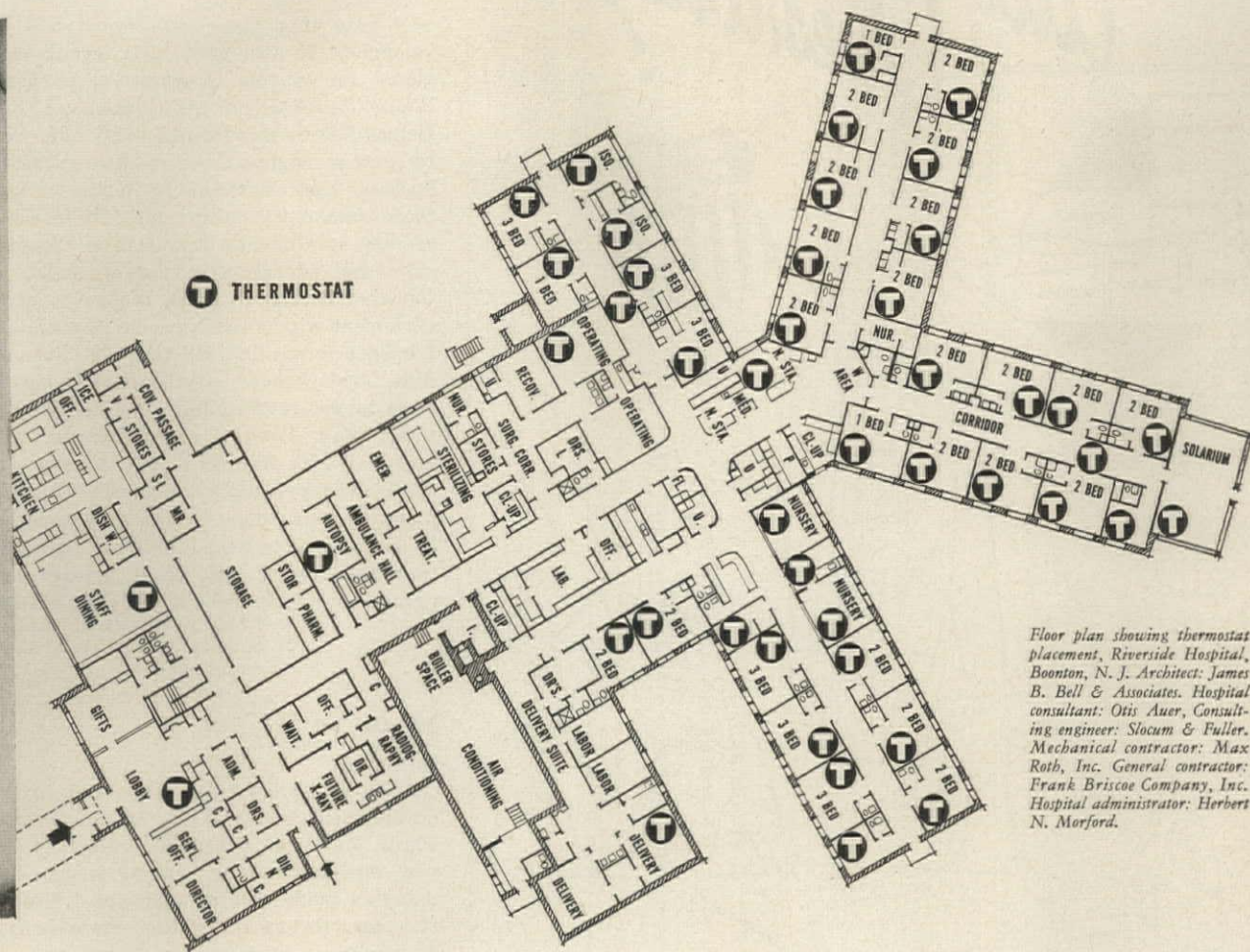
Honeywell can help you satisfy



Thermostat on the wall gives occupants of Riverside Hospital bedside temperature control. Patients have only to dial the temperature that suits them best. The Honeywell thermostat then maintains it accurately and dependably, regardless of the room's exposure or changes in the weather outdoors. Every patient bedroom is thermostat-equipped.



Use factor helps determine building's control needs. In the operating rooms, for example, temperature requirements are not the same as in patient bedrooms. Number of people present in some areas varies, creating still another type of control problem. In all cases, Honeywell thermostats precisely control heating, cooling and ventilating as needed.



Floor plan showing thermostat placement, Riverside Hospital, Boonton, N. J. Architect: James B. Bell & Associates. Hospital consultant: Otis Auer, Consulting engineer: Slacum & Fuller. Mechanical contractor: Max Roth, Inc. General contractor: Frank Briscoe Company, Inc. Hospital administrator: Herbert N. Morford.

any client's indoor weather needs

Honeywell Customized installation gives patients Bedside Temperature Control, assuring ideal comfort

RIVERSIDE Hospital is the result of careful planning and active cooperation among civic leaders of Boonton, New Jersey. Now Boonton has an attractive 65-bed hospital, in keeping with the latest industrial engineering principles.

In a busy hospital indoor comfort needs vary widely. To meet them, Riverside's planners wisely chose Honeywell Customized Temperature Control for the heating and air conditioning system.

Its flexibility makes the Honeywell installation ideal. In air-conditioned spaces such as the operating room, it maintains temperatures at precise levels winter and summer. During the heating season patients in every room enjoy individual room temperature control. And in other areas, strategically placed Honeywell thermostats compensate quickly and accurately for exposure and changes in weather, use and occupancy.

That's what "customized" means—a control installation fitted to the needs of the building and its occupants, in heating and cooling, in ventilating, and in controlling humidity.

True customized control can best be provided by Honeywell. For only Honeywell manufactures all three types of controls—pneumatic, electric, electronic—which permits Honeywell to make truly objective recommendations.

Whether it's a hospital, factory, bank or store—any building of any size, new or existing—Honeywell Customized Temperature Control can help solve your clients' control problems.

For full details of Honeywell Customized Temperature Control, and the economical Periodic Maintenance Plan, call your local Honeywell office. Or write Honeywell, Dept. MB-10-139, Minneapolis 8, Minn.

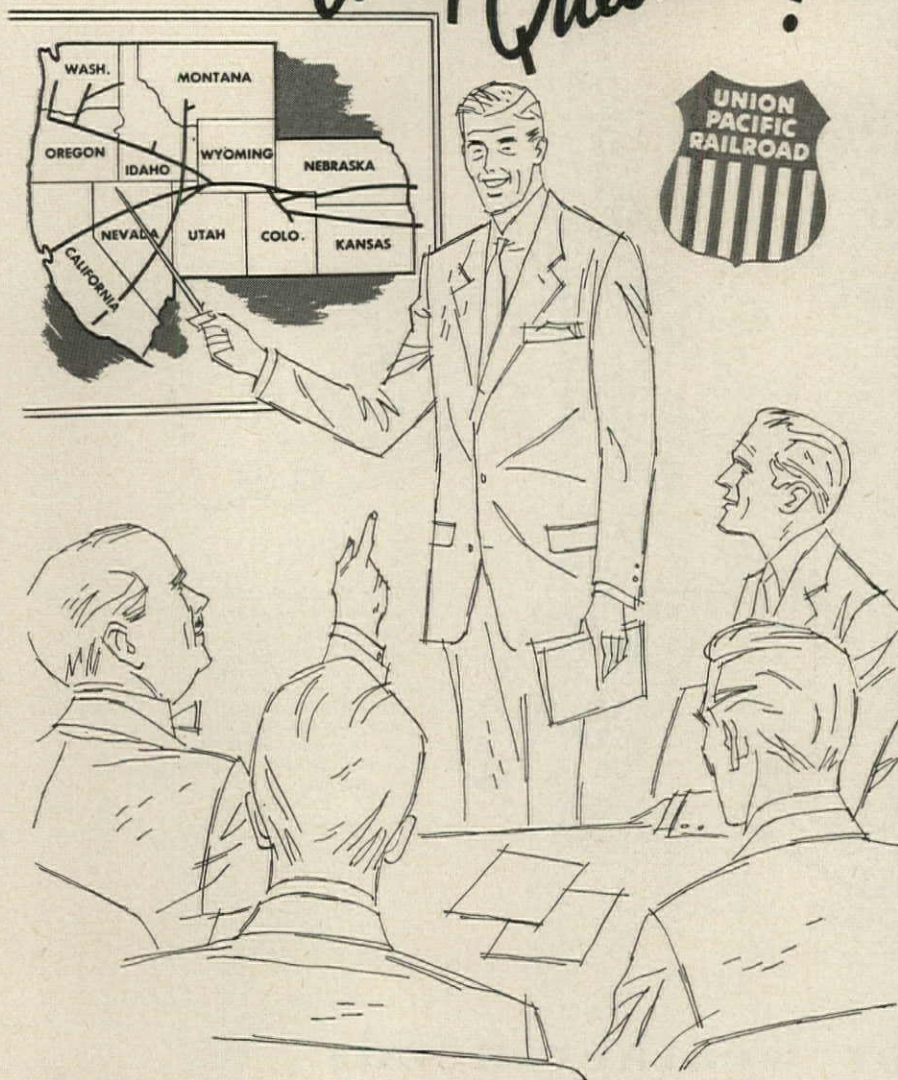
MINNEAPOLIS
Honeywell

Customized Temperature Control

112 offices
across the nation



Any Questions?



May we help you in selecting a plant location?

In our Omaha headquarters we have accumulated a vast amount of factual information covering the eleven western states served by Union Pacific.

This information is kept up to date through day-by-day contacts with our traffic representatives located in cities and towns throughout that area.

So, if you are planning to build a plant for warehousing, distribution, assembly, or what not, in the growing West, it is quite possible that we can help you in selecting a location that will meet your requirements.

For confidential information, ask your nearest U. P. representative to call on you, or contact—

INDUSTRIAL DEVELOPMENT DEPARTMENT
UNION PACIFIC RAILROAD
Room 380, Omaha 2, Nebraska

UNION PACIFIC RAILROAD

LETTERS *cont'd.*

was true that there was much bad development, because most early layouts were made for purely speculative purposes. When the National Association of Real Estate Boards was formed—and as it yearly grew stronger—those in the real estate business were increasingly impressed with their community obligations. Professional conduct was made a condition of membership, and education in various facets of the real estate business became a great movement within the National Association. I believe it was in 1917 that the National Assn. spearheaded city legislation to efforts to secure Planning Commissions and a city plan. Realtors everywhere have cooperated with this activity and have been themselves primarily responsible for the planning work done in one after another of our American cities. It is my judgment that the realtor will be a greater and greater influence in future civic design.

WALTER S. SCHMIDT, *president*
Frederick A. Schmidt, Inc., *realtor*
Cincinnati, Ohio

HP OR TH

Forum:

I have always been interested in the development and building of the Terrace Plaza Hotel in Cincinnati, about which you reported in the August issue. Such analyses made several years past completion are always interesting from both a design and a business standpoint, and are important if we are to learn from past mistakes.

I am perplexed, however, because in one place you give the name as the "Hilton Plaza" and in another as the "Terrace Hilton." As I recall, the architects designed all the items in the hotel from towels to matchbox covers with distinctive insignia so no doubt such work will have to be redone. Perhaps they should use whichever of these names that will best lend itself to creative monogramming.

GORDON C. PIERCE, *architect*
Greensburg, Pa.

* The new name is Terrace Hilton, not Hilton Plaza, and the old monogram (TP) will indeed have to be changed.—Ed.

Forum:

Your Terrace Plaza article neglects its lighting installation which was far ahead of its time when it was put in. The fact that you found that the total effect of the hotel interior, including the special areas, still "holds up" is as much a satisfaction to me as the architectural design must be to the architects.

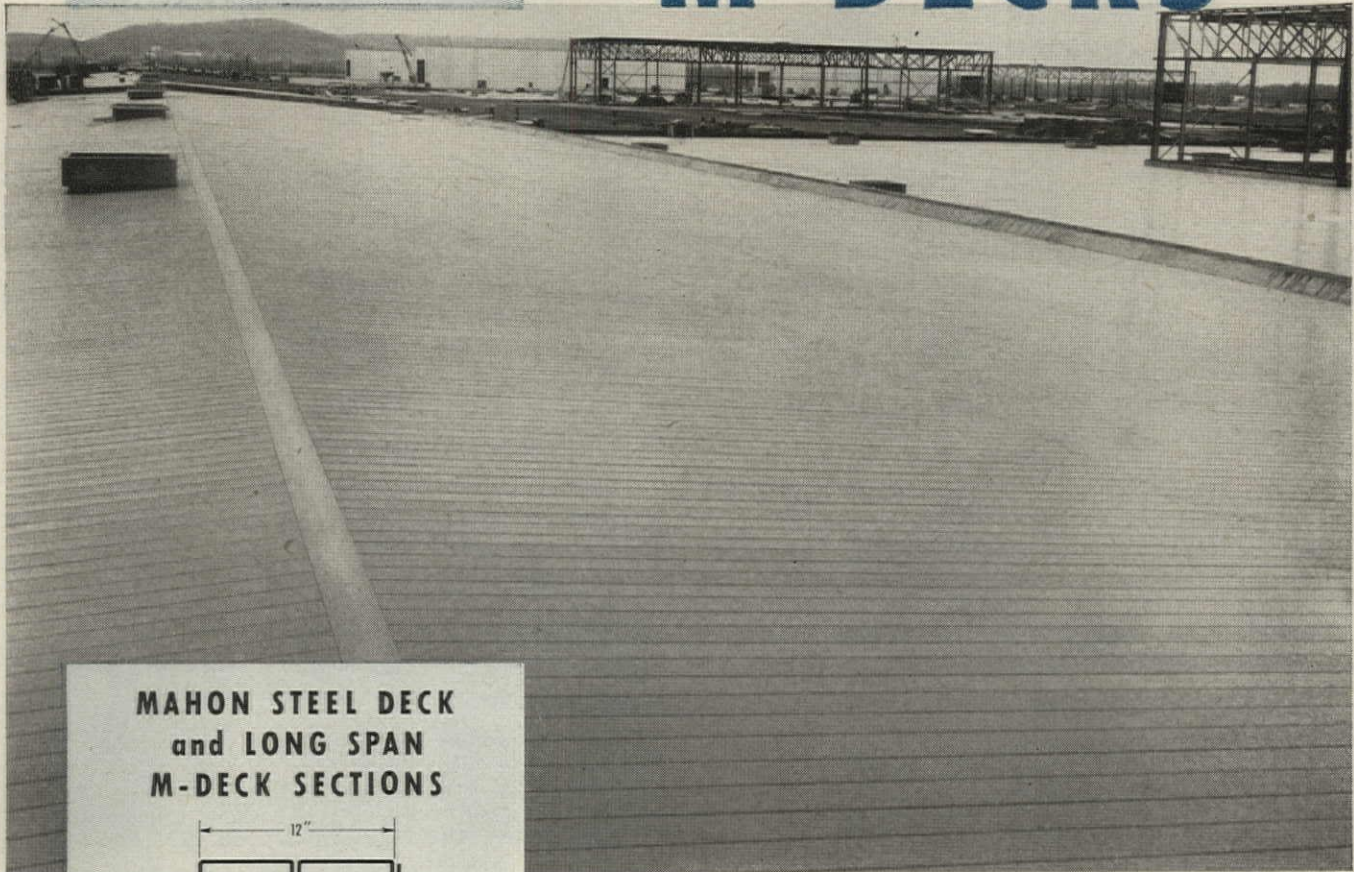
In the article there is some chiding concerning the maintenance of the lighting in the Penney and Bond Stores. As in the hotel proper, the intent was to solve the lighting problems not in terms of what was then current practice, but rather in terms of the knowledge of what could and should be. The foot-candle level in these

continued on p. 70

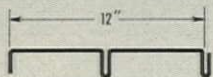
STEEL DECK

and LONG SPAN

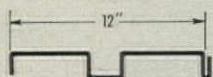
M-DECKS



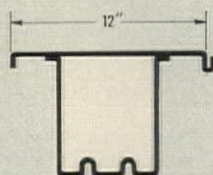
MAHON STEEL DECK and LONG SPAN M-DECK SECTIONS



STANDARD DOUBLE RIB



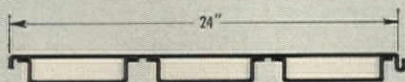
WIDE-FLANGE DOUBLE RIB



LONG SPAN M-DECK
SECTION M1



LONG SPAN M-DECK
SECTION M2



LONG SPAN M-DECK
SECTION M3

1,600,000 Sq. Ft. of Mahon Steel Roof Deck!

Mahon Standard Double Rib Steel Deck is still the most practical material for modern roof construction . . . it is used to roof a greater percentage of new construction year after year. There are two good and logical reasons for this: It weighs less per sq. ft. and it costs less per sq. ft. than any other type of permanent roof building material. And now that Long Span M-Decks are available in a number of Structural Sections and Acousti-Structural Sections that meet virtually any requirement in roof construction and combined roof/ceiling construction, STEEL, employed as the structural unit and interior finish material as well, will roof even a broader range of building types. Long Span Acousti-Structural Sections may be employed as shown for a beamed ceiling effect, or reversed for a flat metal ceiling surface. Noise Reduction Coefficients range from .70 to .85 for various Sections. Mahon Acoustical and Troffer Forms are also available for recessed lighting in acoustical ceilings of concrete joist and slab construction. See Sweet's Files for information, or write for Catalogs D-57 and M-57.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago • Representatives in Principal Cities

Manufacturers of Steel Roof Deck and Long Span M-Decks; M-Floors, Permanent Concrete Floor Forms, Acoustical and Troffer Forms; Insulated Metal Walls and Wall Panels, Rated Fire Walls; Rolling Steel Doors, Grilles and Underwriters' Labeled Automatic Rolling Steel Fire Doors and Fire Shutters.

MAHON

This fine Nebraska school gets

More classroom comfort per



Firsts in classroom comfort by Herman Nelson!

- *the first practical, high efficiency HOT WATER heating element for unit ventilators.*
- *DRAFT|STOP, the first unit ventilator to eliminate window downdrafts—without increasing heat load.*
- *LIGHT|STOP, the first accessory to adapt the unit ventilator to audio visual classrooms.*

AND NOW—

- **HerNel-Cool** *first AIRCONDITIONING UNIT designed, built and priced specifically for schools.*

Senior High School, Grand Island, Nebraska. Superintendent of Education: Dr. Earle Wiltse; Architect: F. N. McNett Company; Engineer: R. L. Fickes; Mechanical Contractor: J. L. Lingeman Company. The design resembles a human hand, with the administrative areas concentrated in the "palm" and classrooms extending down the four fingers.

BETTER AIR IS OUR BUSINESS



Illinois Steam Heating Specialties



Herman Nelson Console Heaters



HerNel-Cool Air Conditioner for schools

dollar with DRAFT|STOP!*

Controls drafts without added heat load

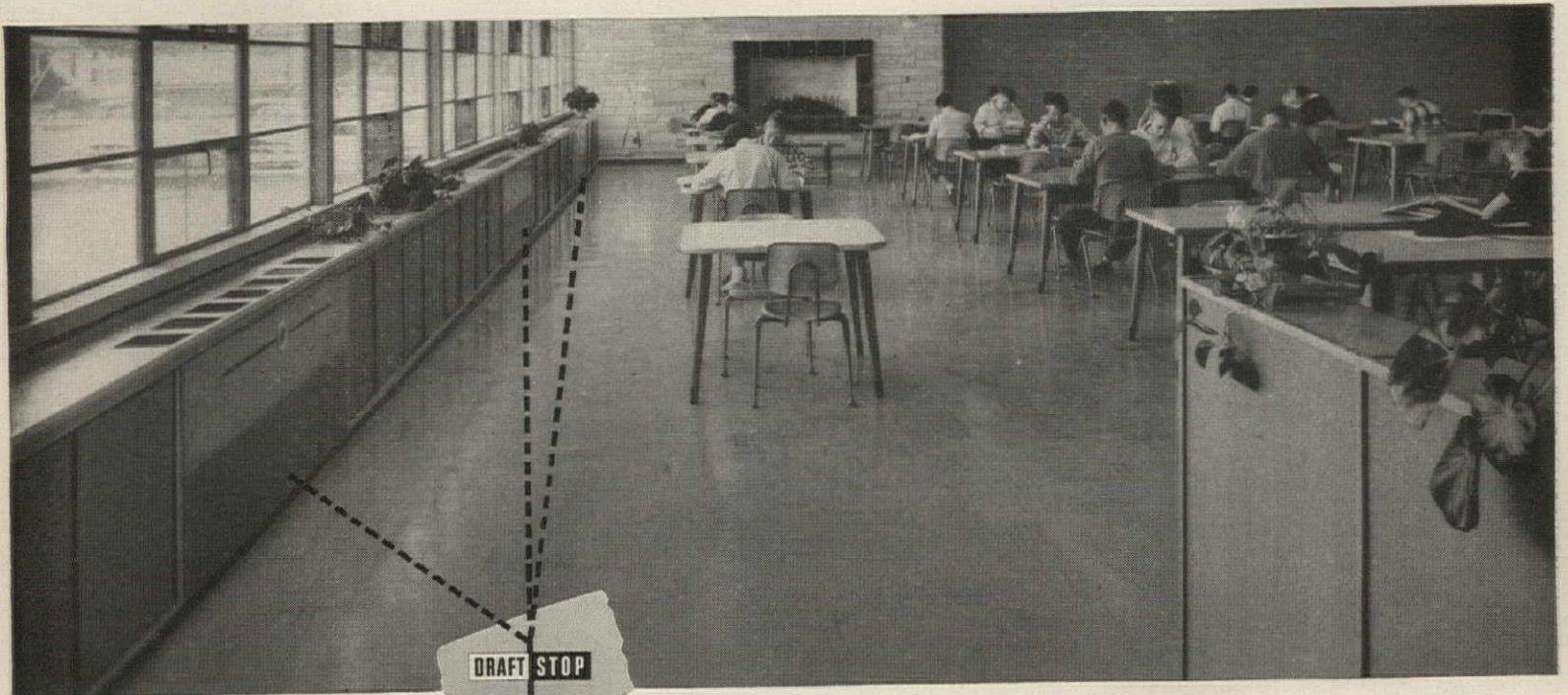
The new Senior High School at Grand Island, Nebraska is recognized as an architectural and engineering "jewel". The finest, most modern equipment combines with excellent planning to create the last word in educational facilities.

It was natural that DRAFT|STOP was selected for the all-important job of cooling, heating and ventilating the classrooms. DRAFT|STOP heats only when heat is necessary . . . *saves* fuel when it is not. It controls downdrafts without added heat load. Its unique design provides a constant supply of properly *heated* or *cool* fresh air . . . automatically

compensating for temperature changes. Pupils are alert and comfortable from the opening of school to the closing bell. Teachers are free to concentrate on *teaching*—in a healthful atmosphere that is conducive to *learning*.

That's why there is an ever increasing demand for *more classroom comfort per dollar . . .* the DRAFT|STOP way! Want more facts? For a 16 page case study, write to Herman Nelson Unit Ventilator Products, American Air Filter Company, Inc., Louisville 8, Kentucky.

**Patented (there are no substitutes)*



DRAFT STOP

Spacious, attractive classrooms have "just right" temperatures and plenty of draft-free fresh air thanks to Herman Nelson DRAFT|STOP unit ventilators. Note how the unit ventilators and matching cabinets harmonize with the interior design.

AAF
herman nelson AMERICAN AIR FILTER COMPANY, INC.

UNIT VENTILATOR PRODUCTS

System of Classroom Cooling, Heating and Ventilating



Herman Nelson
Heating, Ventilating Units



Herman Nelson
Unit Blowers



Herman Nelson
Horizontal Unit Heaters



AAF Dust Control
For School Shops



Herman Nelson
Vertical Unit Heaters

why Architects and Engineers

—as well as Contractors and Owners—

prefer

ALLENCO

INTERIOR
FIRE PROTECTION
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designed to suit your design

because:

it's easier to specify just what is best
for each *individual project*;

you know you'll get all that you specify;

Allenco serves better, looks better,
avoids waste of cost, time, space.



★ A.I.A. file 29e2 gives most thorough easy-to-find data on components, custom-size cabinets, complete systems ... includes ready-to-use standard and alternate specs. Write for your copy; meanwhile check Sweets.

LETTERS *cont'd.*

stores was raised from the standard 15 f.c. to as much as 35 f.c. This does not seem unusually high today, but it was in 1948. The means to that end were not as readily at hand either, and experience had to be gained on the spot. As a result, some of the fixtures utilized proved more clumsy to maintain than ones we would design today. If, however, we are now in a position to criticize these fixtures as not being ideal for maintenance, it is because these very fixtures helped to pioneer the way to a smoother solution of the problem of providing higher foot-candle levels in stores.

Again, the cost of electricity is criticized. Since 1948, incandescent, fluorescent and cold cathode lamp development has progressed incredibly, and what is standard today was not standard then. Therefore, a high light level designed in 1948 costs more to maintain than does that designed today. Let me point out once more, however, that these two stores were a definite step forward in lighting efficiency and helped to pioneer the way for the acceptance of a higher light level in merchandising display.

ABE H. FEDER
Lighting by Feder
New York, N.Y.

Forum:

Your story on the Terrace Plaza was wonderful. I compliment you on the way you handled the subject.

H. C. NANSON JR., *president-treasurer*
The Allis Press
Kansas City, Mo.

HYPERBOLIC PARABOLOIDS

Forum:

Letters published recently in your magazine (AF, March '56) indicate that hyperbolic paraboloids are generally treated as an object of marvel or as an exhibit rather than as a structural form. We have made a test on a sample of such a surface, rectangular in shape (6' x 4") and made with 1½" plain unreinforced cinder concrete. Although this material is inferior in strength to reinforced granite concrete, it withstood a load of 1½' of sand and 1' of water before it collapsed. This membrane was supported only at its four corners and hence there was no chance of its acting as a beam at all. Nevertheless, it carried a live load of six times the design load.

S. SIVANSANI
City Improvement Trust
Madras, India

KUDOS

Forum:

Congratulations on your fine coverage of IIT's Crown Hall (AF, Aug. '56).

ROBERT LAWTON JONES, *architect*
David G. Murray & Associates
Tulsa, Okla.

NEUTRA'S NOTES

Forum:

I appreciate deeply FORUM's friendly review of my new book *Life and Human Habitat* (AF, Aug. '56). I very much agree with your reviewer that for constructive use, any ideas I have collected should be applicable and capable of being traced on the finished products—the more so, as these ideas are not the outcome of speculation, but of clinical observation.

I have hundreds of scrap notations in my drawers which show this constructive, useful application of *Survival through Design*, etc., very clearly, but they deal mostly with how the "physiological approach" or any "biological realism" is helpful as a *procedure*. The good outcome, the satisfying result, I always thought, is best proven by individual testimonial of the user, and even more by some, at least, elementary statistics the way all research finds authentication.

For example this scrap notation has helped me and helps my collaborators as a friendly directive:

"Whenever there is an expressed craving or emotional emphasis—a recall of fatigue regularly experienced in the past, or of endocrine discharges at irritation—make *this clear* in the conversational record—a craving might be voiced thus: "I like to sit on the patio in front of my bedroom before I go to sleep," or "I can't stand it after a working day—the kids are running the TV, making noise—it just drives me crazy. I want to go *somewhere*, but not indoors." If we can alleviate for him these problems, he will love us. If we bypass them, he will be frustrated by his architect for the amortization period. Auditory sensitivity is a determinant of plan."

RICHARD J. NEUTRA, *architect*
Los Angeles, Calif.

CRITIQUE

Forum:

We are very much impressed with the tremendous uplift in quality of editorial material which has appeared in recent issues of the FORUM.

We have been equally impressed with the concern for ideas as live issues in an architectural environment.

The critique of the M.I.T. buildings (AF, March, '56), raising the issue of mannerism and not knowing what to express, is a subject of great concern, and the FORUM in bringing it to light has made a real contribution.

I hope a similar critique of the new eclecticism for which the torch burns brightly in some places could further focus interest on an exciting esthetic problem involving all of us.

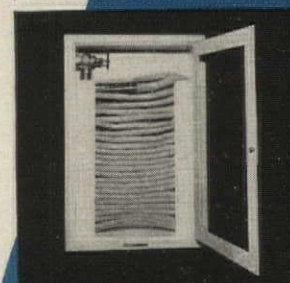
ULRICH FRANZEN, *architect*
New York, N.Y.

"write your own ticket" with **ALLENCO**
widest selection and many exclusive items

Novel HOZEGARD Reel combines hose protection, fastest action and economy. Ideal for industrial applications. Requires no wall work.



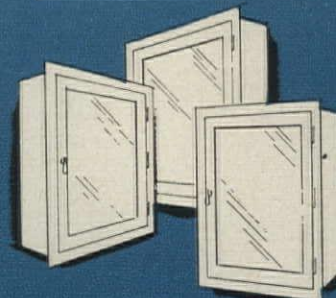
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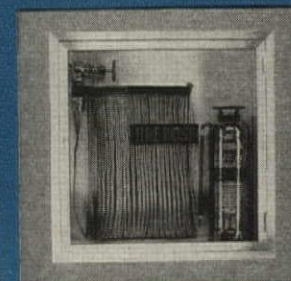
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Smooth surfaces blend into your walls. Finished corners and tight joints help keep out dust. Your clients will agree Allenco looks better, too.



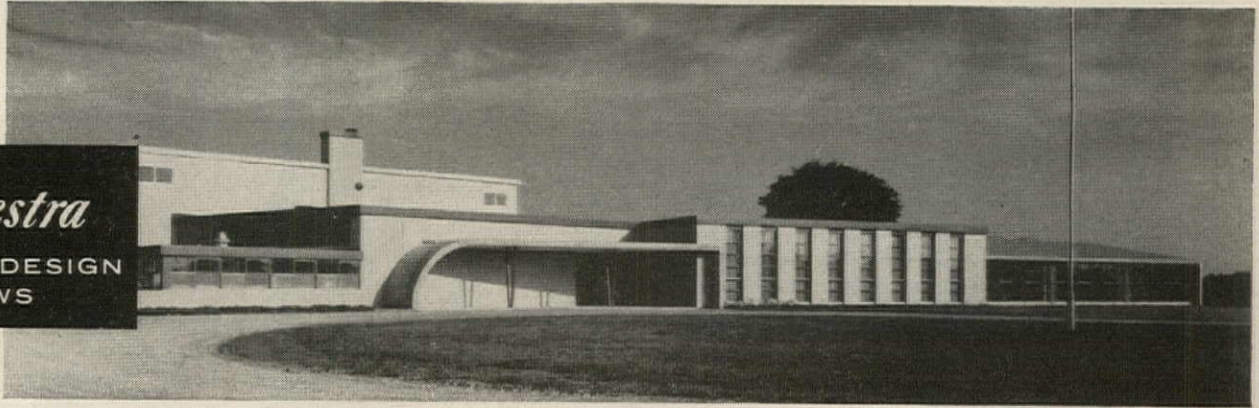
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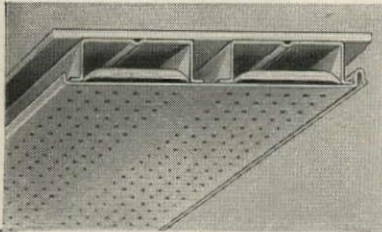
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Fenestra
SCHOOL DESIGN
NEWS



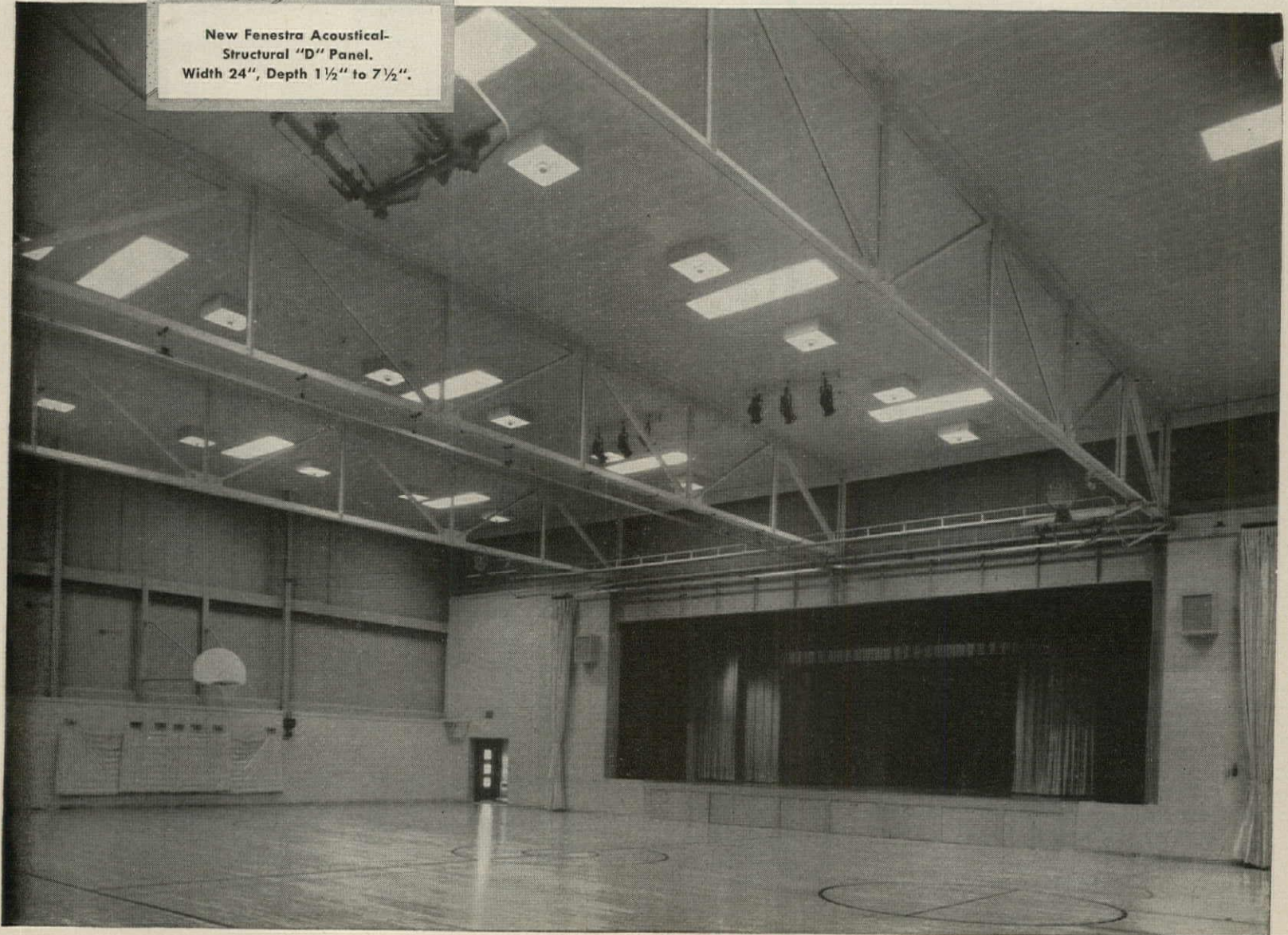
Seymour High School, Seymour, Wisconsin, cost only slightly over \$10.00 per square foot to build. The entrance is oriented to protect it from prevailing storms, and the large canopy allows unloading several school buses at one time without exposing the students to winter weather. This school contains over 55,000 square feet, including all the classrooms and specialized teaching facilities required by a modern high school.

Architect: Lawrence Monberg & Associates, Kenosha, Wisconsin. *Contractor:* Peter Rasmussen & Son, Oshkosh, Wisconsin.



Fenestra Acoustical-Structural Building Panels form the roof for this combination gymnasium and auditorium at Seymour High School. Efficient acoustical treatment inside the panels cannot be harmed by objects striking the ceiling. This room was designed so that spectators would not have to cross the playing floor to reach the bleachers and so that daylighting would not produce sun shafts or bright spots on the playing floor. The gymnasium entrance is located off the school lobby so that it may be easily used for evening activities. The Music Department adjoins the stage and is isolated from the classrooms to eliminate disturbance and noise.

New Fenestra Acoustical-Structural "D" Panel.
Width 24", Depth 1 1/2" to 7 1/2".



How Fenestra* Acoustical-Structural

Building Panels help you

BUILD BETTER SCHOOLS AT LOWER COSTS!

School building costs reduced as much as \$2.00 per square foot over similar building in the same area—that's typical of the experience of school boards and architects who take advantage of the design and building economies of modern Fenestra Acoustical-Structural Building Panels.

Seymour High School, Seymour, Wisconsin, is a good example of the fine schools now being built in many sections of the country with this unique building product. Its basic structural system consists of Fenestra Acoustical-Structural Building Panels on bearing walls.

These lightweight, high-strength steel panels form the structural roof and the finished interior ceiling with "built-in" acoustical treatment. They replace five different materials—usually requiring extra labor and cost—with one prefabricated metal building unit, erected in one operation by only one trade.

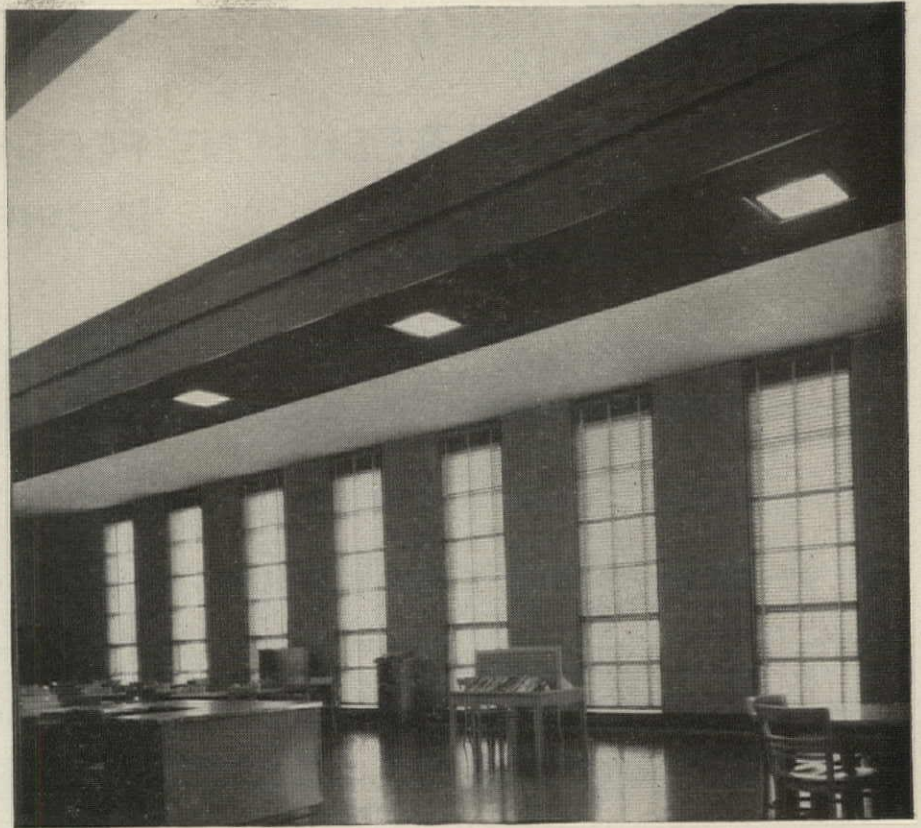
The unique cellular design of Fenestra Acoustical-Structural Building Panels makes them strong enough to span up to 31 feet under normal roof loads and provide lateral support for the bearing walls. Their width—24 inches—fits perfectly with modular design techniques. This speeds up construction and eliminates cutting and fitting of the panels and other materials on the job.

The flat bottom surface of the panels, which forms the interior ceiling, is perforated. Sound absorbing material that produces a noise-reduction coefficient of 80% is enclosed inside the panels. It cannot be harmed by painting or maintenance cleaning. There is no "stuck-on" material to discolor or fall off and require replacement. Because this plate is a part of the structural panels it is made of 16-gauge steel—4 times thicker than the usual metal pan ceiling construction. This assures extra resistance to damage by objects thrown against the ceiling or other impact. You save money on maintenance costs year after year!

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Panels

Your Single Source of Supply for
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The library at Seymour High School, as well as the classrooms, features a Fenestra Acoustical-Structural Building Panel roof for a quiet, pleasant atmosphere and efficient sound control. This school is designed to function as a community center, too. This room opens off the building lobby and other public rooms, and the school offices are combined in this community center unit. They are easily used in the evening without opening the entire school, and visitors do not have to pass through classroom areas.

Room-to-room noise flow is prevented by sound transmission barriers incorporated into the panel design.

Interior masonry bearing walls with Fenestra Panels spanning between them save structural steel and reduce foundation and footing requirements. The exterior walls may be chiefly glass and used only as curtain walls. Schools using this basic structural system have varied in cost from \$9.00 to \$15.00 per square foot depending upon mechanical facilities, interior trim and school accessories.

All across the country, architects and school boards are discovering that they can design and build better schools at lower costs with Fenestra Acoustical-Structural Building Panels. If you are now planning a new school, you should get complete details on these unique building products and the new design concepts possible with them. Call your local Fenestra Representative, today—listed in the Yellow Pages—or mail the coupon, below.

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New laboratory developments give you a

WIDER CHOICE OF RESILIENT FLOORS OVER CONCRETE in contact with the ground.

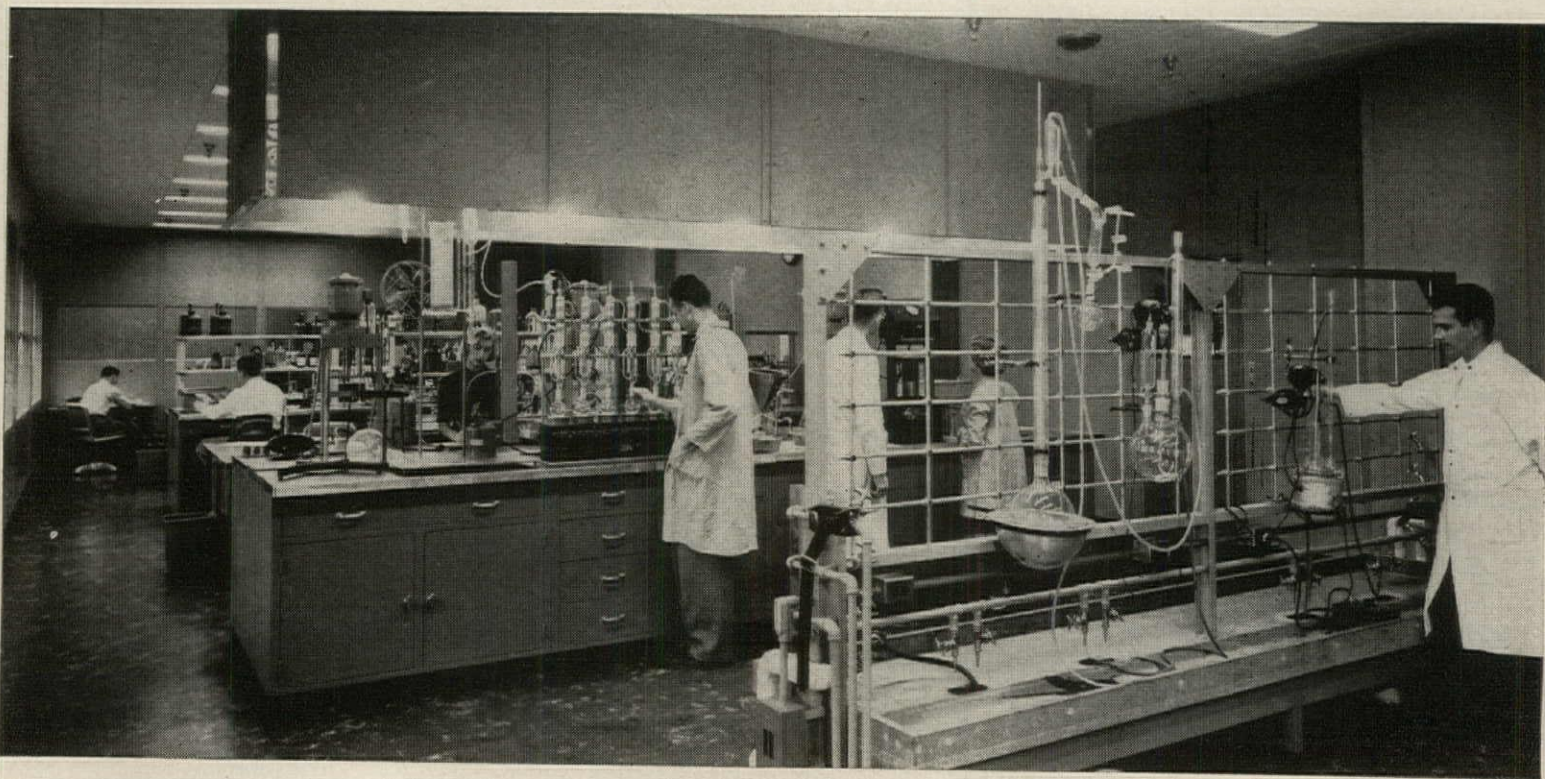
Recent product developments and improvements and the formulation of new adhesives have greatly broadened the selection of resilient floors that may be specified for use over grade-level concrete subfloors. For such subfloors, there is now almost the same freedom of choice of resilient floors as for suspended subfloors. For many years, asphalt tile was the only type of resilient flooring material that could stand up under the alkaline moisture conditions in concrete in direct contact with the ground. Now, in addition to asphalt tile, there is a choice of Armstrong Excelon Tile (vinyl-asbestos), Custom Corlon Tile (homogeneous vinyl), Rubber Tile, and Cork Tile.

Just announced as the newest choice for on-grade concrete subfloors is Armstrong sheet Corlon with Hydrocord* Back. This is the first and only sheet plastic flooring specially developed for installation over on-grade concrete.

For concrete subfloors below grade, all of these floors, with the exception of Cork Tile and sheet Corlon, may safely be specified, provided they are installed with the recommended Armstrong adhesive.

Beyond the increased variety of types of resilient floors for basements and basementless buildings, there is also a wider choice of designs than ever before. New distinctive Spatter effects and Corkstyle* designs are now available in Armstrong Asphalt Tile and Excelon Tile in addition to the straight-grained tile. New subtle tone-on-tone tile effects—and the Terrazzo and Decoresq designs in Corlon—further broaden the decorative scope available.

The chart on the opposite page lists the various Armstrong Floors, their general characteristics, and the proper adhesives to use for installation over below-grade as well as grade-level concrete subfloors.



Many of the types of resilient floors on the market today were originally developed in the Armstrong Research and Development Center. Pictured above is one of the laboratory rooms where scientists measure the basic physical properties of the

resilient flooring materials, underlayments, and adhesives of the future. For the years ahead, as in the past, the primary objective of Armstrong research is the development of floors with maximum service characteristics at minimum costs.

Armstrong FLOORS

LINOLEUM	PLAIN	DECORAY®	TOWN HOUSE® INLAID
	JASPÉ	RAYBELLE®	CRAFTLINE® INLAID
	SPATTER®	ROYELLE®	EMBOSSED INLAID
	TEXTELLE®	MARBELLE®	STRAIGHT LINE INLAID

ARMSTRONG RESILIENT FLOORS FOR USE OVER CONCRETE SUBFLOORS**

● ARMSTRONG ASPHALT TILE

This low-cost floor has long-wearing qualities and beauty unmatched by any other type of economy flooring material. Highly resistant to the effects of alkaline moisture, Armstrong Asphalt Tile is recommended for use on concrete in direct contact with the ground, on or below grade.

Armstrong Greaseproof Asphalt Tile, for areas where splashing or spillage of grease is a problem in addition to alkaline moisture; matches colors in the regular tiles.

Recommended Adhesives

On-Grade Concrete—Armstrong No. S-160 Emulsion
Below-Grade Concrete—Armstrong No. S-160 Emulsion
Dusty, Porous, or Damp Concrete—Armstrong No. S-90 Asphalt Cement, after priming with Armstrong No. S-80 Asphalt Primer

● ARMSTRONG 1/8" GAUGE EXCELON TILE

The vinyl content in this vinyl-asbestos flooring gives it excellent resistance to grease and acids as well as the ability to withstand alkaline moisture. Moderate in cost, it is highly recommended for use over concrete subfloors on or below grade.

Recommended Adhesives

On-Grade Concrete—Armstrong No. S-160 Emulsion
Below-Grade Concrete—Armstrong No. S-160 Emulsion
Dusty, Porous, or Damp Concrete—Armstrong No. S-90 Asphalt Cement, after priming with Armstrong No. S-80 Asphalt Primer

● ARMSTRONG SERVICE GAUGE EXCELON TILE (1/16")

Service Gauge Excelon Tile is a thinner gauge of the same vinyl-asbestos composition in 1/8" Gauge Excelon Tile. It is recommended for use where low initial cost is an important factor. In a price range just above that of asphalt tile, Service Gauge Excelon Tile offers excellent resistance to grease, acids, harsh cleansers, and alkaline moisture.

Recommended Adhesives

On-Grade Concrete—Armstrong No. S-90 Asphalt Cement
Below-Grade Concrete—Armstrong No. S-90 Asphalt Cement
Dusty, Porous, or Damp Concrete—Armstrong No. S-90 Asphalt Cement, after priming with Armstrong No. S-80 Asphalt Primer

● ARMSTRONG RUBBER TILE

Now the exceptional beauty and durability of Armstrong Rubber Tile can be incorporated in luxurious interiors in basements and basementless buildings over concrete subfloors in direct contact with the ground. This provides the opportunity to specify a fine flooring material in keeping with the other elements of a high-style interior in such areas.

Recommended Adhesives

New On-Grade Concrete—Armstrong No. S-104 Chemical-Set Waterproof Cement or Armstrong No. S-225 On-Grade Cement
Cured On-Grade Concrete—Armstrong No. S-225 On-Grade Cement
Below-Grade Concrete—Armstrong No. S-104 Chemical-Set Waterproof Cement
Dusty or Porous Concrete—Armstrong No. S-104 Chemical-Set Waterproof Cement, after mopping floor with a damp mop
Exceptionally Damp Concrete—Installation not recommended

● ARMSTRONG CUSTOM CORLON TILE

Armstrong Custom Corlon Tile is a truly luxurious floor. Because it can be installed over both grade-level and below-grade concrete subfloors, it brings beauty to basements and basementless buildings. Made of the highest quality vinyl resins, this floor also is highly resistant to grease, acids, and most solvents. It is made in two finishes, a high gloss surface and a new exclusive "satin-matte" finish. The latter is available in Imperial Custom Corlon Tile featuring a smart terrazzo design. Both finishes are suited to the most luxurious interiors.

Recommended Adhesives

New On-Grade Concrete—Armstrong No. S-104 Chemical-Set Waterproof Cement or Armstrong No. S-225 On-Grade Cement
Cured On-Grade Concrete—Armstrong No. S-225 On-Grade Cement
Below-Grade Concrete—Armstrong No. S-104 Chemical-Set Waterproof Cement
Dusty or Porous Concrete—Armstrong No. S-104 Chemical-Set Waterproof Cement, after mopping floor with a damp mop
Exceptionally Damp Concrete—Installation not recommended

● ARMSTRONG CORK TILE

The beauty of Armstrong Cork Tile is especially suited to areas where an atmosphere of refinement and quiet dignity is desired. This handsome flooring can now be installed over on-grade concrete subfloors providing the top of the concrete slab subfloor is at least 12" above grade level and the grade slopes away from the foundation.

Recommended Adhesives

On-Grade Concrete—Armstrong S-214 Waterproof Cement, providing top of concrete slab is at least 12" above grade and grade slopes away from foundation
Below-Grade Concrete—Installation not recommended

● ARMSTRONG CORLON

(with exclusive HYDROCORD backing)

This is the first and only sheet flooring specially manufactured for installation over on-grade concrete subfloors. The new Hydrocord backing, an exclusive Armstrong development, is unaffected by the alkaline moisture normally present in on-grade concrete. Corlon is today's most popular sheet plastic flooring, and its availability for "on-grade" installation opens up new decorative possibilities in basementless houses and light commercial interiors. The virtually seamless vinyl plastic wear surface is extremely resistant to grease, acids, and most solvents.

Recommended Adhesive

On-Grade Concrete—New, specially developed S-235 Hydrocord Adhesive. Bonds flooring directly to subfloor . . . no lining felt is used.

** NOTE: In addition to their usage on grade-level and below-grade subfloors, all of these Armstrong Floors can be installed on all types of suspended floors. All will provide satisfactory service when installed over radiant-heated concrete subfloors.

ARMSTRONG CORK COMPANY makes all types of resilient floors for all types of interiors. Almost any flooring problem can be met with one or more of the floors in the Armstrong Line. As a result, we can offer impartial recommendations to solve any flooring problem. Our main interest is to aid you in making a sound flooring selection. Armstrong Architectural-BUILDER Consultants throughout the country are glad to assist architects

and help make specific recommendations for individual jobs. Your Armstrong representative is well experienced with resilient flooring. He can also call upon the Armstrong Research and Development Center and Bureau of Interior Decoration for assistance. For information on any flooring question, call your Armstrong District Office or write direct to Armstrong Cork Company, Floor Division, Lancaster, Pennsylvania.



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EXCELON® TILE

DECORESQ® CORLON
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TERRAZZO* CORLON
MOSAIC* CORLON

RESILIENT TILES

ASPHALT TILE
Regular
Greaseproof
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RUBBER TILE
LINOTILE®
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EXCERPTS

Opinions expressed in these excerpts are not necessarily those of FORUM's editors

Architectural control

Excerpts from an address at Cooper Union by C. McKim Norton, vice president of the Regional Plan Assn.

Should a city go so far as to exercise architectural control over buildings built by private enterprise?

A growing number of smaller communities are to one degree or another imposing architecture standards, constitutional or not. Some insist that houses must look alike (example, Coral Gables, Fla.), others that they cannot look alike (example, Scarsdale, N.Y. The City of Rye, N.Y., has established a Board of Architectural Review which passes on buildings as to excessive uniformity, excessive dissimilarity or inappropriateness. Some cities control the appearance of buildings in certain areas which have achieved recognized beauty, such as New Orleans' "Vieux Carre."

There is great danger in architectural control, except as a means to preserve a style in areas of historic significance. The look-alike ordinances are, obviously, too mechanistic. The Board of Review can discourage atrocious and incongruous building, but it cannot guarantee good

architecture. Furthermore, the Board is not in a position to bring principles of area design to bear in passing on buildings one at a time. Historic areas can, and should, be preserved, but how far should new developments be guided beyond the general guidance of an area design plan?

This is the point, where the lawyer should bow out and leave the field to the design professions to come up with constructive answers. The public and the courts are ready and waiting.

Biblical green belts

Excerpts from an article in the Journal of Britain's Town Planning Institute by Leslie Ginsburg

The earliest known reference to green belts occurs in the Book of Numbers, written during the thirteenth-century B.C., and is from Chapter XXXV, verses 2 *et seq.*—

"Command the children of Israel, that they give unto the Levites of the inheritance of their possession cities to dwell in; and ye shall give also unto the Levites suburbs for the cities round about them. And the cities shall they have to dwell in;

and the suburbs of them shall be for their cattle, and for their goods, and for all their beasts. And the suburbs of the cities which ye shall give unto the Levites shall reach from the wall of the city and outward 1,000 cubits round about . . . and ye shall measure from without the city on the east side 2,000 cubits, and on the south side 2,000 cubits, and on the west side 2,000 cubits, and on the north side 2,000 cubits; and the city shall be in the midst: this shall be to them the suburbs of the cities."

The Levitical cities were 48 in number, of which six were the famous Cities of Refuge. These 48 "cities" would probably be the only *new* settlements in the land, as the invading Israelites would have occupied existing towns and villages wherever possible. Thus the Law for Suburbs (*migrash* in Hebrew) applies in the first case only to new settlements, specially created for the Levites. It would appear therefore that it was considered too difficult or perhaps not necessary to have a green belt around the existing settlements, where the ordinary people dwelt.

The translators of the King James's Bible have used the word "suburb" for the Hebrew word *migrash*. Literally this is correct, *migrash* meaning the land outside the city, and to the Jacobean a suburb



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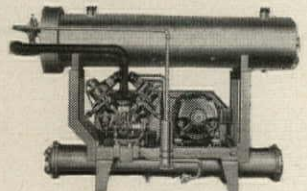
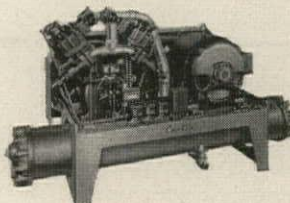


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probably meant open land outside and not a loosely built up area such as we refer to in current language.

Rabbi Rashi, commenting during the eleventh century, has a little more to say, however: "A *migrash* is a clear empty space outside a city, all round, to add to the beauty of the city, and one is not permitted to build a house there, or plant a vineyard, or sow seeds."

Jerusalem is the other city specifically mentioned in the Bible as having a green belt. Living in exile in the flat plain of Babylon, the prophet Ezekiel during the first half of the sixth century B.C. envisaged an ideal plan for Israel. In Chapter XLVIII he divides the country equally among the tribes, with Jerusalem in the center, having land for the Priests to the north, land for the Levites to the south, agricultural land to the east and west, while the city itself is surrounded by a green belt. Thus verses 15 and 17:—

"and the five thousand . . . shall be a profane place for the city, for dwelling, and for suburbs; and the city shall be in the midst thereof. . . . And the suburbs of the city shall be toward the north 250, and toward the south 250," etc. The unit of measurement is not written but is believed to be the Aramaic *putiah*—of six cubits,

amounting to 10'. Thus the green belt here would be 2,500' all round the city.

Apart from these ordinances concerning "suburbs" there is also a remarkable forerunner to the Restriction of Ribbon Development Act, though, like so many passages in the Bible, it has other meanings:—

"Woe unto them that join house to house, that lay field to field, till there be no place, that they may be placed alone in the midst of the earth!"—Isaiah V, 8, and the Prophet is responsible for the exclamation mark.

Curtain wall fundamentals

Excerpts from a talk before the Michigan Society of Architects by J. M. Roehm, Director of Research and Development, Kawneer Co.

If metal curtain walls are to live up to their great promise, close attention must be given the basic engineering principles which are essential to good performance. Four items deserve particularly heavy emphasis: 1) thermal expansion and contraction, 2) weathering, 3) heat transmission, and 4) condensation.

Expansion and contraction

Curtain walls are generally mounted on reinforced concrete structures, steel structures fireproofed with concrete or just plain steel structures. In any case, the thermal expansion or contraction of the basic structure is less than that of the curtain wall. In fact, the supporting structure remains fairly constant dimensionally throughout the year because of the close inside temperature control maintained both summer and winter.

When dealing with different rates of expansion and contraction within the same building system, three things can be done: 1) the difference can be allowed to go into displacement, 2) it can be allowed to go into stress, or 3) a combination of the two can be provided.

The best practice is to accommodate horizontal expansion and contraction in split mullions and to take up the displacement at each mullion. In practice, however, the frequency of expansion joints varies widely. They are often as far apart as every fourth panel, and they work all right if everything is properly done. But this is apt to produce a constantly noisy wall—a wall that pops and scrapes and

continued on p. 84

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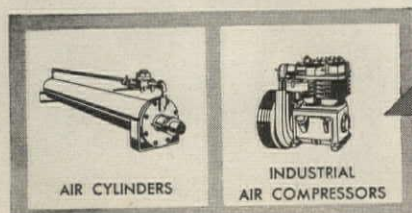
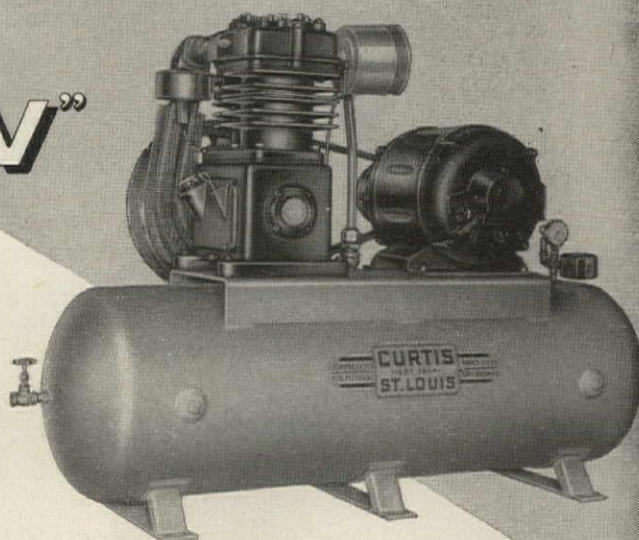
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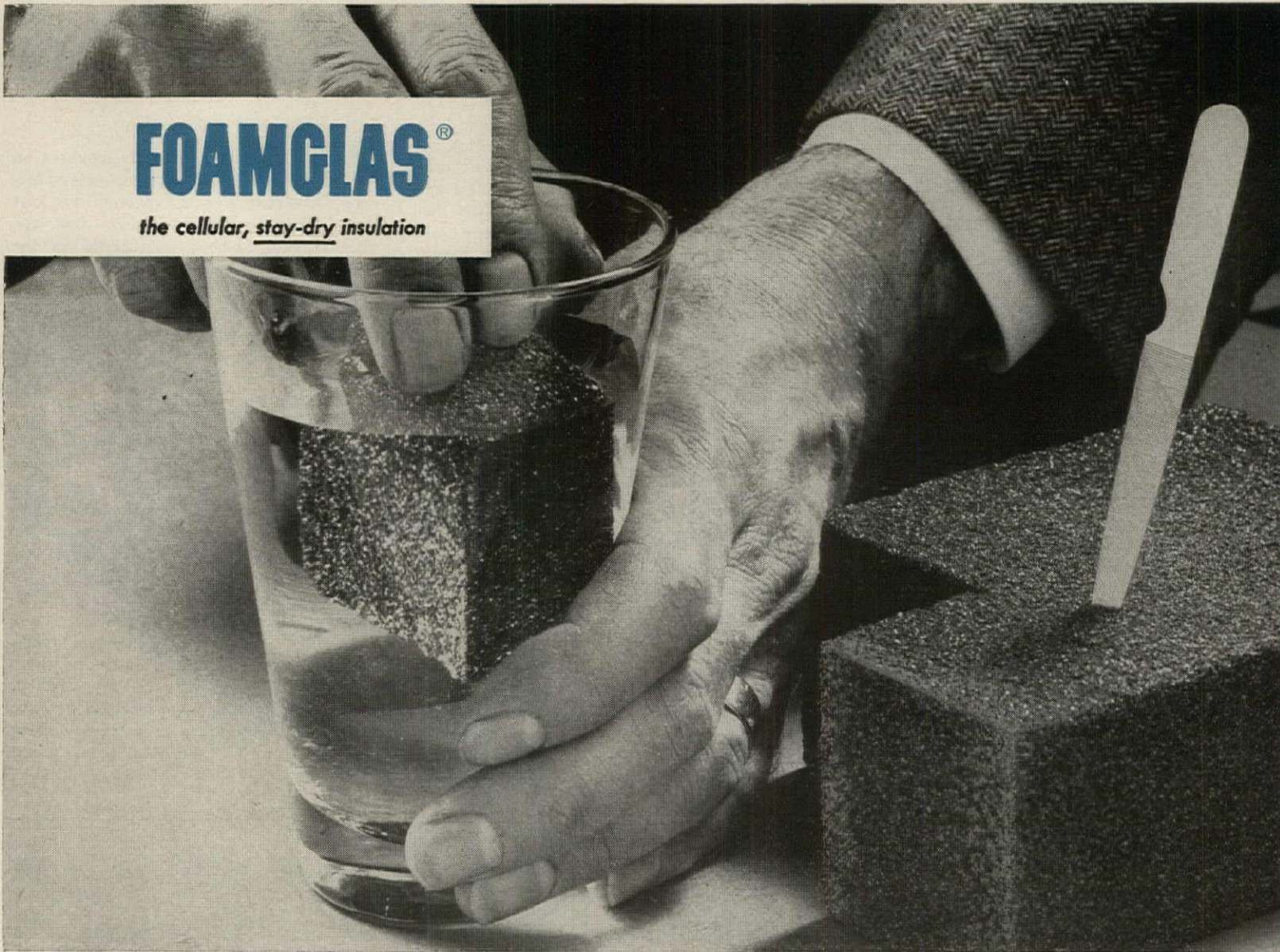
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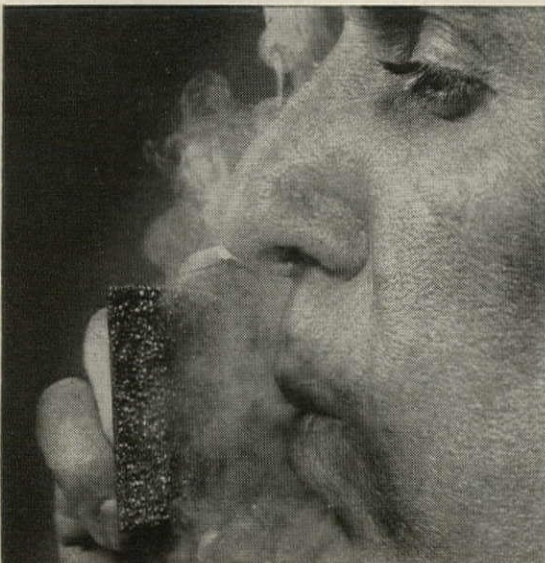
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if you like. Remove the weight and it bobs back to the surface . . . proof that the sealed cells have absorbed no water, still have their original insulating efficiency.

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STRONG AND RIGID — Place your FOAMGLAS block on the floor. Stand on it. Note how it supports your weight without crushing. Compressive strength is over seven tons per square foot . . . making it ideal for load bearing applications.

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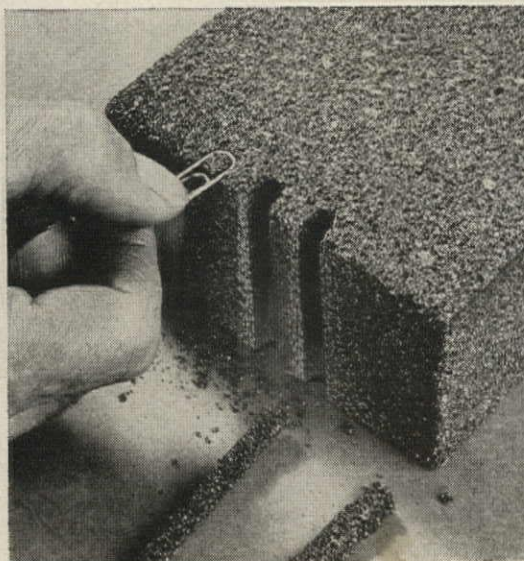
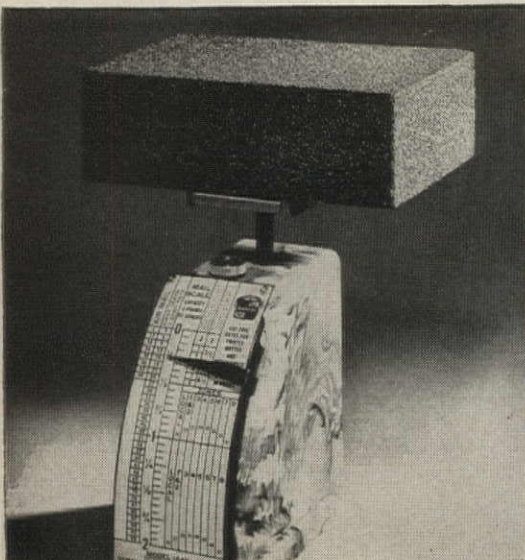
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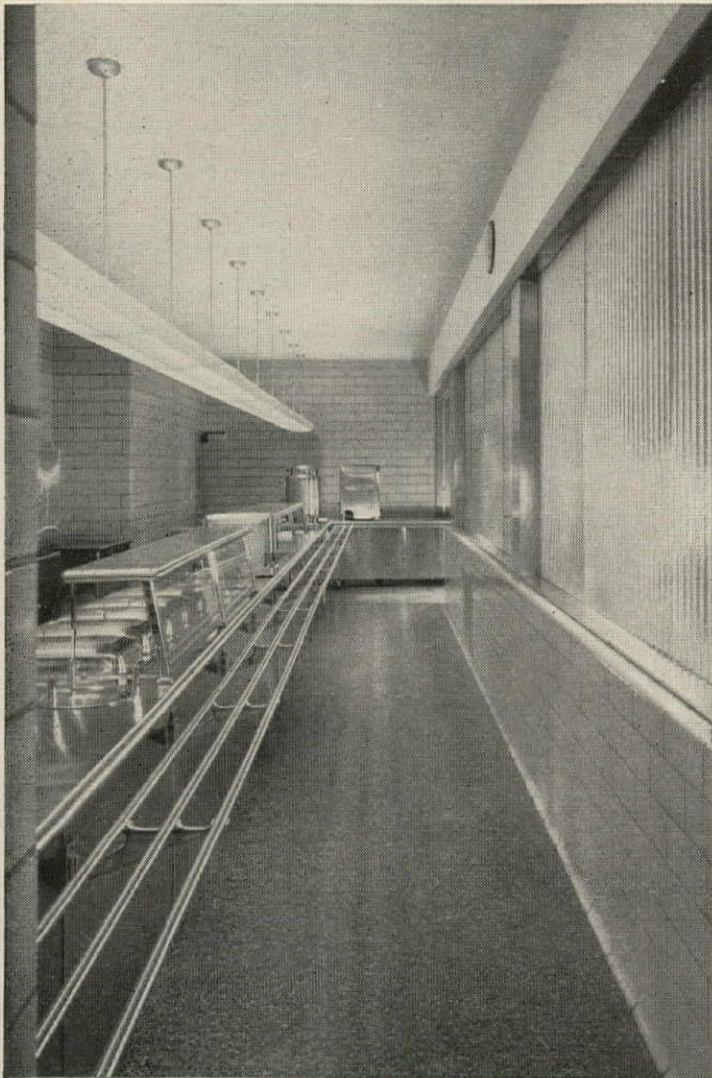


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Terrace Hall Cafeteria is the largest all-stainless steel food service in Northeastern Ohio. ENDURO is used throughout for serving lines and kitchen. Two separate units can serve 4,500 meals a day.

With college enrollments at an all-time high and expected to go even higher, student feeding has become "big business." Food preparation and handling facilities must be designed for maximum efficiency and productivity.

Fully aware of these facts, officials of Kent State University and the architects planned not only for the present but also for the future by designing all of the advantages of ENDURO Stainless Steel into Terrace Hall Dormitory and Cafeteria.

Otto Pedersen, Director, Food Service, believes that in addition to providing labor-savings and longer life, stainless steel also creates



Range tops, sinks, storage racks, work surfaces, deep fat cookers, ventilating hoods and meat hangers are fabricated from ENDURO Stainless Steel. Equipment is mounted on legs which permit easy cleaning and allow air circulation. Well-defined, open aisles maintain smooth traffic flow.

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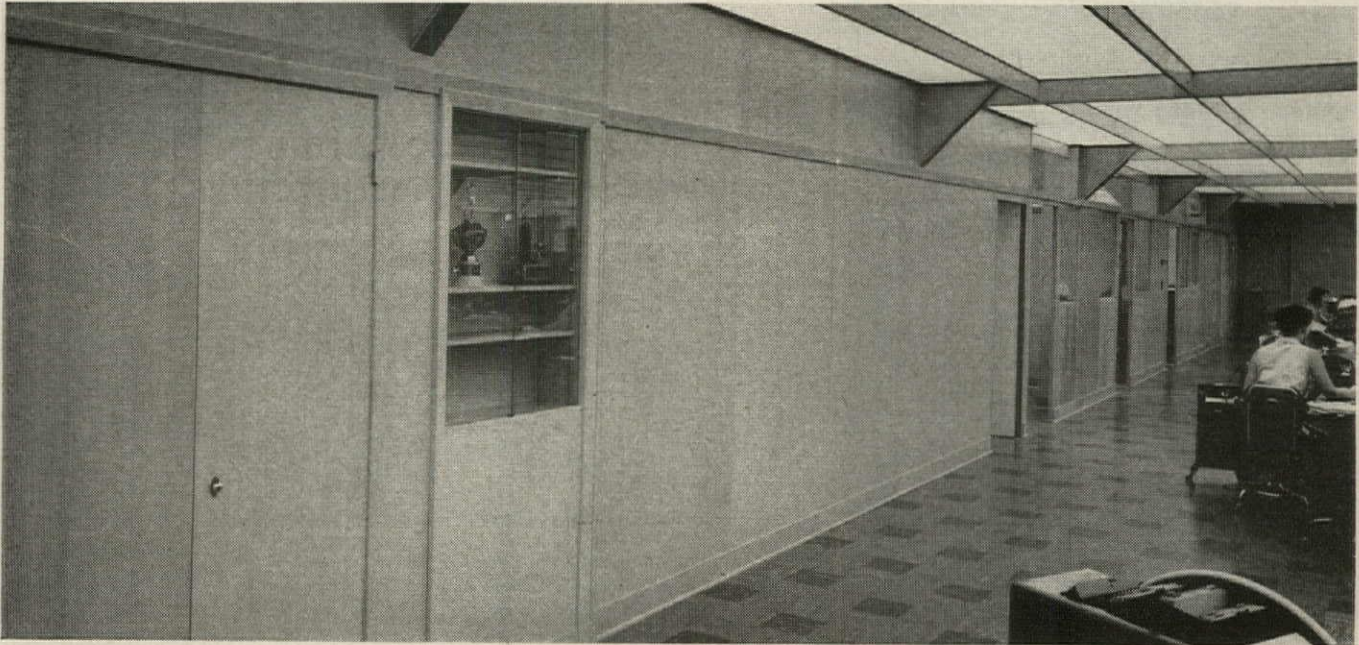
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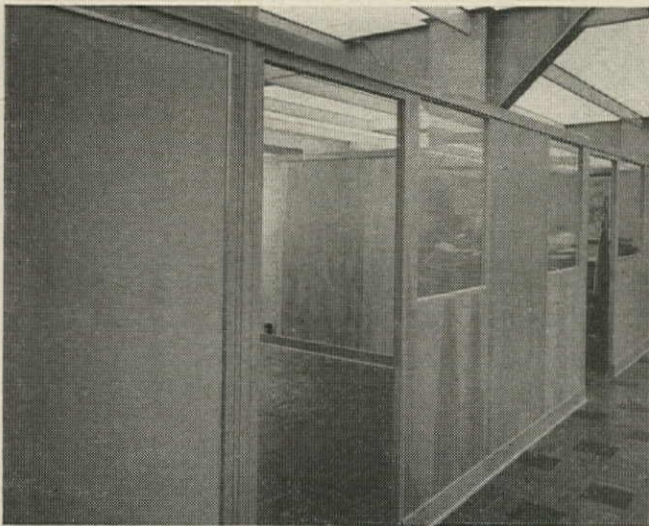
STEEL

and Steel Products

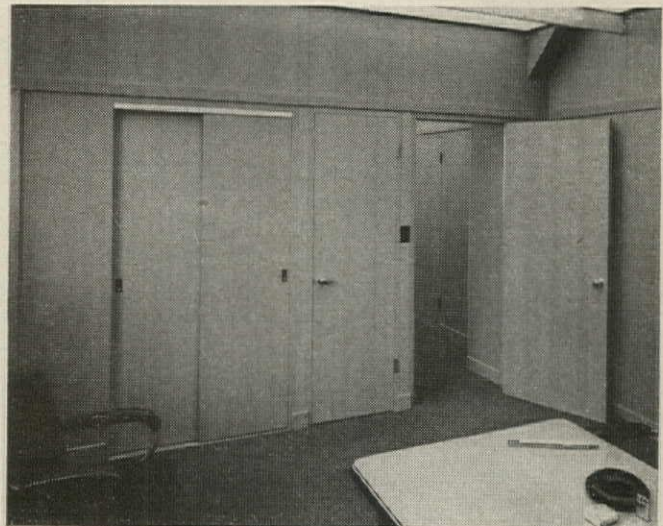
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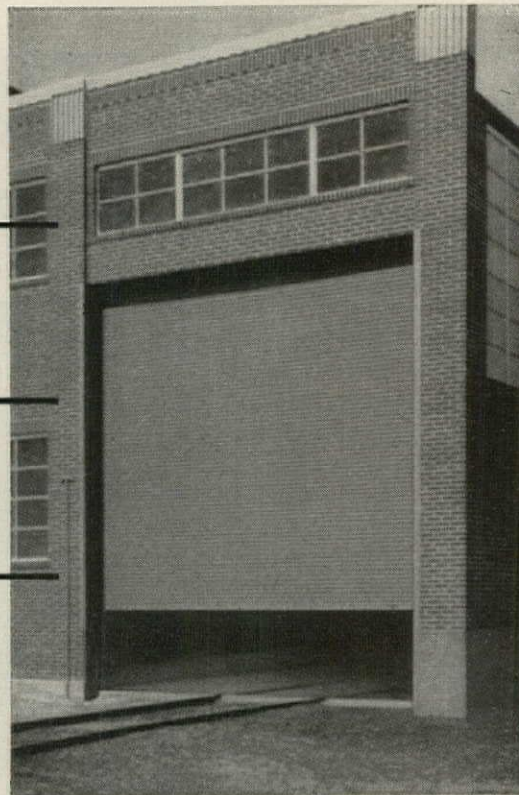


Doors open straight upward--no space is wasted anywhere

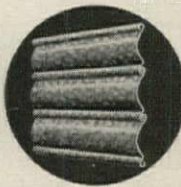
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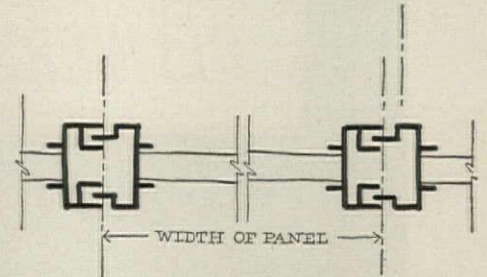
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EXCERPTS *cont'd.*

squeaks. This is due to what is known as stick friction—more properly called static friction. Thermal forces build up; static friction resists until suddenly the thermal force overcomes the friction with a resulting bang.



Split mullions, such as these permit the thermal expansion to go into displacement. Since aluminum responds rapidly to temperature change, in allowing for expansion, it is good practice to base the amount of clearance on the assumption that all thermal expansion will occur in the curtain wall and that none will occur in the building structure. The building structure, enclosed as it is by the curtain wall, will tend to remain close to the inside temperature of the building throughout the year, whereas the curtain wall will expand and contract with every rise and fall of outside temperature. (The clearance of .072" shown in sketch is calculated on this basis and is admittedly greater than will ever be needed.)

The other way to accommodate thermal force is to allow it to go into stress. When this is done, care must be taken to space attachment members properly with relation to the section properties of the curtain wall framing elements. Stress must be kept below the level which will cause permanent set, and loads on the framing elements must be kept below a value which will cause column buckling.

In one-story, and sometimes two-story buildings, we provide clearance for horizontal expansion and contraction. Top and bottom of panels are firmly anchored thereby causing the thermal forces acting in a vertical direction to go into stress. In multi-story buildings we provide clearance for expansion and contraction through slip joints in the vertical members.

Weathering

If rain and wind blow through the wall the client is very unhappy, and correction of the problem can be costly to the contractor. If proper provision is made for expansion and contraction, we cannot have a hermetically sealed wall—we know that moisture can get into the wall, and we must make provisions to drain it out. Areas within the wall should be vented to the outside. This is good practice since vapor barriers should always be on the inside of the wall.

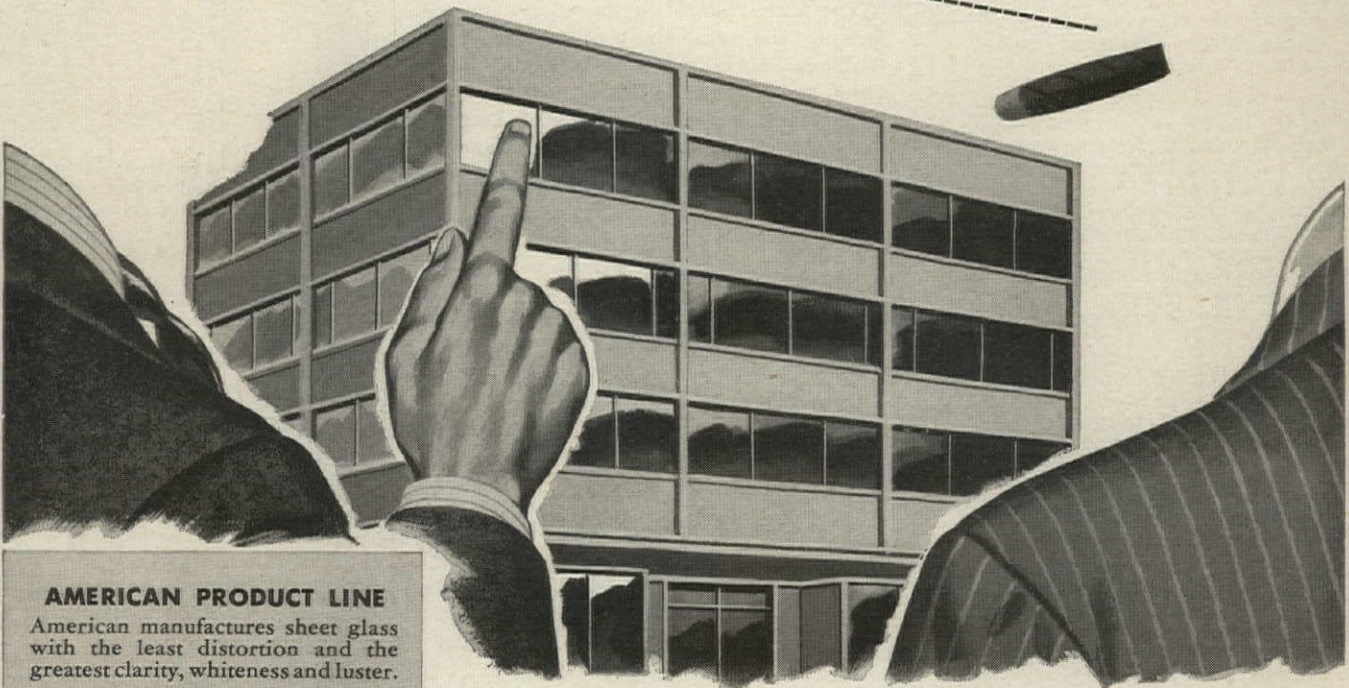
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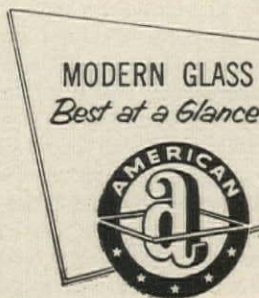
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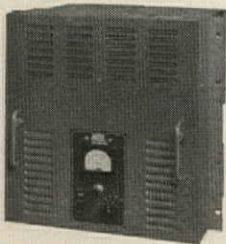
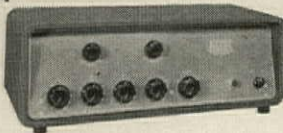
Every Altec Lansing sound product is especially designed to do a specific job. Altec manufactures more than 100 sound products—including microphones, amplifiers, controls, speakers and enclosures, thus providing the right combination of components for every installation regardless of size.

Typical of the wide range of Altec products are the two amplifiers shown. The new Altec 342A is a 20 watt public address amplifier that is truly outstanding in its flexibility of function. Incorporating the "input-matcher" features, the 342A permits the use of any combination of 4 inputs to match your exact circuit needs. It is quickly and easily installed and occupies a minimum of space—the ideal amplifier for small or intermediate size installations.

The Altec 260A is a 260 watt amplifier of low distortion and wide frequency range for public address and industrial control applications where long life and minimum maintenance are paramount. In addition to other outstanding features, the filament warm-up period is controlled by delay relay, thus permitting remote full on-control.

For further information on Altec Lansing sound products see Sweet's Architect's File (32a/AL) or Industrial Construction File (12j/AL) or write Department 10-F for the Altec Engineered Sound Products Catalog.

342A

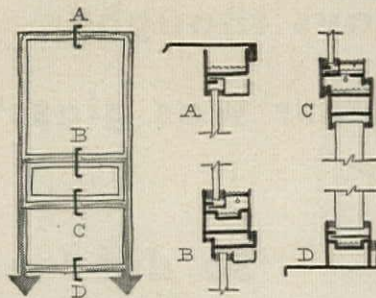


260A



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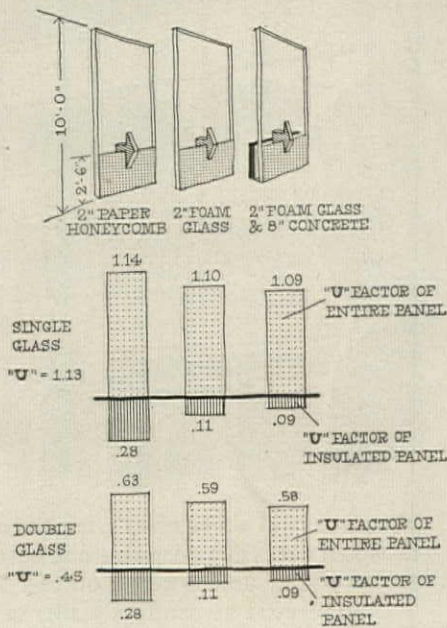
EXCERPTS *cont'd.*



This diagram shows typical details for baffling moisture infiltration and for weeping out any accumulated water. Note that each composite panel has within it a complete drainage system.

Heat transmission

The term "panel" in this discussion refers to the complete unit consisting of mullions, horizontal members, insulated panel and glass. It is this composite structure which has the function of keeping heat out of the building in the summer and in the building in the winter.



This comparison brings to light very quickly some of the fundamentals of good practice. The quickest gain that can be made is to use double glass instead of single glass. By so doing, heat transmission is cut almost in half. This comparison is based on a 5' x 10' unit with an insulated panel 30" high. Note what a small difference 8" of concrete wall makes. This chart quickly illustrates the point that in a composite structure of aluminum, glass and insulated panel, very little is to be gained by increasing the core insulation of the panel. In many cases the added insulation will result in more expense than the cost of heating or air conditioning required to compensate for the lack of this insulation. However, if heating elements are located directly behind the insulated panel, then it will probably be desirable to have a high insulation value.

