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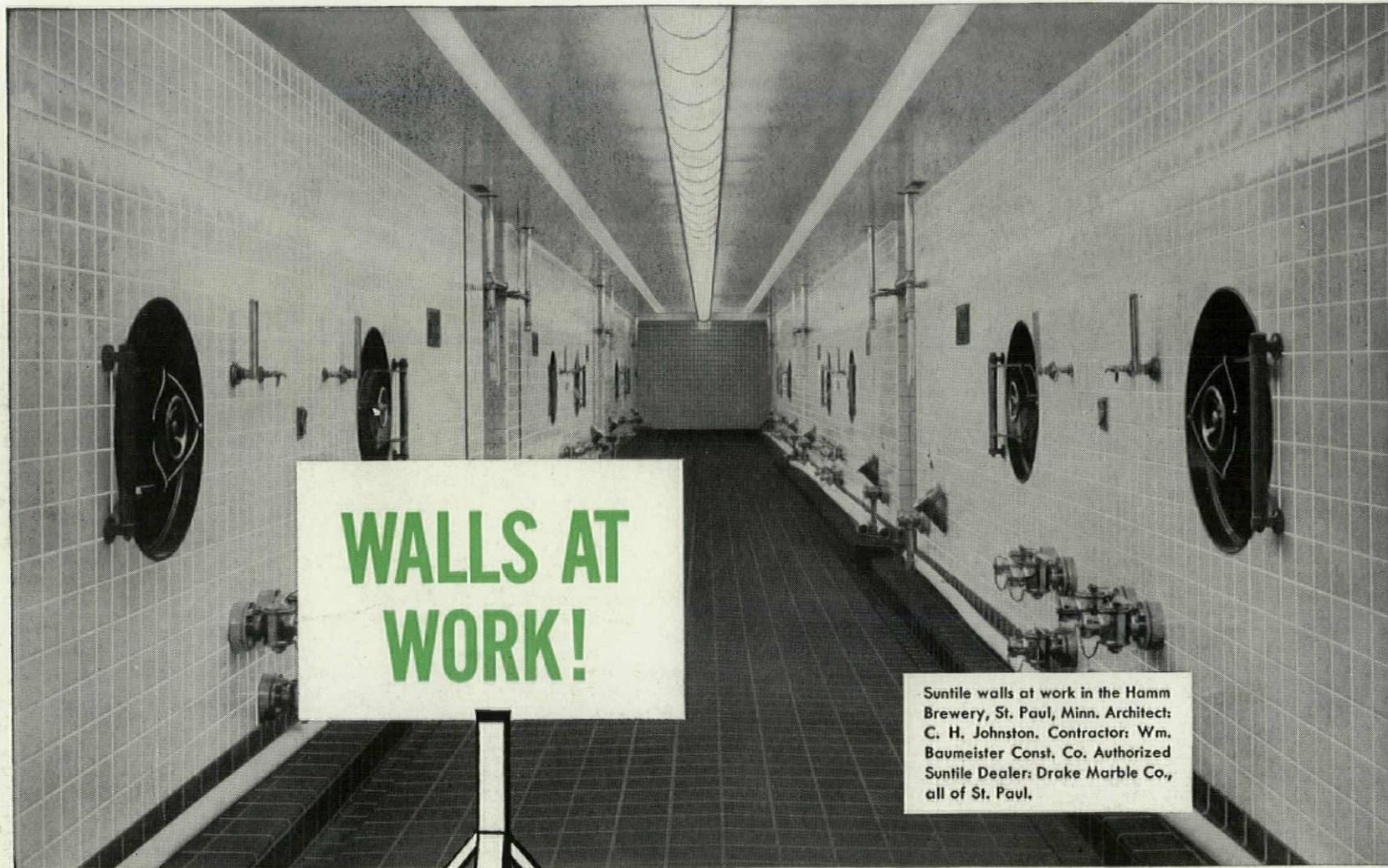
ARCHITECTURAL FORUM

THE MAGAZINE OF

Building

NOVEMBER 1950





**WALLS AT
WORK!**

Suntile walls at work in the Hamm Brewery, St. Paul, Minn. Architect: C. H. Johnston. Contractor: Wm. Baumeister Const. Co. Authorized Suntile Dealer: Drake Marble Co., all of St. Paul.

It's easy-to-clean, hard-wearing, real clay *Suntile*

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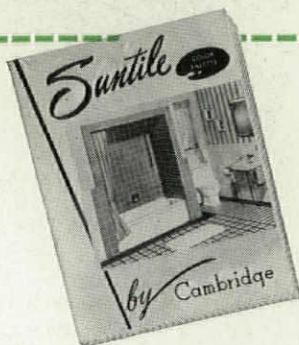
Product processing gets valuable help from Suntile, too. That's because of Suntile's *impervious* surface. It washes clean, *really clean*. Dirt, grease, moisture, many acids or bacteria cannot penetrate

Suntile's hard, fired-in finish. They stay on the surface where they can be thoroughly washed away.

And what a beautiful job Suntile does brightening up a working place! The colors *stay* lustrous and unfaded. Suntile's Color-Balance gives you practically unlimited color combinations to choose from, makes it easy to provide a cheerful, morale-building setting for any kind of production.

Put this versatile, real clay tile to work in the next interior you plan. Your Authorized Suntile Dealer can give you valuable help in this. He knows tile and he knows how to give you the finest installation. Every job carries his guarantee. See your classified telephone directory for his name, or write us.

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WAREHOUSES

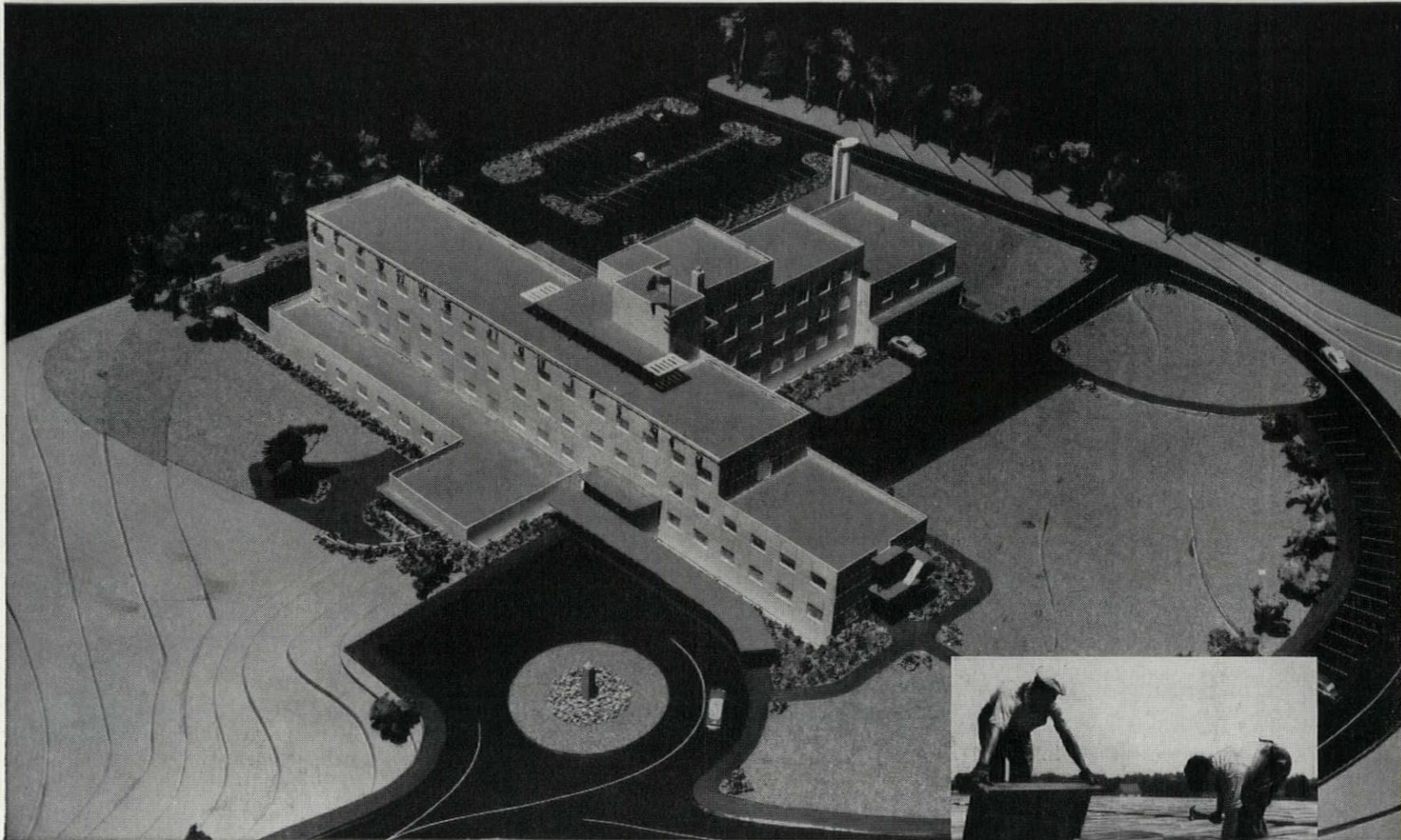
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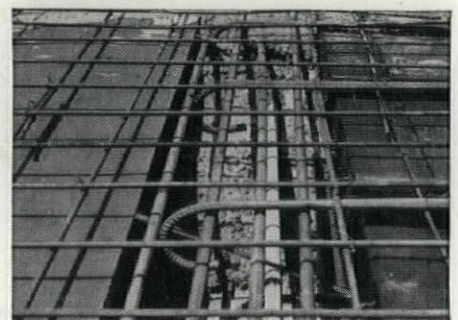


There's one word usually associated with hospitals—"QUIET." But there's another word that's equally important—"SAFETY"—and it covers every phase of hospital activity. So, when the Sequoia Hospital of Redwood, California was designed, extra consideration was given the matter of construction methods. Here's where Ceko Concrete Joist Construction met the need. It provides strong, rigid floor construction. Yes, construction strong enough to resist an earthquake—shockproof yet flexible enough to

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VOLUME 93, NUMBER 5



NEWS

Building in a controlled economy—the effect of credit curbs on housebuilding, the stop-order on amusement buildings and the possibility of still more limitations on the industry.

BEHIND THE BLUEPRINTS

LETTERS

REPORT FROM GREECE

UNITED NATIONS SECRETARIAT

The history behind the most controversial building of this century . . . a critique by three dozen proponents and opponents here and abroad . . . an analysis of its design and its influence on future buildings . . . a discussion of its orientation and how it affected air conditioning and other mechanical installations.

FOUR SAN ANTONIO HOUSES

Quality design and construction by architect-builder teams win recognition by Southwest Research Institute's Quality House Program: Stilt foundations and a wet roof by Architect-Builder Milton Ryan . . . A large and odd-shaped roof over a rectangular plan by Architects Cocke, Bowman & York and Builder George S. McCreless . . . A carport angled to enclose a rear yard patio by Architect DeHaven Pitts and Builder Walter Lowrie . . . A small house with a garden room by Architect Ned A. Cole and Builder Walter Steves.

MODEL HOUSE REMODELED

With an extra \$322 Netherwoods Estates, Inc., New Jersey developers, add a dozen design improvements to their 870 sq. ft. house, make seven rooms out of five.

EGG-SHAPED HOUSE

The hit of a New York art show, Frederick J. Kiesler's airborne ovoid design raises hob with common sense.

REFLECTIVE WALLS

Depreciating the importance of air temperature and insulation, Dr. Clarence Mills lines his new Cincinnati house with metallic wallpaper and foil to reflect heat and cold from coils hidden in the ceiling coves.

DOCTOR'S OFFICE-RESIDENCE

A two-way combination of building types (with extra rooms for rent) by Architect Paul Beidler handsomely solves an economic problem in Lake Placid, N. Y.

FARM MACHINERY BUILDING

A distinctively different design by South American Architects Roberto gives Caterpillar Tractor Co. an eye-catching advertisement as well as efficient sales, exhibit and repair space.

WORKS OF OSCAR NIEMEYER

New buildings by South America's most famous architect — a review.

TOP LIGHTED HIGH SCHOOL AUDITORIUM

A lesson in lighting and crisp design detailing by Swedish Architects Nils Ahrbom and Helge Zim Dahl.

TECHNICAL NEWS

Building for A-bomb protection—suggestions by the Atomic Energy Commission based on what happened at Hiroshima and Nagasaki. Concrete floors poured from the top down—Mexican builders reverse the usual formula for multistory buildings with sizable savings in time and money.

Ceramic tile set in mastic reduces installation cost, permits the tiling of dry-built walls.

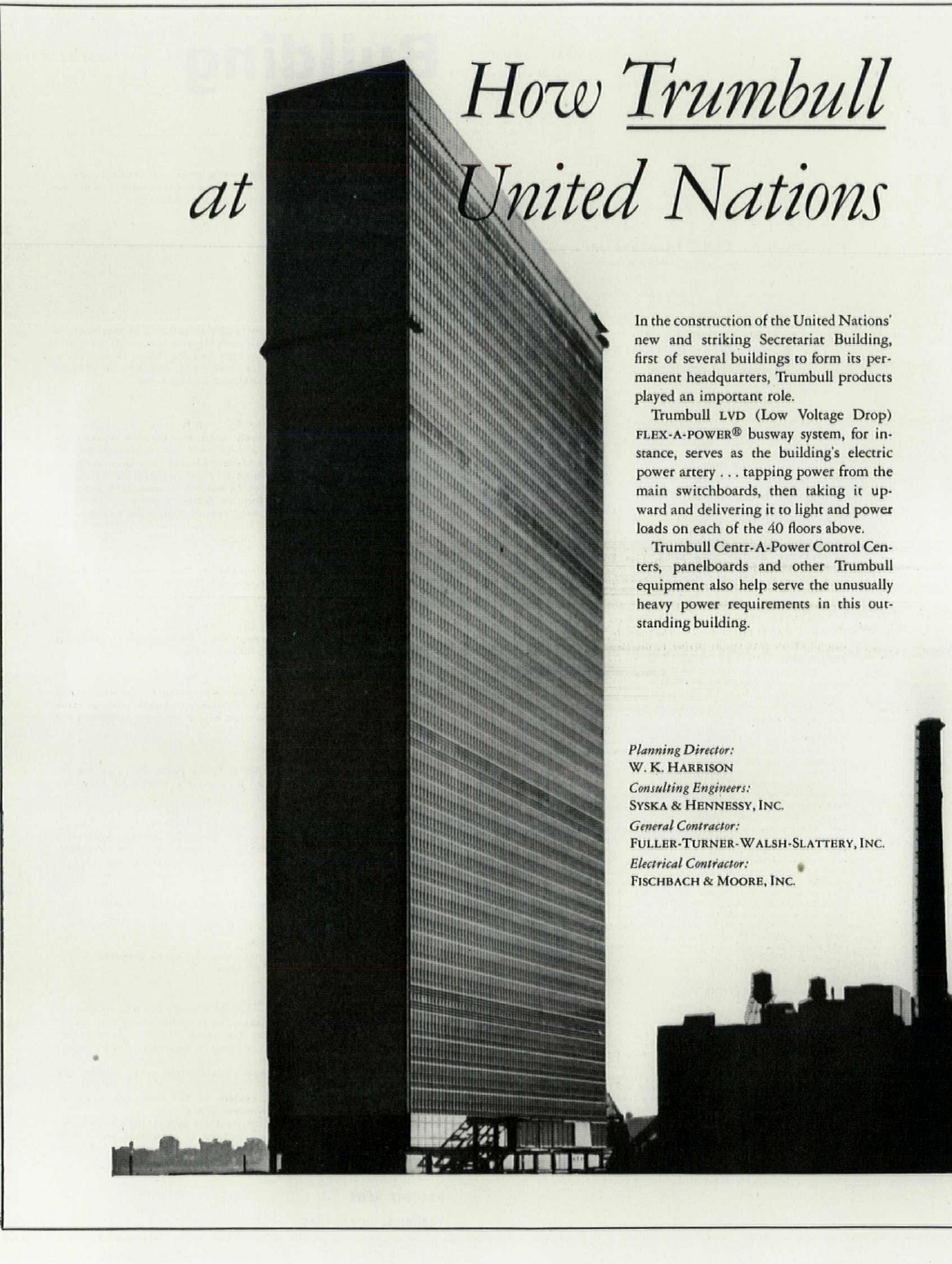
A new heating and ventilating system for the classroom designed to eliminate drafts from big window areas.

A post mortem on Ingersoll's Utility Unit probes the reasons behind the failure of a promising venture in packaging the mechanical elements of the house.

REVIEWS

PRODUCT NEWS

TECHNICAL LITERATURE



How Trumbull *at United Nations*

In the construction of the United Nations' new and striking Secretariat Building, first of several buildings to form its permanent headquarters, Trumbull products played an important role.

Trumbull LVD (Low Voltage Drop) FLEX-A-POWER® busway system, for instance, serves as the building's electric power artery . . . tapping power from the main switchboards, then taking it upward and delivering it to light and power loads on each of the 40 floors above.

Trumbull Centr-A-Power Control Centers, panelboards and other Trumbull equipment also help serve the unusually heavy power requirements in this outstanding building.

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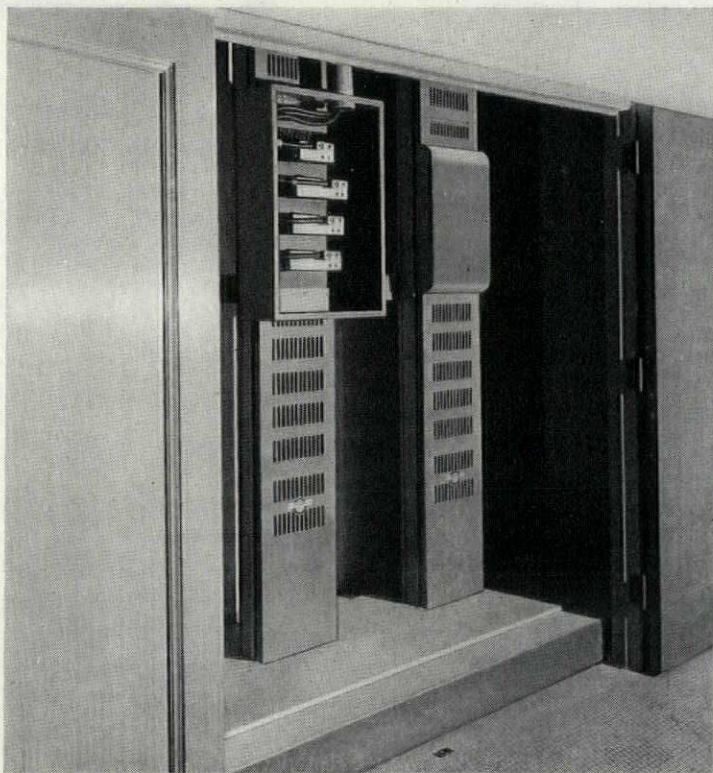
Distributes Electric Power Permanent Headquarters

PRE-FAB, FLEXIBLE ELECTRIC HIGHWAY

LVD is one form of Trumbull FLEX-A-POWER—pre-fabricated busway. It is used as main feeder from switchboard or as riser. Ease of installing 10-foot sections saves installation cost. Ease of rearranging sections and inserting cable tap boxes at any point gives utmost flexibility and makes it unnecessary to make costly investments in anticipation of future needs.

Other forms of FLEX-A-POWER include FVK for secondary feeder (15 outlets every 10-foot section) and LTG plug-in or trolley for light duty (can be tapped at any point).

Centr-A-Power, Trumbull's new and highly flexible Control Center, groups standardized motor and miscellaneous controls in a convenient central location.



LVD FLEX-A-POWER carries high currents over long distances with low voltage drop.

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Centr-A-Power is the answer to the problem of providing safe, economical and flexible grouping of controls.

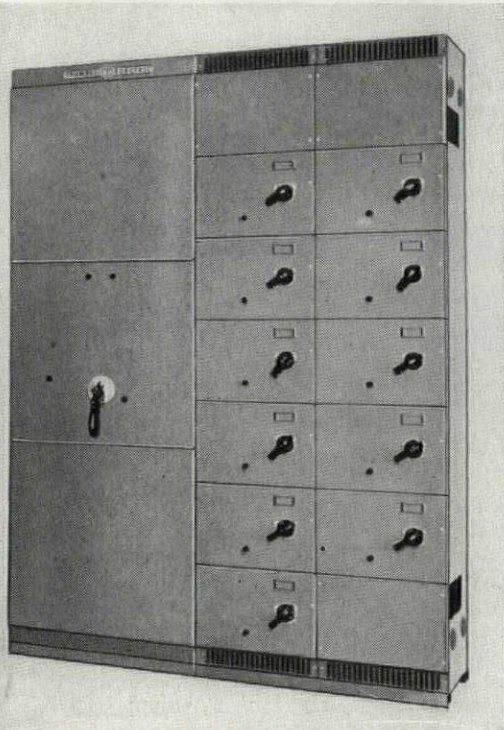
Standardized, compact control units are mounted in rigid steel, pre-fabricated troughs which are grouped to provide a complete dead-front, totally-enclosed Control Center.

Greater control unit capacity of trough requires smaller area . . . saves valuable floor space.

Control units inserted in trough with simple clip action. Saves time . . . makes re-arrangement easy.

Spacious wiring gutter runs full length of trough and gives easy access for wiring.

Get familiar with Trumbull's Aids to Architects—write for information to THE TRUMBULL ELECTRIC MANUFACTURING COMPANY, Plainville, Connecticut.



TRUMBULL  **ELECTRIC**

The big news in modern

Coleman Blend-Air

A revolutionary, pre-engineered, new forced warm-air system, with all standard parts delivered complete for easy low-cost installation



This illustration shows a Coleman BLEND-AIR installation with the furnace located in the utility room. The Heat Tubes are located in the attic. In basement installations, the Heat Tubes are located in the basement immediately beneath the floor.



A statement about BLEND-AIR by W. C. COLEMAN, Founder and President of The Coleman Company, Inc.

WE AT Coleman are proud to introduce to you the first really important development in forced warm-air heating in years. BLEND-AIR is the biggest thing in home heating since furnaces took the place of open grates and pot-bellied stoves. It makes central heating easier to install and homes easier to sell. It fits any construction, old or new. There is nothing else like it.

It is not just a furnace. BLEND-AIR is a complete, pre-engineered, forced warm-air heating and ventilating system with an adjustable fresh air intake for continual

inflow of freshly heated air. The system has three parts: (1) 3½-inch HEAT TUBES that fit inside walls. They carry freshly heated air from the furnace to the (2) MAGIC BLENDERS that fit in the walls of each room. They blend the heated furnace air with room air and recirculate it for even comfort floor to ceiling—no drafts, no dead air pockets; (3) MODUMATIC FURNACE designed just for the BLEND-AIR system. Models for gas and oil fuels.

For new homes, for old homes, BLEND-AIR is a new kind of central heating comfort

home heating

Heating and Ventilating System

FOR GAS AND OIL FUELS



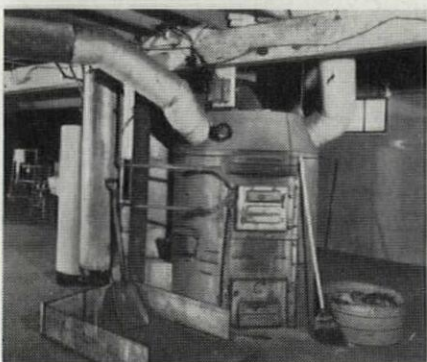
What a difference! Compare the low cost and ease of handling of BLEND-AIR'S compact 3½-inch Heat Tubes with that of gravity warm-air pipes 8 to 14 inches in diameter. Saves metal—saves time—saves work.



Couldn't be easier! See how simple and easy it is to install these 3½-inch Heat Tubes! They fit together quickly! Prefabricated elbows bend around obstacles. A development that simplifies heat installation.



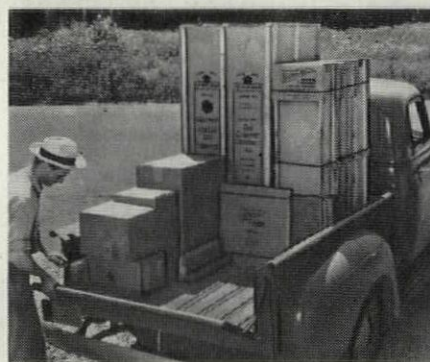
How Blender works! Blends warm air from the furnace and cool room air, recirculates it through the room. Three types fit any construction problem. This blending magic is an exclusive Coleman invention.



No more of this! Gone is the sprawling, space-eating monster of clutters basements. Instead you install a space-saving, high-efficiency Coleman Modumatic forced warm-air Furnace operating through 3½-inch Heat Tubes.



Extra space galore! In the basement BLEND-AIR gives more room for game tables, closet space, laundry, work shop, etc. It's quiet, clean and compact. Put the Coleman Modumatic Furnace anywhere—basement, kitchen, utility room.



Here it is complete! It is Coleman designed, Coleman made with the famous Coleman quality of construction and performance. It is delivered complete, ready to install—the greatest development in modern automatic home heating!

that is economical and easy to install. The Blender in each room adjusts to warmth wanted. At the same time, there is over-all automatic thermostat temperature control for the whole house. BLEND-AIR is delivered complete—all parts are standardized and packaged, ready to install. Nowhere will you find a comparable heating system, and the cost may be less than the equipment you are now using. For more information on this revolutionary new central heating system, write: The Coleman Company, Inc., Dept. AF, Wichita 1, Kansas.

A BIG BOON TO BUILDERS! You get quick, easy installation in this pre-engineered, completely packaged, low-cost central heating and ventilating system. Assures more even distribution of heat in every room. Has built-in flexibility to overcome bad job conditions. Investigate BLEND-AIR, compare its advantages, see how it saves you money and simplifies your heating equipment problems.

Comfort costs so little with a Coleman
America's leader in home heating
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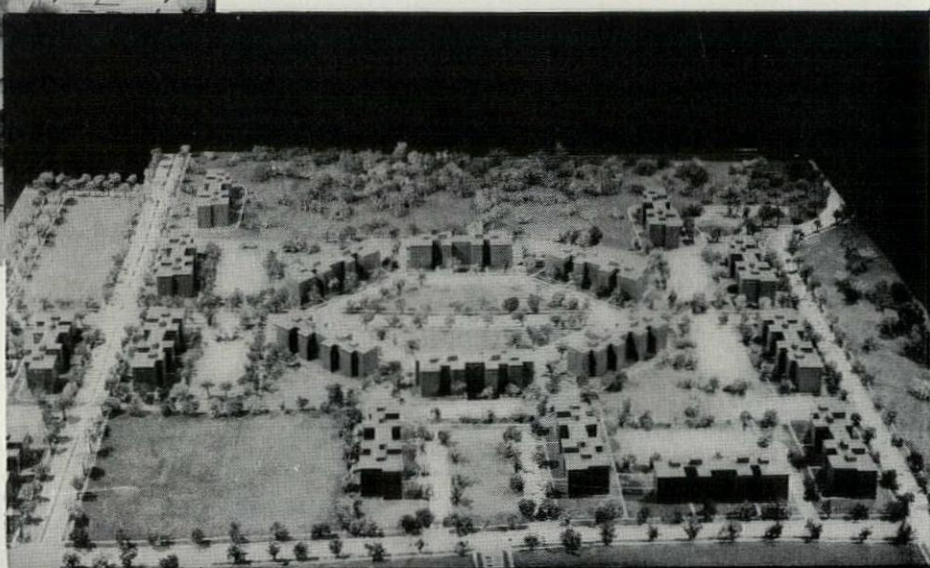


54 years'
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Gross-Morton
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Unique new project of famous 54-year building firm to feature products by America's Pioneer of Electrical Refrigeration!

Three men who are today turning the picture at the right into superbly modern apartments for 1638 families are, from left to right, Alfred Gross, George M. Gross, and Lawrence Morton. Their new project, Windsor Park, in Queens, N. Y., will have 100 percent off-street parking space for all the families, a 10-acre private picnic area, and a \$100,000 master television antenna system.

In keeping with Gross-Morton's objective of providing finest facilities, each of Windsor Park's 1638 apartments will be equipped with a new Kelvinator refrigerator. Gross-Morton's choice of Kelvinator thus brings together a 54-year record of construction experience and Kelvinator's unsurpassed 36 years in building the



1638 KELVINATORS CHOSEN
FOR THE WINDSOR PARK APARTMENTS, Queens, N. Y.

finest electrical appliances.

Mr. George M. Gross says, "We are certain that Kelvinators will satisfy our tenants for the all-important reasons of beauty, efficiency and dependability over the years."

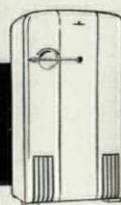
Let Kelvinator's unparalleled experience satisfy the kitchen needs of *your* next project, too! For further information, write to: Dept. AF, Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.



*Kelvinator featured exclusively, nation-wide,
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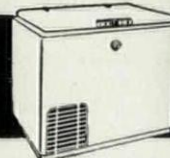
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REFRIGERATORS



ELECTRIC RANGES



HOME FREEZERS



WATER HEATERS

DRASTIC CUT IN HOUSE PRODUCTION will result from credit curb. Industry survey also indicates that higher labor wages will boost house prices despite anticipated decline in material costs

What was happening to the building business? Staggering from the twin blows of the new crackdown on housing credit and the ban on recreation building with its threat of more bans to follow, the building industry last month probed and poked its own mammoth, unmeasurable anatomy to see if it could find out just how badly it had been hit.