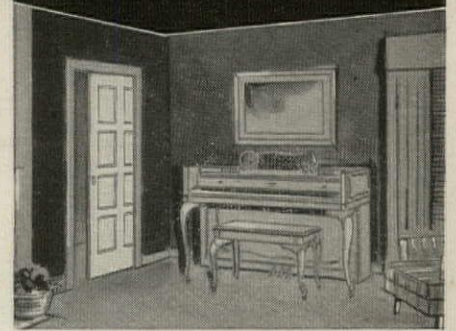
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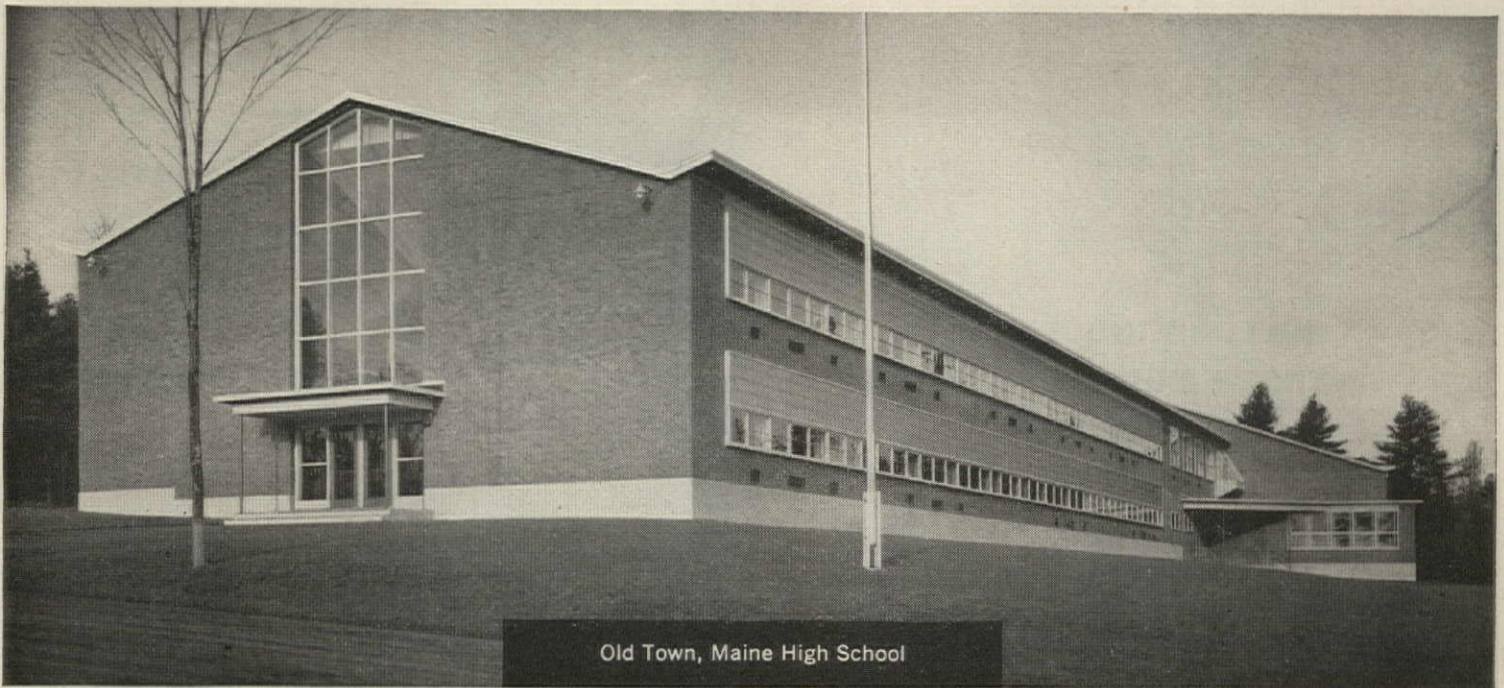
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Old Town, Maine High School



Interior of
Gymnasium wing



Interior of Home
Economics section

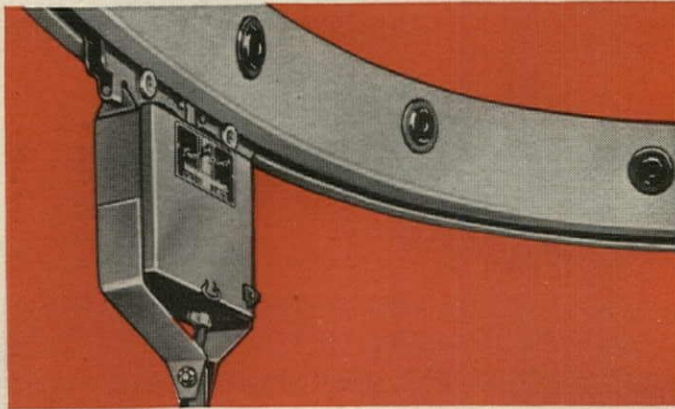
THE WORK OF MAINE ARCHITECT ALONZO J. HARRIMAN

The creative designs of Architect Alonzo J. Harriman, A.I.A., of Auburn, Maine, distinguish many types of structures. His schools, which are nationally known for their functionalism, handsome design and economical construction, are particularly good examples of his work.

Good school designing requires the individuality of custom-built structures. Yet, today's school shortage dictates economical construction and speedy erection. School architects from coast-to-coast are achieving both goals... with the use of Luria steel structures. More and more of today's handsome, custom-designed school buildings utilize the Luria system of standardization. To get the *complete* Luria story, write or telephone your nearest Luria office for a catalog or personal call.

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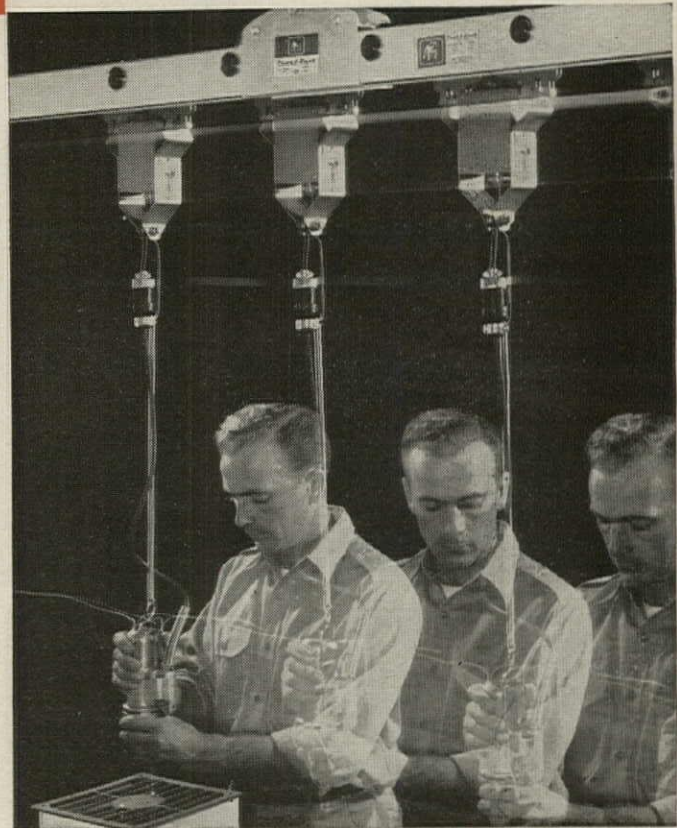
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Duct tailors to any job—mobile trolleys feed and support tools!

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Building suppliers stock striated styrene panels in tongue-and-groove sheets, 12" wide, in various lengths, in about a dozen different colors. Matching trim is also available. Attached with a special mastic, they're guaranteed for 25 years of non-fading service.

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Panels illustrated are manufactured by Ridge Plastics Company, Elyria, Ohio.

A NEW REPORT "Plastics in Housing," has recently been published by the Department of Architecture of the Massachusetts Institute of Technology. The M.I.T. study was made possible by a Monsanto grant-in-aid. Copies are available at \$2.00 each. Address Monsanto Chemical Company, Plastics Division, Room 224, Springfield 2, Mass.



Rotary Oildraulic® Elevator will lift



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ROTARY OILDRAULIC ELEVATING EQUIPMENT installed by Burwak Elevator Co., New York

75,000 lbs. in mammoth New York Coliseum

HUGE ELEVATOR CAR RISES 62 FEET ON 3 HYDRAULIC JACKS

The new \$35 million Coliseum in the heart of Manhattan is big... even by New York standards. It has a four-level exhibition hall, lobby a block and a half long, a 20-story superimposed office building... and one of the largest elevators in the world.

The elevator was designed and built by Rotary Lift Co. to handle any object that might be displayed in the vast expanse of the Coliseum, from a luxurious yacht to a complete highway tractor-trailer unit.

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Three 15" diameter oil-hydraulic jacks, powered by Rotary Oildraulic electric power units, support and raise the elevator. Sixteen equalized guide shoes on double guide rails, developed by Rotary Lift Co. for this installation, steady the giant car and its load during the 62-foot rise. Rugged construction of all mechanical parts and precise controls assure complete safety.

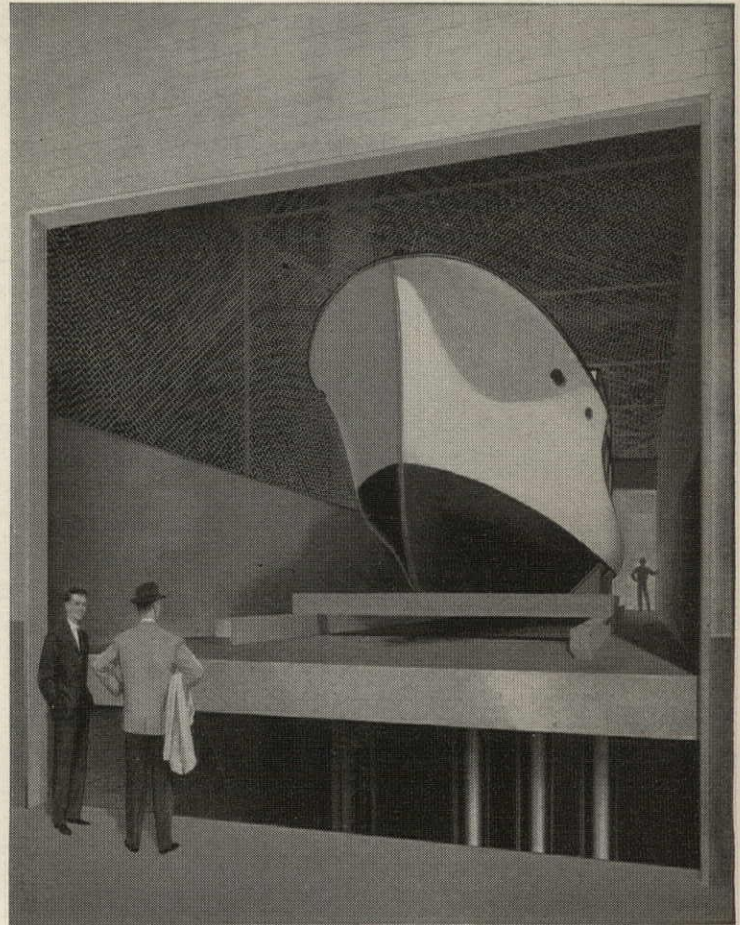
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Because the car and its load are supported by an oil-hydraulic jack, there is no need for an expensive penthouse or heavy load-bearing sidewalls.

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For improved building design at lower cost, investigate the possibilities of Rotary Oildraulic Elevators on your next job. Factory-trained personnel in a national distributor organization will help you with plans and specifications... and provide reliable installation and maintenance service. Look for "Rotary Oildraulic" under "Elevators" in the yellow pages of your phone book.



This big Rotary Oildraulic Elevator lifts heavy, bulky objects from ground floor truck ramp to any exhibition hall level in the New York Coliseum. (Vertical bi-parting elevator doors are not shown in this artist's drawing.) Three Levelator® Lifts, also built by Rotary Lift Company, are included in an ingenious arrangement of elevating equipment.

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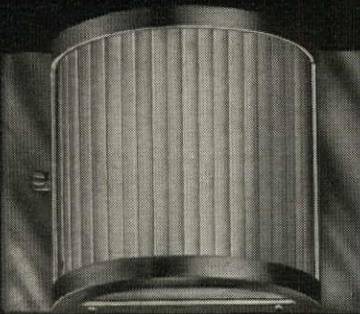


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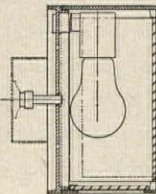
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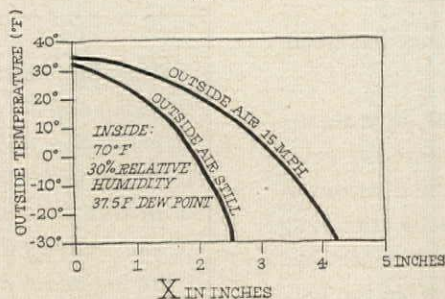
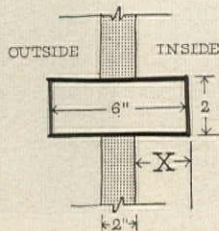
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EXCERPTS *cont'd.*

Condensation

The problem of condensation on metal is one that has always plagued the designer of metal curtain walls. He is caught here between the sometimes conflicting requirements of good appearance, economical production, economy of materials and ease of erection. The ideal way to eliminate this problem of condensation is to completely break the metallic conduction from the inside of the building to the outside. Some day, we hope to have a structure which will economically accomplish this, but no one has yet arrived at an ideal design. Therefore we must contend with this problem of through metallic conduction.

There are however things we can do to improve the situation. The ideal way to eliminate condensation on a mullion section would be to place an insulated panel outside of the mullion itself. This, of course, is impractical from the point of view of architectural appearance. The other way to solve the problem is to put the mullion completely outside of the panel. This then causes problems of mounting the framing to the main building structure. Therefore we are generally confronted with the problem of locating a mullion in the wall system with part of it exposed to the outside and part to the inside.

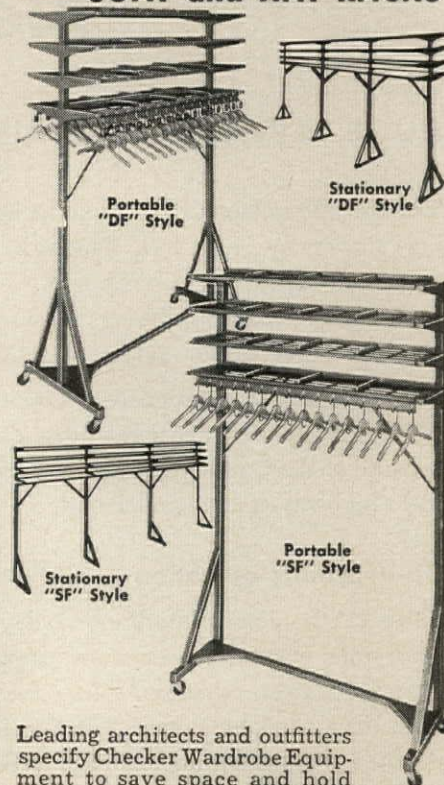


These curves indicate that it is better to have most of the mullion on the inside. The more mullion within the building, the lower the outside temperature may drop before condensation will take place on the metal.

Another way to help reduce condensation is to locate heating elements in the right place with reference to the wall. A warm air curtain rising from peripheral hot air registers or fin radiators will, under the same conditions of mullion design, accommodate lower outside temperatures before condensation occurs. A third

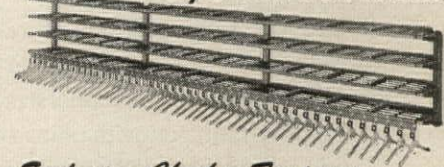
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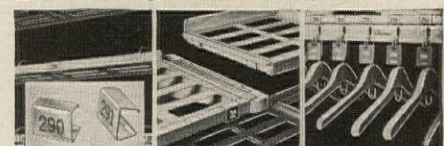


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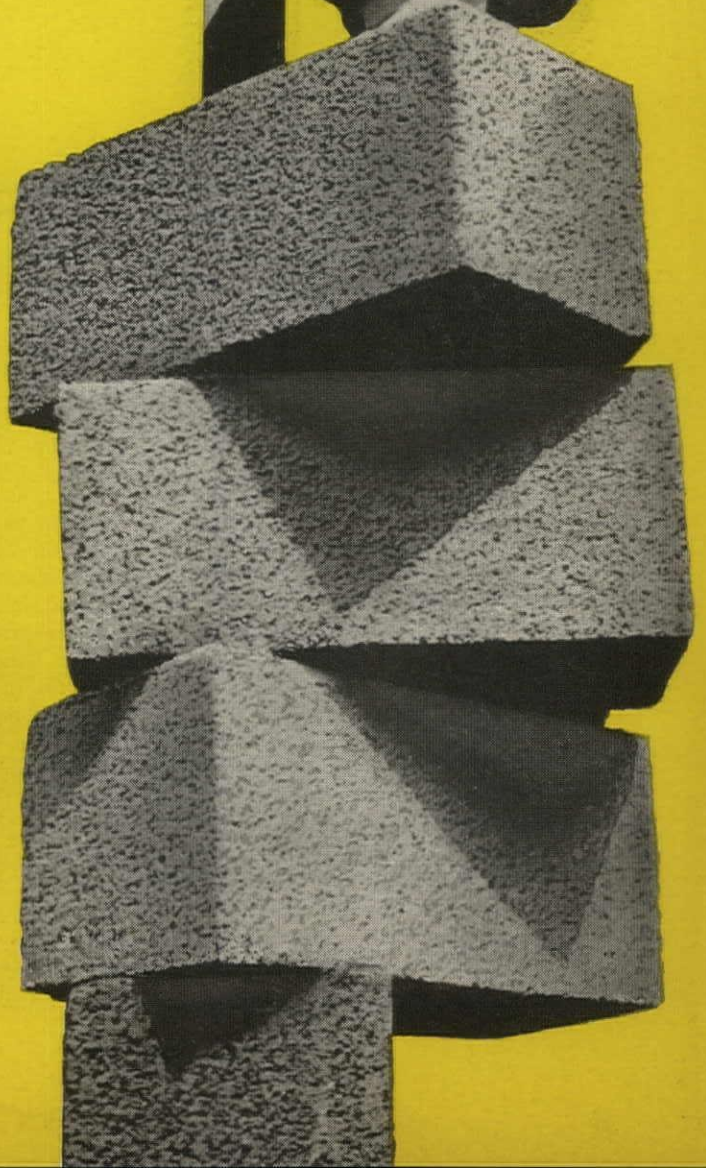
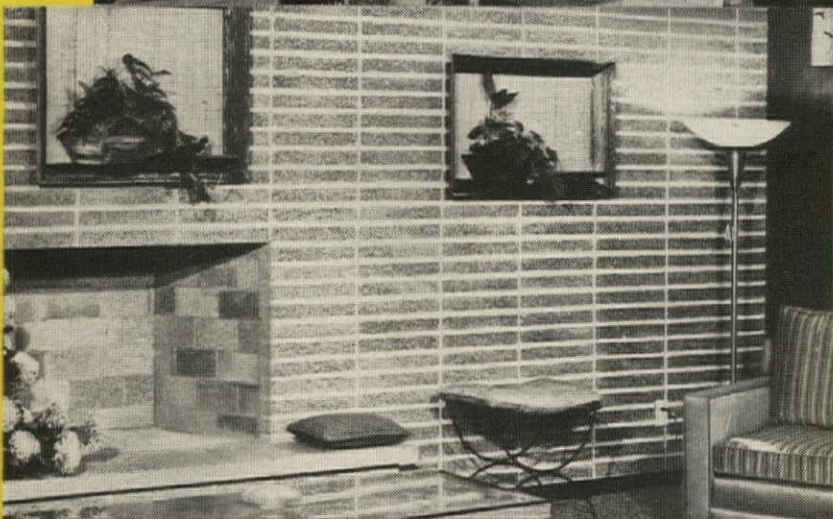
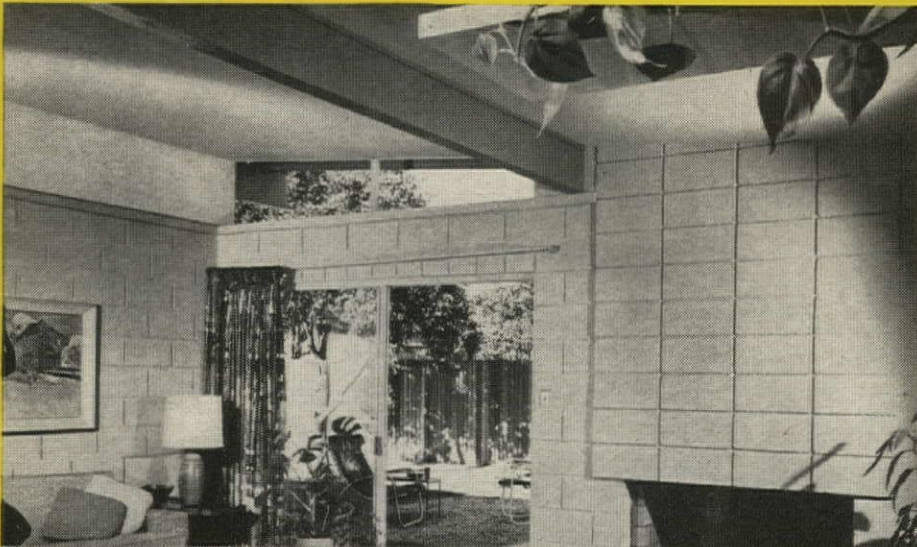
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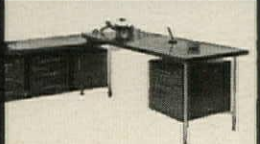
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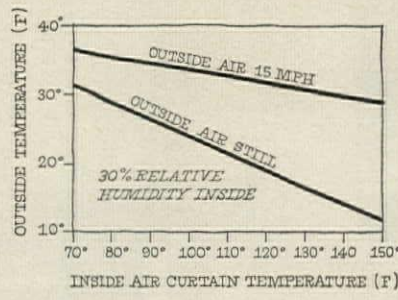
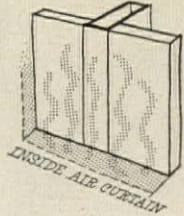
COMPANY _____

STREET _____

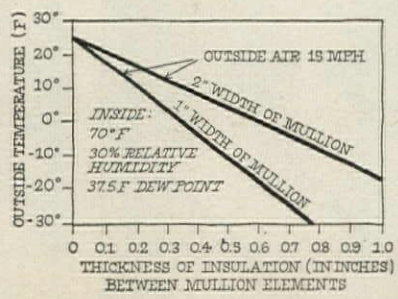
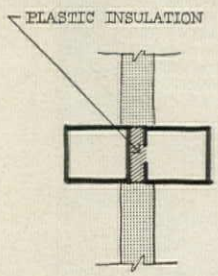
CITY _____ STATE _____

EXCERPTS *cont'd.*

way to overcome condensation is to insulate the inside or outside of the mullion.



This graph illustrates the effect of a hot air curtain on the reduction of condensation. It also shows that this is not quite as effective as shifting the mullion location towards the inside of the building.



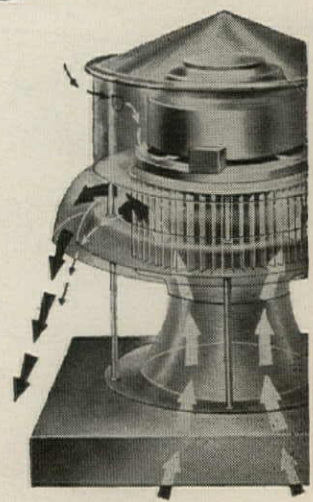
Here is another chart that shows what results can be expected with a break in metallic conduction. The drop in outdoor temperature which will result in condensation of the inside metal is probably not as great as would be expected. On the other hand, this small difference is quite helpful in some designs. The smaller the area of metal in contact with the insulating strip, the better.

In considering reduction in heat transmission, the architect and his client will have to decide whether the reduction in heat loss is worth the extra complication and cost in structure to achieve it. It is the old matter of economics again dictating that we arrive at the optimum design for the total building and not necessarily the best design for the wall itself.

continued on p. 100

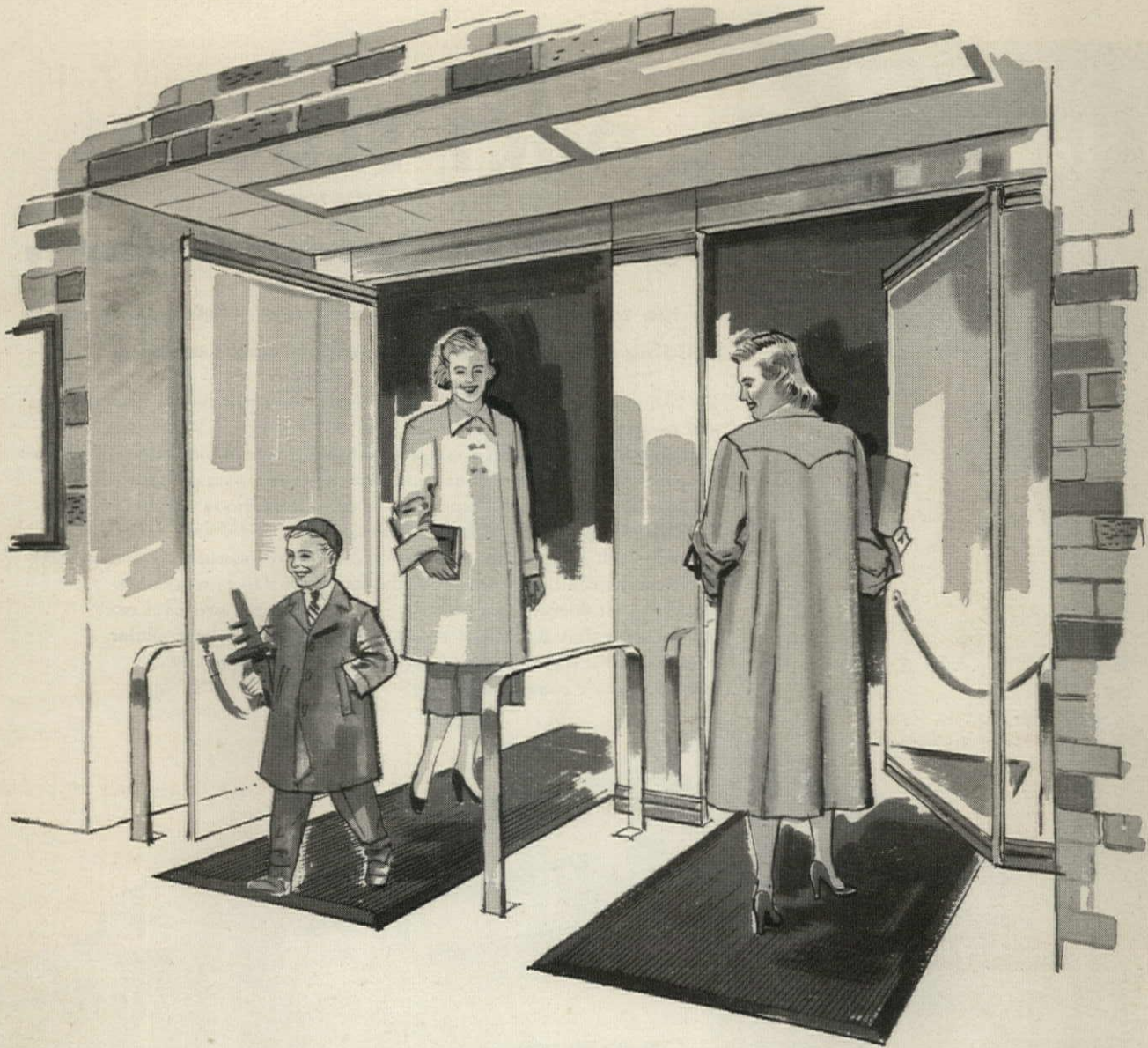
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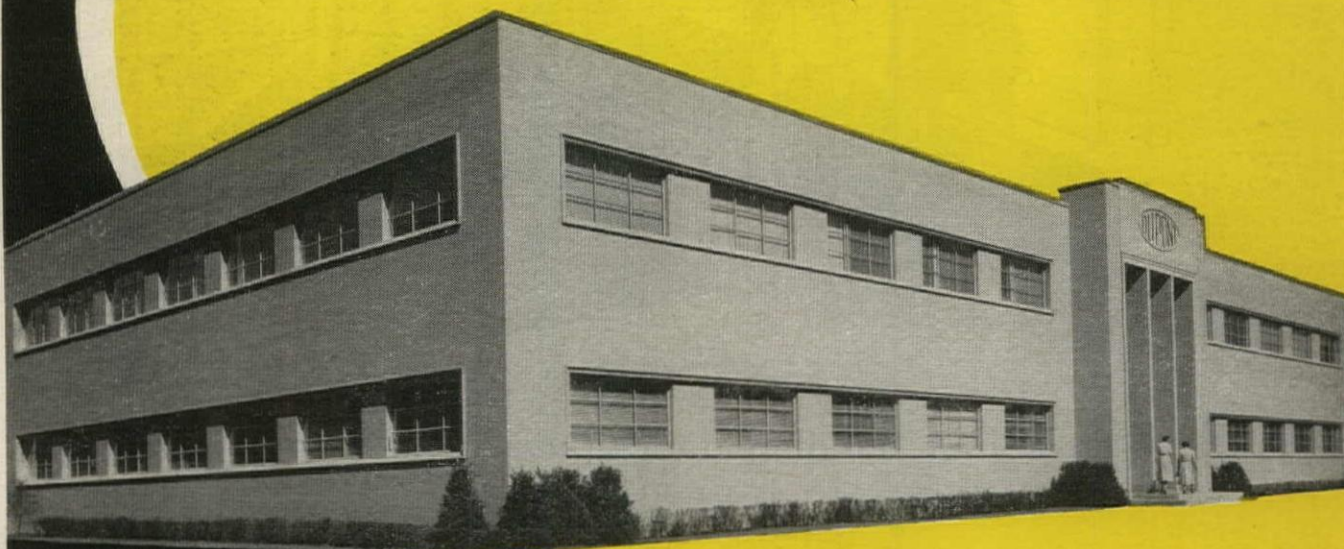
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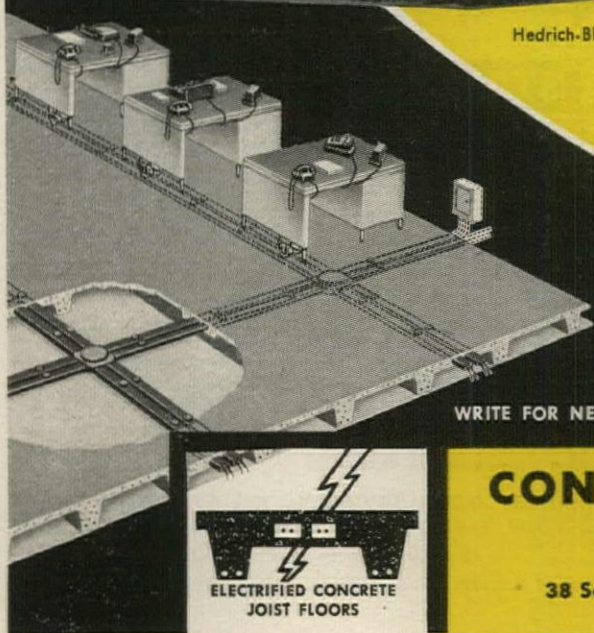
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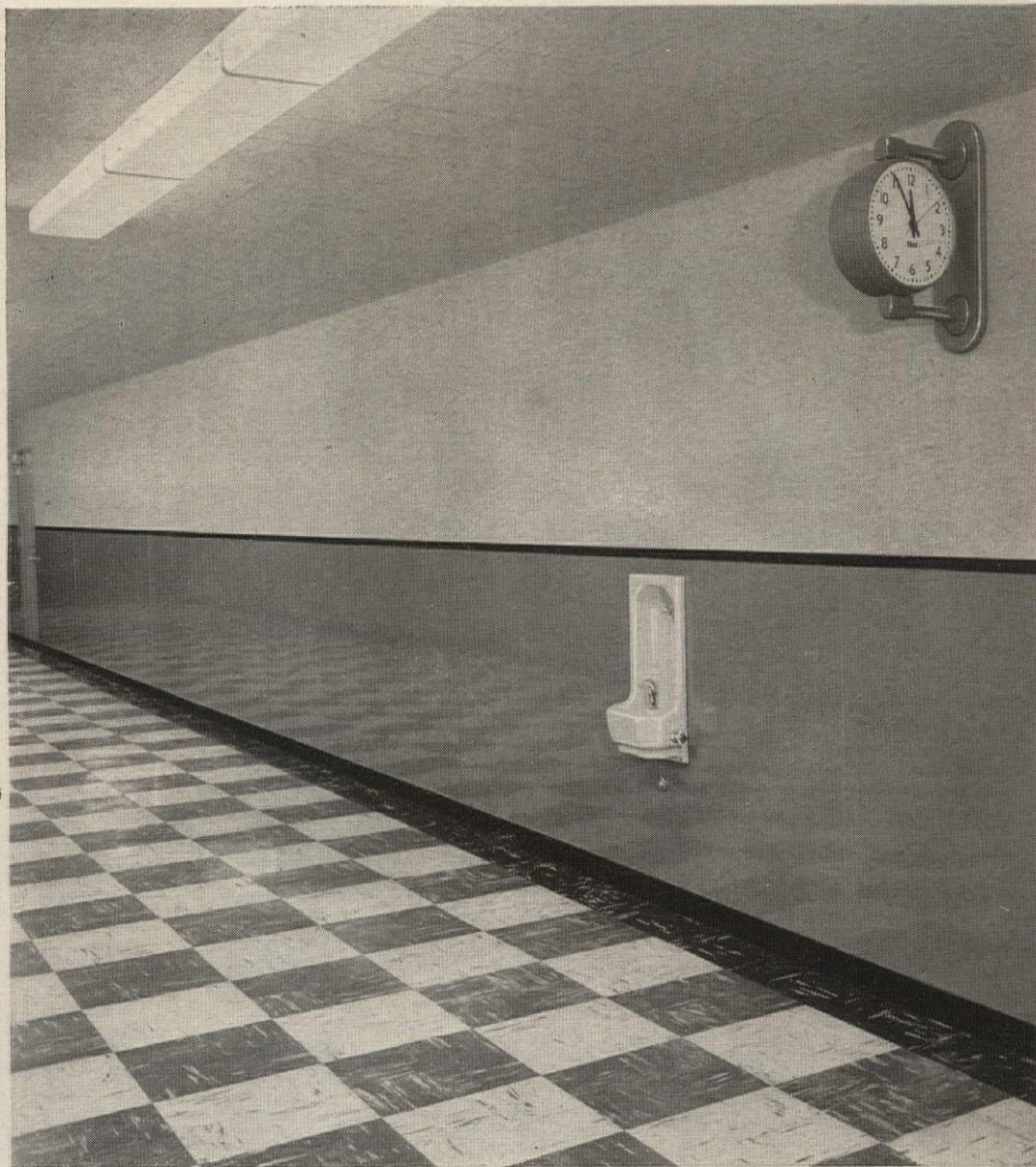
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Consoweld 10 Cocoa Echo on corridor walls in the Wood County Court House. Altogether more than 14,000 square feet of 8 different Consoweld patterns, including woodgrains, were used in various applications in the building, and on the judge's bench.

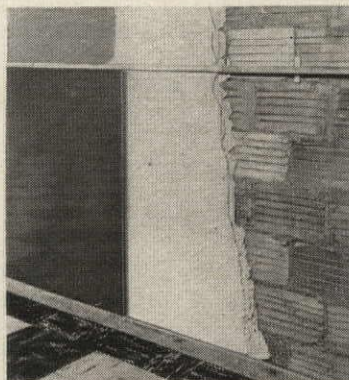


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EXCERPTS *cont'd.*

City of the future

Excerpts from an article in the magazine Challenge by Frederick Gutheim

It would be unreasonable to assume a steady increase in automobile congestion on city streets. Commuting time, if projected on the record of the past quarter century, would soon reach absurd proportions. Clearly, then, a profile of our future cities will have to take into account more than trends now visible.

The way our cities are growing involves two main areas of difficulty. While cities are becoming more congested, there is a steady flight from the city of both the younger, more vital families and of industry. Consequently, assessed values are dropping and many cities face diminishing revenues. Some are fighting a determined battle against these changes, but even the cities which are holding their own realize that the surrounding suburbs are growing faster. As cities spread out they present the second difficulty—the financial inability of suburban communities to stand on their own feet. This is usually evidenced by poor roads and transit conditions, inadequate water and sewer lines, overcrowded schools and the inability of an entire suburb to dig itself out after a snowstorm. Almost every student who has examined all sides of these problems has arrived at the same solution: *metropolitan regional government.*

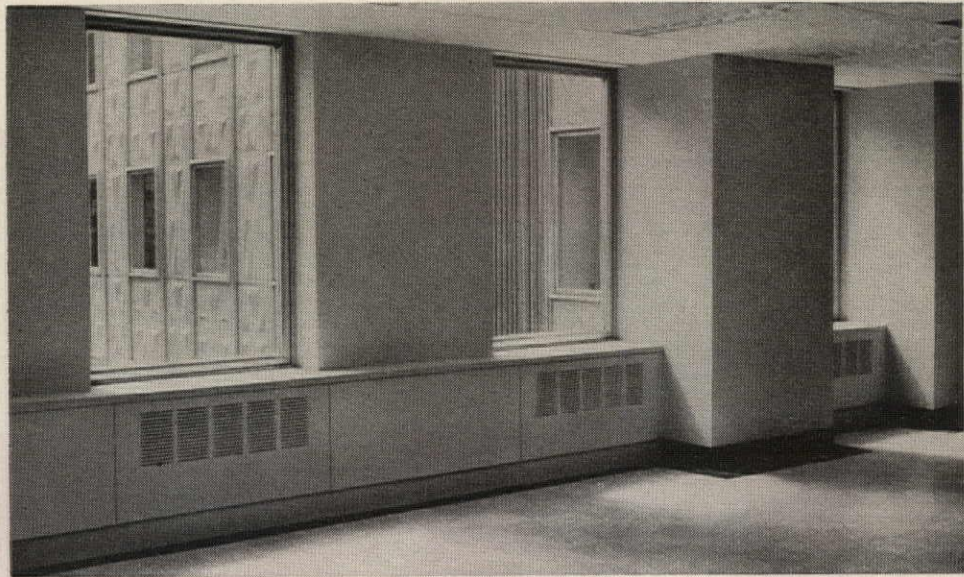
It is important to realize that the metropolitan city of the future is not just the large city of today with its fringe of suburbs amalgamated into some form of a supercity. It is really a sort of city-state, often embracing large areas of watershed, or linking scattered suburban communities which are separated by open country. Contrasted to city planning, metropolitan regional planning embraces such considerations as the availability of natural resources, water supply, flood plains and scenic and recreational areas. It deals with the peaceful coexistence of town and rural areas, where farming is not necessarily affected adversely by the rise of speculative land values or by the approaching urban fringe. It seeks to organize and integrate the city's public utilities, transportation system and such government services as education and health.

To predict that America in 1975 will be a metropolitan America does not mean that it will be dominated by vast, impersonal supergovernments. Certainly, as we advance toward more efficient government of large cities, we shall also find ways to give expression to smaller sectional units of government. The best bet for the future metropolitan area may be a rather loosely federated government.

continued on p. 106

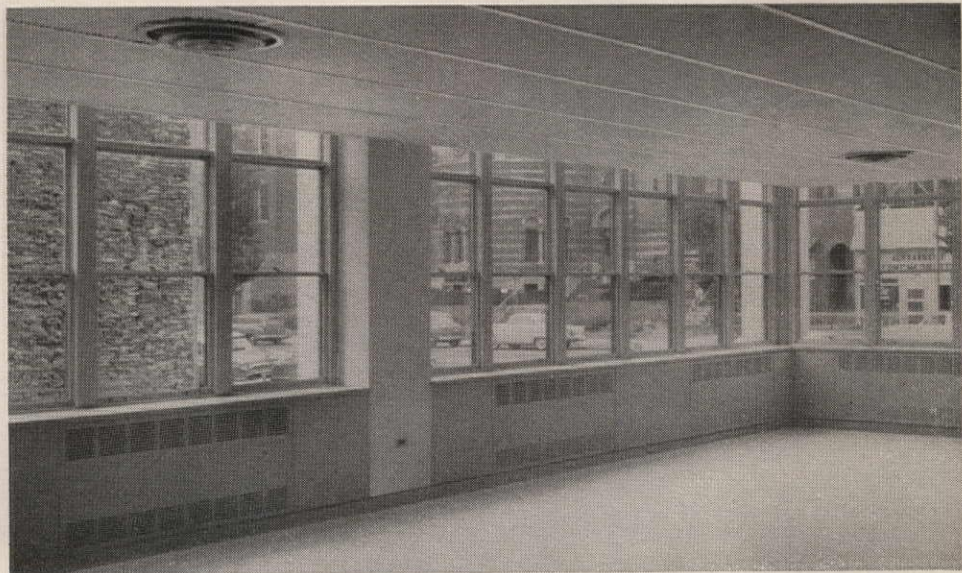
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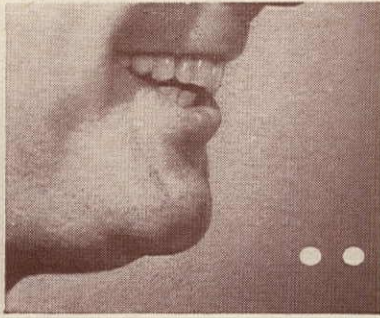
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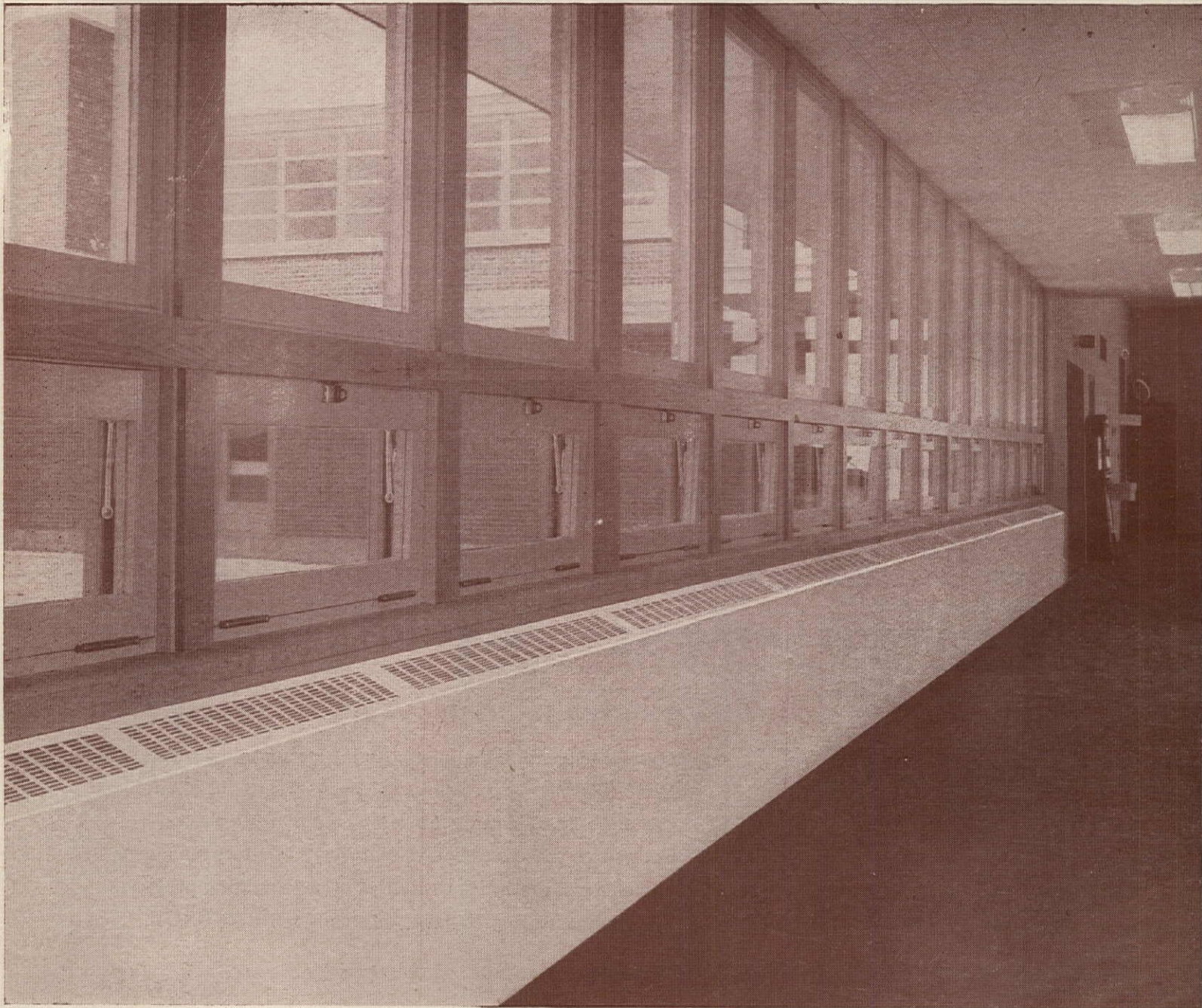
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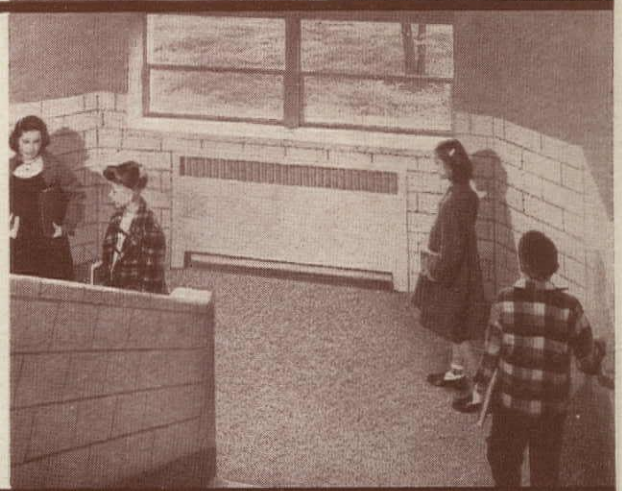


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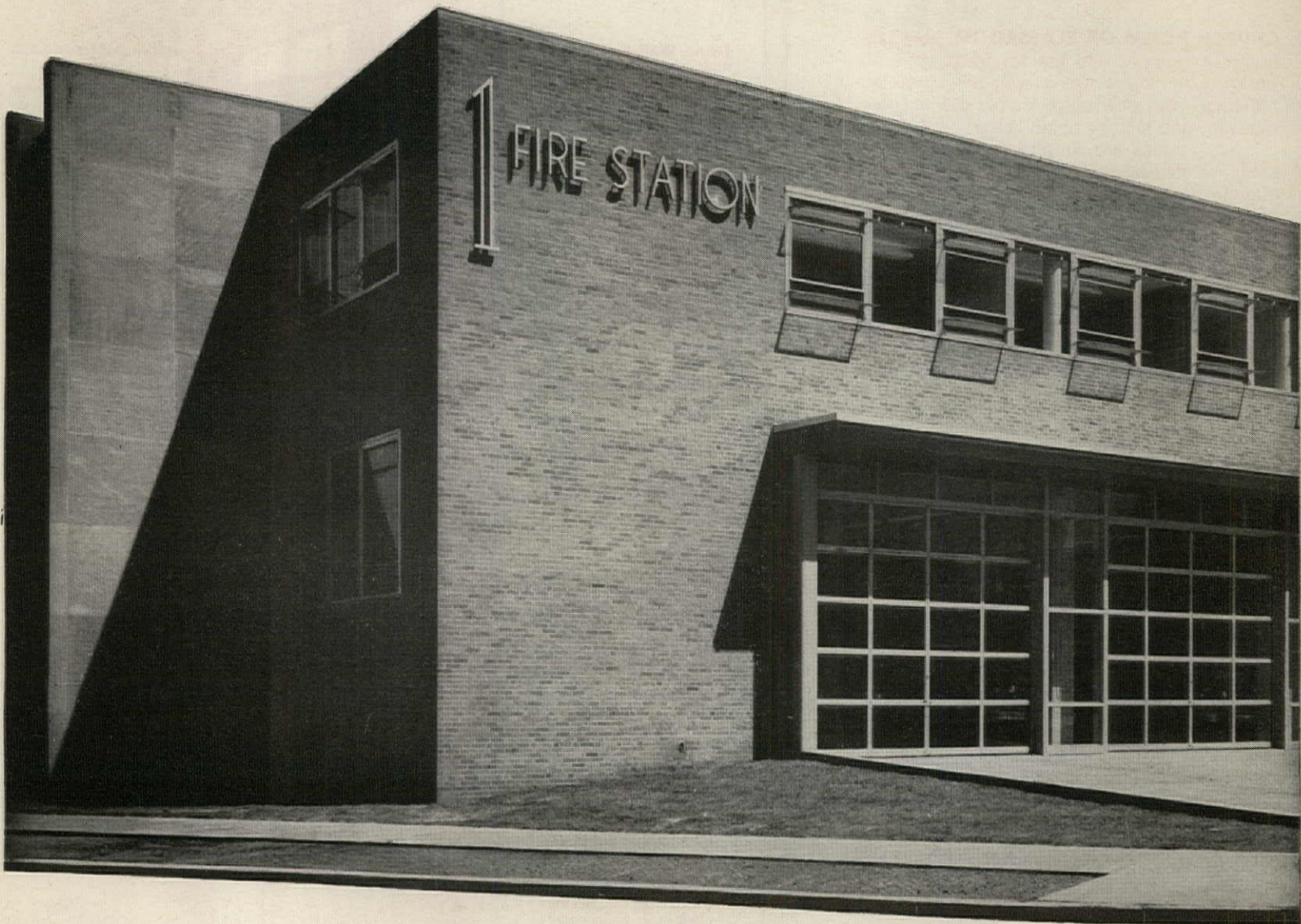


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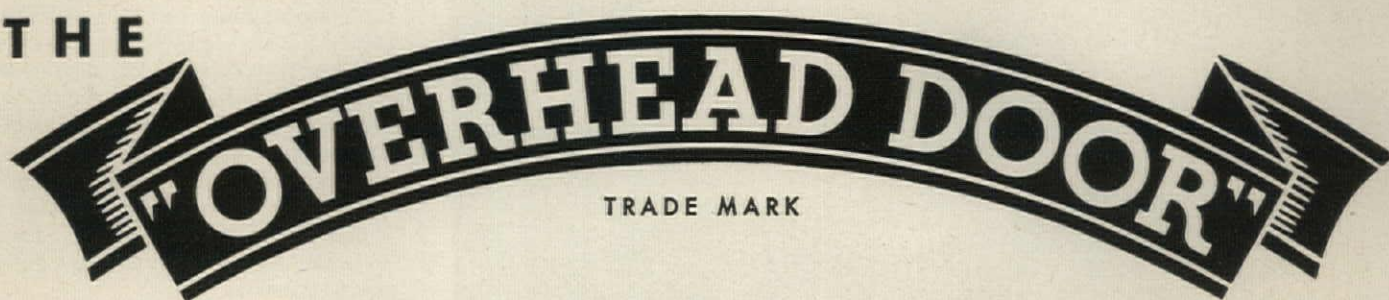
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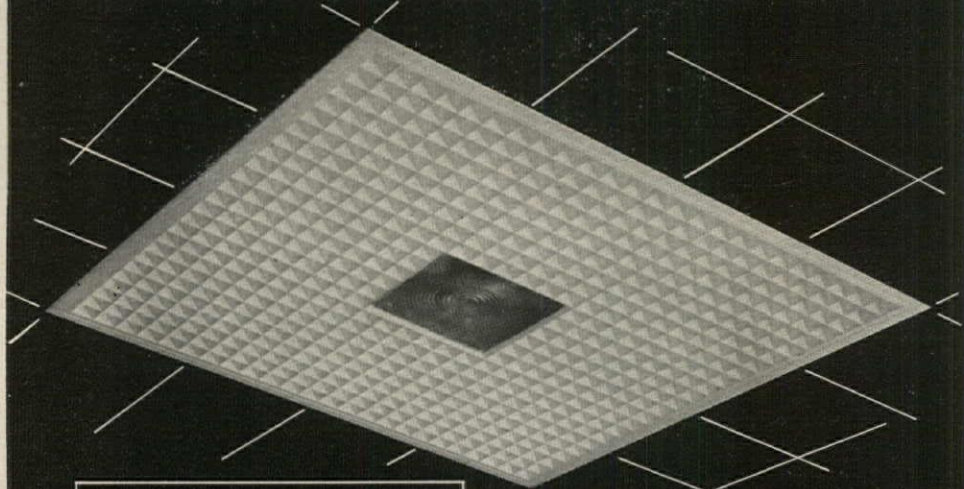
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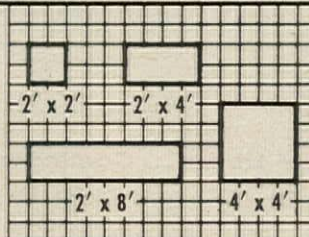
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EXCERPTS *cont'd.*

Only such a federated form of government can assure suburban communities that their independent character will be protected.

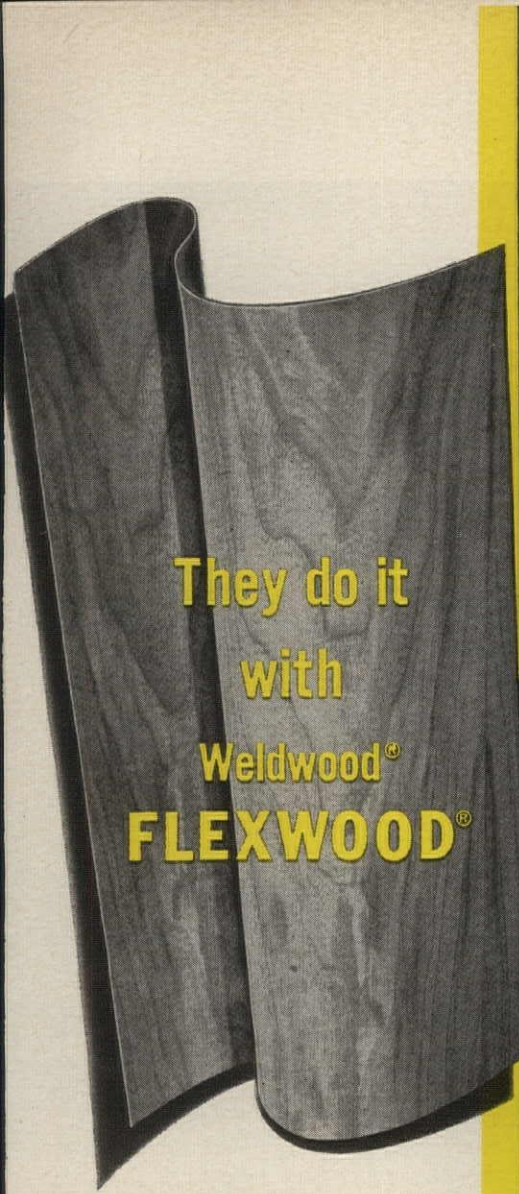
This pattern seems even more desirable politically and more efficient financially than the pragmatic alternative so often advanced—the proliferation of metropolitan districts concerned only with transportation, water, sewers and other special duties. The division of government by function leads to wasteful duplication and interagency conflicts and to a wasteful erosion of civic responsibility. We must be careful that as our cities grow, they do not become too impersonal. For unless individual political responsibility is preserved, an urban America may not be a fully democratic America.

If we can create large cities that maintain a human scale, we can have the cultural and economic advantages of bigness without its disastrous consequences upon which many past civilizations have foundered.

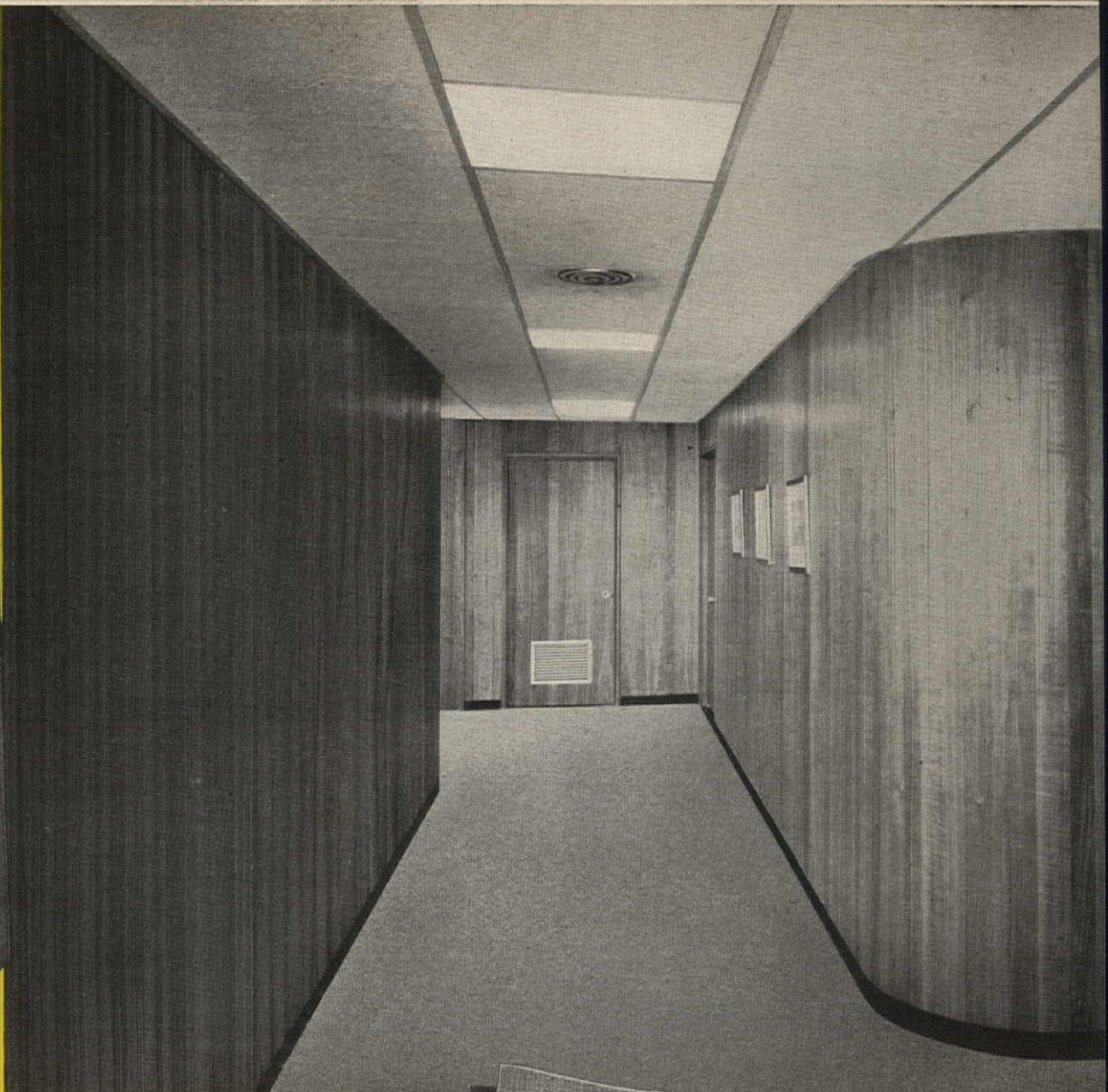
These cities will come to resemble urban archipelagoes. Each "island" will have a considerable degree of autonomy and individuality. They may have two entirely different transportation systems, one to use within the community and the other, in this automotive Venice, for longer distances. People will live nearer their work and much of the traveling now necessary will be eliminated. A rich community life, with greater opportunities for personal development and experience, will be possible. The widest choice of types of housing can be offered in each community, as distinguished from the highly stratified and socially brittle communities that are being created today. There should be no sacrifice of metropolitan cultural institutions like symphonies, universities, libraries and museums, but there should be a corresponding and healthy development of these on a community scale. Thus, it is at the level of the individual community within the metropolis as a whole that there is the greatest opportunity for the development of "urbanity"—the character that is lost in the suburban tidal wave that has temporarily engulfed us.

Among today's metropolitan plans, the one that most closely fits American conditions and needs is the so-called "finger plan" of the Danish capital of Copenhagen. Here is a linear metropolis in which a healthy core spreads into a series of suburban communities, separated from each other by natural land forms of rugged hills and tidal inlets which are developed into forests, parks and beaches. There is an effective plan of movement throughout the metropolitan area. In my judgment, the future of our great cities lies in rationalizing and refining the strong growth lines imposed by various communications systems.

continued on p. 110



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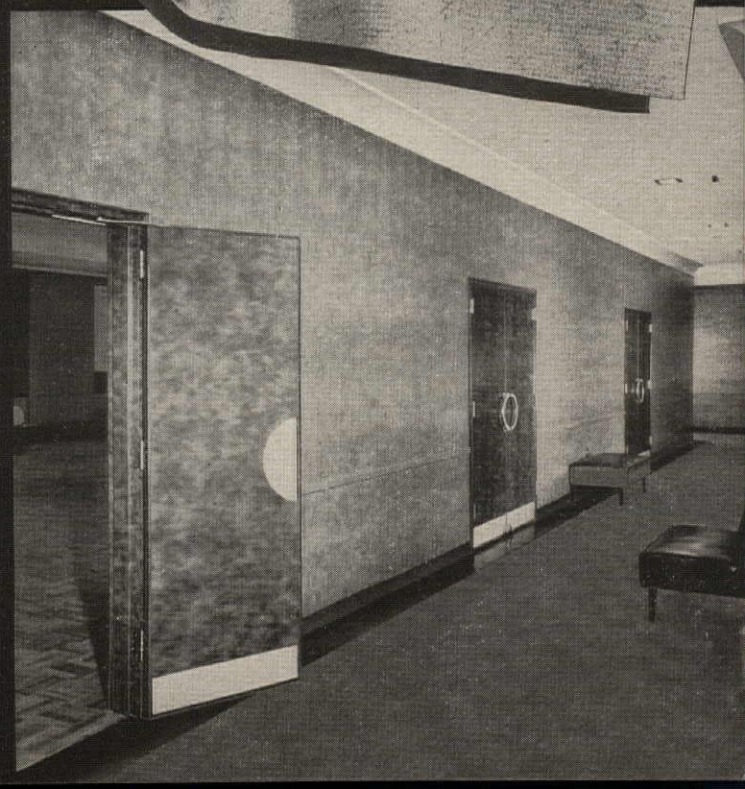
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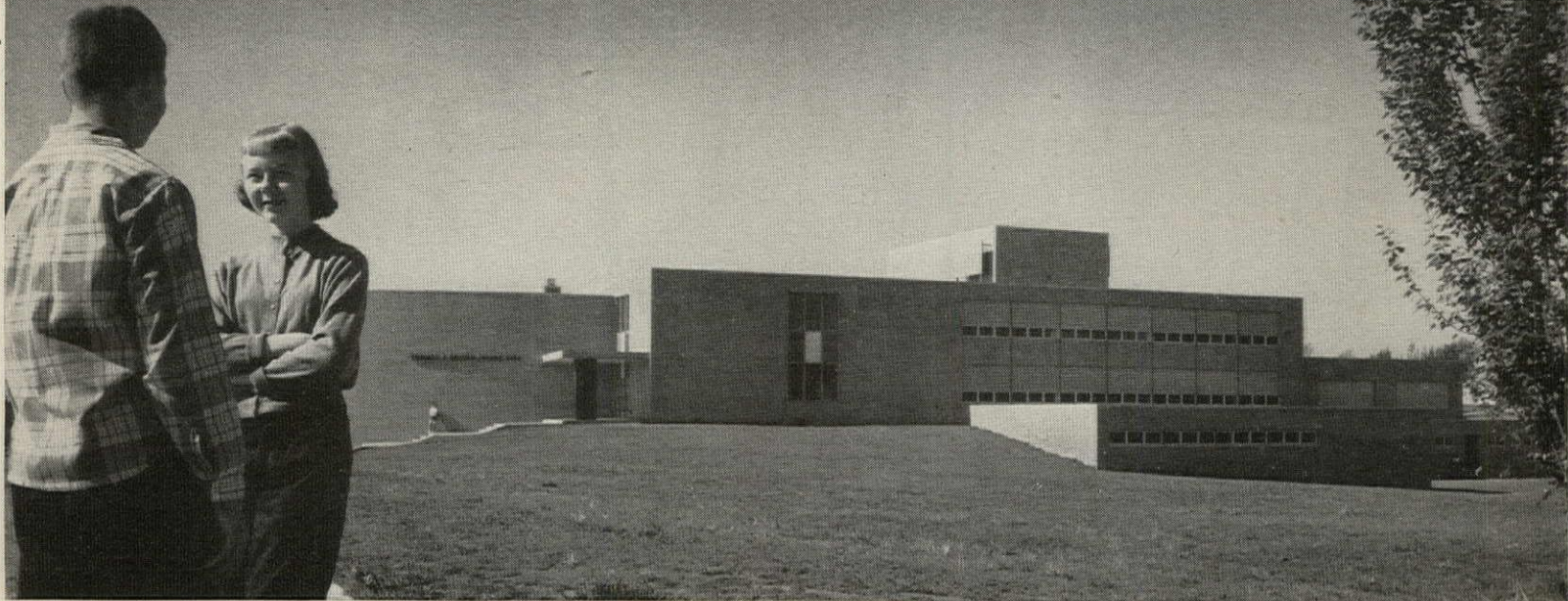
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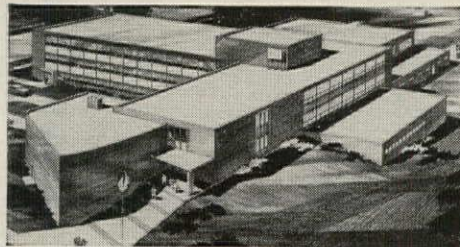


Increasingly high comfort standards, on the one hand, and pressure to reduce operating expenses, on the other, have centered interest on the importance of automatic temperature control. For both *comfort* and the *cost of comfort* in today's schools are determined largely by the efficiency of the control system.

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*Edison Junior High School, Sioux Falls, South Dakota. Harold Spitznagel & Associates, architects, Sioux Falls; Homer Bird, mechanical engineer, Minneapolis; Carlson & Glasgow, mechanical contractors, Sioux Falls.

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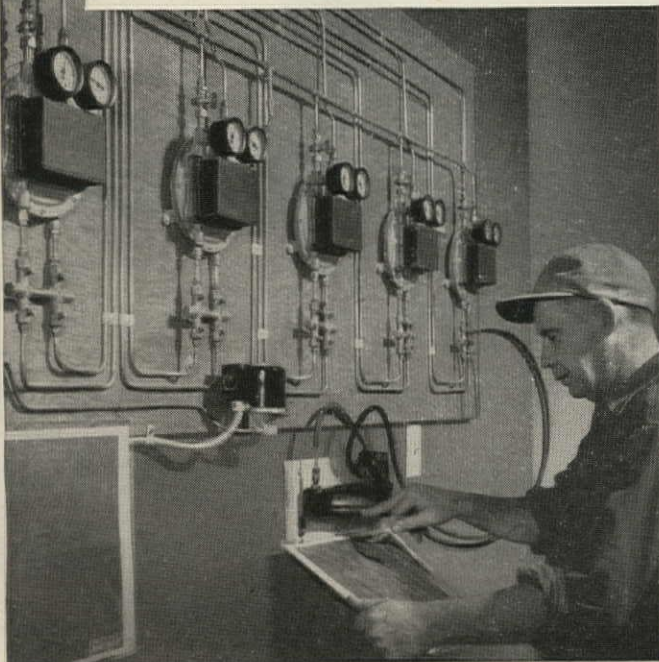
ON THE WALL of each classroom, sensitive Johnson Thermostats provide precision, waste-free regulation of both heat and ventilation. Use of *individual room* control makes certain that occupants of each room enjoy ideal temperatures, even though heat and ventilation requirements often vary widely from one classroom to another due to differences in exposure, occupancy levels, activities and other factors.



HEATING AND VENTILATING of this modern building are accomplished by a combination of central fan heating and ventilating units and convector radiation. The entire system is automatically coordinated at all times to insure the greatest possible operating efficiency. Corridors, the gymnasium, auditorium, cafeteria and other large spaces are as closely controlled as classrooms.

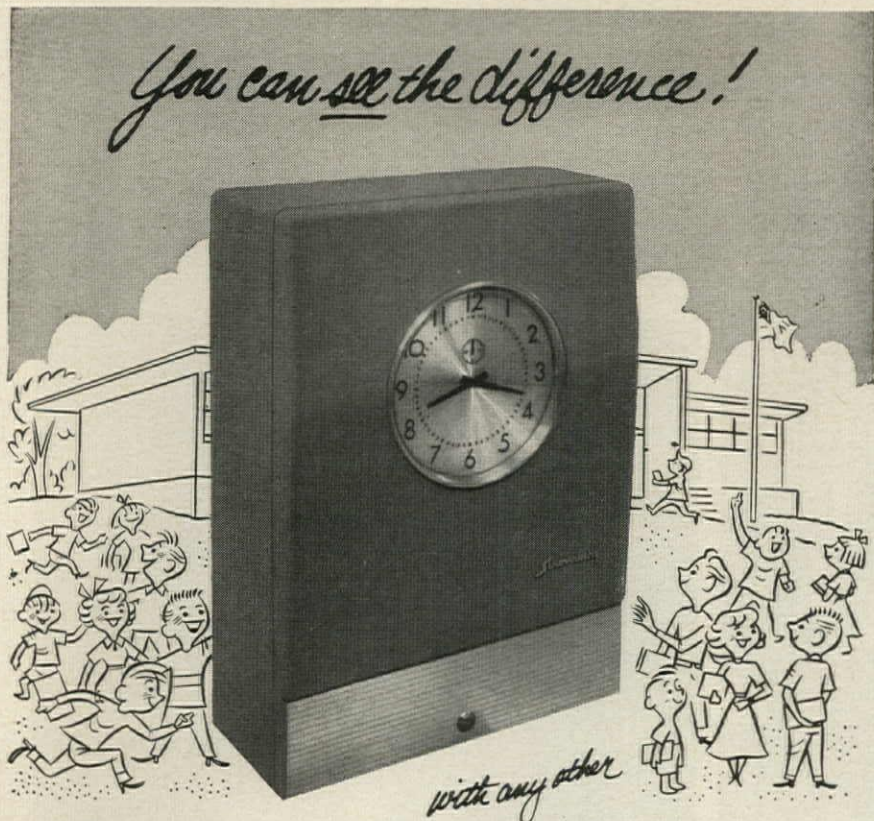


UNIFORM AIR DISTRIBUTION is essential to consistent comfort. Opening and closing of dampers as air is discharged at various points throughout the building could result in too little ventilation in some rooms, too much in others. Here, behind the scenes, Johnson Static Pressure Regulators keep the entire ventilation system in perfect balance and insure even air distribution at all points.



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EXCERPTS *cont'd.*

How to savor a house

Excerpts from an article by Dan McMasters in the Bulletin of the AIA's Southern California Chapter

More sensitivity, I feel, ought to be brought to the viewing of a new house. Architects ought to encourage earnest amateurs to 1) distinguish the subtler variations in our local architecture, and 2) dress appropriately. Attitude is everything.

Pineapple Modern: This you'll recognize by the so-called Kanaka roof and by assorted banana trees, tree ferns, a lanai and at least one hikea. Can be as refreshing as the afternoon breeze over Oahu or, in clumsy hands, as discomfiting as your mother-in-law in grass skirt after two cocktails. Suggested dress for the women: bare midriff and costume jewelry; for the men, polychrome sports shirt, pastel slacks.

Honest John Modern: Above all else, this is sincere, even if the structural timbers have to be sent back to the mill for rough-refinishing. Its steel skeleton is always exposed forthrightly; if it has to be buried, why, a second skeleton is applied for looks. Very reassuring, like a hearty slap on the back (and sometimes as unsettling). Demands great discipline; successful examples are as artless and yet as consummately handsome as an axe-handle. Women: wear peasant skirt and sandals. Men: sweatshirt, baseball cap, or tweeds.

Sho-sho-shoji: Honest John on an Oriental kick. Relies on post and beam, bonsai (potted pines, junior), scroll paintings and shojis. Women: tabi are a must; also popular for some reason are Bermuda shorts and bangs. Men: black slacks and corduroy jackets.

Barefoot Boy Modern: Not to be confused with Honest John. This is Marie Antoinette playing Girl Scout in a monochromatic camp pitched in a carefully disinfected glade. Some see it as the quintessence of good form, serenity and Casual Living. Others call it a pallid cloak for a guilty conscience, a radiant-heated pillar for the Twentieth Century Simon Stylites. Women: the simple black dress with the single strand of matched pearls. Men: natural shoulders, what else?

Wide Angle Modern: A style for the true connoisseur, for it's the most elusive to find. The house looks ordinary and is just that. But hidden in it somewhere are two or three "angles" tailor-made for the camera of Photographer X whose particular technique sells with Editor Y of Shelter Magazine Z. These angles exist apart from the needs and wishes of the client. In fact, he may not even know they exist, only wondering how he ended up with that damn gold-fish pool in the entry. Since some of the best examples of Wide Angle Modern are the belly shot or the bird's eye view, come in coveralls.



Rear View.

Architects: Sorber & Hoone,
Greensburg, Pennsylvania

colored aluminum spandrels

*insulated
flat-type . . .*

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Prominent on the new wing of this Greensburg, Pennsylvania, High School are the permanently colored Alcoa architectural brown aluminum spandrels and the contrasting silver Alumilited finish mullions.

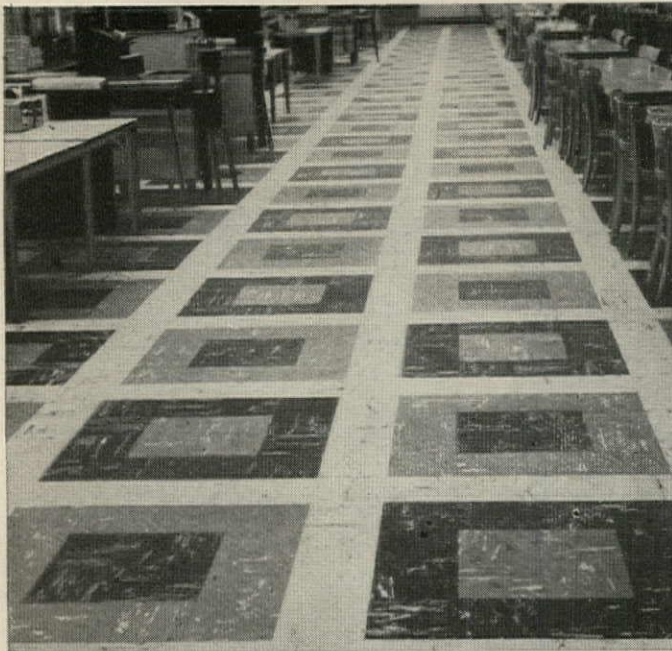
This installation merits attention because it is of a twice proved spandrel construction whose design characteristics permanently assure control of expansion and contraction, flatness of spandrel surfaces and watertightness. Modifications from a previous design involved the addition of Fiberglas insulation and steel sub-framing.

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See "MEET THE PRESS" on NBC-TV, sponsored on alternate Sundays by Johns-Manville

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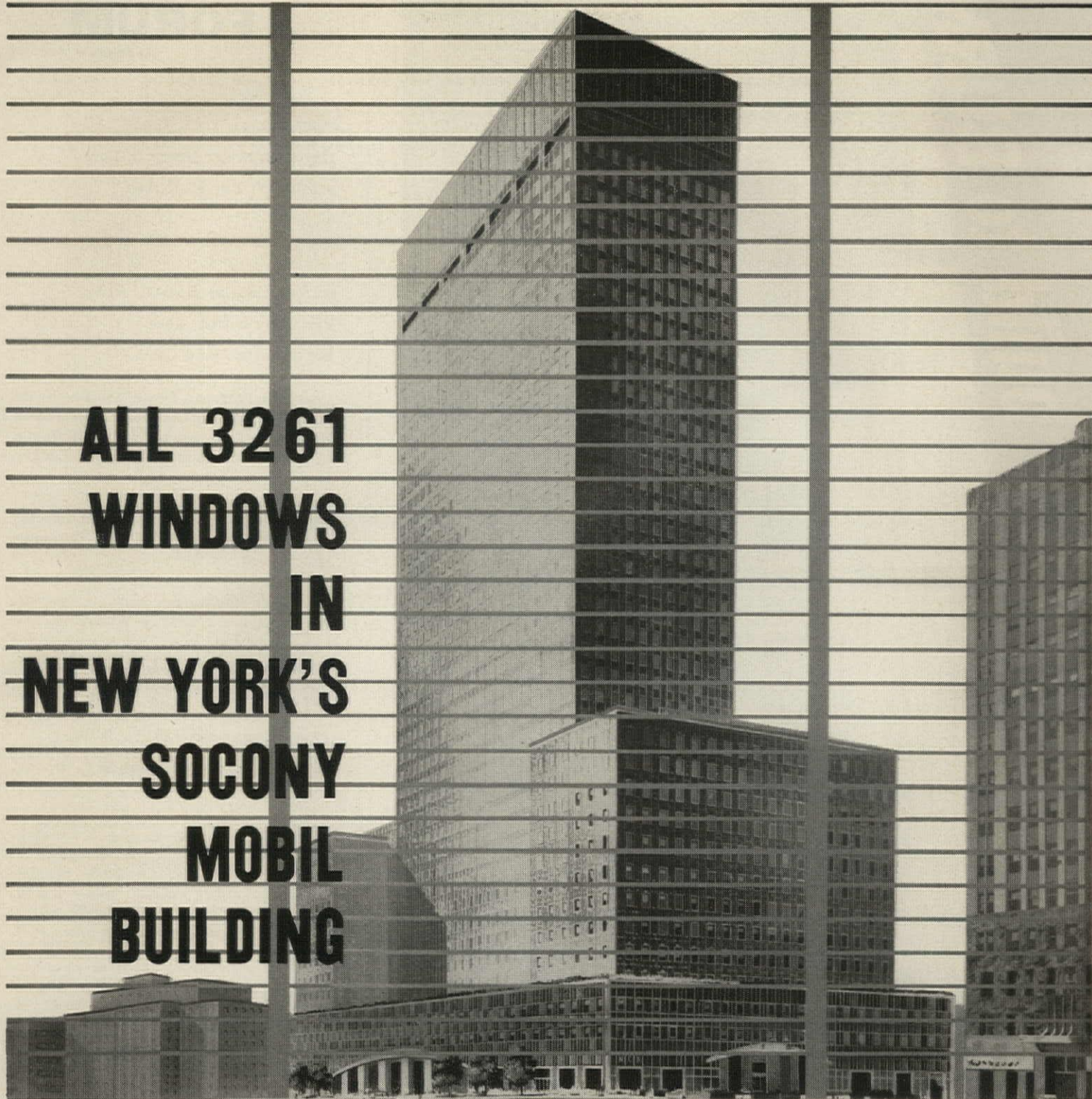
✓ 4. *Wide Color Range*

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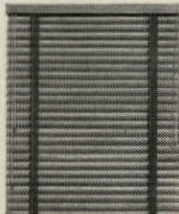
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PUBLISHED BY TIME, INC.

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ARCHITECTURAL FORUM is published monthly by TIME INC., Time & Life building, 9 Rockefeller Plaza, New York 20, N.Y.

SUBSCRIPTION DATA: Sold to architects, engineers and other individuals or firms engaged in building — design, construction, finance, realty; material distribution, production or manufacture; government agencies and supervisory employees; commercial and industrial organizations with a building program and their executives; teachers and students of architecture and engineering; libraries, professional clubs, society and trade associations connected with the building industry; advertisers and publishers; US, possessions and Canada, \$5.50; elsewhere, \$10.00. Single copies, if available, \$1.

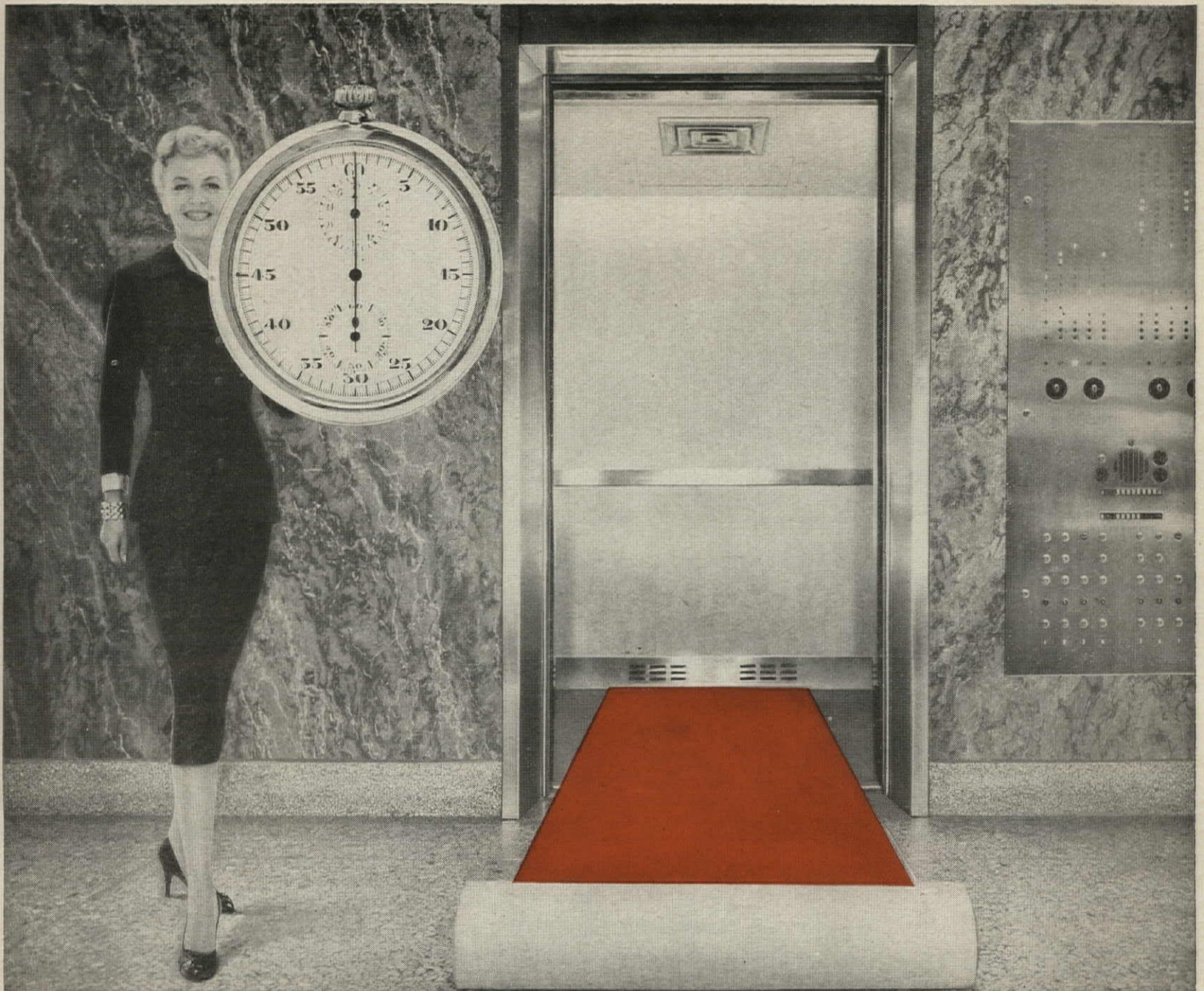
SUBSCRIPTION CORRESPONDENCE should be addressed to ARCHITECTURAL FORUM, 540 N. Michigan Ave., Chicago 11, Ill. When ordering change of address, please name the magazine and furnish an address label from a recent wrapper envelope, or state exactly how the magazine is addressed. Both the old and the new address are required. Allow four weeks for the change.

EDITORIAL CORRESPONDENCE should be addressed to ARCHITECTURAL FORUM, 9 Rockefeller Plaza, New York 20, N.Y. FORUM will not be responsible for unsolicited manuscripts or illustrations submitted, and it will not return such material unless accompanied by postage.

ADVERTISING CORRESPONDENCE should be addressed to the advertising director, ARCHITECTURAL FORUM, 9 Rockefeller Plaza, New York 20, N.Y.

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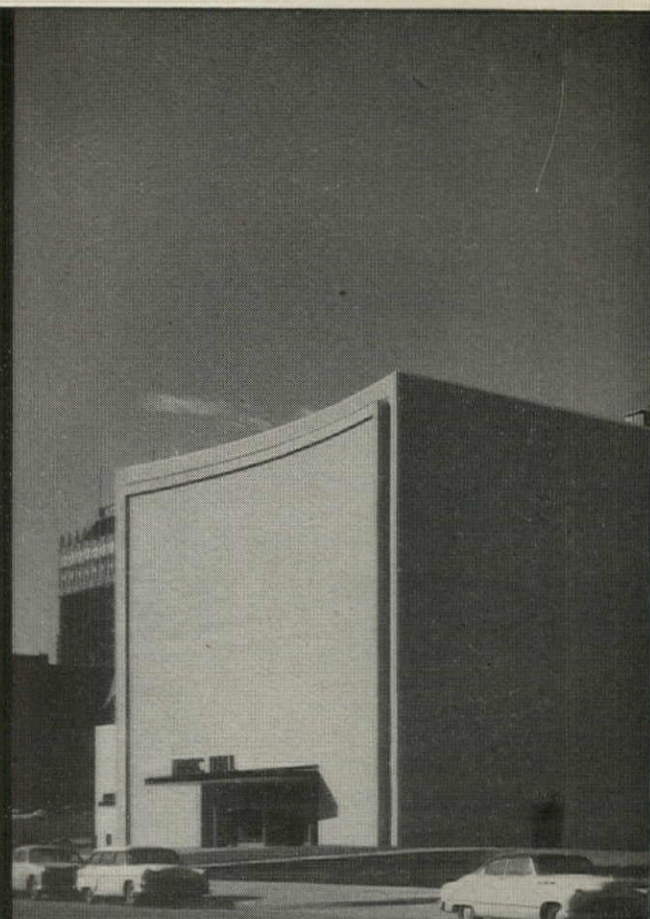
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Arena entrance of the Omaha Civic Auditorium. Ceco-Meyer Steelform concrete floor joist construction and Ceco Open-Web Longspan Steel Joists were used in appropriate floor and roof areas of this building.



View of the music hall, one of the areas where Ceco-Meyer Steelform concrete floor joist construction was used . . . in this case, in the slab levels. Same framing was used for other floors, ramps and concourses.



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Ceco helps architects, engineers and contractors meet schedules for finest buildings. It takes a lot of material to build a safe public structure of ten million cubic feet. Weight could be a problem. That was the condition confronting Leo A. Daly Company, architects and engineers, in designing the Omaha Civic Auditorium. They determined 30% in concrete load could be saved by using Ceco-Meyer Steelform concrete joist construction for floors, concourses, ramps and balconies. Similar weight savings were made by using Ceco Open-Web Longspan Steel Joists in areas of the roof. Architect Daly put it this way:

"Metal pan rib floors were used where loading and span permitted. Though the weight is light, the depth of the floor produces great rigidity. Formwork is economical, requiring only a simple centering board for the soffit form under each rib or joist. Longspan Steel Joists used in appropriate roof areas cut weight, too, as compared to heavier standard truss and purlin construction."

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This is the Omaha Civic Auditorium, showing the music hall entrance at left and the exhibit hall entrance at right. Leo A. Daly Company, Architects and Engineers; Peter Kiewit Sons' Company, General Contractors.

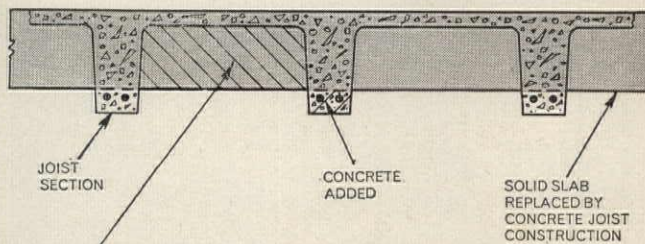


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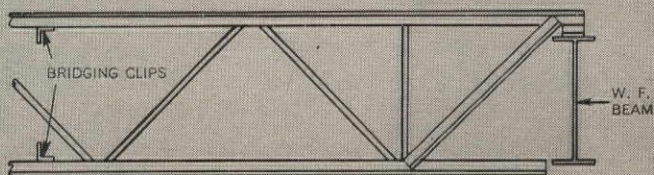
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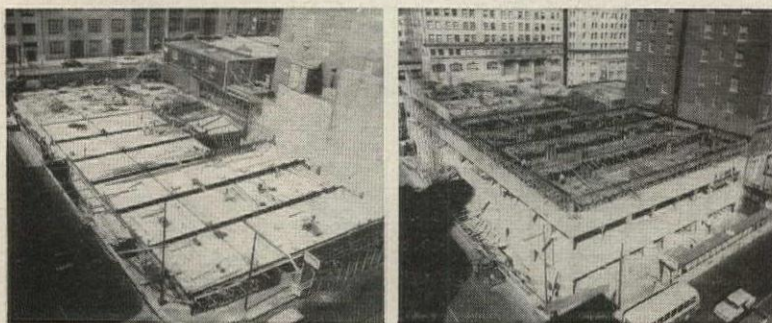
Good job planning and dependable 'Incor' high early strength made it possible to complete this durable, fire-safe structure seven months and two days after breaking ground, including time out for bad weather.

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(Left) View showing precast channels in place for first floor. (Right) photo shows manner in which floors were completed—excellent job organization and 'Incor' speeded construction of well-designed, fire-safe, durable structure.

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A twentieth-century stair climbs a fifteenth-century wall in the Sforza Palace, Milan's famous museum. The ancient bomb-damaged building has been restored by a firm of Italy's most advanced architects

The latest in twentieth-century display techniques are used to enhance, not destroy, the flavor of a great historical building

NEW MUSEUM 500 YEARS OLD

No association of today with yesterday in design could be closer, more intimate, more instructive than the redesign by Architects Belgiojoso, Peresutti & Rogers of the display rooms of the famous old *Castello Sforzesco* in Milan. Originally designed in 1451 by Giovanni de Milano (later consultants: Bramante, Leonardo), the building underwent one ambitious restoration almost 50 years ago and became the repository of one of the great Renaissance collections. But in the last four years the contemporary architects have succeeded in changing the character of the museum from crowded attic to dramatic stage, and in doing it they have taught lessons about both the past and the present.

The Sforza today looks less like a habitable palace than it did after the last restoration; domesticity, even the ducal domesticity of the Sforza's, was swept out. Also removed, however, were a number of unoriginal partitions which have disguised or altered the basic structural rhythm of the original building. Another basic affinity was established between the Renaissance past and the present: the display mounts themselves are either "invisible" modern, or frank repeats of the materials of the old *castello*. Bracket and pegboard systems abound, but the standards and hangers for these are handcrafted in wrought iron or bronze, and the wood fixturing is all beautiful joinery—an adroit hint by the architects that their craft tradition lives on.

The original viewpoint of the works of art is preserved throughout; stonework sits at the proper height, even if some supporting stones are missing (instead of "restoring" these missing stones the architects used iron rods).

In sum the new old Sforza is neither pure fifteenth century, nor distilled twentieth century, but an addition of the basic qualities of both with a subtraction of a great deal of the pomposity of both. The result is philosophic, in a very lively way. A good example of the designers' pleasant walk on the high wire between 1451 and 1956 is the sinuous new hand rail wrapped respectfully but with great style around the aged column (left).





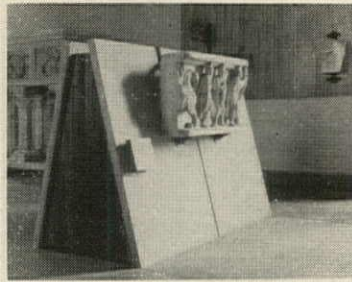
Deep masonry reveal and a delicate steel-frame window, left, are keys to the combination of old and new in the redesigned rooms—a dramatization which itself helps charge the atmosphere with quiet excitement. General simplification has emphasized the surviving ornament, materials and ceiling shapes (as in the umbrella ceiling, below) and added a great deal of power to such subtle works as the *Madonna with Angels and Saints*, by Andrea Mantegna, the large painting on display. The new additions are intended to work too, however delicate. This steel frame window has swing type opening at bottom, sash in center, and fixed glass, top.



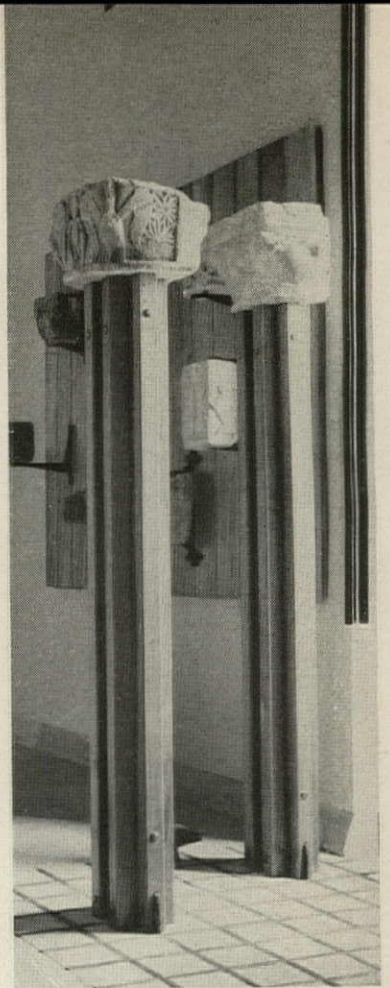
Asymmetrical walks, marble panels, surround severely symmetrical pool in the central *Corte Ducale*.

Masonry stands repeat texture of walls; wood moldings permit flexibility in hanging.





Bas-relief juts forward from solid stone and wood stand, reminiscent of its original masonry standard, but no copy.

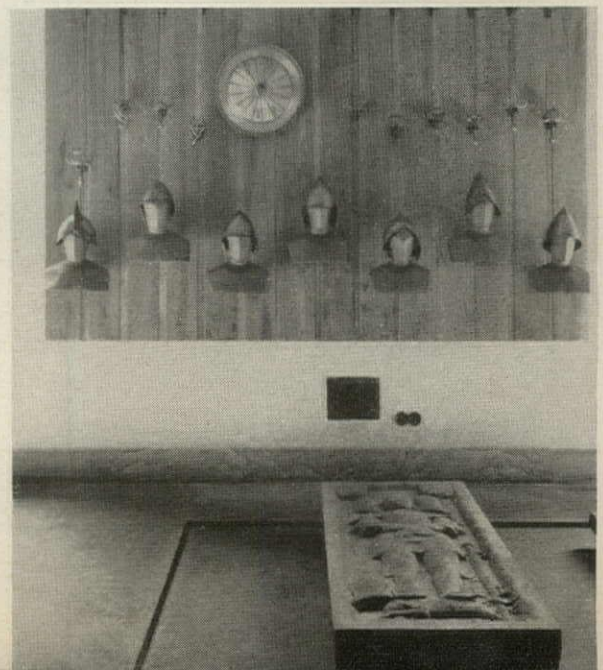


Column caps sit at original height on new walnut stems, in deliberate contrast denoting old and new. Column keys into slot.



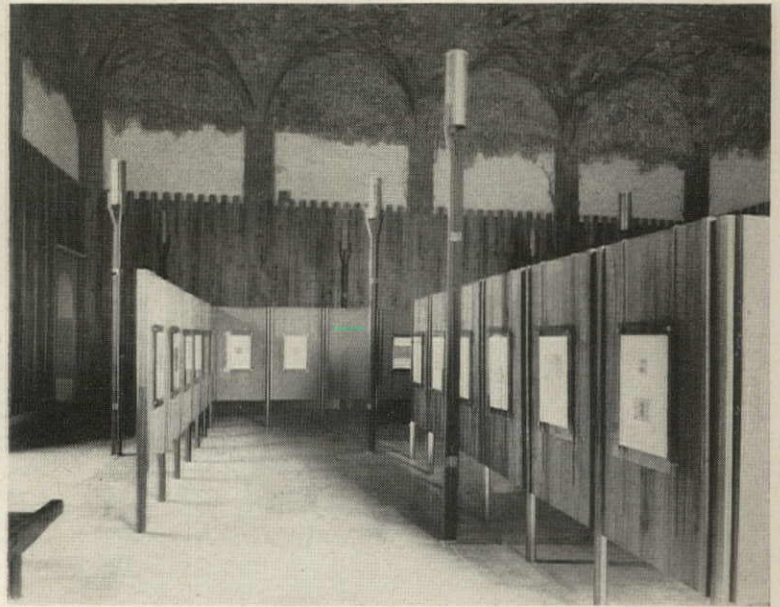
Lighting, as far as possible, is fitted into the building, not attached by a profusion of fixtures. A particularly recondite effort is made to use natural light, much in the technique of sophisticated photographic studios. The old ceiling, shown in photo (left) was opened to insert panels of adjustable vanes. Made of American larch, these can be tilted to compensate for angles of the sun.

Helmets, swords, and shields are displayed on walnut panel attached to light emerald-green wall.

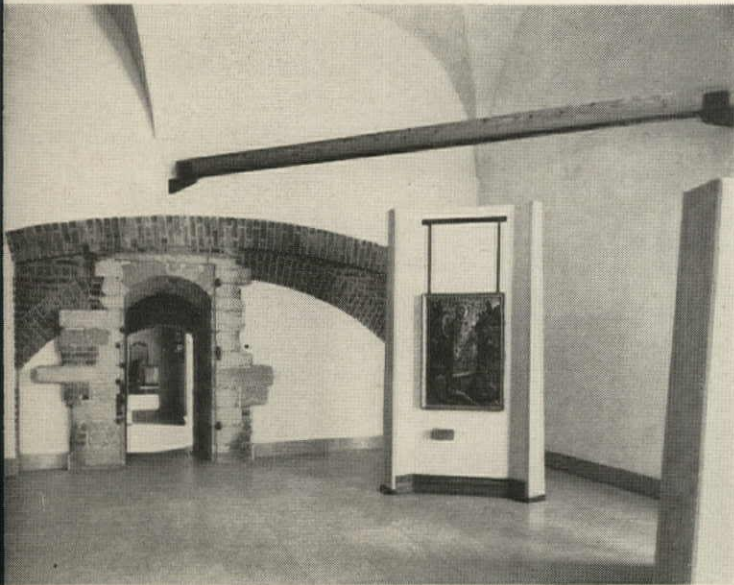




Three adjustable grids are visible here: in floor, on walnut display panel, and on wall.



The present can sometimes become an ally of the past. Leonardo painted vine trellis frescoes on the ceiling and upper walls of this room, which was patched up and restored in the nineteenth century. In the current restoration the patches were removed to reveal his work more truly, and the architects added to the arboreal quality of the room by putting in banks of walnut display fences on bronze legs with garden-like lamps on wood posts. Exhibits are changed frequently in this labyrinth.



Timber suspended on brackets neatly digests upward tubular lighting fixture.

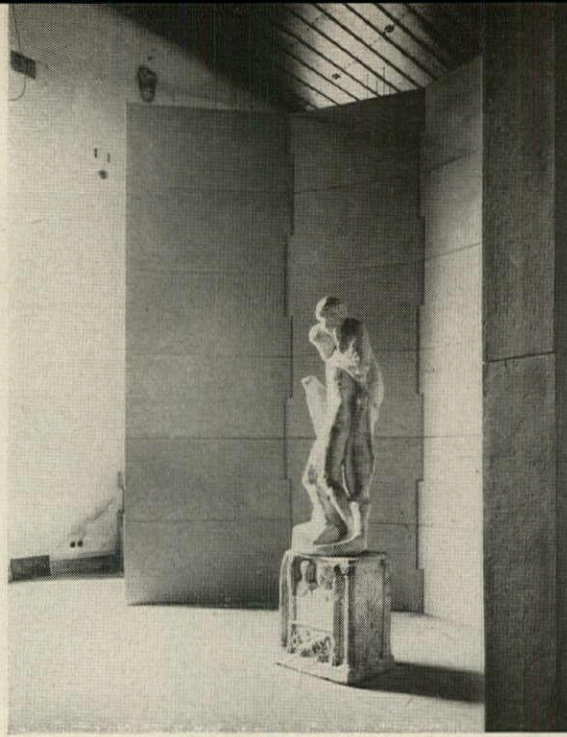
Dual fixture, one of the few that are very evident, illuminates indirectly above, spots below.



Craftsmanship is conspicuous in the joinery of the walnut base supporting this ancient bell.

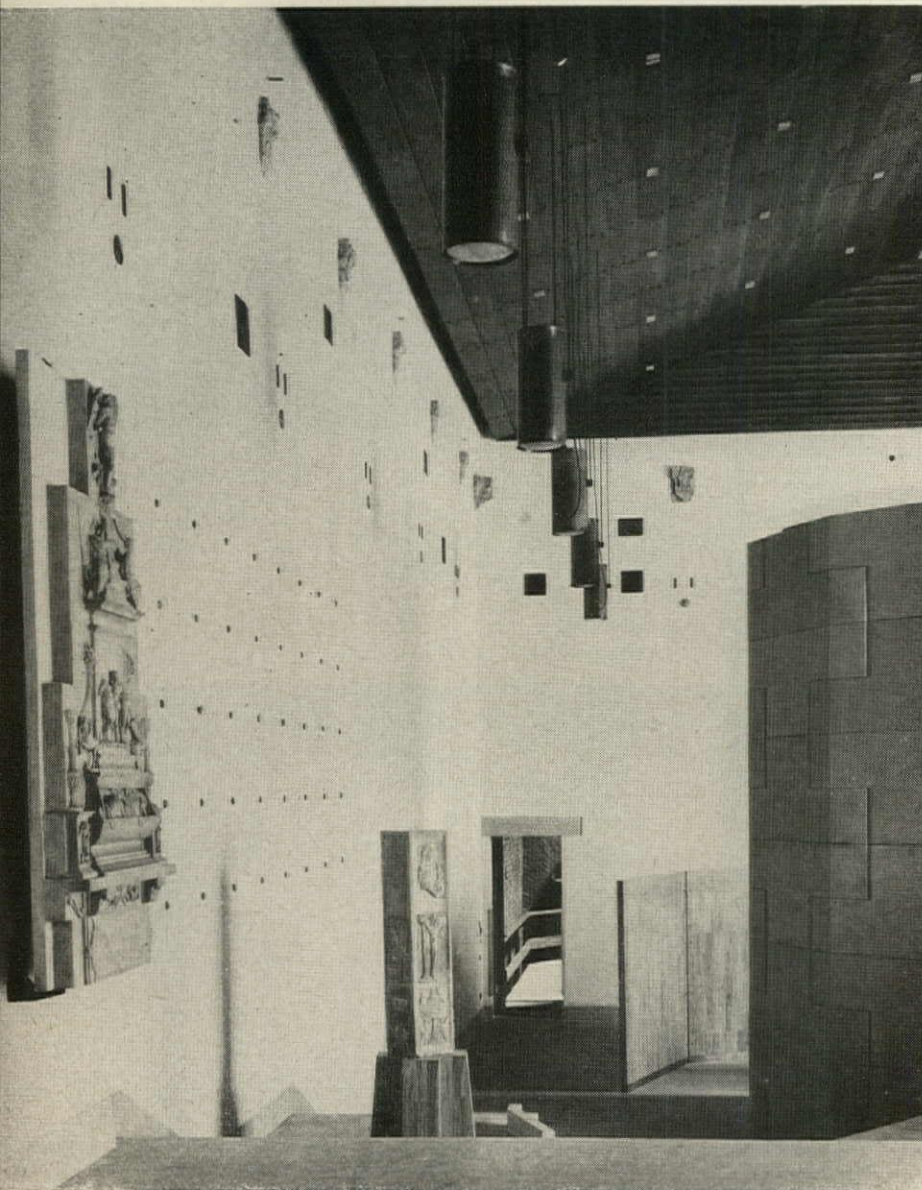
Tapestries hang from wood cross pieces on bright brass supports, angled to catch daylight.





Greatest treasure of the Sforza Museum is Michelangelo's *Pietà*, the sculpture which many critics consider a precursor of impressionism because of its undetailed, plastic quality. It is shown in a room of numerous levels, and is placed so the visitor comes on it almost as a surprise—a climaxing surprise to his entire tour. Behind the *Pietà* is a serene stone screen, with a faint blue color, to set off the creamy marble of the sculpture. A large window directly before the *Pietà* floods it with diffuse light, assisted by another window to one side.

Suspended lamps are deliberately reminiscent of ecclesiastical fixturing, in bronze. Notches in wall are display fixture sockets.



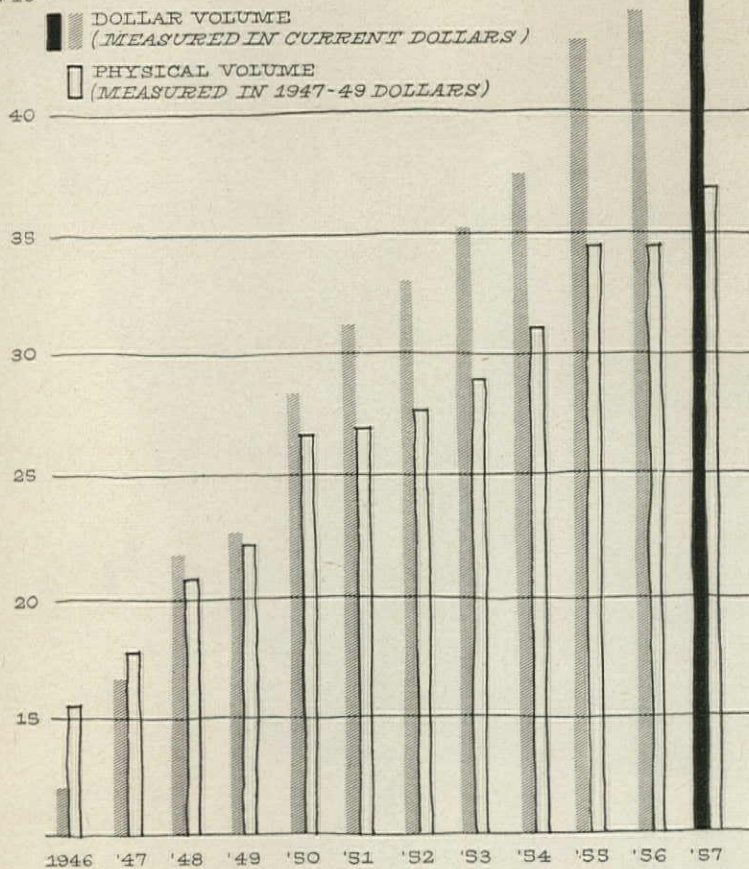
Funeral monument of Bishop Battista Bagaroto is another resident of this room. Zigzag pattern on wall is retained from an earlier restoration by Beltrami.

Renaissance scale of space is dramatized quietly in this great room with relatively few things in it, but precious things.





BILLIONS
\$45



FORUM FORECAST:

NEW CONSTRUCTION ACTIVITY¹

(millions of dollars)

	1955	1956	1955-56	1957	1956-57
	Actual	Estimate	Change	Forecast	Change
TOTAL PRIVATE AND PUBLIC	\$42,991	\$44,100	2.5%	\$46,600	5.7%
Private total	30,572	30,800	.7	31,900	3.6
Nonresidential building	7,612	8,950	17.6	9,450	5.6
Industrial	2,399	3,100	29.2	3,400	9.7
Commercial	3,043	3,525	15.8	3,650	3.5
Warehouses, office, loft buildings	1,136	1,325	16.6	1,400	5.7
Stores, restaurants and garages	1,907	2,200	15.4	2,250	2.3
Other nonresidential building	2,170	2,325	7.1	2,400	3.2
Religious	734	750	2.2	775	3.3
Educational	492	550	12.2	600	9.1
Hospital and institutional	351	275	-21.7	300	9.1
Social and recreational	239	250	4.6	275	10.0
Miscellaneous	354	500	41.2	450	-10.0
Residential (nonfarm)	16,595	15,100	-9.0	15,650	3.6
New dwelling units	14,990	13,350	-10.9	13,800	3.4
Additions and alterations	1,266	1,300	2.7	1,350	3.8
Nonhousekeeping ²	339	450	32.7	500	11.1
Farm construction	1,600	1,500	-6.3	1,400	-6.7
Public utilities ³	4,604	5,100	10.8	5,300	3.9
All other private	161	150	-6.8	100	-33.3
Public total	12,419	13,300	7.1	14,700	10.5
Nonresidential building	4,227	3,900	-7.7	4,050	3.8
Industrial	721	400	-44.5	300	-25.0
Educational	2,442	2,500	2.4	2,700	8.0
Hospital and institutional	331	275	-16.9	300	9.1
Other nonresidential building	733	725	-1.1	750	3.4
Residential building	263	250	-4.9	350	40.0
Military facilities ⁴	1,297	1,400	7.9	1,500	7.1
Highways	4,520	5,150	21.2	6,000	16.5
Sewer and water ⁵	1,085	1,250	15.2	1,350	8.0
Miscellaneous public service enterprises	279	500	79.2	550	10.0
Conservation and development	593	675	13.8	700	3.7
All other public	155	175	12.9	200	14.3

¹ Also includes major alterations and additions.

² Includes hotels, motels and dormitories.

³ Includes buildings of various types (power plants, telephone exchanges, stations, maintenance shops, warehouses, etc.) as well as power, telephone and telegraph lines and other nonbuilding construction.

⁴ Includes mainly buildings of various types (warehouses, barracks, theaters, hangars, schools, etc.) as well as airport and other nonbuilding construction.

⁵ Includes buildings of various types (sewage plants, pump stations, etc.) as well as nonbuilding construction.

Sources 1955 and 1956, US Departments of Commerce and Labor; 1957 estimated by ARCHITECTURAL FORUM

1957 will be the best year yet for the building industry.

A steady increase in private spending and a surge of public activity will boost the total to almost \$47 billion

by Economist-Consultant Miles L. Colean

In 1957 new construction activity will enjoy another year of expansion reaching a total of \$46.6 billion or better, about 6% higher than 1956's very creditable showing. Not only that, the 1957 expansion will be more firmly and broadly based than in 1956.

Three favorable trends that appeared this year will continue even more strikingly in 1957 and will probably characterize activity throughout most of the next decade:

- ▶ An increasing ratio of new building activity to gross national product—now about 11% compared with the 9.6% average of the past decade.
- ▶ An increasing share of government construction in the total—it will continue consistently on the high side of 30% compared with the 27% average of the last decade.
- ▶ An increasing importance of industrial and commercial building within the area of total private activity—now about 21% compared with the 16% average of the past decade. This situation is likely to prevail until a mounting rate of family formation in the mid-1960's activates a renewed housing boom.

These trends, although then only in their incipiency, were recognized in the FORUM forecast of 1956 (AF, Sept. '55). For total activity, the 1956 forecast turns out to be right on the button, although the new trends within the total affirmed their directions more quickly than had been contemplated. Thus government activity moved up further, due mainly to the expansion of road building, and private nonresidential building mounted vigorously to offset a greater than expected drop in private housebuilding.

NEW PRIVATE CONSTRUCTION as a whole will move ahead more strongly in 1957 than it has during 1956, because of both the continuing rise in nonresidential building, and private nonresidential building mounted. The total is expected to rise 4% to \$31,900 million.

Industrial and commercial building will again be leaders in the private construction picture, as they were the brightest spots in 1956. In both categories, new high records were reached during the present year both in dollars spent and in the physical volume of work put in place.

Industrial building increased 29% in 1956. The boom was an integral part of this year's great upsurge in the expansion of manufacturing capacity. Factory building, which is being pushed by the drive to keep

productivity ahead in the race with wages and to prepare for the magnification of markets during the decade ahead, will get an added fillip from the locational opportunities created by the highway program. The forecast: up about 10% to \$3,400 million.

Commercial building has been strong in 1956 and will continue strong in 1957 as a result of the continuing growth of metropolitan areas, the redistribution of population within those areas and the evolution of new merchandising methods. While these lusty activities will continue to give vigorous support during 1957, their advance may be a little less breathless than it has been in the current year. The outlook for this category is for a 4% increase in 1957 to \$3,650 million. *Office buildings*, particularly outside New York City where a phenomenal era seems to be at a near peak, will be an important feature of 1957's advance. Vacancies in office buildings and other commercial space of good quality are extremely low and rents are as high or higher than a year ago. *Parking garages* will again be volume producers. *Shopping centers, restaurants and service facilities* of various kinds will get added impetus as the expanding highway program provides new strategic sites.

Other nonresidential building will have another satisfactory year, moving ahead at about the same rate as in the past few years (price changes taken into account). *Religious building* will continue to march stalwartly forward. Private *school building* which has been strangely laggard considering the increase in the number of families in the higher income brackets and the influence of desegregation, should improve more rapidly in 1957, as also should *institutional and recreational building*. Private *hospital building*, particularly, will be aided by substantial grants from foundations.

Utility construction will make a notable advance in 1957, especially in *telephone and telegraph* (due to population increase and income rise), *pipe lines* (due mainly to expanding demands for gas for heating fuel), and *electric and power* (because of a variety of stimuli—population, income, air conditioning, kitchen gadgets, etc.). From 5% to 10% of this activity will involve the construction of buildings, as opposed to purely engineering structures.

Residential building will move out of its present slough to somewhat higher, firmer ground. The sharper-than-

continued on p. 182

SCHOOL COSTS

As the school bells rang out again on distressing shortages, energetic school men and architects were determined that the nation learn more exactly about the problem of its school building costs. Costs had become a bugaboo and a frustration leading to inaction. So for this year's pupils alone, US communities are short by 275,000 classrooms. Had the larger expected enrollments for the year 1960 streamed through the doors this September, the shortage would have been even more staggering—470,000 rooms, if one takes the estimate of the US Office of Education. Despite record construction — 67,000 new classrooms in the last school year—the gap yawns as wide as ever and shows no signs of closing yet.

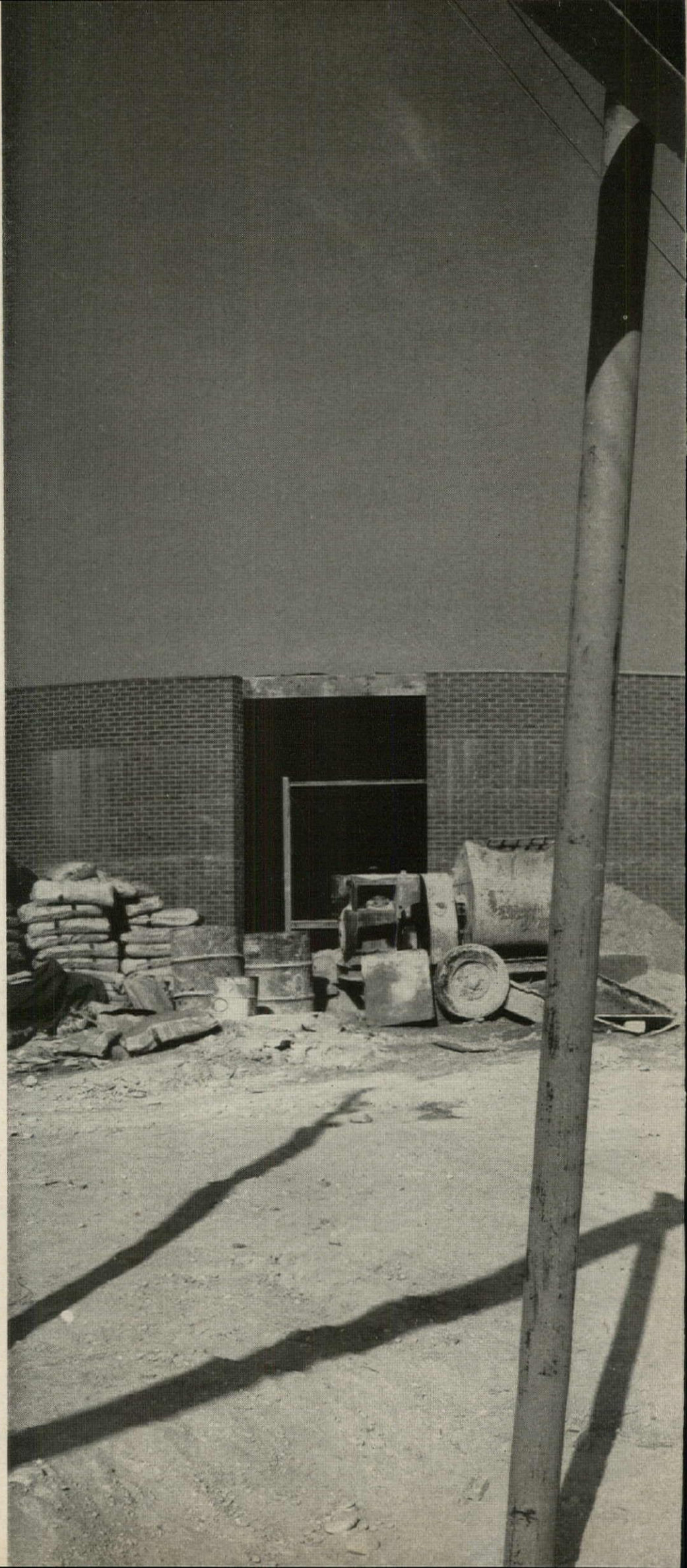
The next 26 pages of this month's FORUM are devoted to school costs—in four parts:

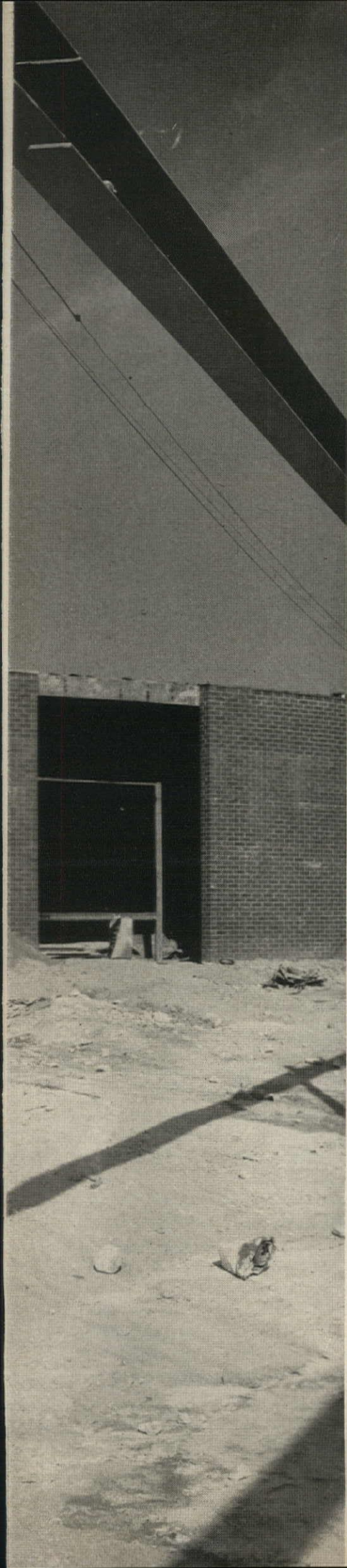
1. A proposal for a fresh approach to cost reporting—right.

2. How the British provide schoolhouse amenities within controlled costs—p. 132.

3. An accounting of the high cost of bureaucracy in an effort to lower the cost of high school stages—p. 140.

4. A half dozen case studies of US schools which achieve quality at reasonable cost — p. 142.





Before we can hope to get our needed schools, the school bond voter must be given cost figures which are easy to understand and difficult to distort

WANTED: A SENSIBLE SYSTEM OF SCHOOL COST REPORTING

Two facts stand out from any examination of our school problem today:

▶ The crisis has been born and bred at the local level—created by the inability, reluctance, and, in some cases, downright refusal of communities to meet their educational needs.

▶ People who need good schools, and who can afford them, aren't spending for them. The reason: distorted ideas of what a school should cost—ideas based on easy, but invalid, cost comparisons.

The need for a more accurate system of school-cost reporting, one that would reflect more than just bare-bone facts about construction, has, of, course, long been recognized. Over the years, several complicated formulas have been worked out, mainly to satisfy the need of professionals for more precise information. But as yet, no system has emerged that would give school boards and voters a simple, accurate yardstick that they could work by. Lacking a way to measure quality and what a school aims at in its educational program, the citizen today compares school costs by the only methods he understands—cost per square or cubic foot, or cost per student place or classroom. And the result is that schools are unfairly compared, that schools which are cheap because they are inadequate are used to deprecate good ones, and that good ones are voted down.

Against this background, FORUM posed a question to some of the nation's school experts*: Can a method of school-cost reporting be developed that, in short form, would give voters substantially accurate information and, in an expanded version, be of help to the specialist? From the evidence so far assembled, we believe that it can. What follows is a suggestion for the way the problem might be tackled.

1. To begin with, one has to recognize that different people compare school costs for different purposes. But what is a good system of comparison for one group is not necessarily good for another.

Voters compare a proposed school with other schools because they want assurance of a "good buy" before voting bonds; school boards compare because they have to weigh one educational feature against another in setting up their programs;

* FORUM is particularly grateful for the help of Dr. Walter Cocking, editor of *American School & University Magazine*; Charles Rockwood, American Institute of Accountants; Henry Toy, National Citizens Council for Better Schools; N. L. Engelhardt Jr., Engelhardt, Engelhardt & Leggett, school consultants; John Marshall, Massachusetts School Building Assistance Commission; and J. C. Van Nuys, J. C. Van Nuys & Associates, architects.

architects and school consultants use comparisons, partly, to protect their professional reputations; state school officials turn to them as a way of administering aid and regulations on an equitable basis.

The trouble is that a system of unit costs, though it may make a state administrator's job easy and protect him from attack, can operate to freeze any kind of experimentation and to put one of the other groups—the architects in this case—into a strait-jacket. (This is precisely what has happened in states such as California and New York where inflexible unit-cost limits have been applied to the state-aid programs.) By the same token, the sort of detailed, qualified costing that does service to the architect may do complete disservice to the voter. A complicated report that the layman finds hard to understand simply opens the door to misinterpretations and perversions by those who have a special stake in the outcome of a vote.

2. In a crisis such as this, then, we have to decide whose interests shall be given top priority in drafting an improved cost reporting system.

The need now is not for a refinement of our existing cost reporting. What we have to find is a tool that will remove one of the worst blocks to a rational school building program — the opposition of voters. Voters today are frightened of school costs; they don't understand what the costs represent, and they don't vote bond issues. Any new system of reporting must therefore be tailored not to the specialist, but to the voting public,

The people we have to think of first, says Architect John C. Van Nuys, "are the ones who have the

final say on what dollars are going to be spent when they mark an X on the ballot."

3. Any practical cost system must be based on services rendered by the school, rather than on arbitrary units of physical measurement.

The trouble with our present cost reporting is that it fails completely to describe the educational program of a school. "We see the square-foot cost, the pupil cost, the whole breakdown strictly from a construction point of view," says School Consultant Nickolaus L. Englehardt Jr. "What we ought to be finding out is what is going on educationally."

There is no way under today's costing to reflect the fact that one school has an ambitious music program and so requires instrument rooms and a practice hall; that another stresses physical education and provides two gymnasiums instead of one; that still another has elaborate manual training facilities and shops in addition to its academic plant. Neither can today's system show that part of the space of a school—an extra large auditorium, say—is actually a community facility, too, and thus is not properly chargeable in whole to the school's costs.

All that we do get from today's measures is a picture that may be more misleading than enlightening. A large number of square feet per student, for instance, may mean either of two opposite things: high quality because of generous space allotment, or waste because space is thrown away. Along the same lines, big rooms may show a lower cost per square foot than small rooms. But their degree of utilization may be lower. Finally, even between comparable facilities, dol-

lar figures fail to tell the whole story. Costs per square foot vary from month to month and locality to locality. Thus, while they are useful if properly interpreted, a better yardstick is urgently needed.

"People are so confused with all kinds of figures now," says Walter Cocking, noted school editor, "that they often settle for something much less than they like and much less than they could have. We need some kind of quantitative guide that will help people see that if they are to have good schools they will cost more than poor ones."

4. Practical cost appraisal might start by classifying schools into groups, depending on the extent of their facilities. Comparisons would always be held to schools of roughly the same size.

For working purposes a breakdown into four groups might be reasonable:

- ▶ schools with classrooms only, plus minimum administration facilities;
- ▶ schools with classrooms and administration space, plus modest multipurpose rooms (auditorium, cafeterias, gymnasiums);
- ▶ schools with classrooms and administration, plus full development of special rooms;
- ▶ schools with classrooms, administration and fully developed special rooms, plus community facilities.

A system such as this would not aim at hairline accuracy or at a definitive breakdown of costs. But it would provide a reasonably precise measure — easily understood — of costs in relation to what those costs are for. And it would have the value of comparing apples with apples, instead of with oranges as we are doing now.

A fair analogy of such a system, Walter Cocking points out, already exists in the clothing business. Over here are the cheapest men's suits. Here is a group a little better, and another a little better still. Finally, here is the best and most expensive line. Couldn't we, Cocking asks, classify school buildings in much the same way? Couldn't we lump them into three or four categories that would provide a fairer measure than we have now?

A system along these lines might well be feasible. In a study of several hundred Massachusetts schools, for instance, Administrator John Marshall found that once adjustments were made for geographical and seasonal cost differences, buildings with similar facilities showed a remarkable cost uniformity.

5. Any attempt to devise an improved cost system should treat warily the idea of rating quality by a mathematical factor.

Over the years, several techniques have been developed for translating quality into quantitative terms. Most of them rely on one or another scoring or weighting methods, and they are designed primarily to recognize and compare architects' skills in creating one building as against another.

For example, A's school may allot a particularly generous amount of space to classrooms. It may rate a score of 10 in this category, whereas B's allocation, which is not so good, will receive only a 7. B, however, has been more proficient in the use of auxiliary space. He gets a 5 for his skill here, while A draws only a 3. And so it goes, until each facet of design is scored.

Though these techniques may be

of some value to the professional, they are apt to create only confusion and argument at the voter level. Worse still, they fail to get at the core of the problem. The voting citizen isn't nearly so interested in comparing dissimilar buildings — which weights would allow him to do — as he is in comparing similar buildings, his town's elementary school, say, against the new grade school in the town next door.

Besides confusing the voter, weighting or scoring systems ignore the factor of efficiency in the use of schools.

In the hands of one school administrator, an oversize hall may be treated as just so much waste area. But another principal, with more imagination and initiative, may seize on the added space as an opportunity for broadening the educational program; he may put the footage to work intensively. Quality scoring can in no way reflect this, nor, indeed, can it tell us anything worthwhile about what function facilities perform once they are completed.

Therefore, it is probably best not to try to assign a mathematical factor to quality. If quality should be described, it is best done, briefly, in words.

6. Cost accountants, using their own techniques of cost appraisal, ought to be encouraged to probe into the school cost problem.

The American Institute of Accountants has already shown a readiness to join in a study of school costing. We welcome their participation. Accountants have been among the leaders in implanting the idea that you cannot very

well measure costs without some relation to what costs are for. Their skills can be invaluable in attacking the school-cost problem, particularly their ability to sift from a mass of statistical data those indexes that are most meaningful in arriving at valid comparisons.

7. An advisory council, or steering committee, should be created now with the immediate aim of fostering full-scale research into the problem.

The development of a satisfactory cost formula can only come about through a technical assault, coupled with extensive field testing. An advisory council, therefore, should probably concern itself first with finding a means of undertaking systematic research, either through an established agency or a specially created group.

Since its primary task would be to produce a formula that would be effective with the public, the council might be expected to draw several of its members from the ranks of those who have concentrated on the public aspects of the school program. The council might include a representative from a citizens school committee, an experienced school board member, a journalist, an accountant, an educational consultant, an architect and a state school official.

The council would work hand in hand with the research teams on the project, offering advice and constantly evaluating progress in terms of the specific goal. Once a formula had been developed, it would be up to the council to decide whether or not the system offered the best hope of providing voters with the tool we so desperately need.

England's schoolhouses pay for the amenities
of imaginative landscaping and integrated art with money
saved through intelligent cost control

PETER PITT



A LESSON FROM ENGLAND

ABOUT SCHOOL ATMOSPHERE

The British Minister of Education here explains the origins and workings of the remarkably fine British system of school cost control, which sets a floor of minimal standards and teaching space requirements per student and a ceiling of maximum cost per student, giving the architect room for play in between. One highly visible result: the architect who can keep under the ceiling while providing the floor, has cost leeway for including such amenities as murals, sculpture, landscaped courts or the luxury of extra teaching space. He also has scope and encouragement to experiment toward this end. These are powerful incentives both to true economy and to quality.

Behind all this is implicit a set of values that makes architectural quality in schools—as well as low cost—a national policy; that does not assume school landscaping should necessarily be dictated by the most economical man-hour use first of bulldozers, then of power grass mowers; and that does not assume adolescents to be fairly hopeless vandals but people ripe for exposure to all the civilizing influences possible. It is salutary to remind ourselves that other nations, much less fortunate in their economic situation than we, are successfully attacking costs without surrendering to a poverty psychology about schools.—ED.

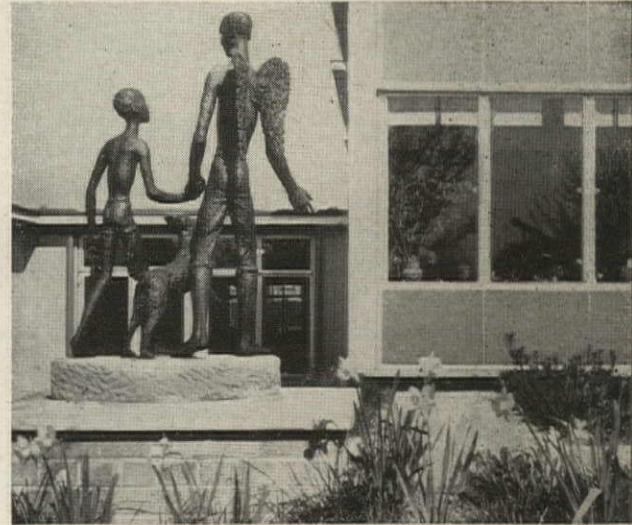
by ANTONY PART

The atmosphere of the schools matters. It is part of the whole process of education. It should pervade the whole environment; it belongs not only to the classroom, but to the main central spaces of a school, to the library, to the principal's office, even to the places where coats are hung and books are stored. Atmosphere depends partly on the noise level in the corridors and the degree of civilization in the cafeteria. It belongs to the texture of the building, the choice of materials for walls and roof, the selection of color throughout the structure. It derives from the proportion of everything, from the shape of a door handle to the massing of a building. And it belongs not to the buildings alone but to their disposition on the site, to whether they are slapped down in a sea of asphalt or seem to have grown out of the land.

Should there perhaps not be more schools of which it can be said: "The exact placing of the building was determined by two large oaks and a fir tree which have been retained within a few feet of the building."

To write this for Americans is perhaps an impertinence. To my mind there is nothing in the world to match the grace and charm of a New England village. If American designers of high schools can find contemporary answers to match the quality of the church and its surroundings at Concord, Mass., study of other people's efforts is superfluous.

In Britain, our postwar school building experience has convinced us that to achieve schools which are good not only by objective measurements, but also by the standards of civilizing, pleasant atmosphere, the first main key to success is the choice of the right system of financial control. The system must have, inherent in it, incentives to good architecture and to experimentation. In Britain we have been concentrating on this problem, among others, and our experience, sketched here against our differing administrative background,



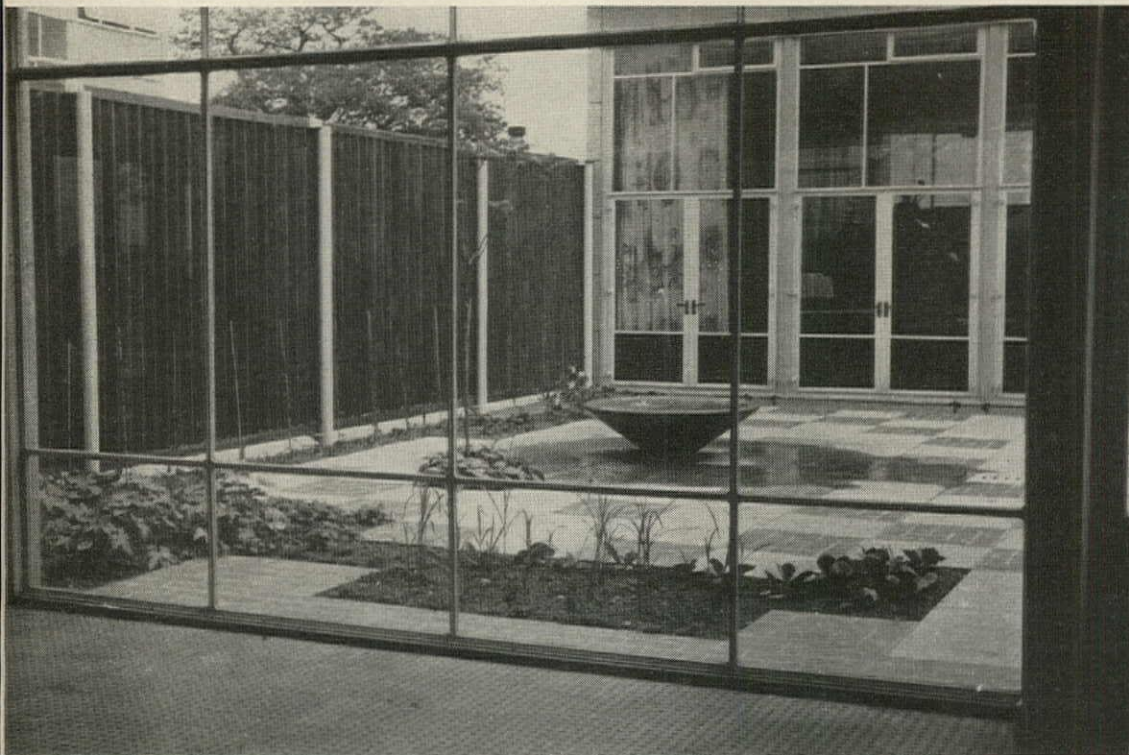
Sculpture of child with guardian angel stands at entrance to primary school in St. Albans; D. Henrion, sculptor. Architect C. H. Aslin is official county architect for Hertfordshire, which has outstanding design program.

may contain useful ideas for the States.

The British Education Act of 1944 required each local authority to draw up a Development Plan for primary and secondary education—a sort of blueprint indicating the organization of the schools and their physical distribution. This in turn is tied in with town and country planning for purposes other than schools. Thus there is for almost the whole of England and Wales today a series of maps or plans showing in broad terms what the general layout of each area is intended to be. This process insures that the siting of schools is properly considered in relation to housing, transport, open spaces and industry. After all, a high school is an expensive investment and it must stand for many years. And however economically we plan the layout of the grounds, it is going to make large demands on land.

It has been a cardinal aim of all British postwar governments to see that no child of compulsory school age should be out of school and no school should have to work double shifts. For this purpose, which has so far been achieved, a technique of annual build-

←
Biology pool at 2,000-student Mayfield school, London, illustrates intimate landscaping for large high school. Powell & Moya, architects.



Small courtyards are no longer a school novelty, but to US eyes such wholehearted, serene landscaping is novel; pool is at end opposite fence. Court adjoins assembly foyer, is overlooked by music room and headmaster's study at Woodlands, a big campus plan boys' high school in the industrial city of Coventry.

ing programs was established. These programs are drawn up by the local authorities each year in the light of estimated effect of the birth rate and housing programs on the area by the time the schools are completed. These local authorities are county and county borough councils, locally elected bodies responsible for a variety of services. There are 146 local education authorities for a school population of 6½ million, which means that the average local authority covers much more territory than the average US school board.

We have tried to bring about an effective, confident partnership between the Ministry of Education and the local authorities—or in American terms, between the state and the school boards. We have tried to arrange things on the basis of three principles:

▶ First, education must remain essentially a local service.

▶ Second, the state's job is to establish the framework for local action. We try to do this by setting up a few key controls and allowing the maximum freedom under them. For example, the state regards itself as the guardian not of standards but of minimum standards. Under the Act of 1944 these standards have to be prescribed centrally, but we have taken much care to cast them in the form not of detailed methods but of results. We prescribe, for instance,

the amount of daylight required in a classroom, not the height of a classroom ceiling.

▶ Third, we believe the right choice of financial control is vital. In England and Wales, the cost of the public system of education is shared between local education authorities and the central government. As a general principle, the state pays 60% of total expenditure, both current and capital. But because the wealth of localities varies a great deal, we have a quite elaborate system of adjusting the grants. The richest area gets only 36% of its expenditure paid by the state; the poorest gets as much as 88%.

Immediately after the war we did not worry too much about the cost of school buildings. We were faced with the threat of a critical school shortage to match the great new housing program. The state's task was to explode the localities into urgent action and to set up procedures which would cut approvals to a minimum, coordinate under one agency controls over scarce materials and labor, and generally enable the school building program to grow from nothing to 1,000 projects a year.

By 1949 this had been achieved. But we could see we were not going to get the schools we had to have unless we could build them more cheaply. Even before the financial crisis of that year,

we had started analyzing the cost of schools and found an enormous variety. In particular we found the most expensive were seldom the best, and some of the best were among the cheapest.

We analyzed the schools in two ways. First, area per child. Second, cost per square foot. The first, when broken into its component parts—teaching and nonteaching area—shows how efficient the layout is. The second reflects the cost of construction.

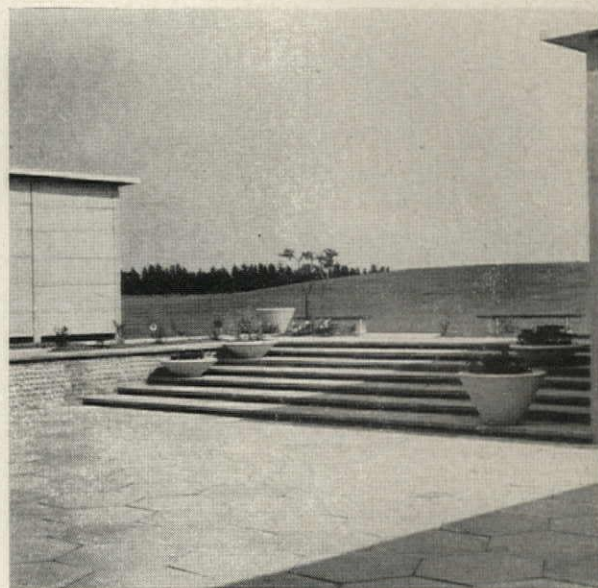
The building regulations subsequently made by the Minister of Education lay down that every secondary school is to have a total *teaching* area of *not less* than so many square feet. This may be divided up in any way the locality likes but it must include certain facilities such as assembly hall, gymnasium and space for practical instruction. A different total minimum teaching area is prescribed for each size of school.

But the minimum teaching area is only half of the area story—too often literally half! Too much of the rest of the school was often taken up by circulation space of a kind suitable only for circulation.

So we made some intensive studies of the logistics of secondary schools and we also studied the proportion of the school day for which each space was used. We found that, whereas a typical secondary school designed in 1948 had needed 112 sq. ft. per child,



Central court (above) and drama court (right) of Worthing technical high school in West Sussex avoid the bleakness and monotony of most paved school courtyards. This school, designed by Development Group of Ministry of Education, was prototype for a multistoried prestressed concrete prefabrication system.



Casual pond and trees sitting on entrance walk—how daring to keep them, and how much interest they add. Pool is at 1,650-student Woodlands school in Coventry, designed in steel framing and prestressed concrete panel prefabrication system by Ministry's Development Group. Trees are at London's Mayfield girls' high by Powell & Moya.



PETER PITT



KENNETH R. COLE

Murals with big scale and boldness are characteristic of much British school art—for example the entrance mural at St. Crispin's secondary school in Wokingham, Berkshire. At left is assembly hall in same school with painted stage curtain and painted ceiling over raised dining side aisle. This 600-student school, designed as prefabrication prototype by Ministry's Development Group, set example of experimentation and ungrudging amenity while keeping well within Ministry's low cost-per-student controls.

it was possible to design an equally good, if not better, school to 78 sq. ft. per child. This figure has since been reduced, without damaging educational efficiency, to 73 sq. ft. of teaching area.

The analysis of cost per square foot proved to be just as interesting. We were surprised to find what many architects had done with their clients' money. Some hid it in the roof, a lot of them buried it in the ground, and not a few spent it on removing all the interesting features from the site. An analysis of cost per square foot is a very searching test. It demonstrates, sometimes with painful clarity, whether the amount of money spent on a particular part of the building reflects the importance of that part in the scheme of things.

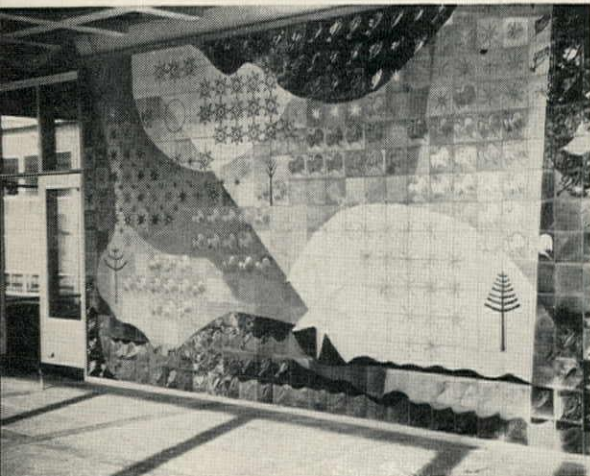
This analysis too showed that quite large savings were possible. In the light of these findings, we combined area per child with cost per square foot into cost per child. We then embarked on a campaign to get better value for money and as a first move, we set about achieving a saving of 25% in the cost per child within two years. This effort was successful. In fact it was achieved at a time when building costs as a whole rose by 27%. So the actual saving was about 50%.

The saving was achieved by analysis, and to my mind analysis lies at the

root of leadership in school building. But it is not too much good analyzing only area per child or cost per square foot. They interact. The cost per child system (usually known as cost per place) insures that the school is looked at as a whole.

The most fruitful result of this approach is that British school buildings have to be built up to a standard and down to a price. This system gives good architects a splendid incentive. The cost per place is not too easy to achieve. The Ministry of Education sees to that. But the architects know that provided they keep within it and comply with the minimum standards, they may do anything they like. They will not be criticized for introducing murals or sculpture. Alternatively they may find themselves able, for example, to provide classrooms 100 sq. ft. larger than their clients had originally hoped for.

Seven years ago we also felt not enough research and development was being done and that what was being done was too piecemeal or was in the hands of people interesting in selling particular products. We also foresaw that the severe shortage of site labor in some areas would continue, and that those areas would never be able to build enough secondary schools in time unless they could use prefabrication. In 1949 prefabricated methods suitable for



Outdoor murals in tile, such as this at Worthing secondary school entrance, are among favorite uses of school art in Britain. Dorothy Annan, artist.



Texture and color enliven the atmosphere. Walls flanking a main staircase at Mayfield girls' secondary school in London are vitreous mosaics, by Artist Philip Suffolk. Opposite the wall with the abstract pattern shown is another portraying the nine muses in mosaic. Architects, Powell & Moya.



PHOTOS (ABOVE): PETER MITT;
COLOR PHOTOS COURTESY ARCHITECTURAL REVIEW



multistory building did not exist.

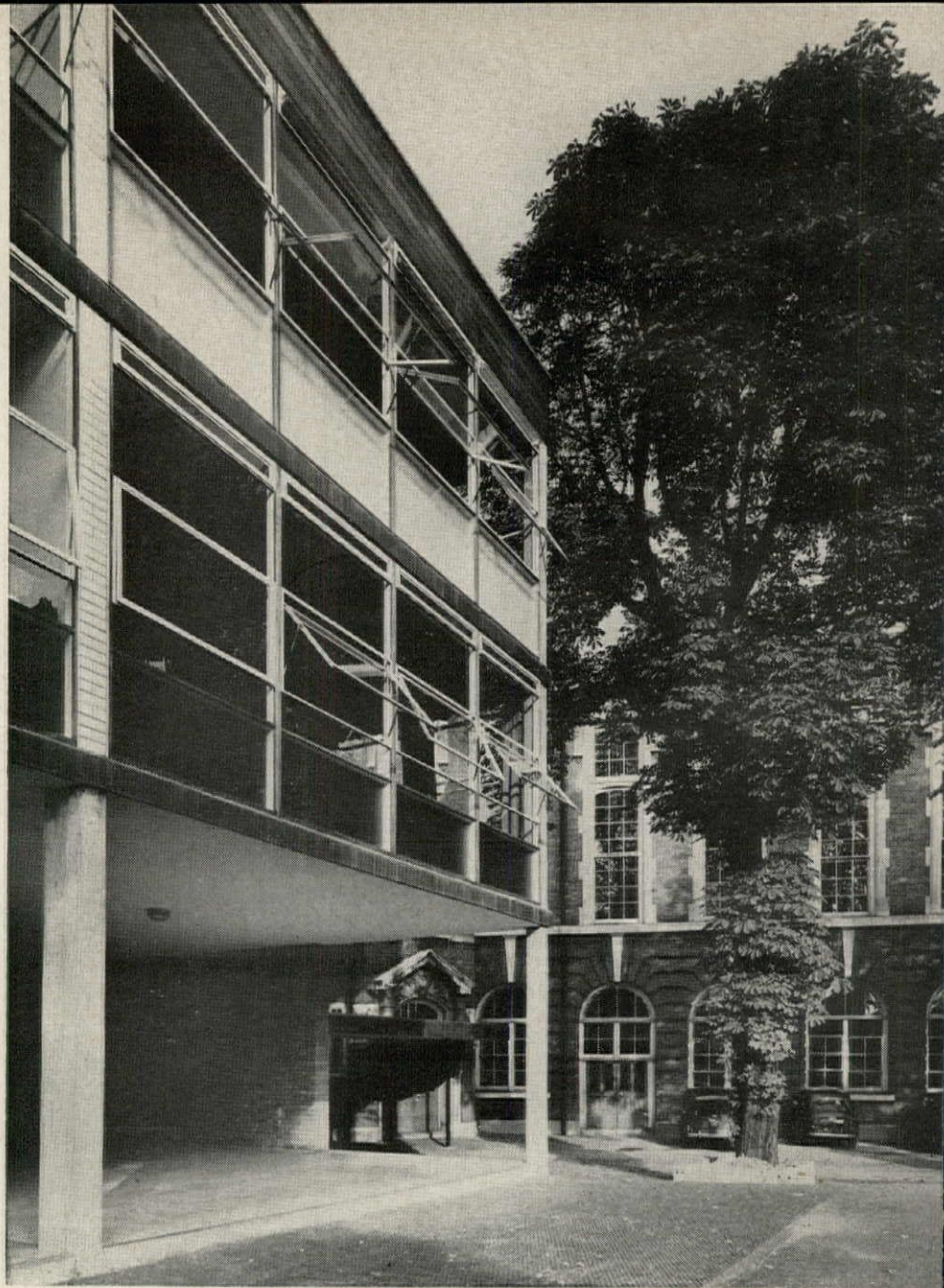
So we set up a development group at the Ministry of Education, a team of architects, estimators, educators and administrators, and gave them as their first main task the development of four systems of prefabrication suitable for any kind of layout and capable of use up to three or four stories. This meant designing on a two-way horizontal module with a related vertical module. This approach involves no such thing as a standard classroom or any standardization of layout. We are strongly opposed to any such development. The first requirement is that each system be flexible enough to allow architects to approach the design of each school as an individual problem. The second requirement is that each system shall provide permanent buildings of good quality.

The cost of developing the systems was borne by manufacturers, who knew that the potential market was large and that the orderly system of annual building programs would make possible substantial orders from localities well in advance of delivery dates. The development of the prefabrication systems, including the building of four prototype schools, did not cost the taxpayers a penny in development contracts. About 20% of each annual program is now being carried out by prefabrication methods.

There is one great risk about development work: the "developers" may get out of touch with, or too far ahead of, the main body of architectural practitioners. This potential gap we try to bridge by our Building Bulletins. These contain not requirements but suggestions. They try to analyze the various problems from first principles and their recommendations are always cast in the form of methods of approach, never of standard plans or prescribed dimensions.

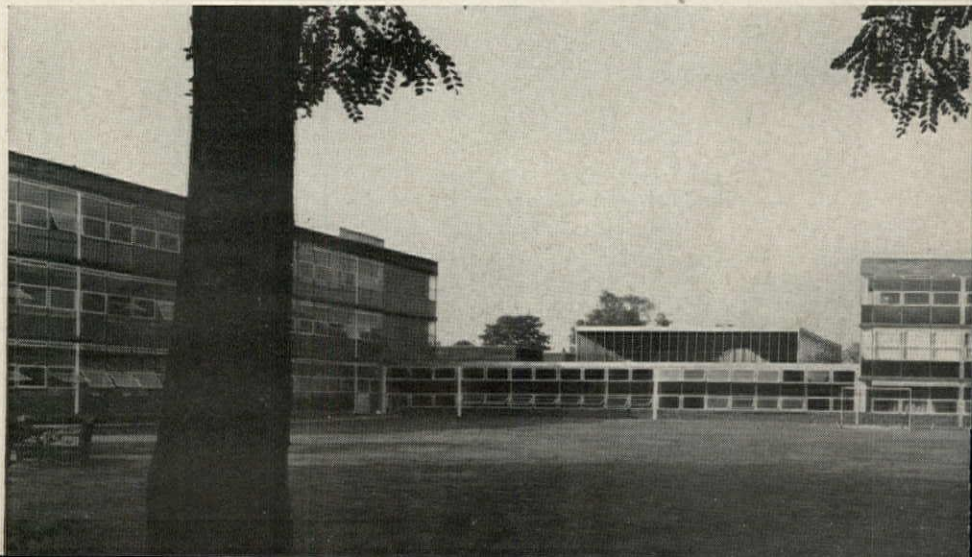
Some of the schools shown on these pages are built by prefabrication systems; some are not. There is a healthy competition among methods. All are among the better examples we have to offer; they are not, unfortunately, a typical cross section. But happily we are producing, at an acceptable price, efficient buildings which have a lively atmosphere and a civilizing influence. At the least, we have come far from the pseudo-Tudor and neo-Georgian and, we hope, just as far from the army post and the instructional institution. Nothing like this progress could possibly have been made without a suitable system of cost control designed not to frustrate, but to stimulate, architectural innovation and imagination.

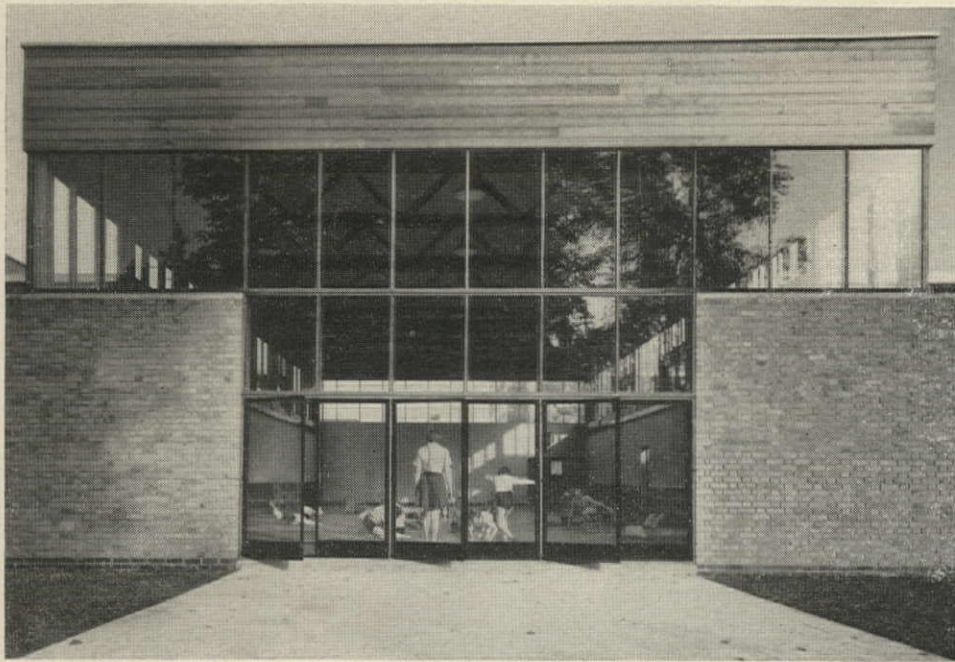
PHOTOS: PETER FITT



Old and new portions of Mayfield school, London, are joined with tact: new three-story structure is in keeping with scale of Edwardian building; the link is a covered way leading from covered play space, and an old tree gentles the juncture. Addition brings old 500-student school to 2,120 student size.

Bigness of school is indicated in this view from south, with assembly hall flanked by two of three teaching blocks. From most vantage points, bigness is little apparent.



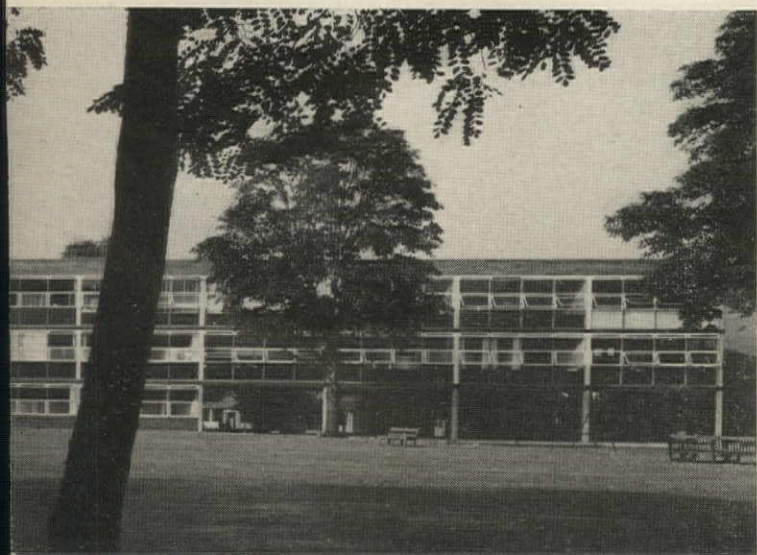
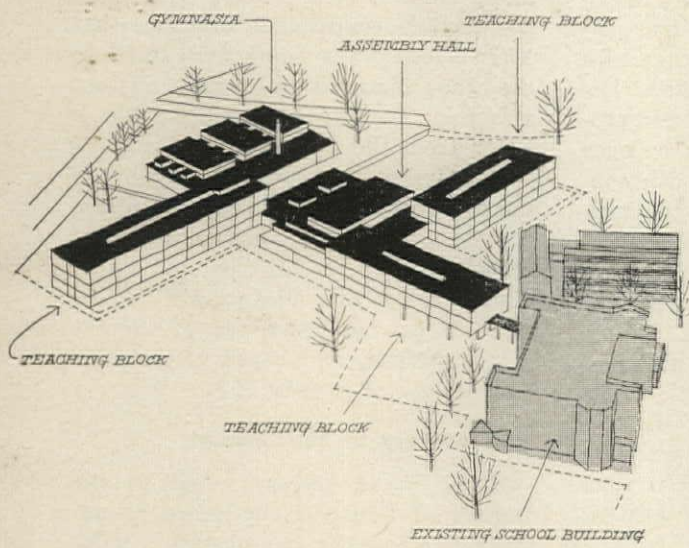


PHOTOS: PETER PITT



Gymnasiums of glass, timber and brick make handsome row, nicely avoid overpowering effect. Because school is so large, Architects Powell & Moya made determined effort to imbue its parts with intimacy, keep scale small.

Assembly hall foyer opens out across delightful biology pool and its tree island. This school, built by simplified, traditional methods, compares favorably in cost with designs using prefabrication systems.



Most high school stages are fifty years behind the times. Bringing them up to date would save money and give students and communities something much more exciting and rewarding to work with. What holds high school stages back? A good part of the answer to that question—and to the question of why the group client is so often a difficult client—can be found in the story of . . .

THE MAN WHO TRIED TO IMPROVE HIGH SCHOOL STAGES



ROBERT KLEIN

When Robert Klein began the unusual adventure in good citizenship related here, he knew a great deal about stages. When he finished, he also knew a great deal about the New York City Board of Education. But not so much can be said of the Board: it emerged learning nothing.

Klein is an easy man to learn from. His enthusiasm and knowledge of his subject come across tempered with modesty and matter-of-factness. A few years ago, after three decades as producer, director and teacher on the professional and college stage, Klein began producing community plays and encountered the high school stage. He made a discovery which FORUM has learned is shared by some of his professional counterparts and in colleges which have had to make-do with converted high school stages, but of which most architects and boards of education are still oblivious.

His discovery was this: standard high school stage design is still stuck back in the 1890s. The reason seems to be that most new high school stages are basically modeled on what was designed during the high school building surge of the twenties and these in turn were an understandable one generation behind *their* time.

Klein analyzed the faults of one cumbersome and antiquated high school stage after another, and found that their most common and serious offenses are: 1) the expensive and inflexible fixed lighting; 2) the hardwood flooring; and 3) the cyclorama curtain which typically lines the interior of the stage. (For his reasons and recommendations, see opp. p.) It especially bothered him to realize that the stages cost more money than they would if these features were improved.

In July '53, these thoughts fresh in his mind, Klein picked up his newspaper and read of the millions of dollars New York City was to spend on new high schools. His conscience as a

citizen pricked him. Why should the taxpayers put out extra money to get obsolete stages? So he wrote the board of education, summarizing his points, explaining he had no personal ax to grind, and inquiring if he might contribute his advice. No answer.

Eighteen months went by, and in Dec. '54, Klein read of more millions to be spent on high schools. His conscience pricked him again. This time he adopted the strategy of going to the man at the top; he wrote Mayor Robert Wagner. This procedure appeared to work like a charm, for a prompt reply from the mayor's educational aide said that Klein's letter was being forwarded to the board of education's Bureau of Construction, and in no time Klein had a letter from the Bureau:

"We understand well what you are talking about and are making serious efforts to overcome obsolete ideas of school design. . . . If you will be so kind as to call this office we will be glad to show you our drawings of current school designs, and benefit from your knowledge and interest."

The mystery of the manual

Klein had a pleasant visit at the Bureau of Construction where he admired the acoustic improvements to be made in the new auditoriums. But when he brought up the subjects of lights, flooring and cyclorama curtains, he was told: "Unfortunately you have come to the wrong people. We can only execute what is ordered on those matters. We follow the specifications."

"Who does the ordering, who sets these specifications?" asked Klein.

"The Manual for School Planning."

At Klein's behest, this bible was produced and the pertinent sections examined. It was indeed out of date. "We shall have to find the editor of this," said Klein. Nobody knew who he was.

So Klein wrote the mayor's office again. A secretary phoned and after the usual misunderstandings ("You are

the man who wants some advice about high school stages? I suggest you try Columbia University"), Klein was referred to the board's Division of Housing, to which he wrote, explaining his purpose and adding:

"If any progress is to be made, the manual would have to be changed. Please let me know whether it is in your power to change the manual or in whose power it is." The reply:

"I wish to assure you that we are making every attempt to secure the best in consultation. . . .

"In order to classify your proffered services, may I ask that you indicate the following:

"1. Have you written or published anything on stage or school auditorium design?

"2. Are you connected with the theater?

"3. Has this been your major field of study?"

This seemed to Klein a rather oblique answer to his question, but he sent on his credentials: dramatics teaching at Rollins, Wells, Connecticut and Goddard colleges; founder of the Studio Theatre

at the New School for Social Research; guest lecturer at Yale and Fordham; producer of 20 plays in England and of several hundred in Berlin; management of three Berlin theaters of his own; management for four years of the Max Reinhardt theaters; director of dozens of US community productions.

'Round and around

The Board replied that a summary of this background was being forwarded to "the committee concerned with the Manual of School Planning." Klein's next communication was from the chairman of the committee on School Plant Planning who wrote:

"I am organizing a total of 23 subcommittees to design the facilities to be incorporated in the plans for new school buildings. When we reach the subcommittee on school auditoriums I shall forward to the chairman of that group the information you have provided."

After another month slid by, Klein asked whether a subcommittee chairman had been named. The reply:

"I have forwarded your letter to the chairman of the Subcommittee on

School Auditoriums of the Committee on School Plant Planning, who is the Assistant Director of our Speech Improvement Bureau. May I suggest that you communicate with her for whatever information you require."

So Klein wrote her. She replied:

"The Committee on High School Auditoriums has not yet been convened. We shall of course be glad to call upon you as consultant as the need arises."

Klein had now been engaged in this remarkably nebulous correspondence for five months. All he wanted to do was discuss, with someone effective and responsible, means of improving obsolete stages. This seemingly reasonable goal was becoming so elusive that in his next letter to the subcommittee chairman, Klein wrote:

"I cannot help feeling somewhat puzzled that you as chairman should not be interested in my observations—whether the Committee has convened or not."

Klein got no answer to this letter. Indeed he never has had further word from the subcommittee chairman. Like the others, she faded from the scene.

continued on p. 196

KLEIN'S RECOMMENDATIONS:

The educational stage should stimulate the creative imagination of everyone working in it and the audience too. It should teach group effort. If it can teach something about the way light acts, about manipulation of sets, and about how things are properly managed on the stage, so much the better. We do not expect all students to become chemists; but we do not equip their laboratories with empty beer bottles instead of test tubes. Why be less logical about their stages?

Lighting now usually consists of fixed overhead lights and permanent footlights. The overheads light the back of the actor's head; the foots awkwardly light the faces from below, and the ceiling. No other stages in the world have been lighted like this for years. Improvements: In place of fixed overheads, a horizontal pipe behind the front upper curtain, for clamping eight or nine moveable spots. Pipe lowers with winch or counterweights

(winch is cheaper) to prepare spots. Instead of foots, spots at the sides of the auditorium, masked from audience, directing beams at stage at an angle of 45° of a cube, or else spots directed from auditorium ceiling or balcony rail.

Flooring is now usually beautiful hardwood which must not be marred. But the floor of a stage is an important tool because the braces and jacks which support stage scenery—flats—are pegged to the floor with stage screws. Playwright Jean Kerr ruefully reminisces in the New York Times Magazine that she grew up thinking there was always a person behind every stage tree because strangely enough, in her school, no stage screws were permitted. Things have not changed.

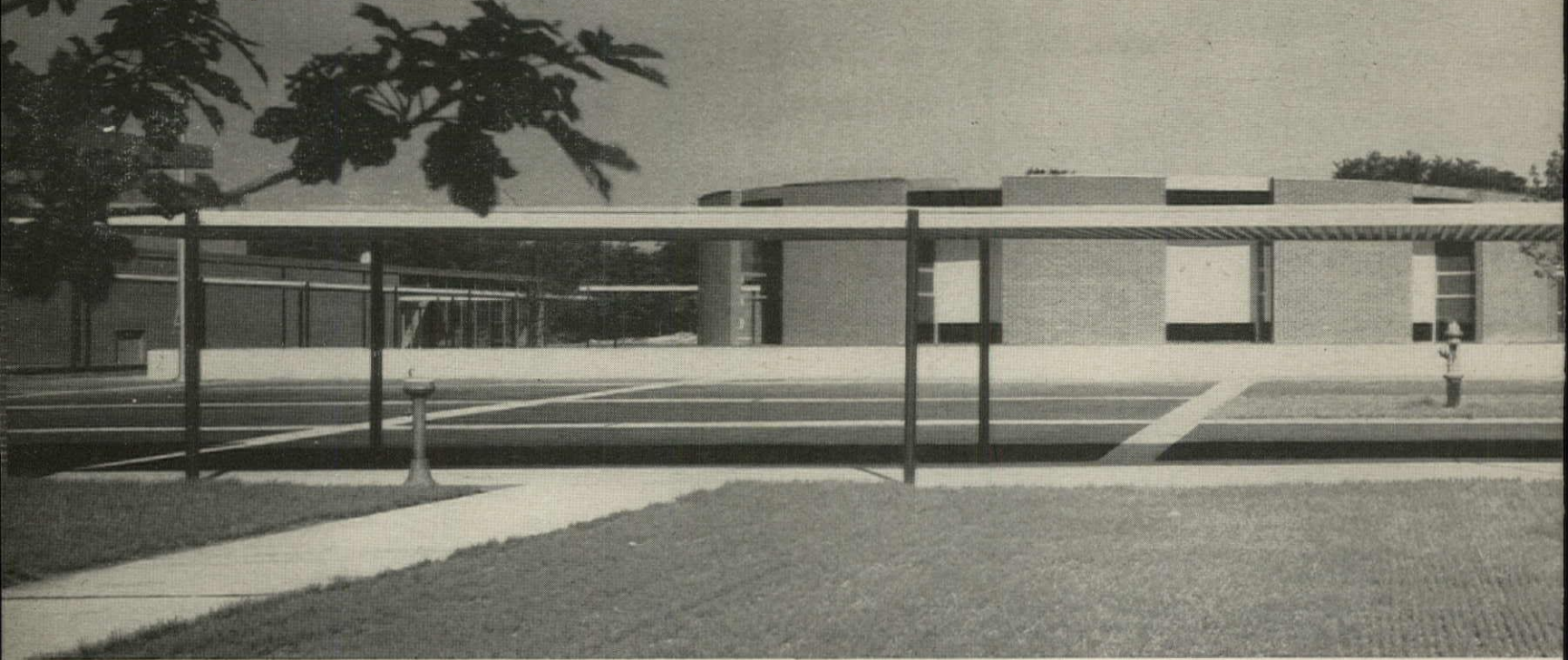
Improvement: Soft pine floor, so students and community can do creative work with canvas flats. These floors wear a long time; in a high school, where settings are not an every-

day occurrence, the floor would likely last a generation. For appearances, a stagecloth can cover the floor. Suitable for any activity; not even the professional ballet uses hardwood floors!

Cyclorama curtain, lining the stage interior, obtrudes clumsily over scenery; worse, the pipes on which its side extensions hang run transversely, thus get in the way of attempts either to fly or set up scenery.

Improvement: Curtain's purpose of background for speaker, singers, etc. could be fulfilled more attractively, flexibly and cheaply with flats kept for the purpose. If architects are actually designing back walls so ugly they must never be seen, which is hardly likely, a better solution than cyclorama curtain is a taut cyclorama—a curved canvas painted in colored spatters that appear any hue, depending on lights. Students can make one or it can be bought for less than cyclorama curtain.

SIX QUALITY SCHOOLS AT REASONABLE COST



1. A HARMONIOUS CAMPUS PLAN

At the hub is a delightful library shaped like a cogwheel

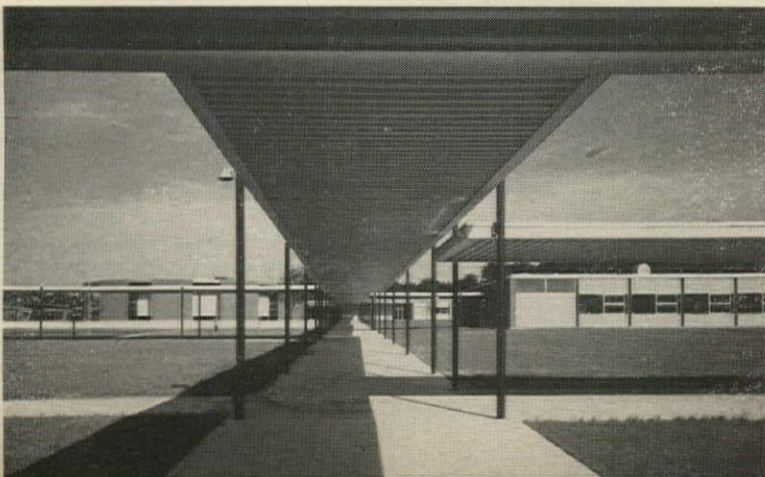
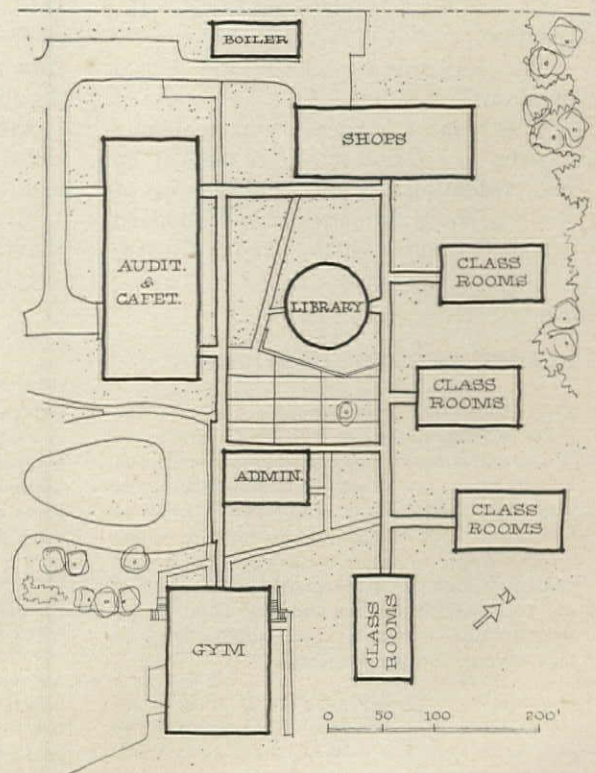
MIDDLEVILLE ROAD SENIOR HIGH SCHOOL, East Northport, L. I. ▲ 33 classrooms, ▲ 800 students; expandible to 1,000.

Features: Activities buildings in visual scale with classroom blocks. ▲ Gym set in slope keeps lobby, lockers low, economical. ▲ Classroom units, for conventional program, adaptable to block-of-time or group school programs; interior block partitions movable, utilities and skylighted lockers concentrated at end. ▲ Classroom vision strips with all-day electric lighting for closely figured savings in heat, construction, blinds, overhangs. ▲ Administration unit combines into lounge-meeting area.

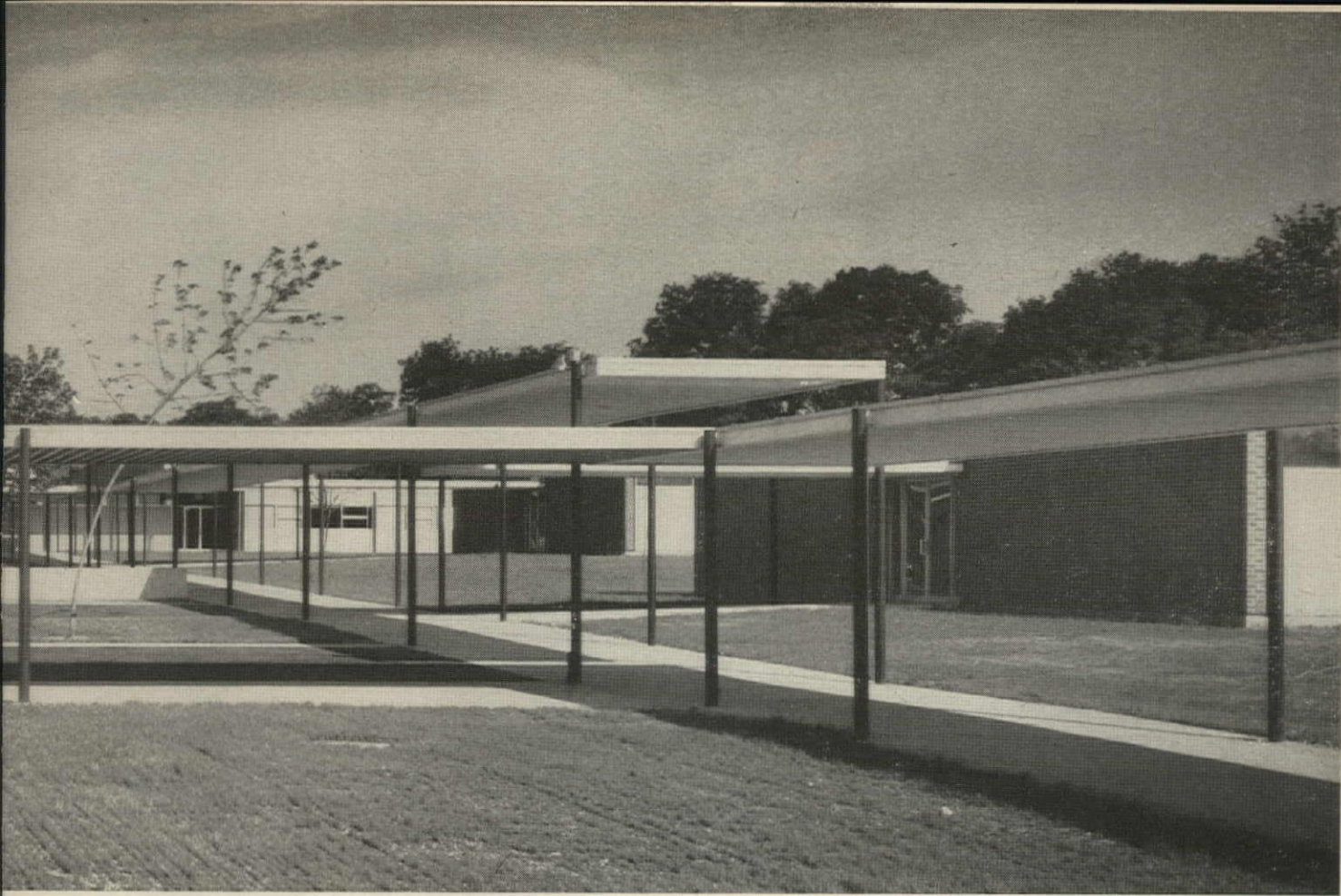
Construction: Concrete and block foundations, reinforced slab on grade. ▲ Cavity brick bearing walls. ▲ Suspended acoustic ceilings. ▲ Metal deck roofs on steel frame; library, reinforced concrete. ▲ Plastic skylighting. ▲ Forced hot water heating.