One plain answer came from the No. 1 housebuilder Long Island's Levitt & Sons, who said they are cutting 1951 starts to 2,500 units, or just half what they are building this year. If this cut proves par for the nation as a whole, 1951 housebuilding will amount to about 600,000 units or half this year's expected total of between 1,200,000 and 1,300,000 starts. This would be some 200,000 units less than the 800,000 house starts which the new credit curb was intended to produce in 1951.

According to the housebuilders who last month replied to BUILDING's survey of their post-Regulation X plans, this estimate of a 50 per cent cut may be optimistic. The majority expect to cut 1951 output 75 per cent under this year. In Detroit, big Miller Homes, which is building more than 1,500 houses this year, said it will cut next year to 400. In Philadelphia, Tyson Construction Co. is cutting from 850 starts this year to 200 next. In Columbus, John W. Galbreath this year counts 550 starts, thinks he will next year put up no more than 25-30 houses. The only builders seemingly immune to the general alarm are Sampson Bros. of Pittsburgh, who told BUILDING they expect to increase this year's program of 1,050 starts to 1,700 next year.

Almost as alarming as this drop in volume are reports of a correlative increase in market prices. A well-defined shift to market prices from \$1,000 to \$2,000 above those of this year is plain in the replies to BUILDING's survey. Where builders have been producing in two price-lines (low cost and luxury), they seem to be dropping their low cost output and concentrating on the high price line for next year. A representative response comes from D. L. Stokes & Co., Atlanta. This year Stokes is building 350 houses, priced from \$7,000 to \$20,000. Next year Stokes expects to start 100 houses priced from \$15,000 to \$20,000.

Although builders hoped for a price drop in materials (in most cities they were buy-

ing close to the belt and refusing to stock up even when short items appeared on the market), little happened to them last month to bolster their hope. They told BUILDING that the spectacular price drop in lumber had been offset by rises in other items—in Columbus and Miami plumbing was reported up 20-25 per cent and was mentioned for smaller increases in other cities. If other materials do follow lumber down by spring, housebuilders dourly expect the difference to be more than offset by increased labor costs (labor-short Los Angeles was already rocked by an industry row over the Metropolitan Life's bid for plasterers—\$48 for Saturday work.)

The credit curb had caught some housebuilders with substantial investment in suburban land, the price of which has been dropping sharply (estimated on Long Island at from 10 to 20 per cent). In Chicago, George F. Nixon has already improved a \$500,000 tract intended to carry \$15,000 to \$20,000 houses. Now, he says, he will build no houses on it, but nobody else wants to buy it either. Almost everywhere, housebuilders were nervously dropping options to buy suburban tracts. Even if they changed their mind later, the dopesters said, the thousands they lost on dropping an option would be more than offset by the decline in land prices.

The full impact of the October credit curbs would not be felt until Spring. Lenders replying to BUILDING's survey almost

universally said that they believed alert housebuilders had shoved enough applications under the wire before the October 12 crackdown to keep the industry humming for another six months at least.

If, as the industry feared, the credit cut was stiff enough to reduce housebuilding by half or even three-fourths, would the government come to the rescue? The probable pattern of rescue, if it comes, was also plain last month: the Housing Advisory Commission of the Department of Defense has recommended that housing around military areas be exempted from Regulation X (in effect, an inversion of Title VI).

But it was equally plain that the economists responsible for pushing the government along its tight-rope over the abyss of runaway inflation would be in no hurry to reverse on the housebuilding question. Their reason: with the boom in direct military production, the Administration no longer needs government-backed housebuilding as a prop to the economy. Housebuilders who thought they were being cut down merely as a sacrifice to the military need for scarce materials had neglected some plain talk from Commissioner Foley at their emergency meeting in Texas: "You operative builders are not the whole building industry. You do not control your costs, or your supplies, or the services you need. You compete for them among yourselves and with other construction interests. Soon you will compete for them with the defense demands of America. So long as there is unlimited competition for limited supplies, costs will rise, prices will rise, but the market for houses will tend to shrink even with unlimited credit to support it.

"We seek to restore competition—not for goods and services—but for customers."

REGULATION X—a second look reveals labor and vets allied with industry opposition, Federal Reserve searching for facts, builders finding loopholes, a boom in applications at the deadline and more curbs coming

After taking their Regulation X medicine for the first few weeks, housebuilders still thought that as a reducing tonic it was slow poison. Instead of getting a girlish figure as a result, they felt building would be more apt to come out looking like a fugitive from a concentration camp.

In addition to the efforts of the builders and other elements of the industry to get the credit curbs eased, demands for relief were coming in from many other sources. Some of the loudest beefing came from organized labor and veterans groups. At its Los Angeles convention, the American Legion cut

loose with a blast against the regulation and related FHA and VA controls. It also voiced a strong objection to the White House action making the VA subordinate to HHHF Administrator Foley for the duration of the emergency. The VFW complained bitterly that veterans and non-veterans too would be kept in a "tenant status"; insisted that it would therefore be more necessary than ever to keep the lid on rents.

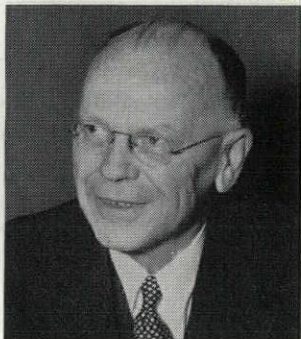
One thing seemed reasonably clear. If any real relief was to be obtained it would have to come from Congress and not the executive hierarchy. The special "Watchdog

Committee" set up by the Defense Production Act to keep tabs on the various control programs had already agreed to hear the gripes of automobile dealers about what the curbs on installment credit were doing to their business. Once it started its checking activities there was no doubt that it would take a look at the building picture too. The industry was not overlooking this opportunity of stating its case for modification of the controls. It had a convincing story to tell the committee. While most of its leaders were disposed to go along with the government's objective of holding residential construction to 800,000 units next year, all felt that the regulations would cut the volume much below this level (see p. 9). (Incidentally, no one knows on what basis this 800,000 goal was determined; it was apparently picked out of a hat by some government planner.)

An industry consultant for the "Fed"

There were a few developments on the brighter side of the picture. The Federal Reserve Board hit upon the smart idea of getting hold of a consultant who knew the practical side of home selling and finance. Drafted for this purpose was William A. Clarke, outstanding Philadelphia real estate man and mortgage broker. In

Reni Photos



William Clarke

addition to advising the Board on matters of general policy he will act as a liaison man with the industry; attend trade meetings around the country and help smooth out the regulations where there is evidence that they are operating unfairly.

As Clarke sees it, one of the immediate questions the Board will have to deal with concerns the effect the credit clamp-down is having in driving people out of the market.* The restrictions are of course intended to discourage a certain amount of buying. But he points out that many veterans and others who previously bought houses for small down payments were sim-

ply latching on to the best terms they could find and could have put up more money to keep the deal from falling through. "The Board's dilemma" he stated "is to find some way of estimating the number of sales that will stand up under the stiffer terms."

Acting with Clarke's advice, the "Fed" has asked the University of Michigan's research experts to survey recent house buyers to determine what portion of them would have been frustrated by the bigger down payment and monthly amortization requirements of Regulation X.

For its part the VA managed to win approval for a special concession to needy veterans before the ink was dry on the new regulations. Under this relaxation, smaller monthly payments are provided for veterans who would otherwise be crowded out of the market. In such cases the maturity period for the loan may be extended to 30 years. Illustration: On a \$9,000 house the borrower's monthly payments would be \$48.48, assuming a mortgage of \$8,000. With the repayment period hiked to 30 years, the payments would be \$38.24 each month—\$10.24 less.

End runs around the law

While no major loopholes in the program had been uncovered, several ways of making small runs around the end were beginning to appear. Examples: A veteran could work out a deal to buy a house and then sell it to a non-veteran, thus passing on his differential of lower down payments and monthly carrying charges. But he would have to stay on the mortgage. It was not believed that this practice (which VA admits has gone on ever since it started operations) would be very widely used since the participating veteran would be relinquishing his benefits under the GI bill. Another method involves the cooperative housing section of the FHA act. A builder could put up individual houses in a cooperative project covered by a blanket mortgage. If 65 per cent of the members were veterans, the entire group would get the advantage of more favorable terms for former service men when the individual houses were lifted out from under the general loan and refinanced with separate mortgages.

Deadline stampede

Still another factor on the plus side of the argument was the large number of applications for VA guaranteed or FHA insured loans that managed to squeeze in under the ropes before the October 12 deadline for the more stringent terms. For

both programs they added up to almost 500,000 units. Even assuming there would be a certain amount of rejections and casualties, this would be a sizable chunk of business that would be carried over into the new year that could thumb its nose at Regulation X and companion programs.

From a high of 8,200 a week back in July, FHA applications had recently gone down hill. In September they were 5,000 a week. Then there was an anticipatory climb to 6,000 a week just before the regulation was issued. During the week it came out the volume took a real spurt; shot up to 22,000. But the next week it fell to 3,800 and for the last week of October sank to barely more than 2,000. Explaining that it was too soon to draw conclusions from this erratic behavior of its business barometer, FHA pointed out that a certain drop was to be expected because so many builders had rushed ahead with their applications. Also it felt that part of the decline was seasonable.

In the case of VA, the race to beat the gun piled up much higher totals. By the evening of October 11, applications involving a total of 55,000 units of new or proposed construction had piled up in its various offices. To accommodate the last minute rush some of them kept their doors open until long after normal quitting time.

More curbs coming

Even if it managed to stop worrying about Regulation X, the building industry would not be able to relax. There was more to come. The Federal Reserve Board and the HHFA were already putting their heads together to work out a program for tightening up on rental housing which so far has been exempted. Housing financiers pointed out that the easiest way to control rental housing would be to put FHA's Section 213 (special aid for cooperative housing) on a par with the regular Section 207 rental program. This would mean reducing 213's allowable mortgage from 90 per cent of *cost* to 85 per cent of *value*.

Plans were also being discussed to place restrictions on commercial construction although action in this field was less imminent. When it comes it is expected to take the form of an outright ban similar to the one imposed by NPA on recreational and amusement building. It was not quite clear just what commercial construction the government would want to discourage. Best guess was that there would be some exempt types—perhaps warehouses and office buildings. But one thing was sure. Heavy industrial construction that fits into the defense effort would get a green light (see p. 13).

* Nearly 40 per cent of the mortgage-financed new houses were bought with no down payment in nine big city areas during the last half of 1949, according to a just-released Bureau of Labor Statistics study.

LIMITATION ORDER halts unnecessary building, raises a question about other building types

Designating construction of the amusement and recreational type as its new target, the government late last month fired a third salvo at the building industry. Building men hastily summoned to Washington to confer with NP Administrator Harrison in the matter had the uneasy feeling that this was where they had come in.* It was all too reminiscent of the events leading up to the famous L-41 order of World War II days which froze all construction except projects necessary in the national emergency. As they trudged into the Commerce Department's plush conference chamber, they detected the same atmosphere of doubt and uncertainty. The only difference, as one of them put it, was that "the confusion was better organized this time."

Patently outlining the strategy behind the move, General Harrison explained that the credit restriction mechanism used to curb housebuilding in the orders of July 19 and October 12 could not be effectively applied to race tracks, bowling alleys, night clubs and the like. Lenders look on building of this sort with a jaundiced eye which means that if it is to get going at all its promoters have to do their own financing. Something had to be done, he insisted, to reduce further any unnecessary drains on the supply of scarce materials needed for defense. He estimated that building of the frivolous variety grossed around \$1½ billion a year; used 1½ million tons of steel.

A sacrificial lamb

There were some things he did not need to emphasize. All knew that the White House had been under terrific pressure from labor and veterans groups to ease up on Regulation X—the order of October 12 putting a severe crimp on housebuilding credit. The squawk: it was squeezing the little fellow out of the market. It seemed likely that the Truman crew was casting about for a sacrificial victim to toss to the wolves. Recreational and amusement building filled the bill perfectly. Even though it did not bulk large in the construction

picture (government estimates put it at 2 per cent of the total construction volume) it was the kind of building most apt to rub the public the wrong way when there was not enough material to go around. What struck the industry representatives as a little raw about the proceedings was the clear implication that the Administration had decided on its course of action before seeking their views. They realized General Harrison was not to blame but they still did not like it.

With the stage all set, there was not much they could do about it except to speak their minds. To a man, they told the General that Regulation X had already knocked the props from under the industry and would cut next year's residential volume way below the government's goal of 800,000 units. Consensus was that there would be no more than 600,000 starts. As far as so-called frivolous construction was concerned, they were not prepared to wage a knock-down-drag-out fight to protect it. They thought it was peanuts anyway. Its entire elimination would not save much in the way of critical material. What bothered them the most was the fear that once a ban against even trivial operations was on the books, it could be easily open-ended by subsequent amendments to apply to any other type of building the bureaucrats might want to stop.

By far the most perplexing part of the whole business was the all too apparent fact that the government did not know how much scarce material it needed to save. The building team kept hammering on this point. Repeatedly they shot this question at General Harrison: "What will the military take be?" All the General could tell them was that it would be considerable. The plain truth of the matter was that the military men themselves did not know yet, he conceded. His view: the whole program was something that had to be played by ear until the unsettled issues could jell. Some of the industry men thought privately that such a musical feat would be difficult.

In its final form, the order was even worse than expected. Designated as M-4, it became effective midnight on October 26. It ran the whole gamut of the amusement and recreational category of building, taking in among other things stadiums, dude ranches, theaters, and swimming pools (except when part of a new school building). While it was probably an academic question, legal experts thought the federal government would be hard put to find any constitutional grounds for keeping a state from building a new football stadium for its university or engaging in any other type of construction. Resort hotels were eliminated at the last moment largely because of the difficulty of hitting upon a clear-cut definition.

Altogether the order applies to 44 types of projects which it painstakingly spells out. It also bans reconstruction, remodeling, extensions, and additions in the specified construction fields. Only exemptions: Construction actually started to the point where the foundations had been laid before the deadline—phony starts involving such operations as preliminary site work or the demolition of old buildings will not count. Restoration of structures destroyed by fire, flood, or storm, or by enemy action. Small jobs costing no more than \$5,000 in a 12-month period. Construction of recreation facilities by the Department of Defense or the Atomic Energy Commission.

Open-end law

But what stirred up an angry chorus of protests from contractors and other elements of the industry was the gratuitous slap taken at all other forms of construction not specifically nailed down. As an afterthought, Harrison's brain trust had slipped in a clause warning that any type of construction not on the banned list would be started at its own peril. The blunt statement: further construction might be halted "when such action is deemed necessary in the interest of national defense to minimize material shortages." This was more drastic

*Under the Defense Production Act, the administrative agencies are required to confer with representatives of the industries involved before imposing restrictions. Gen. Harrison picked a first rate team from the building industry. Included were such men as L. M. Cassidy of Johns-Manville, Falkner of U. S. Gypsum, Best of National Gypsum, Donald Couch of American Radiator, Max Foley of the architectural firm of Voorhees, Walker, Foley & Smith, Chan Turner of the Turner Construction Co., Norman Mason, retail lumber dealer and chairman of the construction and civic development department of U. S. Chamber of Commerce, Rodney Lockwood of NAHB and Robert Gerholz of NAREB.



Photo: Robert D. Stamm & Co.

NAHB'S TEXAS ROUND-UP of Board of Directors heard Government explain credit curbs. Here, in a lighter moment Government and industry wear smiles and ten-gallon hats. L. to r.: Troy Jones, FHA's Franklin Richards, Thomas Coogan, Housing Administrator Raymond Foley, NAHB executive Frank Cortwright, VA's T. B. King.

than anything done during the last war when those contemplating various types of building projects knew where they stood.

Industry representatives immediately began sending in protests. It was pointed out to NPA that this wide-open language would have the effect of putting the skids under all future building of a nonresidential nature. Except for industrial construction that clearly fitted into the defense pattern—many small undertakings like dry cleaning plants obviously would not—and certain other chosen categories such as schools and hospitals, it was doubted that few firms or individuals with building ventures up their sleeves would be inclined to take the gamble. Bankers certainly would not.

In a terse wire to General Harrison, the Associated General Contractors requested enlightenment as to what types of projects NPA would allow to go ahead. Apparently NPA realized that it had gone too far. It still felt that unless it threw a scare into the industry, M-4 might start more build-

ing than it stopped. It reasoned (not without some logic) that those not included in this particular order would get the idea that more regulations might be in the works, would rush ahead with their building before the government got their range. Nevertheless NPA condescended to give the industry a few crumbs of assurance.

At month's end, Stuart Fitzpatrick, head of the U. S. Chamber of Commerce's construction and civic development division, called industry leaders together for a look at what—if anything—could be done. General Harrison came to the meeting and was cornered by the embarrassingly logical arguments presented by such industry spokesmen as Architect Ralph Walker and Engineer Carlton Proctor. Harrison's NPA finally admitted that it had pulled a boner and revised the M-4 order. The revision makes it safe to start buildings, which are not specifically banned, without fear of having their construction stopped by some future NPA order.

NONRESIDENTIAL BUILDING fears cost increases more than controls

What does the threat of building bans yet to come mean to the industry's nonresidential customers? Big building investors have launched no head-long rush to get ahead of a possible future order curtailing commercial construction. Of the 24 big chain stores who replied to BUILDING's survey, only two firms said they had speeded up their building programs since the outbreak of the Korean war. These speed-ups, the merchants explained, were an effort to beat rising building costs.

Although all these big merchants believe that building costs will go higher in 1951, the majority say they will build about as many stores next year as they are building this year. Only four chains say their building programs will be cut in 1951; one of them blames high building costs for the curtailment. (One ominous measure of what Korea has so far meant to building costs came from Denver: the school board reluctantly let two schools at low bids just \$150,000 above pre-Korean estimates.)

Investors in other types of building registered a divided opinion as to whether to push or to shelve construction plans. In Detroit, for example, Fisher & Co., decided to defer construction of a \$10 million office building. This 11-story structure would have been Detroit's first general office building in 20 years. In Houston, Walter Hoving sold a choice block of downtown real estate, said high taxes and building costs had persuaded him against establishing a Bonwit Teller store in Houston. The South Texas National Bank temporarily halted plans for a 17-story building, is now considering a smaller building instead. On the other hand, Prudential Life last month broke ground for its 18-story southwestern home office in Houston, and Jesse Jones pushed plans for a 16-story addition to his Gulf Building. (Houston builders were snapping up British building materials. Taking advantage of the fact that U. S. plaster board had risen from \$39 to \$125 per 1,000 sq. ft., the British were shipping plaster board into southwestern ports to sell at \$61 per 1,000 sq. ft. Cement is \$3.80 per sack compared to the U. S. price of \$6.)

In Dallas, where builders were critically short of carpenters and common labor, Statler Hotels said they will go ahead with their building and anticipate no difficulty in steel delivery. Republic Bank, planning the South's tallest building, is also racing toward a construction start.

In San Francisco, where lack of plasterers, lathers, tile setters, bricklayers were delaying some building jobs, local commercial

Photos: Cortlandt V. D. Hubbard



ON-THE-JOB EDUCATION for the building industry

Convinced that both students and building professionals want to know a lot more about modern building methods, the Philadelphia chapter of the American Institute of Architects is hard at work giving them a chance. The Philadelphia architects have joined with housebuilders, contractors and the building trades unions in setting up a Research Foundation for the Construction Industry. The Foundation's first effort: a concrete clinic, held on the site of a new veterans' hospital, where several hundred students, practicing architects, mortgage lenders, builders, etc. got a thorough explanation of prestressed concrete construction—and a chance to see, handle and apply the building materials.



investors were showing considerable caution. But a number of eastern manufacturers with defense contracts were shopping the Bay area for industrial sites.

In Chicago, where Ford is converting the huge Dodge-Tucker plant to production of Pratt & Whitney wasp aircraft engines, permits for both industrial and commercial construction showed substantial increases in September.

Defense orders were booming industrial real estate in Cleveland, but brokers reported more commercial properties on the market, with some offered for long-term leases at lower rents. Samples of the boom in industrial property: when the government took over a one time bomber plant for tank production, companies who had been using this plant for warehouse space had to go out and buy their own buildings. One 150,000 sq. ft. plant, empty for two years, was leased at a higher rate than when last occupied.

INDUSTRIAL BUILDING gets tax assistance. A boom is in prospect

Whatever happens to the rest of the building industry, industrial building is certain to boom next year. Federal defense bosses are in agreement that, despite material shortages, additions to the country's basic industrial strength must go full speed ahead.

The National Security Resources Board took the first step to make sure this happens: it announced that manufacturers may make tax savings by writing new plants off in five years—if NSRB says they are necessary. This does not mean just plants producing military goods; any plant "indirectly contributing" to the defense program may be eligible for the fast write-off, chairman W. Stuart Symington said. Federal economists hope that plants built now can expand total U. S. production so much that we can soon have our guns without sacrificing much butter.

Other steps may soon follow, if tax saving fails to stimulate enough plant building. The government will offer to guarantee loans made for needed plant building by private financiers, and it will also make direct loans to manufacturers for building purposes.

Production Boss Harrison is setting up plans to allot short building materials on a company-by-company basis—if necessary. But curtailment of residential building, defense officials hope, will make more materials available for needed factory building.

War-connected industries are already seething with expansion plans. BUILDING's survey of leading manufacturers showed that the basic industries—steel,

oil, chemicals—all will greatly expand 1951 building over 1950, in some cases by as much as 30 per cent. Although all replying firms, without exception, expected building costs to be higher next year, the majority of them told BUILDING that they are planning to increase their construction program next year. On war-connected industries, the effect of Korea has been to accelerate building plans. On non-war industries, the impact of Korea has not been enough to cause curtailment of building plans.

There was a big building job to be done. The recent census of manufacturers shows that 72 per cent of all our industrial buildings are more than 25 years old. Half of these are from 35-45 years old, a fourth are over 45 years old.

But industrial building would have to boom high indeed before its increase had much of an impact on 1951's building total. This year industrial building will amount to only about 4 per cent of an estimated total \$28 billion building expenditure, while housebuilding will probably amount to over 47 per cent.

MORTGAGE COMPETITION promises premiums for builders but not on construction loans

Many a lender was shedding no more than crocodile tears over Regulation X. Some of the big ones did not trouble to conceal their relief that the "great federally financed hayride for the housebuilding industry had finally come to a halt." These lenders have long made no secret of their fear that easy federal credit was pushing residential real estate values to a precipice from which bankrupting collapse would be inevitable. Others merely said piously, "What the government has given, the government can take away."

Metropolitan Life's Frederic W. Ecker was the most forthright: "When booms are built out of government-inspired inflationary forces, the only thing to do is to undo the errors of the past and do so as promptly as possible. This is, I believe, what the Federal Reserve Board is attempting to do . . . I would say that we can look forward to a material reduction in construction in the housing field, but we will be proceeding on a much sounder basis and with some of the dangerously inflationary forces removed."

Mortgage bankers were quick to point out that Ecker and the other big life insurance lenders might have to scratch hard next year for mortgages. (For some, this is no cause for concern. Many smaller insurance companies and even big New York Life are now out of the home mortgage market, having already loaded up to their portfolio limits.

For Metropolitan, the amount of new home mortgages on the market will be of more concern. With some hundreds of millions already invested in amortizing home mortgages, Metropolitan has a formidable 10 per cent return to re-invest every year even if it allocates no new capital to mortgage investment.)

Big lender competition for a diminished number of mortgages promises, of course, a reduction in net terms (now firming around 5 per cent in many cities). Mortgage bankers predict that this will be reflected by the re-appearance of premiums of at least 1 per cent early next year.

Since housebuilders will control the mortgage supply, most of these premiums will go into their pockets. But the anticipated mortgage premiums will be more than offset by stiffened rates on construction loans. Construction money is already scarcer in Los Angeles, Minneapolis, San Francisco, Seattle, Chicago, and Philadelphia, according to lenders replying to BUILDING'S survey of how Regulation X is hitting the industry (see p. 9). Hesitancy over the Regulation is not the only reason, according to Chicago's big Dovenmuehle, Inc., insurance companies are also expecting a big government bond drive.

Construction money is not only scarcer it is also being offered on a more conservative basis. In the first place, the reduced loan percentages under FHA and VA financing now greatly increase the amount of cash equities which builders have to put up. Moreover, lenders are requiring extra cushions for cost increases. Said N. N. Wolfson of Philadelphia's Eastern Mortgage Service Co., "The average construction loan lender is now requiring the builder to deposit a cushion of from 8 to 10 per cent cash above present-day estimated costs. This requirement alone causes a considerable decrease in starts due to the builder's lack of such cash money."

More than anybody else, the construction lenders will decide who will be in the housebuilding business this time next year. Big, well-financed housebuilders with already well-established credit will continue to command the polite attention of the construction lenders; the small operators, who have been borrowing construction money against sure 100 per cent government financing, will not.

PREFABRICATION smiles at credit curbs and expanding Government market

To one sector of the housebuilding industry Regulation X seemed to bring no distress. The prefabricators, long at odds with conventional methods of house finance, said

they would actually benefit from the effects of this credit crackdown.

President of the Prefabricated Home Manufacturers Institute James Price (National Homes) told the Institute's annual meeting in Milwaukee that "severest restrictions will fall on costlier homes and the manufacturer of prefabricated houses will actually benefit as more people become more interested in lower cost homes because of the downpayment factors."

Price said "our competitors, the conventional builders, are even more confused than we are" and predicted that a large number of conventional housebuilders would no longer be in business a year from now.

One reason for prefab's optimism: both the National Security Resources Board and the Department of Defense are known to be interested in the use of prefabricated housing in important military areas and around

defense plants. NSRB feels that where such defense housing is needed, it will cost too much—both in time and money—to consider private enterprise, as was done last time under the FHA Title VI program. The Department of Defense housing commission is currently considering a recommendation for revival of the old Lanham Act, under which any extra housing in important defense areas would be built by the government itself. Prefabers remembered that it was the old pre-World War II Defense Homes Corp., operating with Lanham Act funds, which gave the prefabrication industry its first real start.

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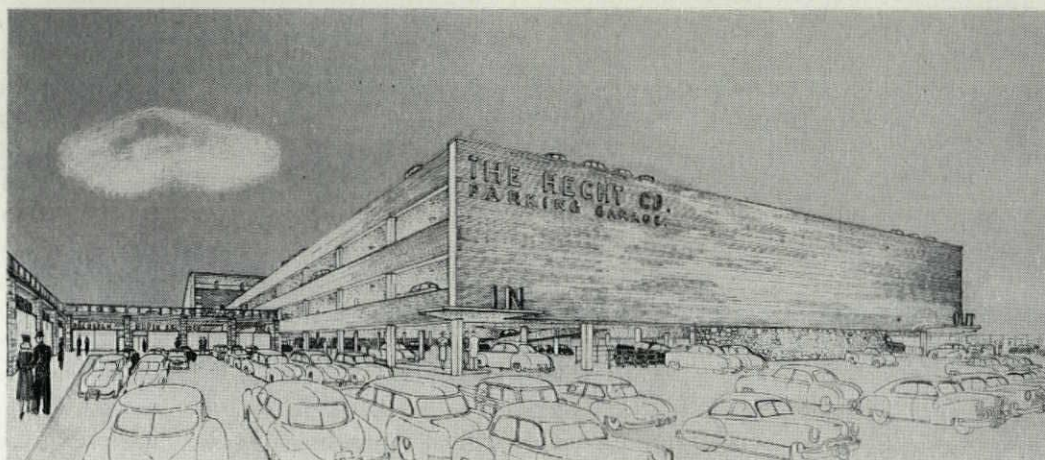
Undismayed by the fact that Lustron's Columbus plant is currently being cased for airplane engines again, a new contender appeared on this seemingly irresistible front. As a leading Detroit steel fabricator, the newcomer was worth some attention. Copco Steel & Engineering Co. made public its first model: an all-welded steel frame, with steel siding and roofing riveted to the frame. Roofing and siding is coated with a plastic which, Copco said provided both thermal and sound insulation. Architects were Beneicke, Pajot & Lorenz, Detroit.

The company plans to erect the units on foundations prepared by individual builders; the builder will install utilities, conventional interior plaster finish and kitchen equipment. Copco was mum about its delivery price, but claimed market price of the finished house would be less than comparable conventionally built houses. The firm said one builder had already contracted for 400 houses.

COMMERCIAL RENTS come under Government scrutiny, but control extension is denied

Determined to live up to its billing as a mother hen for the small chick performers on the economic stage, the Senate Small Business Committee under the energetic direction of Chairman Sparkman has decided to make a quickie survey of commercial rents. It reasons that rents are a substantial cost item for millions of small business men. While it denies any intention of building up a case for an extension of controls to this field, it wants to find out what has been going on in the last ten years; how much commercial rents have risen; whether many small business firms are being forced to the wall as a result.