Costs: \$1,478,168 including fees and all fixed or built-in equipment. ▲ \$17.87 per sq. ft.

Credits: Architects: Ketchum, Gina & Sharp. ▲ Structural engineers: Severud, Elstad & Krueger. Mechanical & electrical engineers: Levy & O'Keefe. ▲ Acoustical consultants: Bolt, Beranek & Newman. ▲ Landscape architects: Tregenze & Briglia. ▲ General contractor: Ellis Chingos Construction Corp.



Canopied walk running length of classroom side of campus is cheerful, its brightly painted ceiling changing color at intersections.



Exterior harmony derives from well-scaled activities units, pattern of walks, sensitive use of slight slopes. Photo, taken beside administration unit, includes auditorium-cafeteria at far left, round library, two classroom blocks at right.



PHOTOS: BEN SCHNALL



Library's "cogwheel" wall forms little light alcoves which would be greatly enhanced by planting in outdoor niches. Circular roof is cantilevered beyond indentation line. Shelving is backed by cement asbestos panel with glazing above and below.



PHOTOS: DEARBORN-MASSAR

SIX QUALITY SCHOOLS AT REASONABLE COST

2. SOCIABLE OUTDOOR AREAS

Courts make pleasant year-round use of paving, planting, benches, boulders

JOHN S. BAKER JUNIOR HIGH SCHOOL. Tacoma, Wash. ▲ 23 classrooms. ▲ 800 pupils.

Features: Generous paved and landscaped courts with benches, raised planting areas, boulders saved as sculpture. ▲ Large court used as public recreation area year round. ▲ Small private court off teachers' room. ▲ Main entrance hall widened to 32' to act as student lobby, used for square dancing at noon hours. ▲ Separate multipurpose wing with kitchen and stage, used for lunch, audiovisual and music classes.

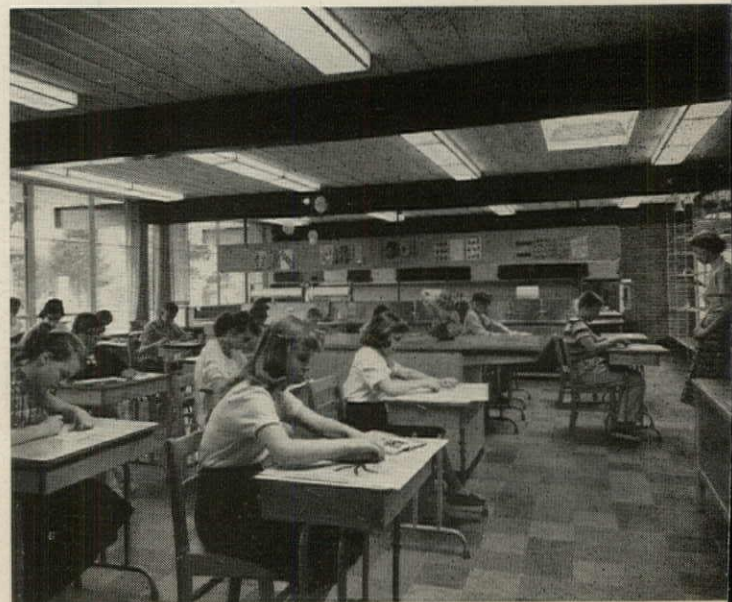
Construction: Slab on grade. ▲ Steel frame on 16' x 32' bays. ▲ Steel roof deck, 1" rigid insulation, built-up roofing. ▲ Walls, glass and porcelain enamel panels, some sections of brick, concrete,

corrugated plastic for additional light in high part of gym and multipurpose room. ▲ Partitions, SCR brick or 2x4 stud walls. ▲ Strip and dome skylight over classrooms, corridors. ▲ Asphalt and cork-tile flooring. Fluorescent lighting. Acoustical board ceilings. ▲ Heating: high temperature hot water radiant system.

Cost: \$774,645 (incl. landscaping, excl. fees, tax). ▲ \$10.72 per sq. ft.

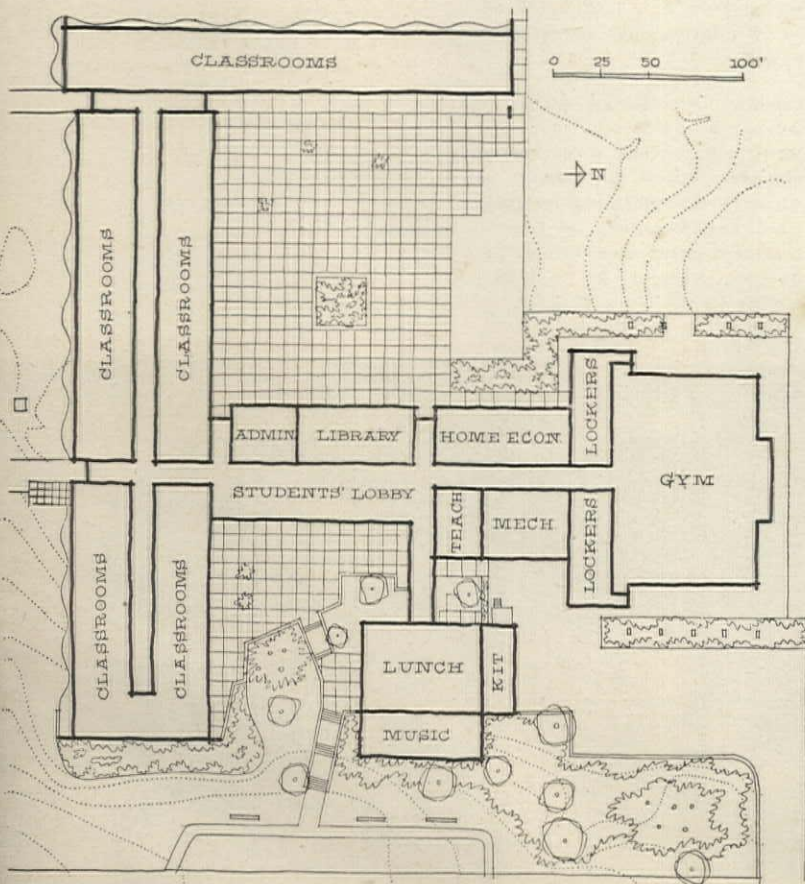
Credits: Architects: Marshall W. Perrow, Robert B. Price. ▲ Structural engineers: Smith & Murray. ▲ Mechanical engineers: Worthen & Wing. ▲ Electrical engineer: Walter Gordon. ▲ Landscape architect: Lawrence Halprin. ▲ General contractor: Ostruske-Murphy.

Entry court is made attractive with a saved tree, wall benches, boulders arranged as sculpture. Building itself adds interest by extending its frame above, its grid in paving.



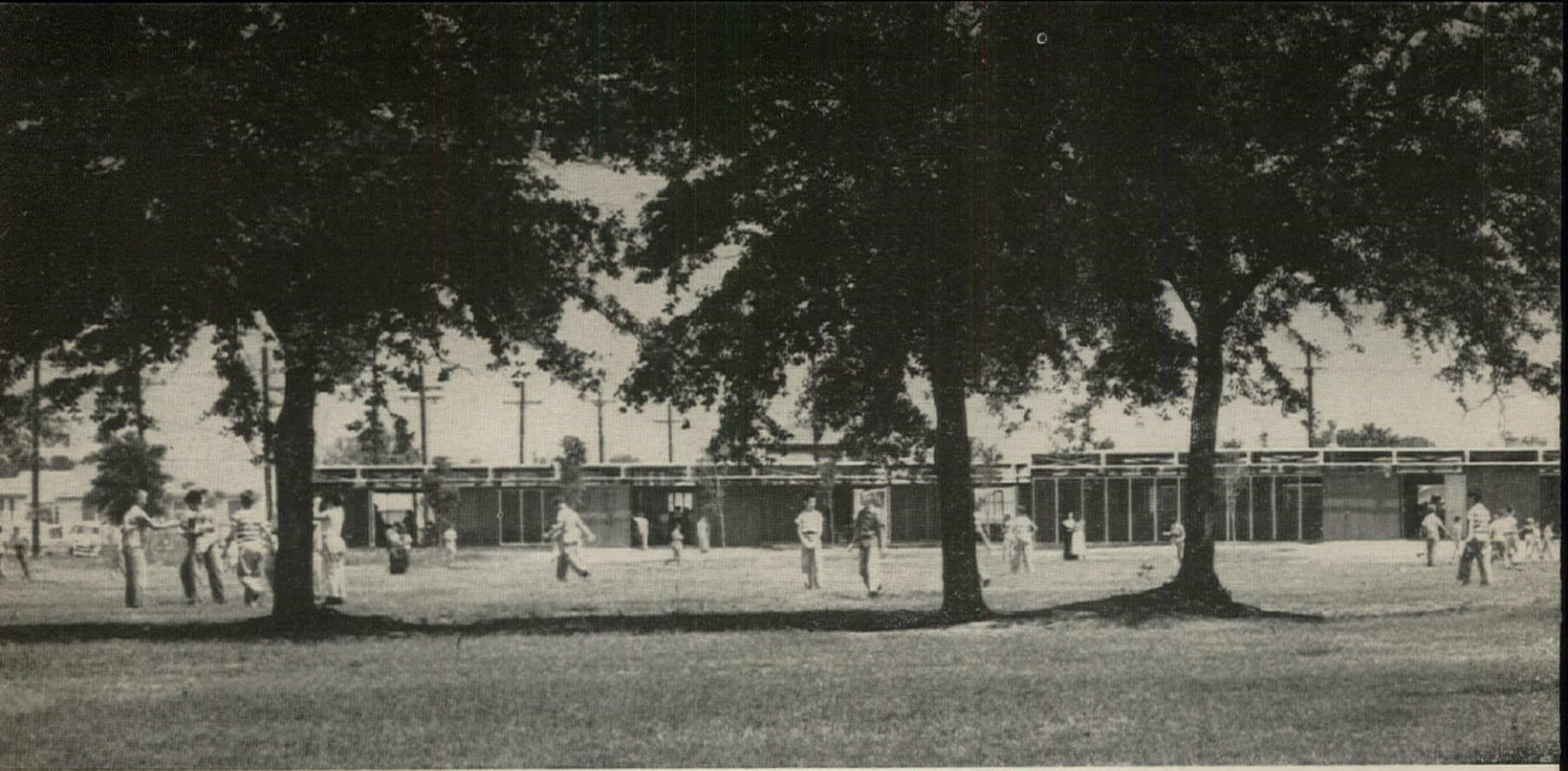


Approach skirts good trees, breaks stairs into curve and levels that also give access to meeting room at right.



Meeting room has stage at left, folding lunch tables in walls. Translucent plastic shields upper two thirds of windows.





SIX QUALITY SCHOOLS AT REASONABLE COST

3. CLASSROOMS OPEN TO THE BREEZE

Transverse instead of parallel corridors make a patio grid out of the finger plan

ST. FRANCES CABRINI ELEMENTARY SCHOOL, New Orleans, La. ▲ 12 classrooms completed, six under construction. ▲ For future: four more classrooms, administration, library, auditorium, cafeteria. ▲ Enrollment of 800 has far outstripped construction.

Features: Hot climate planning for maximum sweep of breeze through each classroom. ▲ Expansion planning with utilities and corridors organized for addition of classrooms in pairs. ▲ 50' patios between wings reported adequate sound buffers. ▲ Abundant built-in storage, wardrobes. ▲ Fireplaces in kindergartens.

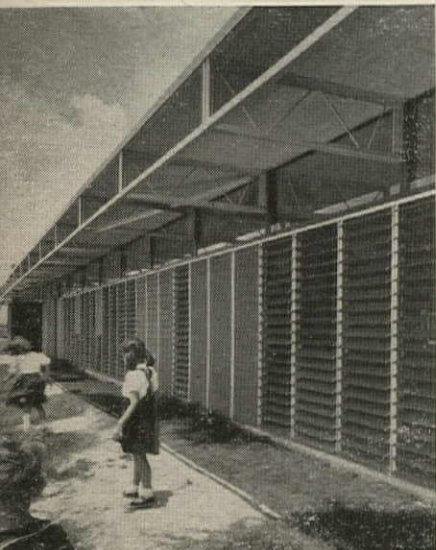
▲ Generous, handsome color.

Construction: Heavy piling and reinforced concrete foundations for poor soil. ▲ Framing, steel columns, bar joists. ▲ End walls, nonbearing brick; north walls, sliding clear glass; south walls, heat reducing glass. ▲ Roof, 2" exposed insulation decking on exposed joists, built-up roofing and marble chips. Corridor ceilings, wood decking. ▲ Corridor-classroom partitions, 7' redwood glazed above; classroom partitions, brick and redwood; toilet partitions 7' ceramic tile, glazed above. ▲ Asphalt and ceramic tile flooring. ▲ Individual gas-fired forced

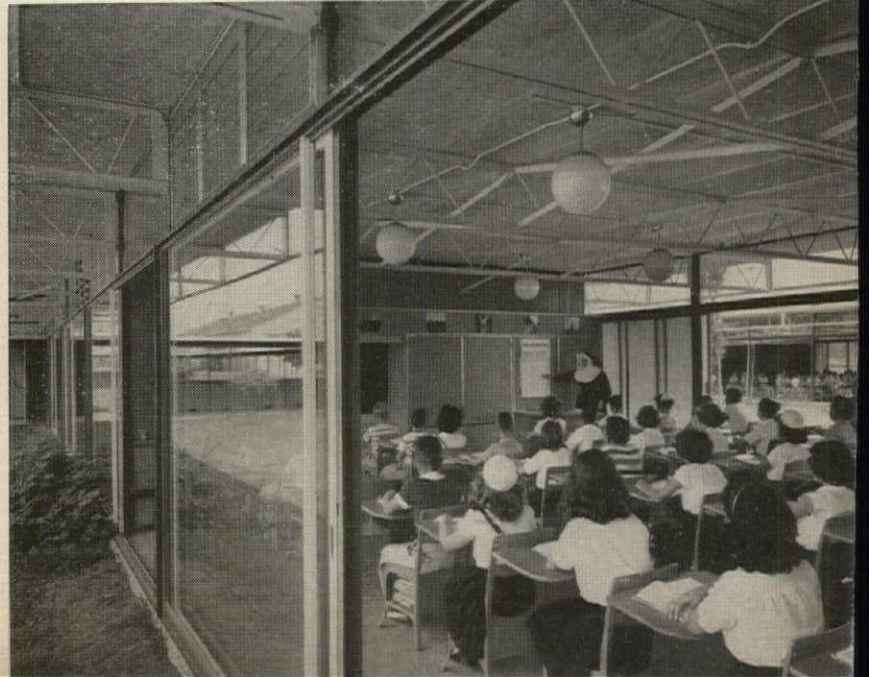
warm-air heaters, supply ducts integral with floor slab.

Cost: For 18 classrooms only plus related corridors and landscaping, excluding fees, \$361,517. ▲ Cost varied from \$11.50 to \$13.45 per sq. ft. during four construction phases.

Credits: Architects: Curtis & Davis. ▲ Structural engineer: William B. Settoon. ▲ Mechanical engineer: Cary B. Gamble & Assoc. ▲ Electrical engineer: Edward Lee Monroney. ▲ General contractors: Lionel F. Favret Co., Gurtler, Herbert & Co., Cox-Hardie Co.

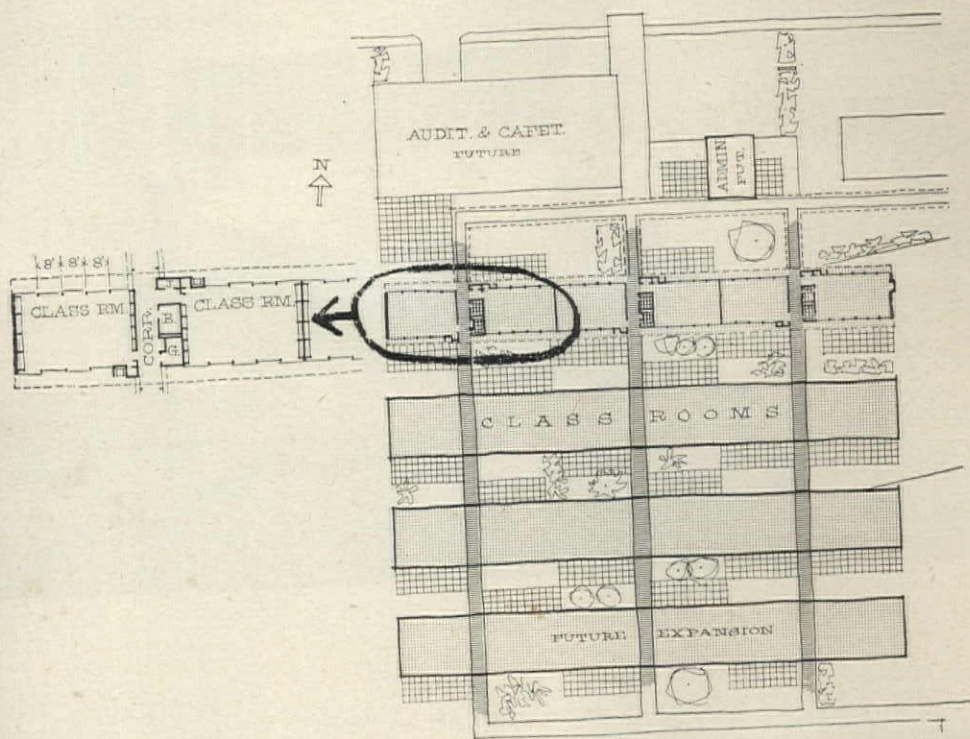


Classroom walls open with sliding doors to patio on north. In first rooms built (right) south wall was similar. In later additions ventilation was improved with south wall of glass jalousies (left) and glass jalousie transoms over north sliding doors.





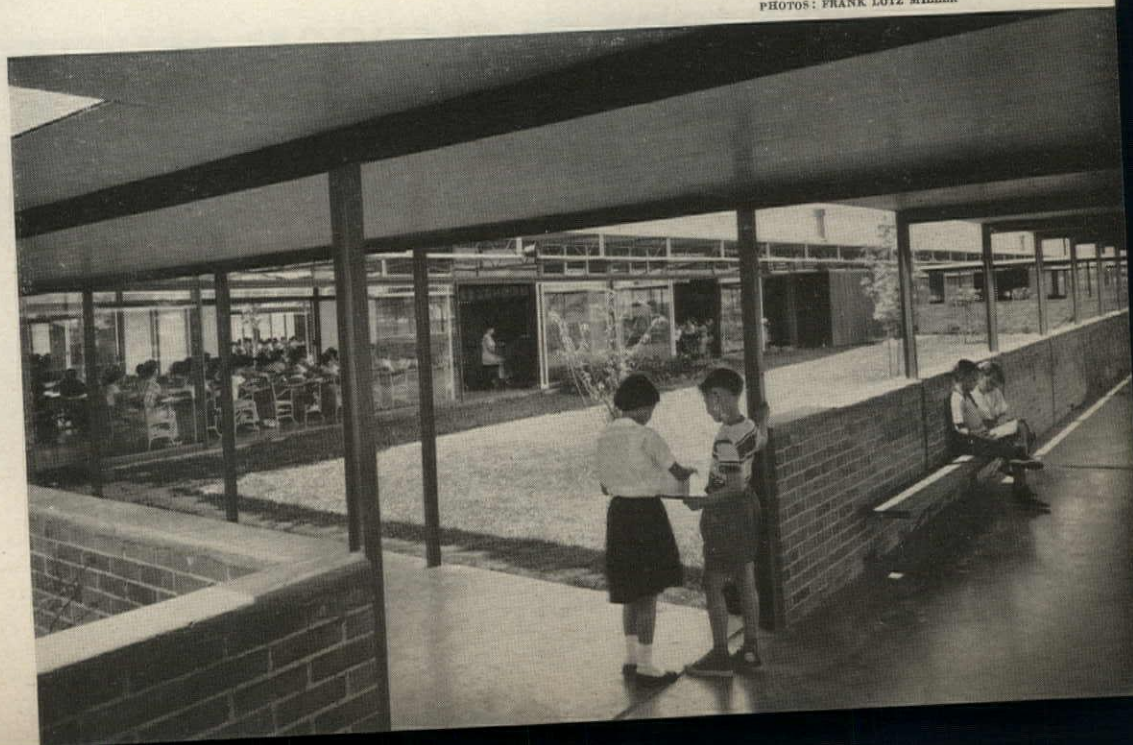
Long wing is only one classroom deep, giving top-to-bottom ventilation and daylight along generous north and south classroom walls. Each class has its own patio.

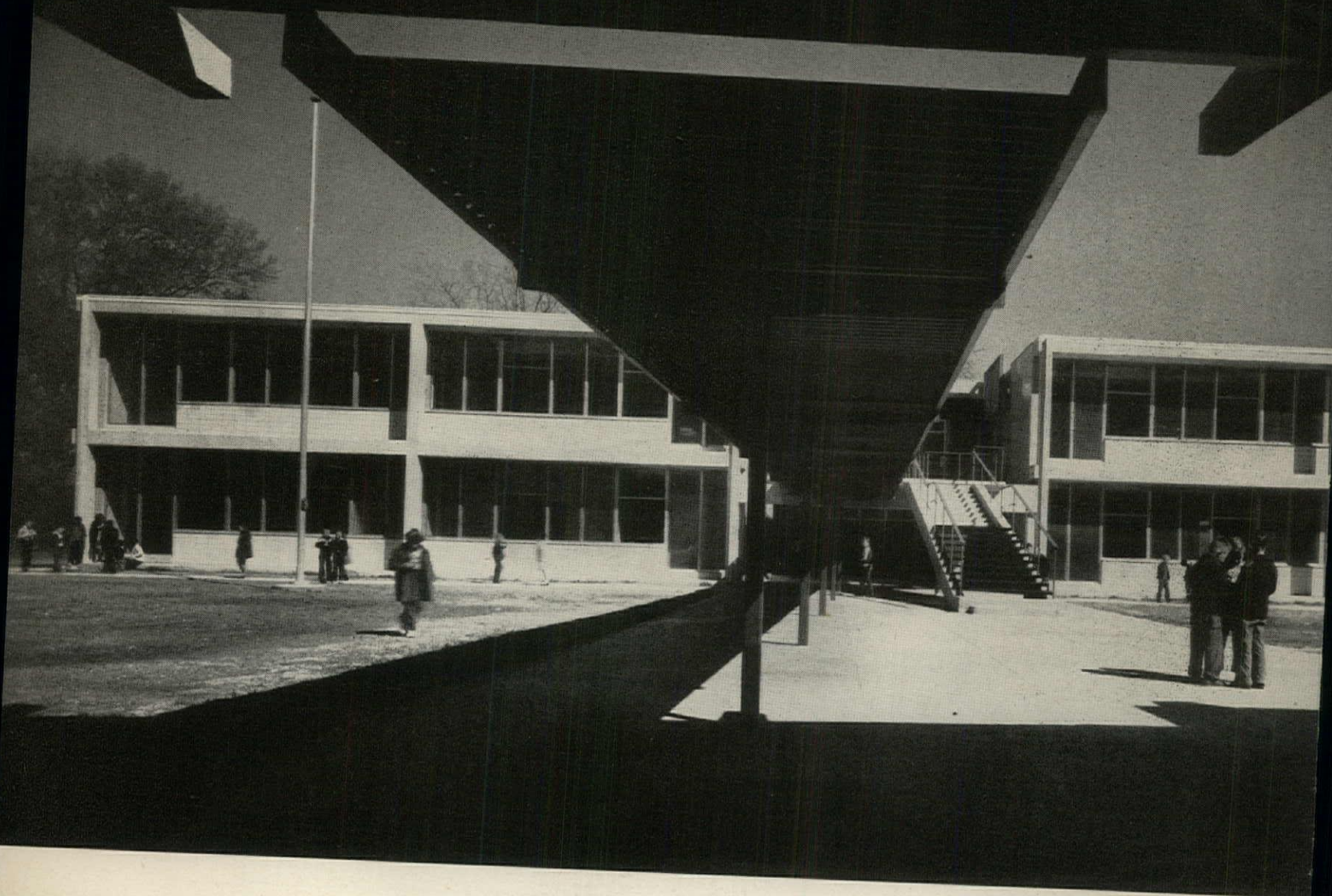


PHOTOS: FRANK LOTZ MILLER



Corridors connecting wings were originally open (right), have since been glass enclosed (above) to form assembly areas and bad weather play space. Until building program reaches final stages several years hence, school must make do without activities units, is hard pressed to supply classrooms alone for fantastically soaring enrollment.





SIX QUALITY SCHOOLS AT REASONABLE COST

4. TWO-STORY CLASSROOM CLUSTERS

Concrete school uses an economical plan, special sunshades

SOUTH COLUMBIA ST. ELEMENTARY SCHOOL, Bogalusa, La. ▲ 14 classrooms. ▲ 420 pupils.

Features: For building economy and concentrated land use, classrooms are arranged in tight clusters of four, stacked in two stories around an open central hall and toilets, served by a single stair and ramp. ▲ Separate common wing has center area that doubles as circulation lobby for cafeteria on one side and assembly room on other, and as covered play space facing play yard. ▲ Class-

rooms have jalousie windows, louvered sunshades on east and west windows.

Construction: Reinforced concrete spread footings, slabs, columns, ribbon beams and flat roof slabs. ▲ Walls, glazed ceramic structural tile. ▲ Concrete block partitions (glazed tile in toilets). ▲ Windows, aluminum sliding sash, projected, fixed glass and jalousies. ▲ Flooring, smooth-troweled concrete, asphalt tile in classrooms and offices, ceramic tile in toilets. ▲ Built-up roofing over

1" rigid glass fiber. ▲ Fluorescent lighting. ▲ Acoustical fiber tiles on ceilings. ▲ Hot water boiler, warm-air circulating heaters at center of each four-room cluster; space heaters in cafeteria and auditorium.

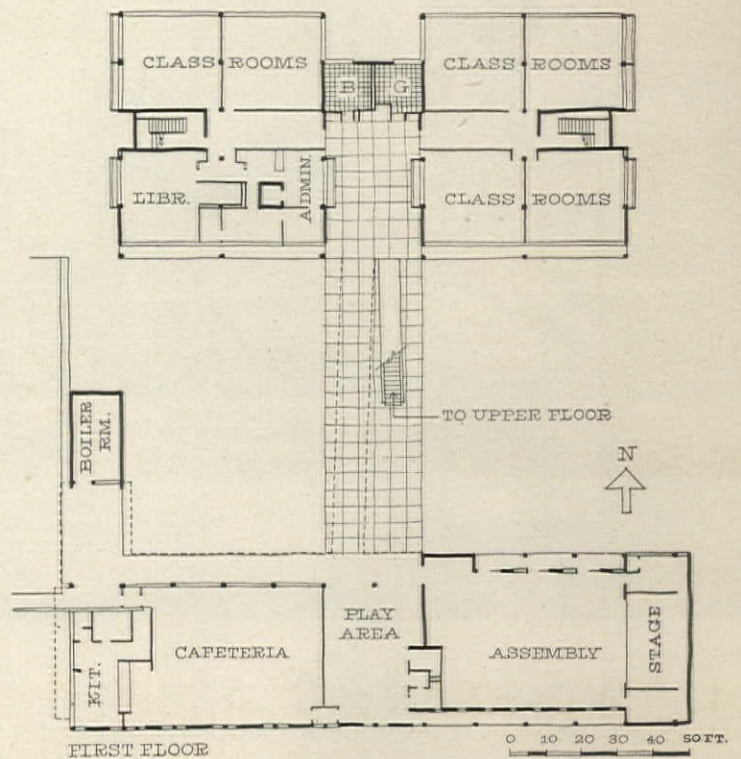
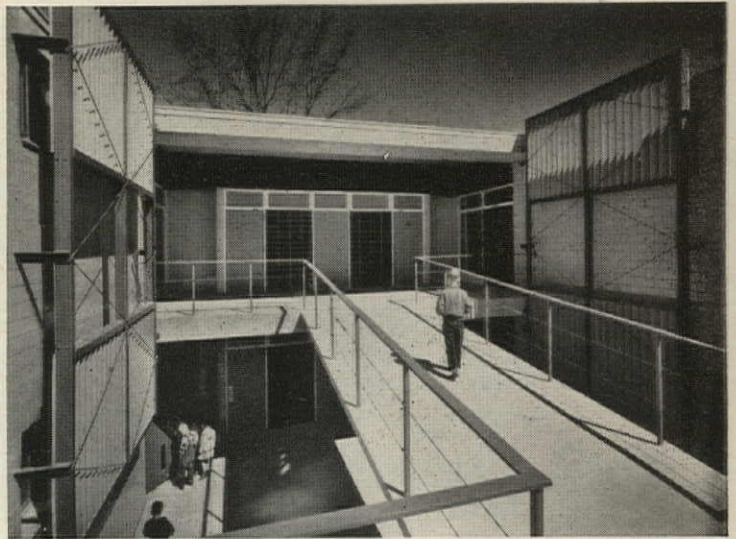
Cost: \$268,466 (incl. fees, excl. land, furnishings); \$9.87 per sq. ft.

Credits: Architects and engineers: Burk, LeBreton & Laman-tia. ▲ General contractor: Archie Pounds.



Canopy of steel decking on single center posts leads across play yard to classrooms. Note jalousie windows for maximum ventilation, metal-grating treads on lower half of stairs to admit light underneath, prevent playground dirt from being tracked into classrooms.

Ramp (photo right) rises slightly from stairs to open cross-walk and second-floor classrooms on either side. At center doors to toilets and mop closet are unified in frame, separated by panels of dark glazed tile. Open wells light court, classrooms below.



Sunshades, on east and west walls of classroom wing, combine here with open stairwell at center and detached concrete columns at left to make a striking composition. Wood louvers in steel frames are angled to admit northerly light.



PHOTOS: FRANK LOTZ MILLER



SIX QUALITY SCHOOLS AT REASONABLE COST

5. GOOD NEW ENGLAND NEIGHBORS

A modern school goes well with a traditional church—winter and summer

NEW PRESTON ELEMENTARY SCHOOL, New Preston, Conn. ▲ 4 classrooms, expandable to 8. ▲ 120 pupils, expandable to 240.

Features: Three-wing plan (incl. future classroom wing) centering on lobby-reading room. ▲ North-facing clerestory window along inner side of classrooms. ▲ Glass strips between classrooms above 7'-4" height. ▲ All-purpose room

has in-wall folding lunch tables, two 8' x 8' folding stage platforms. ▲ Cabinets along hall incorporate coat cubicles on hall side, cupboards on classroom side.

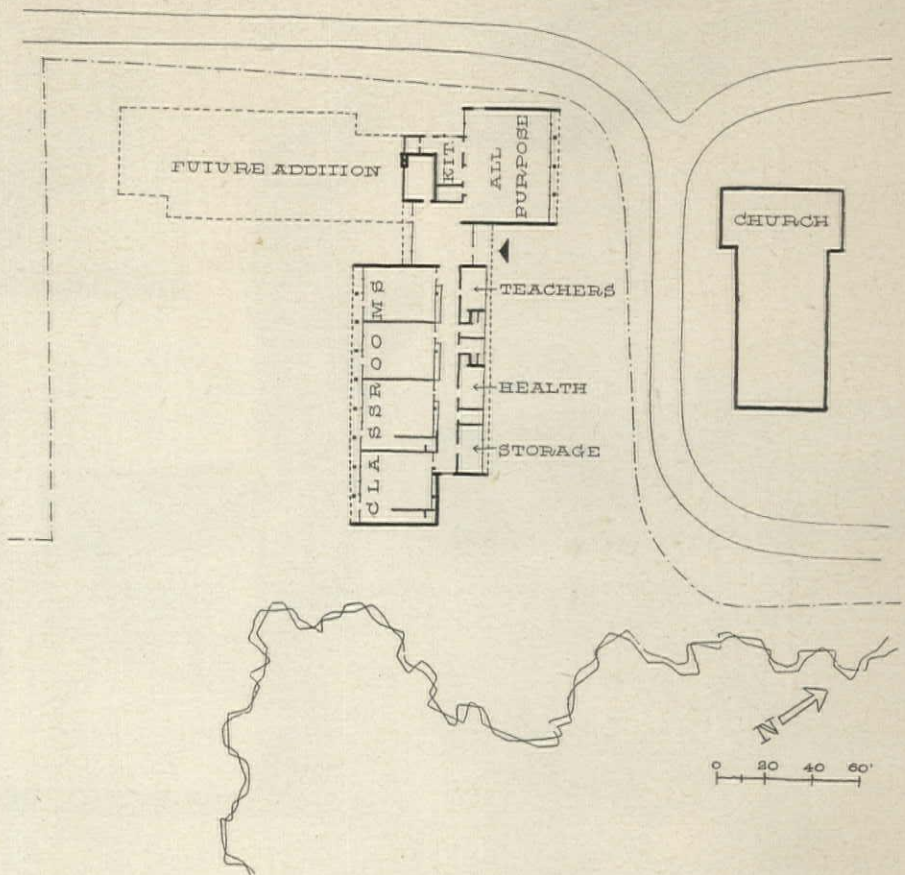
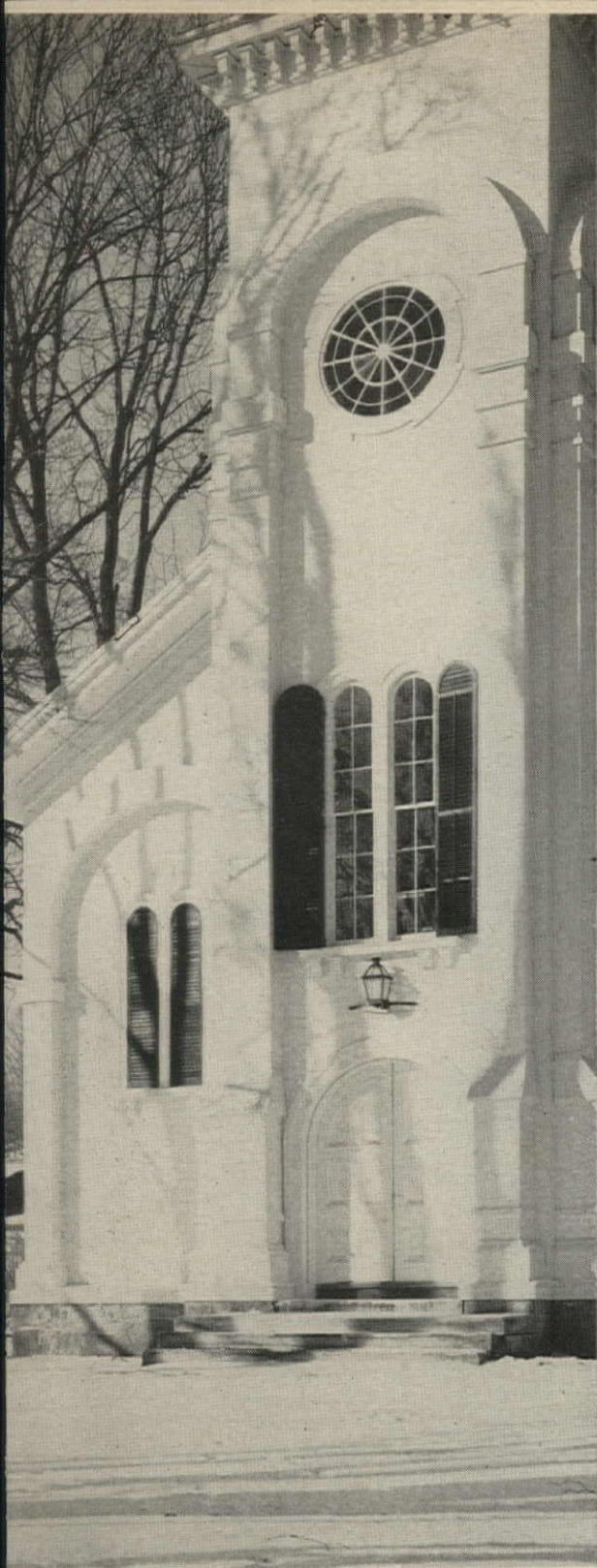
Construction: Concrete T footings, 4" slab on 6" gravel fill. ▲ Steel frame on 12' x 33'-6" bays over classrooms, 12' x 38' over all-purpose room; 3" steel deck, 1½" rigid insulation, built-up roofing

(2' x 10' wood joists and wood deck over low hall-administration portion). ▲ Walls, painted or natural redwood T&G siding on 2 x 4 studs, glass in wood frames, projected sash. ▲ Partitions, painted cinder block. ▲ Chalkboard, fabric tackboard and pegboard in classrooms. ▲ Asphalt tile flooring. ▲ Acoustical tile ceilings throughout. ▲ Fluores-

cent lighting. ▲ Warm air heating.

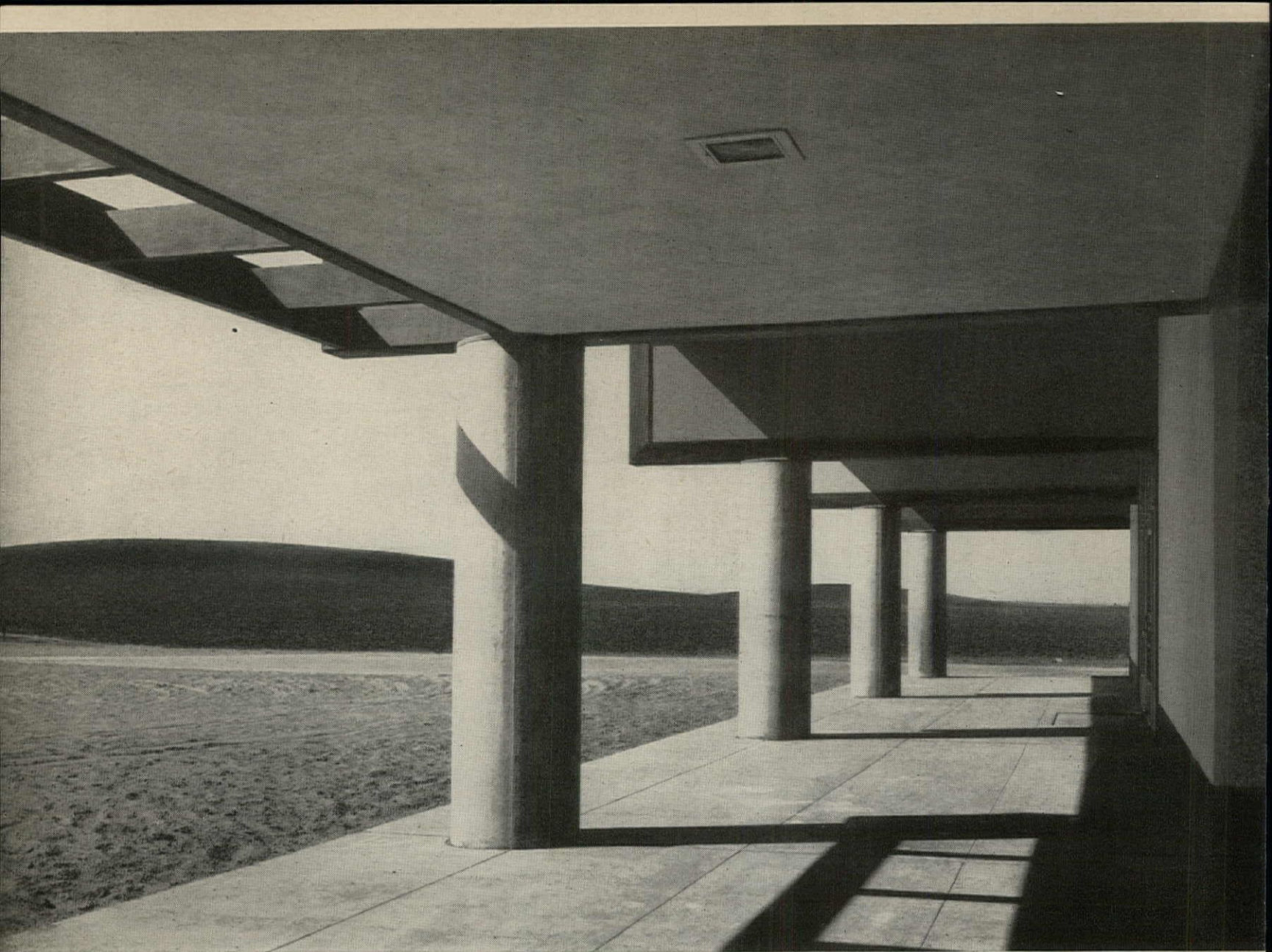
Cost: \$135,650 (excl. fees, furnishings, landscaping); \$14.20 per sq. ft.

Credits: Architects: Nichols & Butterfield. ▲ Structural and mechanical engineers: Marchant & Minges. ▲ General contractor: John Cantillon.



New school of simple horizontal lines sits modestly across road from old church. Photo (left) shows entrance at center, multipurpose wing at right, classroom clerestory at left above colored panels shielding toilets. At rear (below) classrooms open to south sun and playfield under 3' overhangs. Exposed columns support 33'-6" spans.





SIX QUALITY SCHOOLS AT REASONABLE COST

6. RUGGED RANCH HOUSES

A school of houselike units fits its landscape and its community

WHITE SCHOOL (Elementary), Rio Vista, Calif. ▲ Three first-grade classrooms and two kindergartens in first of four units. ▲ 150 pupils, expandable to 600.

Features: 20' wide center corridor, enclosed against prevailing winds, used for play space, lunch, meetings. ▲ 9' luminous plastic ceilings in classrooms (total cost \$8,250) yield uniform desk-level lighting (average: 41 f.c. electric only, 99 f. c. total; wattage: 1,675 w. per 925 sq. ft. classroom or 1.82 w. per sq. ft.). ▲ Natural redwood siding and aluminum sash for easy maintenance.

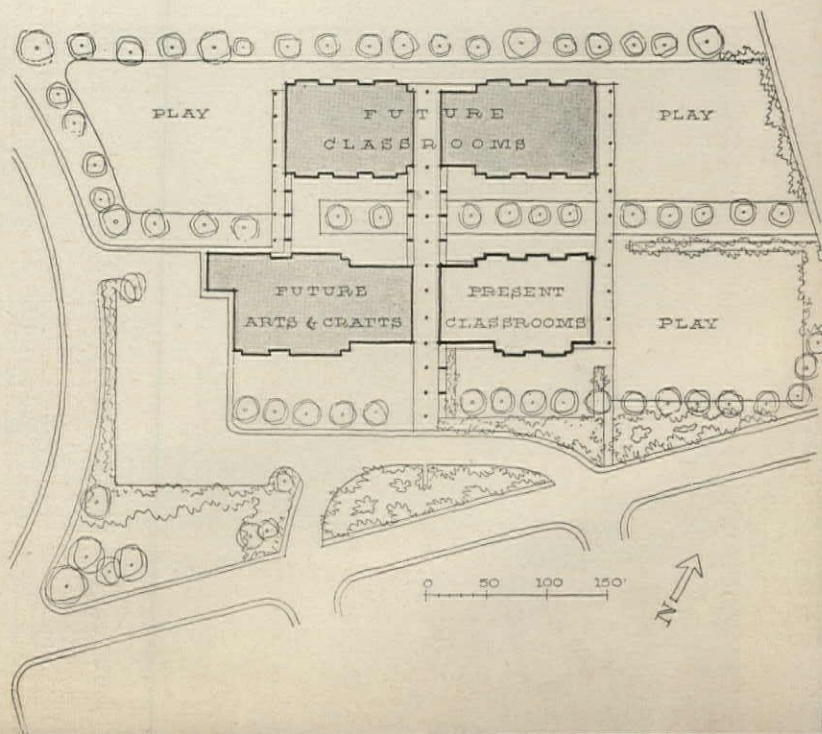
Construction: Strip foundations of reinforced concrete. ▲ Exterior walls 2 x 6 studs 16" o.c., 1" diagonal sheathing, redwood siding or stucco, redwood plywood interior finish. ▲ Wood built-up beams resting on 24" dia. concrete

sewer-pipe columns filled with reinforced concrete; 2 x 12 rafters 16" o.c. White sprayed-on composition roof to reflect heat. 6" concrete floor slab with copper-tube hot water radiant heating; asphalt tile floors (vitreous tile in toilets). ▲ Gravity ventilation, exhaust through continuous slots to roof ventilators at corridor walls.

Cost: \$180,443 contract (excl. fees, land, furnishings; includ. \$27,443 in over-all sitework for future units). ▲ \$13.68 per sq. ft. for first unit alone.

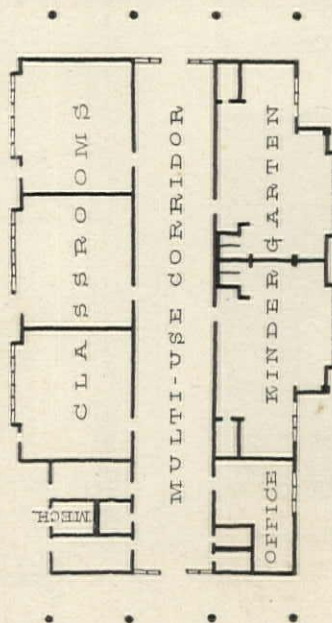
Credits: Architects: Donald Beach Kirby & Associates. ▲ Civil and structural engineer: Baird Hefron. ▲ Mechanical and electrical engineer: Clyde E. Bentley. ▲ Acoustical consultant: Daniel Fitzroy. ▲ General contractors: Henderson Construction Co.

Bold masses of entrance porch match the raw strength of treeless California farmland. Columns are concrete agricultural pipe (farmers wanted no steel pipe-column look); huge wood beams are bright red, yellow and blue.





Broad hall, 20'-wide enclosed against wind and dust, is used for lunch, meetings. Hall is daylighted through end walls of glass in aluminum sash. What appears to be skylight is reflection on smooth ceiling.

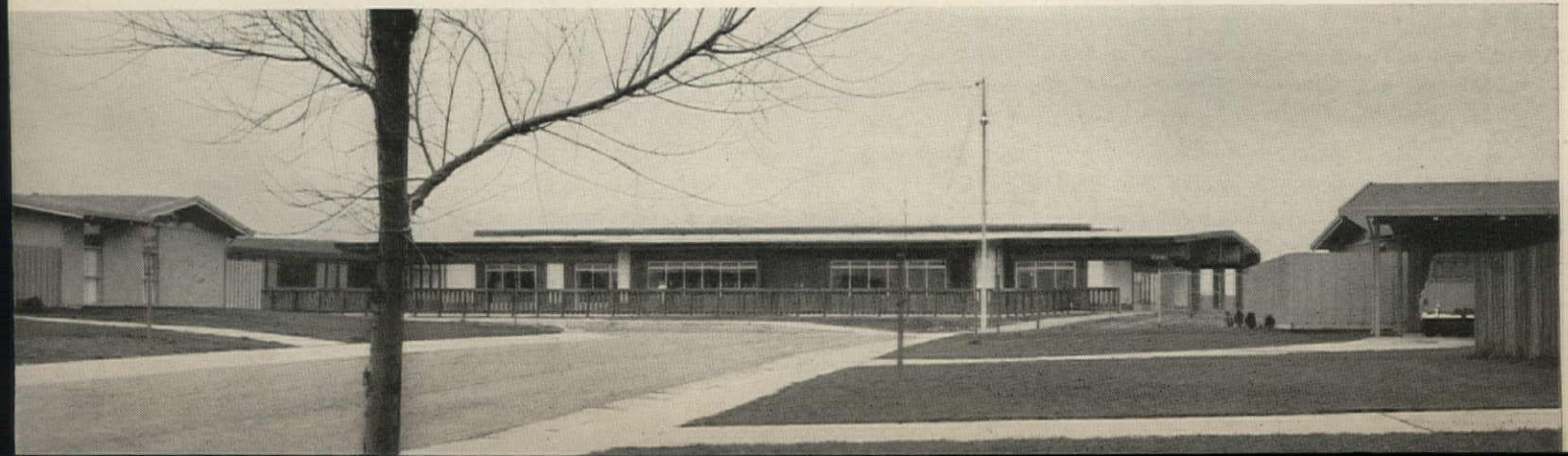


Houselike look of new school echoes residential neighbors in its use of California low-pitched roof, natural redwood siding, mullioned window walls, wood fences.



Luminous ceiling, among the first used in a school, given even light of 41 foot-candles at desk level (99 incl. daylight). Light from fluorescents is diffused through plastic.

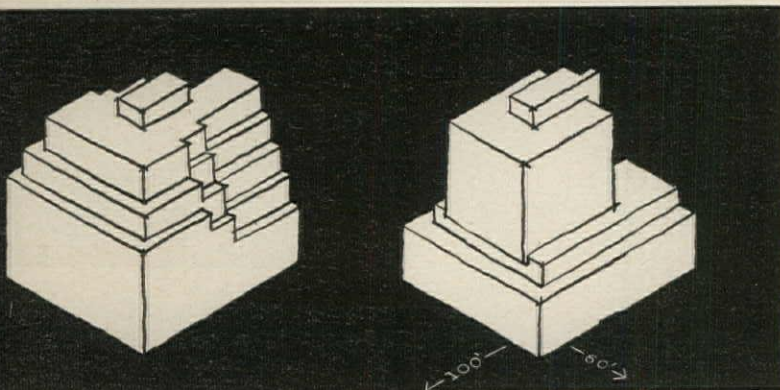
PHOTOS: FIRKLE JONES



Simple shapes, colorful brickwork and a glowing mosaic lobby distinguish a speculative project from its brethren

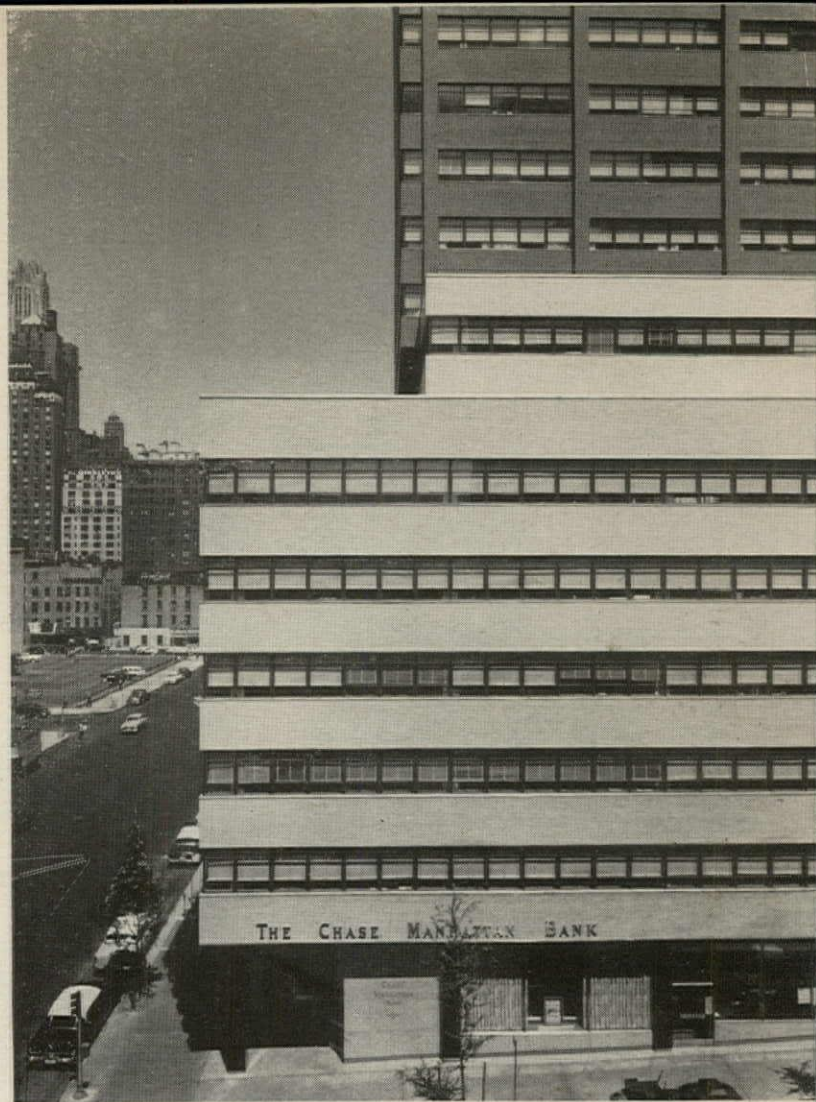
COLOR AND ART HELP AN OFFICE BUILDING

To New Yorkers tiring of wedding cake and tinsel, this sturdy new office building on Third Ave. has some interesting suggestions for a change of diet. It uses the economical brick and glass ribbons of earlier buildings, but instead of wrapping these around its maximum zoning "envelope" in a series of ugly, jig-jog setbacks, it organizes them into three distinct shapes and colors: a broad, gray base, a slim white midsection, and a big blue block of a tower with its columns projecting on two sides—all of brick. In devising this more orderly and balanced—if slightly stubby—shape, Architect Lescaze and Builder Kaufman threw away over 1 million cu. ft. of rentable space that zoning laws would have permitted on this lot. Lescaze's sketches, which show the building designed to the maximum bulk permissible (below, left) versus the actual proposal (right), helped persuade the city to grant a variance: in return for all the light and air left around it, the tower was permitted to cover 33% of the plot instead of the normal 25%, protruding slightly out of the envelope at its upper corners.

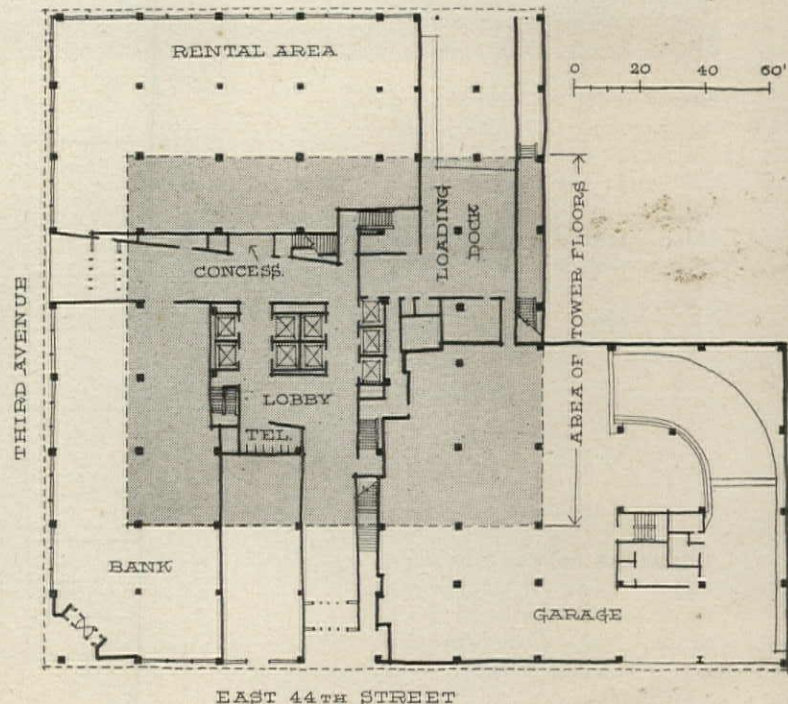


Cutting the wedding cake was done profitably. The top 11 floors, 40% of the building's rentable office area, are fully surrounded by light and air, and fully occupied at New York tower-grade rents of \$5.50 to \$7. Each of these floors, a simple rectangle of 13,500 sq. ft. around a service core, has proved adaptable to a wide variety of tenant needs.

On the ground floor of his \$13.5 million building, the owner made an added \$80,000 (0.6%) bid for prestige in New York's competitive office market by lending bright notes to a neighborhood only recently under the shadow of the Third Ave. El: a big lobby mosaic and stainless-steel sculpture (not yet installed). Says Builder-Owner Kaufman: "It costs so little to have something outstanding I'm amazed more 'spec' builders don't go in for it."



JOSEPH W. MOLITOR



711 THIRD AVE., NEW YORK CITY

OWNER: William Kaufman and Swig & Weiler

ARCHITECT: William Lescaze

ENGINEERS: Weinberger, Weishoff, Leichtman & Quinn, structural; V. L. Falotico & Associates, mechanical

LIGHTING CONSULTANT: Richard Kelly

FINANCING: Chase Manhattan Bank, construction money; New York Life Insurance Co., mortgage

Colorful exterior expresses a base in gray, a pedestal in white and a tower in blue. At rear, fire stairs are set off from tower in white brick. Building, seen here across New York's Third Ave., is a block east of Grand Central Station.

Colorful lobby glows with 16' high mosaic wrapped around automatic-elevator core. Each side has a primary-color background of blue, red or yellow, lively splashes and figures suggesting busy lobby itself. Design, by Painter Hans Hofmann, was executed by Mosaicist Vincent Foscato. Abstract stainless steel sculpture for main entrance by Jose de Rivera is on loan to New York's Museum of Modern Art and is not shown.





A great American architect's intricate passion and irony are brought to life in a masterly new book of words and pictures a century after his birth

SULLIVAN SURVIVES

A BOOK REVIEW BY WALTER McQUADE

There is still something mysterious about architecture. It involves ornament, mood, underskin enjoyment. It cannot be expressed in prescriptions or shorthand specifications; it has to be felt, and cannot easily be prefabricated.

This mystery, the link between buildings and human emotions, in the end centers in vision, not in function. Some structures endure many generations, deepening in significance even as they go out of date. Sometimes these buildings eventually connote whole cities, as the corner of Carson-Pirie-Scott, left, *means* Chicago to many. They are monuments. We are tearing most of them down.

How many of these buildings are we putting up today? Not many. It does seem that most of our impersonal new architecture is in for rapid emotional obsolescence, to leave today's architects wondering if they have not been forced into the position of being custom merchandisers of building effects, not originators. And then there is Louis Sullivan, the father of their functionalism.

Sullivan, born 100 years ago this fall, proved long ago that buildings in our efficient industrial era still can be deeply successful as human backgrounds; adding, not subtracting; vitalizing, not conforming; defining the complex quality in people which is called human dignity. His magic is there whether his building watches over a suburban matron seeking a bus in Chicago's Loop, or a defiant wanderer in downtown Manhattan. If you don't believe it is there, cover the top of either photograph on these pages with a piece of blank paper and see how much the people lose.

It is painfully true in most of our best modern buildings that humans—bathed in soft, complete floods of light, standing on bland wall-to-wall carpeting, enclosed by

PHOTOS: JOHN SZARKOWSKI



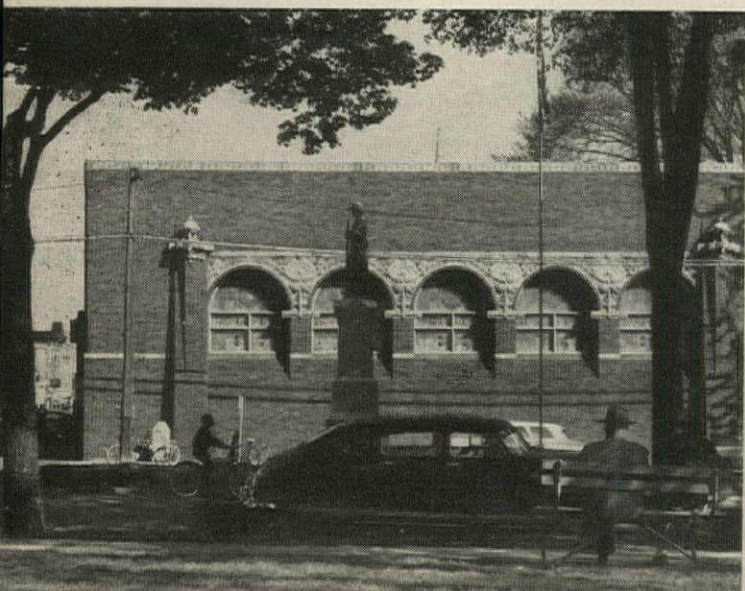
Condict Building, New York, 1897-98

Carson-Pirie-Scott Building, Chicago, 1900



Small Sullivan bank built in 1919, secure in its town, Columbus, Wis.

Farmers and Merchants Union Bank



"When we decided to build, all that I knew was that I wanted a good bank building. . . . Of course I wanted it to look well. . . . But I had never really thought about these things in quite the same way before I met Sullivan as I did afterwards."

Clients Mr. & Mrs. J. R. WHEELER



Builder CARL IBISCH



From a letter from Sullivan, Dec. 1919: "If you are in doubt about any matter refer it to me promptly; otherwise use your best judgment in carrying on the work to completion in the spirit of my drawings.... In other words I look to you to be the directing brain of the actual work."

simple planes, primary colors—often seem mindless. They are reduced.

Sullivan enlarged them. He was not a sentimentalist—he built dynamic, sometimes brutal masses, the latest in modern technology of his day. But he also reached out in sympathy for the individuals who make up crowds. His florid formal decorations have vivid force, direct not abstract. He deliberately created complexity in feel and shadow, as if to declare to the unlettered: "I know, I know, our modern business buildings have to be spare and efficient, but *you're* not that way. Your mind is ornamented with many devious impulses. I know it is, because mine is too."

At his height, in the 1890's, Louis Sullivan was cocksure, but toward the end, in the twenties, sick with sorrow and alcohol and the lonely steady despair of having lost his audience to classical stylists, he put his trust in posterity. He had little else to trust. ". . . do not trouble yourself as to whether or not others understand . . . in due time . . . others will perceive in your works more or less of what you, more or less adequately, have thought, felt, lived, loved and understood."

The author and photographer of this new book*, John Szarkowski, justifies this trust in a wonderful way. He has perceived and conveyed the passion, joy and sometimes irony surrounding great architecture, and brought it to us better than Sullivan himself could on the printed page. His technique is mild; a prologue tells about the construction of one of Sullivan's last buildings, a little bank in Columbus, Wis. (opp. p.). The client and his wife recall how it went; a letter from the architect to the builder is quoted. Then, after a brief, unsentimental biography of Sullivan, Szarkowski goes on with pictures, accompanied by quotations from diverse people: Andrew Carnegie, Thorstein Veblen, Frederick Jackson Turner, Frank Norris, Philip Armour, Ward McCallister, Kipling, and other unlikely architectural critics. Most of the quotations and some of the photographs have little direct bearing on buildings, but they give you an ascending sense of Sullivan's Chicago. Standing with the silent photographs they are lyrical, humorous and tragic.

This book is a work of great talent. The stirring thing about it, beyond its taste and depth, scholarship and compassion, is in the way Photographer Szarkowski included people in so many of his pictures. Sullivan always included them in his architecture; after these many years of progress they turn out to have the same faces.

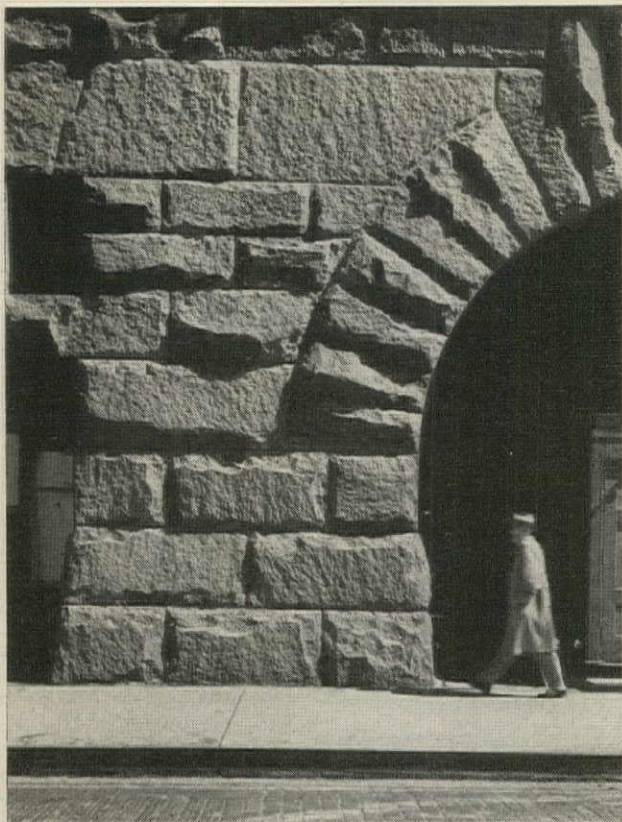
*THE IDEA OF LOUIS SULLIVAN. By John Szarkowski. Published by University of Minnesota Press. \$10



Wainright Building, St. Louis, 1890

Schiller Building, Chicago, remodeled 1935





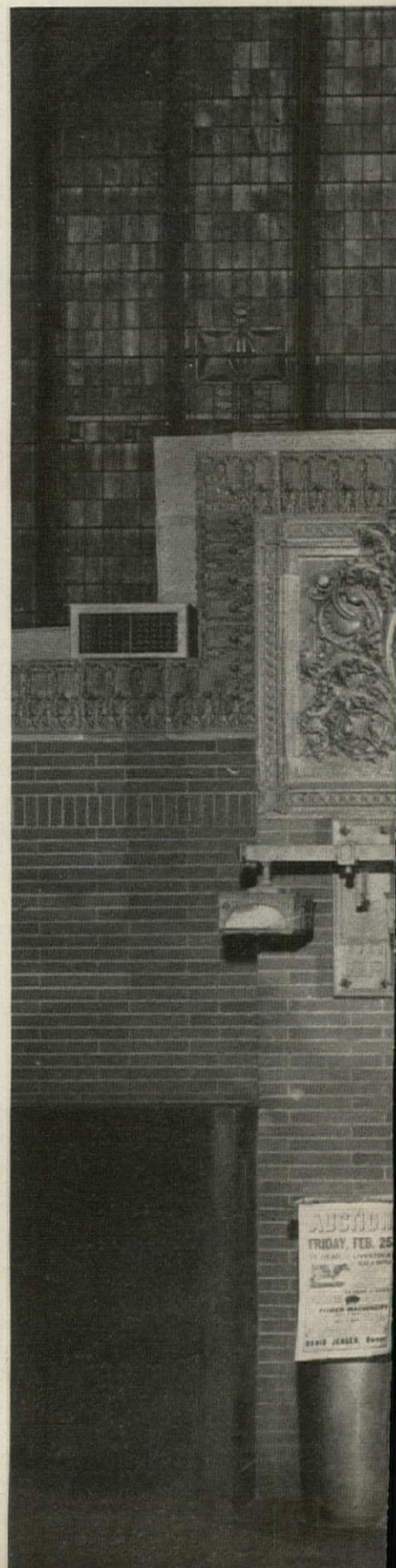
Chicago Auditorium, 1886-89
Stairway, Chicago Auditorium



National Farmers (now Security) Bank, Owatonna, Minn., 1907-08

"The layout of the floor space was in mind for many years, but the architectural expression of the business of banking was probably a thing more felt than understood.... From this search finally emerged the name of one, who, though possibly not fully understood or appreciated at first, seemed to handle the earth-old materials in virile and astonishingly beautiful forms of expression."

"The owners of this building feel that they have a true and lasting work of art—a structure which, though built for business, will be as fresh and inspiring in its beauty 100 years from now as it is today."—CARL K. BENNETT, vice president.



"I have struck a city—a real city—and they call it Chicago. The other places do not count. Having seen it, I urgently desire never to see it again. It is inhabited by savages. Its water is the water of the Hugli, and its air is dirt. Also it says that it is the 'boss' town of America."—RUDYARD KIPLING





What to do architecturally about those who only sit and sigh and yawn and ponder, and nod and sit (and stand) and wait

RECEPTION ROOMS

"While streams the evening sunset on quiet wood and lea,

I stand and calmly wait till the hinges turn for me."

—William Cullen Bryant, *Waiting by the Gate*

In the past year a substantial number of architects and designers have been queried by FORUM on the design of one or another kind of room. Their responses on how to make the most of most of the room types, from kitchens to bedrooms, have been widely divergent, but nearly all of these contemplative professionals are agreed on the best kind of reception room. It is the one with the right girl behind the reception desk—a stylish receptionist for the waiting women to look at out of the corners of their eyes, narrowly; a beautiful one for the men to stare at, and dream the minute hand away.

The most complete architectural definition of the aims and objectives of reception room design was offered by George F. Pierce Jr., of George Pierce and Abel B. Pierce, Houston, Tex., in his set of test questions:

"Does the visitor feel welcome? . . . Does the receptionist have control? . . . Is interoffice circulation possible without going through the reception area? . . . Is the area doing a real job of selling public relations, or is it just a run-of-the-mill showroom for company products? . . . Does it provide a telephone at a comfortable location for visitors' use? . . . Have the old magazines, dull trade literature, etc., been eliminated? . . . And, most important, is the area staffed with a beautiful young thing who can say 'No' so pleasantly that the caller walks out floating on a pleasant pink cloud of happiness?"

In reception room design, it would seem, humanism is usually triumphant. Most of the rest of the advice received from designers on how to bring this triumph about, how to make visitors comfortable and reasonably happy, falls into five categories, shown here with examples:



1

1. CONTEMPLATING NATURE

Few architects and clients can surpass the forms of nature as Frank Lloyd Wright did in his reception area in the Johnson Wax Factory in Racine (opposite); the next best thing is to wipe out the wall with a sheet of plate glass. In reception rooms this sometimes equals the difference between sitting in a woodland glade and in the examination room of the local precinct station.

All doesn't have to be shown; frequently just a touch of the outdoors is enough, as in the poetic tree silhouettes outside the reception room at the Center for Advanced Study in the Behavioral Sciences by Architects Wurster, Bernardi & Emmons (2).

Other introductions of the outdoors: (1) Grossmont District Hospital in California by Architects Pereira & Luckman; General Motors Technical Center (3) by Architects Eero Saarinen & Assoc. and Smith, Hinchman & Grylls Inc.; St. Joseph Lead Co. (4) by Architects Hellmuth, Yamasaki & Leinweber; Maryland office building of the Fairchild Engine and Airplane Corp. (5) by Architects Fordyce & Hamby Associates.

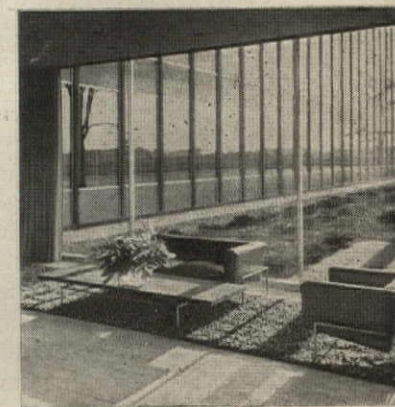


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PHOTOS: (1) ERWIN LANG; (2) MORLEY BAER; (3) © EZRA STOLLER; (4) MAC MIZUKI; (5) GOTTSCH-SCHLEISNER



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PHOTOS: (6) JULIUS SHULMAN; (7 & 20) REYNOLDS PHOTOGRAPHY INC.; (8 & 12) GOTTSCHO-SCHLEISNER; (9) HEDRICH BLESSING; (10 & 15) © EZRA STOLLER; (11) LIONEL FREEDMAN; (13) JOSEPH W. MOLITOR; (14) BEN SCHNALL; (16) J. ALEX LANGLEY; (17) FRANK LOTZ MILLER; (18) DEARBORN-MASSAR; (21) ROBERT DAMORA



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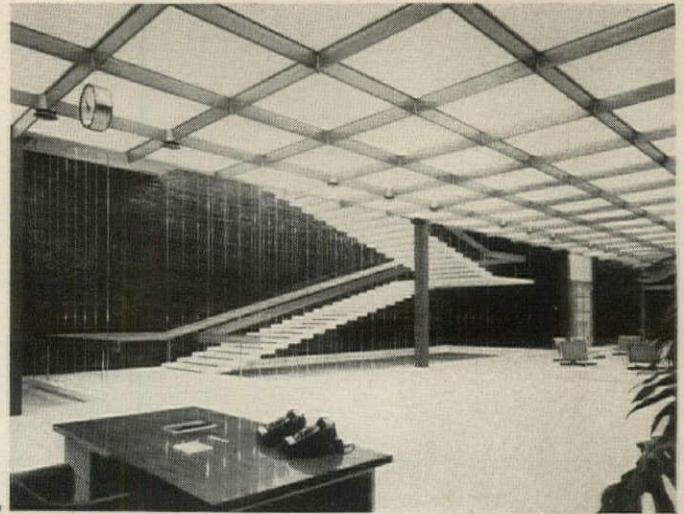
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2. BRIGHTEN THE CORNER

There is no better indoor civilizer than electric light, but none more difficult to define exactly in effect. Frequently, reception rooms can be made as pleasant with small intense lights, narrowly focused, as they can with floods of light from banks of luminaires. Compare all 22 reception rooms shown on these four pages, and try to formulate a guide other than this basic one: either the room has to be so bright that it has an inherent liveliness by virtue of sheer force of foot-candles, or it must use definite shadowing.

Architect William Beckett's own office (6) in Los Angeles has a reception room which exemplifies the latter part of this rule. In the main working area is mass lighting; its shadows liven the waiting area. In contrast, the domed inner garden beyond the reception room of the Andersen Corp. office building in Bayport, Minn. (7), Brooks Cavin, architect, pours light into the reception area naturally in the daylight hours, by courtesy of Mr. Edison at night.

A frequent technique is shown in lower photographs. This method lights the reception desk—and that receptionist—and lets the blessing reflect on from there: the reception room in the offices of Designer Raymond Loewy (8); the reception room of Designer Maria Bergson (9).



10

3. GATHER 'ROUND THE STEPS

This type is a strongly traditional solution. Whether the stair is a gleaming, stainless steel, flying flight of steps ((10), the famous stairway in the Styling Administration Building at GM Technical Center) or a row of elevator doors ((11), the Alcoa Building in Pittsburgh; Harrison & Abramovitz, architects, Altenhof & Brown, Mitchell & Ritchie, associate architects), its well is a logical place to interpose a waiting area.

The reception desk at the Fairchild Engine & Airplane Corp., Stratos Division, Long Island (12) sits in a deep, glass-walled shaft. Architects: Fordyce, Hamby, Strobel & Panero, with Raymond Loewy Corp. as design consultants. Shown in (13) is the reception area and dominant stairway in the Georgia Tech Library, Bush-Brown, Gailey & Heffernan, architects.



11



12



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14



15



16



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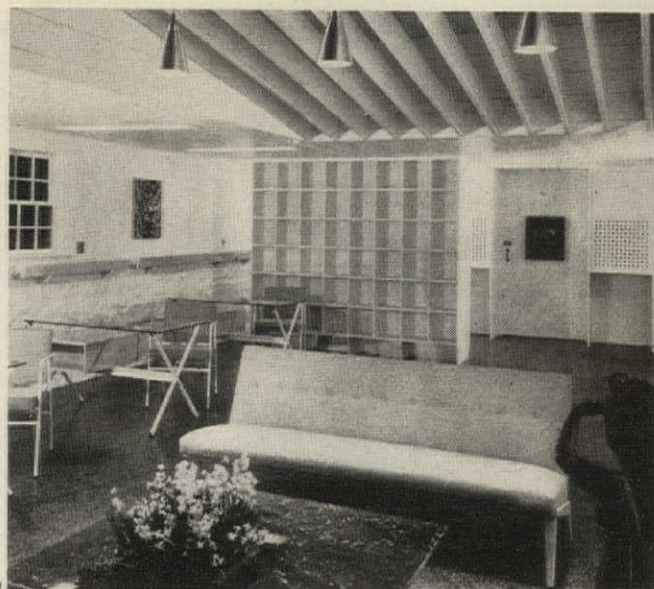
18

4. DIVERSIONS

Many clients think that sales are the healthiest diversions in the world, and their architects have sagely absorbed this opinion in the design of their reception rooms. The sales pitch can be hard or soft, tangible or indirect.

In the quintet of allusively decorated reception rooms above, the most delicate reference is probably the handsome array of fancy trowels (most of them gilded, some solid gold) used at past ceremonial cornerstone layings (16). Collecting these is a bona fide hobby of the president of Herbert Charles & Co., Inc., a realty firm occupying these premises in New York. Designer Michael Saphier made a fine display of a part of the collection. (This handsome office design will be shown in more detail in next month's issue.)

A more direct approach is shown in the reception gallery in the executive offices of Olin Mathieson Chemical Corp. (14) by Designs for Business Inc., and in the Lewinson Opticians (18) in Seattle by Bennett Douglas. Both display samples, but in interesting ways. In the men's dormitories at Tulane University (17) by Freret & Wolf, Andrey & Feitel, Ricciuti, Stoffle & Associates, the focus is art. In the Northwest Orient Airlines New York offices (15) it is a map of the Orient; Carson & Lundin, architects.



19

5. THE MERGER

This type represents the partial tearing down of the wall between reception room and working room, perhaps the most effective means of introducing someone to the operation of any office. The visitor keeps busy watching, which would have been appreciated by Thoreau, who sighed: "As if you could kill time without injuring eternity." At the Brookfield Center, Conn. office of Designer Lester Beall (19) this idea prevails strongly. At the Andersen Corp. offices (20) by Architect Brooks Cavin, it is expressed more cautiously. In the CBS executive offices in New York by the Knoll Planning Unit, the visitor watches the secretaries at work while waiting at an inner reception space to see the boss.



20



21





PHOTO: WARREN SIGMUND



Citizens group, headed by Carl Freese (front row, second left), rallies support for program, meets monthly with mayor (at desk)

HOW TO GET RENEWAL OFF DEAD CENTER

For New Haven, it took a mix of three elements:

a good plan, a mayor willing to stick his neck out, and an unusual citizens organization

On a gray afternoon in September, the mayor of New Haven left his partly finished lunch at Mory's, climbed into the cavern of his official Cadillac, and headed back, somewhat circuitously, for his office.

Halfway along the route, the mayor nudged his companion and waved to a new playground. "We built that," he said, "and we told the people 'this is redevelopment.'" A little farther, and the car passed a school under construction. "Now this is redevelopment, too, and that's the way we've talked about it to the public." Finally, the limousine nosed into the narrow streets of a slum rat nest—an area slated to be cleared completely. "This, of course, is real development," the mayor said. "But do you know something? By the time we got around to this phase, to all the problems of relocating families and businesses, people weren't half frightened of redevelopment.

They'd heard the word before, seen the results, and accepted it. They understood that all this was for the good of the city."

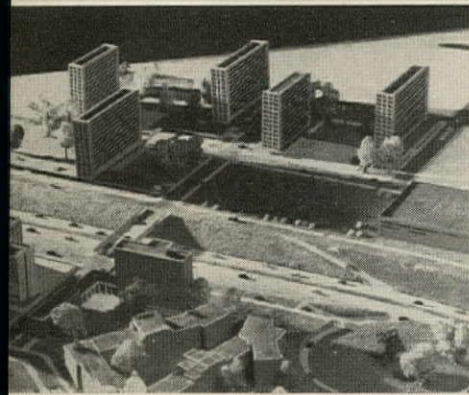
For Richard C. Lee, an intense, 40-year-old Democrat who is serving his second term as New Haven's mayor, this creep-before-you-walk approach to redevelopment has been one of the subtler parts of a sustained and highly energetic campaign that today has brought New Haven to the verge of a full-scale attack on its slums and blight. Whatever the political wisdom of that campaign—and Lee, for one, believes that there are "very great political rewards" for the party that convinces the people that "it can best succeed in this mighty task"—the results are unmistakable. New Haven today fairly seethes with cooperation and common hopes. Between City Hall and community, there is a degree of rapport and coordination that for the first time in years seems to offer a real chance of bringing to life the plans the city has talked about for so long.

By last month, this was the state

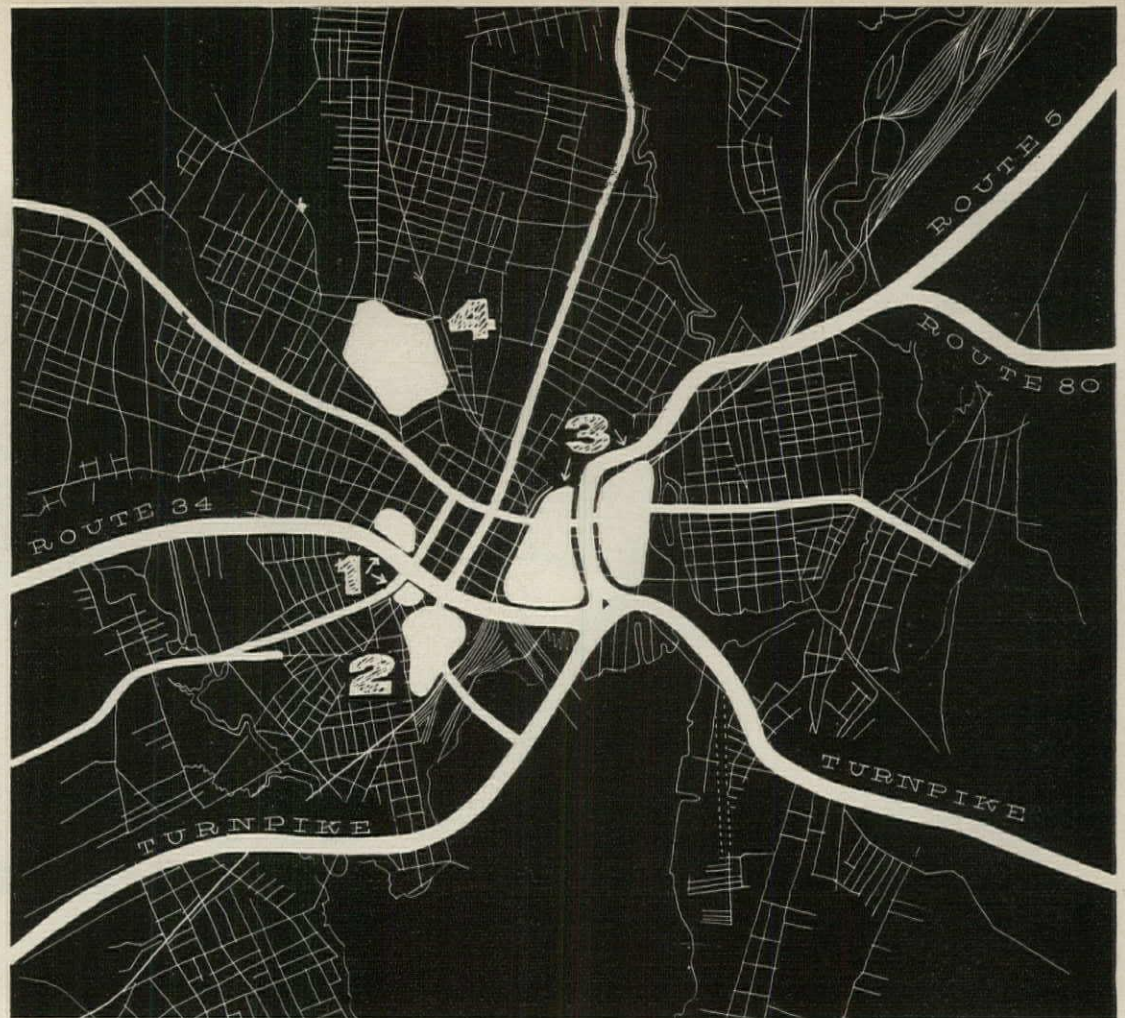
of things in the city that is America's oldest planned community:

► Southwest of the city center—just three blocks from the heart of downtown—one of the city's oldest and worst slums, the Oak St. area, is at last breathing its last (plans have been under way to clear it since 1951). Under the Title I renewal program, the city has signed a loan and grant contract with the federal government which will pour \$2.5 million of US grant funds into a project whose net cost will run to \$3.8 million. Involved are 42 acres of residential and business slum which will be cleared completely and replaced with three or more high-rise apartment buildings (space for 700 middle-income families) and a 500,000 sq. ft. office building for Southern New England Telephone Co. The city is now assembling the site, plans to auction off the residential segment in November, hopes to have it in the hands of a private redeveloper by year's end. Four syndicates are known to be looking at it, with a team of Yale University and Real

←
Highway planning set stage for downtown renewal. This expressway—now Connecticut Turnpike—skirts city core (top).



Oak St. project (No. 1 on map) is farthest along of renewal plans, will follow general lines of symbolic model (picture). Like Oak St., other projects—South Central in the business district (2) and Wooster Square (3)—are closely tied to new traffic net. Biggest area under planning is Dixwell Negro neighborhood (4), where work is just getting under way.



Estate Operator Roger Stevens rated as the hottest prospects.

► In the east-central part of the city, a combined renewal-clearance project covering 265 acres is now moving into the final Title I planning stage. The area here, centering around Wooster Square, was once one of New Haven's finest neighborhoods. The plan is for a joint assault by the city and neighborhood groups to restore its former elegance, eliminate the blighting influence of traffic, and clear out non-conforming land uses. The finished proposal should be ready for the Board of Aldermen next spring.