The survey will cover 20,000 small business establishments ranging from filling stations to barber shops in five key cities. To make the sampling as accurate as pos-



STACKED-UP PARKING in new shopping center plan

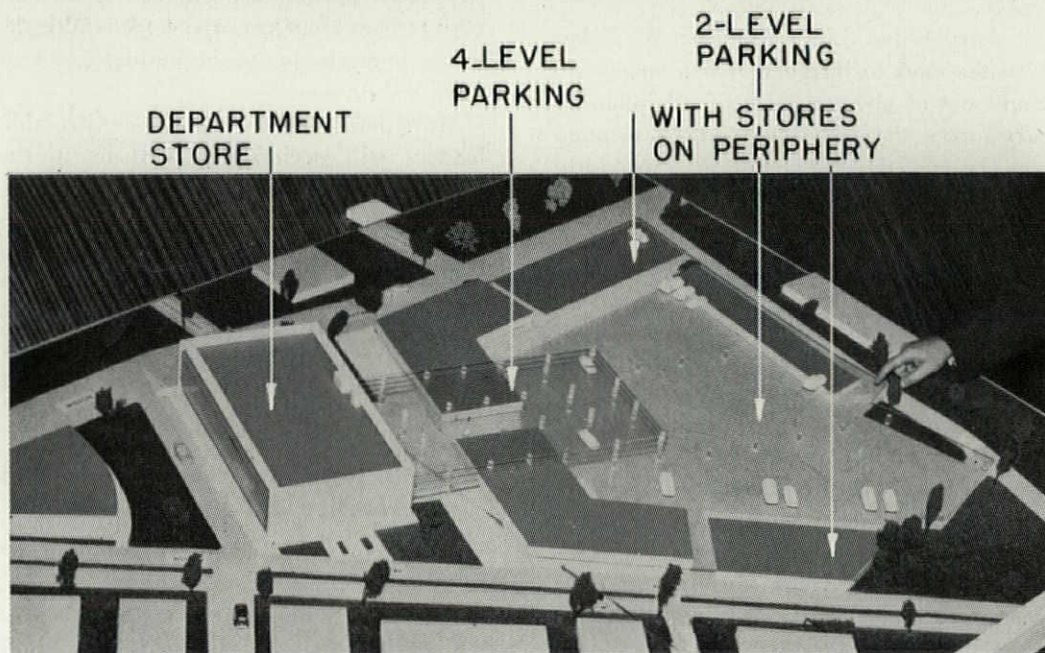
The Hecht Co. announced a new design solution for the suburban retail district. This big Washington, D. C. department store is building a \$10 million shopping center in nearby Virginia. Plans released last month show that the Hecht center will depart from the horizontal schemes of previous centers (BUILDING, Aug. '50) and stack up parking in concrete decks to reduce walking distance.

The triangular building scheme is organized around four parking decks. Customers parked on any deck will be able to enter directly the corresponding floor of the Hecht store. Additional parking space will be provided on two levels in the interior of the building triangle and on the roofs of the store buildings which form

two sides of the triangle. Total parking space accommodates 2,500 cars.

The Hecht branch store will amount to 250,000 sq. ft. in four floors and basement. Its solid glass facade is one more sign of the wide influence of the UN Secretariat (p. 93). Some 40 types of other retail stores, most of them directly competitive with the Hecht branch store, will be located in the center.

Abbott, Merkt & Co., New York are engineers and architects for the project. Kahn & Jacobs, New York, are consulting architects. Edward A. Ashley, New York, is consulting mechanical engineer. The Prescott Construction Co., Washington, are builders.



sible the cities have been selected on a geographic as well as a population basis. The questionnaires are being sent to business men in large, medium-sized, and small cities. No section is being overlooked. Also an attempt has been made to pick static as well as expanding communities so that the findings will reflect more than the natural outgrowth of a boom.

Where percentage leases exist—a practice becoming increasingly prevalent for commercial establishments—the committee will seek information as to how much the landlords have increased their take. Also it will dig up data on whether the percentage yardsticks have been modified. One of the surprising discoveries it has made so far is that business is highly mobile. Only about one out of eight of the reporting establishments were in their present locations ten years ago.

HOUSING CENSUS shows nine million gain during past decade

With housebuilding about to shut up like an accordion, the U. S. looked anxiously to see how much it now had in housing supply. From the Census Bureau came exact data:

Count of U. S. houses in 1950 was 46,151,170. This compares with 37,325,470 houses in 1940. The nearly nine million boost in dwelling units in the last decade represents the greatest numerical increase in U. S. history, but as a percentage increase (23.6 per cent) it has been exceeded in many previous expansive decades.

States which have grown at the fastest

rate: Arizona, 63.9 per cent above 1940; District of Columbia, 62.8 per cent; Nevada, 56.3 per cent; California, 54.2 per cent; Oregon, 42.4 per cent.

LUMBER PRICES PLUNGE, other materials rise

Lumber prices, after soaring to dizzy heights in mid-summer, suddenly crumbled the last week in September, nose-dived as much as 25 per cent for cheaper grades in five weeks. Hardest hit was common green dimension lumber for framing, with Oregon mill prices of random length fir 2 x 4's and 2 x 6's down from an unprecedented peak of \$86-90 per thousand board feet to \$55-65. Hardwoods and finished dry lumber, needed to complete thousands of houses started since July, fared better, declined less than 10 per cent, brought the overall price plunge to between 10 and 15 per cent.

Lumber prices, always more volatile than those of other building materials, were reacting with typical swiftness to two major changes: the improved rail car situation and the slackening demand (housing starts registered the greatest August-to-September decline on record). As the major grain movement passed its peak, releasing box-cars to join the new and repaired ones coming into the fleet, lumber moved more freely through the nation's choked railroad arteries. But lumber retailers were no longer anxious to accept shipments. To cancel orders, some were even invoking the National Production Authority's regulation forbidding excessive inventories.

As for the price outlook, everybody sported a different shade of opinion. Some mill operators anticipated a further drop, pointed to Regulation X and possible new controls, and to the traditional pattern of fall and winter lumber prices as proof. Said T. L. O'Gara, merchandising manager of Weyerhaeuser, one of the largest producers: "If Regulation X is not modified or if no other favorable demand factors develop, lumber prices may continue to sag until spring demand forces buying." Keen observers were also watching the prices of dry finished lumber. After the current batch of houses is finished, would the better grades fall as precipitously as the cheaper?

Those who expected lumber prices to surge upward again reasoned that other building materials had continued to rise as lumber fell, therefore how could lumber keep dropping? In BUILDING's survey last month, housebuilders all over the country reported price hikes in plumbing, heating and electrical supplies, paints, masonry items, plaster and nails. Further substantiation for the price rise stemmed from the inherent nature of the lumber industry, a diffuse, competitive conglomeration of producers with the lowest degree of concentration of any major industry. The more than 53,000 mills in the field included a substantial and important number of small, marginal, high-cost producers who entered the market only when prices and demand were high. Many of these were already dropping out, thereby exerting a stabilizing and upward pressure on lumber prices.

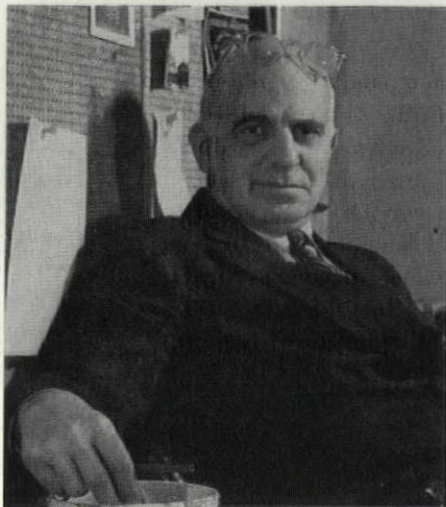
In any case, lumber prices next summer were hardly likely to approach this year's peak.* And lumber's decline last month had somewhat arrested the upward march of total building costs.

ARCHITECT-HOUSEBUILDER TEAMS tackle the fee problem at Houston

Housebuilders and architects have taken the important first step which may mean vastly improved design in the great majority of U. S. houses. Last month in Houston committees representing the National Association of Home Builders and the American Institute of Architects sat down to discuss for the first time how architects can play a greater part in the design of operative-built houses. Talks between the top executives of these trade associations had paved the way for the meeting, which sought to establish the basis of a satisfactory working relation-

* BLS index of wholesale lumber prices for September, 1950 was 371, compared with 299 for April, 1950, and 280 for September, 1949. The weighted index for all materials was 220 for September, 1950, 195 for April, 1950 and 189 for September, 1949.

HOWARD MYERS MEMORIAL AWARD



Pix Inc.

The Architectural League of New York has announced the Howard Myers Memorial Award in memory of the late Howard Myers, for 22 years the publisher and editor of BUILDING.

A committee of Mr. Myers' friends, under the leadership of Architect Wallace K. Harrison, director of planning for the U. N. Headquarters assembled a fund, from which they have asked the League to make \$500 cash awards from time to time for the "best written, most progressive and most influential writing, whether of a provocative nature or not."

The League's committee on scholarships will administer the Myers Memorial Award with the advice of Douglas Haskell, architectural editor, BUILDING; Harold Hauf, editor-in-chief, Architectural Record; and Charles Magruder, managing editor, Progressive Architecture. (Articles published in magazines edited by the advisory group will not be considered for the first award.)

ship between operative housebuilder and independent architect (see *BUILDING*, Apr. '50 et seq.).

Two days of plain talk cleared away much of the underbrush of misunderstanding which has so far kept architects and housebuilders from admiring each other. At the end of the talk, Hugh Stubbins expressed what seemed to be a general feeling: "We're at the end of the beginning. There's still a lot of work to be done but I think that we understand one another."

On the basic question of what fee an architect can ethically accept—and what a housebuilder can afford to pay—for the design of a single house to be built in quantity, the joint committees logically agreed that decision must be made on a local level (any national agreement might conceivably violate anti-trust laws against price-fixing). Both groups plan meetings between builders and architects in every big city to reach satisfactory agreements as to architects' fees. Government officials expressed great interest in the program and pledged all possible assistance from the research and financing facilities of the Housing & Home Finance Agency.

The committees who talked things over were:

For the architects: Kenneth E. Wischmayer, St. Louis, chairman; John Highland, Jr., Buffalo, vice chairman; Hubert H. Crane, Ft. Worth; Alfred B. Parker, Miami; Howell B. Penell, Wynewood, Pa.; George D. Riddle, Los Angeles; David B. Runnels, Kansas City, Mo.; Hugh A. Stubbins, Jr., Lexington, Mass.; Lawrence Galen Waldren, Seattle; L. Morgan Yost, Kenilworth, Ill.

For the housebuilders: Clarke Daniel, Washington, D. C., chairman; W. P. Atkinson, Oklahoma City; Albert Balch, Seattle; Paul L. Burkhardt, Glendale, Calif.; Franklin L. Burns, Denver; Thomas Coogan, Miami; Joseph Driskell, Ft. Worth; Walter S. Johnson, Niagara Falls; H. Morton Robbins, Chicago; Emanuel M. Spiegel, Glenrock, N. J.; Clark B. Sudin, Worcester, Mass.; John Taylor, Kansas City, Mo.; Cy Williams, Roslyn, N. Y.; Joseph H. Vatterott, St. Louis.

PEOPLE

Lumber dealers took time out from their troubles (see page 15) to convene in Houston on October 9th, for a meeting of the Board of Directors of their National Retail Lumber Dealers Association. They elected a new president, **Clyde A. Fulton**, of the Colborn-Fulton Lumber Co., Charlotte, Mich., endorsed *BUILDING's* Round Table reso-

lutions (Extra Issue, Sept. 30, 1950), listened intently to reports that builders were not paying bills as promptly as earlier this year.

Architect **Pietro Belluschi**, Portland, Ore. was named the new dean of the Massachu-

Alda Jourdan



setts Institute of Technology's School of Architecture and Planning. He succeeds William Wilson Wurster, who is now dean of the University of California's School of Architecture.

Famed Architect of the aluminum and glass sheathed Equitable Savings & Loan building in Portland and many another distinguished building in the Northwest, Belluschi came to the U. S. from Italy on an exchange scholarship in architecture offered by Cornell University. He worked in Idaho mines for a year before settling down at a drafting board for a steady climb to his present eminence in the architectural profession.

First major building appointment in the National Production Authority fell pleasantly on industry ears. Able, affable **James**

Follin was named by General Harrison to set up an NPA organization to operate the M-4 building control order. So far, Follin has no formal title. His job will be to handle appeals and keep M-4 from being too



arbitrary in hardship cases. Well-known in the industry as a onetime managing director of the Producers' Council, Follin has been given a leave of absence from the General Services Administration to undertake his NPA assignment.

The Producers' Council, at its annual meeting, elected **A. Naughton Lane**, St. Louis, Mo. as president. Lane is vice-president of the Monarch Metal Weatherstrip Corp.

Architects **Skidmore, Owings & Merrill**, Chicago and New York, have established a \$1,000 scholarship for fifth-year students in the College of Architecture at Cornell University. First winner of what is to be an annual award: **Robert F. Gatje**, Brooklyn. Cornell counts Nathaniel Owings among its many distinguished architectural alumni.

The National Association of Real Estate Board's veteran **Herbert U. Nelson** accepted the Congressional probe of lobbying activi-

ties with his usual aplomb. Nelson reported to his membership that the House Select Committee on Lobbying Activities had described NAREB as a "highly effective opinion-maker." This was only one of the many "laudatory descriptions and other accolades" contained in the Committee's report, Nelson said. Sample: "The National Association of Real Estate Boards . . . has systematized all means of direct contact between its members and legislators more completely than any other group appearing before this committee."

PUBLIC HOUSING, suffering from rising costs, blames Architecture

As the housebuilding industry wiggled to feel just how much it had been hurt, it naturally cast an inquiring eye on what it had long regarded as its natural enemy: public housing. The housebuilders might take what comfort they could from the fact that public housing was hit even harder than they were. But, by a different weapon: high costs.

This ticklish matter of costs set off some angry words at the meeting of the National Association of Housing Officials in Detroit. Warning that the whole public housing program would fail if building costs could not be kept within the budget, Public Housing Commissioner John Egan said there was a "tendency away from a strict economical approach in the design of the projects . . . We are getting high costs because the projects are not being designed down to minimum requirements for livability."

"Dwelling space," Egan said solemnly, "was found to occur most frequently" as the "expensive or very extravagant" element.

Snapped back Frederick Gutheim, attending the meeting as a representative of the American Institute of Architects: "It is not necessary to make architects the whipping boy for inflated building prices or administrative shortcomings.

"The high costs of land and site improvement, failure to get really competitive bids, and high construction costs are the basic factors in the present breakdown of public housing's productivity. It is understandable that the officials running this program are under strong political pressure to explain their failures, but there is no sense in blaming architecture."

How minimum would public housing become? Egan said from now on 1942 (war) standards would be established as minimum space standards, present PHA space standards would become maximums. He suggested that local authorities defer large units for big families to sometime later in the six-year program.

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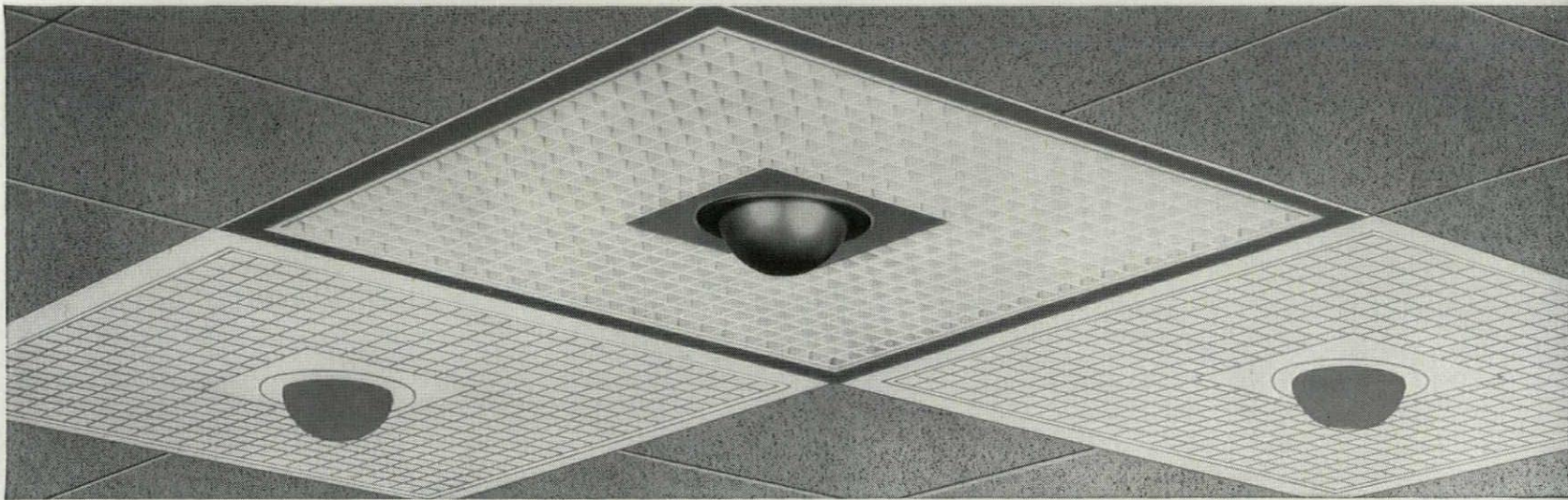
Silvray SKYLIKE lighting* — introduced only a couple of months ago — has excited everyone in the business: user, architect, contractor, lighting engineer. Orders and inquiries are coming in at a rate that has us jumping.

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brilliant new concept of commercial lighting. You know the worth-while reason, of course, so there's nothing to do but realize that Silvray SKYLIKE units will be produced — and orders will be filled — just as fast as conditions permit.

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Why so many businesses want Skylike



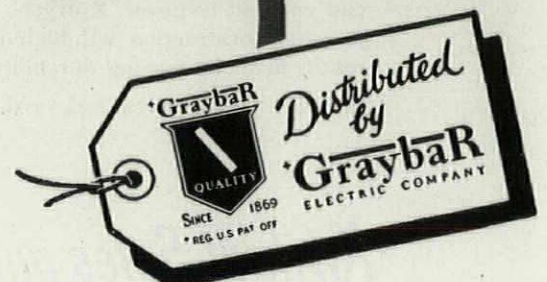
The SKYLIKE system combines the best features of silvered-bowl incandescent lighting with the architectural appeal of a fluorescent-type troffer. No other type of lighting has all its advantages! Here are some quick facts:

- Warm color — most desired by merchandising experts
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The Buildings shown are a few of the many outstanding structures which comprise Tech City. Numerous such buildings have been protected through the years by R. I. W. products.

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NEW YORK CHICAGO



For Planning Director **WALLACE K. HARRISON** the shimmering UN Secretariat (p. 93) represents the zenith of a distinguished career. Years before his appointment to the helm of the world capital's Design Board, he had already received acclaim for his role in the design of Rockefeller Center plus a host of other impressive office, apartment, industrial and hotel buildings. He has taught architecture at Columbia and Yale Universities, served as Director of the Office of Inter-American Affairs, 1945-46.



MILTON RYAN played dual roles as architect and builder of the contemporary San Antonio house on page 113. Ryan is a registered architect (1938) with extensive "on the job", rather than academic, training. His college degree (University of Texas) was in Business Administration.



Builder **G. S. MCCRELESS** (l.) and Architects **COCKE, BOWMAN** (c.) and **YORK** (r.) are jointly responsible for the San Antonio Revere house on page 116. McCreless is a native Texan and real estate broker turned builder. Bartlett Cocke, Walter C. Bowman and John G. York have been practicing architecture together in Harlingen, Texas since 1948.



DE HAVEN PITTS and **ALBERT A. LOWERY** were architect and housebuilder respectively for Meadowbrook Estates (p. 119). Architect Pitts has been in private practice intermittently since 1929, merged his firm last year with William Orrison, Engineer. Lowery worked for his builder-father until college graduation, formed his own construction company, now heads Lowery-Cato-Hubbard, Inc., in San Antonio.



Architect **NED A. COLE** has operated his own design office since graduating from the University of Texas in 1939, except for five wartime years with the U. S. Army Engineers. Since returning from overseas, he has focused his attention on the merchant-built house, designed the San Antonio home (p. 120) built by **WALTER STEVENS'** Mercury Building Corporation.



FREDERICK J. KIESLER's daring work as pioneer architect, stage designer and structural theorist has been more influential than widely executed Viennese-born and famed in Europe for his exciting stage designs, he came to America in 1926 has been Scenic Director of New York's famed Julliard School for 16 years, still does the uninhibited design explorations typified by the Endless House (p. 124).

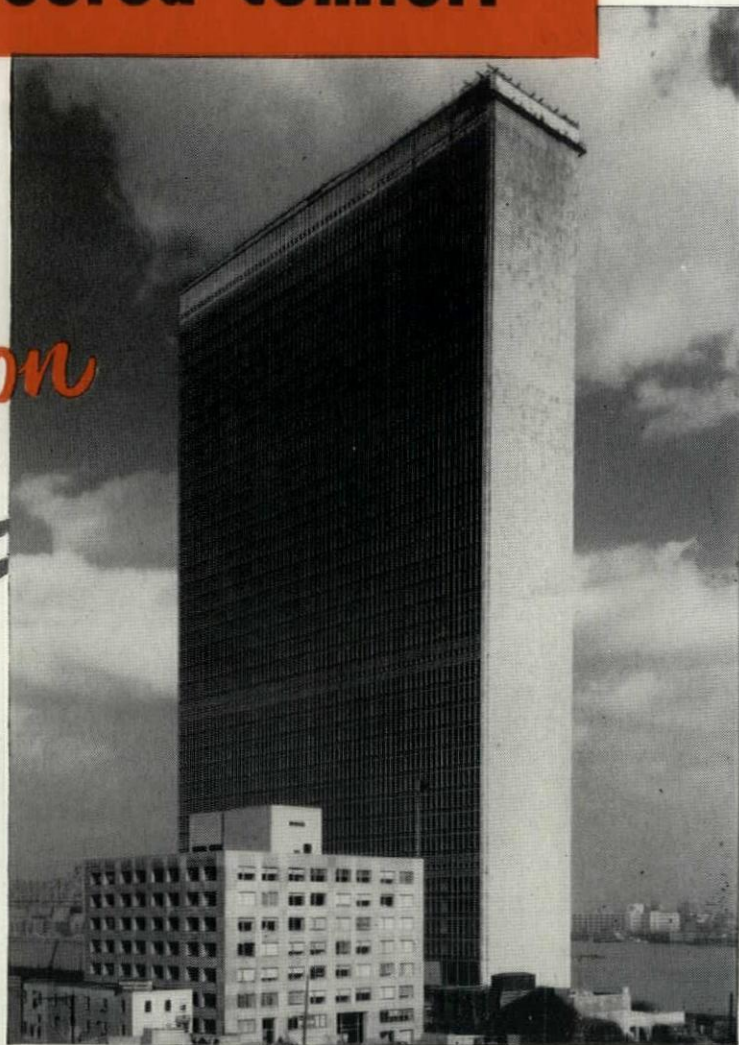


Dr. CLARENCE A. MILLS holds doctorates in medicine and biochemistry, is Professor of Experimental Medicine at University of Cincinnati's Medical School. As teacher and medical researcher, he has done exhaustive studies on climatology and reflective radiant conditioning developed the unique heating system used in his own house (p. 127).

first in engineered comfort

**with individual room
temperature control**

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Secretariat Building, United Nations Permanent Headquarters, New York, N.Y.
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Rapuano & Holleran.
Mechanical Engineers: Syska & Hennessy, New York, N. Y.
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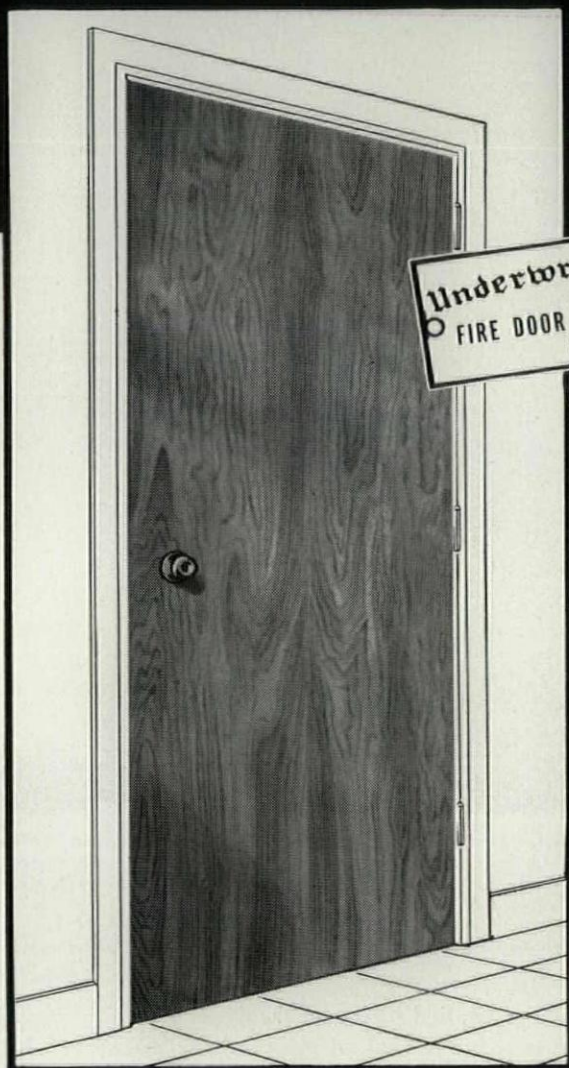
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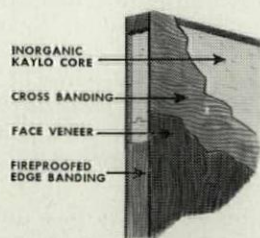
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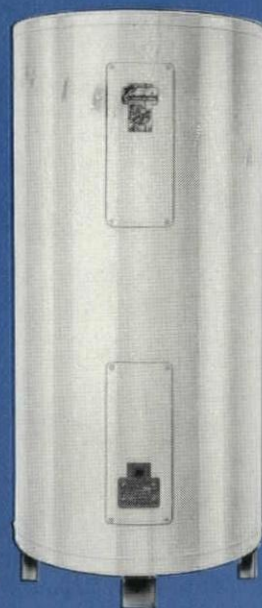
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Section 28a
7a



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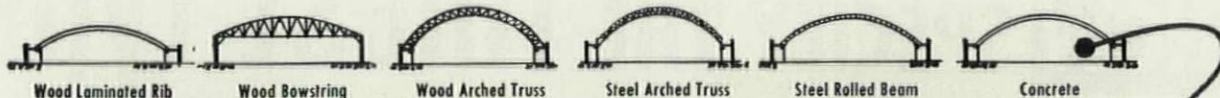
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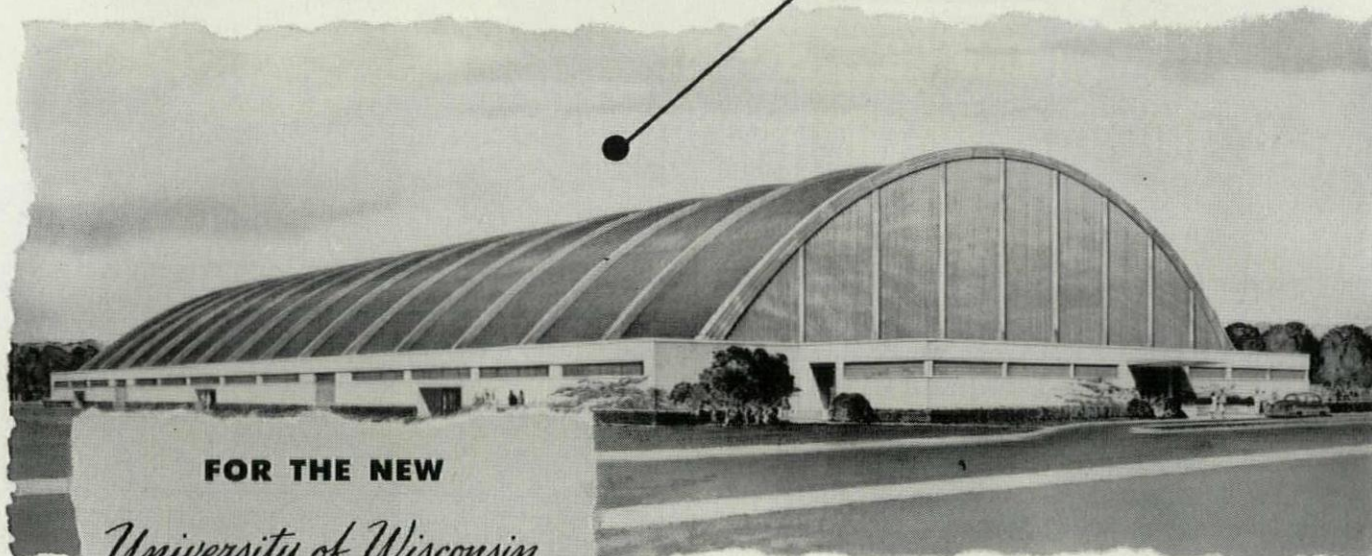
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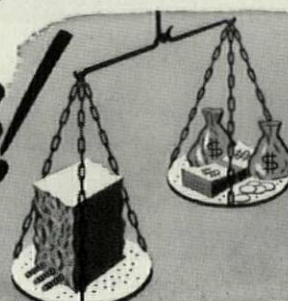
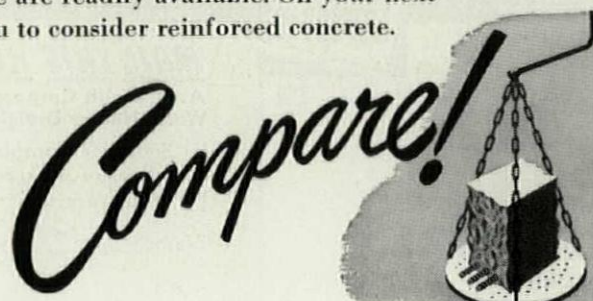
ATHLETIC BUILDING

ARCHITECTS: Roger C. Kirchhoff, Wisconsin State Architect; Fitzhugh Scott & Fitzhugh Scott, Jr., Associates. ENGINEERS: Ammann & Whitney; Chauncey L. Chase, Mechanical Engineer

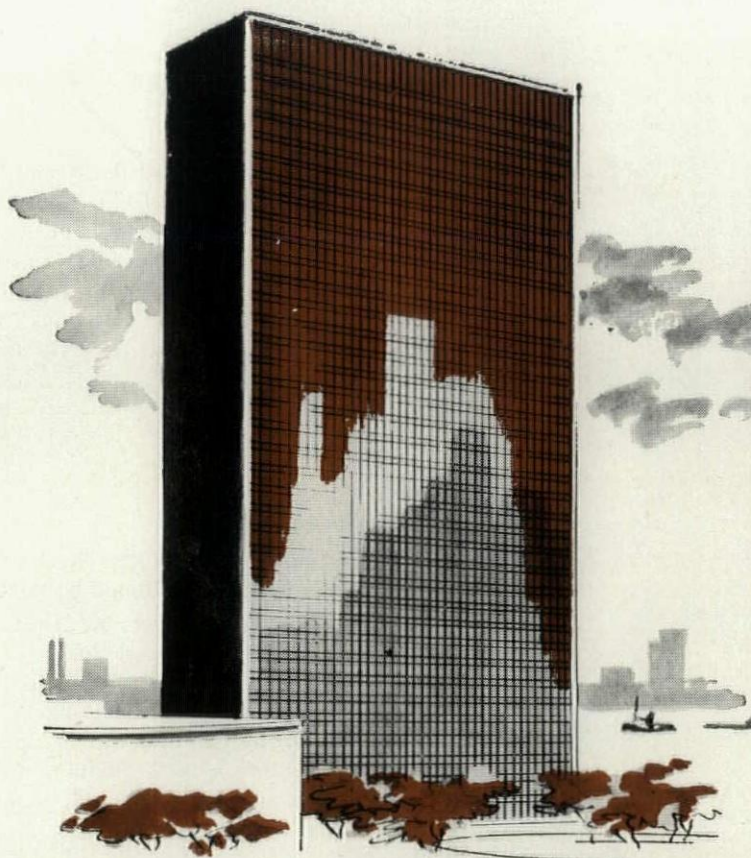
This handsome athletic practice building, designed for the University of Wisconsin, has a barrel shell concrete roof covering a clear span of 200 x 400 feet. In designing this structure, New York engineers, Ammann and Whitney, made a comparative cost study of six methods of roof construction. Their verdict: "Reinforced concrete is the cheapest fire-resisting construction which can be used for this building."