► At the center itself, a 105-acre area embracing the present business district and the wholesale-retail food center to the south of it is now under advanced planning for commercial redevelopment and residential renewal. Details are very much under wraps. But Lee has said the project, which runs through the heart of downtown right to the edge of the central green, calls for a huge shopping center, a new high school and probably apartment housing.

► To the northwest, the city's biggest

project—293 acres of renewal with a minimum of clearance—is now getting under way in the Dixwell Ave. Negro neighborhood. Planning is still in the very early stages.

All this is a rich redevelopment diet, and whether the city will be able to digest it in the next few years is a serious question. Quite apart from its financial requirements, the program is bound to present tremendous problems of assimilation for a community with as old a way of life as New Haven's. But however the present projects fare, they can in no way detract from the fact that the city has had the courage to tackle its future in a grand way and, even more important, that it has found a way of doing it together.

A farsighted plan

How has New Haven managed it? With one important exception, the city in the early postwar could have fitted the description of almost any old US community. The exception was that it had a remarkably farsighted plan for doing something about its age and decay—a blueprint drawn in 1941 by Planner Maurice

E. H. Rotival and since updated several times. This has been the first element in New Haven's resurgence.

Rotival's theory was that the city had to rely for its prosperity on its traditional role as a traffic distribution center, and that the problem was to find a way to revive the city, to feed it, and to consolidate it against further disintegration and blight. On the thesis that general interstate traffic, though not intended for downtown, ought to be brought close enough to the core to enter if it wanted, Rotival laid the route for a bypass artery linked to two expressways that would cut through the central and eastern parts of the city. Within this traffic net, and oriented to it, he and Norris Andrews, director of the City Plan Commission, later pinpointed nine specific areas for redevelopment.

As it turned out, this plan, which was generally supported by the Chamber of Commerce and much of the community, proved of tremendous importance. Because the city was able to present its traffic ideas in the context of an over-all scheme for community development, it even-

tually brought the state highway department around to its way of thinking. (Rotival's route for the bypass is now the path of the new Connecticut Turnpike; the two expressways—the Oak St. connector and the relocation of Route 5—will cut through the center essentially as he drew them.) And because it succeeded, the Oak St. and Wooster Sq. renewal projects, both of which are tied inextricably to the traffic net, are now possible.

A strong mayor

Whether through dedication to the idea of renewal, or shrewd recognition of its political potentials, Lee, when he took office in 1954, seized on this plan and made it the win-or-lose theme of his administration. Last fall, he staked his chances for re-election on it, and after once having acquired the distinction of losing a mayoralty bid by two votes, won handily with the biggest plurality in the city in nearly 20 years. In providing political leadership for the program, Lee has provided the second element for the resurgence.

Lee believes that too many communities have assumed that renewal is a job for planners alone. To him, the program is so "unbelievably complicated" that it calls for the most skilled administrators, a breed, he sadly confesses, that is annoyingly rare. Lee's worries about the processing of the program led him, in 1955, to set up the post of development coordinator in City Hall and to restaff the redevelopment agency under a seasoned hand. To the coordinator—35-year-old Edward J. Logue, a Yale Law School graduate and one-time legislative secretary to Chester Bowles—Lee has handed the responsibility for tying together the work and plans of the Redevelopment Agency, the City Plan Commission, the Parking Authority, the Traffic Engineer, and the Bureau of Environmental Sanitation, which enforces the housing code. Logue, who acts as the mayor's deputy and who sits within the sound of a raised voice of Redevelopment Director H. Ralph Taylor, is not only supposed to see to it that one hand of the city knows what the other is doing in redevelopment, but that all hands are doing what they're supposed to in terms of the common goal.

Though this internal coordination has unquestionably speeded the city's renewal mechanics—perhaps as much as federal red tape will allow—it is safe to say that this alone could never have produced the community support that New Haven has mustered for renewal. That job has taken leadership, not just from City Hall, but from every segment of the community.

As a one-time newspaper man and former director of the Yale News Bureau, Lee has probably been more aware of that leadership requirement—in terms of its public relations aspects—than any US mayor. His A B C handling of the renewal program—the labeling of relatively simple improvements as redevelopment to win understanding for the bigger projects—and his sloganizing ("An Awakened New Haven Builds for the Future") reflects this. So does his constant pounding on the renewal theme; his organization of a junket to Philadelphia for 75 of the city's leaders so that they could see what others had done with renewal; his emphasis on working through neighborhood groups. And so does the Citizens Action Commission, which typifies the third and final element in the resurgence—community support.

A working citizens' committee

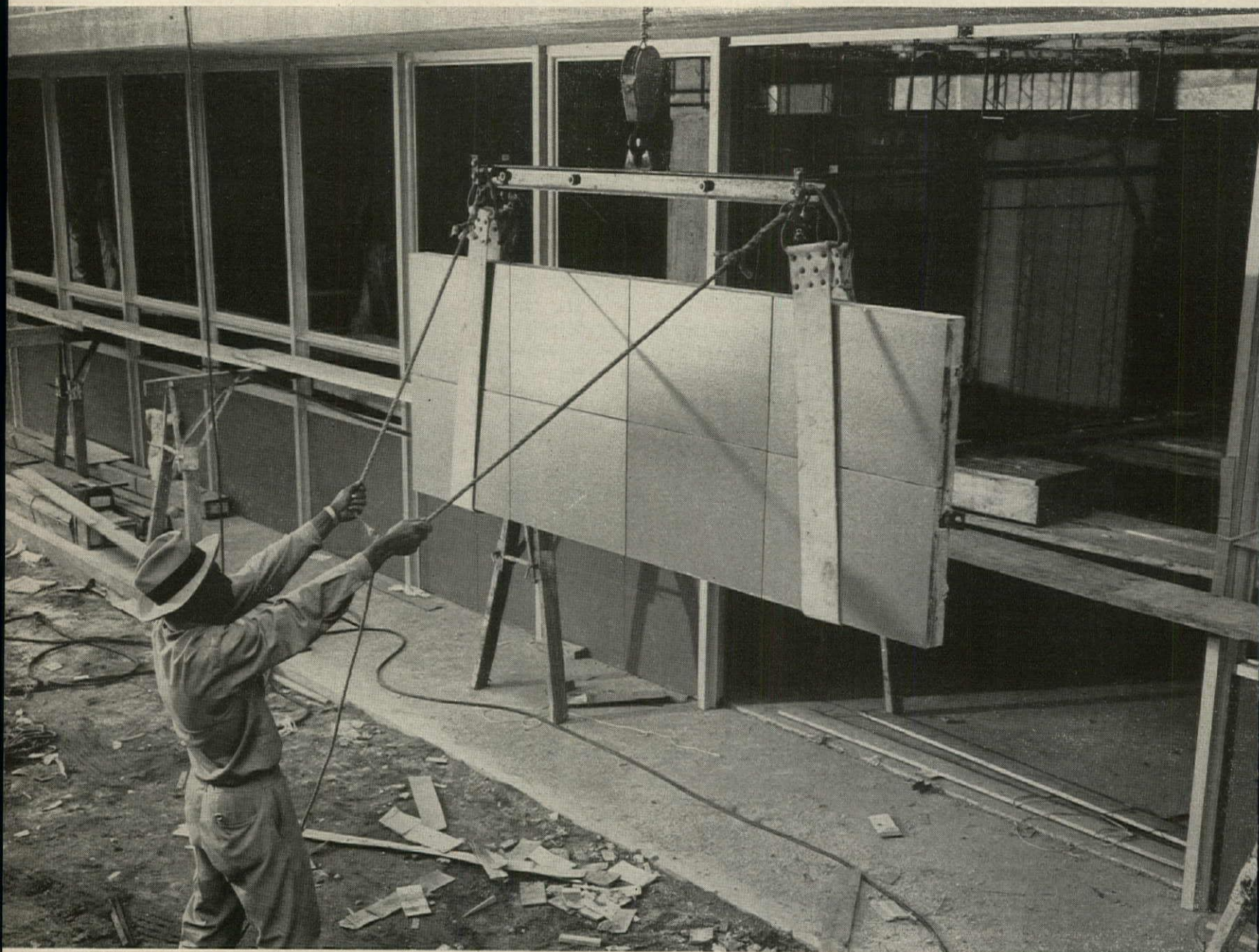
The CAC was created by Lee in Sept. '54, with the express purpose of stimulating and winning public backing for redevelopment. Though it bears some resemblance to St. Louis' Civic Progress, Inc., CAC has a broader membership, one that includes labor leaders, educators and public officials, as well as businessmen, and it has official status. Carl G. Freese, president of the Connecticut Savings Bank, has been its chairman from the start, and its two vice chairmen are A. Whitney Griswold, president of Yale, and Merritt Vanderbilt, president of Greist Manufacturing Co. The commission has 14 members at large, six action committees, which are each concerned with a particular aspect of city existence and which at times have involved as many as 300 people in their projects, and a paid executive director, Gordon Sweet. Up till now, it has had a budget of \$30,000 a year to operate on, with the money

coming from grants from the New Haven Foundation.

Once a month, CAC meets with the mayor and his staff. Far more than a scunding board in these sessions, the commission may assume a planning function by making specific recommendations on a proposed project, or it may help set policy by charting the lines the city should follow in attacking its problems. Although CAC's over-all purpose has been to rally the support of neighborhood, civic and special interest groups for what it believes the city should do, Lee has never hesitated to use it for basic spadework. In two years it has found itself involved in making an economic study of a proposed ship terminal (its conclusion: not enough cargo to warrant the cost); has drafted an enabling bill for the state legislature to permit cities to set up public industrial development corporations; and has helped create a business relocation office—possibly the first in the country—to ease the blows of clearance for small business and to help it resettle. In the campaign for a regional market, a drive that led to legislative passage of a bill authorizing the State Marketing Authority to build a \$2 million produce center on filled land near the harbor, CAC not only undertook site and cost studies, but helped to carry the fight in the Senate and Assembly. Its showing that Republicans wanted the bill as much as Democrats gets much of the credit for clinching passage.

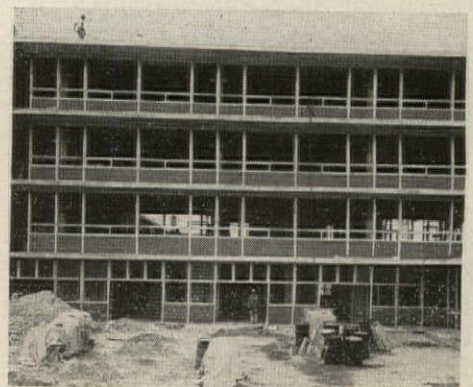
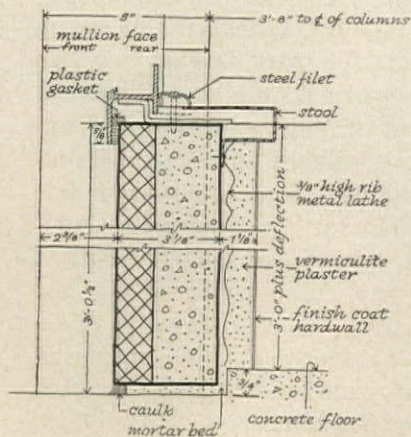
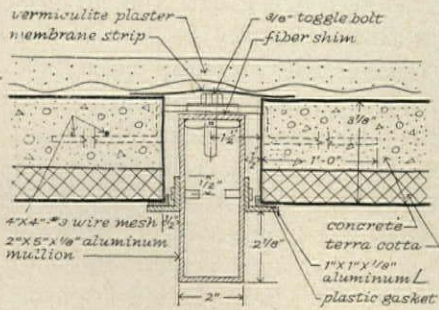
To Lee, this sort of cooperation provides some insurance for the mayor who is incautious enough to crawl far out on the urban renewal limb. The political risks of renewal—the dangers of miscalculation that may lead to overthrow from office—Lee believes are great, and he suggests that this may be one of the big reasons why so many cities have been slow to take to the cure. But, as he told the American Municipal Assn. last year: "It is my frank and blunt opinion that urban renewal is going to work successfully, properly—yes, and magnificently—only in communities where the chief executive is willing to take the calculated risk of serving as the catalyst." In his own case, with cooperation, he still seems willing.

TECHNOLOGY



PHOTOS: DAVID P. SHELHAMER, COURTESY GLADDING-McBEAN & CO.

NEWEST CURTAIN WALL in building field is this ceramic veneer panel, for hospital in California. Structural clay industry is counting on this development and others to put it back into competition with metal curtain wall. New panel is heavy. This one weighs 900 lb.



NEW HOPE FOR THE BRICK WALL

After standing pat for 25 centuries the clay products industry is now betting \$500,000 a year on research. And it's beginning to pay off in the form of prefab curtain walls and a host of other promising new developments

A remarkable change is taking place in the brick and tile industry, an industry that, historically, has resisted change with consistent force. The hospital wall shown on these pages is evidence of what is happening.

The new Methodist Hospital, in Arcadia, Calif., is no extraordinary piece of architecture: a trim, handsome structure, with a skin of glass and thin, green spandrels. But it is a significant new building, because its spandrels are *not* made of metal, but of a clay—ceramic veneer—backed by lightweight concrete. Further, the spandrels are just 3" thick, which is thin indeed for a ceramic wall; and even more remarkable—the spandrels are prefabricated, once a nasty word in the structural clay industry.

This is by no means the only new development in the changing world of structural clay; but it is the most recent and, potentially, one of the most important. Also, it is typical of a new kind of thinking that may save this ancient industry from oblivion.

Actually, this new panel is really not such a bold departure when it is looked at in perspective. Thinner panels have been made for thousands of buildings—of metal. Prefabricated panels too—of metal. But this break with tradition for clay is important to the designers of tomorrow's buildings, because it means that two elegant materials—ceramic tile and brick—which had, to many, become too cumbersome and too slow to work with, may once again be competitive with metal and porcelain enamel, the two materials that now have such a firm grip on the curtain wall market.

A wall of clay

The story behind the new hospital and its new panel involves three organizations: the Architectural Terra Cotta Institute, which developed this prefabricated panel; Gladding, McBean & Co., its manufacturer; and the Structural Clay Products Research Foundation, the newcomer which is

carrying a heavy research and development load for the entire structural clay industry.

Traditionally, ceramic veneer walls had been installed in two stages: first, the backup wall was put into place; then the veneer facing was attached—either with an adhesive material or with small anchors, that held the veneer firmly to the wall. Either process was slow and costly.

With prefabrication techniques, the wall sections now are installed as single units—veneer coupled to backup wall—which means a great reduction in erection time, plus a lower cost for the units themselves.

Two panel sizes were prefabricated for the Arcadia hospital: a 30 sq. ft. section and a 15 sq. ft. section. All panels were cast in the plant, using a large, vibrating table—the same kind that is used in the manufacture of pre-cast concrete. It took just a few minutes to cast each panel. Within an hour, the table could be tilted and the panel slid onto a pallet and stored. After two or three days of aging, a panel could be hoisted into place on the building.

Working with precast panels, the contractor gained in several ways. First, of course, he could install the panels in less time. Also, the panels were much thinner; if the veneer had been attached by one of the old methods, the wall would have been 8" thick instead of 3". It is estimated that the panels, installed, cost between \$4.50 and \$5.50 per sq. ft., which was only slightly more costly than installing a veneer facing alone, by hand-set method, to an existing wall. Thus, the precast method eliminated most of the cost of installing a backup wall.

This cost was lower than a metal wall bid on the same job. But weight, though down considerably from any existing ceramic veneer wall, is still quite high. The 30 sq. ft. spandrels weigh about 30 lb. per sq. ft., or about 900 lb. each. A metal panel that size would weigh only 200 lb., or even less.

Weight is going to be a drag on future structural clay walls, whether they be faced in terra-cotta or brick, for metal curtain walls offer the architect and contractor a lighter-weight, easier-to-handle alternative. (Most existing metal walls weigh just 6 or 7 lb. per sq. ft.). The Structural Clay Products Research Foundation says that it has developed a panel which does weigh considerably less than the 30 lb. per sq. ft. panels on the Arcadia Hospital,



1

INSTALLATION is faster than traditional ceramic veneer paneling, and panels themselves are cheaper to produce. Here (1) gasket is placed on ends of panel as it slips down into cement mortar bed; (2) toggle bolts secure panel to mullion; (3) panel is adjusted, using fiber gasket and metal shims; (4) calking from rear seals base of mullion; (5) membrane strip is placed over mullion, preparing wall for 1" of plaster. Cost of this wall will be \$4.50 to \$5.50 per sq. ft.



2



3



4



5

BRICK WALL *continued*

but even this newest panel is relatively heavy: 15 to 18 lb. per sq. ft., with a thickness of 1 $\frac{3}{4}$ ".

And walls of metal

Of course, a single development such as this new wall panel does not constitute a revolution, particularly in the erupting field of the curtain wall. The advance during the past five years has been so swift that you can almost pick a material at random, and somewhere you will find somebody wrapping it around a new building: aluminum, stainless steel, bronze, copper, porcelain enamel—even glass.

Indeed, the transition from masonry to metal has come so suddenly, and with such decisiveness, that the real question now is whether the renaissance in clay has come too late.

Until this decade, the only important development to come forth for the structural clay industry in a century was the introduction of machinery to shape clay products, and that happened in the 1870's. Even today, brick is made in much the same way that it was made in the days of Nebuchadnezzar, 2,500 years ago, when the Babylonians discovered that firing made brick harder and more durable than mere sun baking.

For years, it didn't really matter that brick and tile were made from ancient recipes. The products were good. The market was healthy. Competition wasn't terribly serious. Then came the first shocking blow: The Great Depression. Of the 2,000 brick and tile manufacturers in the US, less than 500 survived the lean times of the early thirties. Lumber took a great slice of the residential market. Only now is the clay industry beginning to regain its position.

But after the Depression, for the depleted brick and tile producers there still remained the multistory building, a lovely, impermeable market. Then came the second shocking blow: the metal curtain wall.

Porcelain enamel moved first and fastest. It captured a \$2 million share of the curtain wall market in 1947, then expanded; its share this year will be \$60 million. Then aluminum, which was little used in 1950, built itself a monument—Pittsburgh's Alcoa building—and since has rocketed: only 50 aluminum-clad buildings existed in 1952; by this year, the number had jumped to some 400.

Despite the surge of the metals, the manufacturers of structural clay products have been able to show yearly gains. Brick and tile sales have inched

ahead at roughly a 3% annual rate. Industry sales last year were \$255 million. But gains have come because of three quavering assets. The architects have provided one: from an esthetic view, brick and tile will always have qualities which are preferred for certain types of buildings. A second asset has come from the novelty of metal: many of the early metal curtain walls have been troublesome; the big trouble has been with water leaks. Finally, building codes have given brick and tile an edge: existing codes in many cities permit the erection of metal walls, but require the walls be backed by thick walls of masonry.

But each asset is losing its value. Building codes, written in the age of wood, are being rewritten, or simply waived, to permit construction of metal-clad buildings. Too, the metal wall has had time to work out from under its troubles. Even the architect is swinging away, for metal, he finds, offers certain esthetic qualities too.

And then came progress

Were it not for one additional factor, the structural clay industry would surely be headed for trouble. Ironically, this same factor—technical progress—is one which the industry for many years had diligently ignored, and, in more recent times, had bitterly fought.

Technical progress, to the brick and tile industry today, is symbolized and, indeed, incorporated within a sturdy new building (of brick) that stands on 16 acres of ground outside Chicago. This is its workshop: the Structural Clay Products Research Foundation, at Geneva, Ill. (Photo, top opp. p.).

Until four months ago, the industry had no research center it could call its own. It has been just six years since it has had the mere outline of a research program. That had been its main trouble.

In one respect, a brick manufacturer is like a farmer. He is one of more than 500 producers. His market is geographically limited, because he cannot compete with other producers at distant points; transportation costs restrict him to jobs that are close to home. Thus, he cannot grow to giant size, nor can he afford much time or money for research. For example, the largest manufacturer in the US, Natco Corp. of Pittsburgh, had a sales volume of only \$20 million last year, and this volume came not from one plant, but from 16, in four states and Canada.

Contrast this with the fabricators of porcelain enamel wall panels. Here, there are just a dozen companies, each

with a long reach to distant markets.

Although its research laboratory is new, the brick and tile industry had known as long ago as 1948 that things just weren't right. In 1948, the industry's trade association, the Structural Clay Products Institute—which goes under the rather quaint name of "Skippy" because of the way its initials articulate—asked Arthur D. Little, Inc., the Cambridge (Mass.) consulting organization, to study the industry and recommend a course for its future. Little's key recommendation was an industry-sponsored research program. Also, Little screened hundreds of scientists to find one whom it would recommend to head the program. In 1950, with a director of research, Robert B. Taylor, who had been assistant director of research at Owens-Corning Fiberglass Corp., and a staff of one, Paul Johnson, who had been a member of the engineering staff of SCPI, the Structural Clay Products Research Foundation went to work. For the first five years, Taylor and Johnson, who is now deputy director of research, worked in Chicago, principally at the Armour Research Foundation. Under a special, and somewhat unique, agreement, Structural Clay Research used Armour facilities and Armour scientists, under Taylor's direction, to probe into clay's empirical history and its uncertain future.

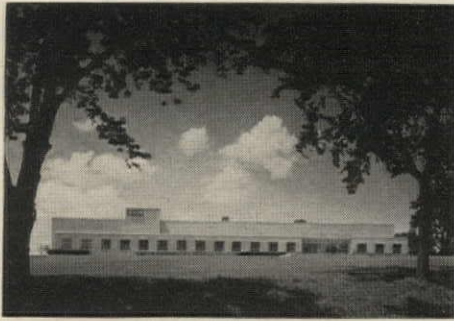
From contributions of nearly 100 brick and tile manufacturers, the research program started out with a fund of \$1.25 million, to be budgeted over a five-year period. (Today, in addition to its own research center, which cost about \$500,000, its annual budget has been raised to \$500,000.)

At first, just a brick

The first product of Taylor's research program was a new brick, called SCR brick, introduced in the spring of 1952. It wasn't a sensational development in the true research sense; it was simply a bigger brick—12" long, including the width of the mortar joint, and 6" thick, which made it about twice as long and 2" thicker than conventional brick. But it was a logical new product, for it enabled a mason to lay twice the wall area in a day that he had been able to lay with conventional brick, and no backup materials were needed.

Today, some 72 companies are licensed to manufacture SCR brick. Since its introduction, 30,000 homes have been built with it, at prices that usually compete with wood frame.

The next product expected to come from Structural Clay Research is one



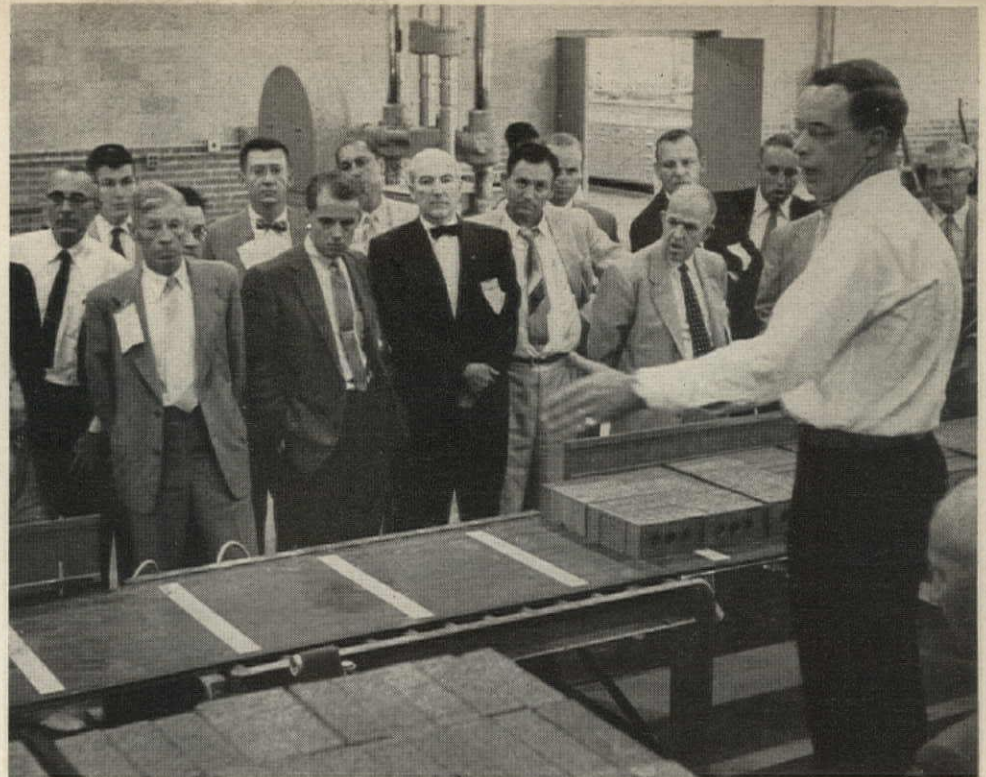
HEIDRICH-BLESSING

HEART OF RESEARCH in structural clay industry is Structural Clay Products Research Foundation, in Geneva, Ill. Manufacturers are too small to carry their own research programs, so they've banded together in industry-wide program. SCR Center was built early this year.

called SCR re-nu-vener. It's a $\frac{3}{4}$ "-thick brick, designed for the house renovation market. At a conference on masonry construction, held two weeks ago by the Building Research Institute, in Washington, Taylor struck an optimistic note for this product. He said: "If this new product reaches 10% of its potential market, it will provide a \$58 million annual market for our industry in the remodeling field—a field in which we've never had a major foothold."

Thin brick veneer has been tried before, but never with great success. Taylor sees a good future for this newest try, for a number of reasons. One reason is that the thin bricks can be attached quickly; special metal clips hold each brick in place, and each clip is attached with just a single nail; also, the brick can be moved laterally—to position it properly—before it is mortared into place. Earlier thin brick veneer didn't always look quite like the real thing, particularly at corners. But Taylor's development includes an L-shaped corner unit that makes the finished job look like a genuine brick structure. Re-nu-vener is being test marketed now in Columbus, Ohio.

Of course, neither SCR brick nor SCR re-nu-vener is an answer to the metal curtain wall. In this area, Taylor's group is working on several developments, the most important of which is the prefabricated wall section—for both partitions and exterior walls, made either of brick or tile. He said last month: "We have developed an extremely fast-setting cement grout which enables us to produce 2"-thick panels without large mold investments.



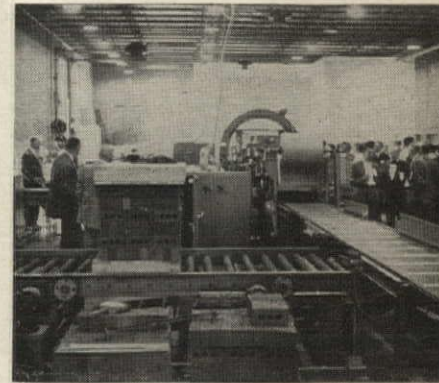
HEAD OF RESEARCH for clay industry is Robert B. Taylor, above, right. He directs industry's \$500,000 research program. A newcomer to ancient clay industry, Taylor was recruited from glass industry when clay research program was set up six years ago.

We estimate that these panels can be produced at the plant for \$1 per sq. ft., and installed for another \$1 per sq. ft."

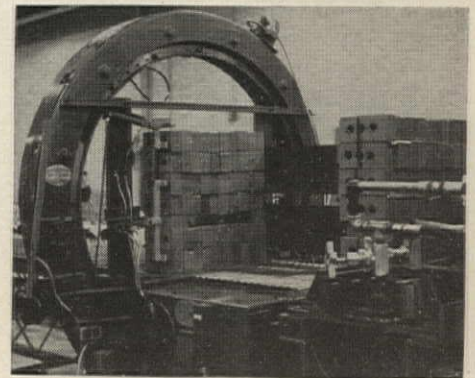
At the Geneva laboratory, Taylor and his team—which now includes 31 scientists and engineers—are experimenting with both terra-cotta panels and panels of brick, and, too, with a number of new kinds of mortar, for quick-setting mortar is essential to an efficient prefabricating process. They have experimented with various plastics as mortar additives, hoping to find a new bond that is both high in tensile strength and quick to set. They have one now that gives a strong bond, sets in 15 minutes, instead of 24 hours.

Then a diet

The industry research program is looking closely at its weight problem too, because a heavy-weight product is not only a drawback at the building site, it is also an expensive item to ship. This project is just now getting into the pilot plant stage. But Taylor knows already that a lighter clay product can be produced. He says that this development will permit a 40% reduction in weight for structural brick and tile units: "In other words, a current 5 lb. brick will weigh 3 lb., and the 8 lb. SCR brick will weigh less than 5 lb." He says too that the water absorption of such units will not be appreciably higher than current clay bodies. Further, the new process will permit the production of lighter-weight units by nearly every manufacturer in the industry research program, without requiring that the manufacturer discard his existing facilities. He can even use



KNOTTY PROBLEM for brick industry is materials handling. One of Taylor's current projects is development of automatic packaging machine above, which will handle 100,000 bricks a day with one operator.



AUTOMATIC PACKAGING MACHINE is working now at SCR Center. It isn't trouble-free yet, but Taylor hopes to see commercial versions at work in a couple of years. Hand-packaging, which industry relies on now, is slow, costly operation.

BRICK WALL *continued*

the same kinds of clay that he now uses. Also, because the new brick will be less dense, grinding it to exact size will be, in Taylor's words, "an economic possibility."

For the past three years, Taylor has been working with an eastern furnace manufacturer on the development of a new furnace that will produce the lightweight aggregate for these new bricks. A pilot model will be in operation later this year. By December, Taylor hopes pilot production will amount to 50,000 lightweight bricks a day.

The process works like this: The new furnace takes small particles of clay, about the size of grains of sand; it expands and fuses the particles to five times their original size. The particles come out of the furnace as multicellular spheres. These are then blended with unburned clay and the mixed batch is molded and burned, just as ordinary clay would be.

Of course, the lighter bricks are not as strong as ordinary brick, but ordinary brick doesn't really have to have all that strength anyway. Ordinary brick has a compressive strength of roughly 10,000 lb. per sq. in.; the new brick's compressive strength will be above 3,000 psi. Thus, the new brick sacrifices unneeded compressive strength to save weight.

It will have still another advantage: the new brick's dimensions will be easier to control during production. Regular brick is difficult to produce to precise dimensions, because you never quite know how much water or how much organic matter is contained within the clay, which means that shrinkage during firing is apt to vary from one batch to the next. Because much of the new blend has been pre-fired, the problem of shrinkage is considerably reduced. Also, of course, the new bricks can be ground to size if precise tolerances are necessary.

It is still too early for anybody to know how much it will cost to produce this new brick, though it will certainly be more expensive than regular brick. A new furnace, for example, will cost \$75,000 to \$100,000. It will be another year before this new lightweight aggregate is commercially available. Meanwhile, the pilot furnace will supply the new expanded clay to the Structural Clay Research labs and to a few brick manufacturers for experimental work.

The new furnace holds forth another possibility for the future. For panel walls, where load-bearing requirements are secondary, it is possible that structural clay products of still lighter weights will be available, simply by

using a greater proportion of expanded clay in the blend—perhaps $\frac{3}{4}$ expanded to $\frac{1}{4}$ regular clay. Such products would have lower compressive strength—say 1,000 to 1,500 psi—but their weight would approach that of some of the lighter curtain wall materials that exist, such as stainless steel and porcelain enamel on steel.

Labor savers

But until that far-off day, when the brick industry turns full-force into pre-fabrication, it must live with a serious materials handling problem. Here is an industry that for centuries has turned out millions of small, identical products every day, but has never found a satisfactory way to handle them—except by hand. Look inside a brickmaking plant, and you will find a team of 11 or 12 men busily packaging bundles of brick for shipment. When you consider that it costs only a few cents to produce a brick, it's a short step to the conclusion that you cannot afford to give much labor time to its handling, whether in the plant or at the site. The research people have been looking at this problem too, though it's likely to be some time before manufacturers see commercial results. At present, there is an automatic packaging machine in operation at the research center—an elaborate affair—designed and built by Taylor and his crew, that assembles and packages 62 bricks at a time and stacks each set in such a way that it can be handled by truck at the building site. The machine uses several sets of photoelectric cells that tell it when to work, when to stop, and a complex series of hydraulic lifting and handling devices that move the bricks from place to place. From the time the bricks are fed into the machine, until they move out, neatly packed and wrapped tightly in steel bands, it takes just one man to keep the process under control. Taylor's group has had only a few months to tinker with the machine. He is very cautious about discussing its future value to the industry—except to say that he is optimistic—because he feels that it may be a couple of years before many commercial versions will be in use. But then, says Taylor, the manufacturer will be able to package 100,000 bricks a day with a minimum of plant labor.

Brick packages are used on many major building projects now. But no manufacturer has an automatic packaging machine; he must use an 11- or 12-man labor force to package his product. Also, a good many of the available hand-packed packages are unsatisfac-

tory even to the masonry contractor—usually because the package is too big and too unwieldy.

The SCR packaging machine will reduce labor costs in the plant, and, too, it will save time at the building site, because the size and shape of the package is such that it can be handled either in multiples, by fork lift truck, or singly, by hand truck. Also, it is expected to be practical for either house construction or multistory construction.

At a building site, of course, there is the other half of the materials handling problem. Here, the 62-brick package will be a time-saver. The few tests that have been made to date demonstrate that. For example, one contractor—on a small house—says that he saved more than \$18 per 1,000 bricks by using the packages. (He got his bricks from the research center, because manufacturers are not shipping the package; it isn't economical to do it by hand-strapping methods.)

The continuously adjustable scaffold, another new SCR development, is said to increase productivity by 20% to 25%. With the new scaffold, the mason is always at optimum working position and his supply of brick and mortar are always at a convenient height and location behind him. Scaffolds of this type are now on the market (photo, opp. p.)

Another development, which people at Structural Clay Research do not want to talk publicly about yet, can boost productivity still further. In combination with the scaffold and a marked mason line, this newest development will increase productivity by 50% to 100%, according to Taylor. A number of buildings have quietly gone up in recent months trying out all of these developments. Taylor says that they have proved to be workable and that masons have been receptive to them. (FORUM will report on these developments later.)

The future

As anyone familiar with the history of the building industry knows, the question of how long it will take these improved masonry techniques to be adopted throughout the industry will not be determined strictly on their merits, but also on their acceptability to the men who must put them to work. Unfortunately, the building industry as a whole has been content to ride for years on yesterday's ideas, and has been slow to adopt new production techniques.

Despite its conservative attitude in the past, Taylor is confident that the

industry in the future will accept change. He argues that there are many contractors and labor leaders who are as alarmed at the progress of the metal curtain wall as are the most enlightened brick and tile manufacturers.

Last month's industry-wide meeting in Washington, which was set up by the Building Research Institute of the National Academy of Sciences-National Research Council, was still another hopeful sign. The two-day meeting, attended by several hundred people from the brick and tile industry, marked one of the few times in recent years that members of the industry were willing to get together and exchange ideas. In the past, guards were held high, with everybody seeming to fear that somebody was going to slip away with a trade secret—even though there were few secrets, and fewer worth taking.

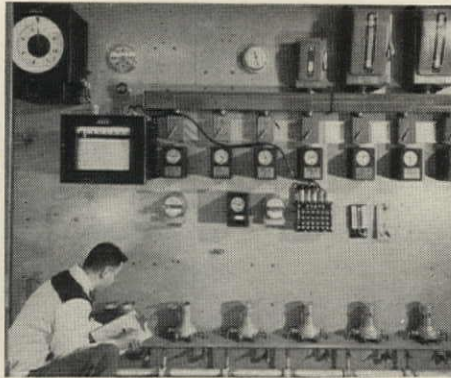
Because of this new spirit among the makers of products of structural clay, there is a feeling of optimism in the air. The metal wall be damned, the brick and tile manufacturers are actually betting money on their future. In a survey made this spring, Robinson Newcomb Associates, market analysts of Washington, D.C., found that the industry expanded its capacity by 2.4% in 1954, then 9.9% in 1955. And, according to early reports, the analysts expect a 1956 expansion that will exceed 4%. In his report, Robinson Newcomb says: "The industry spent more and expanded more proportionally in the last two years than did the producers of any other major building material."

Of course, if you can muster up faith in the industry's research program—as most industry members seem quite able to do—and if you have bullish convictions about the nation's immediate economic growth, then it is easy to become dazzled at the industry's potential. For example, more than \$1 billion was spent on the larger multistory buildings last year; for the walls alone, the nation spent about \$30 million. For schools, we spent even more—\$2.4 billion, and \$146 million for school walls. Toss in factories, stores, and don't even bother counting houses, and you have a \$200 million market, for somebody.

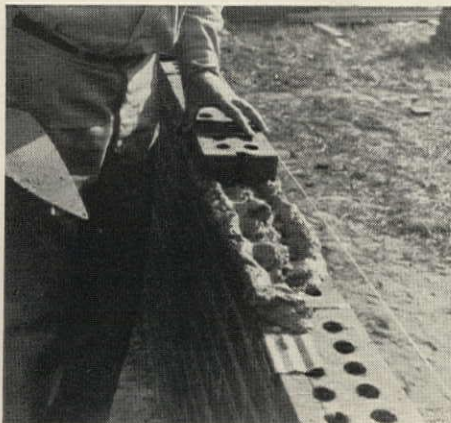
For the next few years, at least, and perhaps for longer, it seems likely that metal and enamel are going to continue to gain ground in this market. But if the renaissance of structural clay has not come too late, and if the people who do the spending see economies, then clay shall win back its share, and perhaps even a little more.



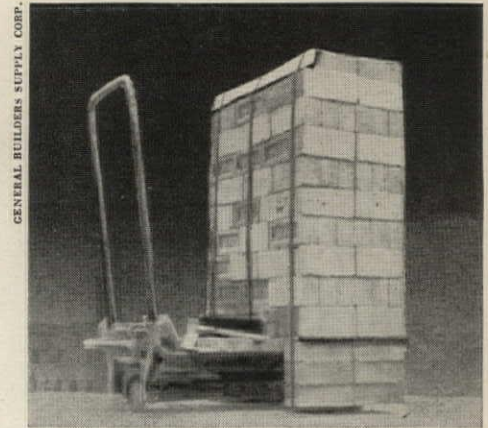
EIGHT HUTS shown here were built by Structural Clay Research to test different curtain walls, including metal, wood, brick, and tile. Shorter building, near center of picture, is control center, where heat flow measurements are recorded.



MEASURING HEAT FLOW. At Structural Clay Products Research Foundation, outside Chicago, scientists test thermal properties of various kinds of curtain wall material. Here, technician records heat flow data for panels which clad small buildings shown in top photo.



SCR BRICK, on the market for past four years, has been industry's biggest success. Mason can lay twice the wall area per day, because brick is bigger than standard brick. Biggest market is the housebuilding industry.

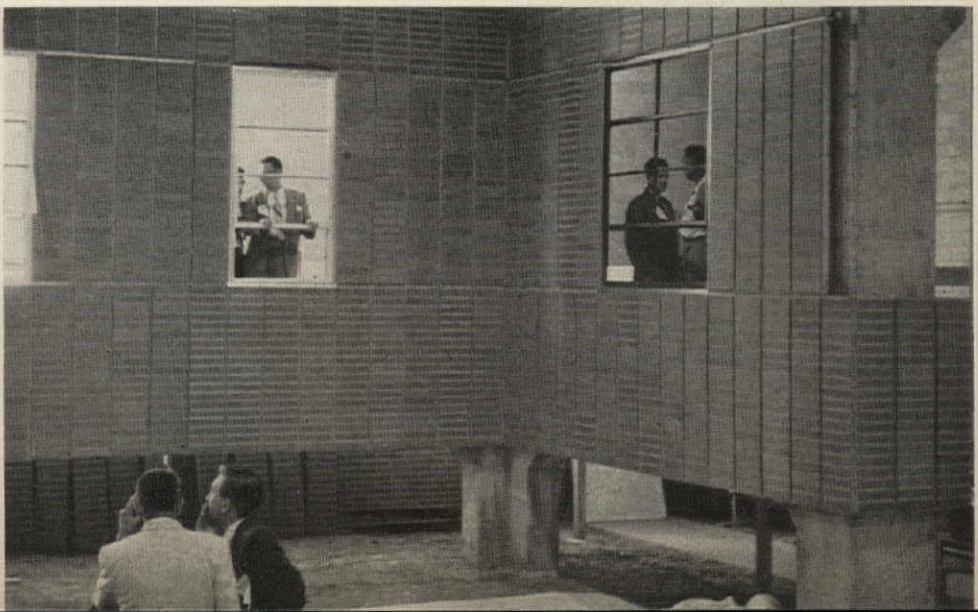


BRICK IN PACKAGES: Many brickmakers now deliver brick in packages, thus reducing contractor's materials handling problem. But for brick companies this is costly because packaging must be done by hand.



PRODUCTIVITY BOOSTER for mason is this adjustable scaffold. It keeps mason at optimum working position, increases his productivity by 20% to 25%. Three such scaffolds are on market now.

NEW BRICK PANEL is not yet on the market, but structural clay industry has high hopes for its future. This development could put brick makers into prefabrication business. Brick panel's big market will probably be in offices and apartment buildings.



TECHNICAL NOTES



ALL GLUE, NO NAILS

Long Island's new sports arena is largest of its kind in the world

The 137 tons of lumber that arc over this new sports arena at Commack, Long Island, make up the largest rink of a laminated wood arch design in the world. The 12 arches which support the roof extend over a clear span of 205', at a peak height of 65'. The arena is 350' long, with a usable floor area of 17,000 sq. ft. Two-and-a-half tons of glue—and no nails—hold the superstructure together.

Because of the alternate freezing and thawing of the ice rink, Architect James Van Alst specified a waterproof glue that could withstand stresses that would ordinarily tear the wood apart.

Sides of the arena are formed of concrete block, the roof of wood sheathing, and the deck of planking laid over the concrete foundation slab.

The arena has permanent seating accommodations for 4,100 people. Its rink size is larger than the rink in New York's Madison Square Garden.

ROAD DESIGN BY PHOTO

Engineers at Ohio State use camera to measure "give" of road surface

A combination of engineering, photogrammetry and astronomy may prove to be a key to reducing the cost of highway construction and maintenance. At Ohio State University's Engineering Experiment Station, a new photogrammic method of measuring a road's deflection under heavy loads has been in

development for two years. Actual road tests now indicate that the method has "definite promise."

The process works like this: any road surface—even the most rigid one—bends when weight is applied to it. The deflection may range from 1/100th of an inch to 1/10th of an inch. The new process uses strips of tape, applied to the highway's surface, as targets. The tapes are photographed by a special stereoscopic camera—first before any weight is applied to the surface, then again as a loaded truck passes over.

The two photographs show extremely small differences in the locations of the tape targets—too small to be viewed by the naked eye. And here is where astronomy comes in. Photonegatives of the tape targets are printed on glass plates and the differences measured on a Gaertner Measuring Engine, a device used to determine size and locations of stars. Finally, the pavement deflection is calculated mathematically.

Some \$7,800 is going into the Ohio State study. The objective is to develop information on the effects of heavy axle loads on the structural life of both flexible and rigid pavements. Prof. Robert F. Baker, of Ohio State, will present a paper on the method at the January meeting of the Highway Research Board, in Washington.

HEATING BY SUN POWER

New Mexico tests first office building to use sun as only heat source

Man has tried since the time of the Greeks to capture the sun as his worker. But, at best, his effort has seldom been significantly rewarding, until very recent times.

This summer, on a hot patch of desert near Albuquerque, N.M., two young mechanical engineers—Frank Bridgers, 34, and Donald Paxton, 43—took a bold step: they built the world's first solar-heated office building, then promptly moved into it themselves to see how well it worked.

The Solar Building, owned by Bridgers & Paxton Engineering Consultants, cost \$60,000—which is rather costly for

a building of this size (4,400 sq. ft.). Its heating and cooling system alone cost about \$15,000, which is about twice as much as a conventional year-round air-conditioning system would cost.

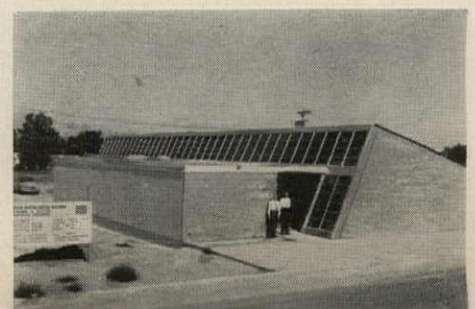
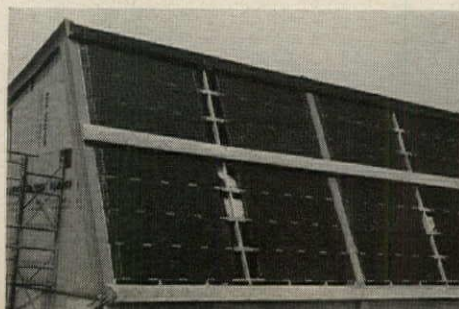
But the men believe that savings in operation will be substantial: about 25% to 50% lower than a conventional heating system, only slightly lower than a conventional cooling system. And, more important, they expect to collect valuable solar heating cost data from the building. The building will be used as a working model for equipment and services that Bridgers & Paxton recommend for their clients.

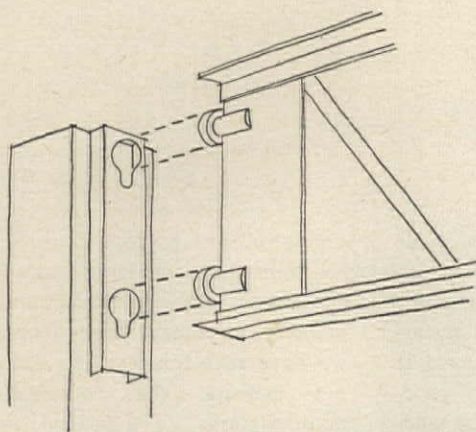
To capture the sun's energy, the engineers, and Architects Stanley & Wright, sloped the building's southern wall at a 30° angle, then covered the wall with 800 sq. ft. of glass-covered, partly hollow aluminum panels. Within the 56 panels, which are covered with a heat-absorptive paint, water circulates, heats (to as high as 140° F.), then is pumped to a 6,000 gal. storage tank. From the tank, it is pumped through the heating system. When the building is warm enough, the hot water skips the heating system, simply circulates between collector panels and storage tank until it is needed—say at night, in cloudy weather or when the building needs more heat than the panels can deliver.

Of course, the building needs electric power too; solar power does not do every job. It needs electric power to move water from place to place, and also to operate its air-conditioning system, which works from a heat pump.

This extra power is necessary because science has yet to find a fairly efficient way to store solar energy. (The 6,000 gal. tank in the Solar Building is only a crude beginning.) Actually, enough solar power falls onto those collector plates in a day to keep the building supplied with all of its power needs for a month. But the collection and storage system, advanced as it is, is still extremely inefficient.

The Solar Building is a notable move forward for solar power, for it is just the fourth building ever to be used for study of solar heating costs. Those other three are residential buildings in Arizona, Colorado and Massachusetts.





NO BOLT, NO RIVET, NO WELD

\$3,000 in steel costs saved by friction assembly method

Architect Eugene Wasserman, of Sheboygan, uses a new steel framing system in Sheboygan's \$175,000 Elks Club building, which is now about three fourths completed. Because the frame needs no bolting, riveting or welding, Wasserman estimates that steel costs have been reduced by \$3,000.

The secret is prefabrication: in the factory, steel burrs are welded to the ends of the girders; on the site, the burrs are forced into slots in the columns. (See sketch.)

Wasserman said that little time had been saved in erecting the steelwork because workmen were not familiar with the system. But he said that he does expect to experience labor cost reductions on future jobs.

The system was developed by a Canton (Ohio) company. It has been used on other buildings in recent months—particularly industrial buildings and schools.

ARE BUILDINGS TOO STRONG?

Says one engineer to others, "Let's not be so conservative"

The structural engineer is under fire. The main criticism: overdesign. He has heard criticism before, from architects and from engineers of other types.

But now he is getting it from one of his brothers. John T. Percy, a professor of structural engineering at Rensselaer Polytechnic Institute, says, in *Civil Engineering* magazine, that engineers needlessly waste materials by overdesigning their structures.

Percy takes his argument out of the area of the academic, for he does not condemn overdesign strictly on the basis of its being "poor design." He argues that it contributes to hidden costs and, therefore, costlier buildings.

Further, says Percy, hidden costs pyramid: thicker floor members require a corresponding increase in wall surfaces; heavier dead loads result in larger columns and foundations.

What's the cause? Percy names several causes. One is the handbook. He says: "Handbook standardization was originally planned to relieve the engineer so that he would have more time for special analysis. Many designers, however, pick oversized members in their uncertainty."

Another cause is simply the weight of tradition: "Designs and details of old buildings are constantly being used and reused." The pity is that these old buildings were purposely designed with large safety factors, for materials in those days were not standardized.

Today, he says, structural engineers should be able to determine future loadings with "a fair degree of accuracy." He concedes that many indeterminates still remain, but he questions whether the safety factor of 4 is always necessary: "With an intelligent appraisal of available laboratory data, the engineer can closely approximate the physical characteristics of the materials of construction."

To overcome this practice of overdesign, he recommends that the engineering societies make two studies: an appraisal of existing knowledge, to find just what engineers do know and don't know; a study of existing structures to find cost-cutting methods.

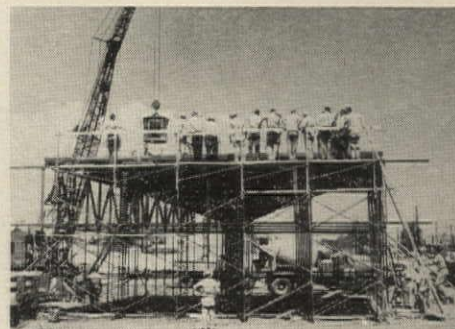
PAPER-COVERED WOOD

Cheap lumber, less swelling are two advantages

The US Forest Products Laboratory, at Madison, Wis., has been looking carefully at low-grade wood, hoping to find some way to make it more usable to the building industry. Now, after tests, the laboratory concludes that low-grade wood, covered with resin-impregnated paper, can be used for siding, house trim, cabinet partitions.

The paper cover makes it possible to use cheaper lumber—by hiding such defects as knots and splits—and, too, it reduces lateral swelling 25% to 40% for pine, 20% for oak. Two layers of paper reduce oak swelling by 35%.

But there are disadvantages: nails might be driven through a weak spot, the lumber cannot be resawed or planed, which means that it is likely to be used only for finished products.



UMBRELLA ROOF

A new forming technique cuts cost of shell concrete

Mexican Architect Felix Candela is regarded by some of his American contemporaries as a man who can make a warehouse look like a cathedral. One of his devices is the hyperbolic paraboloidal shell (see pictures) which is said to be very efficient in resisting stress.

The concrete roof slab shown here shows evidence of Candela's influence in the US. It is an experiment to find whether his idea can be made workable in the US, where labor costs are considerably higher than in Mexico. The A.A. and E.B. Jones Construction Co., Denver, built this 40' x 40' slab, under commission by Great Southwest Corp., of Dallas and Fort Worth. The intent is to find whether this is a practical idea for a new industrial district, between Dallas and Fort Worth.

In Mexico, of course, the idea is practical, because labor costs less than in the US. Forms can be built, used once, and then destroyed. The challenge for the Jones firm was to design forms that were lightweight, portable and reusable. Apparently, they met the challenge, for a spokesman for Great Southwest Corp. said last month, "A.A. and E.B. Jones have shown that a knotty concrete construction problem can be solved."

The slab experiment made it possible to test a new lightweight aggregate too. According to first reports, the new concrete, called Idealite, could be compacted to close tolerances on the steeply sloping form surfaces.

But, at this time, no decision has been reached as to whether Candela's slab roof will go into that new industrial park.

for all concerned

HOW BIG 1957?

Statistics are only as good as the use that is made of them, and this goes for predictions of building volume too. We are happy to present on p. 126 Miles Colean's forecast that building in 1957 will hit just under \$47 billion (his forecast of \$44 billion for this year looks as if it would be on the button).

Although this reflects what is probable it does not put a limit on what is still possible. In a sense, the building industry is not even up to normal. Last year's building volume was almost 11% of all goods and services produced in the

HOW MUCH BLIGHT DO WE NEED?

A highly progressive mortgage banker, one who has been a monumentally good citizen in his own city, shocked us the other day by declaring that serious urban renewal must wait for distress to bring land prices down. In the meantime he is investing in more and more outlying shopping centers.

This evoked an old old memory. Way back in 1934, in these pages, Frederick L. Ackerman, a perspicacious architect who has since passed on, made sardonic remarks about our housing processes for people of modest income. Said he: "They cannot be housed until nearly two thirds of our habitations have fallen into such decay that they no longer rate as investments but are viewed as liabilities by owners, mortgage holders and collectors of taxes. These facts would seem to indicate that *slums and blighted areas are among the assured end products of our economy.*"

Now there is no sensible man who decries the existence, even in an economy of abundance,

nation—but in 1927 the share was 12.2%. Meanwhile automobile sales had grown more than 400% greater than they were 25 years ago, food sales were very nearly 200% greater, and electrical goods 221% greater.

The great vehicle of growth for the building industry is urban renewal and orderly new city creation.

Where is the top for the building industry? There is no top in sight. If we had the ability to seize all our opportunity we might, with supporting industrial capacity, go above \$50 billion.

of second-hand markets for partly depreciated goods; used cars, used refrigerators, washing machines, etc.—and even, at the bottom of the scale, worn clothing. And yet in no industry except urban building have we permitted a used-goods market in fully depreciated properties to flourish so profitably that it cuts off, diminishes and discourages all but a trickle of new production.

How much blight do we need?

One reason why blight persists and urban renewal lags is that a great deal of blight carries an *assured* profit whereas renewal is an elaborate risk venture. And certain government officers, like the present heads of the FHA, watch renewal like hawks to make sure nobody makes a cent too much out of it, even after the tremendous fight the enterpriser has to make to push his project through a thick sea of government. We refer back to the Urban Renewal Round Table report in this magazine last April for two major facts:

1) urban renewal can be made profitable to all concerned, including the federal treasury and the city treasuries; 2) this can happen only if renewal is converted into a steady process, a constant flow, with adequate encouragement.

We now add that *blight* must be made unprofitable, of and by itself. This can be done. We need only get the community behind law enforcement against

PROGRESS—IN CANADA

Last month the Canadian Federation of Mayors and Municipalities was addressed by J. S. Hodgson, director of the Development Division of Canada's famed Central Mortgage and Housing Corp., their equivalent of our FHA.

Hodgson's speech is a fine example of good sense. He said, among other things: "Some... regard urban renewal as a luxury... others admit the need but contend that their city cannot afford it. I suggest that a city cannot afford to ignore urban renewal: if it does so it is headed toward bankruptcy just as surely as a trucking company that refuses to trade its old vehicles. We have only about 100 months' grace in which to make our cities work efficiently (until the second postwar generation appears).

"Redevelopment is usually presented as an exercise in municipal accountancy. Assessments are usually increased. For example in one clearance operation the city's tax revenue multiplied sixfold, from \$36,000 to \$240,000 a year. Yet although the higher assessment may be a consequence of an increase in values, the worth of redevelopment is better judged by other criteria... Values in nearby properties are sustained or increased.

landlords who make big profits out of operating substandard and anti-human obsolete dwellings. And then we have to begin working out tax policies that operate against slums.

We assume that the overwhelming interest of the building industry is in healthy building, and that those who operate blight are not its friends but its foes.

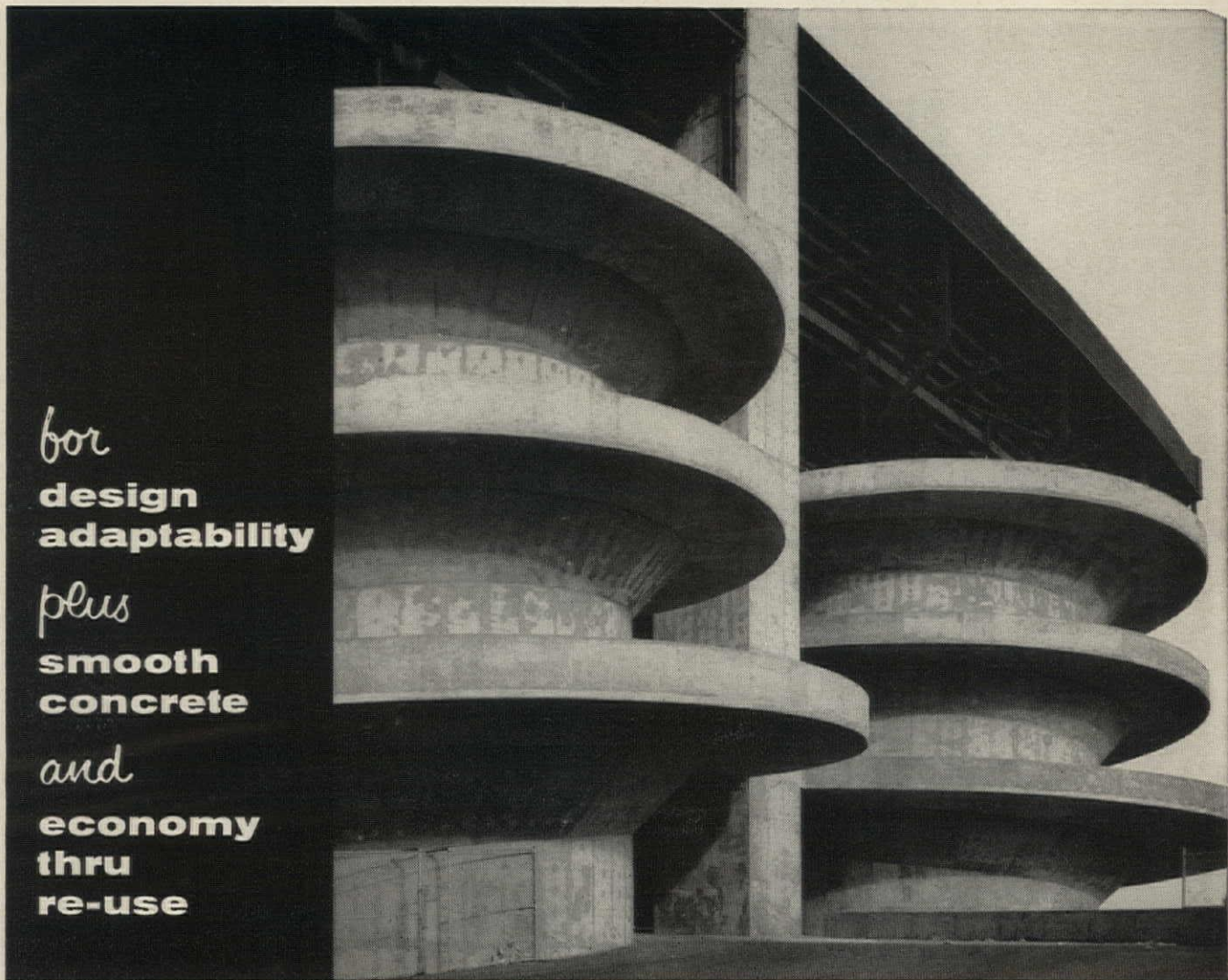
Perhaps most important, the renewed area functions more efficiently. Beyond this are the human factors.

"Let us regard our cities not merely as buildings and streets but as the very fabric of our 20th Century civilization."

FORUM sincerely recommends Mr. Hodgson's speech to our own FHA and its commissioner, Norman Mason. In the past month our FHA has apparently considered a sliding scale of profit and risk allowances rewarding smaller projects rather than large ones—Hodgson declares for the large ones. Our FHA, in its correct but exaggerated concern lest the initiative and drive of redevelopers might earn a little too much, has shown slight concern over the vastly greater earnings of antisocial non-initiative in slums, the beneficiary of inaction. It would be unthinkable for our FHA to lapse into a combination of tolerance toward blight within cities and overstimulation of development outside, but this possibility has to be consciously avoided. FHA must serve the whole USA.

And building's interest lies that way too.

Douglas Haskell



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**design
 adaptability**
 plus
**smooth
 concrete**
 and
**economy
 thru
 re-use**

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Year 'round air conditioning is provided by separate perimeter and interior systems. In the perimeter areas, air conditioning units are served by a high pressure conduit system. Thus, occupants in each individual space may select the temperature desired by adjusting the Powers thermostat inside the unit.

Interior zones are supplied with conditioned air from ceiling diffusers. Here, too, Powers controls automatically adjust temperature to the requirements of occupancy and outside weather.

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condition called for by the Powers master zone thermostat which operates control valve on zone steam reheat coil.

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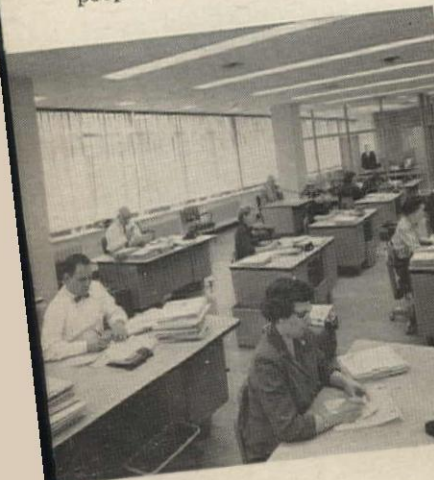


(c79)



Efficiency combined with architectural beauty is the keynote in this colorful building. It has a curtain wall of blue-green porcelain enameled steel; an auditorium seating 266 people; the Martin Luther Library; sunken garden terrace

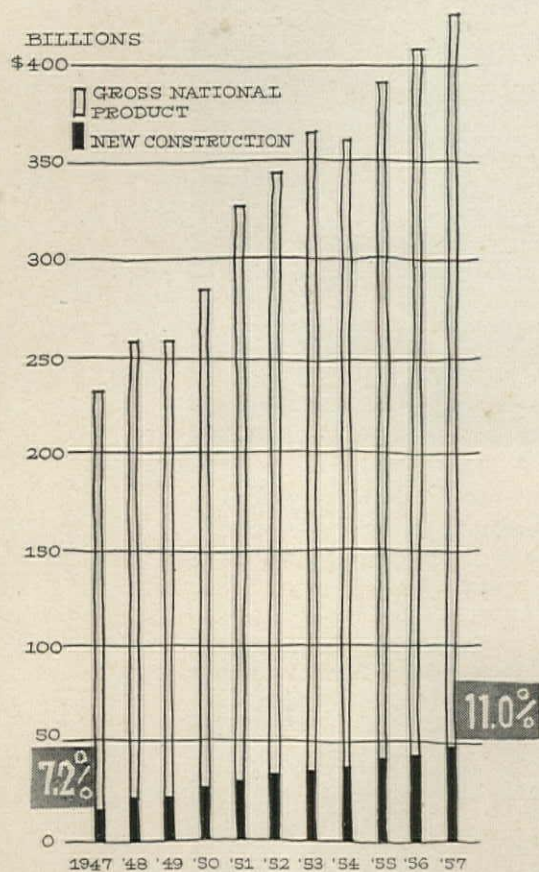
and fresh air intake louvers above, which are well integrated into the building design. Photo below shows zone temperature indicator also the central control panel of the POWERS AIR CONDITIONING CONTROL SYSTEM.



FORUM FORECAST cont'd. from p. 127

anticipated sag in total residential activity in 1956 was due to a drop in expenditures on *new dwellings*, because of a number of eventualities: bad weather held up starts during the brief period early in the year when credit was relatively easy; credit generally began to tighten as the weather improved; the rate of savings continued to drop until after the housebuilding season was far underway; the push of industrial expansion proved tough competition for the pegged interest rates in the home mortgage market. On top of this, buyers manifested an uncustomary aloofness. Owing both to price rises and improved quality, dollar expenditures for new dwellings have fallen proportionately less than the number of units, but the dollar drop of 11% is still disappointing.

The brighter residential building picture in 1957 will result from a more ample supply of mortgage funds, greater interest on the part of buyers, and more vigorous efforts by builders to get in tune with demand. Expenditures on new dwelling units should be up by



Gross national product and the industry's share of it have both been increasing ever since World War II. GNP next year is expected to expand \$18 billion to \$425 billion, and building's share from 10.8% to 11.0%. At the close of the war building's share was only 3%.

about 3.5% and the number of new private housing starts should reach 1,150,000. Some change in the volume of *apartment building* (now less than 10% of the total) is to be expected because of the provisions affecting private multifamily housing in the Housing Act of 1956. Cooperative housing is likely to be the biggest gainer. Otherwise, while on the helpful side, the new legislation does not offer enough to pull apartment activity out of its half-decade of doldrums. *Hotel and motel building* will be heading into a minor boom which will take on greater importance during the next several years. *Alterations and additions* will continue to be on a modest upswing.

PUBLIC CONSTRUCTION in 1957 will reach its highest peacetime level, both in terms of absolute volume and in proportion to the total of all new activity. Except in the highway segment little change will occur in the federal-state ratio of participation. Four fifths of these funds will be state and local, with emphasis on school building, highway and sewer and water facilities. Federal expenditures will be heavily weighted on the side of military and highway activities.

Nonresidential construction will be led by *school building*, which, though still troubled by the desegregation issue, will make a more substantial advance (8%) in 1957. Nevertheless, at around \$2.7 billion, it will still be lagging behind estimates of need. *Industrial building* (\$300 million—mainly for atomic energy) will be reduced 25% from its already declining 1956 level, while *hospital and institutional building* (also \$300 million) will make a 9% gain.

Public housing which, for statistical purposes, also includes housing built on military establishments under Title VIII of the National Housing Act will take a real jump, making 1957 the second biggest public housing year since World War II (1951 reached a total of 71,200 dwelling units). Expenditures at \$350 million will be up at least 40% from the 1956 level and may go beyond that. Probably about 60,000 dwelling units will be started, about equally divided between the military and the civilian programs.

Military construction took more than the expected upturn in 1956. Further expansion, particularly in connection with Air Force operations, is assured for the coming year. The forecast total: \$1,500 million, up 7%.

Highway construction in 1957 will feel the first impact of the new federal aid program. Total highway outlays, for the first time probably will top \$6 billion (up about 17% from 1956) and will be pointing upward for a number of years.

Sewer and water construction, like school building, a laggard in relation to all estimates of need, will increase about 8% in 1957 to \$1,350 million. This is another area of activity that will be stimulated by the highway program and will expand for at least the next decade.

continued on p. 186

TERRITORIAL HEADQUARTERS, THE SALVATION ARMY
ARCHITECT: Skadberg-Olson Co., Chicago
GENERAL CONTRACTOR: Paschen Contractors, Inc.

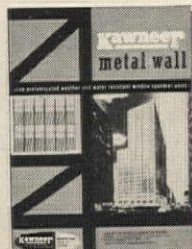


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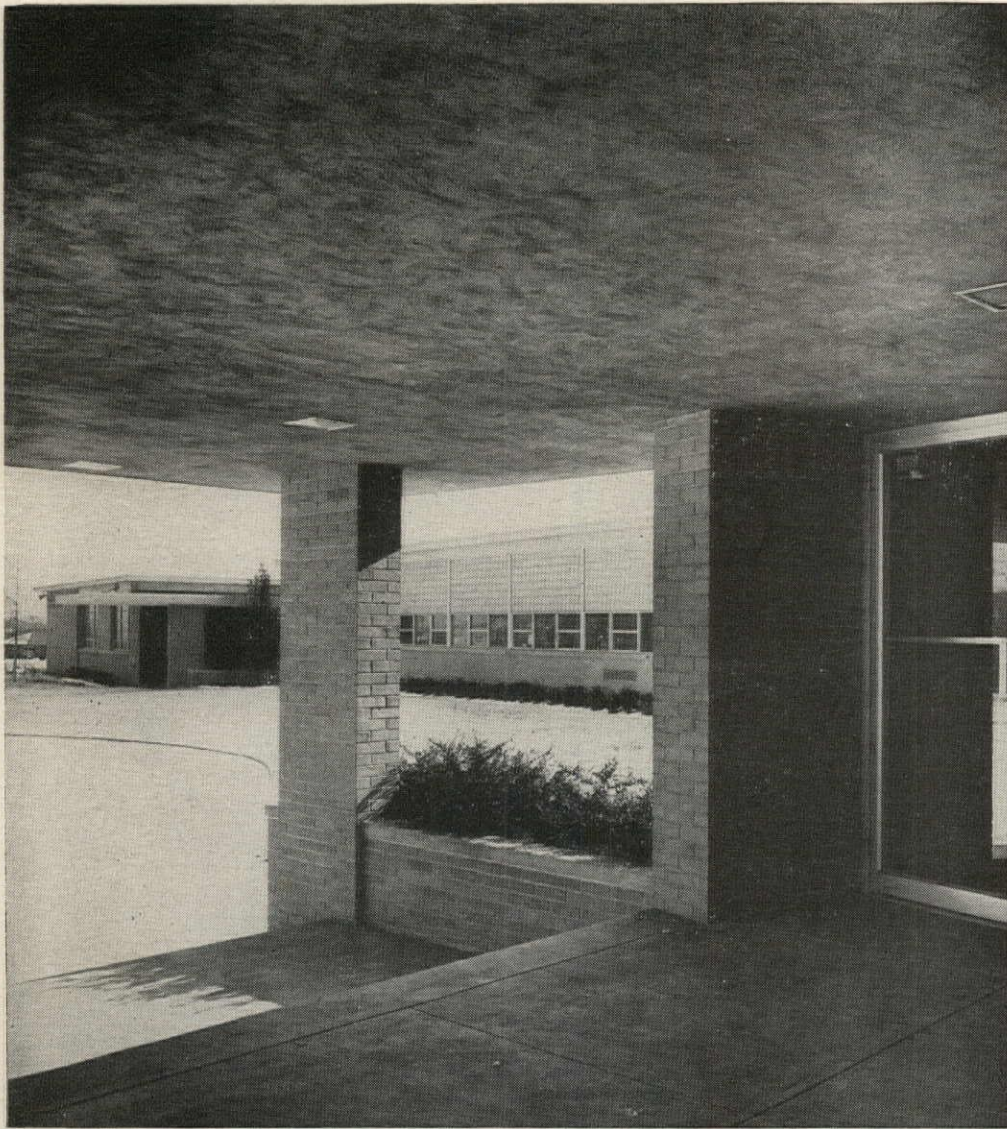
- Tishman Buildings, Los Angeles
- Equitable Life Building, San Francisco
- Insurance Exchange Building, Oakland
- Imperial Oil Co., Sarnia, Ontario
- Newark Center Building, Newark
- Kaiser Aluminum, Ravenswood, W. Va.
- Fireman's Fund Insurance Co., San Francisco
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The new Salvation Army Territorial Headquarters in Chicago is another example of Kawneer's ability to engineer, produce and install a complete skin from the anchors on out. Kawneer works closely with the architect by helping him establish his design budget well in advance of the bids. Kawneer assures him that the translation of his design will be true and accurate. The curtain wall of this building will consist of Ingram Richardson 2" insulated porcelain enameled steel sandwich panels, double-glazed pivoted Kawneer aluminum windows and self-supporting aluminum mullions. Special weather-tightness features, adequate provision for expansion and contraction, and tested prefabrication methods assure the architect complete client satisfaction. For further information on how Kawneer can assist you in metal wall engineering write: Metal Wall Department, Kawneer, Niles, Michigan.



Write for folders describing Kawneer metal wall jobs and windows.





In Pennsylvania—Monroeville Junior High School. Architect—Walter E. Schardt, Pittsburgh; Consulting Engineer—Leland W. Cook, Pittsburgh; Contractor—Guy Miller Company, Pittock, Pa.

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- **Helping build better, stronger** buildings of all kinds.
- **Cutting construction costs**—“five per cent,” said one builder; “five cents per square foot,” said another.
- **Shortening building time**—“we saved six weeks,” said the builder in California.

Steeltex, the sturdy steel wire mesh reinforcing which carries its water-proofed form right on its back, was the choice of the men who designed and constructed the representative buildings on these pages. They agree Steeltex does a better job at lower cost.



In California—Westlake Shopping Center's J. C. Penney Company Department Store in Daly City. Architect & Engineers—Lloyd Gartner, A.I.A. and Associates of San Francisco; Contractor and Owner—Henry Doelger Builder, Inc., of Daly City.

J. C. Penney Company Store in Daly City, Calif., (lower left) is a totally fireproof department store with 93,350 square feet in its basement, first floor and second floor. The architect said:

"The facility and speed with which Steeltex Floor Lath was installed and the whole operation was completed resulted in a saving of many weeks of valuable construction time."

Henry Doelger Builder, Inc., builder and owner of the Westlake Shopping Center which includes the J. C. Penney store, credits Steeltex with "about six weeks saving in time and about five per cent in cost."

Monroeville Junior High School, near Pittsburgh (upper left) used approximately 110,000 square feet on floor slabs with the contractor, Guy Miller Company, declaring:

"At a conservative estimate, 1½ cents per square foot was saved in time and material as a result of using Steeltex instead of other methods."

The American National Bank Of Austin, Tex., (upper right) used about 7,000 square feet of Steeltex. Contractor J. M. Odom said: "On steel joist spans under 25 feet with a spacing of not over 32 inches we save approximately five cents per square foot over most other types of deck."

Fairchild Aircraft Division, Office Building, Fairchild Engine and Airplane Corp., at Hagerstown, Md., (lower right) Steeltex was used for 46,000 square feet of office space. The architect estimated "a Steeltex-supported slab over bar joists, spaced 24 inches on center, to be 40 to 45 per cent less expensive than a conventional four-inch reinforced slab using wooden forms, and over steel beams, six to eight feet on center."

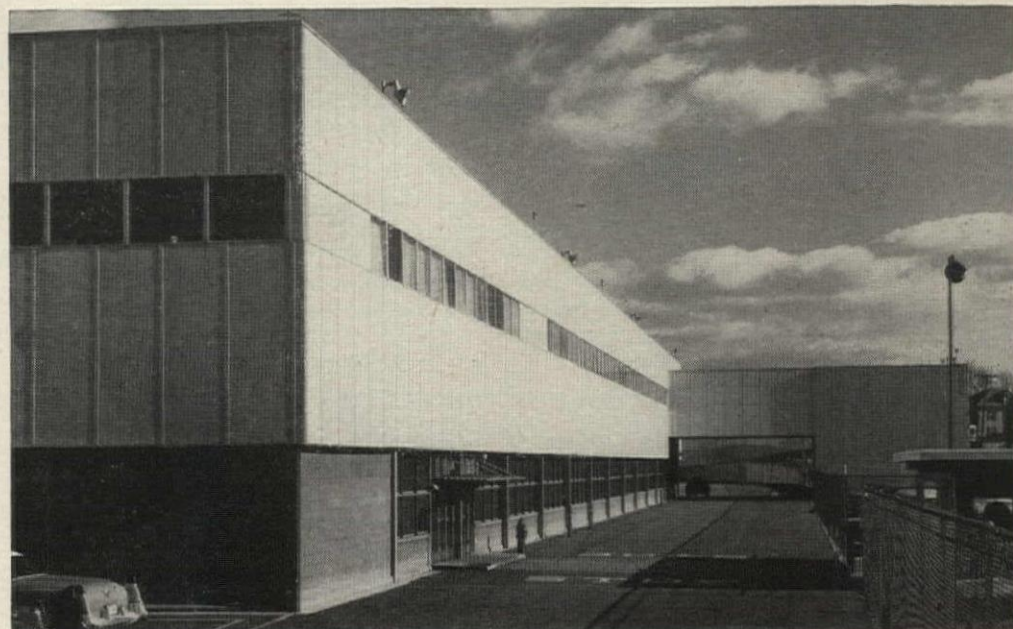
Peter A. Strobel of the consulting engineering firm of Strobel and Salzman said the savings due to the use of Steeltex on the Fairchild building "are quite substantial and, according to our estimate, vary between \$.40 to \$.70 per square foot."

The Steeltex story is the same in the East, West, North or South. Designers and builders favor Steeltex because it makes better roofs and floors and speeds construction.

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In Texas—American National Bank of Austin, Tex. Architect—Kuehne, Brooks and Barr, of Austin; Contractor—J. M. Odom of Austin.



In Maryland—Office Building for Aircraft Division of Fairchild Engine and Airplane Corp. in Hagerstown, Md. Architect—Fordyce & Hamby, New York City; Consulting Engineer—Strobel & Salzman, New York City; Contractor—Calabro Construction Co., Inc., Linden, N. J.

See Sweet's Catalog Section 2-A

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THE FACTORS BEHIND THE 1957 FORECAST:

A growing economy. In 1957 the economy generally will be in an expansive phase. Gross national production promises to move from a range of \$408 billion to \$410 billion to a point in the neighborhood of \$425 billion. Employment will be at high level and national income will get another substantial boost. Under these circumstances construction is bound to share in that expansion as it invariably has, except during wartime. It may be expected that construction will maintain the high ratio to gross national product that it reached in 1955 and 1956 (11.0% and 10.8% respectively). In 1957 it will be around 11%—and would do better if investment funds were more plentiful.

A peaceful world. This forecast is based on the assumption that the international situation, while troubled with the unpleasant surprises that have become almost routine, will be kept out of a shooting phase.

A friendly business atmosphere. It is also assumed that the federal administration will remain friendly to business—that it will maintain the confidence of both consumers and investors in the strength of the economy. If these premises hold, the federal budget will show a surplus at present tax rates, leading to the further assumption of getting in 1957 the tax cut that was heroically foregone in an election year.

An expansion of investment. The fiscal soundness of the federal government should lend support to the continued expansion of capital investment, which so far as the industry's interest is concerned, will be reflected mainly in a further advance in the volume of commercial and industrial building. At the same time the current uptrend in savings, which may be expected to persist into next year, should increase the availability of borrowed funds. The expansiveness of demand, however, is such that it will quickly absorb all the money

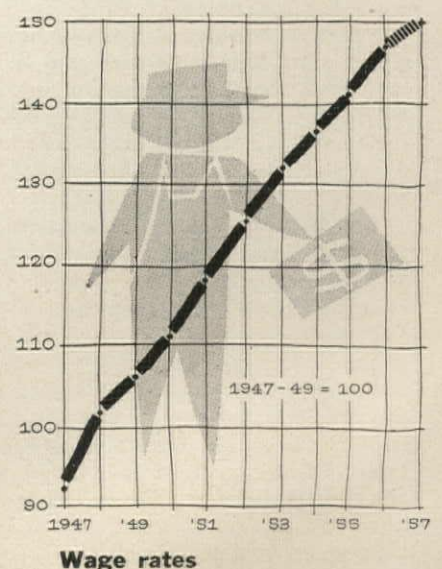
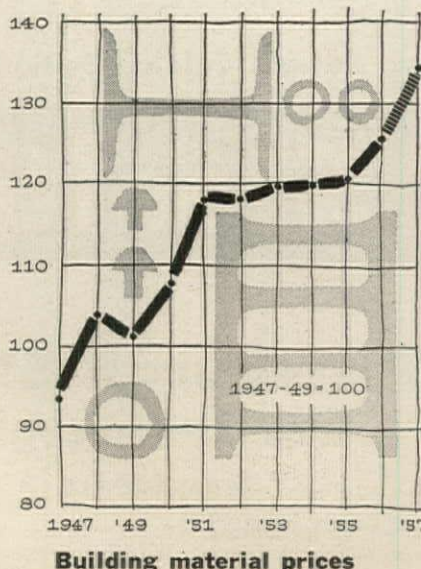
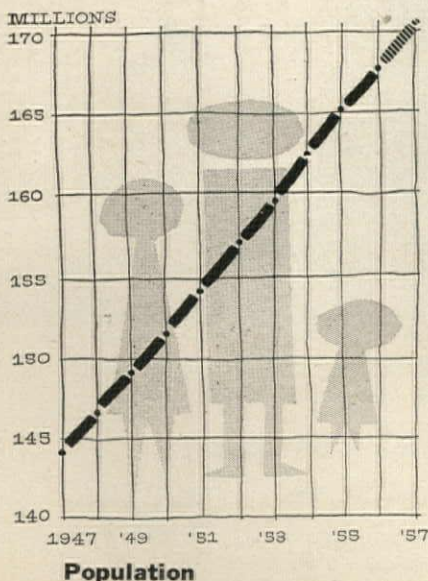
obtainable and will leave little or no prospect for any reduction in interest rates.

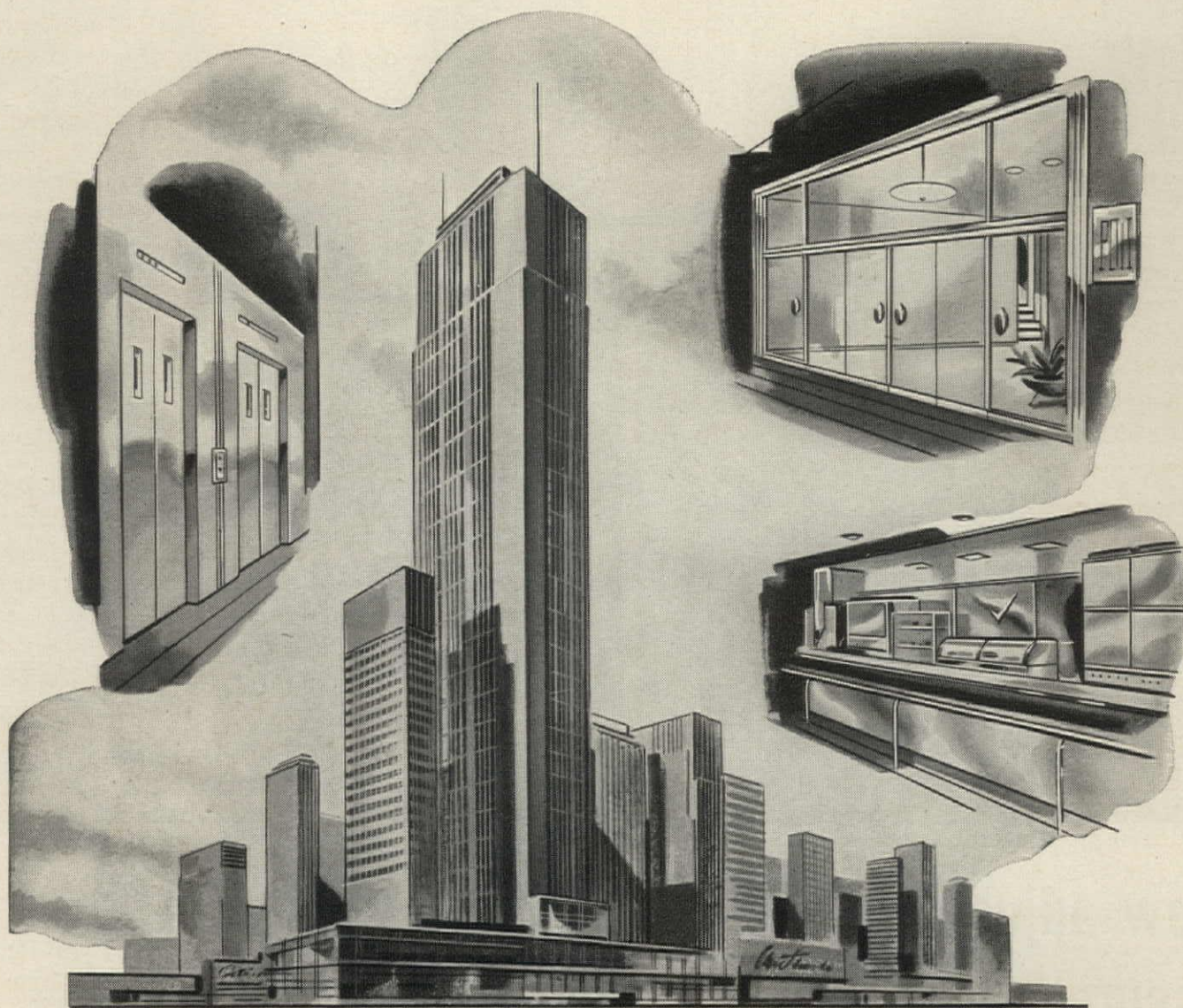
A multiplying population. Because the number of potential household-formers remains at a relatively low level, the rate of increase in the number of households will be fairly stable at around 800,000. On the other hand, the rate of population growth will continue upward, bringing its pressure to bear on the housing supply. The steady advancement in family income will make it possible to seek improvement in the standard of housing. The potential expansion of housebuilding will be held back, however, by the tight controls on the money market, by the arbitrary FHA and VA interest regulation and, as far as multifamily construction is concerned, by numerous impediments which FORUM has repeatedly pointed out, but which the 1956 Housing Act went only part of the way in removing.

A spreading road net. A new stimulating influence will be introduced next year by the expanded highway program, which will not only be directly a major source of activity but will also bring incentive to practically every other form of construction. While the stimulus of this program will be cumulative during the next decade, even 1957 will begin to demonstrate its effects on new residential subdivisions, regional shopping centers and industrial park development.

A good supply of materials. The uptrend in the prices of building products, although certain to continue as a result of the steel settlement and other factors, is likely to be mild and to have no major effect on plans. No real shortages of materials should develop, though many items such as structural steel, cement and gypsum products are likely to continue to be on the tight side.

The year should be one of healthy growth rather than one of feverish boom. It should be one in which the restraining hand of monetary policy will prevent either excessive price rises or inventory speculation. It should, in other words, be a year that does not exceed itself, but still leaves room for expansion to continue in 1958.





in buildings...
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the architect specifies long-lasting Stainless Steel for its strength, its beauty and its economy of maintenance. In heavy use areas and for weather-exposed panels and trim, nothing stands up or keeps its smooth finish like Stainless Steel.

the builder likes working with Stainless Steel. It is easy to install, does not dent, peel or discolor and presents no problem on matching or replacement.

the tenants enjoy living or working in buildings that are bright, clean and attractive because of Stainless Steel.