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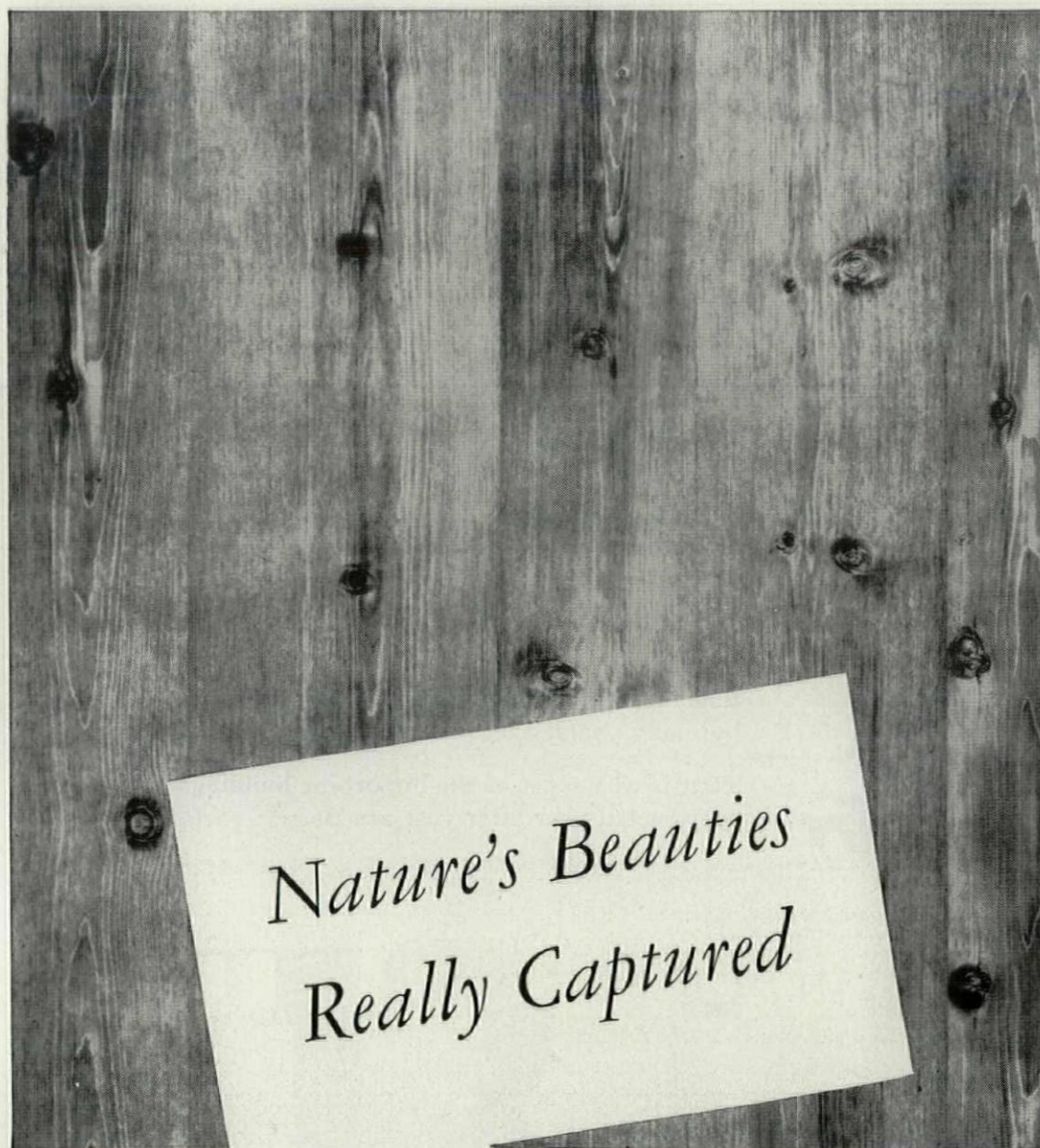
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Genl. Cont.: Fuller-Turner-Walsh-Slatery, Inc. Arch.: United Nations Headquarters Planning Office. Roofer: The New York Roofing Co. All of New York City.



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LETTERS

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It was the most constructive move I've seen in a long time. . . . I appreciated the solid analysis of our industry and its prospects. We all owe a vote of thanks to BUILDING for making it possible.

PAUL FARVER
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BUILDING:

Congratulations on the Report and Recommendations of your "Round Table. . . ."

HENRY K. HOLSMAN, *Architect
Chicago, Ill.*

BUILDING:

. . . about the best article summarizing the current situation in the building industry that I have seen and I am passing it along to the other members of our organization. . . .

JOSEPH R. MURPHY
*Vice President
Taco Heaters, Inc.
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. . . it is certainly a relief and pleasure to follow the thoughts of sensible men in the midst of the never-ending babble deluging us from all sides.

EVERED DEWEY REED
*Director of Merchandising
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Congratulations and continued success.

KENNETH LAIRD
*Tatham-Laird, Inc.
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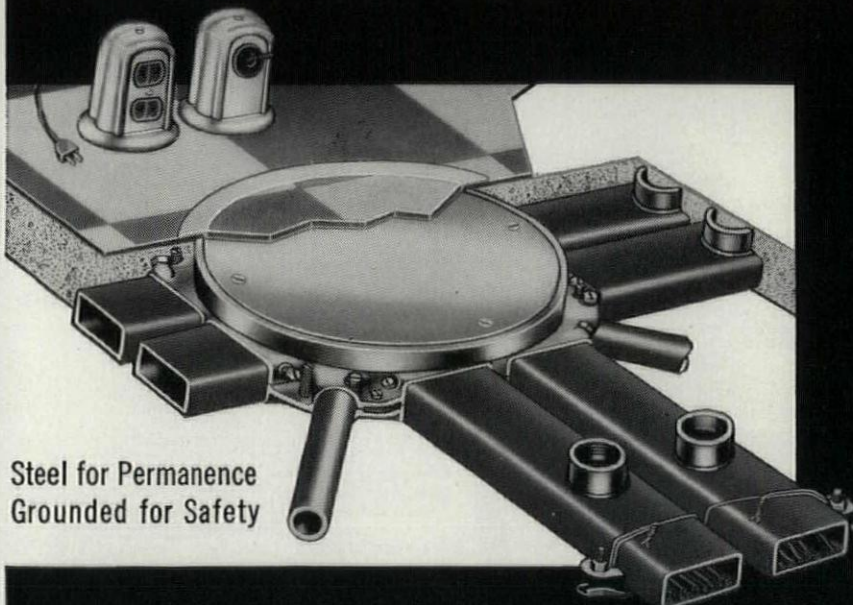
BUILDING:

While you have prepared us for the change, it is with something of a shock that we see for the first time our leading architectural magazine bearing at its masthead the dominant title: BUILDING. The motive is not difficult to understand and we shall not quarrel with you at the change. There are many, alas, who are inter-

(Continued on page 30)



ARCHITECTS . . ENGINEERS . . CONTRACTORS . . BUILDING OWNERS . . TENANTS . .



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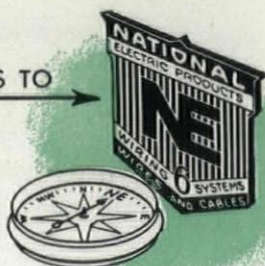
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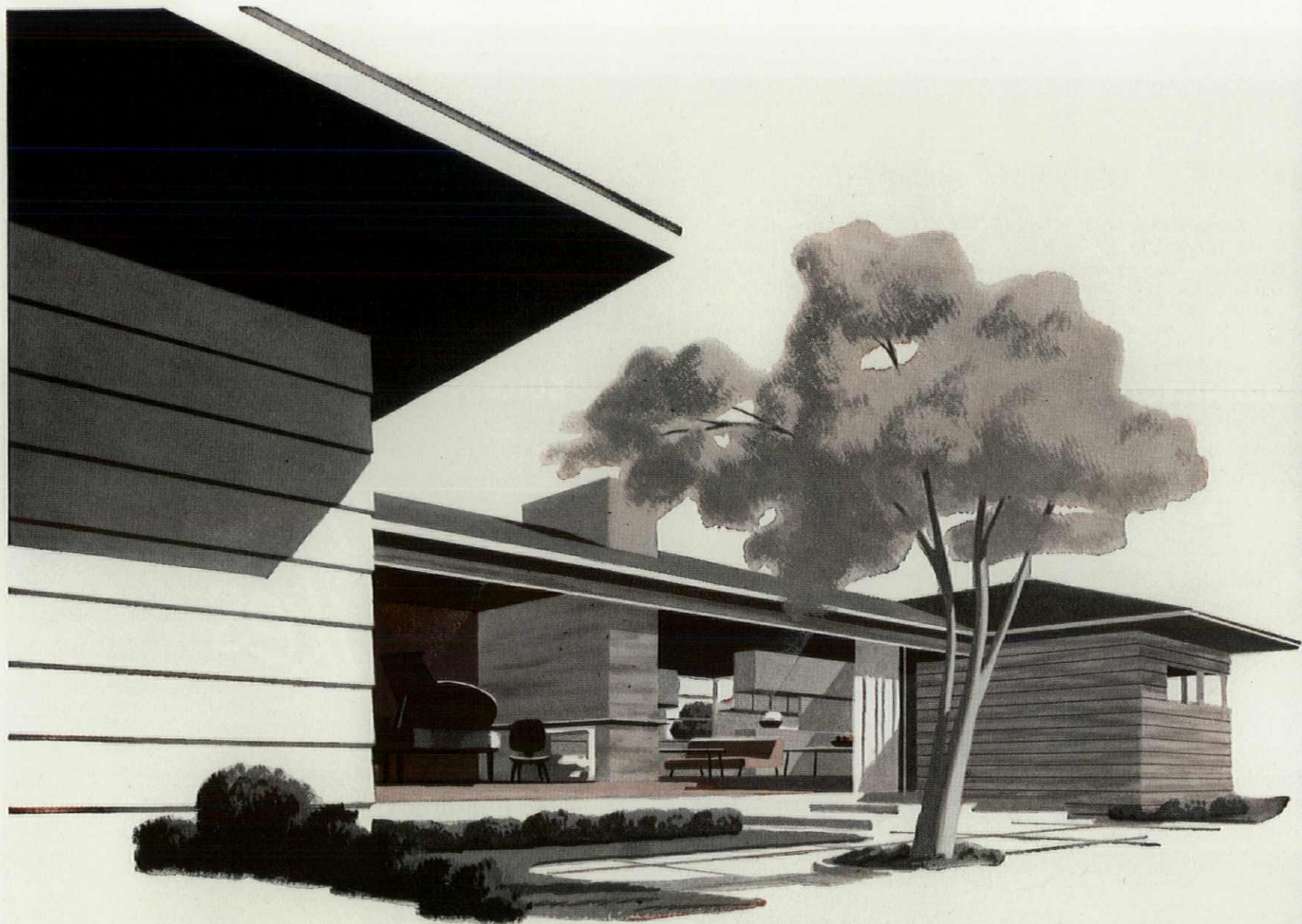
**National Electric
PRODUCTS CORPORATION**

1334 Chamber of Commerce Building, Pittsburgh 19, Pa.



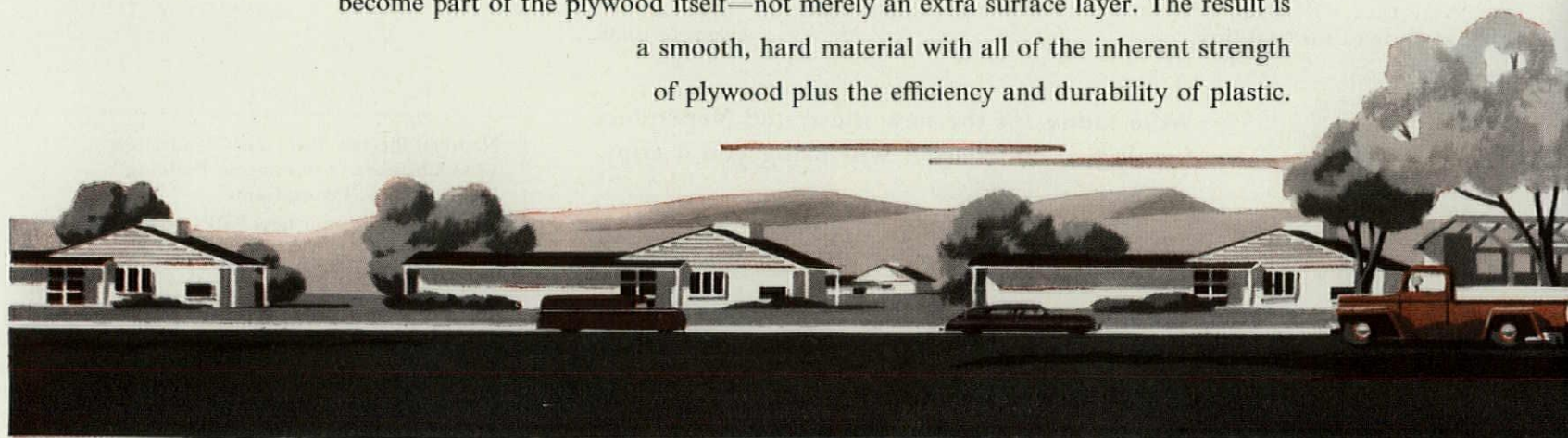
National Electric Products Corporation
1334 Chamber of Commerce Building
Pittsburgh 19, Pennsylvania
Please send me your new NEPCODUCT Catalog.

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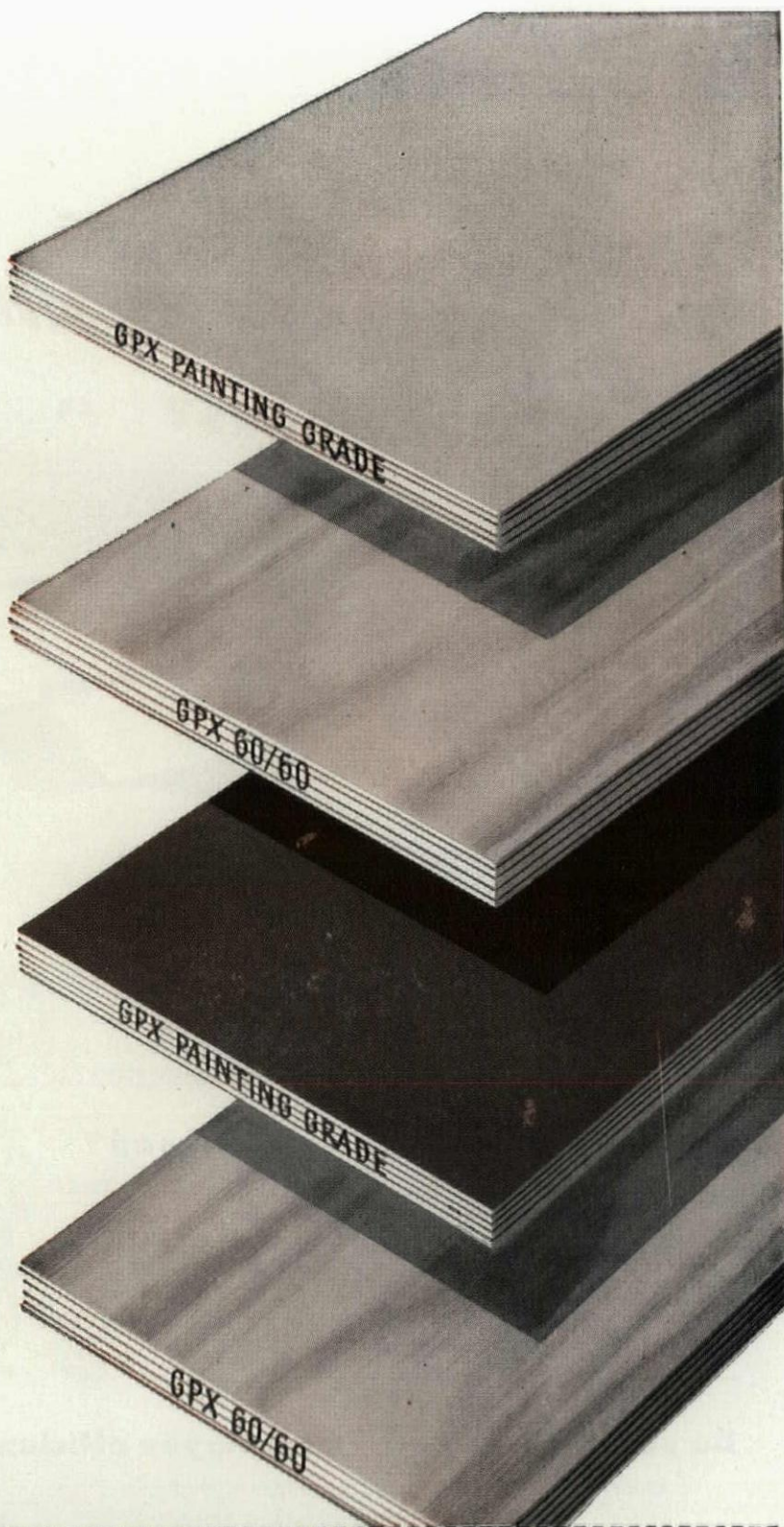
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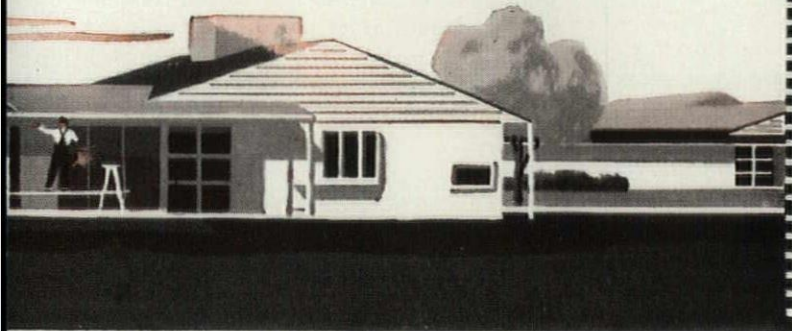
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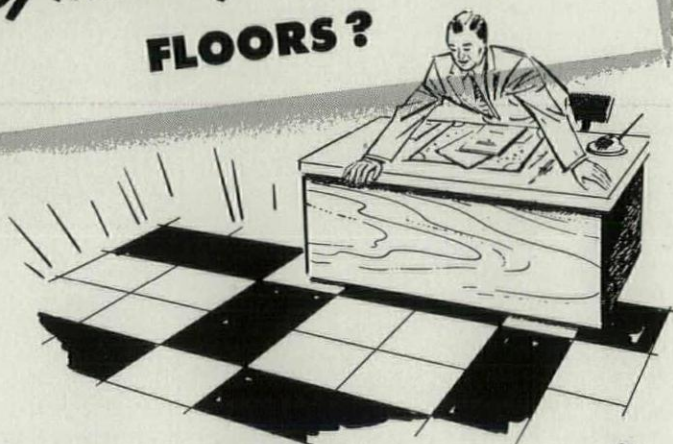
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YOUR POSITION.....



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- ♦ WRIGHTTEX — Soft Rubber Tile
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- ♦ WRIGHT-ON-TOP Compression Cove Base

LETTERS

ested in building, but to whom architecture is caviar. I shall not argue with them here except to point out that every building has its architecture, good or bad, efficient or nonefficient, adding or detracting from the enjoyment of life.

Any fears which the architect may have had at the change in name of the magazine are dispelled by your editorial "Pittsburgh and the Architect's Problem" in the September issue. Hold fast to this concept. "Where there is no vision, the people perish." The dream must come first. It is in the early synthesis of the problem's vital needs that the architect exercises his life-giving function.

ELECTUS D. LITCHFIELD, *Architect*
New York, N. Y.

BUILDING:

What's the matter with the fine old name that means so much to all of us? Why turn your back on a heritage?

HARRIS ARMSTRONG, *Architect*
Kirkwood, Mo.

• Mindful of its heritage, BUILDING will make its new name mean even more to its readers than its fine old name did.—Ed.

BUILDING:

Congratulations and happy sailing for your magazine under the masthead of BUILDING.

With the last publication of the magazine as FORUM, you can look back with pride upon a service as significant and as influential in its own way as the creative work you have fostered. It is fantastic to realize that a small but powerful group of architects and designers could give us within a matter of 50 years a new and meaningful architecture for our age. It is even more fantastic to realize that despite the opposition of the status quo this new and meaningful architecture has taken root. . . .

As BUILDING, your magazine has the burdensome responsibility of continuing its know-how in the capacity of coordinator and integrator. . . . It is in this practical relationship between the thinkers and the doers of building that our horizons are unlimited. To this end perhaps it was fitting that the last issue of FORUM paid its respects to Eliel Saarinen who understood, as few do, the need for communication between the theorist and the practical minded builders.

As you relaunch your ship under a new name, I am sure your pilot has familiarized himself with some of Saarinen's charts. One of them reads: "It could and it might happen that the profession of architecture would become the supreme educator of the people: toward better physical living, toward better spiritual living, toward better standards of taste, and toward deeper cultural aims." . . .

VINCENT GLEASON
East Lansing, Mich.

BUILDING:

My compliments on the manner in which you lap-dissolved from the FORUM title to BUILD-
(Continued on page 34)

**IF THERE EVER WAS A REASON FOR NOT
USING WALL TYPE FIXTURES, IT NO LONGER EXISTS!**

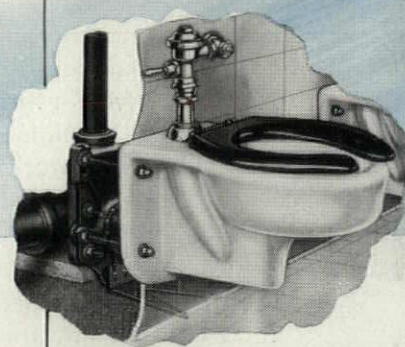
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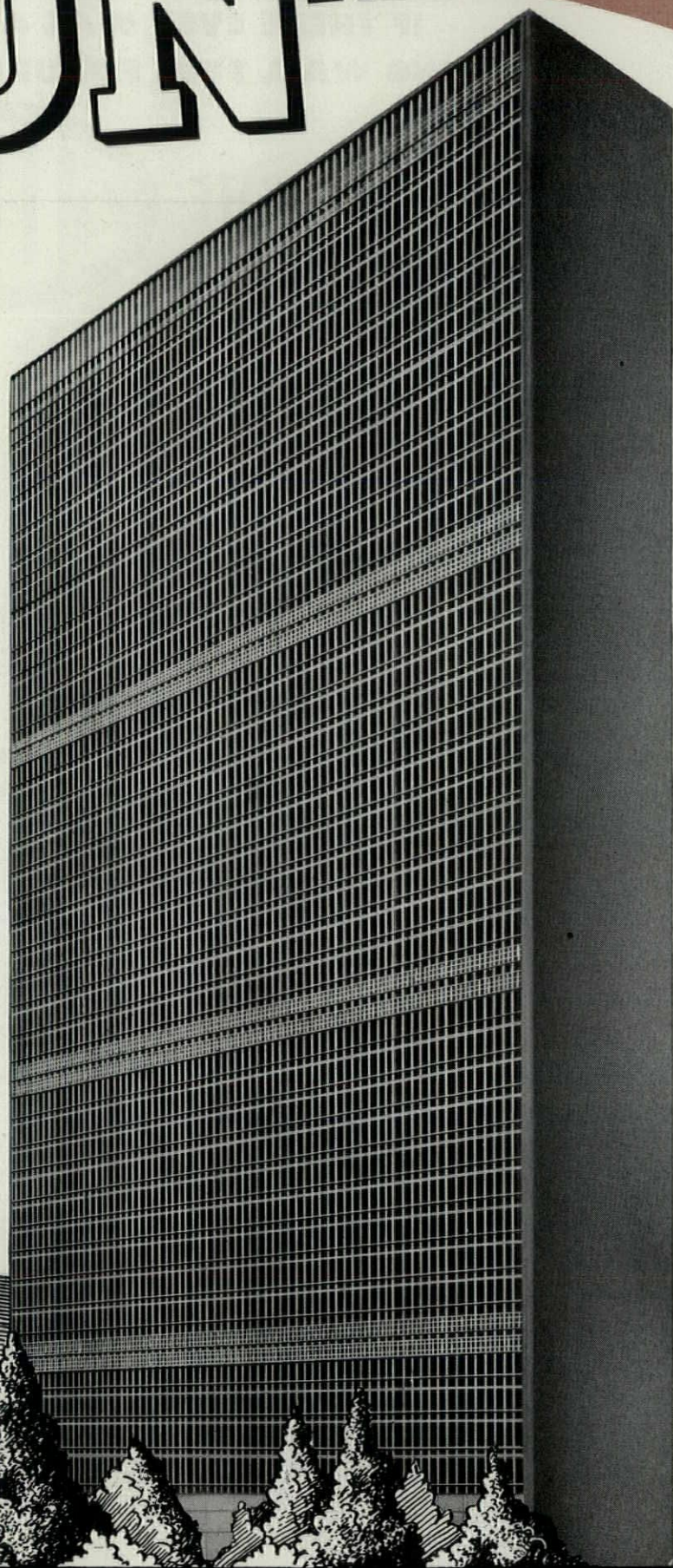
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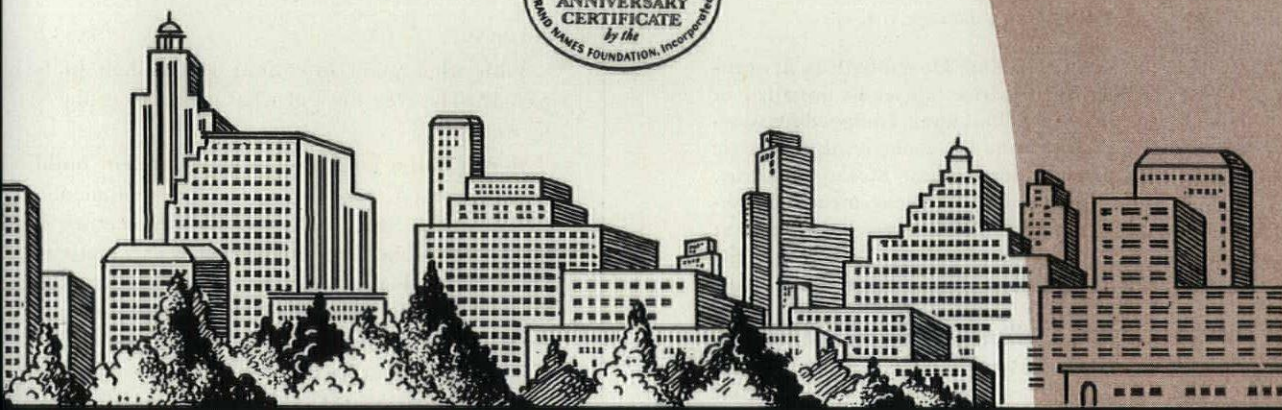