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For the product you make today and the product you plan for tomorrow specify McLouth high quality sheet and strip Stainless Steel



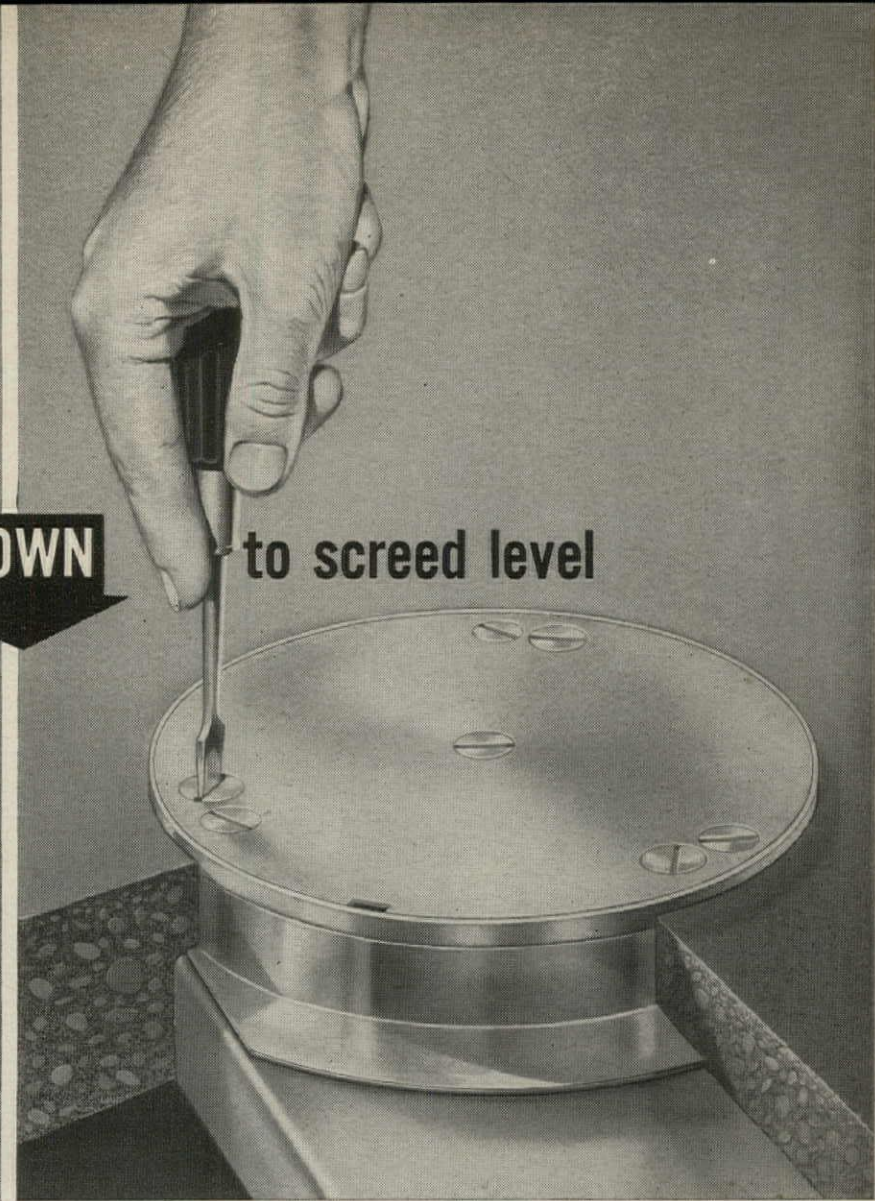
McLOUTH STEEL CORPORATION DETROIT, MICHIGAN • MANUFACTURERS OF STAINLESS AND CARBON STEELS



Easily adjusts

UP

or DOWN



to screed level

New adjustable header duct junction units assure a level finished floor

National Electric has developed an easily adjustable junction unit ring for its Header Duct Steel Underfloor Raceways.

The new Header Duct junction unit ring is designed to eliminate the raised spots and depressions that occur when underfloor raceway junction boxes protrude above or become recessed in the floor due to minor variations in the level of the concrete. Adjustment of three easily accessible recessed screws in the cover of the unit is all that's required to level the ring with the concrete surface . . . assures a smooth, level, attractive finished floor.

National Electric junction unit rings can be moved *down* as well as up after the concrete has set. A galvanized steel collar around the junction unit ring keeps concrete from bonding to the ring and preventing a downward adjustment.

This newest Header Duct improvement is typical of how every detail in NE Header Duct is engineered to help you give the owner complete flexible electrical distribution for power, light, communication or telephone—where and when it's needed.

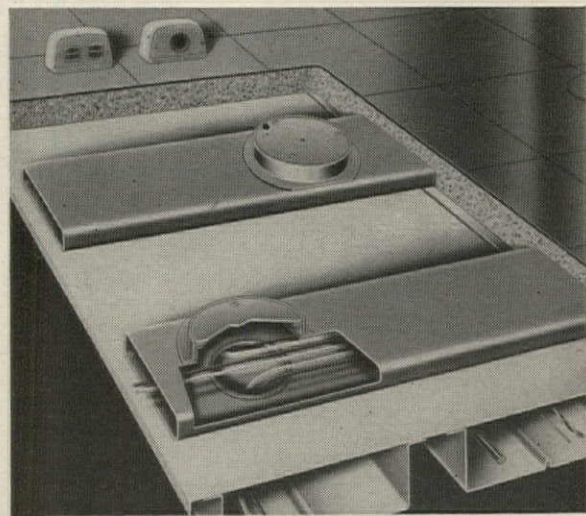
If you're planning for cellular steel floors make sure you include Header Duct—the all-steel grounded feeder raceway from distribution panel to the raceways formed by the cellular steel floor panel.



National Electric Products

PITTSBURGH, PA.

3 Plants • 10 Warehouses • 36 Sales Offices



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HEADER DUCT

...for a touch of Glamour that lasts and lasts!



Young Miss Department of Snellenburgs of Philadelphia—one of two large areas floored with 1/8" "Sequin" linoleum in a big store modernization program.

NEW, EXCLUSIVE Gold Seal SEQUIN® 1/8" INLAID LINOLEUM

Now, with new 1/8" "Sequin" linoleum, you can offer commercial clients a truly luxurious, high styled heavy-duty floor. Here is rich, beautiful coloring . . . a terrazzo type design that fairly scintillates before the eye . . . excellent resilience—for exceptional quiet and comfort underfoot. Seven decorator colors provide ample selection for matching *any* decor.

And new "Sequin" is as rugged and easy to maintain as it is beautiful! Colors are inlaid *clear through* to the backing. Its satin-smooth surface seals out dirt, resists

Abrasive Wheel Test proves "Sequin" will "look like new" through long service life!



The circular "After Test" area is the result of applying the abrasive wheel to the "Sequin" sample. See how it has worn well through the linoleum—and yet the pattern is still there, as clear and sharp as ever! Compare it with the "Before Test" area. You can't tell the difference! Write to Architects Service Department, Gold Seal Floors and Walls, Congoleum-Nairn Inc., Kearny, N. J., for further information.

stains . . . makes cleaning easy! Grease, grime and spills just wipe off with a damp cloth! And "Sequin" needs less buffing—for scuffs "disappear" in the design. See new Gold Seal 1/8" "Sequin" linoleum at your Gold Seal Dealer.

SPECIFICATIONS: 6-ft. wide yard goods. 1/8" gauge, bur-lap backed. Install over suspended wood or concrete subfloors. Available in: Grey mix, Grey, Green, Dark Brown, White Multi, Taupe, Beige. Also made in standard gauge for residential use—in 16 colors.

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HOW DO YOU MEASURE AGE?

You cannot measure age in terms of years. The child is young; the Marble on which she stands, many millions of years old. Yet as the child advances in years and matures, the Marble retains its fresh youthfulness. In fact, with very little care, Marble will stay young forever. Remember that, when you calculate cost.

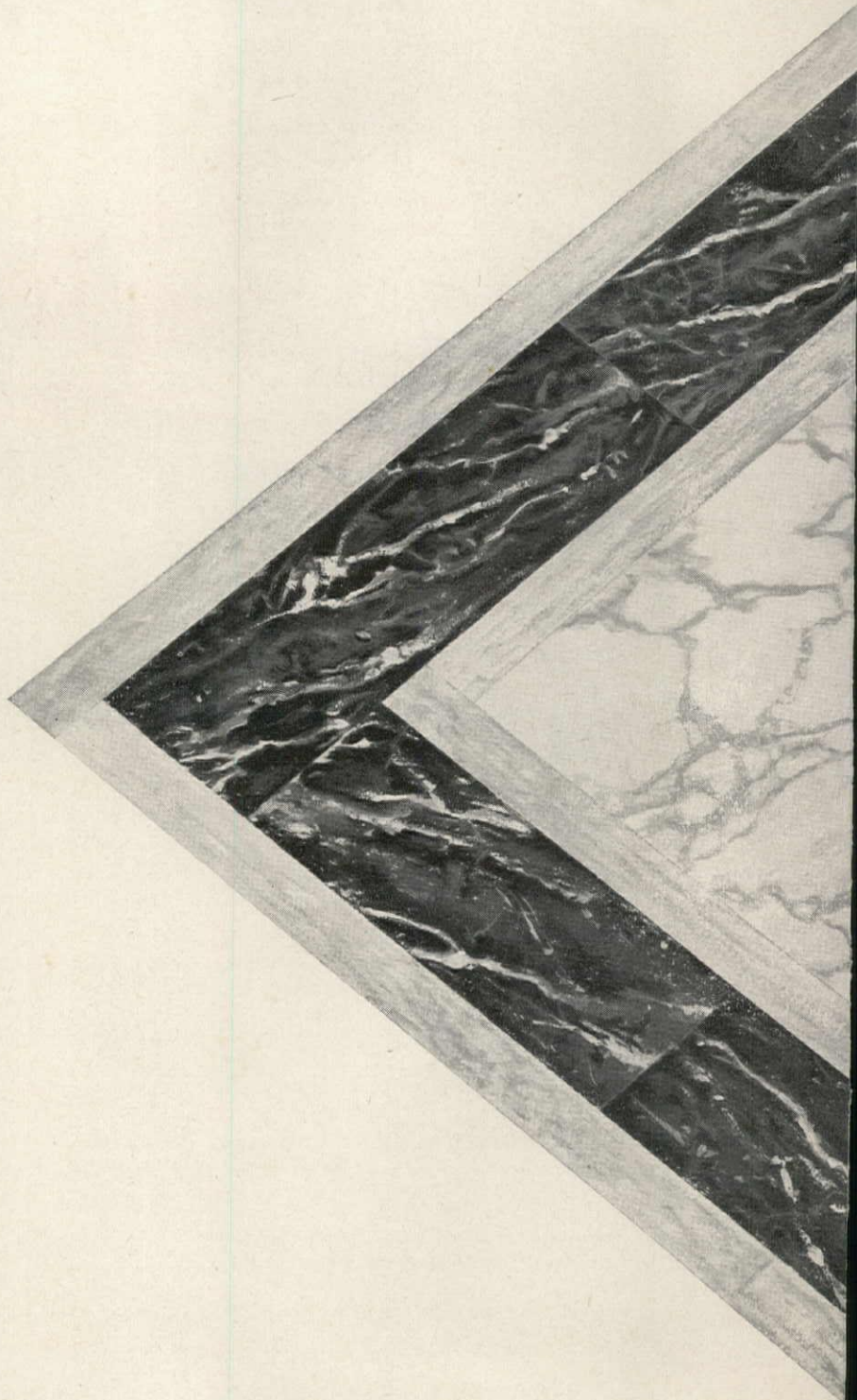
Age is relative

Cost—true cost—is more than initial outlay. It embraces also the cost of maintenance. If maintenance costs are high, then the material is expensive, no matter how low the initial cost. Marble costs slightly more, initially, than many other materials, but is so inexpensive to maintain that it is usually the most economical to use. There are facts and figures to prove the economy in a report: "Proof that Marble Costs Less . . ." available at no cost from the Marble Institute of America, 32 South Fifth Avenue, Mount Vernon, New York. Write today.

marble



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


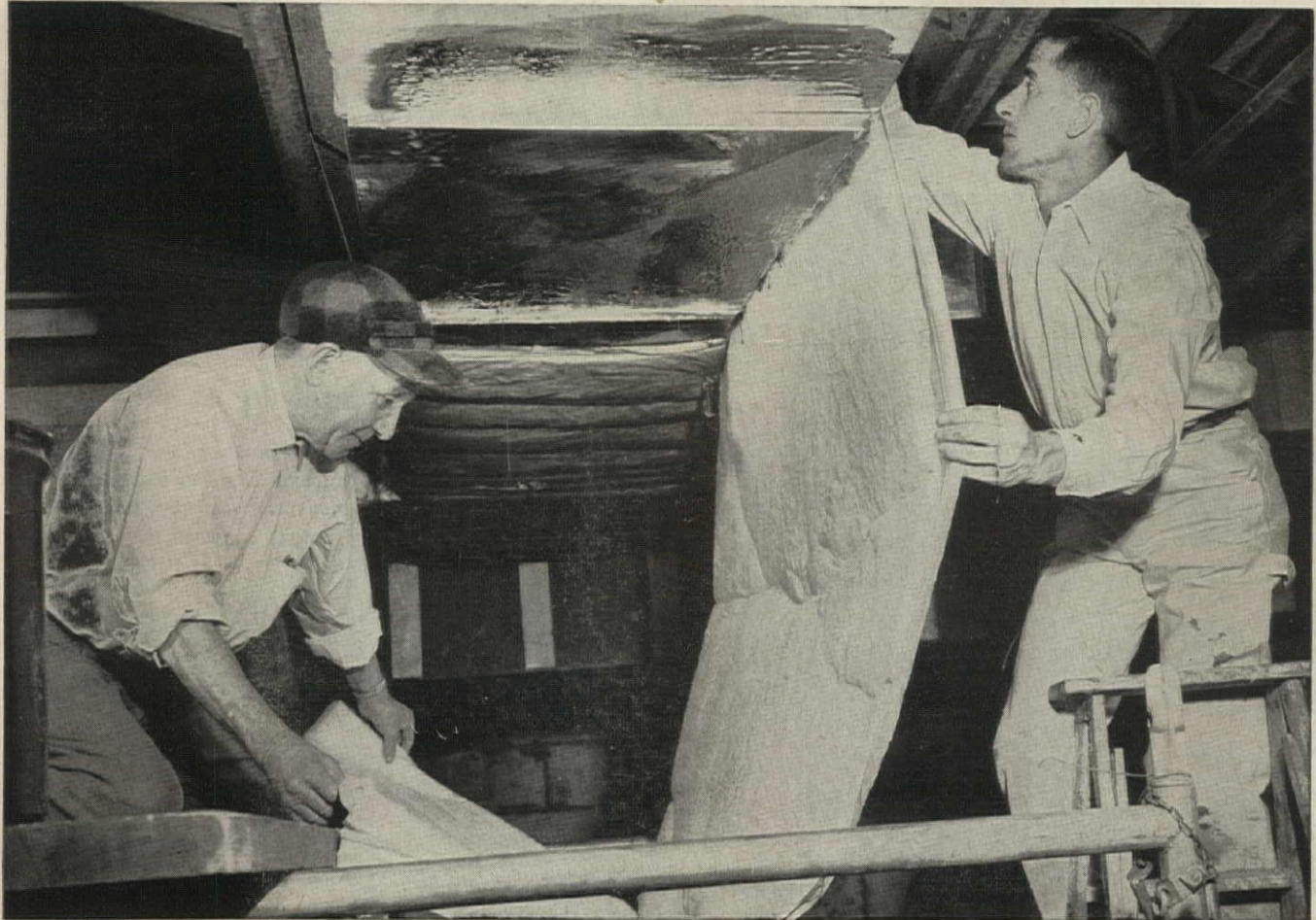
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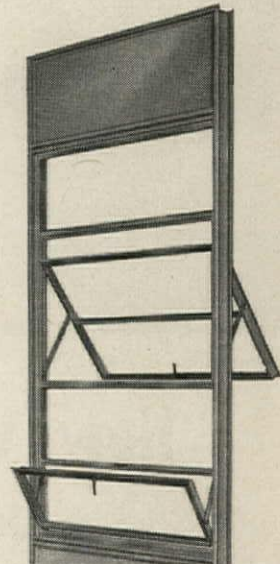
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The over-all reliability of a 77 year old, nationally recognized, financially responsible company with complete, modern manufacturing facilities; supported by a nationwide sales engineering and service organization.

Bayley Projected Windows and Bayley Curtain-Wall system — in aluminum and steel — has had a major influence on today's trend from the old conventional to the modern. If you are not familiar with Bayley Details see Sweet's or write; or call in your local Bayley Representative.



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10 and 16-ounce
Chase® Thru-Wall Flashing
actually gives you
more copper
at less cost!

Remember, it's the COPPER that does the water-proofing job of flashing through a masonry wall—and the expenditure should bring the MOST COPPER to the job.

Why pay for thinner copper (and less protection) when you can get the full protection of Chase Thru-Wall Flashing for less money?

10-ounce Chase Copper Thru-Wall Flashing costs 25% less than 7-ounce "copper fabric" or membrane flashing, yet Chase gives you 42% more copper!

16-ounce Chase Copper Thru-Wall Flashing, which costs only about 8% more than 7 oz. membrane flashing, actually gives you a bonus of 128% more copper!

Chase Copper Thru-Wall Flashing is made from rolled temper copper—not just a dead soft "deposited" temper. (This feature alone means years more service!) And Chase Flashing has a 3-way bond keyed right into the metal—a watertight bond secures the wall for good!

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Typical Chase Thru-Wall Flashing installation.

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STAGES *cont'd. from p. 141*

But she does have the distinction of not having passed him on to someone else. Maybe he had struck bottom.

... and around again

Determined that he would not give in for a while yet, Klein tried a new avenue. He wrote Superintendent Dr. William Jansen. Setting forth his central points, Klein said:

"I would especially be interested to learn why there always must be:

- "1. a hardwood floor in which one is not allowed to put a nail or screw;
- "2. a lighting system with border-lights and useless overhead lights;
- "3. a curtain set which hangs on iron pipes."

An associate superintendent (the man who had countersigned the first letter from the Division of Housing, half a year before) answered this one:

"With regard to the three specific statements that you make, I can inform you, first, the floors of our stages are made of soft wood; secondly, those in charge of our High School Division insist on lighting and, finally, we 'fly' curtains and scenery on such stages.

"I appreciate your interest and I shall put your letter in the hands of the chairman of the Manual Revision Committee."

Klein had to admire the speed with which he was reconsigned to the 23-legged Revision Committee. The letter was almost too silly to answer, but Klein tried:

"I obviously did not succeed in making myself clear in my letter. Of course there must be lighting. I only asked why is there *old-fashioned* lighting. I am very interested to learn that floors are now made from soft wood, from which I take it one is now permitted to put nails and screws in the floor. May I ask whether there serves on the committee for auditorium stages a practical theater man. . . ."

Here is the reply in full:

"I have your letter requesting certain information about the design of high school auditoriums and stages. In reply:

- "1. We allow no nails or screws in the stage floor at any time.
- "2. Our auditoriums are planned for educational use not theatrical purposes.
- "3. We have among our teaching staff people who are thoroughly familiar with the theater through actual professional practice.

"Thank you for your inquiry."

continued on p. 198

FOLDING DOORS

... ARE

... MORE
BEAUTIFUL

... MORE
DURABLE

... AND
FIRE
RESISTANT

... WHEN
THEY'RE MADE OF

TOLEX
SUPPORTED VINYL

No other covering material offers such outstanding quality and features at such low cost! Produced in dozens of patterns and leather effects in a wide range of decorator colors... the perfect folding door material!

We'll send you sources!

THE GENERAL TIRE & RUBBER CO.
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Send me the names of folding door makers who use TOLEX supported vinyl coverings:

Name _____

Address _____

Washrooms in Soldiers Memorial finished in Carrara® Glass!

● There are three important reasons why Carrara Structural Glass is the ideal material to create washroom walls and partitions in public buildings.

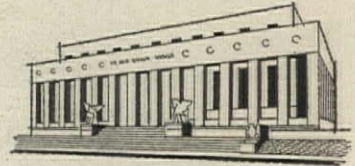
BEAUTY. The gleaming, highly polished finish of Carrara and its wide range of colors make its selection important where beauty and attractive color schemes are desired.

DURABILITY. Because it is all pure glass, Carrara is designed to last. It won't crack, craze,

stain or change color with age. Its uniform homogeneous structure is completely unaffected by water, acids, cleaning compounds, pencil marks or odors.

EASY MAINTENANCE. An occasional wiping with a damp cloth keeps Carrara fresh and clean. And because Carrara is made in large sections and installed with true, even joints, there are few places to trap dust and germs, and add to cleaning problems.

The Soldiers Memorial, in St. Louis, Missouri, was designed by Mauran Russell Crowell & Mullgardt. P. J. Bradshaw, associate. Plaza Commission Architects, St. Louis, Missouri.



Carrara
*...the quality
structural glass*

For more information on Carrara Glass, just write to Pittsburgh Plate Glass Company, Room 6395, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.



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f-18

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STAGES *cont'd.*

Klein was left wondering why, if theatricals are not educational, the schools have them. What is the purpose of these activities? Why give students a misconception of the working stage? Are nails in the floor and spots instead of footlights anti-educational? Does not the Board perhaps confuse scholastic with educational? Some of these students might become inspired to study stage design. Many of them will later on join community theaters; would it not be sensible to have their school productions furnish them with some inkling of the necessities of the modern stage? Would not community theaters gladly pay the high schools for the rental of their auditoriums were they permitted to put up some professional sets? But Klein did not ask these questions because he had finally had enough of the committee-ridden, buck-passing bureaucratic art of using time and paper to "dispose" of a problem without the need of facing troublesome questions. His summary of his attempt to be a responsible citizen:

"On the few occasions I had a chance to converse with anyone, I was asked what I had to sell and what my real interests in the matter were. When I pointed out that my only interest was to see the taxpayers' money used wisely and to see an improved stage, this seemed to baffle and disturb my hearers. I suspect they thought I must be some sort of pink.

"As to the argument of the Board that it needs no theater expert on its committee, I quote from the book, *Modern Theater Practice*: 'It is unfortunate that directors in school and community theaters often allow salesmen from scenic studios and lighting equipment companies to select lighting equipment for them. Usually the salesman is looked upon as an authority, and a considerable amount of money is wasted on the purchase of three or four border-lights and proscenium striplights that are obsolete in design and of very little use for the sort of production common in school theaters.'

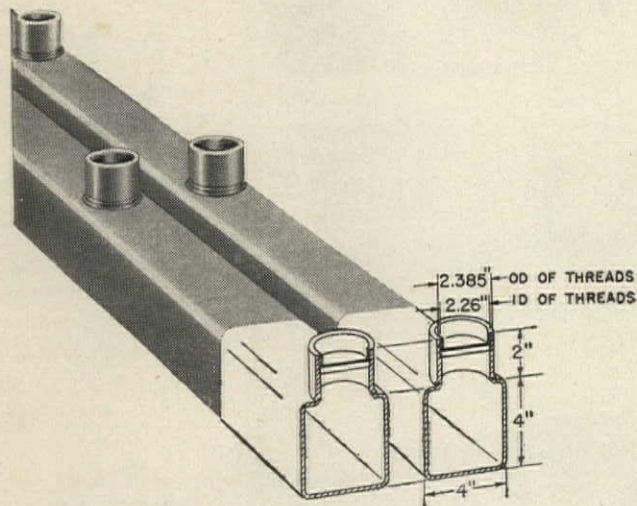
"I could find no motive to the Board's resistance to improvement. The nearest thing to light on the matter was an incident after my meeting at the Bureau of Construction, back at the beginning of the whole affair. A very nice architect took me aside at that time and said, 'Dear sir, we all start as idealists. But after many years of red tape you learn it is hopeless and you give up.'"

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wiring hazards...

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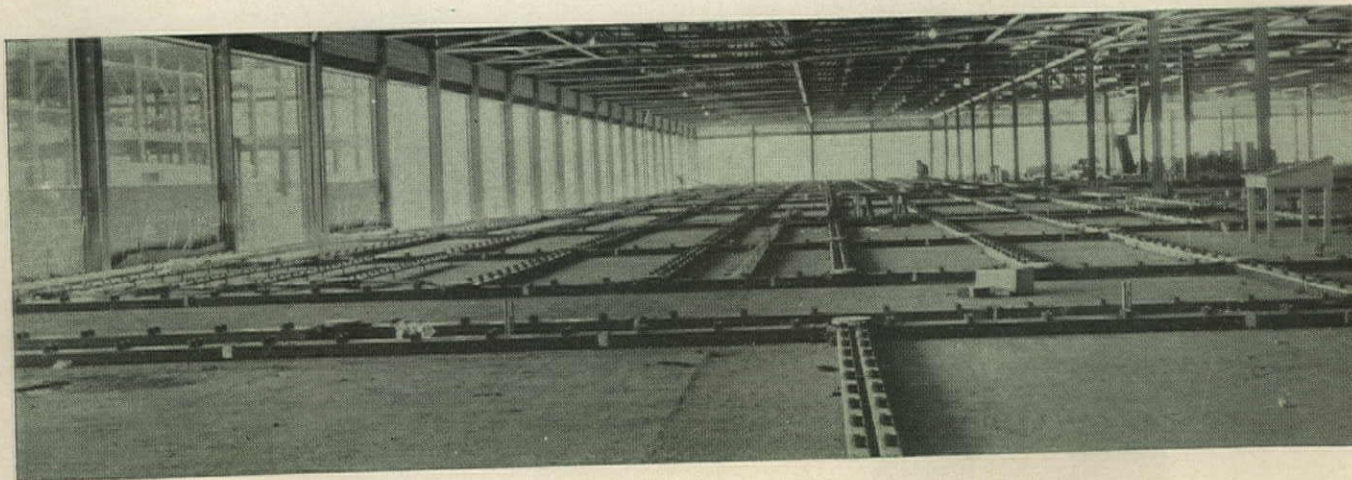
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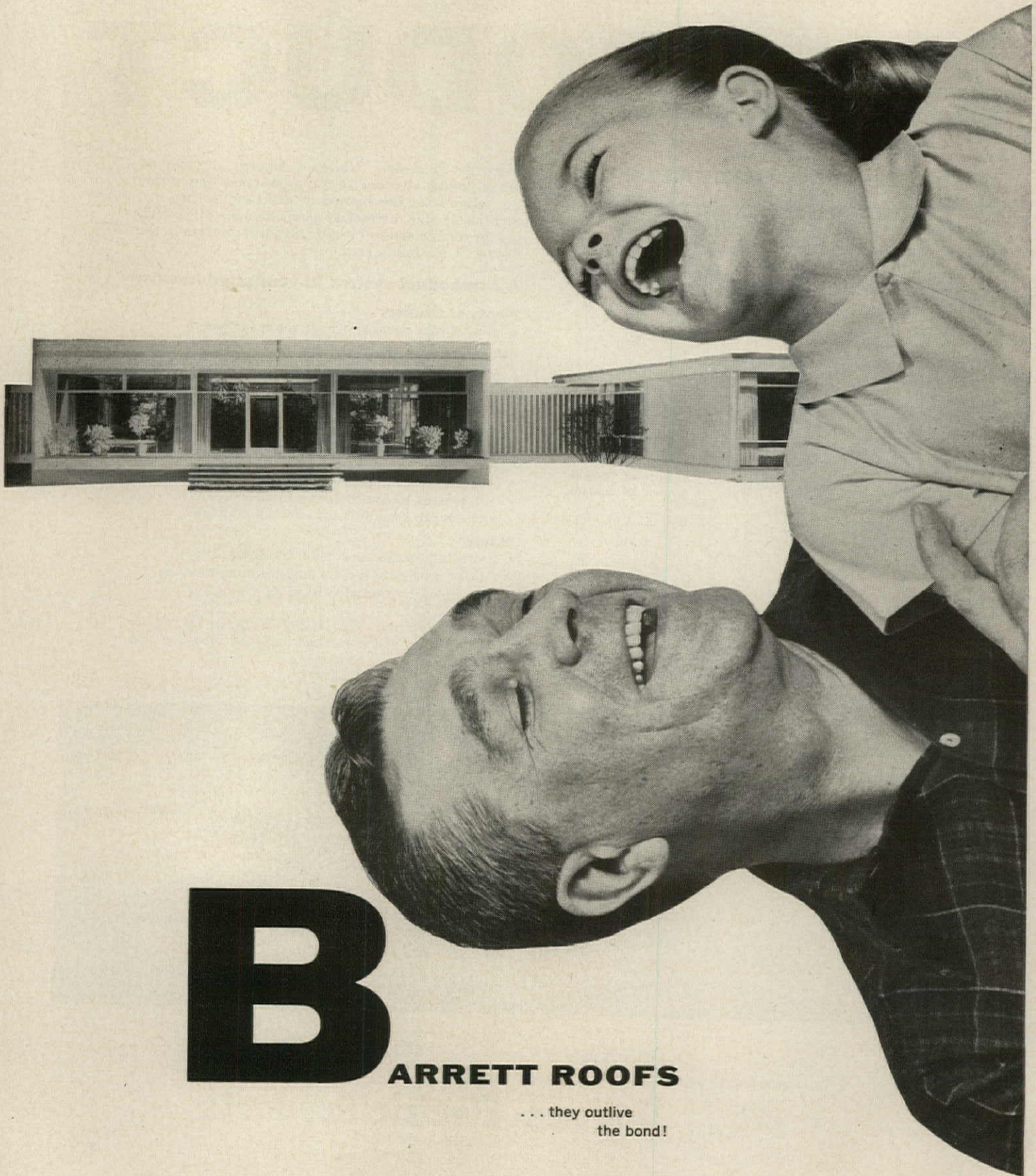
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A ROOF TO GROW UNDER is a built-up roof constructed of Barrett pitch and felt—the same materials used in the famous Barrett SPECIFICATION* Roof. Those materials... application by approved roofers... inspection by Barrett experts... and the specifications themselves—all contribute to the functional performance of this roof. It's guaranteed by bond for up to 20 years, yet often serves years longer without attention. *Its long-life design is exactly right for your latest design!* BARRETT DIVISION, Allied Chemical & Dye Corp., 40 Rector St., N. Y. 6, N. Y. In Canada: The Barrett Co. Ltd., 5551 St. Hubert St., Montreal, Que.

House: Fairfield County, Conn. Architect: John MacL. Johansen, New Canaan, Conn.
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*Reg. U. S. Pat. Off.



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Because Celotex Insulating Sheathing is easier to cut and fit, it goes up 30% faster, with up to 15% less waste. It insulates and weather-proofs as it builds, at *one* cost, and makes building paper unnecessary. Laminated for extra strength and rigidity, with no corner bracing needed with 4' wide, $\frac{25}{32}$ " thick Celotex Insulating Sheathing to meet FHA requirements. Has approximately 30% greater strength than ordinary sheathing with let-in bracing, as proved in actual demonstrations by independent testing laboratories.

Only Celotex Insulating Sheathing is made from tough, interlocking, long Louisiana cane fibers . . . nature's long-life fibers . . . protected against dry rot and termite attack by the exclusive Ferro[®] Process. This ideal basic material for insulation board combines strength, lightness, and resistance to deterioration. Moreover, this sheathing is *double-waterproofed* to seal out damaging, job-delaying moisture . . . *outside*, by protective asphalt coating . . . *inside*, by special processing of the fibers. It provides *practical job advantages* unmatched by any other brand of sheathing.

For dependable, easily-applied, time-saving sheathing . . . be sure to specify Celotex *Double-Waterproofed* Insulating Sheathing.



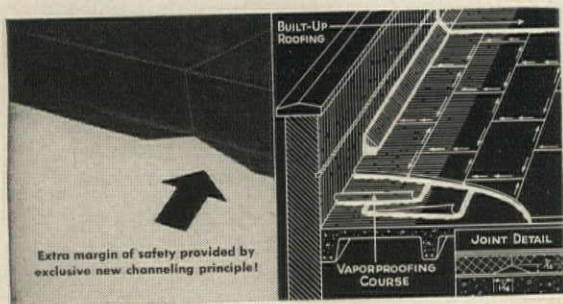
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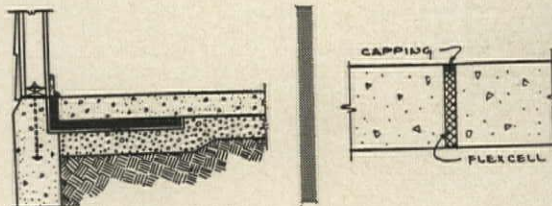
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New Inland Steel Building foretells office life of tomorrow

Bold, new design concept of Chicago building includes in-floor power, heating and air-conditioning — made possible by

MILCOR[®] Cellufloor

An extraordinary architectural achievement is taking form on the skyline of Chicago's Loop — it's the distinguished new headquarters building of the Inland Steel Company. Here is the ultimate in imaginative planning and engineering — unprecedented today, sure to be abreast of the best tomorrow.

The Inland Steel building has 19 floors — without interior columns. It has the longest clear spans of any tall building ever built. Its utilities are in a separate tower. Absolutely nothing obstructs the floor space.

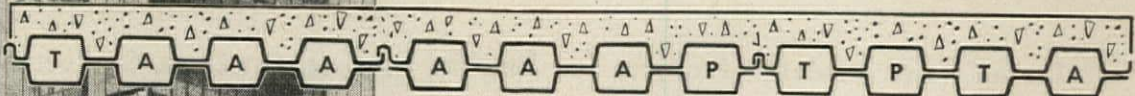
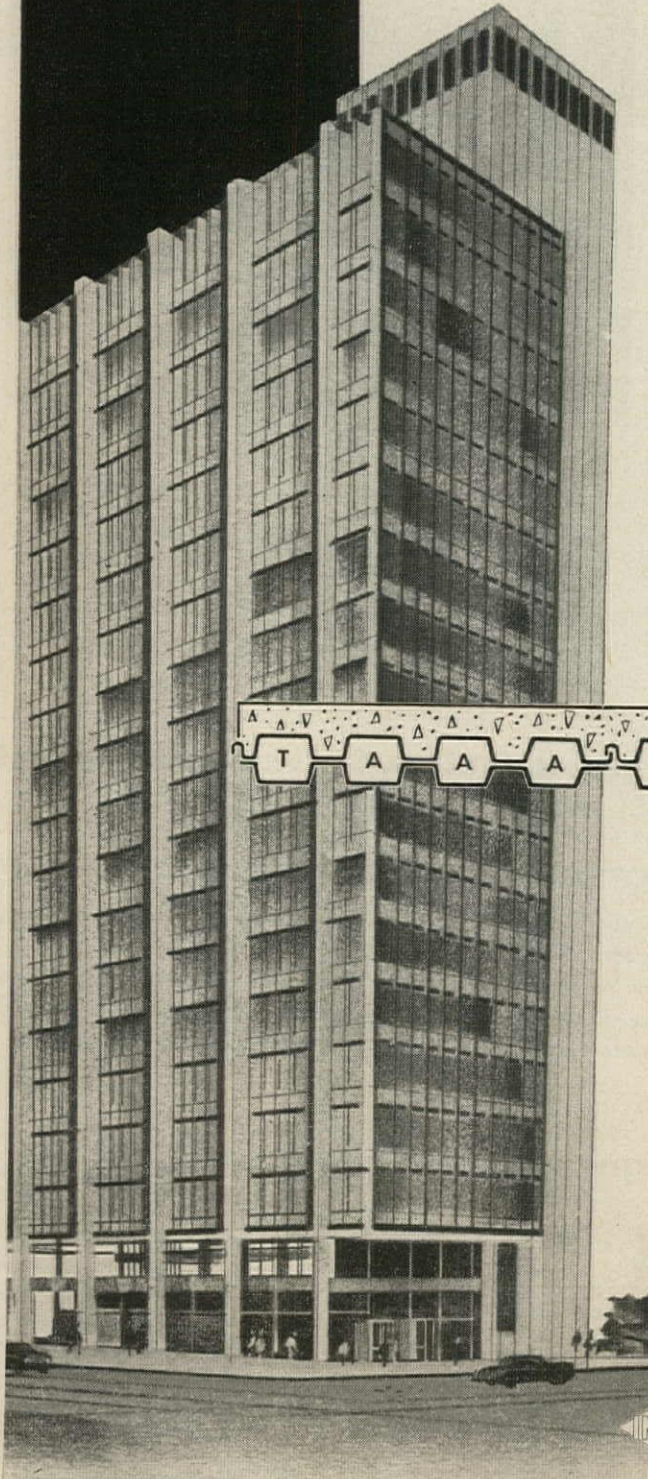
Air-transfer for year-round air conditioning plus power and communications pathways for all the potentials of the electronic age are provided *in the floor* — in Milcor Cellufloor, the cellular steel floor that combines light weight with great strength.

Cellufloor is made of TI-CO[®], the galvanized steel with the protective coating that won't flake or chip. Cellufloor was selected for warm and cool air distribution because TI-CO galvanizing protects against time, temperature and humidity.

For more information on the interesting Inland Steel Building design, or for Catalog 270 which describes Milcor Cellufloor construction, write to address listed below.

general contractor
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Chicago, Illinois

architects-engineers
Skidmore, Owing & Merrill
Chicago, Illinois



*Cross section of Milcor Cellufloor installation in the Inland Steel Building, showing the cells and the 2-inch concrete fill which covers them. The letters in the cells show the pattern of use developed for this installation.
(Key: A-Air; P-Power; T-Telephone.)*

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Heating and ventilating the new coliseum is accomplished by 22 Marlo Ceiling Units, with a combined capacity of 336,800 cubic feet per minute.

The building was designed by architect A. G. Odell, Jr. General contractor was Thompson & Street Co., mechanical contractor was Hopkins, Hicks and Ingle, and engineer was Mechanical Engineers, Inc., all of Charlotte.

View at right shows some of the 22 Marlo Heating and Ventilating Units installed in the new coliseum. Write today for more detailed information on these and other Marlo air conditioning units.



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RESEARCH

A spotlight on new tests, new standards, new studies

Plaster cracks

Secondary expansion of perlite plaster has been held responsible by some for the failure of ceilings in several big buildings (AF, Sept. '54 and Feb. '56). It is known that perlite plaster, unlike ordinary sand plaster or vermiculite plaster, undergoes a secondary expansion. All three types of plasters expand to a maximum volume and then decrease to a minimum after their set. Uniquely, perlite plaster then begins to expand again and continues this secondary expansion for a long period of time.

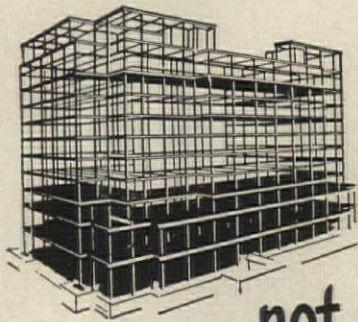
An extensive series of experiments with gypsum plaster used with lightweight aggregates is being conducted in Australia and is now partially presented in a three volume report.* The results indicate that plaster ceilings, restrained against movement, are unlikely to fail due to expansion. It is thought that the stresses introduced by the primary expansion will be relieved by plastic flow. Also, plastic flow should almost entirely relieve the stresses introduced by the secondary expansion of perlite plaster. This conclusion does not apply where there is appreciable bending in the supporting structure. Deflection of the floor-ceiling construction may contribute to noticeable deflections due to the secondary plaster expansion and lead to failure.

The report suggests that the secondary expansion is a result of an ionic interchange between the gypsum and the perlite. Calcium, potassium and sodium ions in the perlite may combine with the hydroxide ions from both the water chemically united with the plaster and the absorbed free water. Further studies at the Australian organization are being directed to determine the limits of the secondary expansion and definition of the amount of structural movement that will cause failure or serious deformation for various perlite-plaster mixes. It is believed that a chemical test of the perlite and plaster in solution can be developed to predict the amount of secondary expansion for any perlite-plaster mix.

Although these reports represent only a part of the Australian program of studies on lightweight aggregates with gypsum

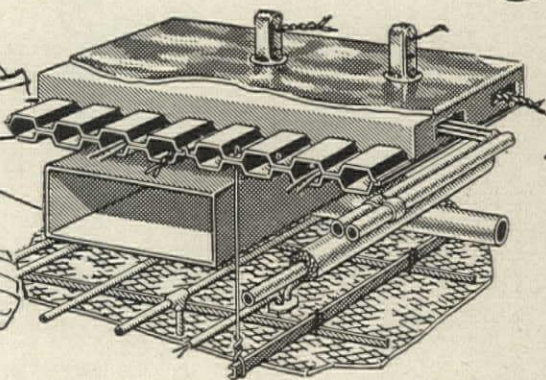
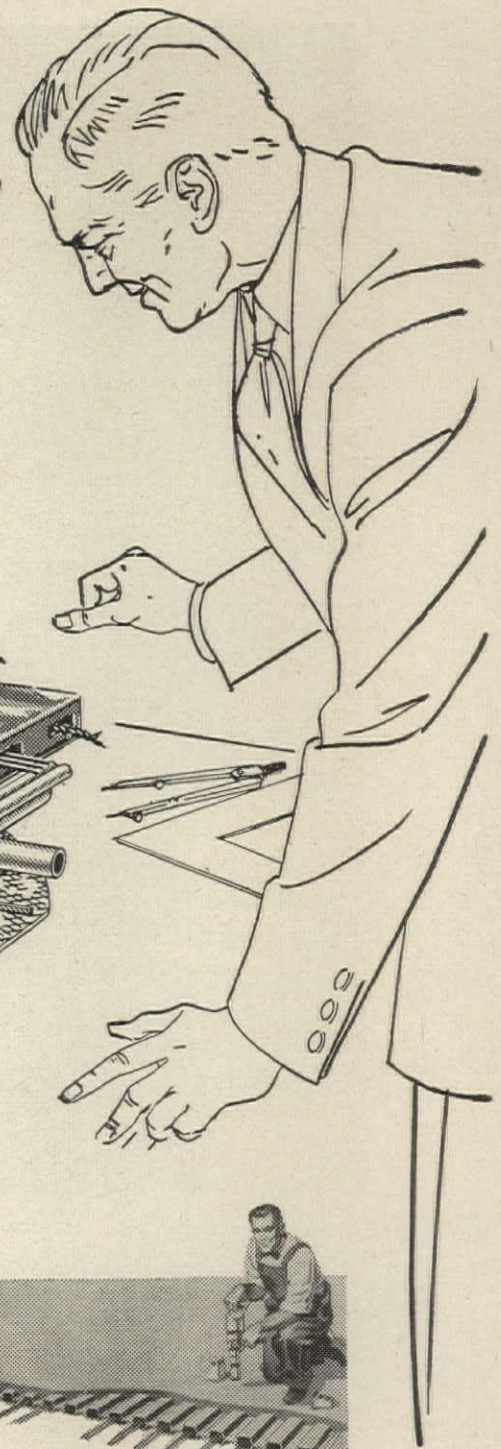
continued on p. 209

*J. J. Russell, *Properties of Gypsum Plaster with Lightweight Aggregates: 1. Plaster AB/1, Perlite AA/1; 2. Plaster AC/1, Perlite BG/1, Vermiculite AM/1; and 3. Plaster CC/1, Perlite CO/1*; Division of Building Research, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, 1955.



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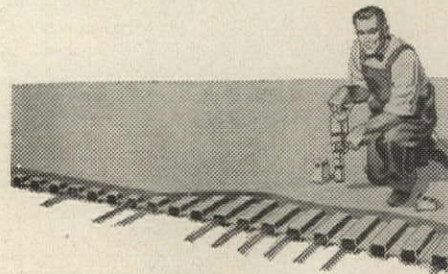
“Look at this model. Those cells are the steel Q-Floor. It is dry, noncombustible, clean. It goes up as fast as the frame. No temporary forms, no shoring. Two men can lay 32 sq. ft. of Q-Floor in half a minute and it immediately becomes a dry, working platform. Even in freezing weather, work speeds along, not delayed by wet materials.

“This is just the first reason for Q-Floors. Think of the electrical availability. After all, you’re investing for thirty, forty, fifty years. And you sometimes forget that floors are what a building is for. Even though the floor is a small fraction of total cost, floor space earns the income. It should be alive with ducts, pipes, wires, the earning arteries of a structure. You don’t want your building born with hardened arteries, with monolithic slabs for floors.

“See how the load-carrying steel cells of Q-Floor are crossed over by raceways for wires of every conceivable electrical service. This is your assurance that your investment will keep step with future increased demands for electrical business machines. You can put an outlet on every six-inch area of the exposed floor. It literally takes only a few minutes. Floor layouts are permanently flexible. Alterations tremendously simplified. It saves a huge amount of money over the years.

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Architectural engineer: S. Arthur Axtens, Denver. Contractor: R. T. Bickhard, Denver

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See how much bigger this classroom looks because of its Daylight Wall (with sliding glass doors). Wonderful solution to the problem of limited space. Emory School, Palm City, California. Architects: Paderewski, Mitchell & Dean.

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See the clear, true undistorted reflections in the windows of this Prudential Savings & Loan building. The glass is *Parallel-O-Plate*. Architect: Gerald H. Bense & Associates, Whittier, California.

these reflections
tell a
true story...
looking in,
looking out,
looking at

When reflections in a window are distorted, see-through vision is distorted too. As a result, the building makes a shoddy impression.

The reflections in the window of *this* building are clean and true because this glass is L·O·F *Parallel-O-Plate** — the most distortion-free (the only *twin-ground*) plate glass made in America.

Yet in most localities, *Parallel-O-Plate* Glass costs no more than ordinary plate glass.

So it makes good sense to have *Parallel-O-Plate* Glass in *your* windows, storefronts, display cases and mirrors. You'll find it's so much better — looking in, looking out, looking at. Read the column at the right for important facts on *Parallel-O-Plate*.

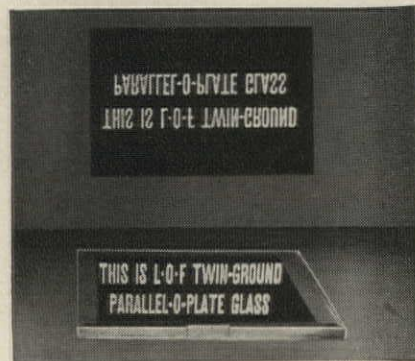
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PARALLEL-O-PLATE FACTS



COMPARE the reflections of the upside-down signs in the mirror of conventional plate glass (top) and the mirror of *Parallel-O-Plate** (bottom).

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RESEARCH *cont'd.*

plasters, they do provide considerable information on mechanical strengths and stiffnesses of these materials.

Another study of the problem of plaster cracks has led to the development of a measure of building motion. Studies of lateral building motion due to earthquakes, conducted at the University of Washington in Seattle, explored the possibility of using the cracking of gypsum plaster as a criterion of lateral motion. The results indicate that the cracking is proportionate to building motion and can be used to show its magnitude. The tests conducted under the supervision of Professor Alfred L. Miller used one part gypsum plaster and two parts sand plaster, instead of the lightweight aggregate materials used in the Australian studies.

Diagonal tension cracks in plaster walls and ceilings result from skewing or shear deformation of the diaphragms. During such deformations, diagonal tension and diagonal compression stresses are induced. Brittle materials can withstand only limited amounts of such stress without cracking. Cracking indicates that the limit has been exceeded and this limit was named the "cracking modulus." Its numerical evaluation is expressed in terms of a ratio. The ratio is that of the slope of a reference line, which is perpendicular to the imposed motion, to the slope of the crack which has been caused by that motion.

Of great interest is that the studies of neat plaster and sand plaster show the "cracking modulus" to be dependent on the gypsum matrix rather than the imbedded aggregate, provided that the mixture is homogeneous. Test panels were studied with both wood lath and metal lath. The average "cracking modulus" was 0.00095 or approximately 0.001 for both kinds of lath. However, the lateral loads were slightly greater at the time of cracking for half of the metal lath samples. The wood lath samples and the remaining metal lath samples cracked at about the same lateral load. For practical purposes, the "cracking modulus" appears to be independent of the lath base.

To use this information to determine the amount of skewing that has taken place in a plaster wall or ceiling diaphragm, multiply the "cracking modulus" by the height of the wall or the ceiling dimension normal to the distorting force. Thus, if the plaster "cracking modulus" is known to be 0.001 and the cracked wall is 8' high, the differential lateral displacement between the ceiling and floor diaphragms would be $0.001 \times 96" = 0.096"$. To this value must be added the actual width of the crack, measured in a horizontal direction. The cracking modulus concept is supported by a consistent relationship within the limit of cracking and therefore appears to be valid.

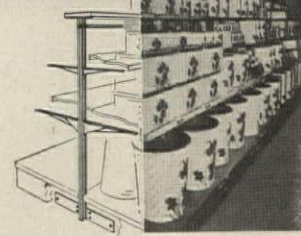
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Vizusell* is a system of strong metal channel uprights into which brackets and accessories can be locked at any height with the twist of a screwdriver. Recessed edges of uprights accept $\frac{1}{4}"$ or $\frac{1}{8}"$ panels.



Walls



Floor Units



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Thickness Inches	% Absorption By Volume	
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Last winter fire broke out in one bay of a large industrial plant in Canada. The performance of Fesco Board in that fire will be of interest to every architect. Here are the facts:

THE ROOF was 4-ply, T & G, with 1" Fesco Board over vapor barrier on steel decking.

TEMPERATURES in the bay reached 1600°, heat so intense that steel roof members and steel decking buckled.

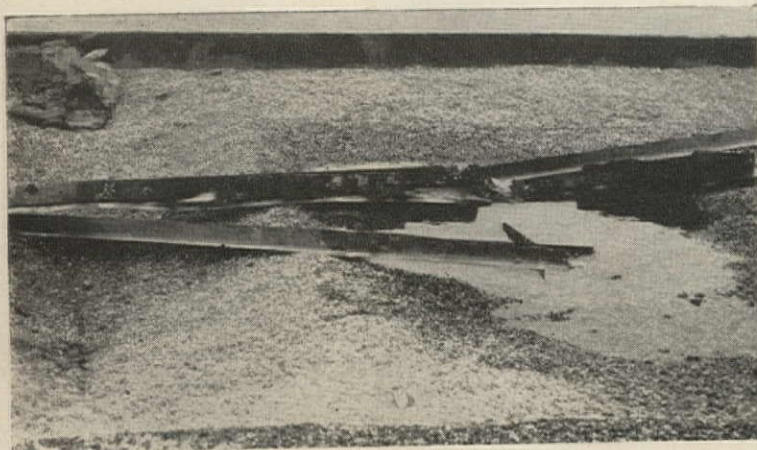
THE FIRE SOURCE was of such great volume and volatility that it raged for one hour and fifteen minutes before being extinguished.

FESCO BOARD remained intact, unfissured and unbroken, preventing flame tongues or fire balls from breaking through the roof and spreading fire to other bays.

FIRE DAMAGE was limited to the single bay where it originated.

A detailed case history of the performance of Fesco Board in this fire will be shown on request. Here is dramatic proof that Fesco Board provides an ideal combination of properties not found in any other roof deck insulation board. — Write for sample and data.

Water from firemen's hose stands on unbroken deck over fire-damaged bay. Fesco prevented "break through" of fire, though 1600° temperatures buckled steel roof members and decking.



Roofing peeled back for inspection shows heat warped steel deck, charred vapor barrier, undamaged Fesco Board. Note strong bond of Fesco Board to felts—pried loose from board with spade.

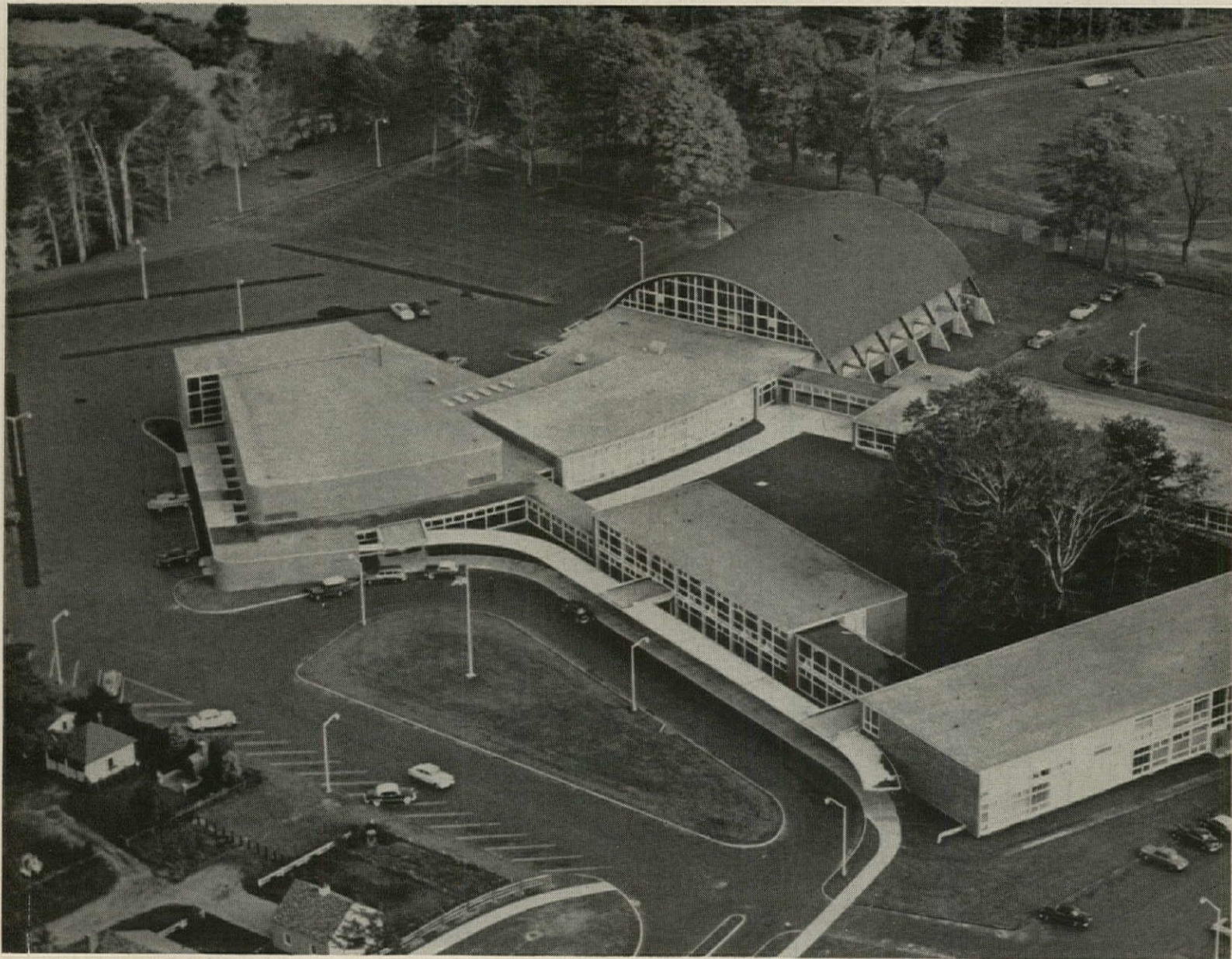


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*Pittsburgh Glass lets the light in
 . . . and the beauty, too!*

In this dramatic new high school at East Hartford, Conn., just about every room boasts a huge, glass window-wall. The daylighting is superb, and so is the view—two important considerations if you want fresh, alert minds.

The cluster-plan buildings are connected with *glass-enclosed* walkways that are bright and cheerful, while offering complete protection against the elements. But look at the gymnasium to see what a

miracle material glass really is. The gym is glazed with large panels of Herculite® shock-resisting plate glass to dispel the gloom. And, since Herculite is heat treated and tempered, it is incredibly strong—a useful property in athletic areas!

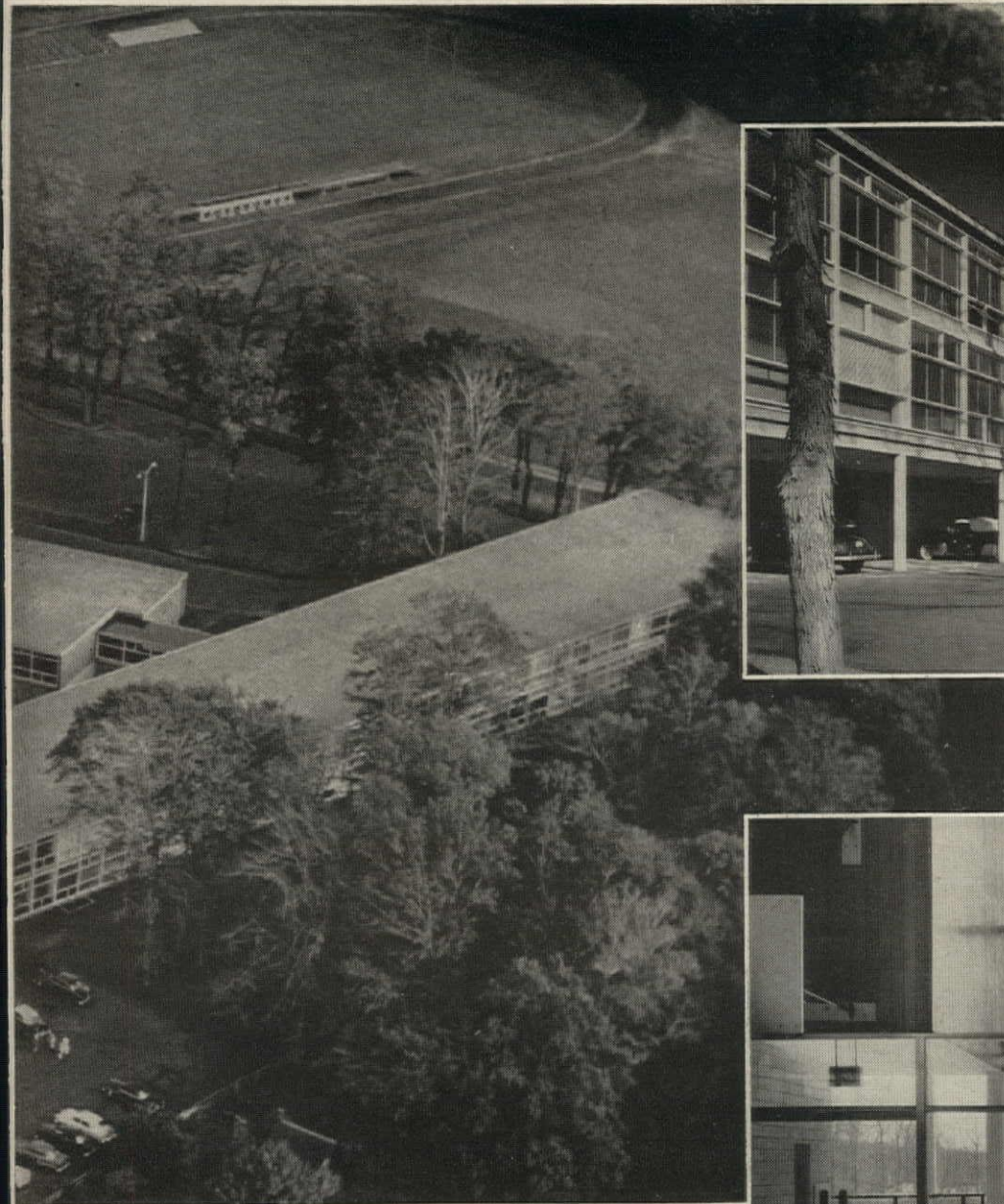
All in all, 50,000 square feet of Pittsburgh Glass were used here. Countless visitors feel that the glass deserves great credit for the daylighting, the view, and the graceful beauty of this new school.



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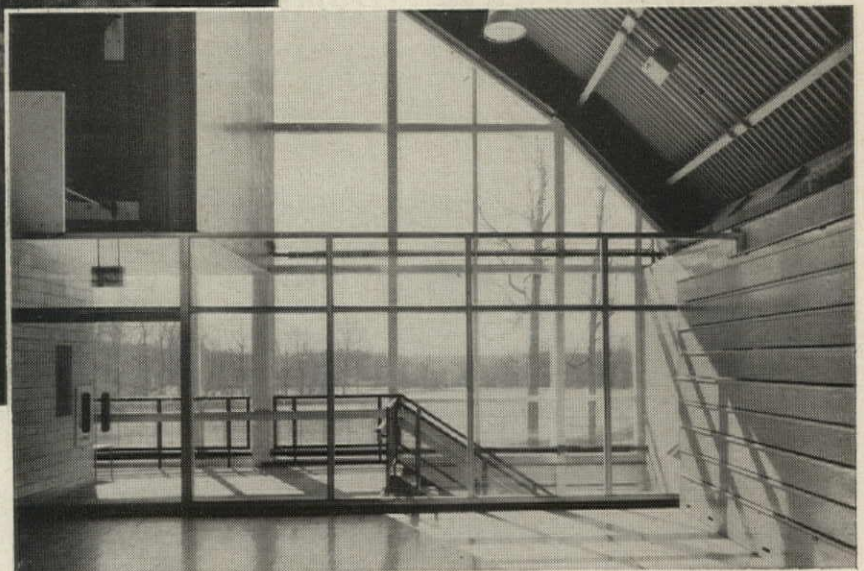
IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED



Auditorium is at left, then, (clockwise) the gym, shops, classrooms and office building.
 Architect: Nichols & Butterfield, West Hartford, Conn.



Academic wing at left, shops to right. Venerable beech trees were carefully preserved during construction.



Entrance to gym, showing Herculite Glass. Unit at upper left houses ventilating system.

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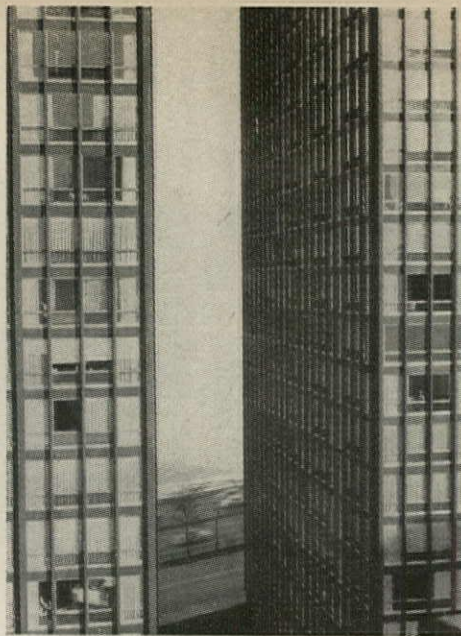
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Design your schools better with
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IIT Commons building at Chicago
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BOOKS

MIES VAN DER ROHE. By L. Hilberseimer. Paul Theobald & Co., 5 N. Wabash Ave., Chicago, Ill. 200 pp. 8 $\frac{3}{4}$ " x 11 $\frac{1}{4}$ ". Illus. \$9.75

"At a time when Wassily Kandinsky was experimenting with form and color, he happened to enter his studio one evening at dusk. In the dim light he saw his paintings only as form and tone values and was forcibly struck by their simplicity. He realized that by eliminating details and reducing everything to a minimum, the effectiveness and meaning of his paintings could be greatly intensified. Something similar happened to the architects of the twenties. They, too, realized the superfluity of meaningless architectural elements; they discovered the basic essentials of architecture and came to express their ideas with refreshing directness and simplicity."

L. Hilberseimer is an old-time colleague not only of the subject of his new book, but of that whole stem of the modern movement which sprouted in Germany after World War I; he himself founded the Dept. of City Planning at the Bauhaus of Dessau (and is a professor at Illinois Institute of Technology today). He has lived the lore of the movement, so he can remember it with authority, as indicated in the paragraph above.

But his book about Mies is hardly a memoir. Instead, he divides his pictures and thoughts into a dozen essay subjects, ranging from "Proportion" to "Public Buildings," in explaining what this leader has accomplished in the past 70 years. Illuminated by intimate knowledge and some fine photographs, the book is a welcome addition to the chronology of an important movement in architecture.

OSCAR NIEMEYER: WORKS IN PROGRESS. By Stamo Papadaki. Reinhold Publishing Corp., 430 Park Ave., New York City. 192 pp. 9" x 9". Illus. \$10

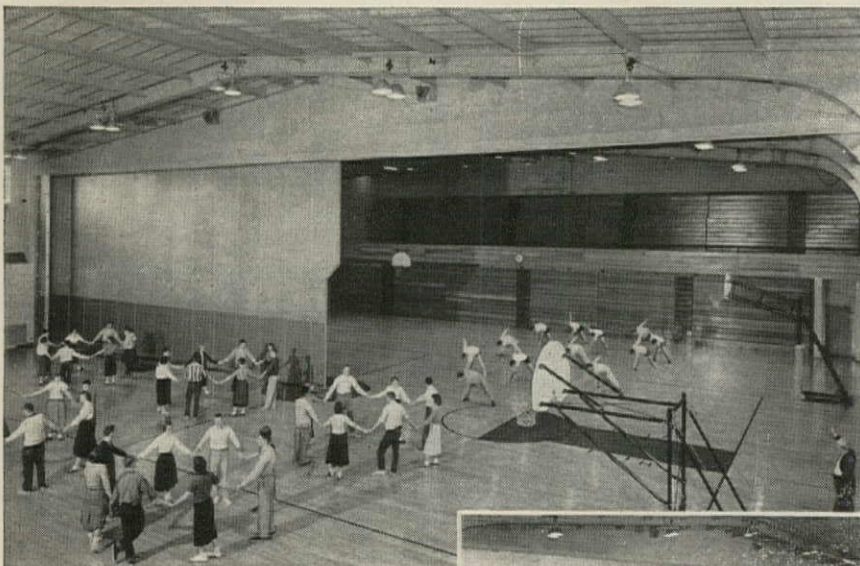
Only a few architects have grown stylistically tall enough in the shadow of the big three—Mies, Corbusier and Wright—to be visible internationally. Notable among these few is Oscar Niemeyer of Brazil, a Corbusier student and a master architect. In 1950 Stamo Papadaki produced an excellent book: *The Work of Oscar Niemeyer*. This new book returns after only six years to the chronicle of Niemeyer's creative career, and interestingly, opens rather defensively.

Author Papadaki (and also Niemeyer himself, who contributed notes) are evidently still smarting from the accusation of empty flamboyance included in a critique of Brazilian architecture published by Britain's *Architectural Review* in 1954.

continued on p. 218

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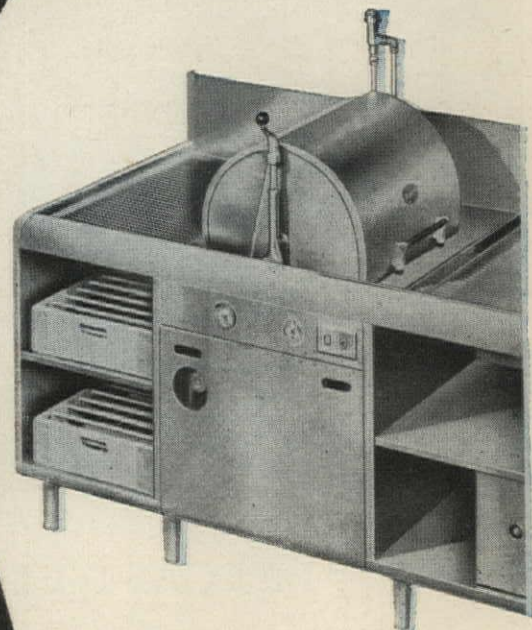
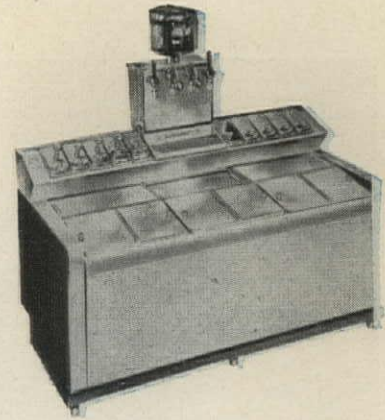


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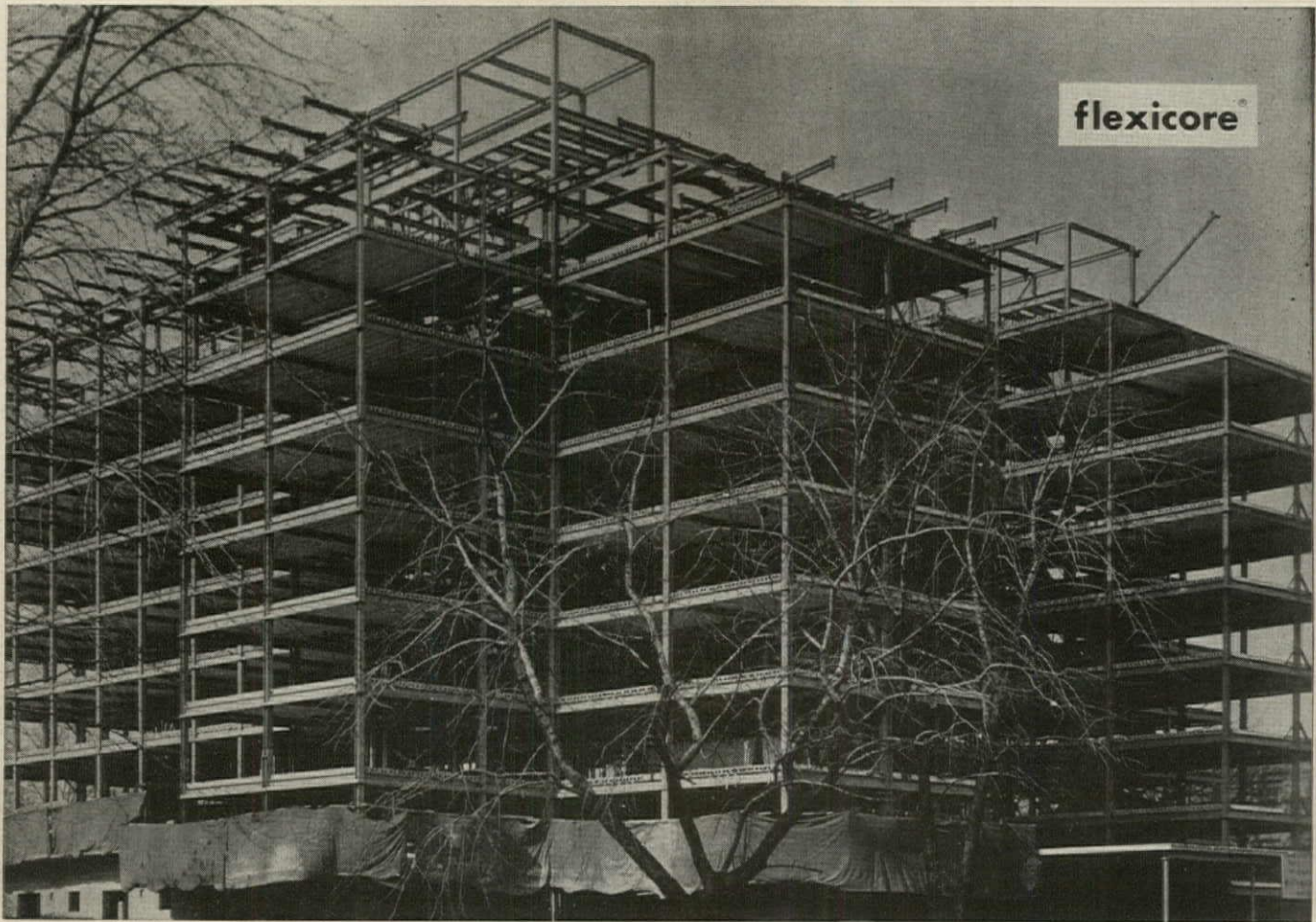
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PRECAST FLOORS ON STEEL FRAME

This picture was taken during the erection of precast floors on the Shoreland Towers, Indianapolis, one of three luxury apartments designed by Paul I. Cripe, Inc., and built by L and L Building Corporation. All three used Flexicore on a steel frame. This method can cut a month or two off construction time on a job of this size, and give your client a month or two ad-

ditional rental income. Construction costs are cut by saving weeks of on-the-job labor and the usual delays of poured floors. The smooth underside of the Flexicore floors were exposed throughout, eliminating plaster ceilings. Find your nearest manufacturer in the list below and phone or write for more information on Flexicore construction.

Flexicore slabs are exposed to make attractive ceiling treatment for auto entrance, below left, rental unit, center, lobby, right.



ALABAMA, Birmingham 1, PO 630
The Alabama Cement Tile Co.
COLORADO, Denver 1, PO 366
Flexicore Company of Colorado
FLORIDA, Tampa, PO 2189
Universal Concrete Pipe Co.
ILLINOIS, Chicago
Franklin Park, PO 277
Mid-West Concrete Pipe Co.

INDIANA, E. Chicago, PO 539
Columet Flexicore Corporation
MICHIGAN, Livonia, PO 2006
Price Brothers Company
MINNESOTA, St. Paul E-4
Molin Concrete Products Co.
MISSOURI, St. Louis Flexicore
P.O. Box 552, Collinsville, Ill.

NEW JERSEY, Camden
Camden Lime Co.
NEW YORK, Buffalo 6
Anchor Concrete Products, Inc.
NORTH CAROLINA, Lilesville
W. R. Bonsal Company, Inc.
OHIO, Columbus 22
Arrowcrete Corporation
OHIO, Dayton 1, PO 825
Price Brothers Company

PENNSYLVANIA, Monongahela
Pittsburgh Flexicore Company
RHODE ISLAND, Saylesville
Durastone Flexicore Corporation
TEXAS, Houston, 4511 Kyle St.
Flexicore of Texas, Inc.
WEST VIRGINIA, Wheeling
Universal Concrete Pipe Co.

WISCONSIN, Beloit, PO 325
Mid-States Concrete Products Co.
CANADA,—Toronto, Ontario
Murray Associates, Limited
CANADA, Montreal, Quebec
Creaghan & Archibald Ltd.
CANADA, Woodstock, Ontario
Shell Industries Ltd.
PUERTO RICO, Rio Piedras
Flexicore Co. of Puerto Rico

*Meeting
the architect's
concept*



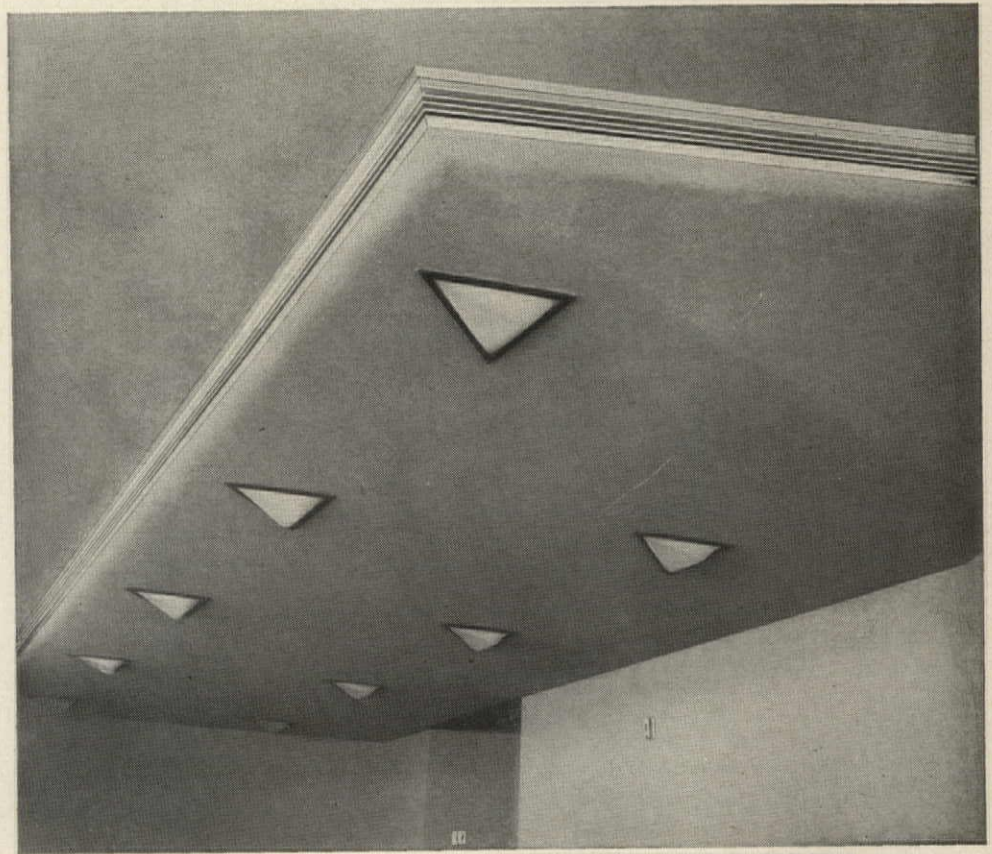
*Price Tower:
Bartlesville, Okla.*
Architect:
Frank Lloyd Wright
Engineer:
Mendel Glickman
Consulting Engineers:
Collins & Gould
General Contractor:
Culwell Construction Co.

High velocity air diffusion in the Price Tower

The photograph at the right shows how Mr. Frank Lloyd Wright incorporated Anemostat Straight Line All-Air High Velocity Units in the ceiling design of the Price Tower at Bartlesville, Oklahoma. The conditioned air is supplied through continuous Straight Line Diffusers located on two sides of the suspended ceiling. The diffusers do not only have vital functional use, but also add to the esthetic appearance of the architect's design.

The Anemostat All-Air High Velocity distribution system also offers important advantages. It can be used with smaller than conventional ducts. It can be installed in less time and at less cost. It requires no coils, thus eliminates leakage, clogging and odors. Furthermore, Anemostat round, square and straight line diffusers with high velocity units are adaptable to a wide variety of architectural designs.

See how Anemostat Straight Line All-Air High Velocity units are used in a typical office area.

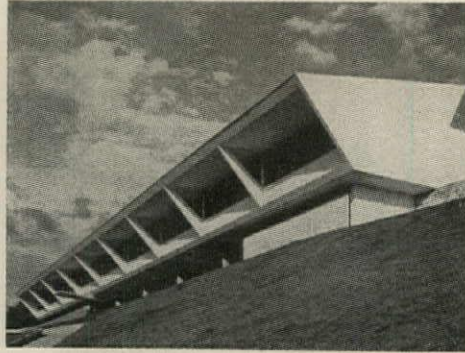
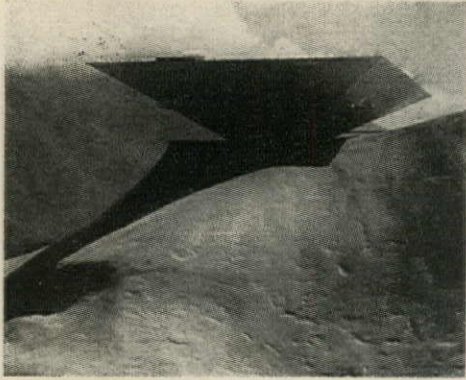


PHOTOS: JOE D. PRICE



Write for "High Velocity Air Conditioning: Its Effect on Building Design" to Anemostat Corporation of America, 10 E. 39 Street, New York 16, N. Y.

Anemostat—The Pioneer of All-Air High Velocity Systems



School at Diamantina
Art museum for Caracas (model)

BOOKS *cont'd.*

The architects are just playing around over there, the *Review* hinted.

Retorts Papadaki: "Lyrical exuberance is not or does not appear to be necessarily humble . . ." Explains Niemeyer: "It seems that they do not use the same measure—severe and objective—when they deal with their own projects as when they are examining ours. . . . Our modern architecture reflects the social contradictions in which we live and in which it has developed."

The reader of this book will wonder. For instance, Niemeyer's planned Modern Art Museum for Caracas, Venezuela, surely is a brilliant tour de force, renouncing geography to expand upward into its own private world (photo above). "Our desire," says the designer, "was to develop a compact form detaching itself clearly from the landscape and expressing in the purity of its lines the forces of contemporary art." But are the South American "social contradictions" so emphatic as to compel a retreat of architecture to the detachment of modern art? And is there any future in these defiant intellectual gestures?

The large number of drawings and model photographs, contrasted with the disappointing number of photographs of finished buildings and a minimum of words make this book itself wan although beautiful. There are too few moments in it when the reader feels again the sorcery of this architect, who can mix his two main ingredients, sun and concrete, with such valid imagination. Possibly six years was an unfairly short interval to publish again.

CONTEMPORARY CHURCH ART. By Anton Henze and Theodor Filthaut. Published by Sheed & Ward, 840 Broadway, New York 3, N.Y. 128 pp. 8½" x 11¼". Illus. \$7.50

Sixty-four pages of thoughtful text and 128 pages of handsome photographs on the integration of church art and architecture. About one-third of the illustrations are from US churches; the balance, from Europe.

BUILDER'S VEST-POCKET REFERENCE MANUAL. By William J. Hornung. Published by Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N.Y. 3" x 6" x 3/8" thick. \$1.95

This is an unusually compact and useful little handbook for builders with good enough eyes. Small but very clear. It is all arranged so the builder can not only quickly choose structural sizes to fit spans, but can quickly make a rough estimate of costs. The manual's small dimensions make it genuinely a vest-pocket book.

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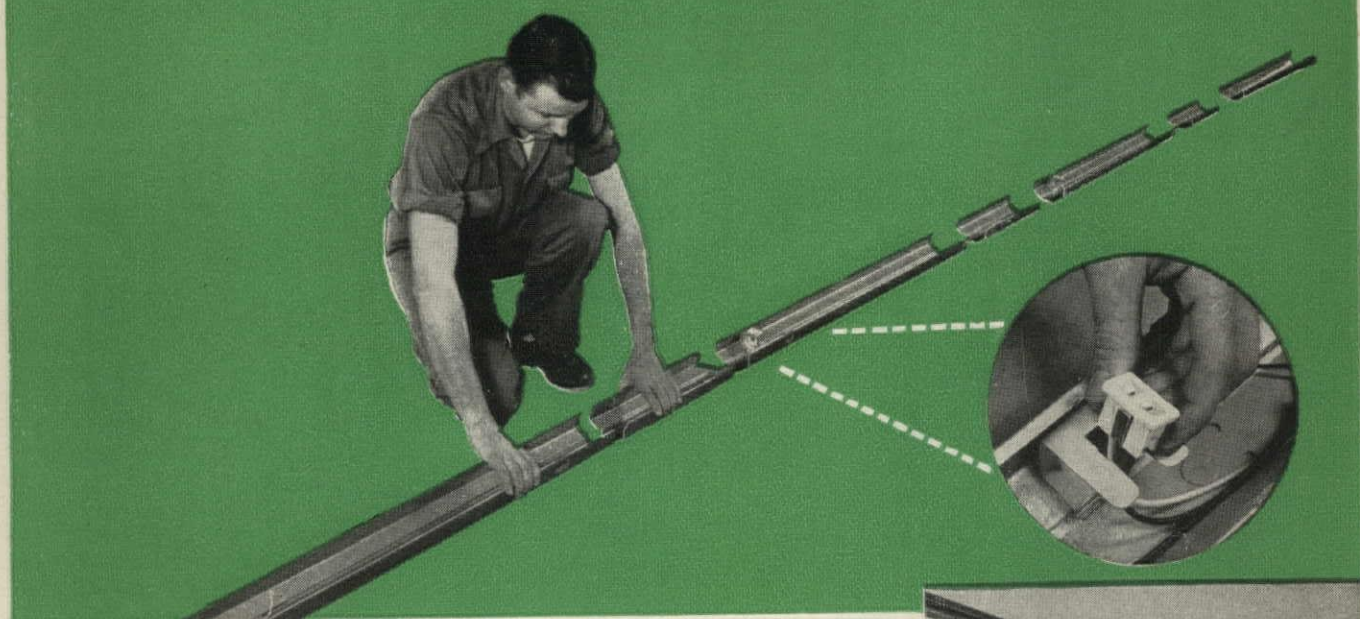
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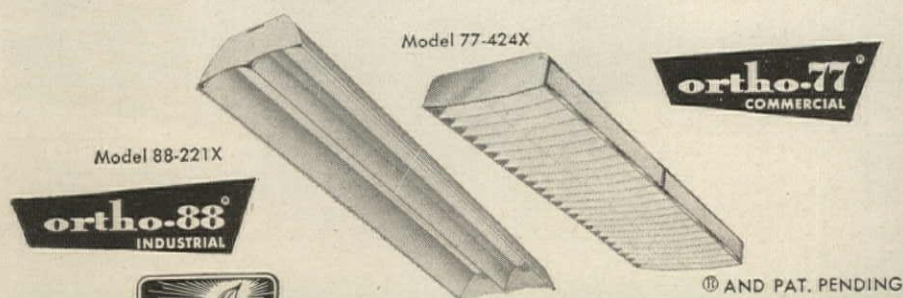
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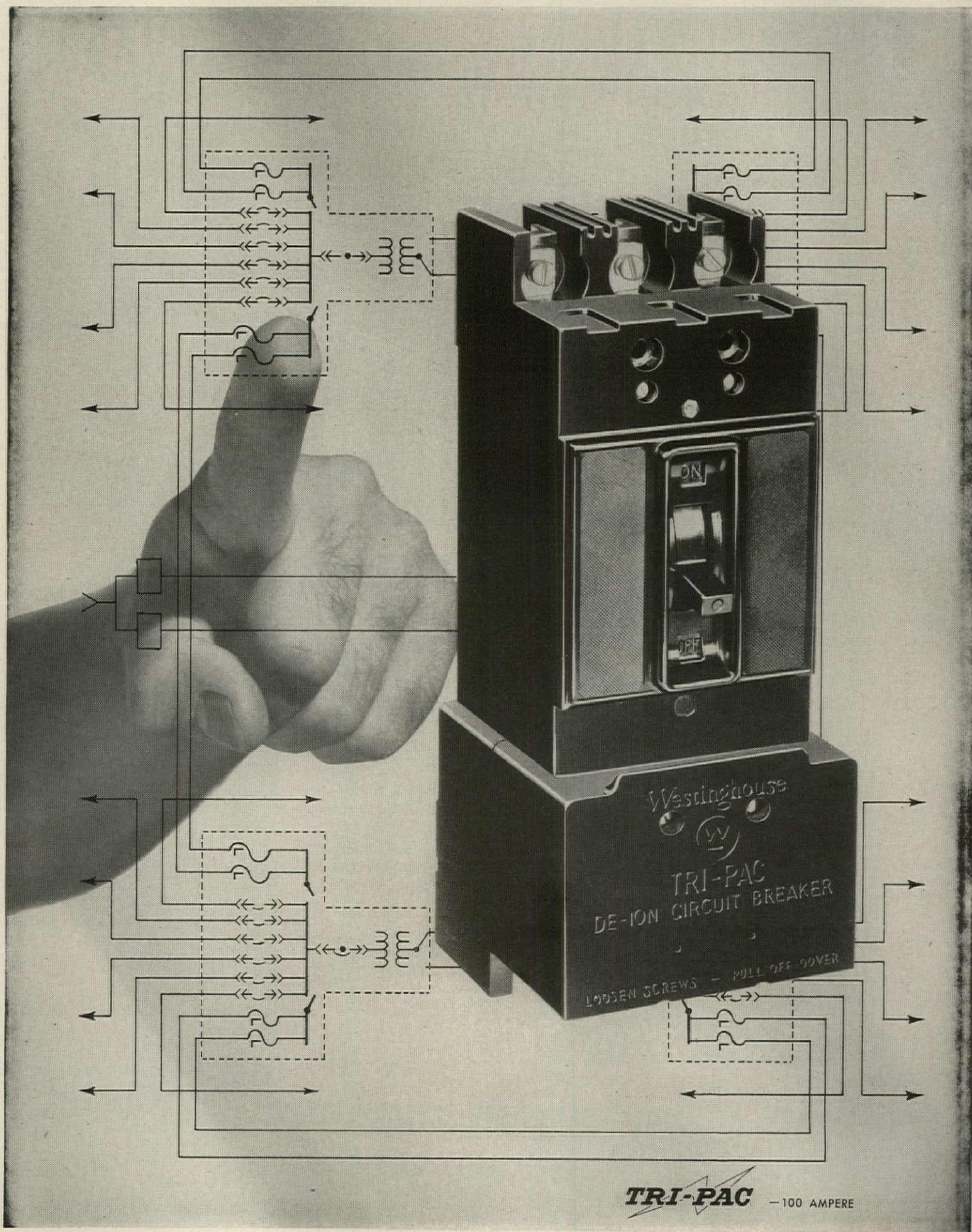
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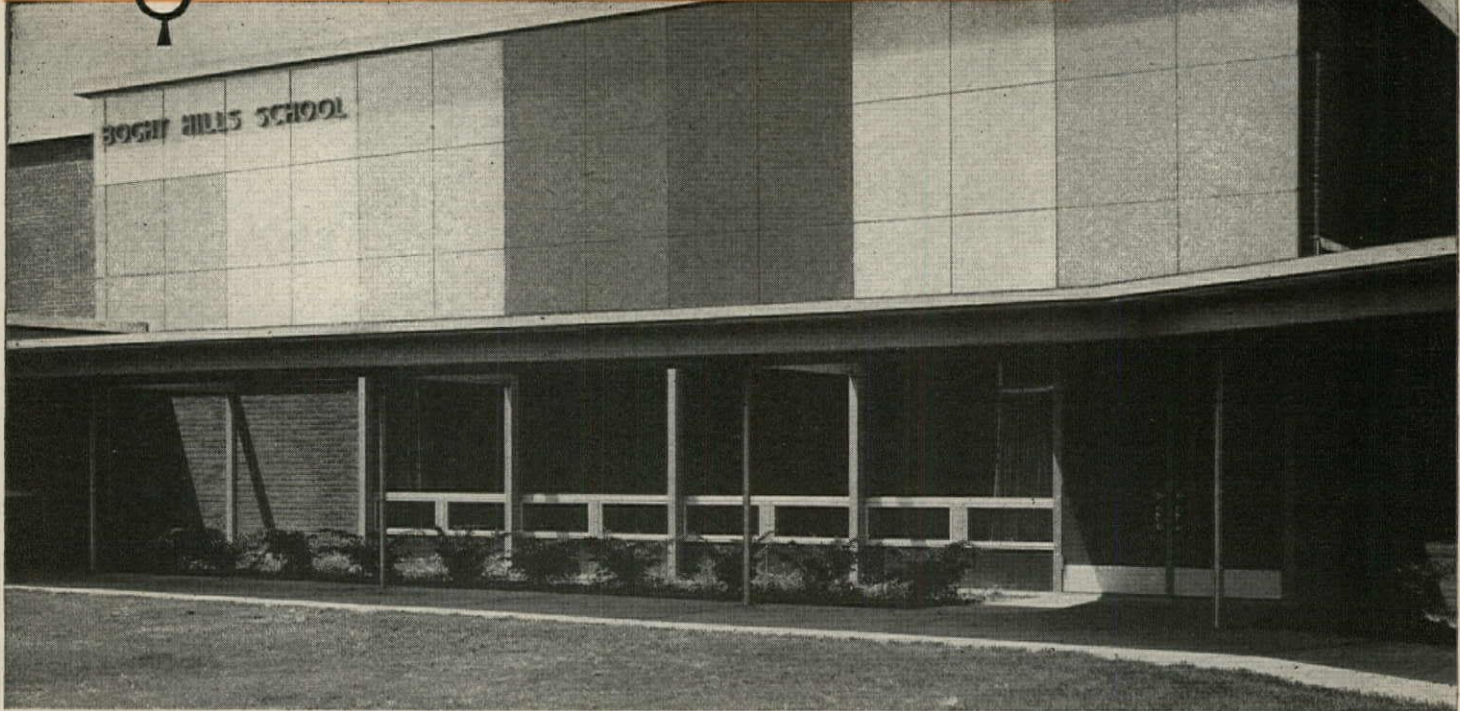
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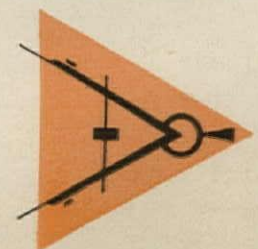
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See next page for study of
porcelain construction details
of the building shown above.