Wallace K. Harrison
Director of Planning

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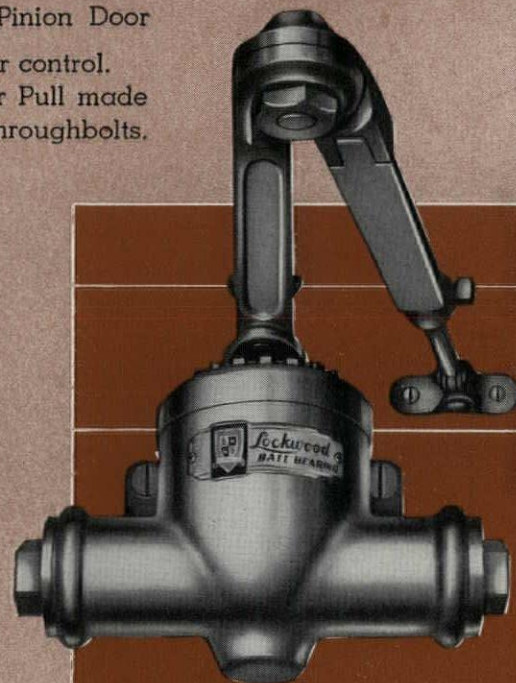
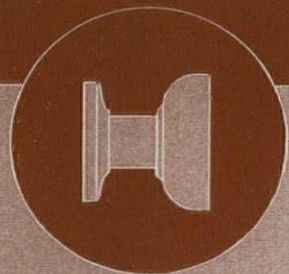


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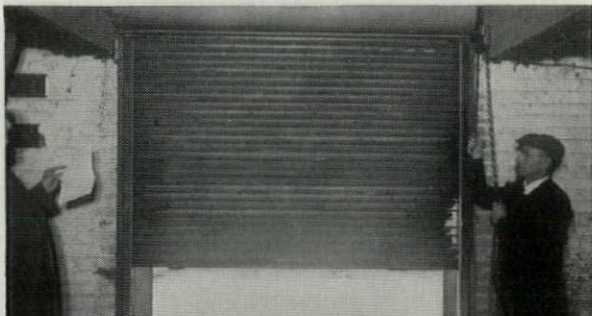
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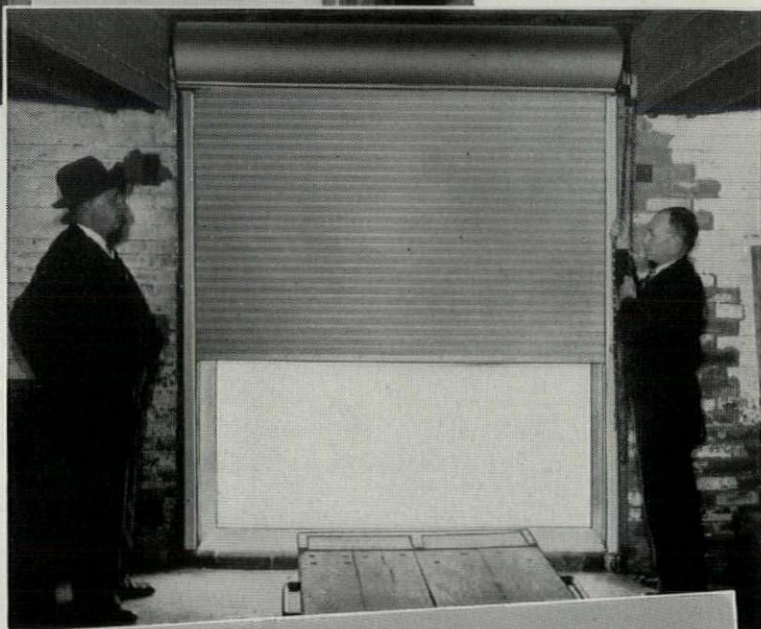


47 YEARS OF SERVICE

and a few repairs make it ready for 47 more



The door at left has been in continuous service since 1903—for 47 years! The picture was taken this year, just before curtain slats were replaced and a few minor repairs made. In the photo below, the door is ready for many more years of efficient service and protection.



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LETTERS

ING. It makes much more sense. The magazine has improved enormously in reader interest during the last six months.

I am sorry not to have known of your intention to do a story on "Theaters in the Round" (BUILDING, Sept. '50). I have designed four during the last two years, one of which has been in operation for more than a year. Your story refers to the theater in the round I did for the Chicago World's Fair, but failed to mention the plans I made for Winthrop Ames in 1922, and which is the first modern architectural handling of "Theater in the Round."

NORMAN BEL GEDDES
New York, N. Y.

PITTSBURGH AND THE ARCHITECTS

BUILDING:

The editorial in your September issue about Pittsburgh and the architects is splendid. . . .

N. A. OWINGS, *Architect*
Skidmore, Owings & Merrill
Chicago, Ill.

BUILDING:

. . . My heart-felt congratulations on your editorial on "Pittsburgh and the Architect's Problem."

Needless to say, I have followed with great expectancy the Golden Triangle Project, and now that you show us something of what it will be like, I am filled with a great sadness.

Yes, I agree, all of us as architects are probably somewhat at fault. But you must admit that architectural magazines, architectural critics are much more at fault. It is up to you to keep convincing great builders that they have everything to gain and nothing to lose by taking the architect into their confidence from the very start.

Thought and care of the owner's own interest are important parts of our obligation to him. But, Mr. Owner, don't you see that it is not in your best interest to start new buildings with ten years' obsolescence against them?

WILLIAM LESCAZE, *Architect*
New York, N. Y.

AND THEN WHAT?

BUILDING:

With what good intentions is this hell to be paved? The clearance of what evil to be replaced by what evil?

Here (in the long, thin, high apartment buildings proposed for Chicago's redevelopment—BUILDING, Aug. '50) modern architecture at the climax echoes in its transparent emptiness the modern idea of man. Such economic packaging of humanity, however it may vary on a quantitative level, reveals the identical materialist idea of man that is the data of the communist solution for the world, while at any moment these prospective inhabitants may be called to give their lives against this same concept of man.

Together with the current concept of man, the
(Continued on page 38)



Give living a lift... with Steel!

Plain or fancy, large or small . . . the living area *outside* a home can be planned to give a big bonus in pleasure.

And the outdoor furnishings needed to execute such plans are plentiful, durable and reasonable . . . because they're made of *steel*. Steel is America's great bargain metal for modern living.

As a matter of fact, even the siding of the home above is steel. That's a brand new idea in building . . . siding panels of *Weirzin* electrolytic zinc-coated steel that resist rot, fire, termites, fungus and corrosion; provide a wonderful base for paint; safeguard home beauty and reduce maintenance costs.

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Metal sculpture, executed in Weirzin steel, demonstrates the exceptional workability of this easily fabricated metal.

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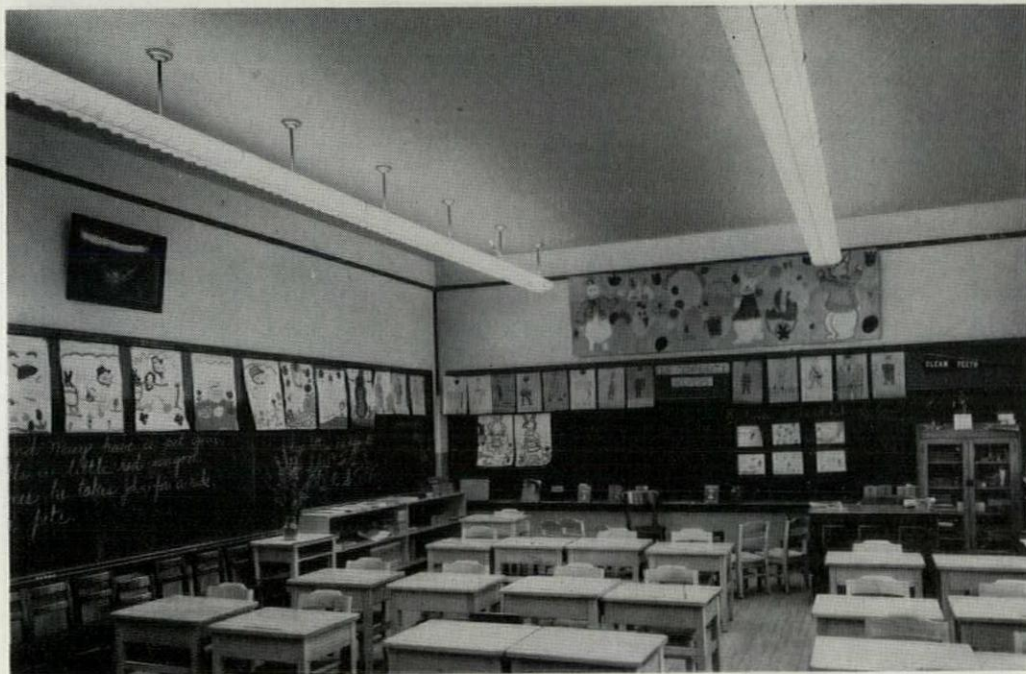


CORPORATION

Outstanding Lighting Versatility

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Continuous rows of Sylvania Trimline Fluorescent Fixtures in the Love School, Jamestown, New York, combine ample intensity with low surface-brightness for the protection of children's eyes.



Offices and stores choose Sylvania Trimline Fixtures for their attractive appearance, efficiency, easy installation, and low maintenance costs

Now, with Sylvania's new Trimline Fluorescent Fixtures, you can plan your lighting as accurately as you plan other essential building details.

This line of beautiful fluorescent fixtures offers you 19 coordinated units . . . designed to harmonize with every type of institutional and commercial building.

Fixtures are made in 4-foot and 8-foot lengths . . . louvered or full-plastic shielded. Equipped with 2 or 4 lamps . . . standard on instant start.

All are engineered to meet the most exacting requirements. Handsomely designed and finished in durable "Miracoat" white enamel. Equipped with either plastic or metal side panels, they assure maximum transmission of glare-free light, and true lamp color.

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Sylvania's new Trimline Fixtures and Trimspots enable you to offer your customers an unlimited variety of lighting patterns and possibilities.

The Trimspots are equipped with Sylvania PAR 38 reflector lamps. Finished in gleaming "Miracoat" enamel to harmonize perfectly with both the 2-lamp and the 4-lamp Trimline fixtures. Easily focused anywhere within a 360° arc, approximately 20° from the perpendicular.

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SYLVANIA

Sylvania Trimline Fixtures

example, Sylvania Trimspots are used to highlight displays and selling areas with dramatic impact.

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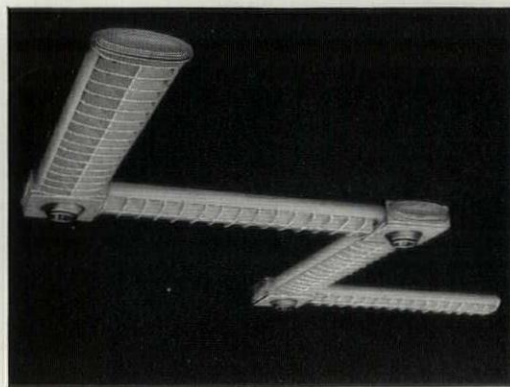
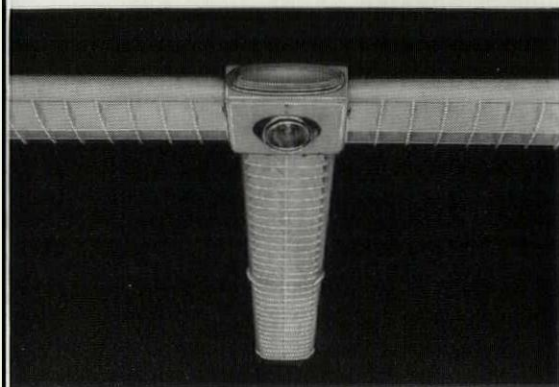
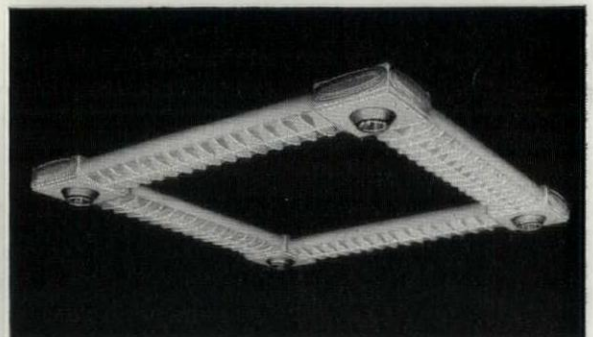
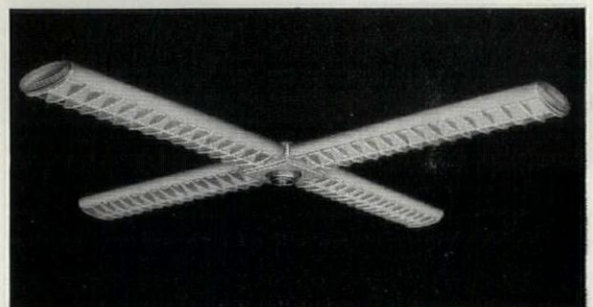
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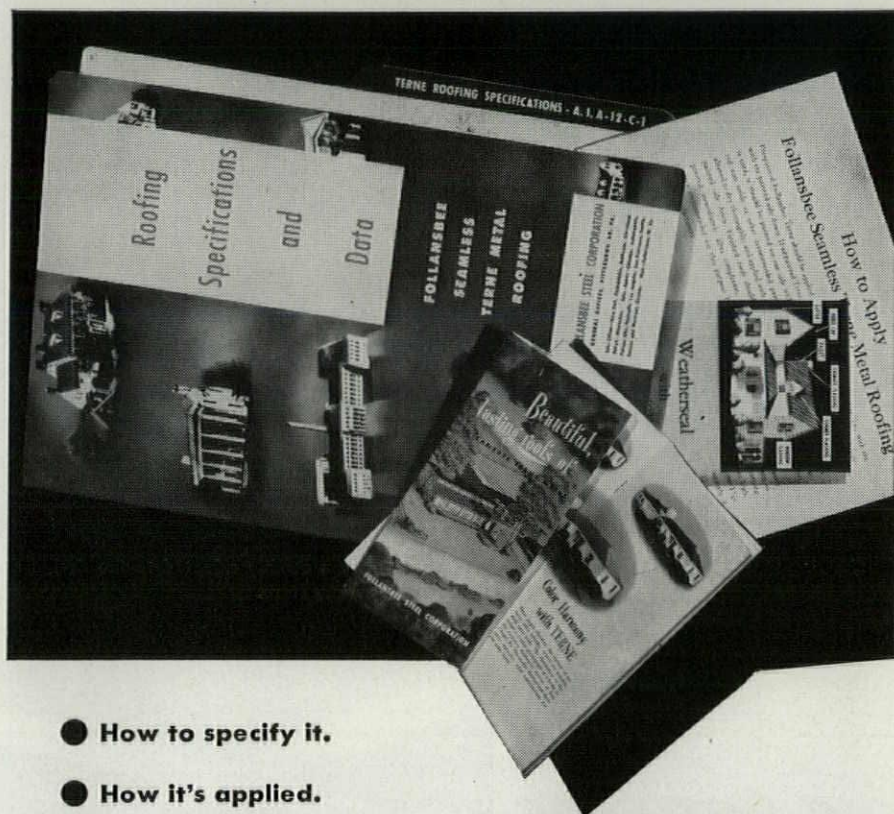
ELECTRIC



an Architect's File of Information

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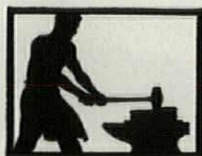
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LETTERS

arts have lost the spirit, the religions have lost the spirit and architecture bears witness. When the spirit is lost the form is sought. When the form is lost the function is sought. When the function is lost economy reigns.

And then what?

PAFFORD KEATINGE CLAY
Phoenix, Ariz.

STUYVESANT TOWN

BUILDING:

In the article "Chicago Redevelops" in the August BUILDING the statement is made that "Stuyvesant Town quadrupled the previous population."

Stuyvesant Town occupies an 18 block area, about half of which was long used for industrial or business purposes. About 27,000 persons lived in the district around 1920. The number had decreased to some 11,000 in 1943 when the Metropolitan Life acquired ownership. There now live in Stuyvesant Town about 24,000 persons.

GUSTAV ZISMER
Metropolitan Life Insurance Co.
New York, N. Y.

• Unable to refute these facts, BUILDING's editors must have looked at Stuyvesant Town's population through a magnifying glass.—Ed.

GUIDE TO ENGLAND

BUILDING:

A large number of visitors is expected in England next year, particularly for the Festival of Britain...

As an architectural student, I offer your readers who may be visiting England my services as guide, in payment of which I should ask an exchange of views and opinions on architecture in the U. S. as compared with Great Britain...

GEORGE A. ASKEW
4 Dorchester Court
Colney Hatch Lane
London, N. 10, England

PUBLIC HOUSING SCORE

BUILDING:

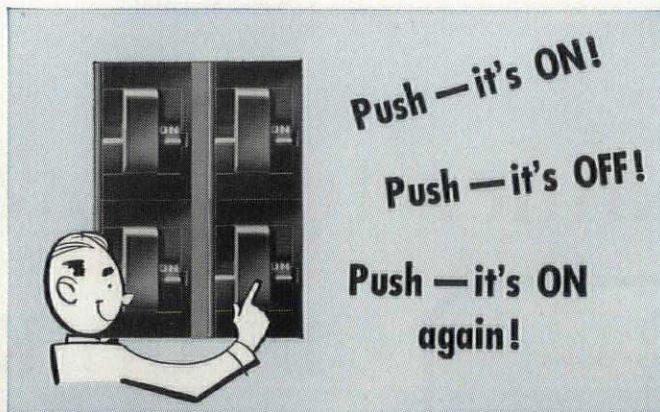
I have observed... a departure from your established policy of giving uncolored truths in your editorial columns.

I refer to the statement in your August 1950 issue... "Houston last month became the twelfth city to reject public housing by referendum (seven have accepted by referendum)."

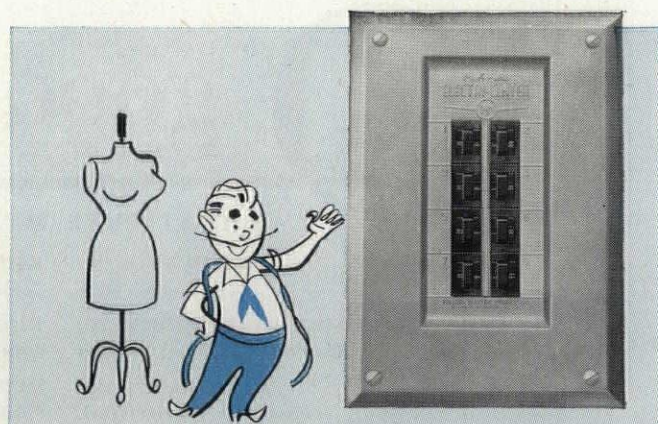
PHA Bulletin of June-July 1950 shows "public housing under way in 499 places with 45,000,000 people, rejected in 29 places with 2,000,000 people."

EDWARD P. FINEGAN, Architect
Beverly Hills, Calif.

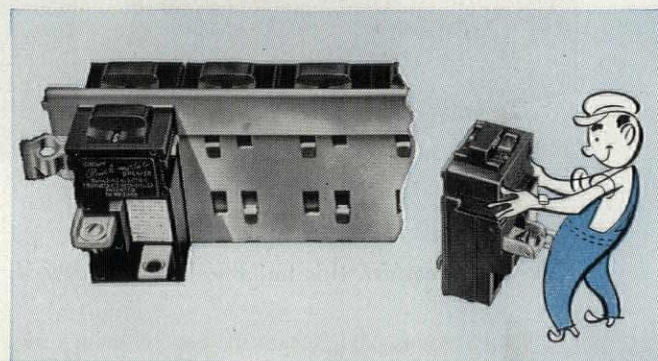
• BUILDING and the PHA Bulletin were talking about two different scores: BUILDING about the number of cities which have accepted or rejected public housing as a result of referenda of the voters; the Bulletin about the number which have accepted or rejected it through decisions of local governments.—Ed.



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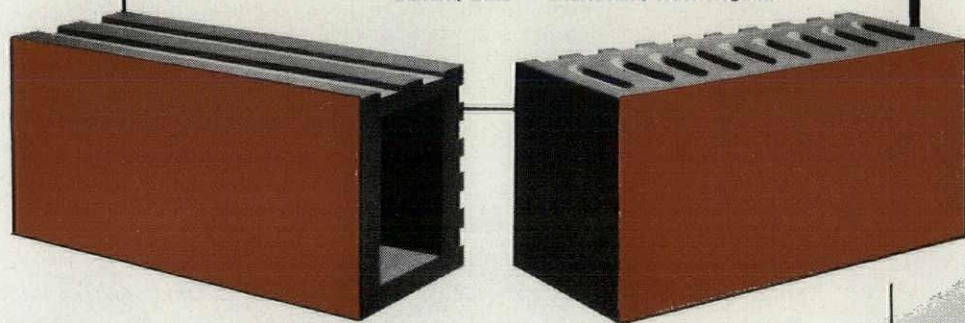
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You can get more detailed information about the Facing Tile Institute and its products from our new catalog, 51-C. If you do not yet have this valuable reference piece in your files, just write the Institute, Desk AF-11, or contact the Institute member nearest you.

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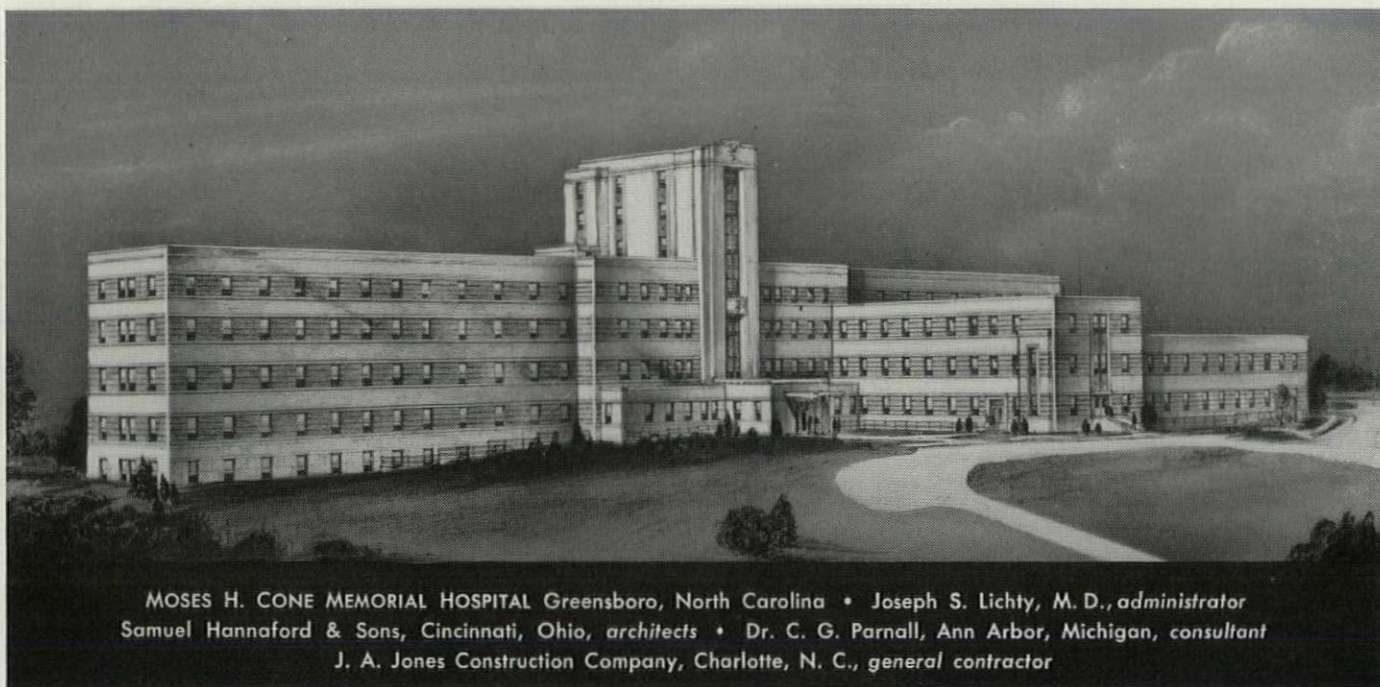
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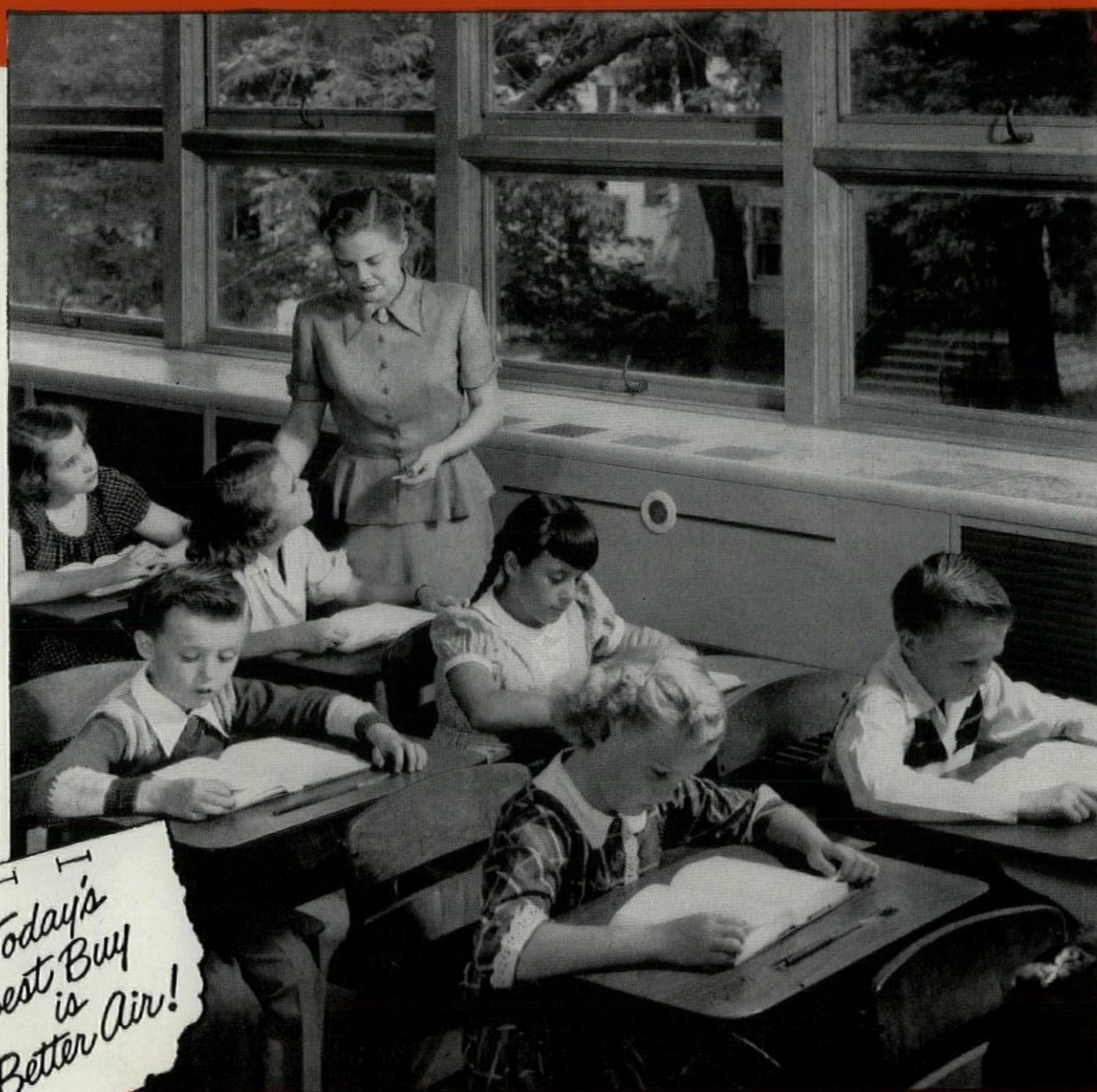
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Draft|Stop is the dramatic new system* of schoolroom ventilation designed by Herman Nelson engineers to insure greater classroom comfort and better student health. Architects and engineers responsible for the design of modern school buildings will recognize this entirely new concept of ventilating and heating the classroom as the answer to a problem posed by the trend toward more and more window area.

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achieves the ideal in modern classroom comfort—a classroom free of drafts—a classroom with atmosphere which inspires rather than retards the learning process.

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**Patent Pending*



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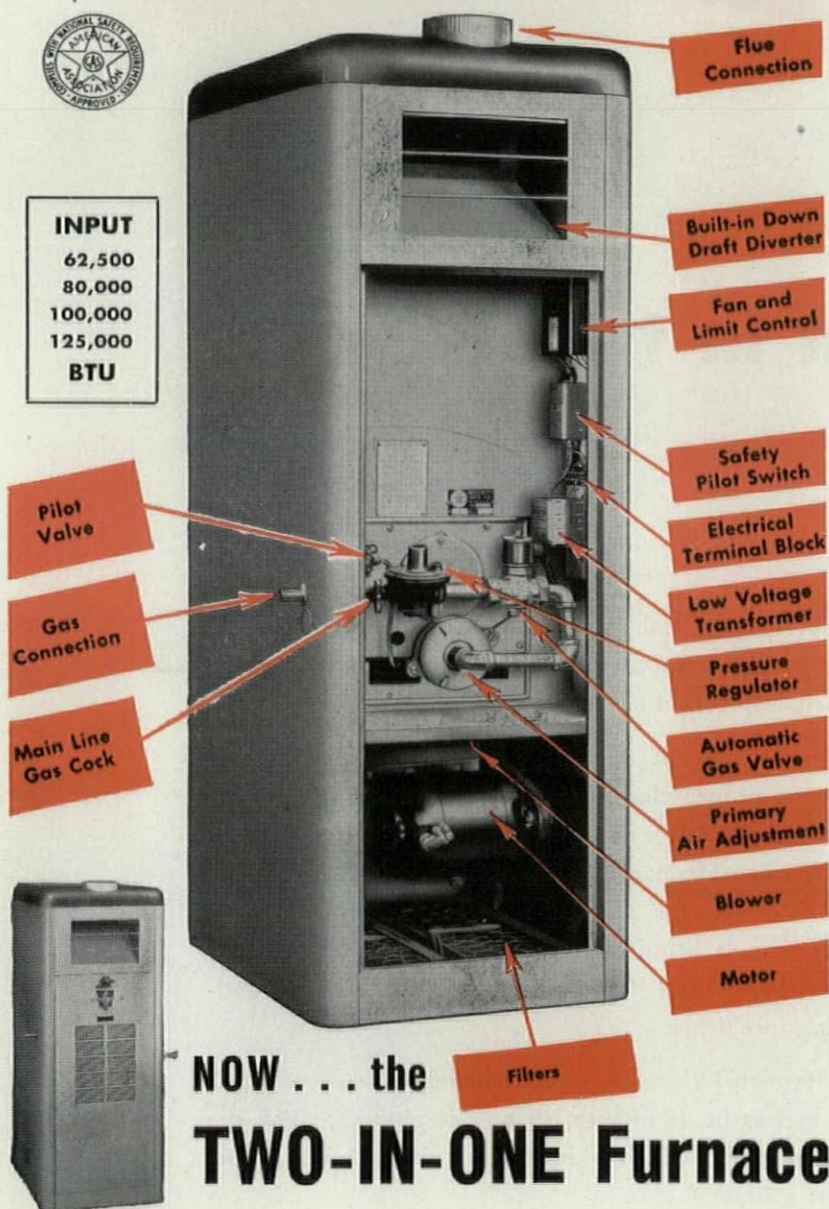
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INPUT

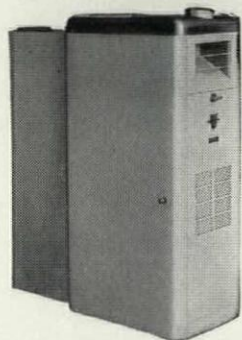
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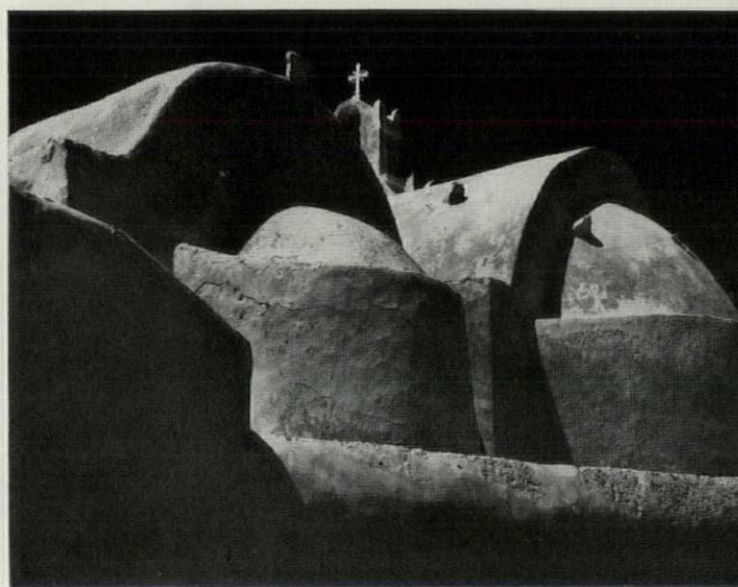
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1630 Oakland Ave.

Kansas City 3, Mo.

REPORT FROM GREECE

By G. E. Kidder Smith*



Whatever other merits forthcoming Greek building may have, it will probably never produce an architecture with the enormous ingenuousness and appeal displayed by the native work in the Greek islands. This vernacular building has a naivete and charm, a feeling for shapes and forms which is totally foreign to our overly sensitive and self-conscious civilization of today—in Greece or elsewhere. The little church at Thera, or Santorini (photos above and below), an island about half-way between Athens and Crete, has a brilliant (though perhaps subconscious) massing and awareness of line, light and shade. It is the perfect counterpoint to the highly intellectualized Parthenon. Its studied informality is, indeed, the very antithesis of the ancient Greek mathematical symmetry and geometry. Yet, in spite of glorying in the opposite of the elements which have produced "perfection," so to speak, it cannot be denied that this church has an esthetic appeal and architectural "rightness" whose impact it is impossible to refute. It

(Continued on page 54)

* The sixth and final installment in a series of architectural impressions of European and North African countries, this is a report from Architect-Author-Photographer G. E. Kidder Smith, who is visiting these countries (with the aid of a President's Fellowship from Brown University) to study and photograph their native and contemporary architecture.



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PLEXIGLAS

Sets A New High in Store Identification

Forty-five feet above the sidewalk, these PLEXIGLAS letters at Loblaws (Buffalo, N. Y.) Supermarket flash the high sign to customers blocks away. Even the 6-foot-square clock face is PLEXIGLAS, and the whole display is interior lighted at night—for long-distance, glare-free legibility.



PLEXIGLAS letters on top of this pylon are 45 feet above the sidewalk. They are 4' high with 4" returns and are lighted by 4 rows of rose pink cold cathode tubes, powered by 30 ma transformers. The double-faced clock is white translucent PLEXIGLAS lighted by a double set of cold cathode grids using 15 mm white tubing with 60 ma transformers. 42" interior-lighted white PLEXIGLAS letters are used on the marquee. Architect: Stanley Podd, Buffalo. Tower and letter contract: Eastern Signs, Inc., Buffalo. Letter Fabrication: Lee-Hy Plastics, Buffalo.

But radiance and readability aren't the only reasons for Loblaws use of PLEXIGLAS. Winters in Buffalo bring freezing gales and high winds from Lake Erie. It takes this *outdoor plastic*, PLEXIGLAS, to withstand severe weather and to keep its shape, sparkling color and brilliance year after year.

Also... because PLEXIGLAS weighs less than half as much as glass, large sections can be erected without difficulty. It's easily cleaned and shatter-resistant, and that means low-cost maintenance. And it's adaptable to all manner of indoor and outdoor merchandising needs—signs and displays, show cases, glazing, cabinets and partitions.

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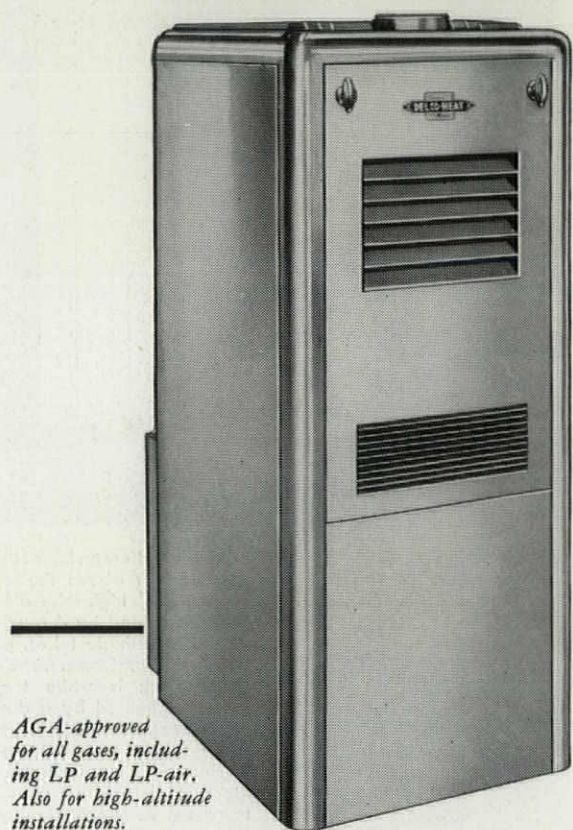
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						In- put	Out- put	In- put	Out- put	In- put	Out- put
GA 63	56	22	26	550	550	62.5	50	62.5	50	60	48
GA 90	56	22	26	650	800	90	72	90	72	90	72
GA 120	56	28½	26	660	1050	120	96	120	96	102	96
GA 150	56	35	26	620	1300	150	120	150	120	150	120
GA 210	56	48	26	600	1600	210	168	210	168	210	168

*Available with either 12 or 16 gauge heat exchanger.



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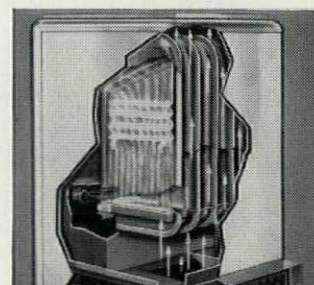
The new "GA" Series includes 5 AGA-approved, forced warm air models—in both 12 and 16 gauge steel. Capacities are 62,500, 90,000, 120,000, 150,000, and 210,000 Btu input . . . a range that makes them applicable for all sizes of homes.

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Ribbon-type twin burners are engineered specifically for Multi-Rad sections. Made of cast iron, with expertly designed stainless steel ribbons. Design assures more even flame, more complete combustion, positive ignition and quiet operation.



Exclusive Multi-Rad heat exchanger has continuous-welded construction. Each of the multiple sections completely encloses the flame from a separate burner head. This affords greater radiation area — extracts maximum heat from fuel.



EVEN THE



Floor

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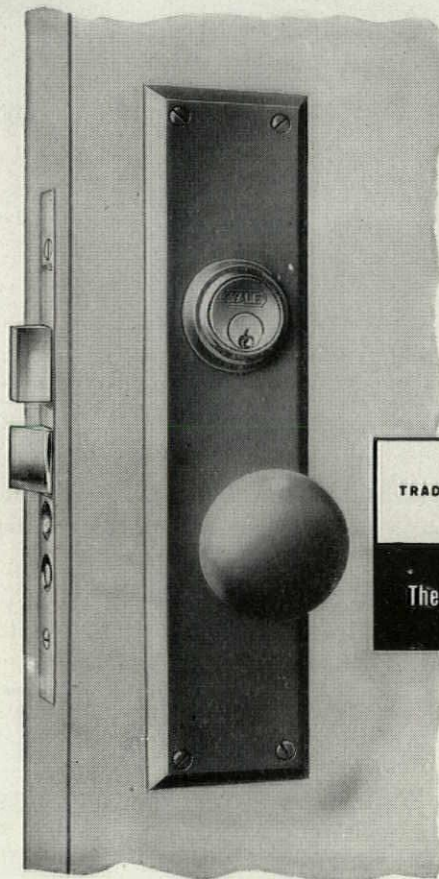
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YALE's Stonington design. Simple classic lines, rugged construction. Bronze front and bolts. Armored front conceals cylinder set screws. Lock has compensating hub to prevent binding. Both latchbolt and deadbolt can be locked.

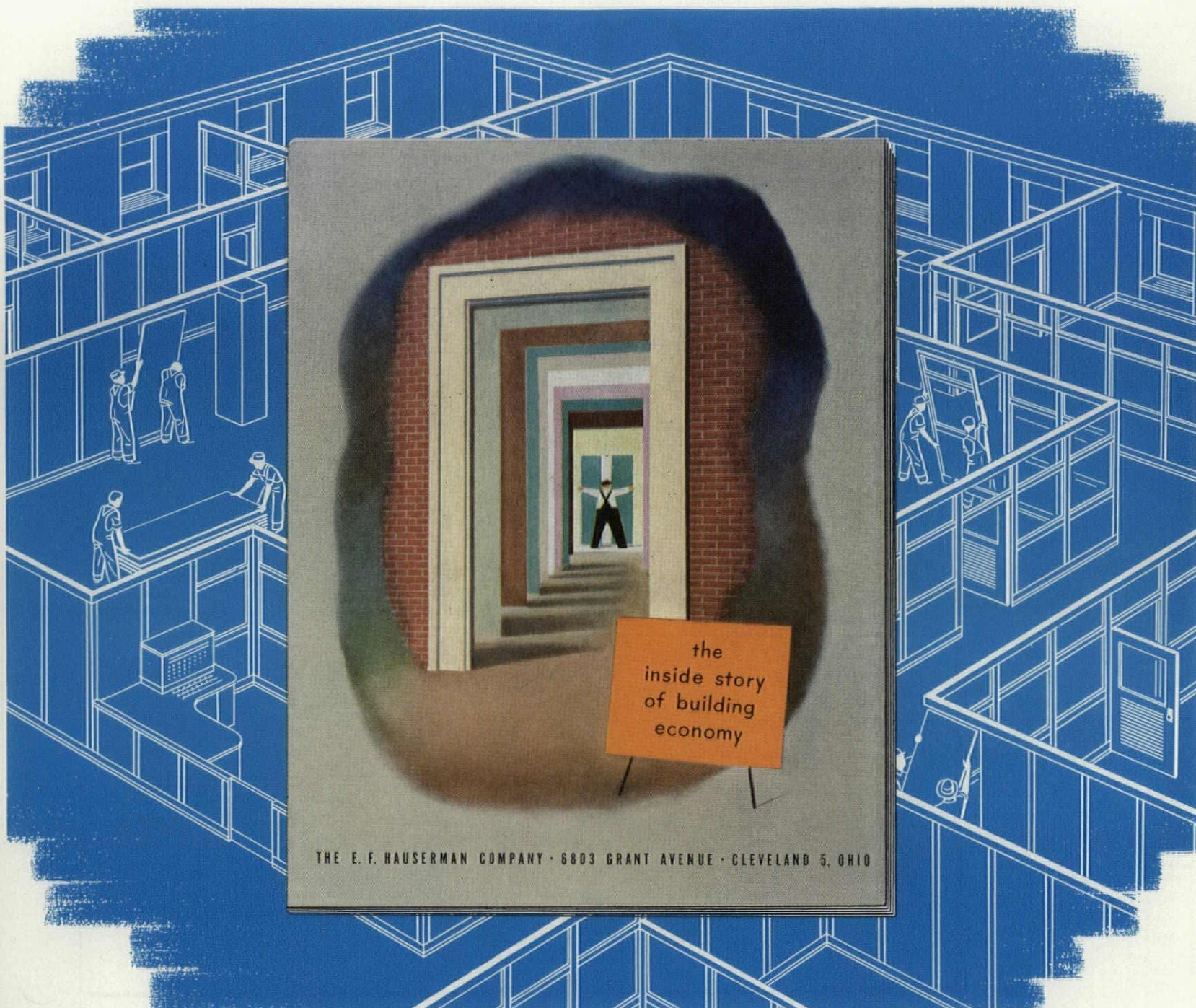
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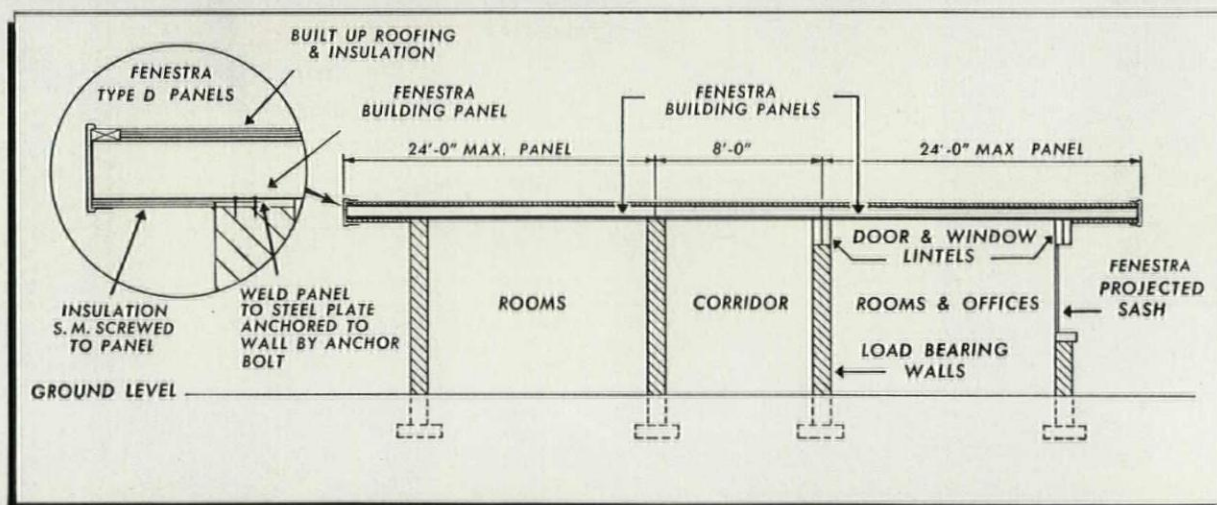
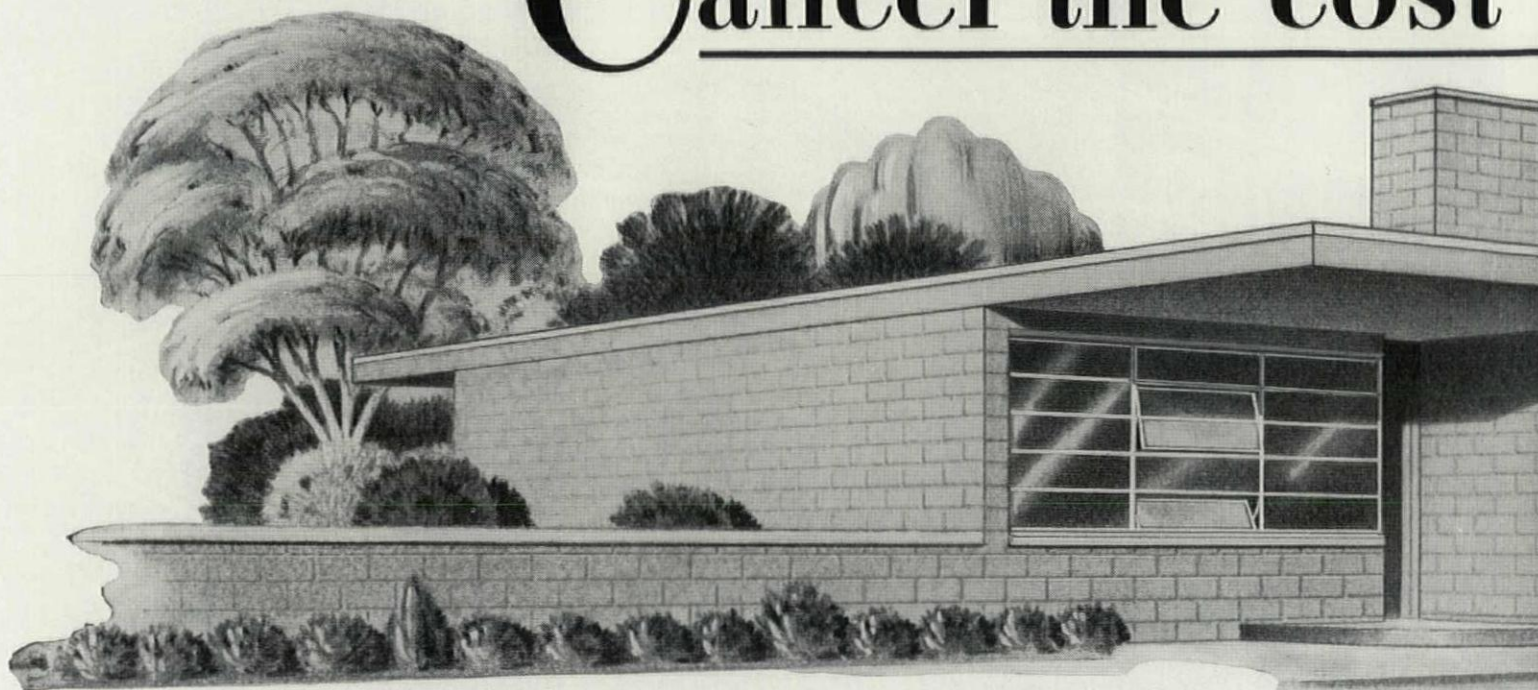
Title

Company

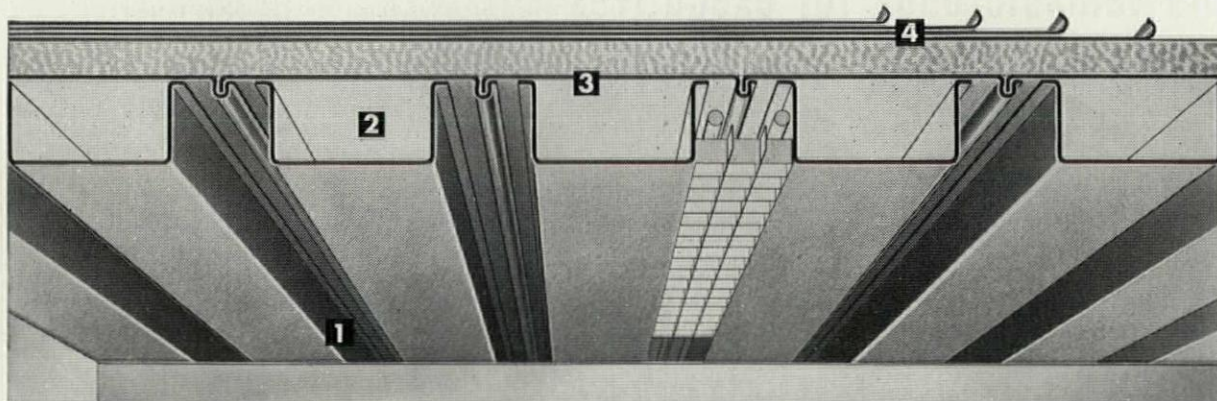
Street

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Cancel the cost



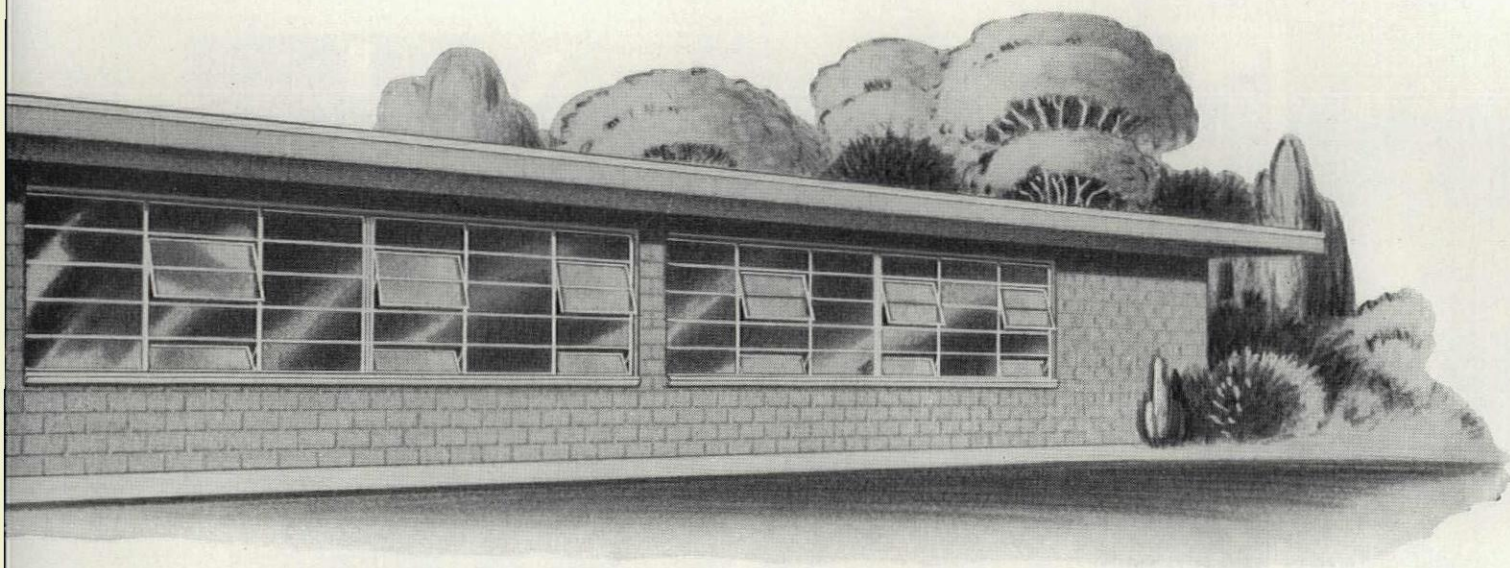
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Refrigerated by Frigidaire!



When the Berlo Vending Company of Philadelphia took over the concessions of Cleveland's Municipal Stadium last spring, they were faced with a crisis.

The old refrigeration equipment was obsolete—couldn't serve a stadium of people—and baseball season was almost at hand!

Plenty of the right equipment had to be installed—and fast! So Frigidaire was called in to solve the problem.

30 Frigidaire Beverage Coolers and 21 Compressors Installed

Soon, an army of workmen had made alterations and erected 21 sectional walk-in coolers. Then, in four days, the Gardella Brothers Refrigeration Company, Frigidaire dealer in Cleveland, installed compressors and coils for the walk-ins, put in 30 beverage coolers, and had the complete system in operation—in time for the season "opener"!

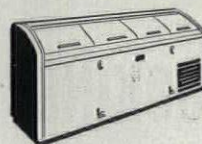
Since then, and throughout the baseball and football season, concession officials say they "always have ample supplies of cold drinks to fall back on in any emergency." Moreover, they point out that food preservation is more efficient, providing clean, healthful conditions as well as practical, economical operation.

Food and Drink Cooled for an Army of Fans

This was amply demonstrated when 79,000 roaring fans watched a double header between the Indians and Yankees one day last spring. These fans consumed 100,000 hot dogs, 19,000 ice cream bars, and 85,000 bottles of beverages—all refrigerated by this Frigidaire equipment.

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Over 400 Frigidaire Commercial refrigeration and air conditioning products—most complete line in the industry

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When you specify Corruform you get one standard product developed to meet your needs, uniform in quality, available anywhere without restriction on your choice of the major construction materials with which Corruform is used.

Patented Corruform is a 100,000 psi steel base for concrete in joist construction. Millions of square feet of Corruform testify to its service to architects and performance to contractors.



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REPORT FROM GREECE

might be said that within a relatively few miles of each other we have the supreme examples of the intellect vs. the emotion, the brain vs. the heart in architecture. All of which is another way of saying that there is no place like Greece!