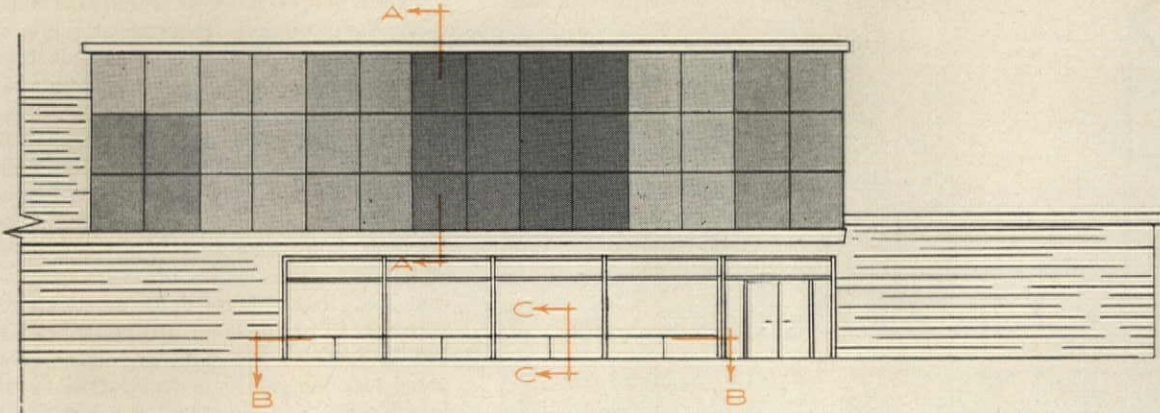
In case you have missed Design Study 1 and 2, let us know. We will be glad to send as many copies as you need.



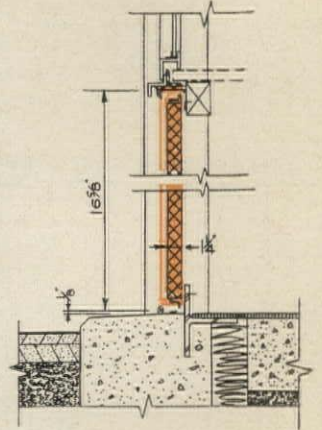
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ELEVATION



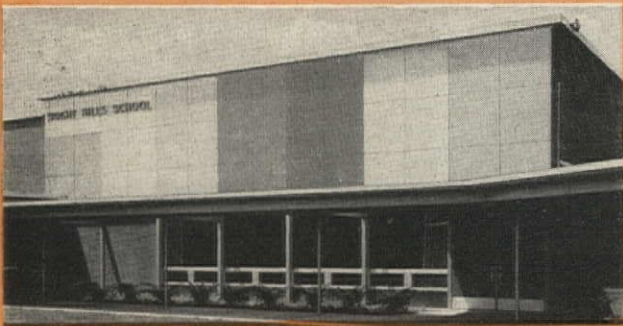
SECTION C-C

DESIGN STUDY





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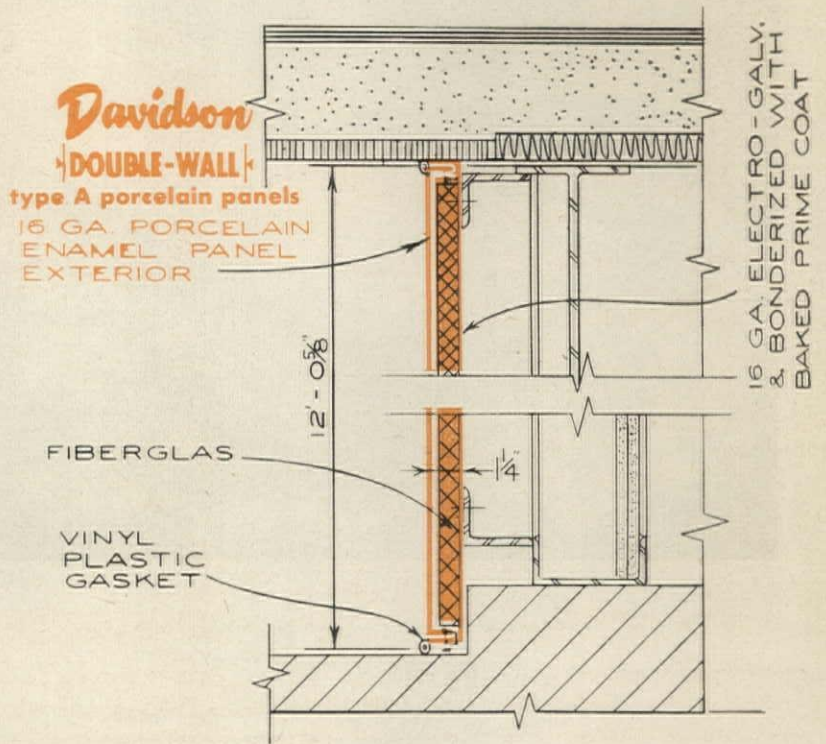
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- Detailed, 16-page Architectural Catalog, 1956 Edition
- Porcelain Panels for Store Fronts
- Porcelain Panels for Shopping Centers
- Porcelain Panels for Schools
- File of Typical Construction Details
- Reference File Jacket on Architectural Porcelain
- Reprints of this Study #3. Quantity _____

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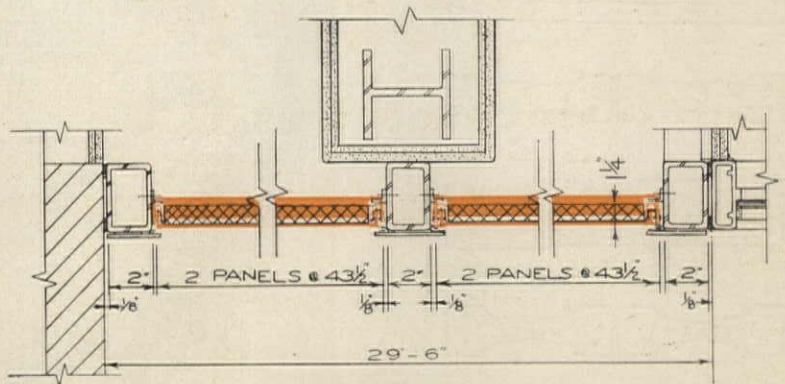
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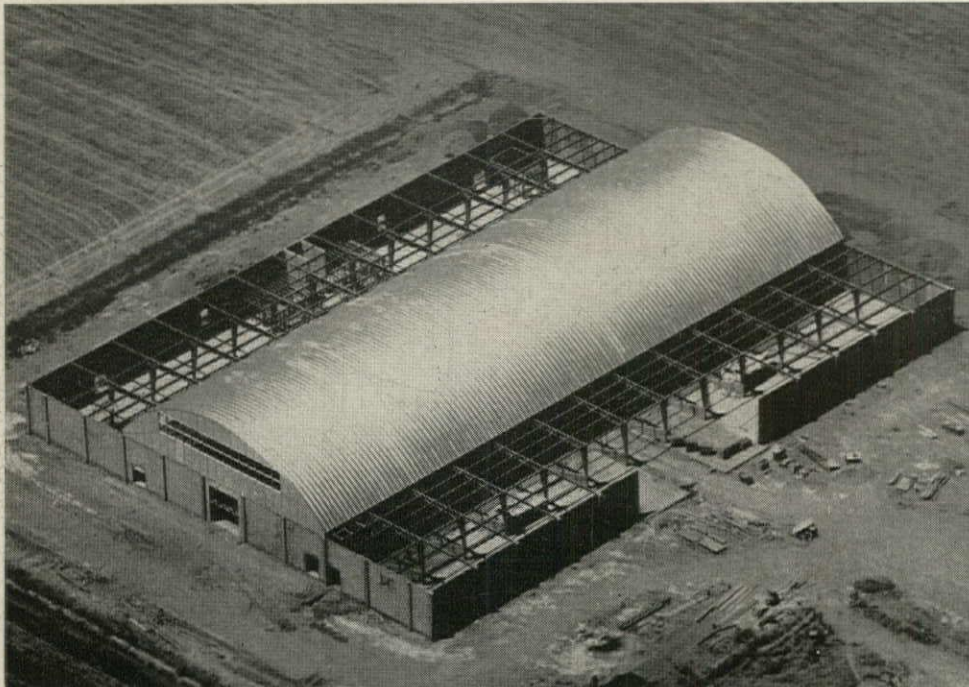
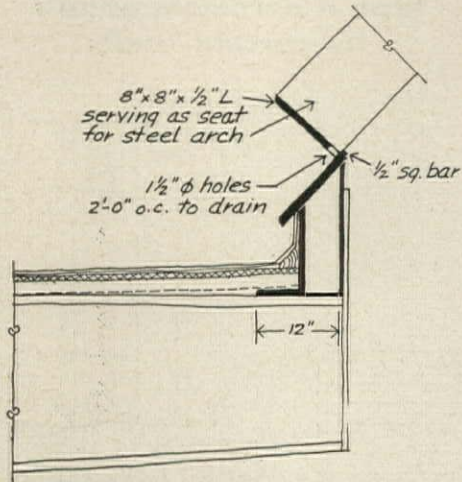


SECTION "A-A"



SECTION B-B

PRODUCTS

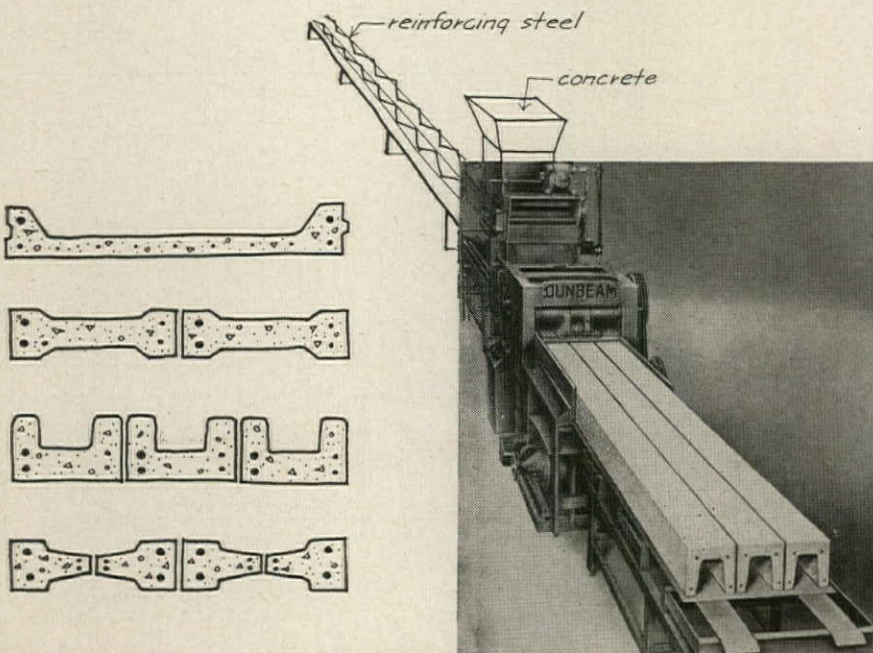


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(1) STEEL ARCH ROOF spans 120' without a truss, purlin or post

Bridging the 120'-wide arena in the Phoenix Coliseum with little more than a 1/16" thickness of steel is a new trussless *Wonder* roof. Engineered on the same principle as the manufacturer's quonset-type industrial and commercial buildings (AF, Aug. '55) the long-span arch is shallower in section than the half-moon prefabs yet is still completely self-supporting. On the Coliseum the ends of the arches are braced against steel plates and welded (see drawing, left). The roof is site-assembled of 2'-wide curved bands of 18-ga. galvanized steel with minute cross corrugations. Sections, 6' to 10' long, are bolted end to end into 60' to 120' arcs and interlocked along side flanges for a rigid structure of any length. The roof will support 42 lb. per sq. ft. (more than a 5' snow load) and can buck hurricane winds of 113 mph. For thermal and sound insulation and fire protection, 1/2" of acoustical plaster can be sprayed directly to the metal underside. Cost of *Wonder* roof per sq. ft. in place is estimated at 75¢ for material, 15¢ for labor. Roofing over the 31,200 sq. ft. display area on the Arizona job pictured took 450 man-hours—an average of eight men working seven 8-hour days. Contractors and owners may be most impressed with the reasonable price and suitability of the roof for such structures as hangars, supermarkets, convention halls, auditoriums and school gymnasiums. (Height at center of 40' allows for some free swinging aerial acts.) Designers, and spectators on the inside, will appreciate what the roof system does without: pillars, purlins and posts to peek through and crane around.

Manufacturer: Wonder Building Corp. of America



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continued on p. 230

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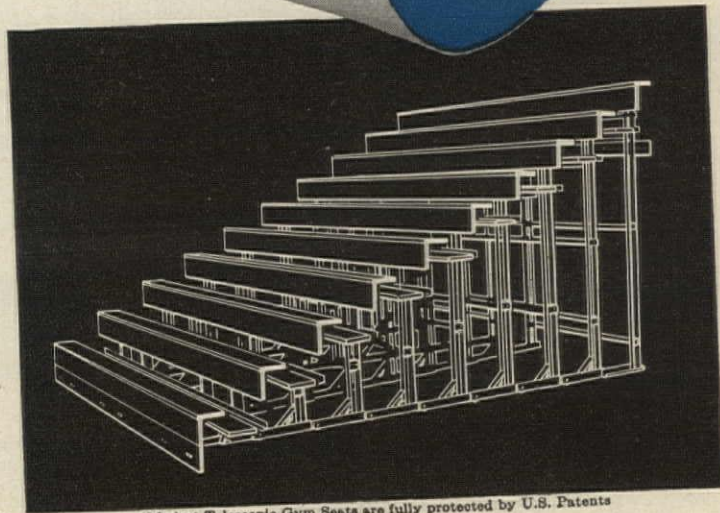
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Reynolds Aluminum Applications:
Aluminum Extrusions for Sun Shades

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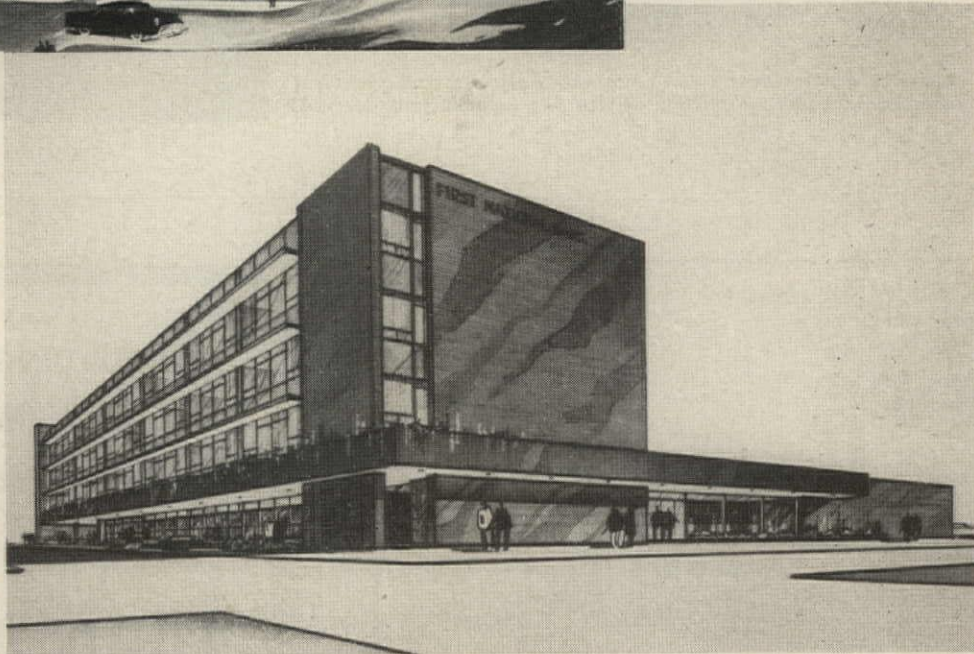
Architects:
MacKie and Kamrath, A.I.A. Houston

Associate Architects:
Lloyd Borget and Kenneth Bentsen, Houston

General Contractor:
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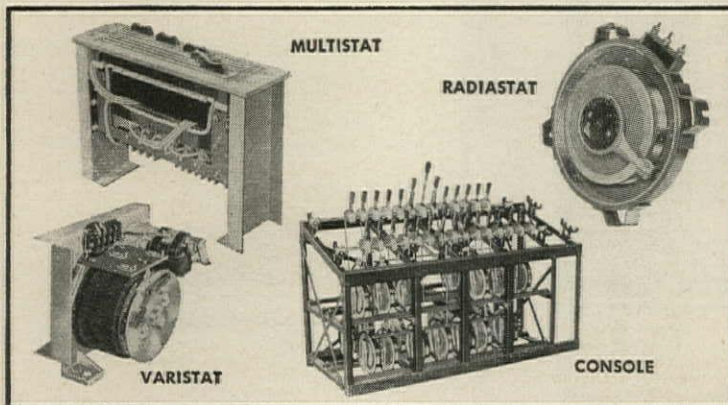
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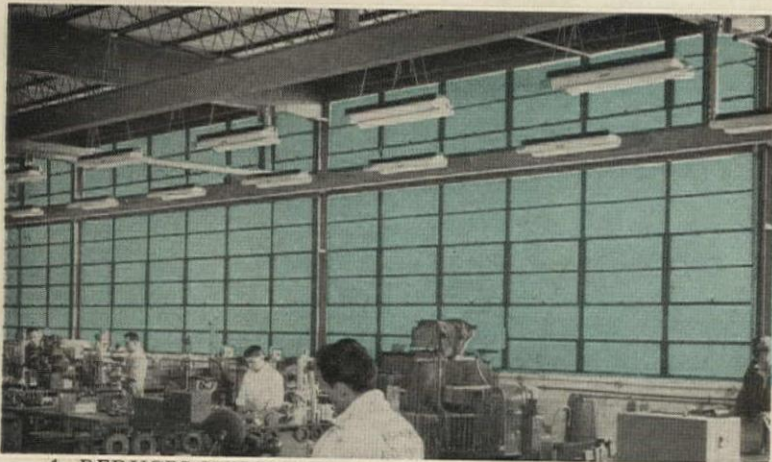
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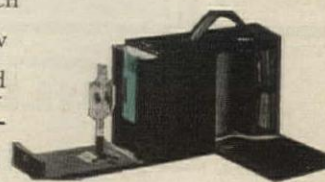


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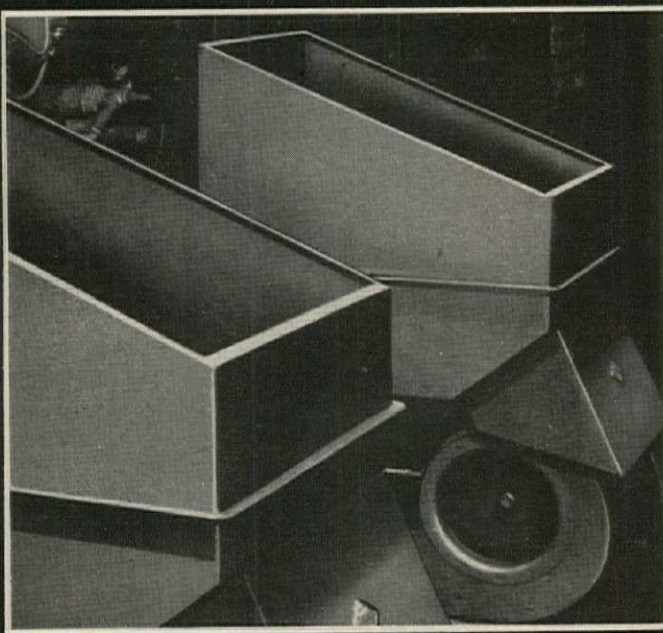
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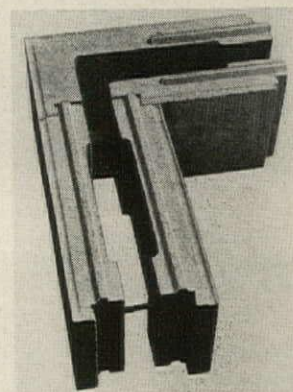
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unit or combination of lintels, coping or beams up to 2' wide and 8" high can be produced on the machine. Slabs can be formed with plain or tongued and grooved edges. In addition to solid shapes, the *Dunbeam* can turn out cored members. Load bearing strengths of all *Dunbeam* members meet ASTM standards. Cost of an 8" I-beam runs about \$1 a lin. ft. Machinery is available on a rental basis with 6 months allowance for delivery. Dies for different shapes run from \$500 for a rectangular slab to \$2,500 for a cored member. As for that inevitable question, can the *Dunbeam* handle prestressing? "Entirely feasible," says Dunn's Engineer Rutgers, who is busy supervising machinery orders for everything from cored deck to seawall pilings, "but please, please, wait till next year."

Manufacturer: W. E. Dunn

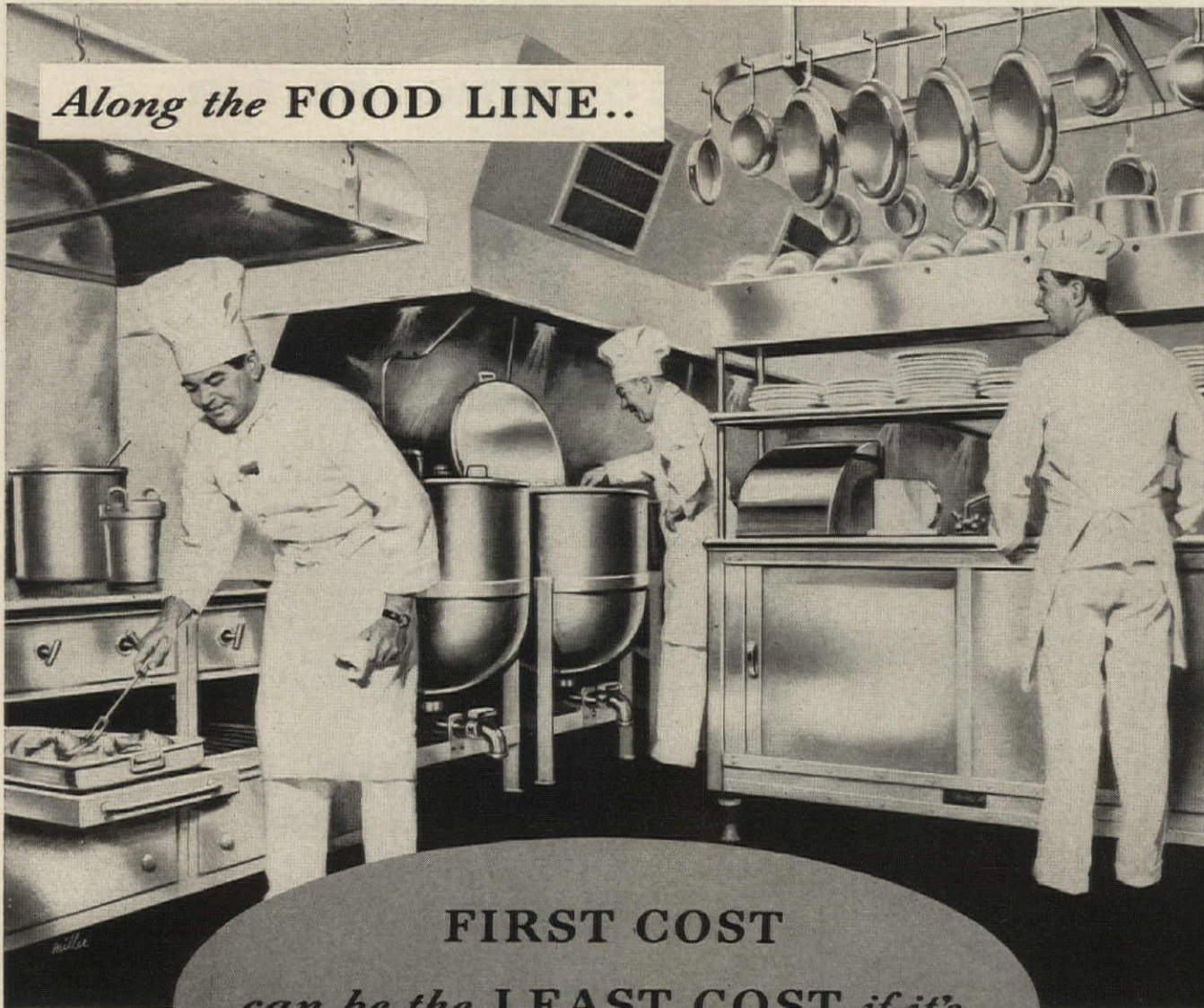


(3) **CAVITY BLOCK interlocks at joints to eliminate mortar bed**

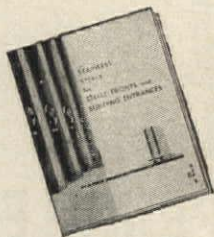
A miniature cavity wall, the *Presto* masonry block capitalizes on the insulation value of plain air space. Its two concrete faces are bound by steel ties and each unit is keyed to interlock at top, bottom and ends. No mortar bed is needed; the blocks are laid dry with no inside to outside masonry contacts. (After the wall is erected, joints are pointed to insure an effective moisture seal.) The corrugated metal ties, inserted automatically in the casting process, are said to make extra reinforcement unnecessary. A *Presto* block wall is claimed to

continued on p. 236

Along the FOOD LINE..



FIRST COST
can be the LEAST COST if it's
the LAST COST



Write for your copy
"STAINLESS STEEL
for STORE FRONTS and
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If modernization or new construction is on your mind, this 40-page booklet contains many ideas on handsome treatments for you. (Note: A new booklet on "AL Stainless in Food Preparation and Serving Equipment" is in process—write for one of the first copies when available.)

ADDRESS DEPT. B-82

No material is more at home around food (or beverages, drugs, chemicals, etc.) than AL Stainless Steel. And that's not just because stainless is perennially good-looking, and so easy to keep clean.

Basically, it's because stainless steel equipment is the most economical you can buy. It stands up so much better—lasts so much longer—costs so much less to clean and maintain—that it actually saves you money in the long run. First cost isn't the whole story, you know. It's the long-term, over-

all cost that counts, and no other material is as hard, strong and resistant to heat, wear and corrosion as stainless steel.

So, when you want equipment that has to look well, maintain high sanitary standards and take a beating every day, remember that only stainless steel can give you the utmost in service and economy. ● Use time-tested AL Stainless, and let us help you work out any design or engineering details. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

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KNO-DRAFT SLOTTED AIR DIFFUSERS: handsome extruded aluminum in modules of 2, 3, 4 or 6 feet. Install singly or butted in series to form continuous diffuser line on wall or ceiling. Adjustable one-directional flow for small areas; multi-directional flow for larger areas. Exclusive Kno-Draft adjustable air direction vanes. Grid-type volume control. Damper grids equalize air distribution over length of diffuser.

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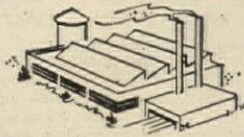
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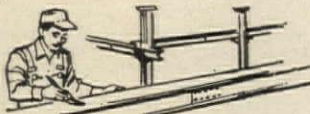


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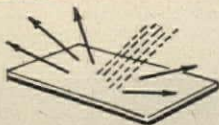
MANY COLORS, INCLUDING ALUMINUM AND WHITE

You beautify as you protect, because Rust-Oleum finish coatings are available in practically all colors, including aluminum and white. They use the same basic rust-inhibiting vehicle as Rust-Oleum 769 Damp-Proof Red Primer and so provide double protection.



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Rust-Oleum is so easy to apply by brush or spray that one man can often do the work of two. Because of Rust-Oleum's easy-flowing qualities, an average of 30% more coverage is usually received—depending upon the type and porosity of the surface.



PRACTICAL ANSWER TO YOUR RUST-PRODUCING CONDITIONS

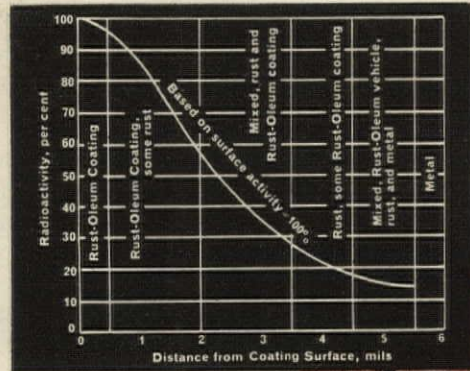
Rust-Oleum dries to a firm, decorative finish that resists salt water, heat, fumes, sun, steam, humidity, and weathering. Whatever your rust problem—you'll find Rust-Oleum the modern, practical way to stop rust.

Facts

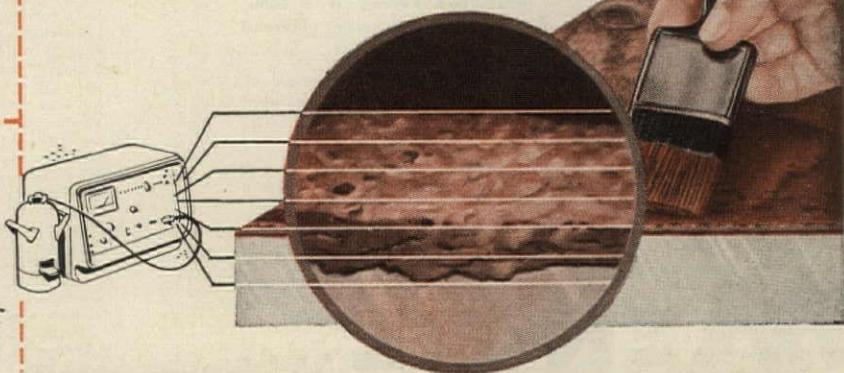
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Geiger Counter traces Rust-Oleum penetration through rust to bare metal. The results of radioactive research prove that Rust-Oleum penetrates rust to bare metal. Rust-Oleum's *specially-processed* fish oil vehicle was radioactivated and formulated into Rust-Oleum 769 Damp-Proof Red Primer—then applied to rusted test panels. Geiger Counters then traced Rust-Oleum's *specially-processed* fish oil vehicle through the rust to bare metal. This penetration enables Rust-Oleum to be applied directly over sound rusted surfaces—usually eliminating costly surface preparations. Attach coupon to your business letterhead for your thirty-page report, "The Development of a Method To Determine The Degree of Penetration of a Rust-Oleum Fish-Oil-Based Coating Into Rust On Steel Specimens," prepared by Battelle Memorial Institute technologists.



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They are easily installed in almost any combination in place of conventional walls, thereby saving floor space and money. They are also widely used as *extra* closets in existing buildings.

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► Mengel's exclusive roller hanger is easily and quickly adjusted with one screw!

Hardwood frames with Gum, Birch or Mahogany plywood exteriors!

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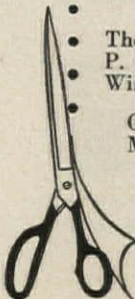
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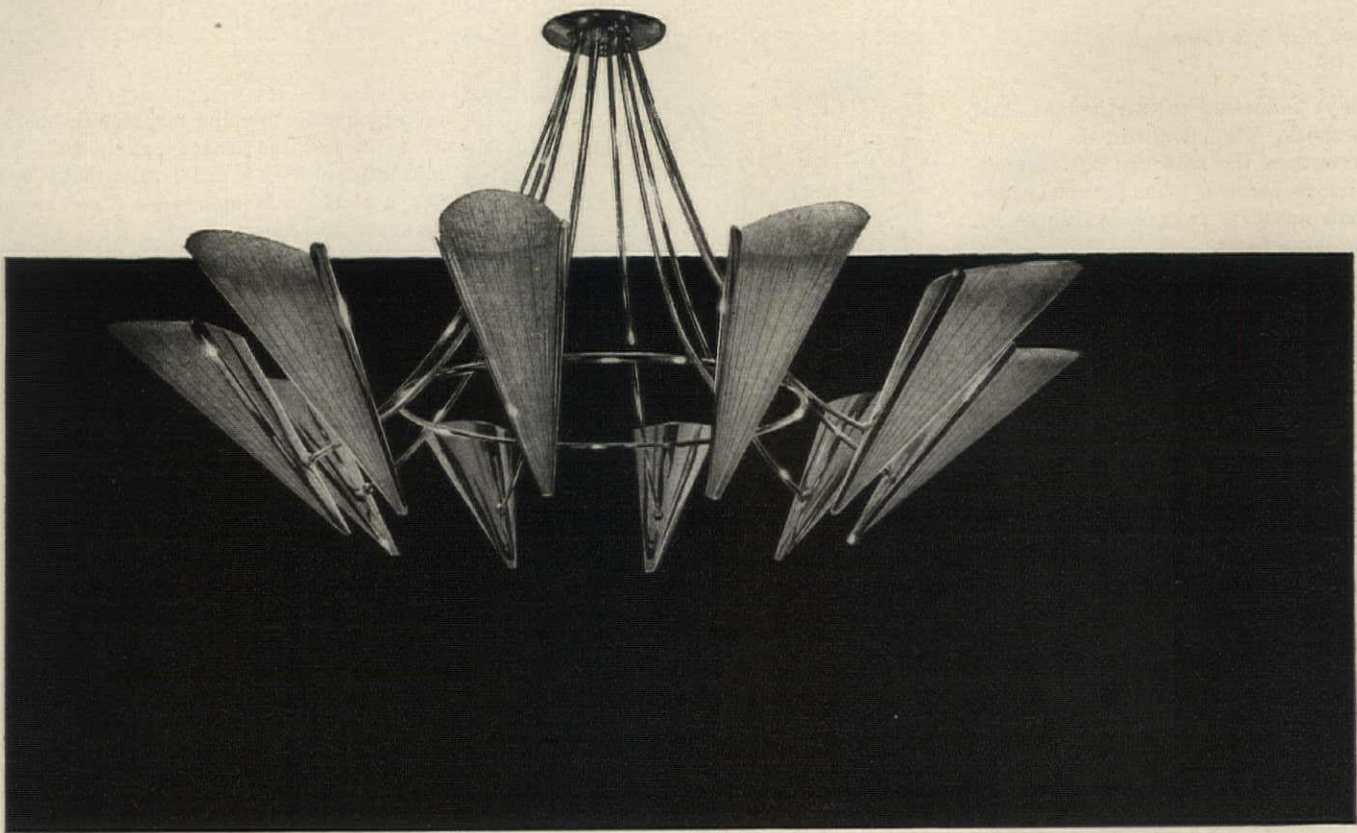
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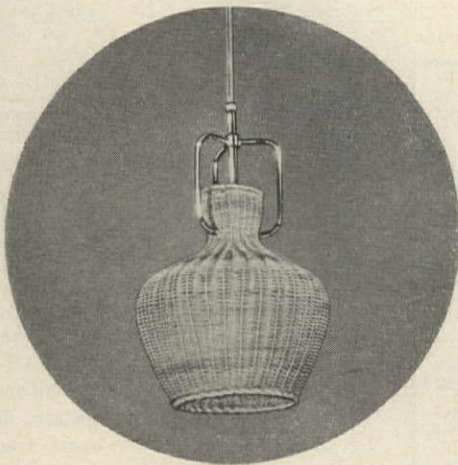


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Typical of Lightolier's leadership in exciting new decorative lighting: #40554 directly above . . . Lightolier's Cornucopia, where sparkling Claremont glass cones soar from a shimmering brass ring, spreading evenly diffused, glarefree illumination. Left, #40572 . . . the new *light touch* in a woven wicker basket that lifts and lowers to shed warm, latticed light wherever needed. Below left, #40543 . . . Lightolier's pierced brass shields, so flexible that each shield swivels in or out as well as up or down, may be mounted vertically or horizontally to create imaginative lighting effects.

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PRODUCTS cont'd.

For more data use coupon, p. 274

be highly resistant to earthquake and tornado shock. The crimps in the ties not only strengthen the masonry but, once in the structure, serve as drips for condensate to prevent moisture from collecting on interior wall surfaces.

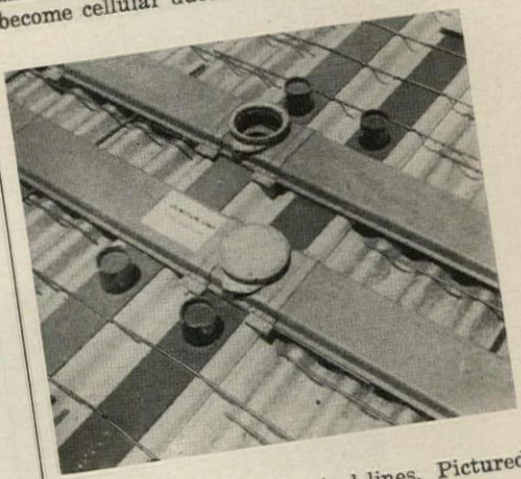
In many light commercial structures, furring can be eliminated by running wiring and plumbing lines right up through the cavity. Presto units can be turned out



on a hydraulic forming machine in heights of 4" to 12" and lengths up to 16". The conventional 8" x 8" x 16" runs about 30¢ to 40¢ a block; a Romanesque 4"x16" would be about 25¢ apiece.
Manufacturer (of block machine): Presto Brick Machine Corp.

(4) PERMANENT FORM for concrete fitted for floor electrification

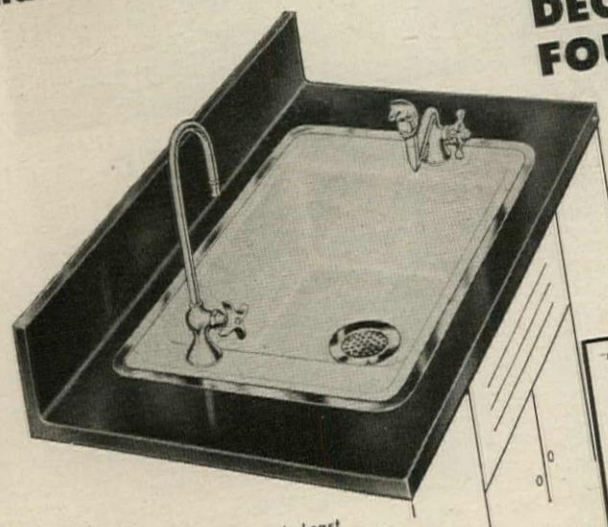
Another major function has been added to Granco's impressively versatile and inexpensive *Cofar*. Already combining a floor deck, permanent form and reinforcement for poured concrete, the corrugated steel panel literally has been pressed into service for power distribution. Like the standard sheet, the new *E* (electrically) -*R* (ready) *Cofar* measures 2'-6" wide, spans up to 14', and is welded directly to the building frame. Instead of 24- to 20-ga. steel it is formed of heavier 16-ga. metal and its troughs are widened and capped to become cellular ducts for telephone, signal



system and other electrical lines. Pictured above is a two-cell system running diagonally left to right. One- and three-cell systems are also available. All *E-R Cofar* panels have transverse reinforcing *T*-wires welded to each corrugation. In-place cost of deck-form on 10' beam spacing with a two-duct system 6' o.c. would be about \$1.20 to \$1.25 per sq. ft. including concrete and temporary supports. Standard header ducts and junction boxes can be used with *E-R Cofar*.
Manufacturer: Granco Steel Products Co.

New School Project on the Board? ...add "the touch" that makes it really new ...

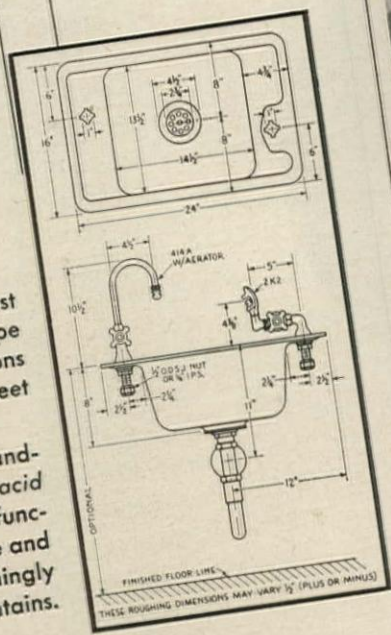
HAWS classroom DECK-TYPE FOUNTAINS



Acid resisting porcelain enameled cast iron receptor, 16" x 24", equipped with drinking faucet and pantry faucet... with HAWS advanced sanitation features for utmost cleanliness and safety.

Specify water facilities where they're needed most—right in the classroom! HAWS versatile deck-type fountains are available with optional combinations of VANDAL-PROOF faucets and fixtures to meet any classroom need.

And for appearance... they can't be beat! Handsomely designed in lifetime stainless steel or acid-resisting enameled iron, they add pleasing functional beauty. Five basic series fit every space and service situation. Make your school refreshingly new throughout—with HAWS Deck-Type Fountains. Write for detailed information... TODAY!



HAWS features complete lines of drinking fountains, electric water coolers, emergency eye-wash fountains—and KRAMER Flush Valves, for every make plumbing fixture.

HAWS DRINKING FAUCET CO.
 1443 FOURTH STREET (SINCE 1909) BERKELEY 10, CALIFORNIA

(5) ONE-MAN CLINCHER fastens flanges on metal building panels

Speeding up connection procedure on its aluminum and steel wall and floor panels, Fenestra Inc. has developed the *Riv-clincher*. This simple fastening tool with a unique togglelink arrangement is handled easily

continued on p. 244



When you plan open areas, plan on carpet for 50% lower maintenance costs

Most clients would probably guess their floor space at far less than it is. Since a general office staff of ten people requires a minimum of 1,000 square feet, according to an article in *Management Review*, most of your clients have a lot of floor space to maintain.

The trend to more open planning in general offices means more heavy traffic areas. And here is where you can save your clients money. Specify carpet... because *carpet can save over 50% in heavy traffic areas.*

The cost of labor and equipment needed to keep non-carpeted floors at an accepted maintenance level averages \$383 per 1,000 square feet annually, in heavy traffic areas. Carpet averages only \$189 per 1,000 square feet a year—a clear saving of \$194 a year for each 1,000 square feet, or 50.7%.

Industrial Sanitation Counselors, maintenance en-

gineering specialists, whose clients include Lever Brothers, Ford, and many other blue-chip companies, based these figures on their own field work, which shows that carpet cleans so inexpensively because it cleans so easily.

Soil stays loose in the pile—routine vacuuming can easily remove it. Less labor and equipment are needed—just one operator and one operation. Dirt doesn't grind in and there's no gloss to wear off.

Carpet looks better longer, too. It's amazing durability is due to the resiliency that makes it yield with pressure, spring back when pressure is released. Carpet looks soft—wears hard. In addition, carpet reduces noise and provides slip-proof footing.

Send for your file copy of "Cutting Costs With Carpet." Write Dept. A1, Carpet Institute, Inc., 350 Fifth Avenue, New York 1, New York.

Specify carpet designed and made for the American way of life by these American manufacturers

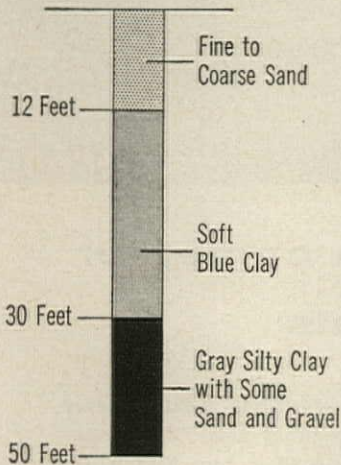
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 Shaw, Metz & Dolio, Consulting Architects
 Frank J. Kornacker & Associates, Structural Engineers

**Log of Soil at
 1000 Lake Shore Drive**



Using a single acting hammer developing 15,000-foot-pounds of energy, the sand required about three blows per foot; soft clay one blow per foot; silty clay with sand and gravel, a maximum of 120 blows. Average pile length was 67 feet.



Armco Pipe Piling stayed dry in wet foundation at 1000 Lake Shore Drive

Watertight piles driven from below-lake level

Foundation for the new 23-story apartment building at 1000 Lake Shore Drive, Chicago, could have been a problem. Driving piles from below the level of nearby Lake Michigan called for absolute watertightness of each pile. The driven piles had to be dry for concrete placement. Yet there was no problem. The Armco Pipe Piling withstood the impact of up to 120 blows per foot

needed to meet the 60-ton bearing requirement. Average pile length was 67 feet.

Armco Pipe Piling provides many additional advantages that can save money in design and in construction. They are available in a wide range of diameters and wall thicknesses. This means you can meet your requirements exactly. And long lengths—up to 90 feet—mean less splicing at the job.

Costs are lower. Write us about your pipe piling requirements. We can supply the price estimating information you need. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 3476 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO PIPE PILING





How this new plant cafeteria benefits with Gold Bond Insulation Roof Board

THE ROOF on Mesta Machine Company's new 500 man cafeteria in Pittsburgh has the full insulation value specified, thanks to Gold Bond Insulation Roof Board. The application was made by Warren-Ehret Co., roofing contractors, and here's how their district manager, Al Lauer, sums up:

"Gold Bond Insulation Roof Board resists compression... it's easy to mop... and it doesn't soak up asphalt!"

Gold Bond Insulation Roof Board stands up under installation traffic—loaded wheelbarrows, workmen's feet, sharp-rimmed asphalt buckets. The insulation value is not *squeezed* out of the roof board!

There's a smooth surface on Gold Bond Insulation Roof Board, smoothness that lets workmen mop faster

and more easily—and get maximum coverage of asphalt or pitch. There'll be lower labor costs on the roof you design with Gold Bond Roof Board—and a better job done, too.

Gold Bond Insulation Roof Board has a minimum absorption of pitch or asphalt. The insulation value you specify is protected against "loss through soak-in"—and you save material.

This insulation roof board is moisture-resistant—each fiber is impregnated with water-resistant resin or asphalt. Available with full asphalt coating for still more moisture-protection. You can specify square, shi lap or offset edges.

Call your Gold Bond representative, or write Dept. AF-106, National Gypsum Company, Buffalo 2, N.Y.

ROOF INSULATION BOARD

NATIONAL GYPSUM COMPANY

Gold Bond[®]
BUILDING PRODUCTS

A new CARRIER Centrifugal for air conditioning

From Carrier—the people who built the first centrifugal refrigerating machine—now comes a new centrifugal designed for big-building air conditioning and for chilling water for industries.

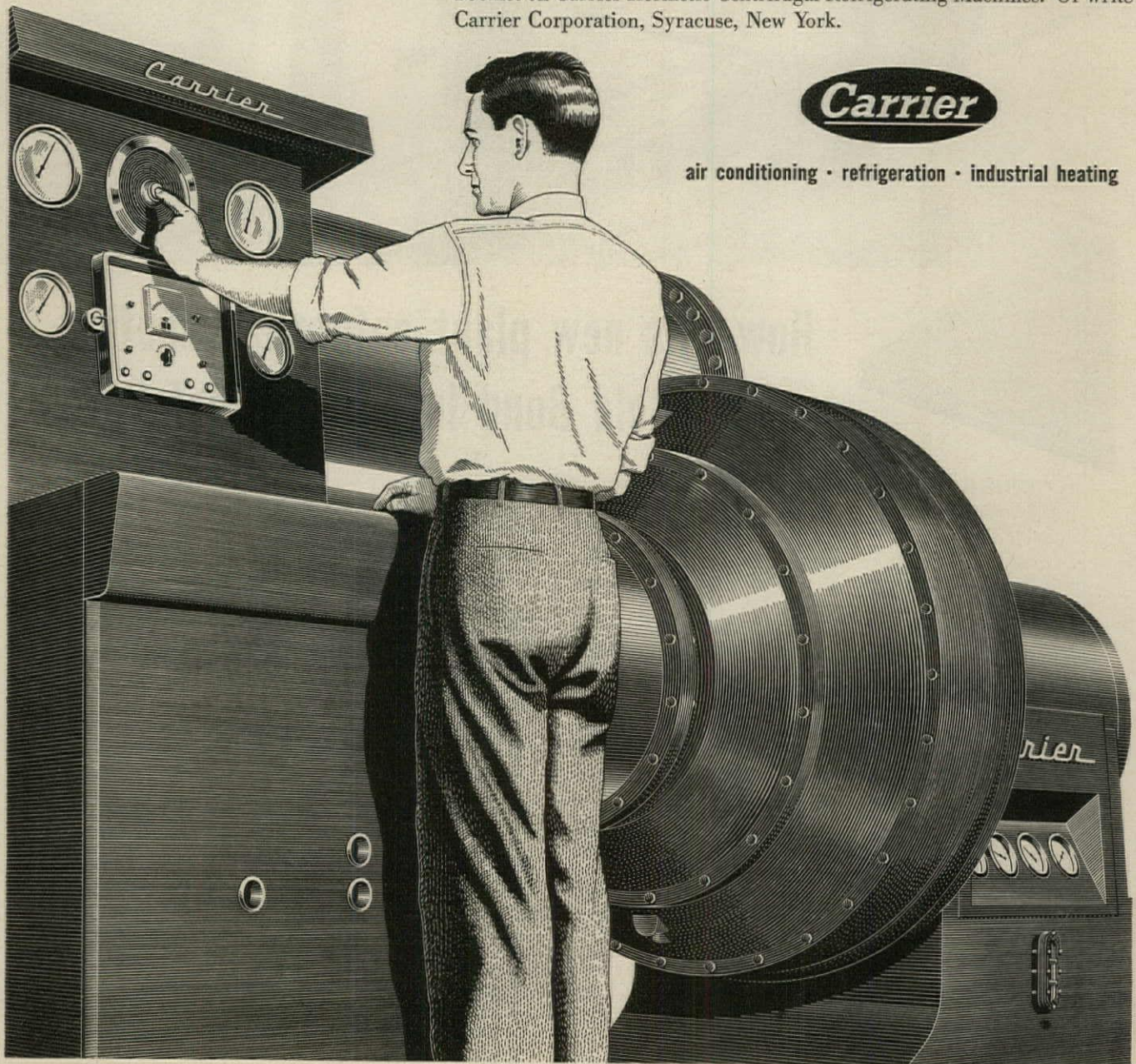
It's a hermetic—WITH CARRENE-COOLED MOTOR . . . exclusive with Carrier! Cool, dry refrigerant gas from the refrigerating circuit keeps motor temperatures at a uniform level under all load conditions.

It's a hermetic—WITH ELECTRONIC CONTROLS . . . exclusive with Carrier! You push a single button and electronic controls start, regulate and protect the machine automatically.

It's a hermetic—WITH CENTRAL CONTROL CONSOLE . . . exclusive with Carrier! All control functions are co-ordinated in a central console. You can locate this nerve center right by the machine, or in the next room.

It's a hermetic—WITH HYDRAULIC CAPACITY VANES . . . exclusive with Carrier! Capacity-regulating prewhirl vanes are positively positioned by hydraulic power under the automatic control of the electronic system.

Telephone the nearest Carrier office for your copy of the big new factual booklet on Carrier Hermetic Centrifugal Refrigerating Machines. Or write Carrier Corporation, Syracuse, New York.



Carrier

air conditioning • refrigeration • industrial heating

NEW SERIES OF STORAGE UNITS developed by the Knoll Planning Unit. Combines natural teak and white plastic laminate in chests, vanity and bed table. All sides are finished for versatility in room planning. Drawers have metal slides for smooth and easy operation Information on request.



#225-2



#225-3

KNOLL ASSOCIATES, INC.

575 MADISON AVE., N. Y. 22

Boston, Chicago, Dallas, Detroit, Miami, San Francisco, Washington, Toronto



#226-1

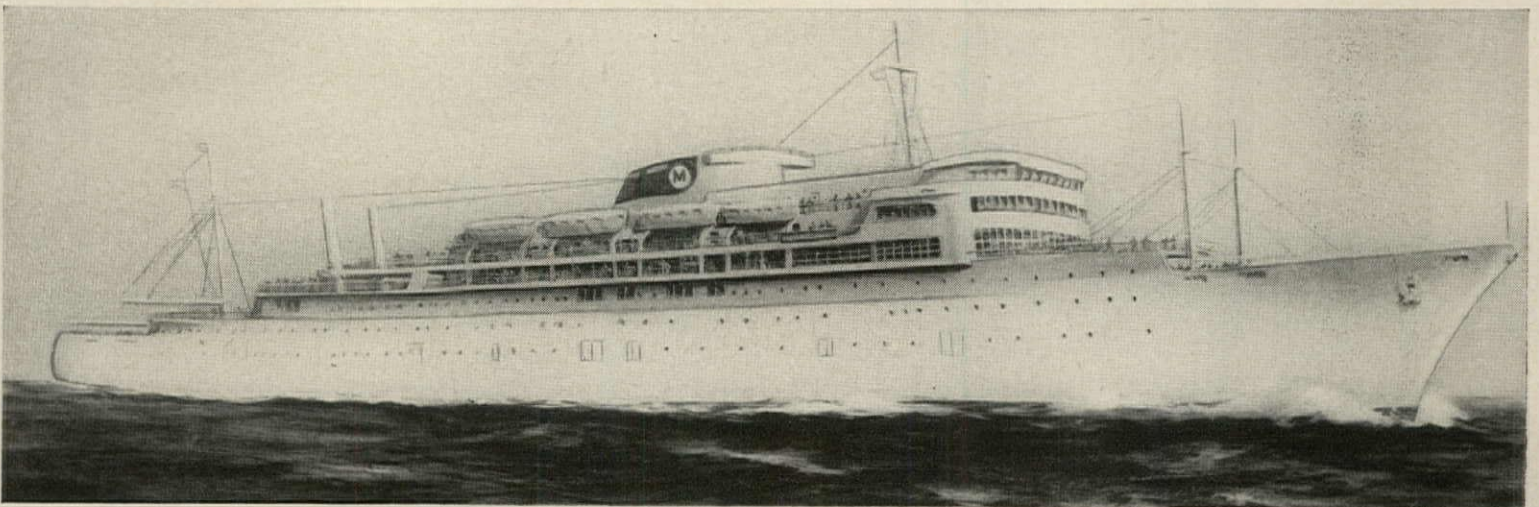


500-Room Hollywood Beach Hotel, Hollywood-by-the-Sea, Florida, was recently air conditioned, using a York TURBOMATIC system.



Ruskin Apartments, Pittsburgh, Pa., are air conditioned by a York TURBOMATIC system, making living more comfortable, healthful.

York TURBOMATICS make an air conditioning



Two Moore-McCormack liners, now being built by Ingalls Shipbuilding Corp., will be air conditioned with York equipment including TURBOMATICS. The system will help make trips to hot climates even more enjoyable.

Colgate-Palmolive Building, N.Y.C., is another new building air conditioned with York TURBOMATIC equipment.

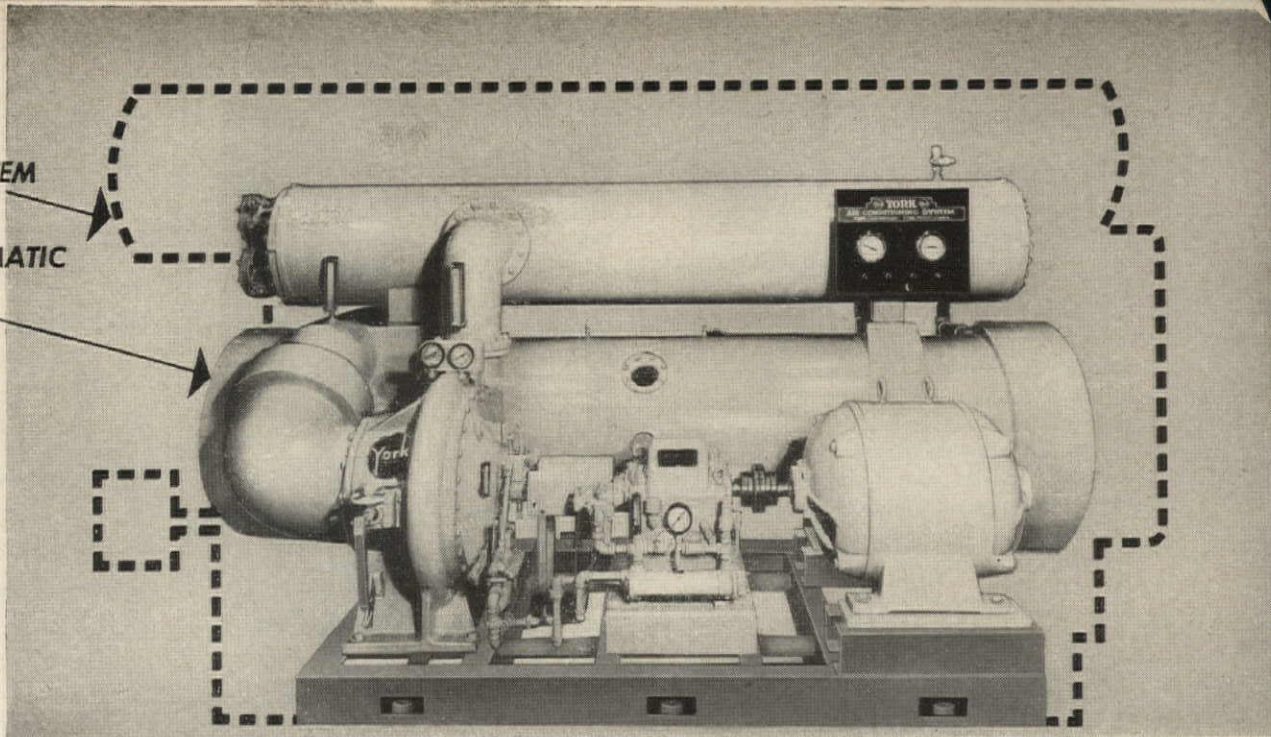
Doctors Building, Atlanta, Ga., is air conditioned with a York TURBOMATIC system supplying chilled water for the cooling.

The Dayton Biltmore, Dayton, Ohio, (a Hilton hotel) is air conditioned by the lightweight, smaller sized York TURBOMATIC unit.



OLD SYSTEM
NEW TURBOMATIC SYSTEM

SMALLER, LIGHTER. By virtue of its smaller size and lighter weight, the York TURBOMATIC (shown here in comparison to a previous design multi-stage unit of the same capacity) can be mounted on upper floors without any major structural changes.



system lighter, smaller, more flexible

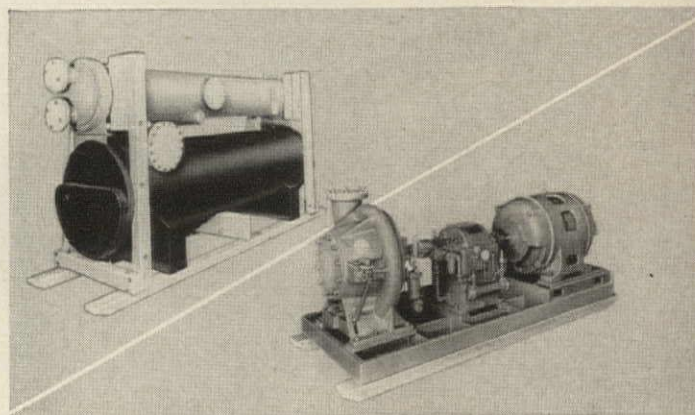
The heart of the York TURBOMATIC water cooling system for air conditioning is the TURBOMATIC compressor, a powerful single-stage unit of advance design. It gives users these important benefits:

1. Saves space, weight. A 350 horsepower TURBOMATIC system can be installed in 120 square feet of space. It weighs considerably less than former systems of the same capacity. This economy of size is important to the builder who wishes to conserve rentable space and to the architect who may wish to mount the system on a high floor without expensive load-bearing structural work.

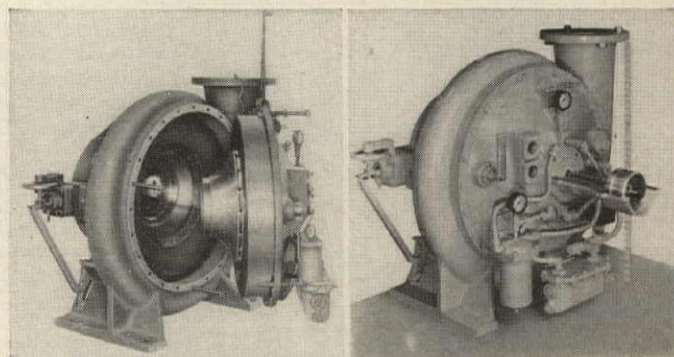
2. Matches your power source. You can buy the TURBOMATIC system equipped with the motor of your choice, or you can use any other power source... a steam turbine drive, for instance.

3. Simple to operate and maintain. The TURBOMATIC compressor has only one-quarter the number of parts of previous units. It has a minimum of gasketed joints, and since it is automatic, it can easily be controlled as to need no attendant, even for starting and stopping!

York TURBOMATIC systems have already been proven in operation (see left hand page) and have established fine records for trouble-free operation. For more information, get in touch with your nearest York sales office. You'll find the telephone number listed in your Classified Directory under "Air Conditioning Systems."



EASY INSTALLATION. The system is shipped on two skids, is practically ready-assembled. Customer may specify motor or use another power source.



ECONOMY OF DESIGN. York has streamlined the TURBOMATIC to one-quarter the number of parts in previous systems, making maintenance easier.



the quality name in air conditioning

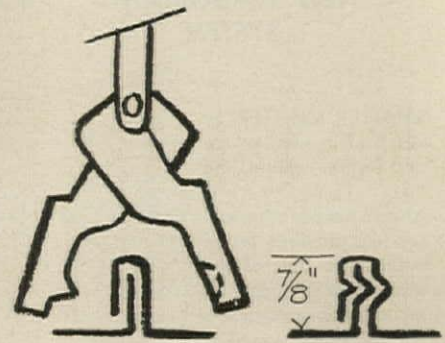
HEADQUARTERS FOR
MECHANICAL COOLING SINCE 1885

YORK
CORPORATION

PRODUCTS *cont'd.*

For more data use coupon, p. 274.

by one man, who can form securely crimped joints along panel flanges every 3' in less time than a welder spots connections 4' apart. Clinched deck sections put through seismic, wind resistance and shear tests at Cornell University matched the strength of welded construction. Comparing application costs with welding the manufacturer found the *Riv-clinch* saves \$1.50 to \$3 a square. Another advantage of the mechan-



ical joints on jobs where the panel underside is exposed is the elimination of weld burns. A *type D Riv-clinch* designed for 2'-wide cellular steel panels up to 14 ga. costs \$100. It is 34" high and weighs 16 lb. A smaller tool, the *type F*, for lighter gauge siding and field-assembled *Fenestra* curtain walls (AF, Mar. '56) is \$50.

Manufacturer: Fenestra, Inc.

HOW TO light a gymnasium

Senior High School
Chambersburg, Pa.



Architect: Lawrie & Green
Elec. Engr.: Gatter & Diehl
Elec. Contr.: Keystone Engr. Co.

teamwork

Important to efficient gymnasium lighting is the teamwork between the architects, engineers, school officials and contractors.

Evaluation of the various functions of the gymnasium area, together with analysis of the levels and quality of illumination required, should precede definite specifications. It's at this point a Pittsburgh representative can suggest the Pittsburgh Permaflexor Fluorescent and Incandescent Equipment that will fill efficiently, and within your budget, all gym lighting needs.

Planning a Gymnasium?

Write for the idea packed bulletin "How to Light a Gymnasium." It highlights the problems you'll encounter and points the way to their solutions.



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FLUORESCENT



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Lighting

REPRESENTATIVES IN PRINCIPAL CITIES • WHOLESALERS EVERYWHERE
In Canada: Pittsburgh Reflector of Canada, Ltd., 105 Tycos Drive, Toronto



(6) ELECTRIC DUCT in rubber strip makes stumbleproof extension

That open invitation to litigation, the footsnaring extension core is brought under control by *Electriduct*. Suitable in remodeling schemes for older and inadequately wired offices, the flattened rubber strip provides a safe means of bringing electricity across the floor and into the billing machine. One end plugs into a wall outlet; the other has a two-way receptacle. The strip is 1/2" high at the middle and feathers out along both sides so that office equipment on casters can roll over it easily. Ribs on the underside keep it from slipping. *Electriduct* comes in standard 4', 5', 6' and 10' lengths at \$7.50 to \$12.50 and in custom lengths to order.

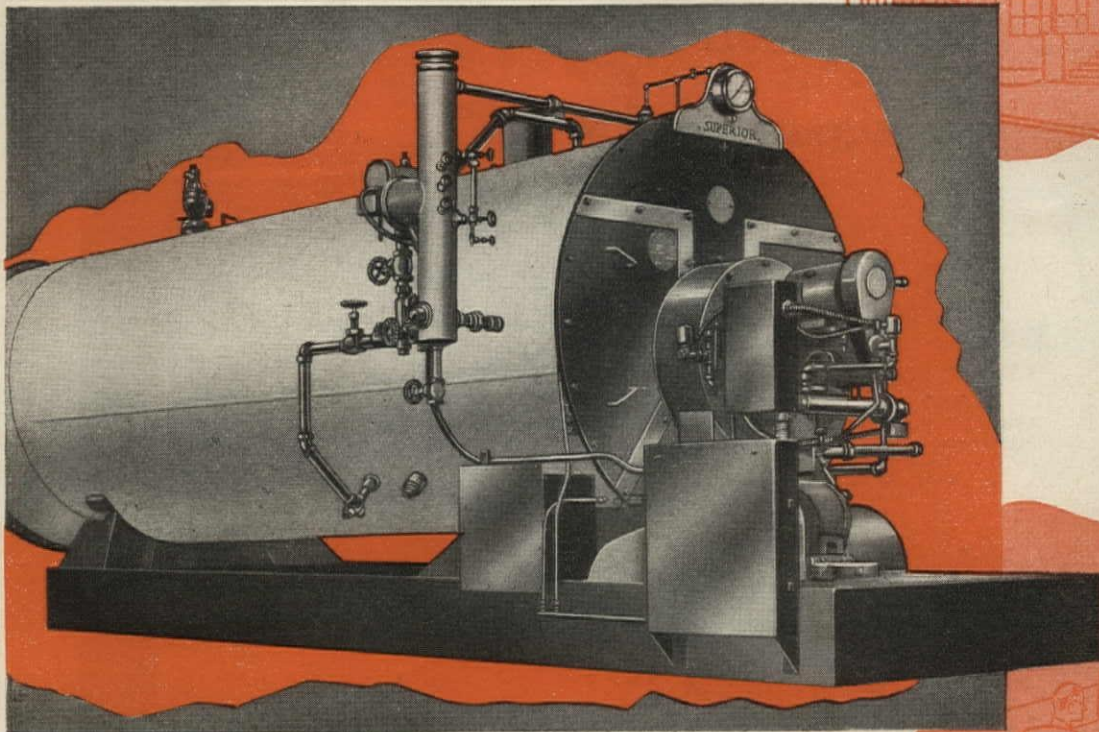
Manufacturer: Ideas, Inc.

(7) GIANT PARTITION of aluminum panels folds into wall pocket

Built to any height, the *R-W Folder-Way* partition makes a lightweight but rigid divider for school gymnasiums and auditoriums. Its 4'-wide sandwich panels have embossed aluminum skins bonded to 3"-thick honeycombs of resin-impregnated paper. Edges of the metal facings are rolled to lock into the extruded aluminum frame. In the Aurora, Ill. high school pictured above, the partitions stand 27' tall and have a high wainscot of green linoleum.

continued on p. 250

GOOD FOR THE *School*



GOOD FOR THE *Budget*

Superior Steam Generators are an ideal solution to the problem of heating schools. Shipped completely assembled after factory test, they are backed by the undivided responsibility of their maker. Installation is simple and inexpensive. No special foundation is required. Rugged and compact, they fit into small space.

Superior's built-in induced draft eliminates the need of an expensive chimney, and also provides that extra measure of safety so desirable in school installations by preventing the escape of combustion gases into the boiler room and the rest of the building.

Built for years of dependable low-cost operation, Superior Steam Generators reduce maintenance to a minimum and earn their cost many times over through long-lived efficiency. They are guaranteed to generate their maximum capacities at thermal efficiencies in excess of 80% and will burn the cheapest grades of fuel oil (or gas) fully automatically.

Clean, quiet, safe, reliable operation, plus fuel savings of 20% or more over conventional boiler installations, make Superior Steam Generators ideal for both the school and the budget. A full range of sizes from 20 to 600 b.h.p. for pressures from 15 to 250 p.s.i., or in the hot water type, provides units of proper capacity for every school.

For complete details, write for Catalog 812

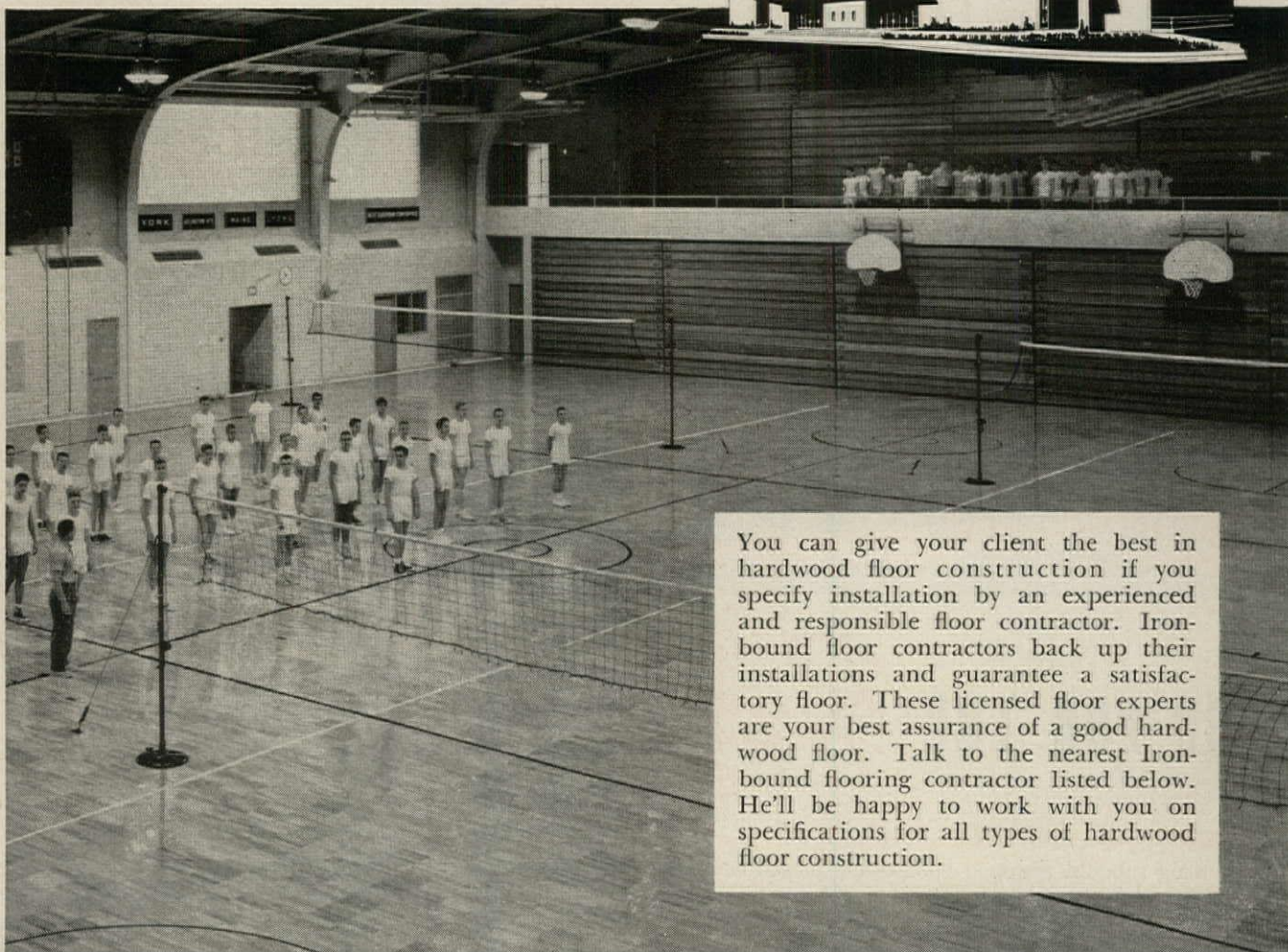
Specialists in **PACKAGED BOILERS**... exclusively

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SUPERIOR
STEAM GENERATORS

even *Ironbound** floors are no better than the men who install them

Ironbound® Continuous Strip® Maple Floor in York Community High School, Elmhurst, Illinois. Architect: Childs & Smith, Chicago, Illinois.



You can give your client the best in hardwood floor construction if you specify installation by an experienced and responsible floor contractor. Ironbound floor contractors back up their installations and guarantee a satisfactory floor. These licensed floor experts are your best assurance of a good hardwood floor. Talk to the nearest Ironbound flooring contractor listed below. He'll be happy to work with you on specifications for all types of hardwood floor construction.

PARTICIPATING *Ironbound** INSTALLERS

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The Akron Floors Co.
177 W. Bowery St.

Birmingham, Ala.
E. P. Cuthrell Flooring Co.
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Boston 34, Mass.
National Floors Co.
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Canton 8, Ohio
Canton Floors, Inc.
2548 Clearview Avenue, N.W.

Chicago 41, Ill.
Chas. H. Anderson Floors, Inc.
3869 Milwaukee Ave.

Chicago 51, Ill.
Austin Flooring Co.
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Cleveland

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Matthews Flooring Co., Inc.
P.O. Box 677
Denver, Colo.

Reeves-Ryan & Co.
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Austin Flooring Company
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10301 Lyndon Ave.

Kansas City, Kansas
Austin Flooring Company
Box 952

Kansas City 14, Mo.
Chas. H. Anderson Floors, Inc.
7929 Wornall Road

Los Angeles 6, Cal.
A. B. Rice Co.
1312 Dewey Avenue

Miami 42, Florida
Rowell-Southern Flooring Co.
2723 N.W. 17th Avenue

Minneapolis 19, Minn.
Chas. H. Anderson Floors, Inc.
5940 Nicollet Ave., S.

Montreal 9, Quebec
Northern Flooring Co.
8230 rue Mayrand

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Northern Flooring Co.
70 Brownville Avenue

New York 51, N. Y.
Storm Flooring Co., Inc.
2650 Park Avenue

Philadelphia 21, Penna.
Federal Hardwood Floor Co.
1503 N. Stillman St.

Raleigh, N. C.
R. L. Dresser
P. O. Box 806

Rochester 10, N. Y.
Yaeger Floor Company, Inc.
P.O. Box 74, Brighton Station

St. Louis 24, Mo.
Missouri Floor Company, Inc.
8862 Ladue Road

San Francisco 7, Cal.
Acme Floor Company
1115 — 20th Street

Seattle 99, Wash.
Queen City Floor Co.
310 W. Republican St.

Spokane, Wash.
Southern Hardwood Co.
3515 N. Haven Street

South Bend 15, Ind.
G. E. Weaver Co., Inc.
1147 Mishawaka Ave.

Tulsa, Oklahoma
Austin Flooring Co.
P. O. Box 1211

There may be an installer nearer you. For a complete list, write Ironbound Floors, Box 128, Reed City, Michigan.

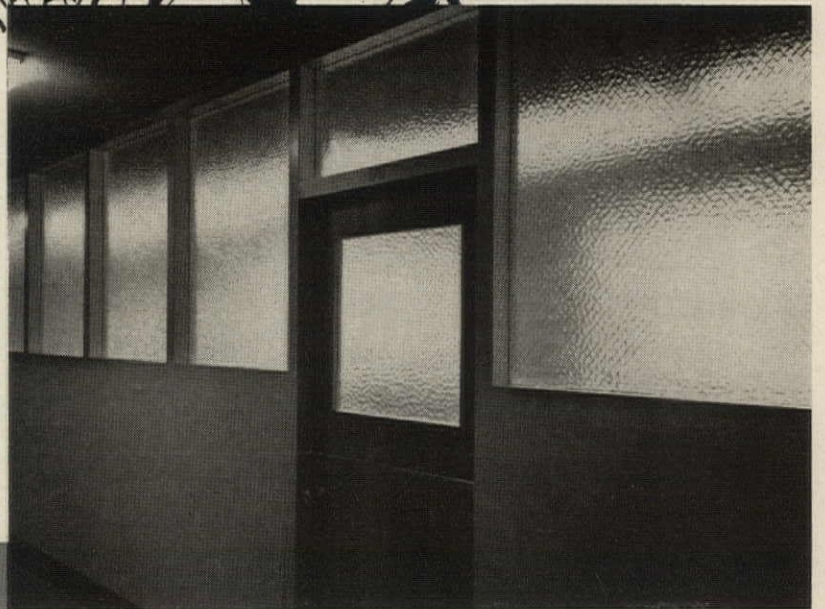
AUTHORIZED IRONBOUND INSTALLERS ASSURE EXPERIENCE, GUARANTEE SERVICE

Beauty on Duty

California County Hospital Brightens Interiors with 6000 Square Feet of Mississippi Glass



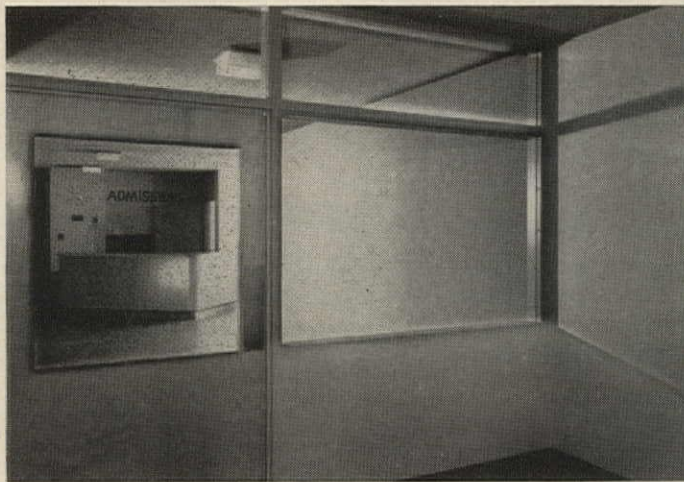
Extensive use of rolled glass in partitions, doors, and windows gives this new San Mateo County Hospital a bright, cheerful atmosphere . . . creates a pleasant environment for staff, patients and visitors. The extreme practicality of glass partitions as well as their unexcelled beauty recommended their installation. The diffusing glass floods rooms and corridors with softened "borrowed light," yet protects privacy. And maintenance is so simple . . . the glass wipes shining "hospital clean" with a damp cloth, never requires repainting.



Privacy plus protection against breakage or fire is achieved with this installation of Smooth Rough Misco Wire Glass. Misco, approved Fire Retardant No. 32, tends to help bottle up fires.

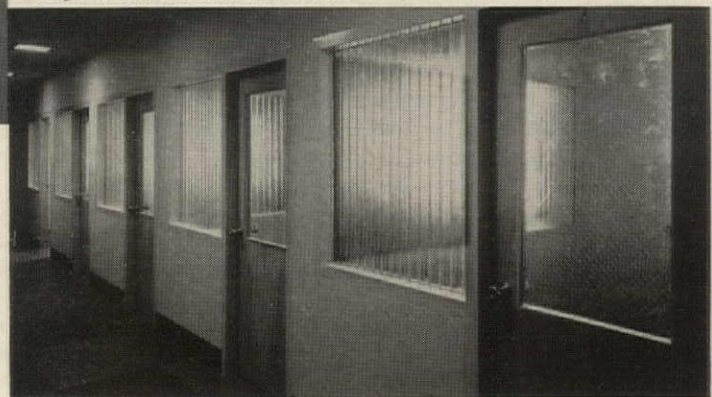
Architects: Stone, Mulloy, Marraccini & Patterson, San Francisco
Glass and glazing by: San Francisco Glass Company

Structural Corrugated Glass is translucent without being transparent, brightens both rooms and halls with "borrowed light".



Clear Polished Misco provides maximum protection with undistorted view. This is widely preferred for windows, doors, skylights.

When you build or remodel consider the many benefits that only glass can offer you in partitions, doors, windows, skylights. Specify Mississippi Glass. Available everywhere in a wide variety of patterns and surface finishes for every daylighting requirement.



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WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS



Look to Standard for **DRAFTITE*** weatherstripping of aluminum windows

The venting portions of all windows in this modern New York skyscraper at 112 West 34th Street are weather-sealed with DraftTite . . . Brugnoli and Boehler, Architects.



Projected vent-type aluminum window, as illustrated, supplied by Cupples Products Corporation, St. Louis, Missouri.

*Trademark

The modern skyscraper, shown above, is just one of many buildings where DraftTite wool fiber has been used as a seal around the opening perimeters of aluminum windows.

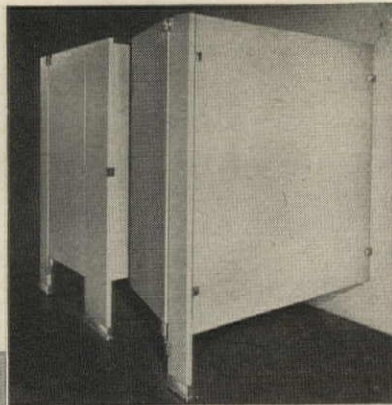
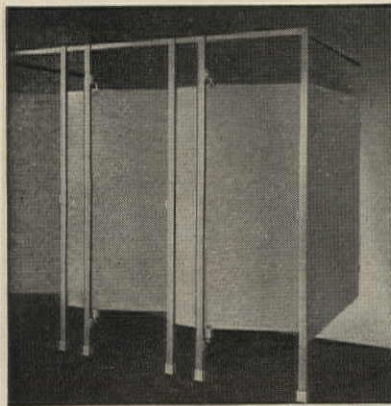
Where friction is a factor, wool fiber is the most satisfactory material for eliminating air infiltration. For proof, we can point to the many manufacturers of prime windows who have selected this material as the best weatherstripping for their products.