* * *

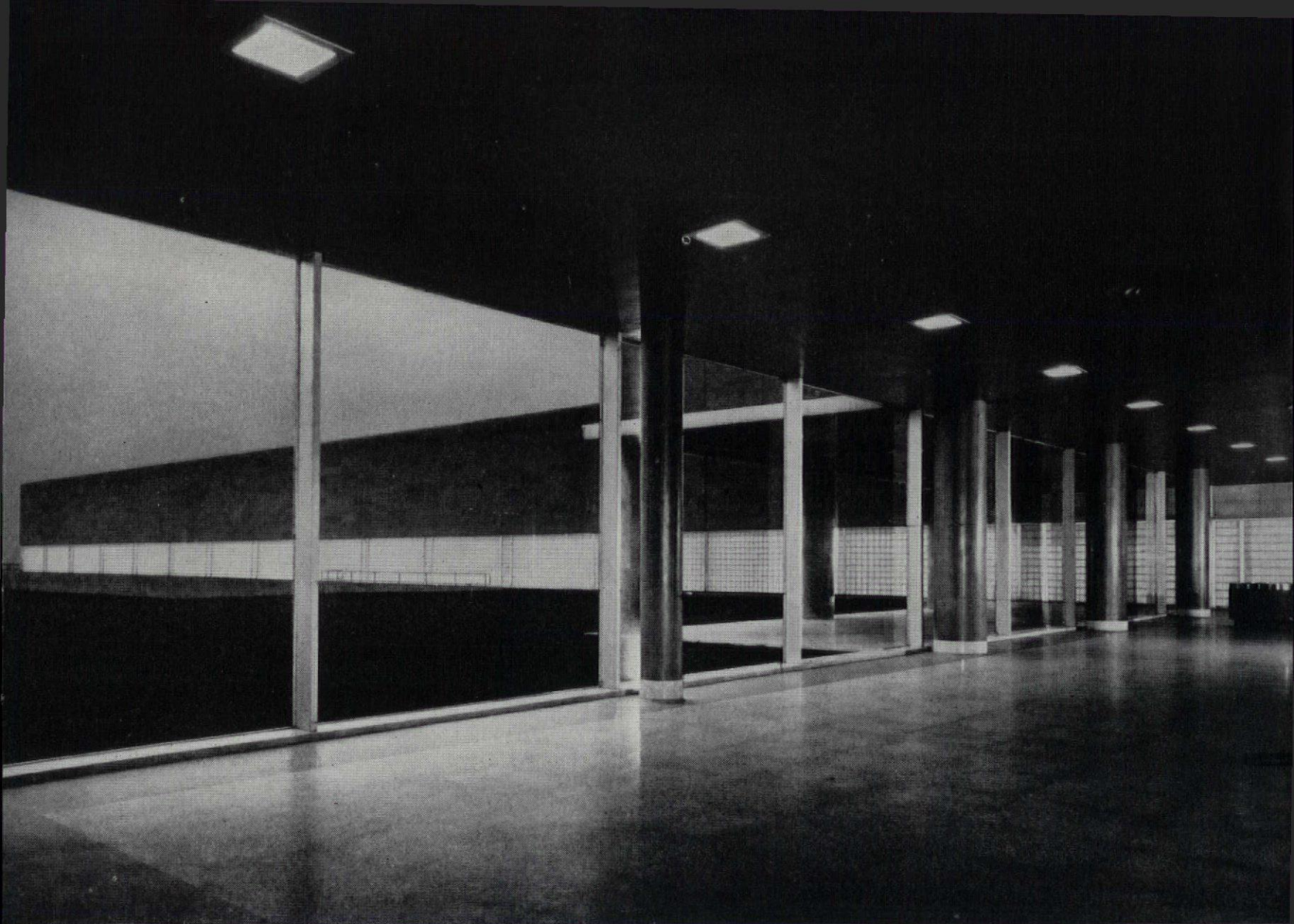
The current architectural situation would appall even the stoutest souls. And whereas it also appalls the heroic Greeks—like other dismaying odds they have encountered in the last 130 years—they are tackling reconstruction as they tackled liberation, invasion and civil war. In this, too, it seems that they will eventually win.

To begin with, half the bridges in a rough country where bridges are the life line of communication were destroyed by the Germans. And, as the chief American ECA engineer has said, the Germans are the most thorough bridge destroyers known to man. Then ports were leveled, canals blown up, power stations demolished, transmission lines cut, tunnels dynamited. All communications were in chaos. Thus when it came to repairing the thousands of wrecked homes, the hundreds of burnt-out schools and hospitals, the countless ruins of every description, Greece was prostrate. And as if this desolation were not enough, the communists seized upon this moment of paralysis to wage a nearly successful civil war, a war which penetrated the very squares of Athens itself. Most of Europe fought from late 1939 until 1945; Greece always desperately poor, fought until 1948. The result can be imagined. Architecture there—that is, architecture as most of the western world knows it—is impossible. Shelter of the most elementary character is the demand and such shelter is the only possible answer.

New buildings with space standards which would horrify the FHA and most of Europe are not only accepted, they are avidly grabbed up as soon as the workmen are out. Shortages of virtually every known material except stone, unbelievable inflation, political instability and postwar reactions are only some of the most desperate problems trying this tiny country (size of North Carolina). When you add to these no money, almost no exports nor bottoms to ship them in, you can grasp what a staggering problem the Greeks have and how completely essential continued American aid must be. Without the ECA and American Mission, Greece would collapse; with them she is beginning to stand on her own feet.

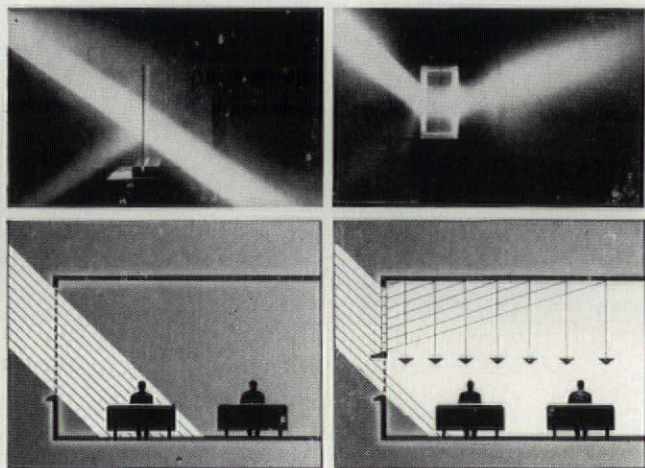
The first tangible aid from the U. S. was in the form of the American Mission Aid to Greece (part of the Truman Doctrine for aid

(Continued on page 60)



Chicago's gigantic South District Filtration plant gains light, cuts heating and maintenance costs with Insulux Glass Blocks that resist corrosion, condensation, need no painting, never rust or rot. Designed by Paul Gerhardt, Jr., constructed by S. N. Nielsen Co.

DESIGN FOR DAYLIGHT THROUGH Daylight Engineering



Direct sun causes uncomfortable brightness near windows, extreme contrast in other parts of room. Insulux Fenestration (glass block plus vision strip) directs and spreads daylight to ceiling, keeps brightness at comfortable levels, provides vision and ventilation.

Old style windows need shades, blinds or awnings, that shut out an average of 44% of the light, to reduce sunshine to tolerable levels. When pulled up and down these light-reducers make a crazy-quilt effect on the faces of beautiful buildings.

Now, with an Insulux Fenestration System you can direct daylight UP to ceilings, spread it evenly over large areas. Annoying contrasts are eliminated. Wall insulation increased. Fire hazards diminished.

An Insulux Fenestration System also picks up early morning and late afternoon light and refracts these low-angle light rays over the ceiling surface. The lighting effect is like having the building turn with the sun.

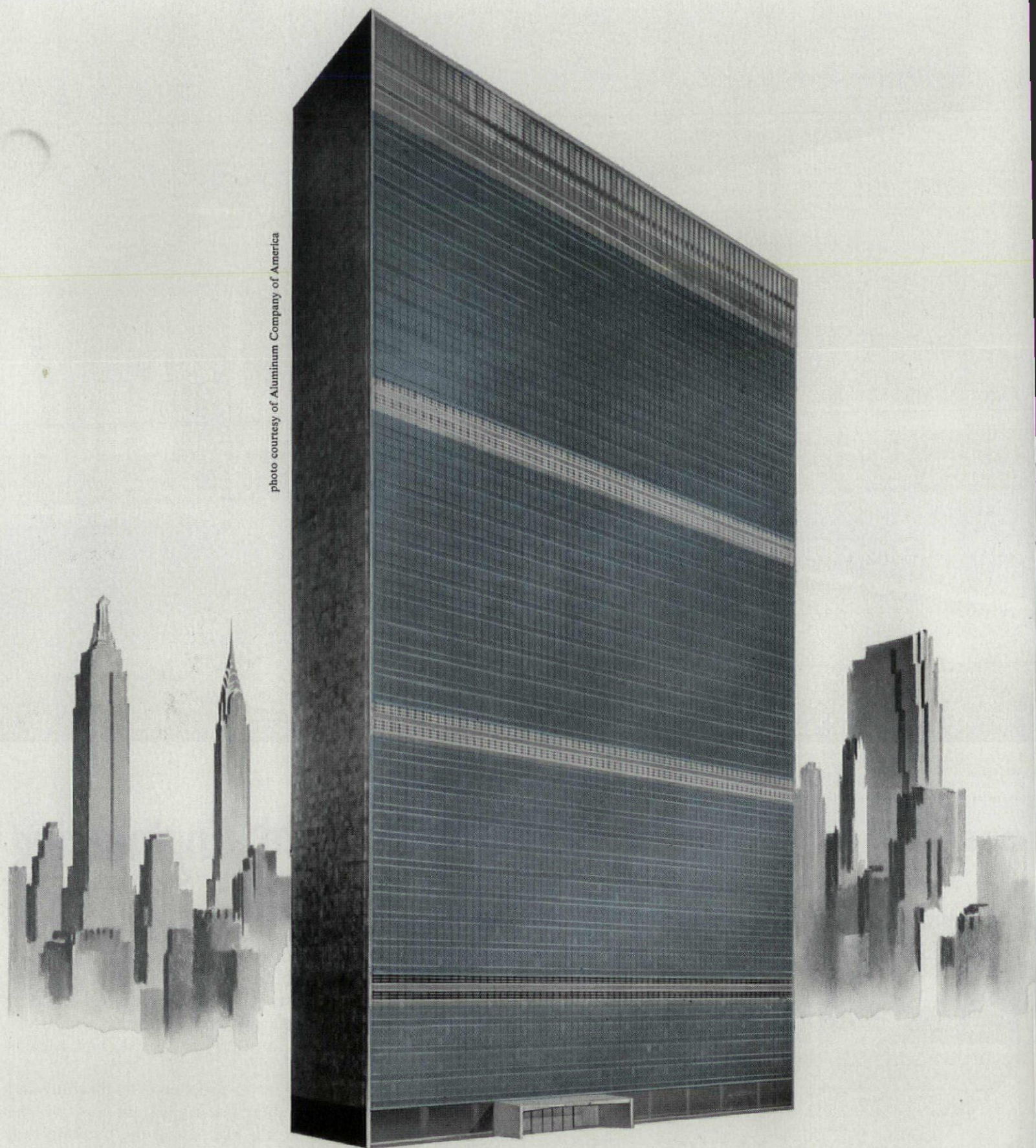
Our Daylight Engineering Staff is at your service. Call on it for information, specifications or help in applying the principles of Insulux Fenestration to your special needs. Write: Daylight Engineering Laboratory, Dept. AF11, Box 1035, Toledo 1, Ohio. *Insulux Division, American Structural Products Company, Subsidiary of Owens-Illinois Glass Company.*



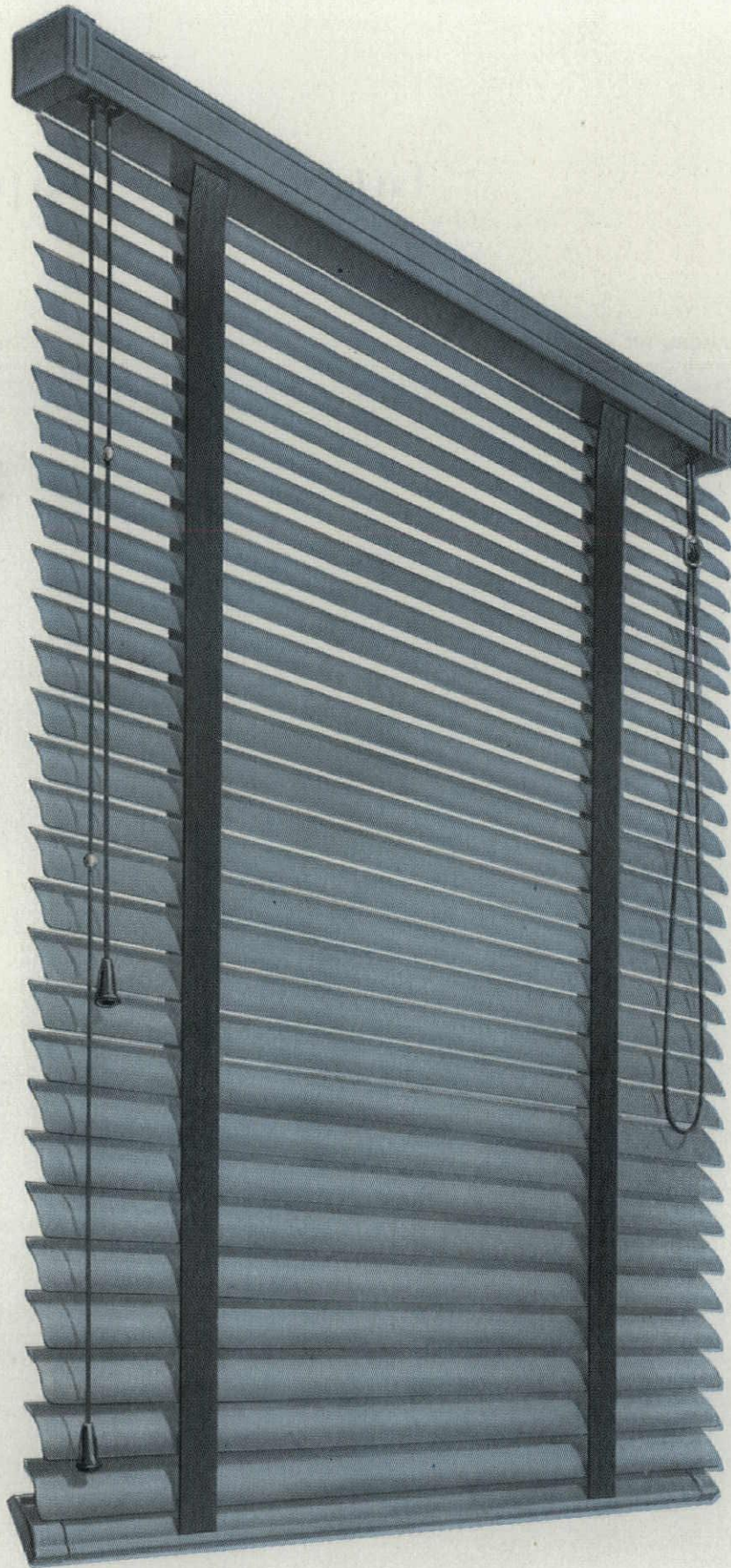
INSULUX FENESTRATION SYSTEMS

— by the pioneers of Daylight Engineering

photo courtesy of Aluminum Company of America



Looking east...looking west...windows of the United Nations Secretariat



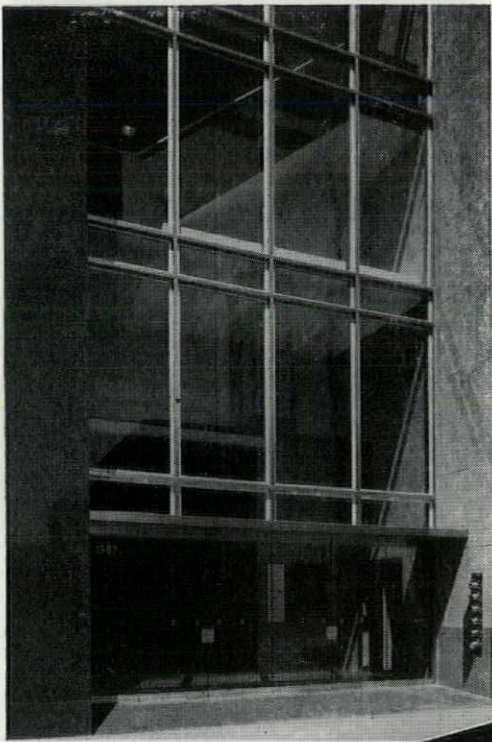
© 1950 LEVOLOR LORENTZEN, INC., NEW YORK

umbering 4739, are fitted with venetian blinds

... manufactured with **LEVOLOR** TRADEMARK enclosed metal heads and bottom bars

Interesting applications

AMONG THE ELEMENTS that help to make this building of the Pacific Telephone and Telegraph Company, Oakland, California, a landmark is the extensive use of Pittsburgh Glass. These products include Pittsburgh Polished Plate Glass, Herculite Doors and $\frac{1}{4}$ " Herculite Glass on the second floor stairwell. Architects: H. A. Thomsen—A. L. Wilson, San Francisco, California.

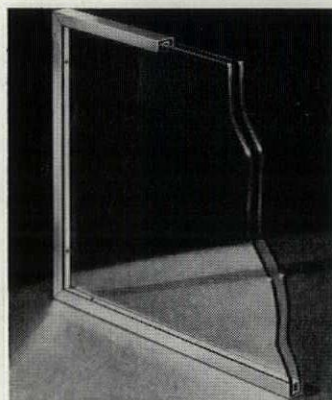


ARCHITECTS FIND Pittsburgh Products ideal for meeting the demands imposed by open-vision store fronts. These large expanses of transparent surfaces permit seeing the interior from the sidewalk, thus serving as a display and advertising medium. In this automobile showroom at Ardmore, Pennsylvania, Pittsburgh Products were utilized to help create a distinctive and appealing design. Among these materials are Pittsburgh Polished Plate Glass windows, Herculite Doors, and Pittco Premier Store Front Metal. Architect: J. Bedford Wooley, Philadelphia, Pa.

of GLASS in current construction



NO OTHER material can add so much beauty and utility to a bathroom as Carrara Glass. Architects agree on that. For Carrara lends itself to many interesting and pleasing treatments. It is available in ten colors, a wide range of thicknesses and numerous possible surface decorations. It lasts indefinitely, is easily kept clean.



ALL THE ADVANTAGES of Twindow—Pittsburgh's window with built-in insulation—plus a high degree of ventilation, are now available to your clients. That is because of the Vita Automatic Window—"the only picture window that opens electrically!"—offered by Vita Automatic Windows Inc., 101 Park Avenue, New York 17, N. Y.

This cut-away view shows the construction of a Twindow unit, using two panes of Pittsburgh Polished Plate Glass. The hermetically-sealed air space between the panes provides effective insulation which minimizes downdrafts, cuts heat losses through windows, reduces condensation. When three or more panes are used, insulation is even more efficient. Forty-seven standard Twindow sizes are available, adaptable either for wood or steel sash.

Design it better with
Pittsburgh Glass



Your Sweet's Catalog File contains a complete listing and descriptions of Pittsburgh Plate Glass Company products.

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY



IN UNITED NATIONS BUILDINGS—

WEISART

COMPARTMENTS

For the Secretariat building Weis furnished polished stainless steel doors with complete hardware for all toilet compartments. All other buildings of the United Nations group will be equipped with Weis-Art floor mounted toilet partitions similar to this installation in one of the nation's leading universities.



BEAUTY

Designed and built in harmony with the most modern trends, and suited for use with the latest building techniques, WeisArt compartments combine fine appearance with thorough-going quality of construction.

SANITATION

Doors, stiles and partitions are of flush steel construction with edges locked and sealed. Galvanized surface is smooth as furniture steel, and is Bonderized for additional corrosion resistance and positive adhesion of enamel to metal.

STAMINA

Baked synthetic primer and enamel, separately baked, combines a highly protective surface coating with lustrous beauty—in a wide range of colors.

Measured in terms of years of dependable and trouble-free service, WeisArt compartments are practical and economical—as well as highly suitable for the finest of modern structures. For detailed information, write

HENRY WEIS MFG. CO., INC.
1102 WEISWAY BUILDING, ELKHART, INDIANA

REPORT FROM GREECE

to both Greece and Turkey). This began to function actively in July, 1947. A year later, in July 1948, this was taken over by the greatly expanded concept of American assistance which developed into the ECA, or Marshall Plan. This brought hundreds more Americans to Greece, including highly skilled specialists, and many are still there advising and helping in all phases of recovery and reconstruction. In architecture, George A. Speer, the housing expert from Chicago, has been very active.

In the architectural and engineering fields, in which there had been nothing but destruction for ten years, the range of activity is now enormous. Restoration of communications by road, railroad, sea and air were priority items among the main projects financed with ECA dollars and ECA Drachma Counterpart Funds. Roads, tunnels, bridges, canals, port and harbor facilities and airports were first put into some sort of order so that reconstruction of the rest of the country would proceed with at least a degree of transportation efficiency. Housing, schools, hospitals and clinics and other essential shelter of course followed liberation from war and Communist devastation, but these works could not be properly attacked until the means of reaching them were established.

All these reconstruction problems were seriously complicated by the fact that 10 per cent of the entire Greek population were refugees from the Communist's war. (For comparison, imagine 15 million hungry Americans uprooted from home and farm.) When these refugees could return to their homes they found between 800 and 900 villages more than half destroyed, including 300,000 homes almost beyond repair.

It was therefore obvious that these exigencies called for housing standards which would be distressingly low by normal standards but which would spread money and materials as far as possible.

New minimum housing was thus limited to a room and a half or two rooms with an average cost of between \$600 and \$700 per unit. Both free-standing houses and multiple housing were planned as nucleus units able to be expanded. Individual houses, especially those in the more remote areas, were all of local stone with often only enough lumber for half a floor in the one main room.

So that the utmost advantage could be made of given resources and needs a set of master standards was drawn up. This eventually evolved into 14 basic house types, all very clearly and capably published. Thus, in the field, houses to fit specific personal require-

(Continued on page 68)

NOW — SELECTOMATIC PLUS

Synchro-Glide Landing

cuts elevator travel time 1½ seconds per stop

Only Synchro-Glide Landing, the new, Westinghouse-perfected automatic landing control, gives you all these remarkable features:

FASTER FLOOR-TO-FLOOR TIME—Synchro-Glide makes the car accelerate fast and evenly to the maximum possible speed . . . slow down quickly and smoothly. And—as the car is making its perfect-level landing, the doors are opening . . . ready for passengers to exit. The total result—floor-to-floor time reduced by 1½ seconds per stop!

SOFTER, SMOOTHER LANDINGS—The smooth, uniform gliding stops will astound you. Synchro-Glide's dynamic braking action lands a car so softly you scarcely feel the brake set.

ACCURATE FLOOR-LEVEL LANDINGS UNDER ALL CONDITIONS—With Synchro-Glide you are sure of floor-level landings of unmatched exactness regardless of load or temperature changes. Yet, the accuracy of these landings is protected while passengers are entering or leaving the car.

The secret of Synchro-Glide Landing is the teaming of experience-proven Inductors with Rototrol—the exclusive Westinghouse developments that force each car to follow a predetermined pattern.

* And—Synchro-Glide Landing is integrated with Selectomatic Supervision (the ingenious “electrical brain” that instantly and automatically matches calls to cars to floors.) This integration gives you the most perfect vertical transportation system you can buy . . . Selectomatic PLUS!

SEE IT TODAY—right in your own office! See and hear how Selectomatic PLUS Synchro-Glide Landing solves elevator problems. Write on your letterhead and we'll gladly arrange a showing of our new, sound motion picture “Synchro-Glide Landing for Elevators.” Elevator Division, Westinghouse Electric Corporation, Dept. F-1, Jersey City, N. J.

YOU CAN BE SURE...IF IT'S

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J-98588



22 YEARS AND MILLIONS OF WINDOWS LATER

Twenty-two years ago the aluminum window was an Alcoa experimental project. Today the first aluminum windows made are still in use, functioning perfectly. And millions more have proved their value in actual service.

Now, world renowned architects have specified aluminum framing for the great glass walls of the United Nations Secretariat. Like the first aluminum windows in America, these largest windows in the world are framed in Alcoa Aluminum.

Because of their proved economy and efficiency—because aluminum lasts—windows of

Alcoa Aluminum are being specified for more and more outstanding commercial, industrial, and residential projects.

Alcoa engineers have had a part in every pioneering use of aluminum in the building field, in the design of every major aluminum-clad building erected in America. Their services and experience are available to all architects and builders.

For information on any application of aluminum, call your nearby Alcoa Sales Office or write ALUMINUM COMPANY OF AMERICA, 1887L Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA

FIRST IN



ALUMINUM

United Nations Secretariat. All window framing of Alcoa Aluminum fabricated by General Bronze Corp. Architects: United Nations Board of Design, Wallace K. Harrison, Director of Planning, Max Abramovitz, Deputy Director of Planning. General Contractors: Fuller-Turner-Walsh-Slatery, Inc.

Here's how to start



This St. Louis sales riot is not an unusual event. Rather, it is the typical success pattern of builders all over the country. From Maryland, Colorado, New York and other sections come

similar enthusiastic reports of builders who install General Electric Kitchens. Why not let General Electric help sell *your* houses faster, too?

General Electric offers you all this :

- Tested merchandising programs that have helped so many other builders enjoy phenomenal sales results.
- The brand of electrical appliances that people prefer to all others.
- Assistance in designing and improving kitchen layouts for your houses.
- One source of supply for matched equipment . . . a full line of cabinets and appliances.
- And most important: G-E equipment is world-famous for its dependability! Remember, you can put your confidence in G-E!

a sales riot!

"Rather than spend money to sell our houses, we installed complete General Electric Kitchens so that people would buy. Result: We sold 109 houses the very first day!"

Mr. N. R. SCHUERMANN of Schuermann Building & Realty Co., St. Louis, Missouri

Today, more than ever, people want houses that include all-electric living.

They want *low-priced* homes that have kitchens in which dishes are washed and double-rinsed automatically—where there's a Disposall® for food waste.

They want plenty of hot water at all times . . . and they want an electric range that takes the trouble and guesswork out of cooking, and a family-size refrigerator.

What Schuermann did

The Schuermann Building and Realty Company offered the people of St. Louis, Mo., that kind of a house for the full price of \$8995 . . . with less than \$1000 down!

You can see from the photograph at the left what happened. Hundreds of people were waiting to enter the General Electric equipped house at 10:00 a.m. More than 7000 people came out

to see the Schuermann home on opening day. 109 people bought houses the very first day!

A suggestion for you

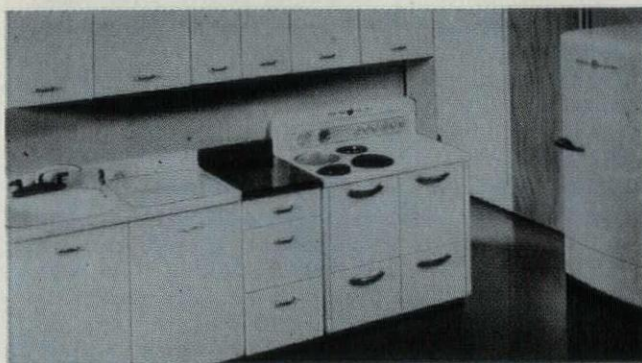
We would like to work hand-in-hand with you to achieve similar results for *you* in your area. We can help you *pre-sell* your houses just as we have for so many other builders throughout the United States.

Get complete facts about the G-E "Kitchen Package" through your local General Electric distributor, or write to the Home Bureau, General Electric Company, Bridgeport 2, Connecticut.

As little as \$4.80 more a month!

You can include General Electric Kitchens in your houses for as little as \$4.80 a month extra when the G-E "Kitchen Package" is included in the long-term realty mortgage.

Furthermore, the slight increase in monthly payments may be offset by the economical operation, low maintenance and long life of General Electric appliances!



The new Schuermann home and its General Electric Kitchen made a deep impression on future home buyers of St. Louis. It includes: Dishwasher, Disposall®, Refrigerator, Electric Range, and Steel Cabinets. Think how this type of worksaving electric kitchen would stimulate sales of *your* houses!

You can put your confidence in—

GENERAL  **ELECTRIC**

"Look — no radiators !"



Steel pipe is first choice for home radiant heat

Imagine the surprise of the "girls" from the bridge club when they walked into their new member's living room. Out of the blustery cold, into the glowing warmth of a beautiful room which, as far as the eye could detect, seemed to have no heating system at all!

Yes, that's the effect radiant heating *has* on folks who have never experienced it before . . . as though the warmth of summer sunshine had been stored up in some magic way and gently released indoors when winter comes.

To bring these pleasant advantages of radiant heating to the home, architects, engineers and heating contractors are utilizing the favorable, inherent characteristics of steel pipe to provide outstandingly successful systems. For they know that steel pipe has not only been *proved* by more than 60 years of comparable service, but, for this new application, includes all the desired qualities of formability, weldability, durability and suitability . . . plus maximum economy!

Yes, for radiant heating there's no question . . . steel pipe is first choice!

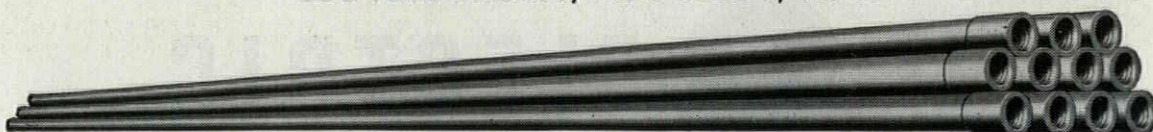


SNOW MELTING, TOO

Sidewalks and driveways can be kept free of snow with modern steel pipe snow melting systems!

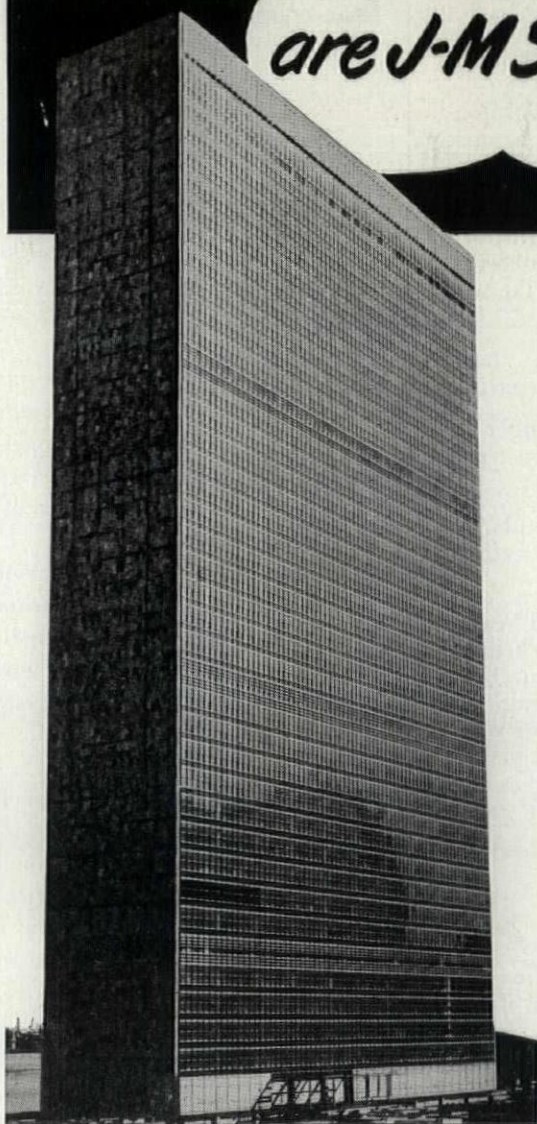
COMMITTEE ON STEEL PIPE RESEARCH

AMERICAN IRON AND STEEL INSTITUTE
350 Fifth Avenue, New York 1, N. Y.