Standard has long been a leading supplier of this type of seal and is currently producing 250 million feet annually.

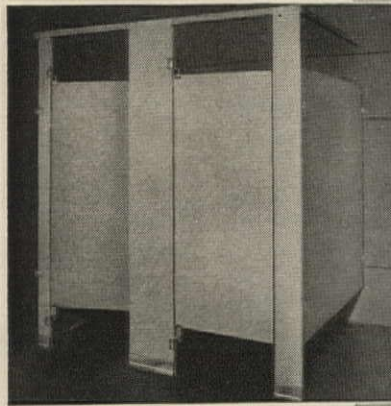
Send for our 12-page catalog . . . illustrating all DraftTite standard sizes and shapes for every type of metal window or door.



The Standard Products Co.
BUILDING PRODUCTS DIVISION, LEXINGTON, KY.



you can count on...



Minimum Field Erection Costs!

...when you specify NICHOLSON Toilet Compartments

There's no need for your installation charges to get out of line. Nicholson Toilet Compartments are designed and constructed for rapid assembly and easy adjustment to location contours.

- ✓ All panels and pilasters pre-drilled, with provision for vertical and horizontal adjustment.
- ✓ All hardware locations are pre-drilled and finished.
- ✓ Pilasters and front panels are shipped as assembled units.

you can count on quick delivery, too!

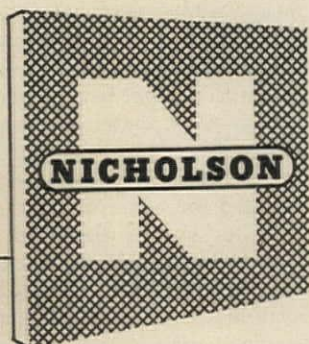
There's no delay in shipment . . . because Nicholson Toilet Compartments are stocked in standard sizes and colors for fast "from stock" shipment.

For serviceability and service . . . plus minimum field erection costs . . . specify Nicholson.



Specify right from this new Nicholson "tell-all" bulletin!

Contains complete specifications, illustrations and engineering drawings . . . facilities, styles, construction, layouts and hardware. Send for a copy today!



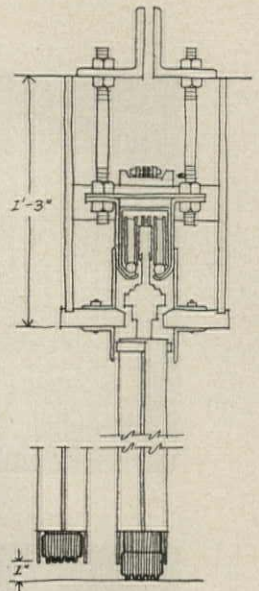
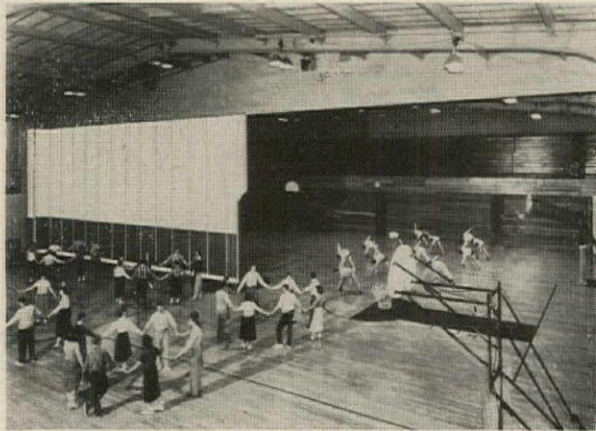
W. H. NICHOLSON and Company
METAL PARTITIONS • TRAPS • VALVES • FLOATS

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PRODUCTS *cont'd.*

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The panels are folded and unfolded electrically by a keyed switch and operate on a rollerdrive chain over ball bearing hangers. A resilient floor seal drops down automatically to shut off sounds between the divided areas and to prevent any side sway in the panels. A pass door can be included for access through the *FoldeR-Way* without opening up the entire wall. Despite its bulk, the *R-W* stores compactly



in a wall pocket. Costs vary according to size and particular building needs.

Manufacturer: Richards-Wilcox Mfg. Co.

WHEREVER YOU NEED WALKING SAFETY -

IN THE OFFICE

Where appearance is important!

ALUNDUM Aggregate in terrazzo means attractive appearance as well as safety for people coming in from the street in all kinds of stormy weather.



IN THE WASHROOMS

Where wet floors are a hazard!

No slipping on this washroom floor. ALUNDUM Aggregate, an integral part of the floor, makes a non-slip surface even when covered with soapy water.



IN THE PLANT

Where resistance to wear is vital!

ALUNDUM (C. F.) Aggregate for cement floors will withstand highly concentrated traffic year after year and provide a permanently non-slip surface even when covered with water, oil or other liquids.

See Sweet's File or write for your own copy of the new edition of catalog 1935-F.

NORTON

NON-SLIP AGGREGATE

NORTON COMPANY Worcester 6, Mass.



(8) LATEX TERRAZZO trowels over subfloor in thin resilient coat

Half the water in a standard terrazzo mix can be replaced with *Surco* liquid latex for a durable homogeneous floor. Offering good resistance to sharp blows, the cementitious topping has enough flex to yield to structural movement and requires no expensive metal divider strips. It can be trowelled over any subfloor in a $\frac{1}{2}$ " thickness instead of the conventional 2" (relieving the building of a 20 lb. dead load per sq. ft.). In its liquid state the *Surco* rubber provides the moisture needed for hydration of the cements while efficiently dispersing film-forming latex solids throughout the marble chip mixture. The latex comes in two types. *Surco Red Label* is recommended for cafeterias, auto showrooms and other areas where floors must be highly resistant to grease and oil. *Surco Yellow Label* formulated for waterproofing qualities can be used for shower receptors and washroom floors. Because of the saving in materials and grinding time, *Surco* latex flooring costs less than 90¢ per sq. ft.—about half as much as conventional terrazzo.

Manufacturer: Surco International Corp.

continued on p. 256



Miss Foster finds an outlet!

But as handy as she is, Miss Foster's ingenuity isn't the answer to her boss's old-fashioned wiring headaches.

Perhaps our Miss Foster's problem is exaggerated, but it is a known fact that many wiring installations in commercial buildings are being made obsolete by modern electrical demands. If you're planning or building offices, you'll want to avoid the kind of wiring that leads to lack of electrical convenience and limited use of floor space. You can't crowd desks around wall outlets and it just isn't practical to have dangerous and unsightly exposed wires and raceways running across floors.

The best answer to sound electrical planning and to Miss Foster's problem is General Electric Q-Floor wiring, the system that makes every square foot of floor space available for outlets. It's the underfloor wiring system that provides outlets for typewriters, dictating machines, calculators, telephones, intercoms, lighting, and other electrically operated equipment wherever you want them—now, or at any time in the future.

General Electric's Q-Floor wiring system is designed for in-

stallation with cellular steel subflooring. Every cell is a raceway. This means that every six-inch area of the floor is a potential location for an outlet. Electrical changes can be made easily. No costly alterations, no litter, no tie-up of space, no matter how often or how much your electrical requirements change.

Thousands of cellular steel underfloor wiring installations, all of which are still electrically up-to-date, have given General Electric specialists years of experience in handling electrical planning. These specialists have the "know-how" to help you select and apply the best system for your particular needs.

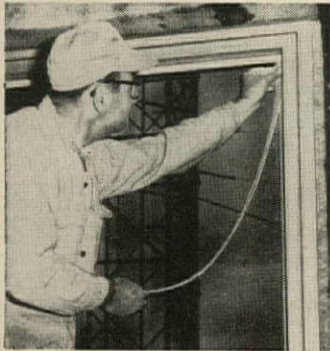
For more information on G-E Q-Floor wiring or about other General Electric underfloor systems—Fiberduct wiring or the new two-level steel underfloor wiring system—call your G-E Construction Materials District Office, or write to Section C58-104, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

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CURTAIN WALL CALKING REMOVABLE STOP-GLAZING

PARFLEX PRE-FORMED
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Used on
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Non-shrink calking and glazing extrusions delivered to your site in strip form for fast hand application. Eliminates compound waste . . . assures lasting seal. Use "Parflex" without warming in temperatures near Zero° F.

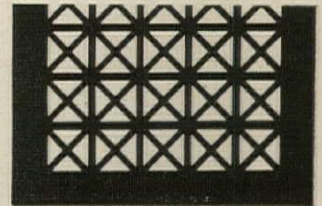
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For Beauty in Buildings

What makes one building interior stand-out over others? In many cases it's that extra touch of splendor made by the inclusion of Hendrick Grilles.

There are over one hundred different Hendrick Grilles available to harmonize with the most modern designs for residential, business or public buildings . . . and many are exclusive Hendrick designs. Each design can be furnished in a wide range of overall dimensions, bar sizes and number of perforations. And they're easy to install because they always lay flat . . . don't bend or warp. Write for complete details.



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PROBLEM?

**MACK ARCHITECTURAL
PLASTICS** may be the solution



Over 35 years experience in the production of industrial plastics is available at Mack to help solve special building problems with durable, economical molded plastics. Molded plastics offer important advantages for certain applications . . . permanency of color, rapid assembly and erection and the efficiency of pre-formed shapes.

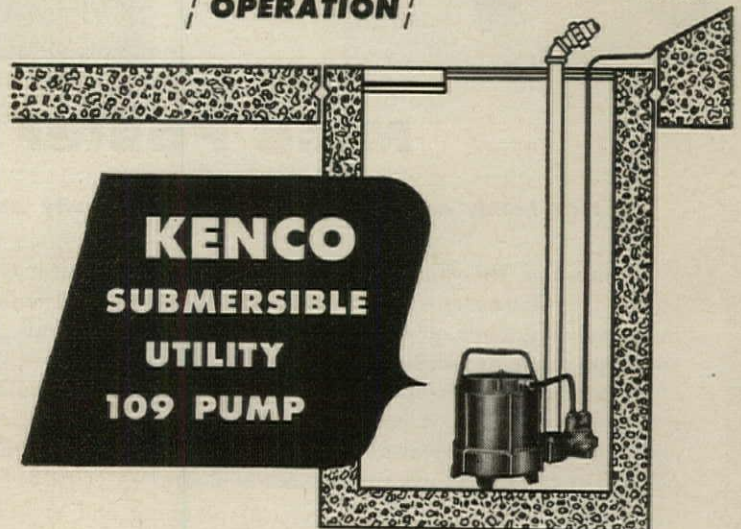
Mack technicians offer a 3-way service to architects and building men with problems to solve or ideas to develop including the adaptability of plastics to your job, recommendations on materials selection and design collaboration. For advice on the use of plastics in your business, just write Mack outlining your problem or ideas.



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Perfect **DECOR SAFETY OPERATION** for every building with a basement



Plan your building down to the last detail by guarding it with a Kenco Submersible Utility 109 Pump! Absolutely automatic, foolproof. Can be installed completely beneath the basement floor line. Pumps 3300 GPM at 10' head. Quiet operation. Compact — fits any sump 13" wide by 12" deep. See the complete line of Kenco Submersible Pumps — capacities from 600 to 5000 GPH — at your jobbers.

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is used on doors in schools, hospitals, offices and public buildings the world over. For beauty, versatility, and top performance, specify the "400".

CORBIN Unit Locks

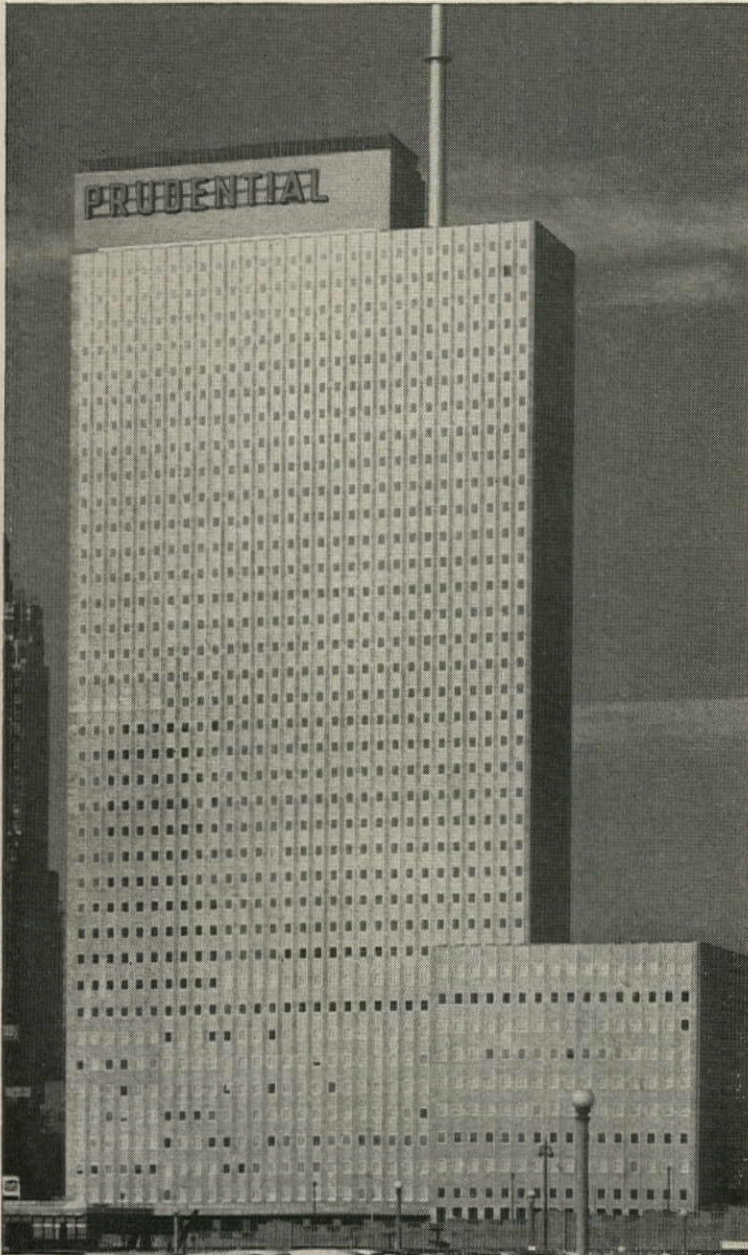
The locks that come practically "pre-installed"! Factory-assembled on single-piece frame. Easy one-piece installation without mortising. Any one of 20 available functions slips into simple cutout in door. Smooth, trouble-free performance unequalled by any other lock.



CRESTWOOD
DESIGN
NO. 905



MODERN! RIGHT DOWN TO THE REST ROOMS... ECONOMICAL, TOO, WITH FLOOR-FREE DESIGN



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ZURN SYSTEM teamed with **AMERICAN-STANDARD** off-the-floor fixtures keynotes Prudential Building's modern rest room motif.

Completely unobstructed rest room floors add the final touch of modernity to Chicago's all-new Mid-America Home Office Building of the Prudential Insurance Company of America. Here, in more than 100 rest rooms, more than 1000 American-Standard plumbing fixtures are supported off-the-floor by the Zurn System to provide the ultra-new look and sparkling clean sanitation standards tenants and employees expect.

Zurn System Behind Scenes. Concealed behind the walls, the Zurn System provides rigid, permanent support for the superior American-Standard wall-type fixtures. Zurn drains, hydrants, Supremo Cleanouts and Greaseptors were installed to assure smooth functioning drainage control.

Most Economical, Too! Architects, engineers, contractors recognize the superior beauty and sanitation of floor-free design. But important too is its greater *economy*... that pays off again and again over the life of the building.

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Get The Complete Story on the proved benefits of the Zurn System and American-Standard off-the-floor fixtures. Write for your free copies of "You Can Build It For Less A New Way" and "Better Rest Room Guide."



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Zurn Industries, Inc.
Erie, Pa., U.S.A.

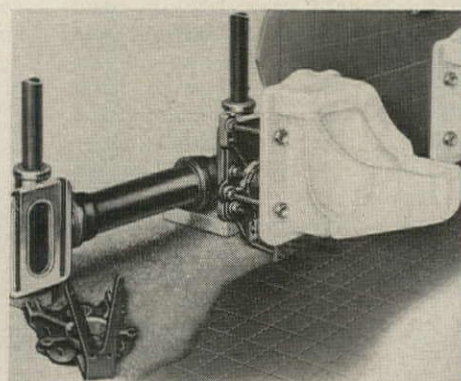


OFF-THE-FLOOR FIXTURES
AMERICAN-Standard
Plumbing and Heating Division
New York 18, N. Y.

This advertisement is sponsored jointly by Zurn Industries, Inc. and the American-Standard Plumbing and Heating Division.



Better Looks, Easier Cleaning. Modern rest rooms like these using the Zurn System and American-Standard off-the-floor fixtures, not only look better, but actually speed cleaning time up to 30% based on comparisons with old-style installations.



Saves Material, Time, Labor. Zurn System supports off-the-floor fixtures from behind wall... for a new world of better rest room design. Cuts installation and maintenance. No furring-in, floor reconstruction, unseen water seepage.

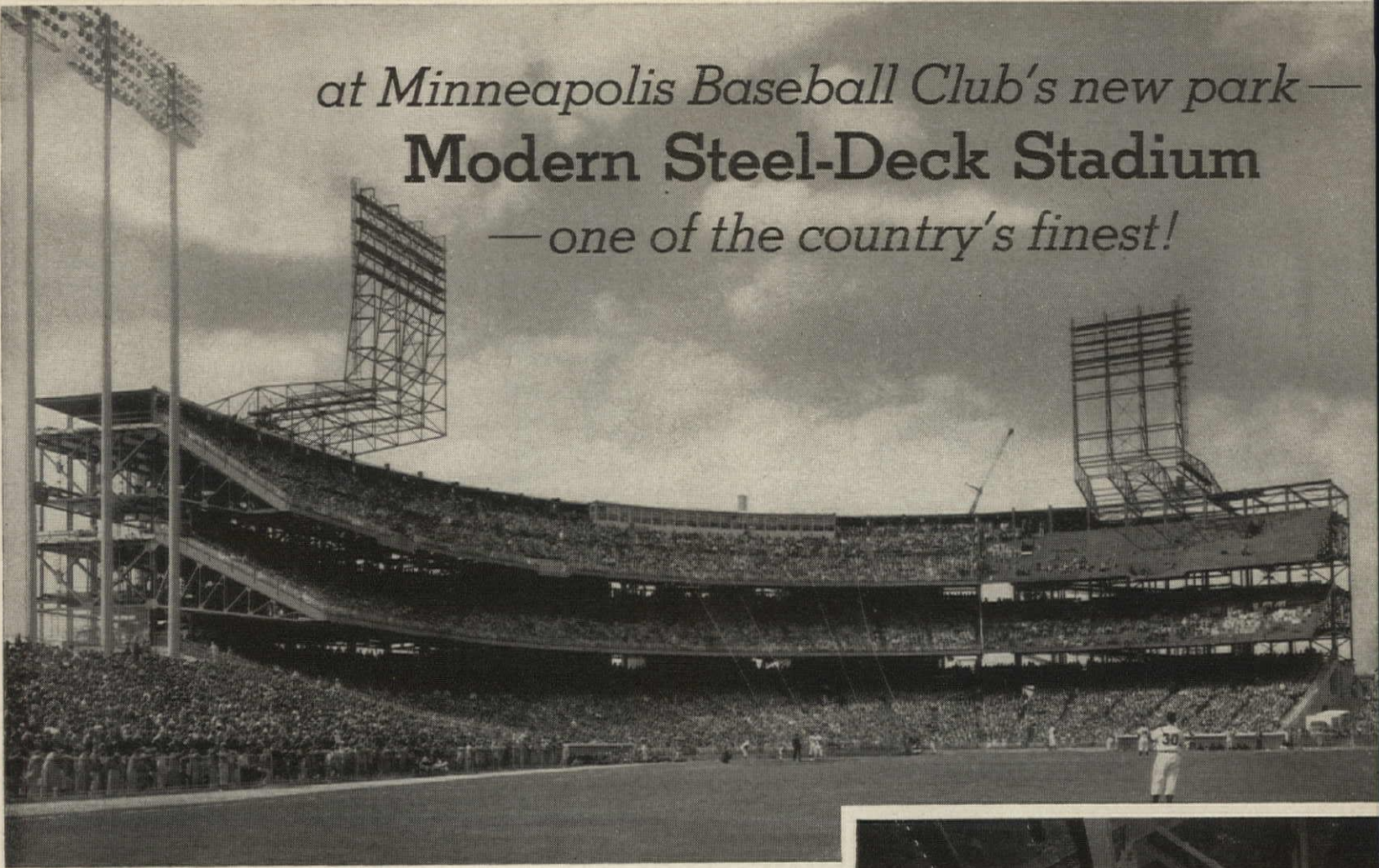


Mail coupon for new literature. Describes benefits of floor-free rest room design. There's no obligation, of course.

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Zurn Industries, Inc., Erie, Pa., U.S.A.
Please send me free copies of "You Can Build It For Less A New Way," and "Better Rest Room Guide."

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Modern Steel-Deck Stadium
 — one of the country's finest!



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The stadium is fan-shaped with three tiers and a roof. The upper two tiers have American Bridge Standard deck. Total estimated weight of structural steel is 1,555 tons, all but 376 tons of which was fabricated in the Minneapolis plant of American Bridge. Erection was sublet by American Bridge to Industrial Construction Company.

The grandstand will comfortably seat 15,000. Approximately 15,000 more can be handled in the bleachers which will ring the field, bringing the total to 30,000 seats when completed.

American Bridge steel-deck stadiums and grandstands are the product of more than 30 years of technical and practical experience in this specialized field of construction. They are easily adapted to any local requirement as to size and design . . . and to ground contour without extensive grading. They are easy to extend by adding sections at the ends, or by double-decking. The watertight steel plates form a perfect roof for room facilities beneath the stadium for lockers, concession booths, etc. Simplicity of fabrication and ease of erection assures quick completion. Every job is scientifically plotted for maximum spectator comfort and convenience . . . and economy to the owner. Our engineers are at your service for free consultation. Cost estimate furnished without obligation for definite projects. Just address your inquiry to our nearest office.



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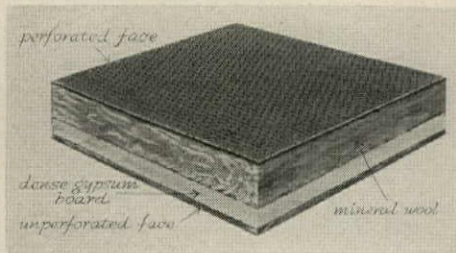
AMERICAN BRIDGE



UNITED STATES STEEL

PRODUCTS *cont'd.*

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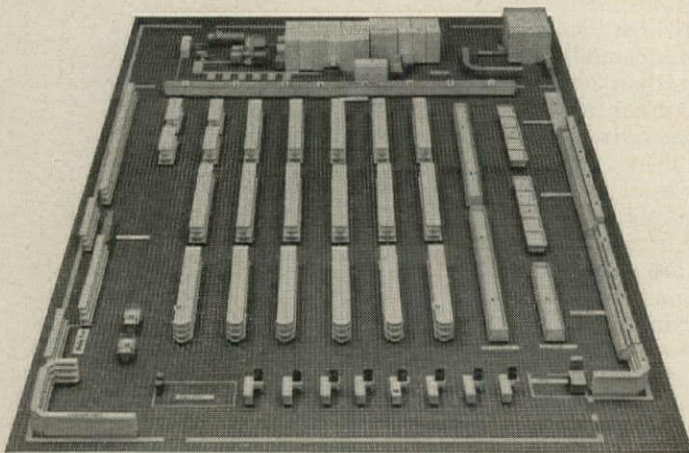
(9) ACOUSTICAL PANEL cushions and bounces distracting noises

The *E. H. Noise Reduction Panel* tackles the problem of acoustical control with a sensible combination of materials. One face of the laminated 4' x 8' panel is perforated to let noises through to an absorbent blanket of mineral wool. Any sounds penetrating the cushion are stopped dead by a dense gypsum back-up board while the solid outer face bounces off noise from the other side. Weighing about 5 lb. per sq. ft., the 2½"-thick *EH Panel* can be cut to size on the job. It costs about \$2.50 a sq. ft. and can be used for effective isolation of industrial machinery, fan plenums and TV contestants. Perforated aluminum or hardboard is used on the absorptive side, hardboard or asbestos cement for the sound-reflective skin. The round holes are standard, but numerous other slotted and square pat-

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Go right with color in the supermarket—use the **NEW TYLER-KETCHAM COLOR COMPATIBILITY SYSTEM** developed in consultation with Howard Ketcham, Inc., color experts. Covers Tyler equipment in color and its relation to walls, flooring, signs, the entire store interior! Flexible, simplified. Wide range of selections. Store-tested. Write Store Planning Dept. for complete details, today.

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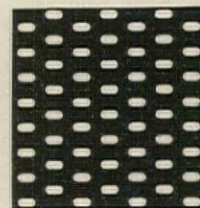
NEW TYLER SALES-CASE LINE (Series Y) for self-service Meat, Produce, Dairy, Ice Cream, Frozen Food Depts. Introduces new, low 33" merchandising height; many other new "Advanced Design" features that simplify, speed up installation; cut costs; boost profits! Send coupon for complete data.



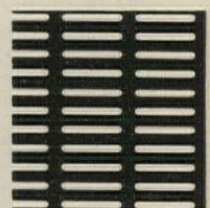
9% open



26% open



22% open



35% open

terned sheet may be obtained on order. (Interestingly, the amount of open area can vary from 3% to 30% without affecting the panel's efficiency except in very high and very low sound frequencies.) Also available are metal studs, channels, special doors, air intake and silencers for constructing a record booth or complete office to put inside a boiler plant.

Manufacturer: Elof Hansson, Inc.

(10) PLAY SCULPTURE complements school grounds and activities

A lot of concrete has flowed through the hopper since Creative Playthings, Inc. sparked a meeting of national park officials with a bold collection of art for play's sake (AF, Oct. '53). Now fabricating a broad assortment of cast panels, slides, play-puddles and welded tubular steel climbers, the firm is a top source of beautifully sculpted and engineered equipment for the modern schoolground. The Pueblo-like

continued on p. 260

TYLER

TYLER REFRIGERATION CORPORATION
Niles, Michigan

Canada: Tyler Refrigerators, 732 Spadina Ave., Toronto

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Tyler Refrigeration Corporation, Dept. AF-10
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74 TONS of GILSULATE were poured around 1500-foot steam line.

ONLY 5 MEN (unskilled) were needed to do the job: two in the trench and 3 above.



Western Carolina College Chooses GILSULATE® for New Steam Installation

On its modern campus at Cullowhee, N. C., Western Carolina College recently poured 66 tons of type B and 8 tons of type A GILSULATE on a 1500-foot steam line installation. This brought to more than 1200 tons the volume of GILSULATE used by North Carolina institutions, schools and colleges during 1955—enough to fill 40 railroad cars, or a ditch one yard wide by one yard deep and 10 city blocks long!

The installation consists of a 6" steam and a 2" condensate piping system. During pouring, only 2 men were required in the trench and 3 men above to open the bags and pour.

No other insulation for hot underground pipes can match this low-cost performance—just as no other insulation can match GILSULATE for permanent protection of piping systems. No wonder more and more engineers, architects and contractors are specifying GILSULATE for their hot

underground piping work!

Whatever the type of job you have in mind—airport, school, utility, institution, factory, railroad—it will pay you to investigate the unusual features of this easily-installed, dependable, low-cost system. Use the coupon below or see your local GILSULATE dealer.

FACTS ABOUT GILSULATE

1. **EASY TO USE**—just pour and tamp ...pipe heat does the rest.
2. **FORMS 3 ZONES** of protection against heat loss and all hazards commonly encountered by hot buried pipes.
3. **NEEDS NO HOUSING OR MECHANICAL SHEATHS:** no mixing, special handling or equipment.
4. **ONLY NEEDS NORMAL PIPE SPACING:** for multiple pipe or cramped conditions.
5. **THREE TYPES AVAILABLE:**
 Type A for 220°-300° F. temp. range
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UNGRADED DITCH. Concrete pads were located at 10-foot intervals and 4" transite pipe supports placed on top of them.



THE TRIPLE-ZONE INSULATION SYSTEM FOR LIFE-TIME PROTECTION OF HOT UNDERGROUND PIPES

AMERICAN GILSONITE COMPANY, SALT LAKE CITY 1, UTAH
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Indiana Limestone cannot be identified with any one architecture or any one building type. Its use is indicated wherever permanence, minimum maintenance and the textural beauty of natural stone is desired.

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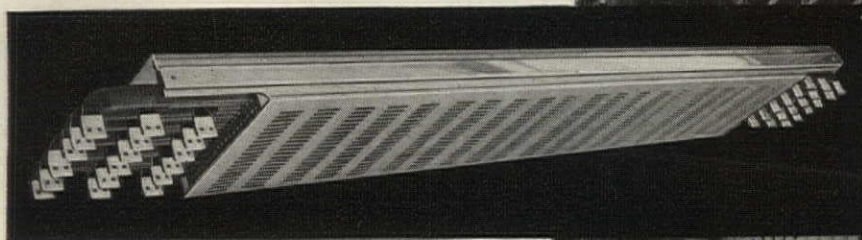
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More than 2½ miles of aluminum busways

*carry power in
New York Coliseum*



New York Coliseum

CONSTRUCTED BY TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY, HON. ROBERT MOSES, CHAIRMAN
Architects—Leon and Lionel Levy
Mechanical and electrical engineer—Guy B. Panero
Advisory architectural committee—Aymer Embury II, Eggers & Higgins, John B. Peterkin
General contractors—Walsh-Fuller-Slattery (joint venture)
Electrical contractors—T. Frederick Jackson and J. Livingston Co. (joint venture)
Busways—General Electric Company

Important Innovations in Coliseum

New York City's new Coliseum is modern in every detail, particularly in its electrical distribution system. This 26-story office building, combined with 365,000 square feet of display space, has one of the first major installations of a higher voltage distribution system (480Y/277 volts). More than 2½ miles of busway incorporating aluminum conductors were used to feed power to this huge structure.

Higher Voltage System Saves Money

The higher voltage system provides greater capacity and flexibility than conventional systems. Yet it requires only

half as many, or half as large, risers and feeders. Characteristics such as excessive voltage drop or costly power losses present no problems to this system. The use of lightweight aluminum bus bars makes the equipment easier to handle and easier to install.

More and more manufacturers of packaged electrical distribution systems are finding that Alcoa® Aluminum Bus Conductor offers advantages of lower cost, availability, design flexibility. Aluminum distribution bus weighs a third less than a copper system of equal conductivity. Pound for pound, it has greater current-carrying capacity than cable in conduit.

Alcoa Aluminum Is Your Best Bet, Too

Wherever your production requirements demand an efficient, flexible electrical distribution system, it will pay you to specify busways with Alcoa Aluminum Conductors. Write us for the names of manufacturers who specialize in this lighter, better, more economical product. Aluminum Company of America, 2304-K Alcoa Building, Pittsburgh 19, Pa.

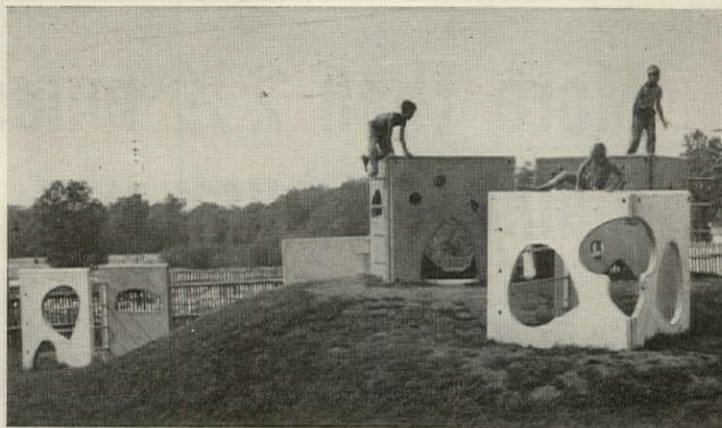
*Your Guide to the Best in
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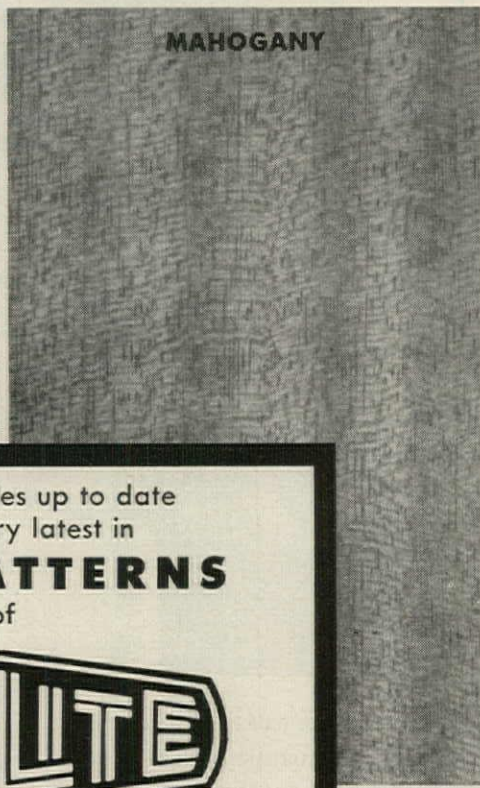
THE ALCOA HOUR
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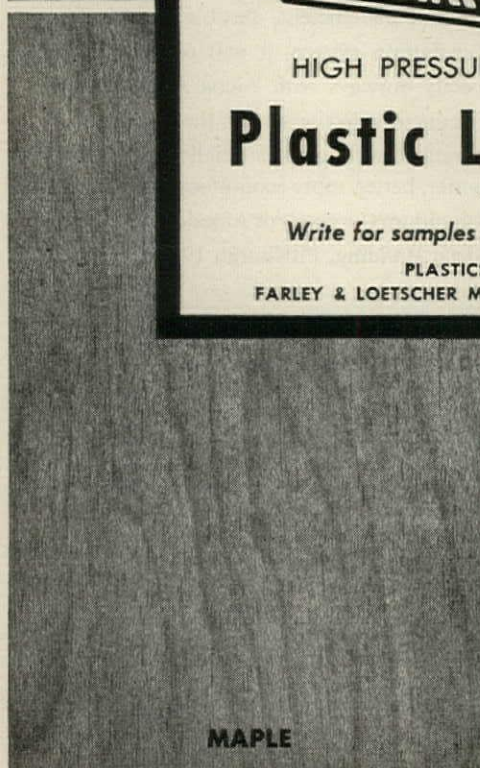
HIGH PRESSURE



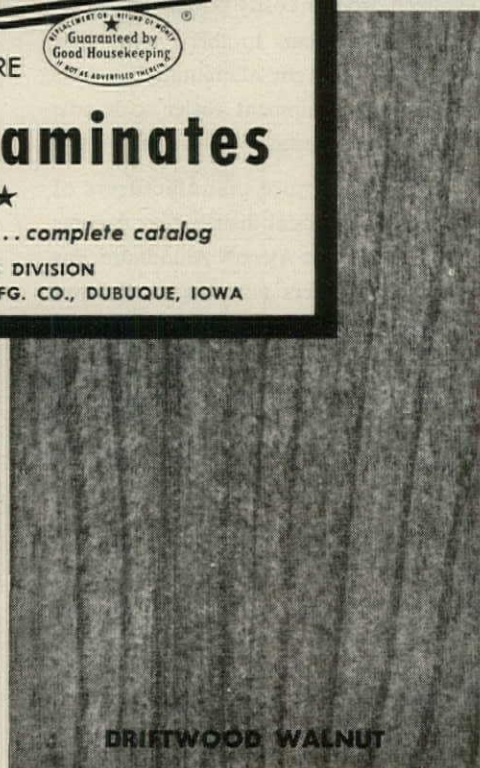
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MAPLE



DRIFTWOOD WALNUT

houses pictured above (first prize winner in the Museum of Modern Art Play Sculpture Competition) are made up of different arrangements of five patterns of slabs and two kinds of pipe grids. The complete village, weighing in at 9,700 lb., costs \$1,385 FOB. Plans and footing specifications are included. Playhouses can be purchased separately for about \$250 to \$315 each. Individual slabs and pipe walls are \$50 to \$65.

The three arched ladders comprising the *Amphitheatre Climbers* (above left) challenge children of assorted sizes and skills to test their muscles in graceful surroundings. Available in senior and junior groups, the three arches cost \$325 and \$375 FOB. Flat playground sites can be given some rippling interest and fun with a staggered series of hilly *Tunnel Bridges*. Colored terra cotta, dark and light gray, the two-



part units are each \$90 FOB. The *Playweb Gym*, (below) is a sociable silo shape that invites all kinds of young gymnastics. It is finished in bright blue enamel and costs \$150 FOB.

Manufacturer: Play Sculptures, Div. of Creative Playthings, Inc.

continued on p. 262



HOW WOULD YOU DO IT?

... this way?



ROOF VALLEY DETAIL

Fig 1

... or this way?



ROOF VALLEY DETAIL

Fig 2

In Fig. 1 above, the detail shows that the valley is connected to the metal roofing sheet with a $\frac{1}{2}$ " wide unsoldered seam.

In Fig. 2 the valley sheet extends up under the roofing pans at least 6" and the roofing pans are connected to the valley sheet by a $\frac{3}{4}$ " lock as shown.

The method shown in Fig. 1 can be the cause of many leaks that occur at a valley. When you consider that no other roofing material

would be installed to lap over the valley flashing $\frac{1}{2}$ " it doesn't seem logical that because the roof covering is metal a $\frac{1}{2}$ " lap will not leak.

To avoid any chance of leak trouble either method shown in Fig. 2 should always be employed. Should the water be diverted against this lock by ice, leaves, sticks, etc. that might lodge in the valley, no leaks will occur because a head lap was provided.

We do not wish to presume to tell you how to design your structures or dictate their construction. For there are many satisfactory methods of installing gutters, leaders, roofs, flashing, coping covers, etc., which, of necessity, change with the design and type of construction and materials used. The purpose of this advertisement is to point out the methods of installation that have been proved by many years of use, and backed by more than a century and a half of experience in working with copper, to be the most satisfactory techniques. You will find these methods in Revere's 110 page brochure, "COPPER AND COMMON SENSE." Send for a copy today. And remember: Revere has a staff of specialists known as Technical Advisors, whose experience qualifies them to render valuable service and advice regarding the use of metals in the building field. Feel free to consult with them at all times regarding the use of Revere Copper; you incur no obligation. Revere Technical Advisors may be contacted through the Revere Office nearest you.



REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

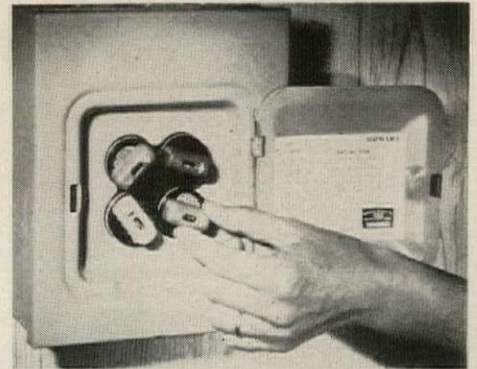
Mills: Baltimore, Md.; Brooklyn, N. Y.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Newport, Ark.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.

PRODUCTS *cont'd.*

For more data use coupon, p. 274

(13) **SIX-LIVED FUSE** pinpoints trouble with tiny neon beacon

Behaving like a circuit breaker, a blown *Sightmaster* fuse can be switched to a new position to restore power service. The safety-dial unit also makes the job of poking into a dark, baffling fuse box less foreboding; its tiny neon light glows to show immediately which line is overloaded. The fuse does not have to be taken out or



replaced until six power failures—a considerable life span on most installations. It is made in 15, 20, 25 and 30 amp. capacity (identified by different colors) and sells for about 85¢ each.

Manufacturer: A. Lawrence Karp

(14) **PLUG-IN FIRE ALARM** shrieks warning of ominous hot spots

Should room air near a *Fire Spy* reach a dangerous 140° F., the diminutive box lets out a piercing alarm and keeps screaming until the temperature is brought down to 100°. A practical accessory to sprinkler



systems in plants, schools and offices, the reusable thermostatic device plugs into any A.C. outlet and draws no current except when signalling. It weighs 6 oz. and sells for \$6.95. If there are no disasters to test the *Fire Spy*, a lit cigarette or match held in front of the thermostat button should give assurance of its working order.

Manufacturer: Laramie Chemical Corp.

PRODUCT NOTES

(15) **Darkening drapery** for windows

A flame-resistant fabric has been developed by Du Pont for darkening windows in classrooms and auditoriums. The *Tontine* material is colored and textured on one side and has a neutral beige side to face the window. It is made completely opaque by a middle coating of black vinyl. Soft and lightweight, *Tontine* will drape easily over large glass areas. It can be sewn and pleated, and hung on standard hardware.

continued on p. 274

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Laundries are important, but they have to fit in along with the many other essential service facilities. We take this view in helping you plan a laundry department. Whether it's in a hotel, hospital, school, or other institution, we hold floor space to a minimum. Not the absolute minimum—but the practical minimum, which properly balances floor space with capacity needs for most efficient and economical work flow with the least operating personnel.

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World's Largest, Most Complete Line of Laundry and Dry Cleaning Equipment

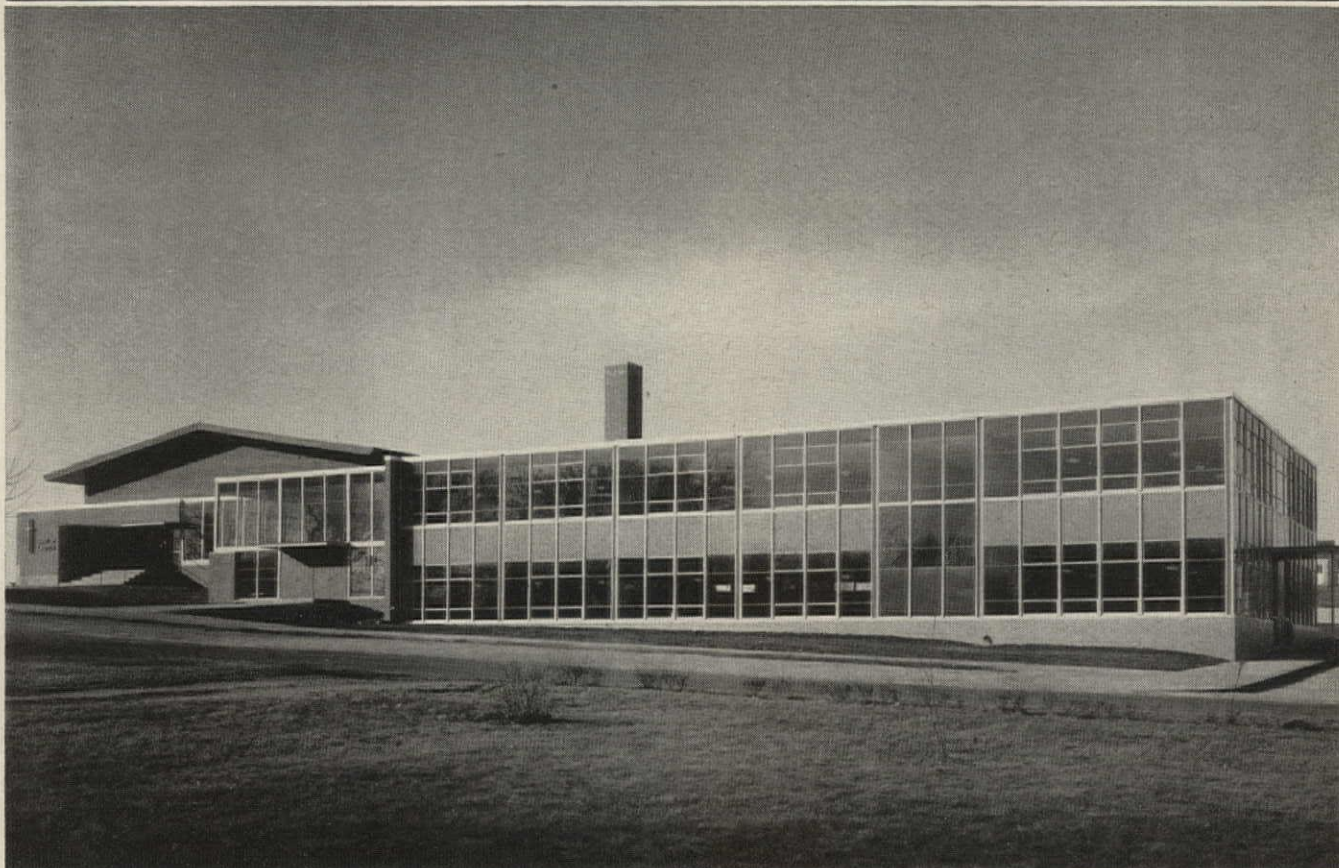


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1818

STEEL WINDOWS HAVE THE STRENGTH AND RIGIDITY THAT NO OTHER WINDOW CAN MATCH



ST. PIUS X PARISH CENTER, MISSION, KANSAS

Architects: Shaughnessy, Bower & Grimaldi

General Contractors: Frank Quinlan Construction Co.

Here is another fine example of the application of Hope's Multi-Story Window Wall construction to modern building enclosure.

These window walls start at sill level and extend to the full height of the second story ceiling. They include fixed glazed areas, top and bottom ventilators and insulated painted steel panels.

The architect and builder are permitted the greatest freedom in design arrangement. Fixed glazed areas, ventilators, insulated panels (porce-

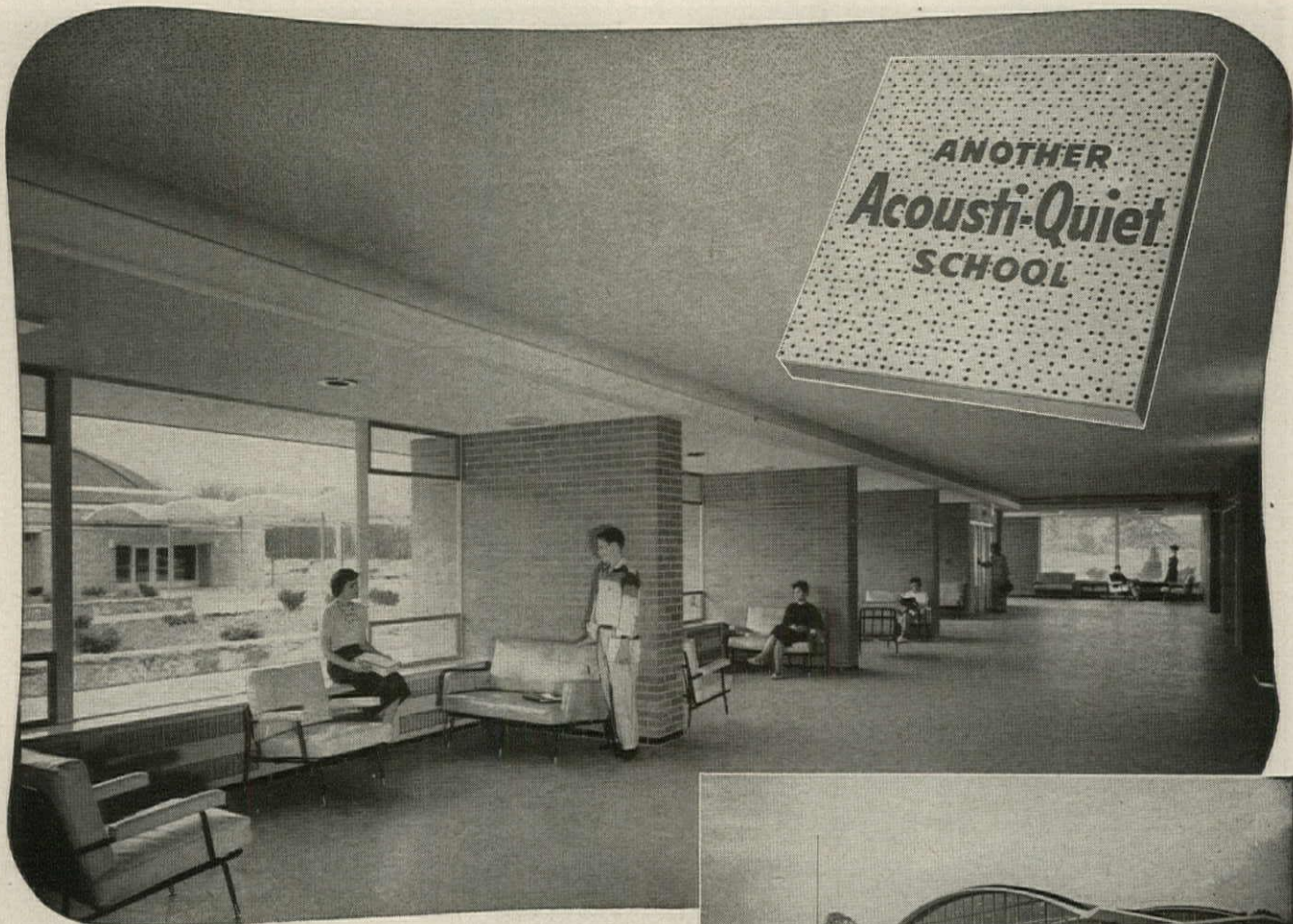
lain or painted), louvers and doors may be inserted in Hope's Multi-Story Window Wall openings wherever desired.

In addition, other advantages include structural savings due to the light weight of Hope's Window Walls that carry right down to the footings. Ease of erection results in rapid enclosure, saving time and labor. And the superior strength and rigidity of Hope's Steel Window Walls retain their full weathertightness for the life of the building.

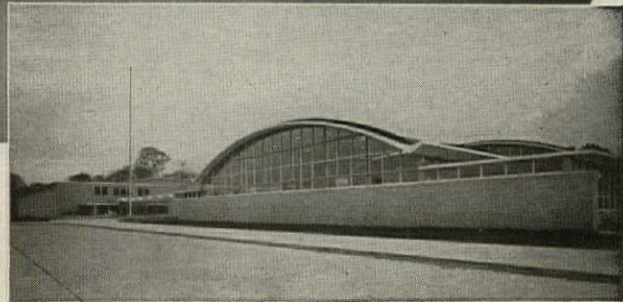
Write for Catalog 152-AF for Full Information

HOPE'S WINDOWS, INC., *Jamestown, N. Y.*

THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS



Edsel Ford High School, Dearborn, Michigan, showing corridor with Acousti-Celotex Sound Conditioning installation
 Architect: Eberle M. Smith Associates, Inc., Detroit, Michigan
 Acousti-Celotex Contractor: R. E. Leggette Company, Dearborn, Michigan.



The Acoustical Ceiling: Of Prime Importance In School Design

Here in the interesting, widely-known Edsel Ford High School, a spacious corridor is used for informal student meetings. The original Random Pattern* in Acousti-Celotex Tile blends evenly across the broad ceiling surface.

In the two gymnasiums (inset), a special application was engineered to follow the graceful curve of the unique thin shell concrete roofs, using an acoustical construction that will withstand the impact of indoor athletic games.

*PAT. NO. D-168,783
 †REG. U. S. PAT. OFF.
 ‡PAT. NOS. 2,218,992 & 2,710,338

Your Acousti-Celotex Distributor, listed on the back cover of our Sweet's Catalog, will be glad to cooperate with you in working out your ideas for the most effective ceilings in your school projects.

Ask him particularly about school applications of Steelacoustic† Panels, Cavity Tile, Acousti-Lux‡ Translucent Panels, and the Structural Acousti-Line System. All of these new products make their own specific contribution to the part that ceilings play in good school design.

Sound Conditioning Products for Every Requirement



TRADE MARK

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Sound Conditioning

THE CELOTEX CORPORATION, 120 S. LA SALLE ST., CHICAGO 3, ILLINOIS • IN CANADA: DOMINION SOUND EQUIPMENTS, LTD., MONTREAL, QUEBEC

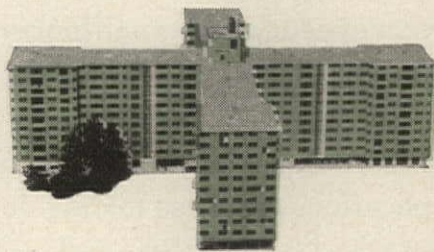


An apartment building with all-aluminum skin

ALODIZED WITH ARCHITECTURAL ALODINE®

Chetwynd, an apartment building of all-aluminum skin, is ready for occupancy. Its exterior is protected and beautified by Architectural Alodine — a chemically formed coating integral with the metal. The process has many advantages. It is economical in comparison with other commercial finishes and it reduces maintenance costs. Aluminum thus protected is given a beautiful appearance and glare is materially lessened. The color is sunfast.

A file folder describing this new process in detail, and containing samples of Alodized Architectural Aluminum, is yours for the asking. Write us.



Project: Chetwynd Apartments • **Location:** Radnor Township, Delaware County, Pa. • **Architect:** Charles Frederick Wise, A.I.A. • **Structural Engineer:** Severud-Elstad-Krueger • **Mechanical Engineer:** Ginsburg & Smith • **Contractor:** Rosemont Construction Company • **Height of building:** 10 apartment floors and lobby • **Number of apartments:** 320, 32 per floor • **Other facilities:** Garage for 160 cars, restaurant, and cocktail lounge • **Floor area:** 31,730 sq. ft. per floor

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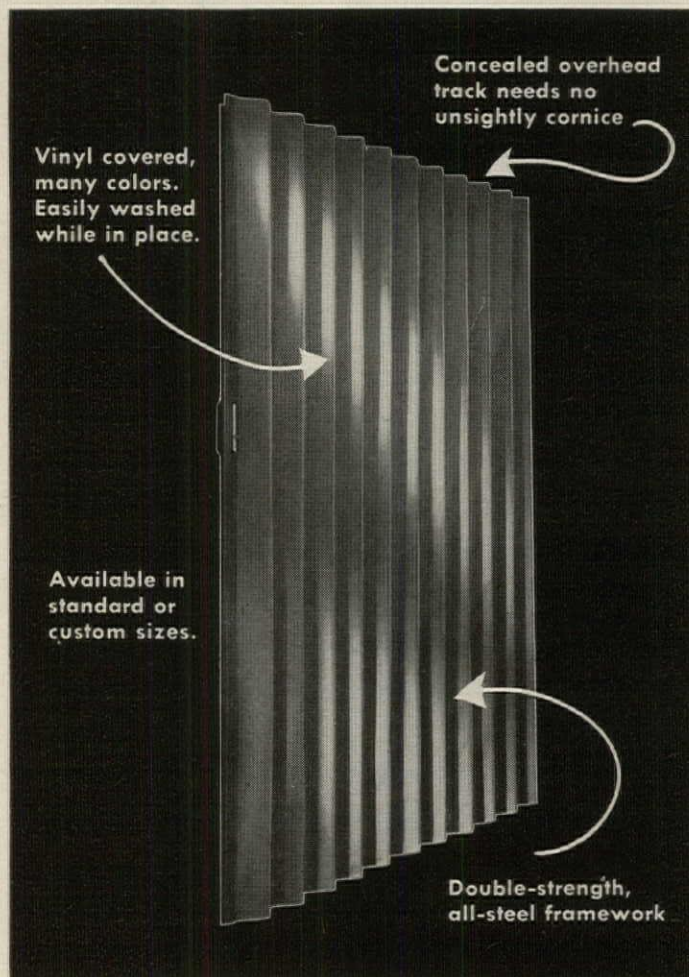
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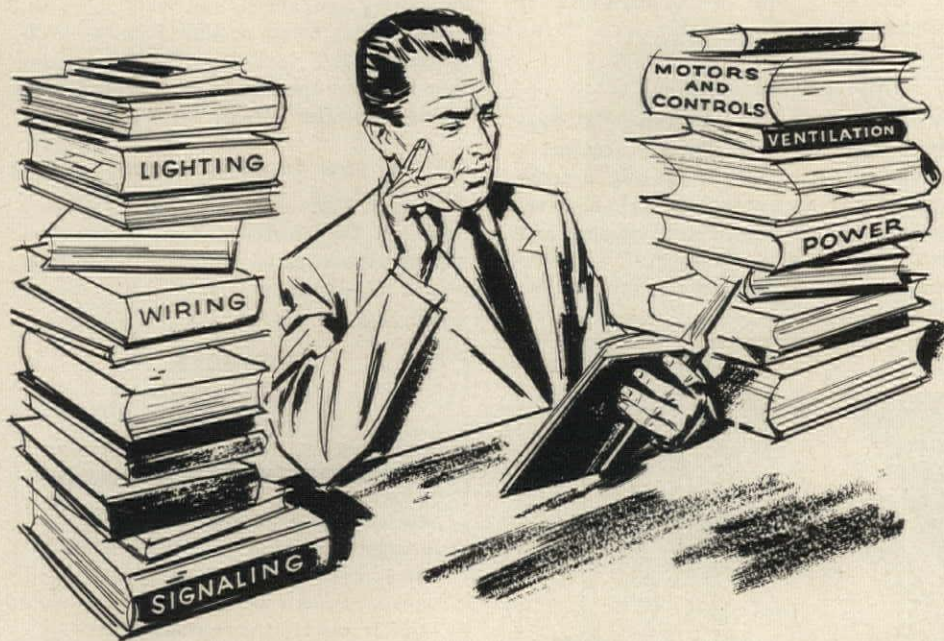
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also furnished with a backup sheet of hardboard.

(17) Vinyl coated steel

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(18) Copper faced aluminum

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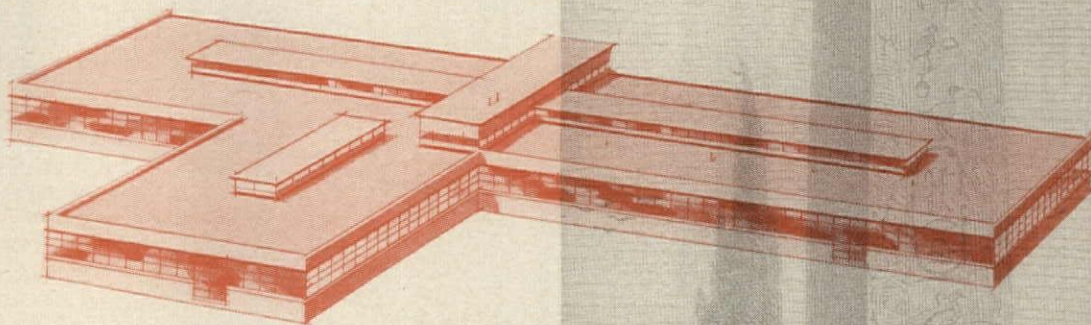
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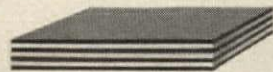
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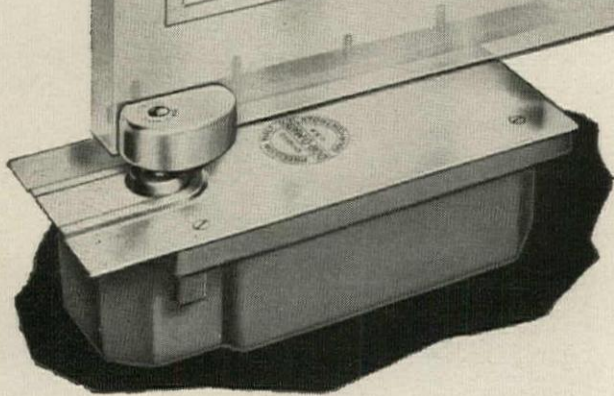
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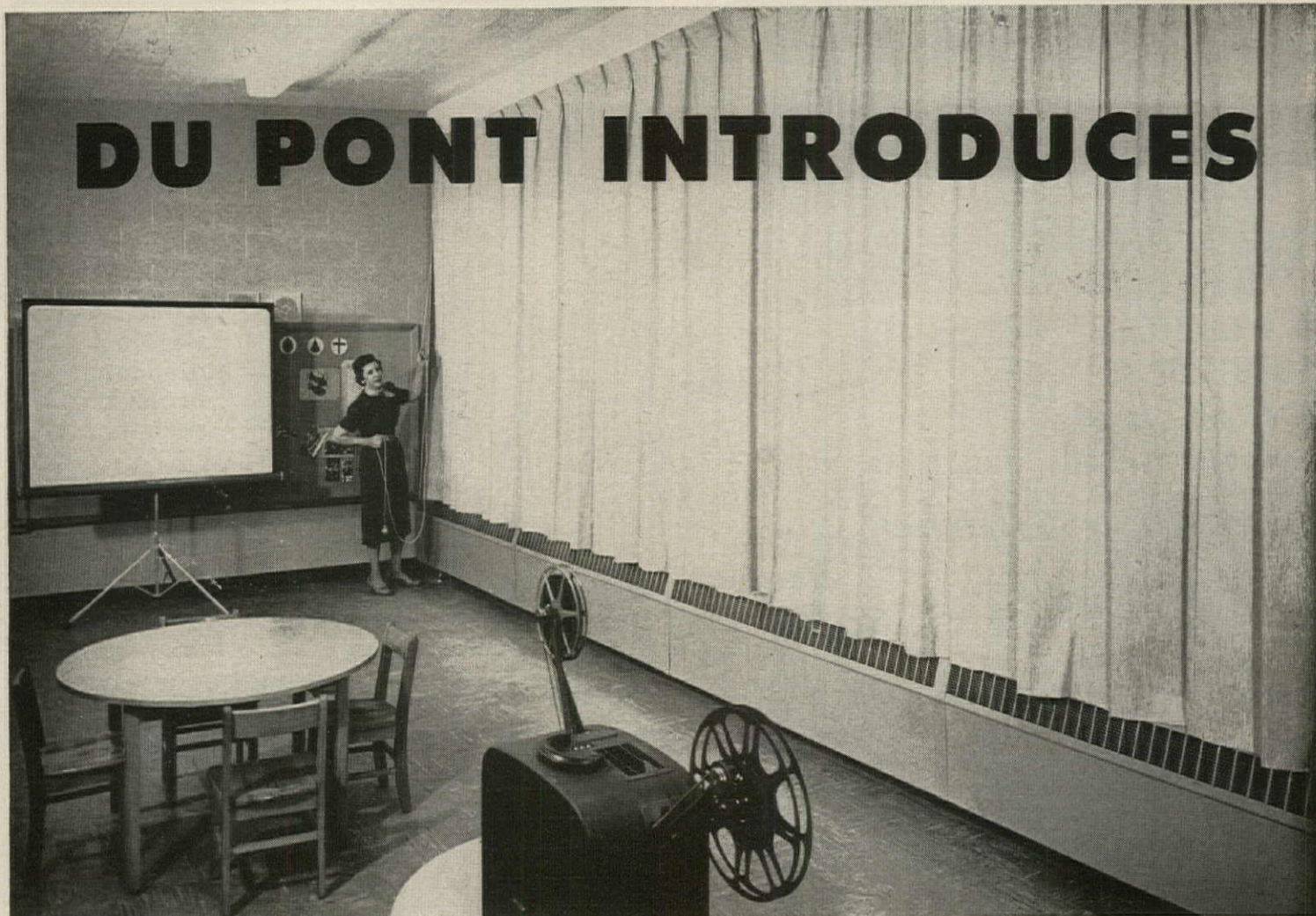
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TECHNICAL PUBLICATIONS

ADHESIVES

Flintkote Water Base Adhesives and Protective Coatings for Industrial Insulations. I-F No. 46. Flintkote Co., 30 Rockefeller Plaza, New York 20, N.Y. 4 pp.

Penacolite Resorcinol Adhesives for Permanent, Waterproof Bonding. Koppers Co., Inc., Chemical Div., Pittsburgh 19, Pa. 8 pp.

ACOUSTICAL MATERIALS

Quiet at Work. Armstrong Cork Co., Lancaster, Pa. 16 pp.

AIR PURIFICATION

Cyclo-trell Multiple Tube Dust Collector. Bul. 100. Research-Cottrell, Inc., Bound Brook, N.J. 12 pp.

New but Proved Super-clean Air. Catalogue E-90. Trion, Inc., 1000 Island Ave., McKees Rocks, Pa. 6 pp.

ALUMINUM

Alcoa Aluminum Handbook. Aluminum Co. of

America, 781 Alcoa Bldg., Pittsburgh 19, Pa. 176 pp.

CABLES

Interlocked Armor Cable No. 19-555. General Electric Co., Bridgeport 2, Conn. 18 pp.

CHURCH EQUIPMENT

For Greater Confessional Privacy . . . Donald Acousti-Confessionals. J. R. Donald Co., 620 N. 108th Pl., Milwaukee 13, Wis. 4 pp.

COMBUSTION CONTROL

Control Fundamentals. . . . Their Application to Combustion. Cleveland Fuel Equipment Co., 1111 Brookpark Rd., Cleveland 9, Ohio. 16 pp.

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Better Patient Care. Executone, Inc., 415 Lexington Ave., New York 17, N.Y. 12 pp.

CRANES

Underhung Type Overhead Cranes. Bul. U-200-1. Chicago Tramrail Corp., 1330 S. Kostner Ave., Chicago 23, Ill. 16 pp.

ELECTRICAL EQUIPMENT

Touch-Plate Manual 55 and price list. Touch-Plate Mfg. Corp., Box 1970, Long Beach, Calif. 8 pp.

2200 3-in-1 Plugmold Electrified Baseboard. Form 590. The Wiremold Co., Hartford 10, Conn. 8 pp.

Walker Aluminum Service Fittings. Walker Brothers, Conshohocken, Pa. 4 pp.

FANS

Hartzell Propeller Fans. Bul. A-109B. Hartzell Propeller Fan Co., Piqua, Ohio. 40 pp.

HARDWARE

Dual-Purpose Sliding Door Hardware. The Stanley Works, New Britain, Conn. 8 pp.

Kwikset "400" Line Locksets & Accessories. Kwikset Sales & Service Co., Anaheim, Calif. 8 pp.

McKinney Forged Iron Hardware. Catalogue No. 11. McKinney Mfg. Co., Pittsburgh 33, Pa. 70 pp.

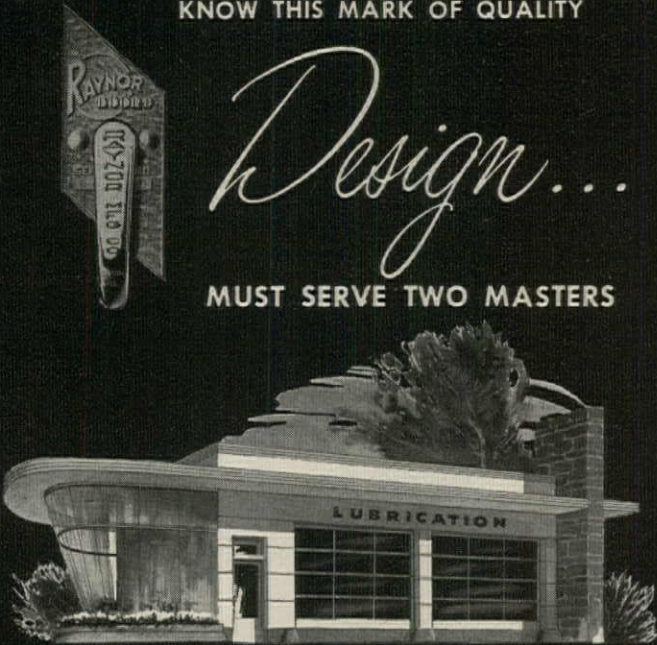
Pittco . . . The Quality Checking Floor Hinge. Pittsburgh Plate Glass Co., 632 Fort Duquesne Blvd., Pittsburgh 22, Pa. 12 pp.

HEATING AND AIR CONDITIONING

Central Station Air Conditioning Units—Cabinet Type. Bl. C-1100-B88 P. Worthington Corp., Harrison, N.J. 52 pp.

Cooling Tower WMT Series. Bul. C-H 56110. Drayer-Hanson, Div. of National-US Radiator Corp., 3301 Medford St., Los Angeles, Calif. 4 pp.

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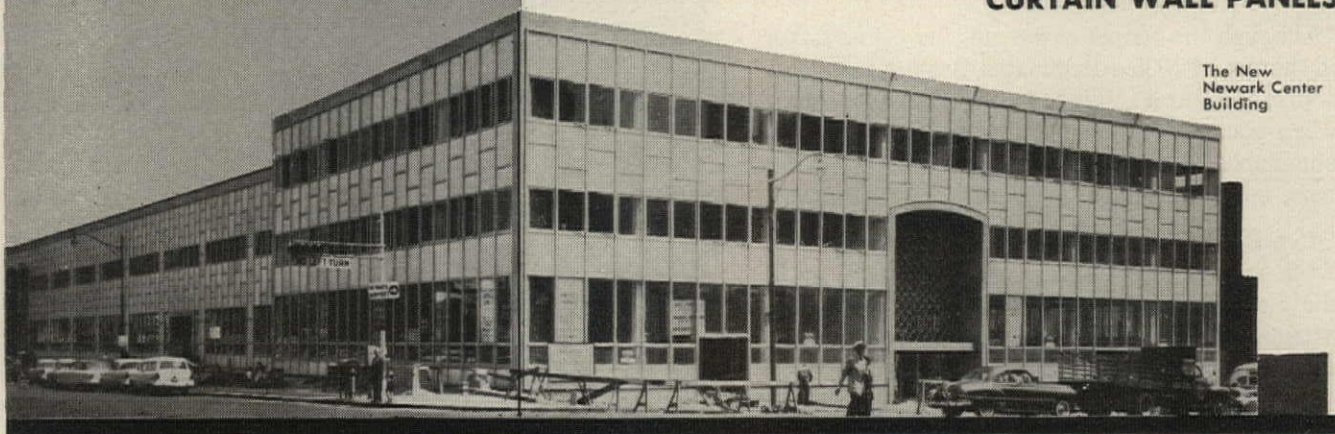
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Air Conditioners—Complete Summer Cooling Systems. The Majestic Co., Inc., Huntington, Ind. 8 pp.

Ceiling Diffusers. Model TMA. Titus Mfg. Corp., Waterloo, Ia. 4 pp.

Electric Radiant Glass Tubular Infra-Red Convection Heaters. Catalogue 83. Electric Can Arm Heaters. Bul. 84. Can Arm Corp., P.O. Box 156, Champlain, N.Y. 20 and 32 pp.

Diffusers, Registers & Grilles Catalogue 1956. The Lima Register Co., Lima, Ohio. 32 pp.

Electric Radiant Heating. Heatmore, Inc., 59 Throop Ave. Brooklyn 6, N.Y. 4 pp.

Installation Manual for CHA1 Series Horizontal Hermetic Air Conditioners. Lennox Industries Inc., Marshalltown, Ia. 22 pp.

Monobloc Centrifugal Pumps for Better Operating Air Conditioning Systems. Bul. W-306-B3D P. Worthington Corp., Harrison, N.J.

Water Coil Selection Method. Drayer-Hanson

Inc., 3301 Medford St., Los Angeles 63, Calif. 4 pp.

INPLANT FEEDING

Food Facilities Engineering. J. E. Stephens Associates, Inc., 116 Delaware, Detroit 2 Mich. 40 pp.

INSULATION

Spun Mineral Wool Duct Insulation. Baldwin Hill Co., Trenton, N.J. 4 pp.

LAUNDRY EQUIPMENT

Eastern Cyclone Specialized Laundry Equipment. Eastern Cyclone Conveyor, 876 Van Houten Ave., Clifton, N.J. 12 pp.

LIGHTING

The ABC's of School Lighting. Celline Inc. Batavia, Ill. 4 pp.

Ainsworth Lighting Catalog. Ainsworth Lighting Inc., 38-10 29th St., Long Island City 1, N.Y. 8 pp.

Lighting Fixture Guide. General Electric Large Lamp Div., Nela Park, Cleveland, Ohio 40 pp. 50¢

The New L-69A General Purpose Sports and Outdoor Area Floodlight. General Electric Co., Hendersonville, N.C. 12 pp.

School Lighting Plan. The Art Metal Co., Cleveland, Ohio

Service Station Lighting by Crouse-Hinds Bul. 2689. Crouse-Hinds Co., Wolf and Seventh North Sts., Syracuse, N.Y. 16 pp.

Universally Adjustable Hospital-Lites. Swivel Co., Inc., 43 34th St., Brooklyn 32, N.Y. 8 pp.

LIGHTNING PROTECTION

Lightning—Its Behavior and What to Do about It. St. Louis Lightning Protection Co., 200 S. Jefferson Ave., St. Louis 3, Mo. 24 pp.

MATERIALS HANDLING

Hi-Lo Fully Automatic Dockboards. The Kelley Co., 316 E. Silver Spring Dr., Milwaukee 17, Wis. 4 pp.

MAINTENANCE

Manual on Sweeping and Mopping Floors. Huntington Laboratories, Inc., Huntington, Ind. 24 pp.

PARTITIONS

Studlock Clip System. Penn Metal Co., Inc., 205 E. 42nd St., New York 17, N.Y. 4 pp.

PROTECTIVE COATINGS

Tygon Protective Coatings. Bul. 760. Plastics and Synthetics Div., The U. S. Stoneware Co., Akron 9, Ohio. 28 pp.

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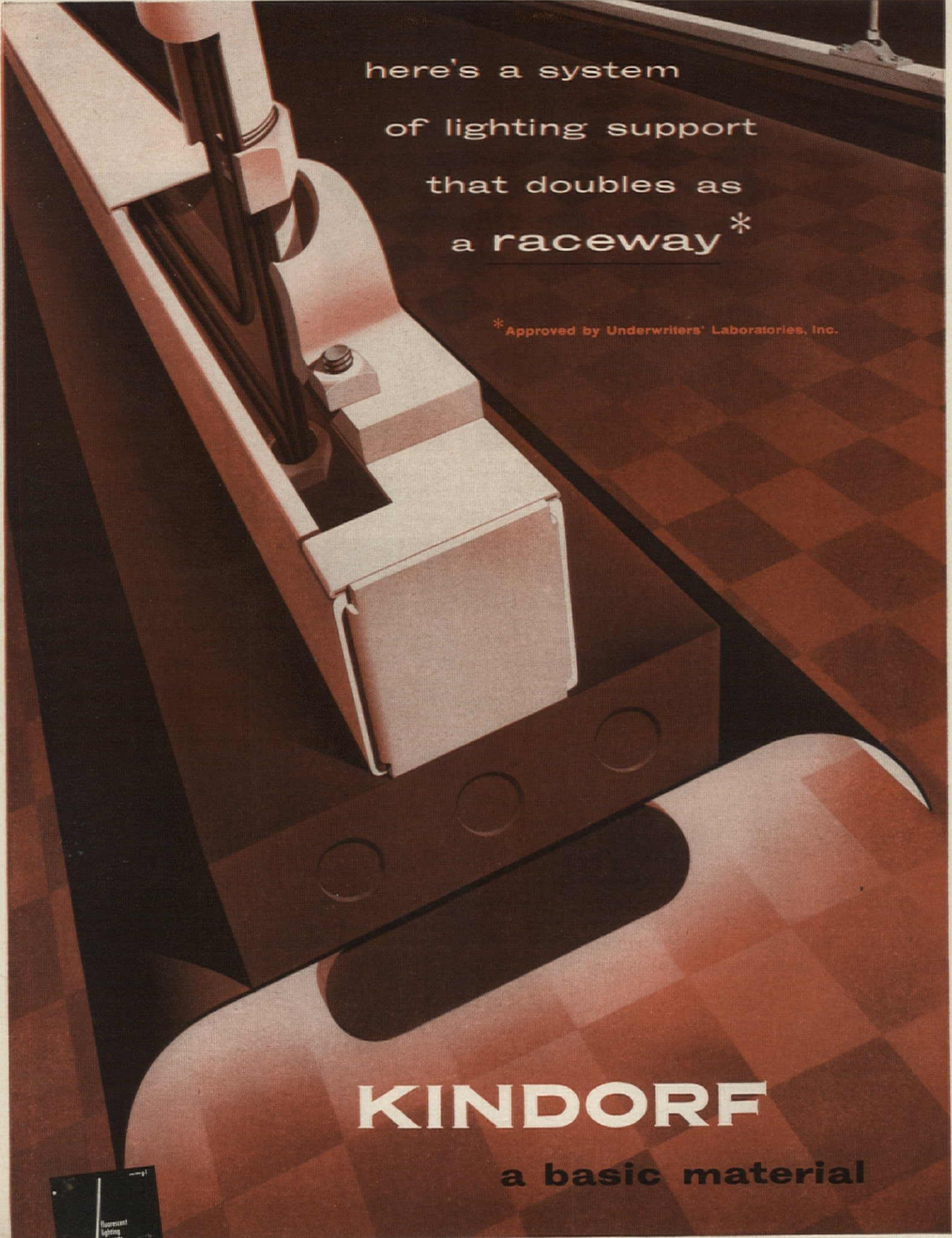
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continued on p. 290



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THE MAJOR INFLUENCE IN AMERICAN BUILDING

And now! Another GOLDEN DOWEL lifetime masterpiece

Roddiscraft announces

first all-wood B-Label fire door

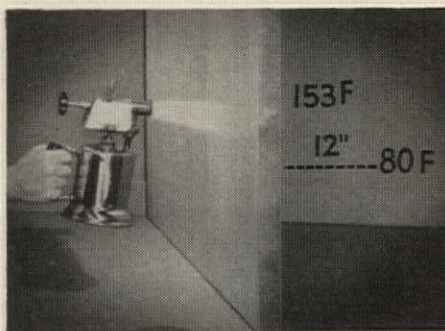
Once again, Roddiscraft makes history with doors. Cutaway model illustrates this dramatic new development — a one-hour flush veneered fire door (B-Label) in which the core is composed of millions of fireproofed wood particles . . . bonded forever with phenolic adhesives under heat and pressure. This all-wood fire door is fully approved by Underwriters' Laboratories, Factory Mutual and the New York Board of Standards and Appeals.

This new core construction is significant in terms of both present function and future promise — because it offers a sure, new way to tailor door characteristics to particular applications.

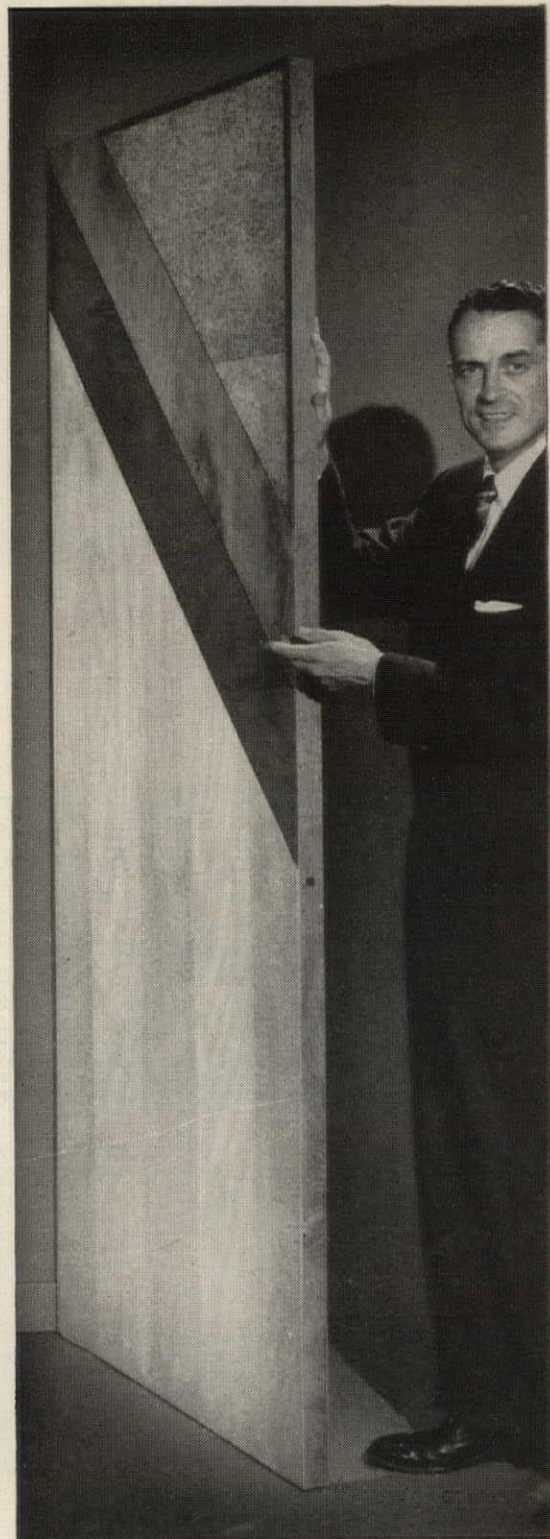


HIGH-DENSITY CORE — EXTRA STRENGTH —
Weighs about 50% more than conventional mineral-core fire doors. Core assures exceptional screw-holding power. Asbestos lock block position indicated on rail with golden dowel.

ONE-HOUR FIRE RETARDANT — UL tests show unexposed surface temperatures at end of 30 minutes average 153F. Heat radiation temperatures at 12 inches average only 80F — considerably lower than those of mineral-core fire doors.



LIFETIME GUARANTEE IN WRITING — Owners of new Golden Dowel One-Hour Fire Doors are fully indemnified against loss for the life of the installation — by a policy with one of the nation's leading insurance underwriters.



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SEALTIGHT *Premoulded Membrane*

TRADE MARK

the industry's only **TRUE** VAPOR SEAL



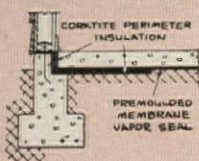
The only sure way to "eliminate" the ravages of destructive moisture is with the installation of "Premoulded Membrane" during the original construction . . . all other methods are merely temporary "stop-gaps." When specifying or installing a vapor seal, be sure it meets these Sealight standards of quality: permeance rating of only 0066 grains per square foot . . . resistant to rot, mold and termites . . . expandable . . . quickly, easily and permanently installed . . . ONLY "Premoulded Membrane" meets them all.

Eliminates

- EXCESSIVE WINDOW CONDENSATION
- EXCESSIVE BASEMENT DAMPNESS—RUSTING OF TOOLS
- BLISTERING OF EXTERIOR PAINT
- DETERIORATION OF INSULATION VALUES
- DETERIORATION BY MILDEW OF RUGS, FURNISHINGS, SHOES AND CLOTHING

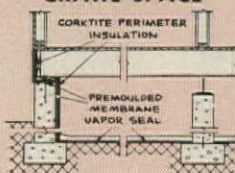
IDEAL FOR ALL TYPES OF CONSTRUCTION

SLAB-ON-GRADE



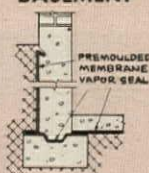
This illustration shows how the installation of Premoulded Membrane and Corkite completely isolates the slab and superstructure from soil moisture.

CRAWL SPACE



The proper installation of Premoulded Membrane and Corkite removes all danger of condensation and oxidation of metal installations in the crawl space area . . . eliminates the need for ventilation.

BASEMENT



The proper installation of Premoulded Membrane to the exterior of the basement walls as well as beneath the floor slab insures a permanently warm and dry basement.

ARCHITECTS, BUILDERS, DEALERS . . .

WRITE TODAY for complete information that tells you where, why and how to use Sealight Premoulded Membrane, the only true vapor seal and Corkite, the resilient, impermeable perimeter insulation.

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PRODUCTS *cont'd.*

PUMPS

Submersible Multipurpose Utility Pump. Ken-co Pump Div., American Crucible Products Co., 1305 Oberlin Ave., Lorain, Ohio. 2 pp

REFRIGERATION

Hermetic Centrifugal Refrigerating Machines Catalog No. 19C-100. Carrier Corp., Syracuse, N.Y. 20 pp.

United-American Refrigerated Units. United American Soda Fountain Div., Lewis-Shepard Products, Inc., Dept. R-27. Watertown, Mass 4 pp.

TILE

Carefree Living with Tile. US Ceramic Tile Co., 217 Fourth St., N. E., Canton, Ohio, and The Sparta Ceramic Co., E. Sparta, Ohio 8 pp.

TREADS

Non-Slip Vermarco Tru-Tread Nosings and Inserts. Vermarco Supply Co., Div. of Vermont Marble Co., Proctor, Vt. 4 pp.

VALVES

Dependable Control by Asco. Automatic Switch Co., 391 Lakeside Ave., Orange, N.J. 34 pp.

Lawler Line of Thermostatic Control Valves. Bul. C-7. Lawler Automatic Controls, Inc., Mt. Vernon, N.Y. 8 pp.

VERTICAL TRANSPORTATION

Amplidyne Control System for Gearless Elevators. GE-6497. General Electric Co., Schenectady 5, N.Y. 4 pp.

VIBRATION CONTROL

Shock and Vibration Control. Bul. SVC-5B. T. R. Finn & Co., Inc., 200 Central Ave., Hawthorne, N.J. 4 pp.

WATERPROOFING

To Insure Better, Stronger Concrete. . . . Specify Rapid-Flo., Lambert Corp., Houston, Tex. 4 pp.

WINDOWS AND DOORS

The Care and Cleaning of Aluminum Windows During and After Construction. The Aluminum Window Mfrs. Assn., 75 West St., New York 6, N.Y. 16 pp.

Series 130-W Tubular Window—Completely Weatherstripped. Valley Metal Products Co., Plainwell, Mich. 4 pp.

Silent Hydro-Door. Hydro-Door Sales, 1346 S Broadway, Santa Ana, Calif. 4 pp.

Sliding Aluminum Windows. Horizon Window Co., Inc., Flower & Paula Sts., Glendale 1, Calif. 4 pp.

Standard Steel Doors and Frames. The Steel Door Institute, 2130 Keith Bldg., Cleveland 15, Ohio. 8 pp.

The Ultimate in Beautiful All-Aluminum Sliding Glass Doors. Horizon Door Co., Inc., Flower and Paula Sts., Glendale 1, Calif. 4 pp.

WIRE

American Tiger Brand Wire Rope. American Steel & Wire, Div. US Steel, Rockefeller Bldg., Cleveland 13, Ohio. 86 pp.

WOOD

Fir Plywood Design Ideas. Douglas Fir Plywood Assn., Tacoma 2, Wash. Portfolio