*Qu'il fait silencieux
au Secrétariat des U.N.!*

*Yes, it's so quiet
because the ceilings
are J-M SANACOUSTIC**



The United Nations' choice of Sanacoustic noise-quieting ceilings for use throughout the new Secretariat is a tribute earned by Johns-Manville's 40 years of acoustical treatments in all types of institutional and commercial buildings

Architects like the combination of advantages provided by the all-metal-and-mineral construction of J-M Sanacoustic Ceiling Panels: fire-safety . . . good appearance . . . removability . . . high light-reflection . . . ease of maintenance . . . extremely high sound-absorption qualities.

Because so many desirable features are combined in this one acoustical product, *millions* of square feet of Sanacoustic have been installed in institutions, offices, hospitals, schools, and places of public assembly.

Consisting of *perforated metal panels* backed up with a fireproof sound-absorbing element, Sanacoustic Ceilings will not burn, rot, or disintegrate. They're ideal for suspended ceiling construction, equally adaptable for new work or remodeling. The method of installation assures perfect alignment of units, allows easy access to services. Write for "Sound Control" brochure. Johns-Manville, Box 290, New York 16, New York.

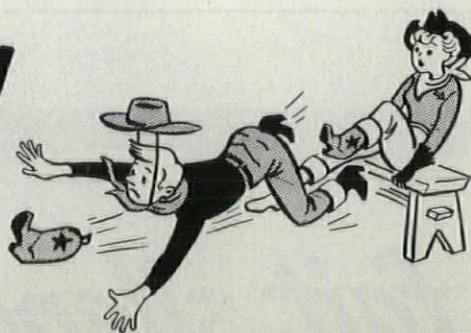


*Reg. U. S. Pat. Off.

Johns-Manville

J-M Acoustical Materials include Sanacoustic Units, Transite* Acoustical Panels, and drilled Fibretone*

a Force Fit
is a Good Fit!



All

Sealuxe Browne

"Folding-Flue" Windows

have a **FORCE-FIT** closure

BY LABORATORY TEST... Air infiltration less than $\frac{1}{2}$ cu. ft./min./ft. of sash perimeter under static air pressure of 25 mph wind. (Test window 4 ft. x 6 ft.)

DIRT PROOF!
DUST PROOF!
NOISE PROOF!
DRAFT PROOF!

...because SEALUXE-BROWNE "Folding-Flue" Windows close to a force fit against resilient, pure wool felt weather cushions that last the life of the window.

100% controllable, draft-free ventilation ... when opened slightly, fresh air comes in at the bottom and foul air goes out at the top. No drafts. No wind-blown rain.

eliminate "Flying" window washer ... both sides can be safely cleaned from the inside.

long, trouble-free life ... fold at finger-tip pressure yet stay put. Resist tarnish, rust and corrosion.

more light—greater beauty ... streamlined to admit more light; set off any architectural treatment.

design freedom ... choice of standard or custom in aluminum, stainless steel or bronze. With or without muntins; reversible mullions for any width partition; inside screens; mechanical or manually operated; with or without stool, sills. Models include: Monumental, Residential, Underwriter-labeled and escape-proof Psychiatric "windows without bars."



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DISTRICT SALES OFFICES, AGENTS AND DISTRIBUTORS IN ALL ARCHITECTURAL CENTERS ...

SEALUXE-Engineered Products are

Miracles in Metals!

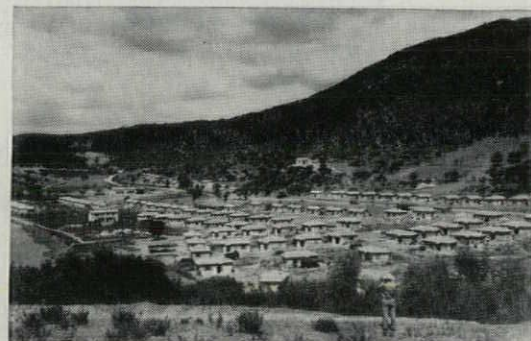
MEMBER



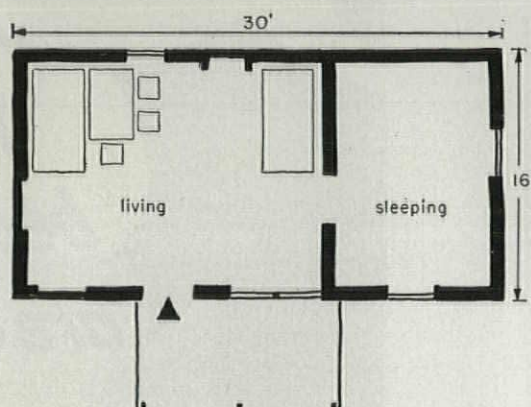
Please send me more information
about SEALUXE—Engineered Products.

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ADDRESS
FIRM

REPORT FROM GREECE



Expandable basic house



ments (farming, nonfarming, etc.) can be selected by the local labor to fit various site conditions and orientations. One of these standard plans is shown above together with a photograph of a small village made up of several units.

However, it is not in free-standing houses that the greatest architectural interest lies, but in the two- and sometimes three-story multiple housing. Here some very ingenious designing has been done—with an ingenuity sparked by the sheerest necessity.

The three-story walkup, shown on page 76, is virtually unique in that it provides a private entry and lawn or roof space for each occupant on each floor. A private garden for vegetables, flowers, clothes drying and baby airing is considered quite necessary in Greece, and to achieve it in multiple housing is no mean feat, even though it does involve much vertical circulation. It is accomplished in this building by having the entries to the ground floor apartments on one side and the entries to the second floor on the opposite side. Thus the occupants of these two lower floors can walk right out onto their own plots of land which no one else crosses or enters upon. This much is relatively easy, but then to provide a privately reached outdoor drying area and sitting "room" for the third floor, much more head scratching was involved.

The solution arrived at is wasteful in its excess of vertical circulation, but it does resolve a difficult problem. It is solved by hav-

(Continued on page 76)

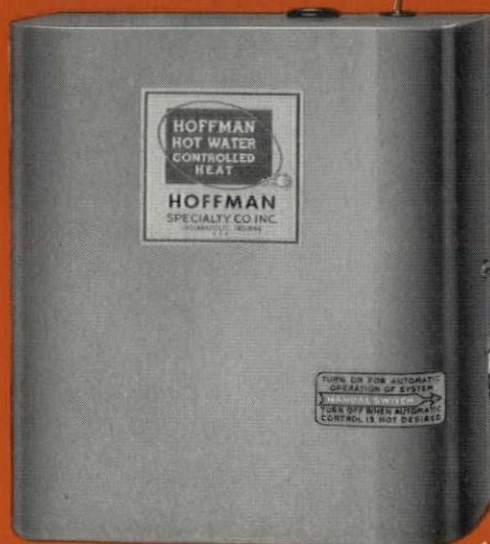
C-141 HOT WATER SYSTEM

Automatic CONTROLS

A Packaged Job for the system with mains not exceeding 1½".

Particularly suited for:

1. Modernizing existing systems.
2. Changing Gravity Systems to forced continuous flow systems.
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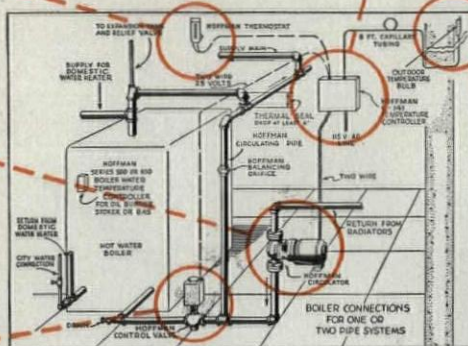
A POPULAR PRICED CONTINUOUS CIRCULATION SYSTEM

THERMOSTATICALLY CONTROLLED

The Hoffman C-141 Comfort Package offers *precisely controlled heating*—yet the cost is within the budget of even modest homes.

The uniformity of a *continuously circulated* forced hot water heating system can now be obtained with simplified and inexpensive equipment. The Hoffman C-141 Comfort Package combines a Circulating Pump, Temperature Controller, Control Valve and Room Thermostat.

In operation, the C-141 Comfort Package effects a constant balance between heat loss and heat supply, so that the home temperature is held uniform, regardless of weather variations. Note in the diagram that the boiler is by-passed from the rest of the circulating system. Hot water from the boiler is admitted *only* when the room thermostat requires additional heat. Hence the system keeps pace with the actual need for heat and never delivers a fuel-wasting excess. Send for Bulletin No. AF-11.



HOFFMAN C-141 CONTROLLER: Automatically maintains indoor comfort and temperature by combining Room Thermostat control with continuous circulation of the heating medium.

HOFFMAN CIRCULATOR: Continuously circulates the heating medium throughout the heating season. Automatically stops when outdoor temperature goes above 65° and starts again in the fall when heat is required.

HOFFMAN CONTROL VALVE: An especially designed valve to keep the hot water in the heating system at the desired temperature to maintain heating comfort.

HOFFMAN BALANCING ORIFICE: Engineered to maintain proper balance between the circulating pipe and boiler circuit.

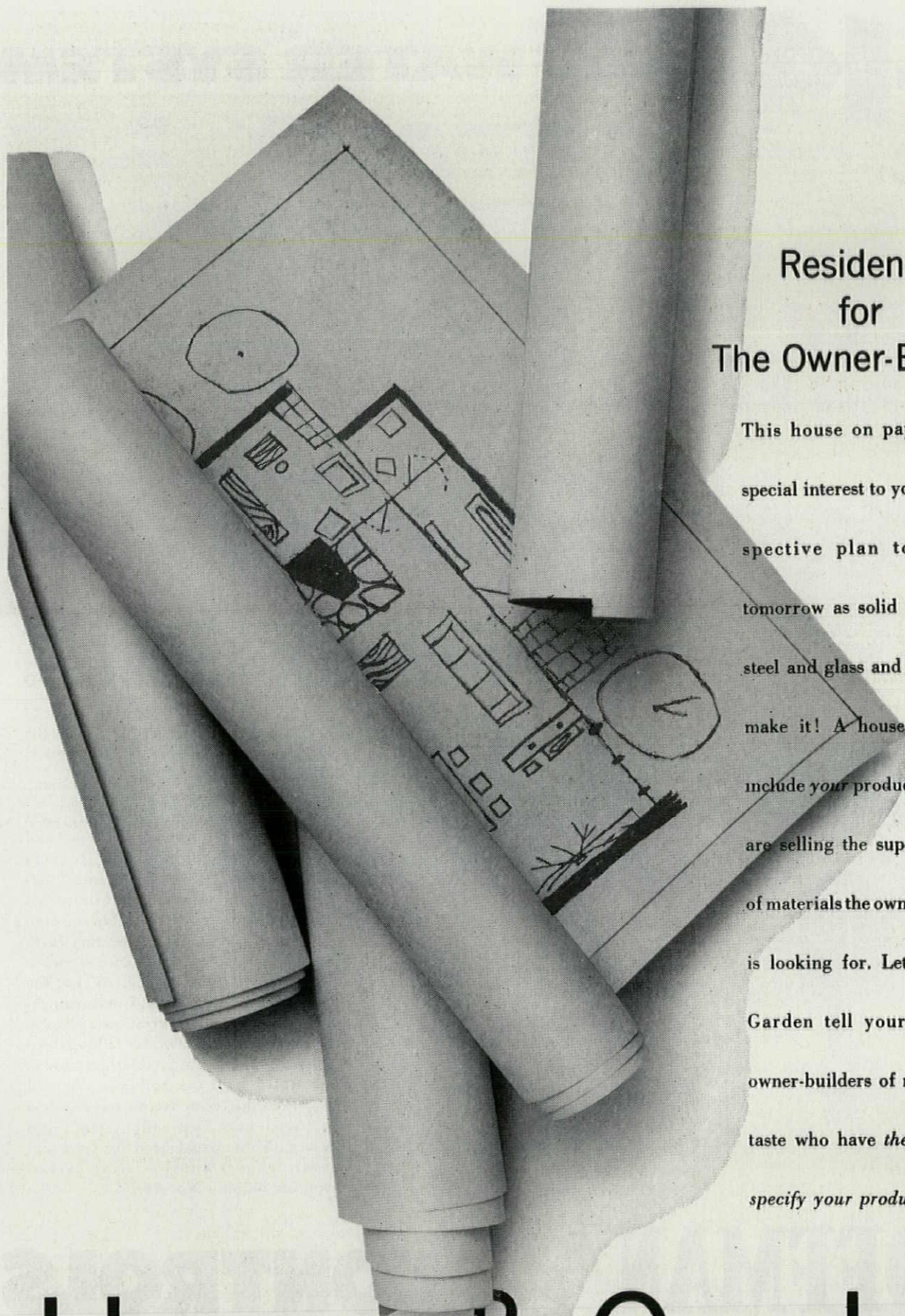
HOFFMAN ROOM THERMOSTAT: Heat anticipating thermostat adjustable to slow, medium and fast cycles.

HOFFMAN *Hot Water* CONTROLS

Famous for HOFFMAN VALVES, TRAPS, VACUUM AND CONDENSATION PUMPS, FORCED HOT WATER HEATING SYSTEMS—Sold by Leading Wholesalers of Heating and Plumbing Equipment.



HOFFMAN SPECIALTY COMPANY, Dept. AF11, 1001 York St., Indianapolis 7, Ind.



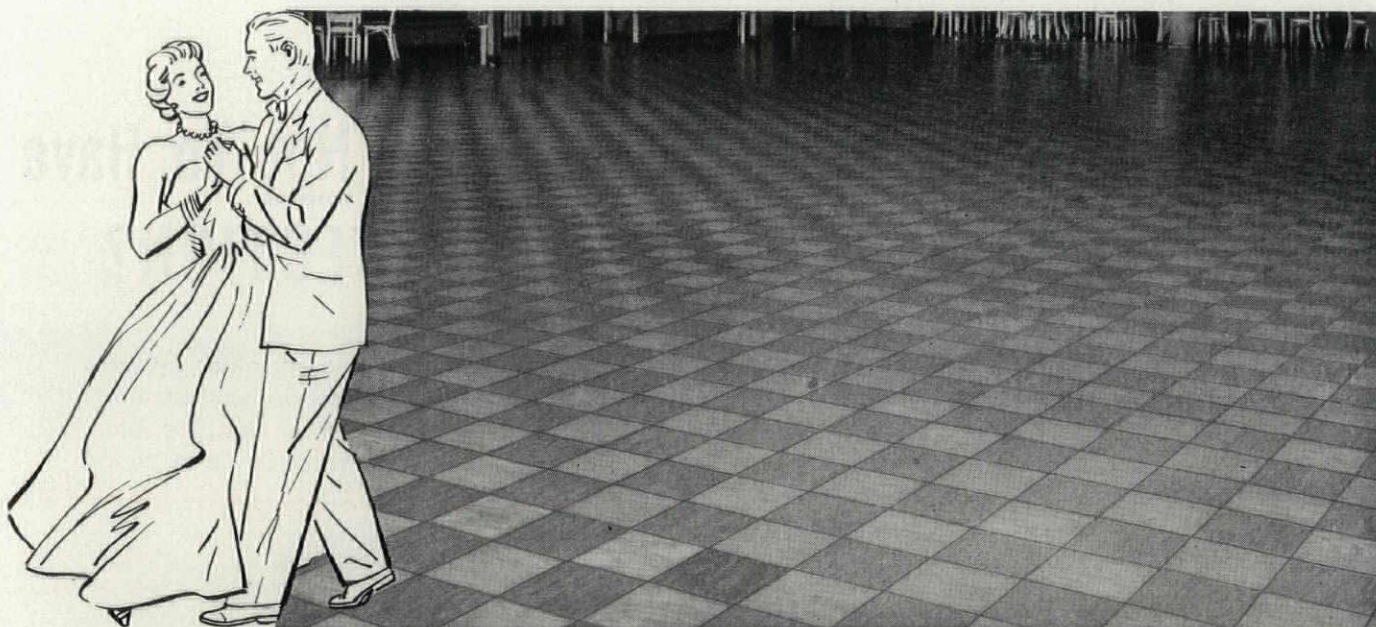
Residence for The Owner-Builder.

This house on paper is of special interest to you. A prospective plan today... tomorrow as solid in fact as steel and glass and brick can make it! A house that can include *your* product...if you are selling the superior type of materials the owner-builder is looking for. Let House & Garden tell your story to owner-builders of means and taste who have *the power to specify your product.*

House & Garden

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26,000 Dancing Feet—not a mar!

HARDWOOD FLOORING

by *Higgins* WORLD-FAMOUS
BOAT BUILDERS

Widely Used in Homes for Beauty and Economy

Because it keeps luxurious beauty for life, with minimum housekeeping attention, Higgins Flooring is being specified for individual homes (in *all* price brackets). For housing developments and apartments, Higgins Flooring combines distinctive appearance with low maintenance cost.

Higgins Flooring is ideal over radiant heating. Grooves on back of blocks act as heat conductors, assuring uniform heat with practically no increase in water temperature. Higgins Flooring can be installed over any type of slab—will even breach slightly uneven slabs. Being simple to install, Higgins Flooring costs less, laid down, than any comparable hardwood flooring.

Even under severe conditions, you can specify Higgins Flooring with perfect assurance of low-cost, lifetime satisfaction.

**10,000 Sq. Ft. Higgins-Floored Ballroom
King Phillip Co., Wrentham, Mass.**

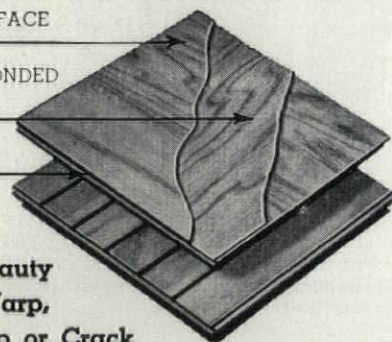
GENERAL CONTR. } APPALACHIAN FLOORING CO.
FLOORING CONTR. }

Said E. R. Enegren, Jr., general manager, King Philip Co.—“The flooring is most beautiful. After thirteen thousand people had danced on it, we inspected it carefully and could not find a single imperfection. And it was laid in record time of six days—including removal of old maple flooring.”

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MULTIPLE-PLY BONDED
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Buckle, Cup or Crack
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Write for
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Higgins
INCORPORATED NEW ORLEANS
**BONDED HARDWOOD
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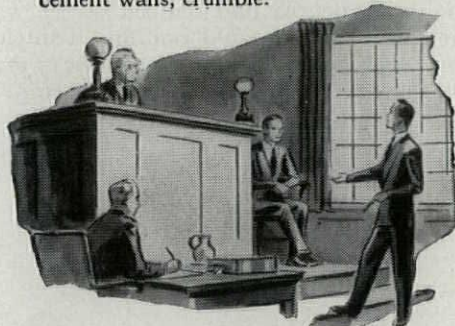


How Can You Afford Not To Have GRINNELL PROTECTION?

PERHAPS YOU KNOW that automatic sprinkler systems justify themselves as the best protection against hotel fires and loss of life. But do you also know that, for many other reasons, Grinnell Sprinkler Protection is a sound business investment? For instance . . .



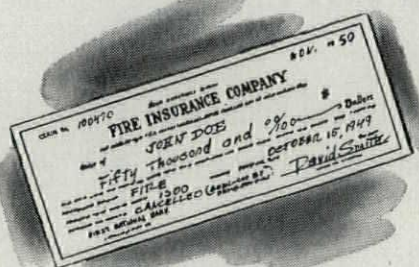
"FIREPROOF" HOTEL CONSTRUCTION is not enough. Like a furnace, the walls will not burn but the contents will. The interior can become a blazing inferno. Steel beams, weakened by the intense heat, can buckle . . . cement walls, crumble.



COSTLY DAMAGE SUITS are out. For over seventy years practically 100% of fires starting in Grinnell protected buildings have been extinguished without material damage.



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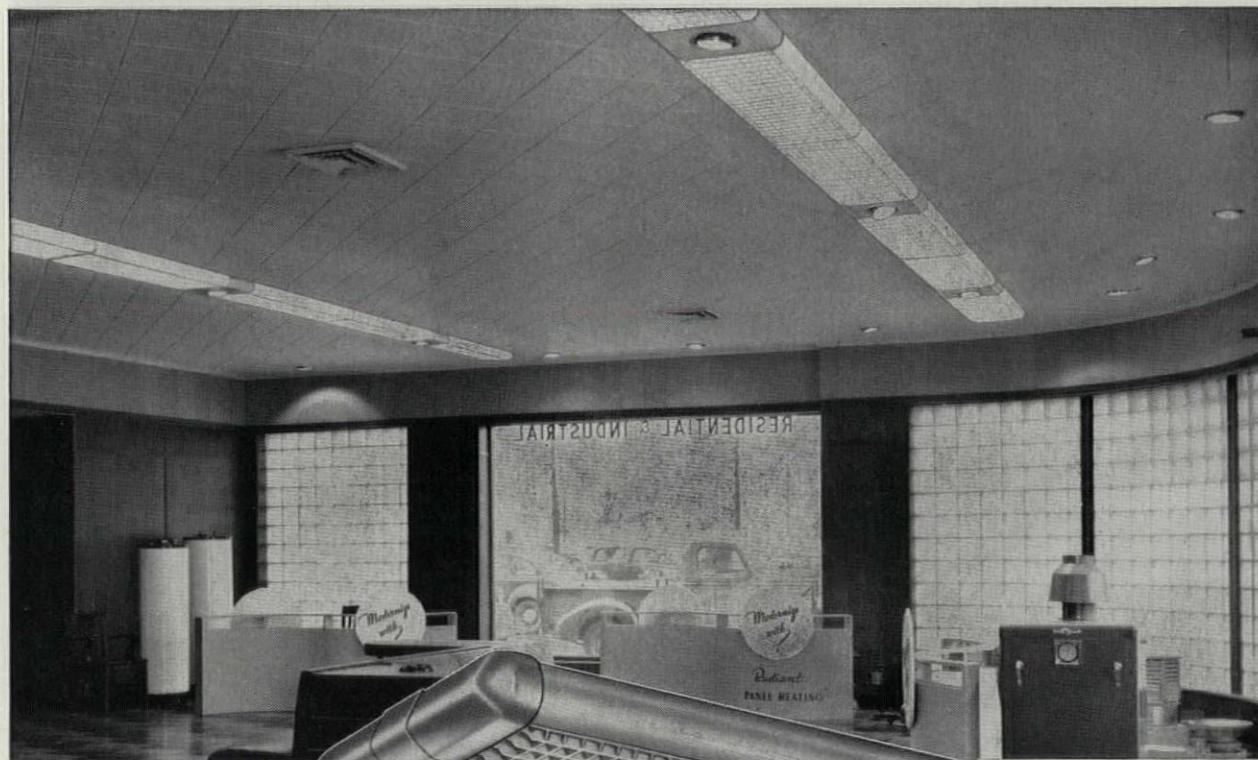
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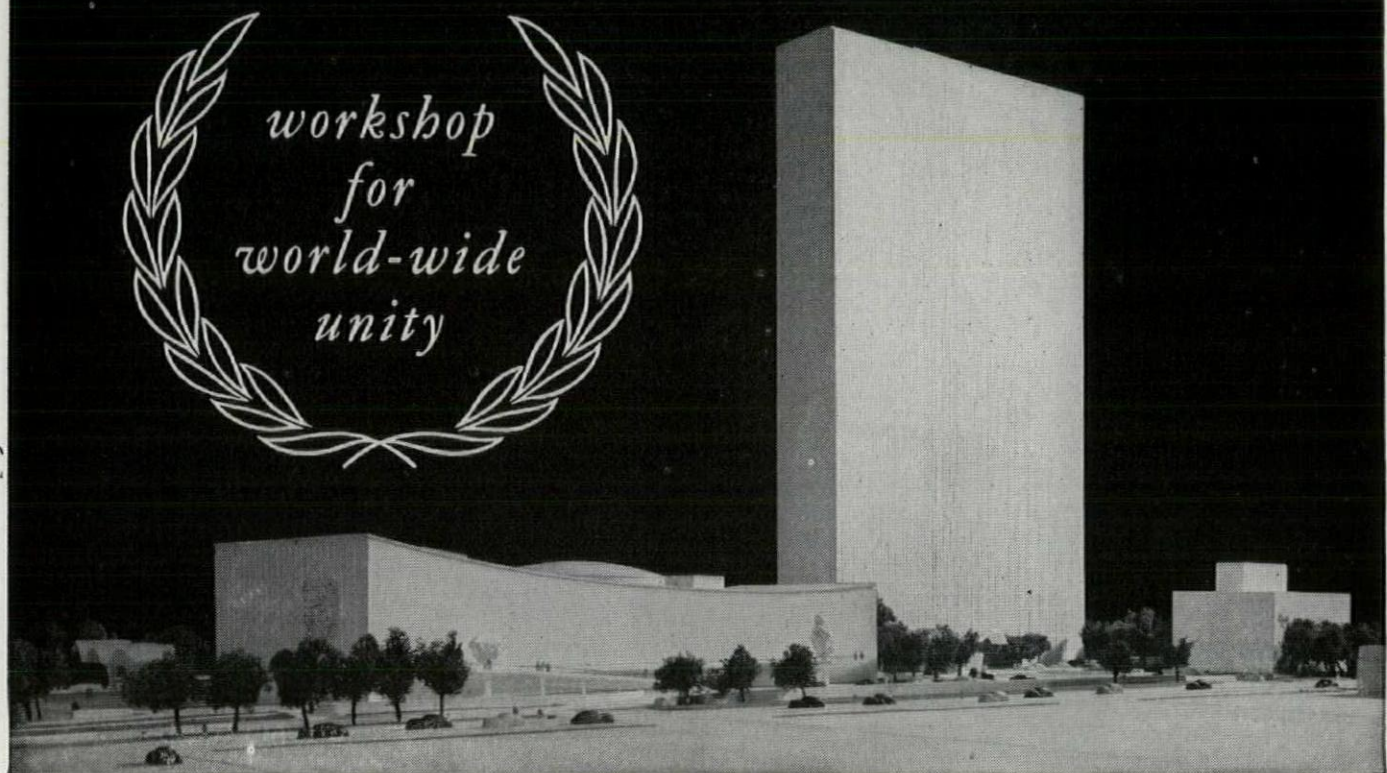
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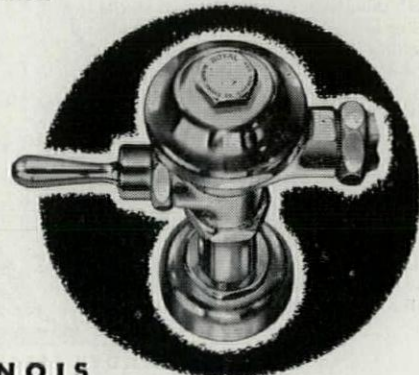


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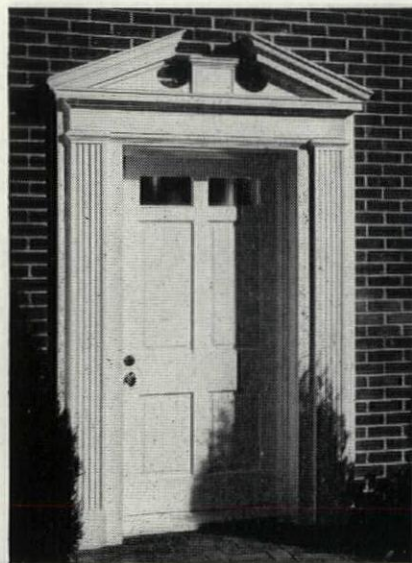
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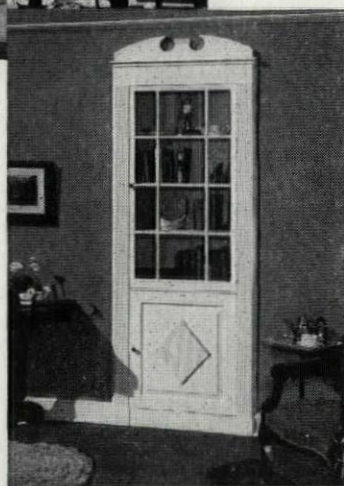
first impressions

are mighty important in creating owner satisfaction. A Curtis entrance like this—design C-1733—adds that extra touch of quality because it is correctly styled—beautiful in its simple lines. Yet Curtis entrances—and there are many for your choice—are priced for even the most modest homes.



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Nothing like a Curtis mantel to give a living room grace and appeal. This Curtis mantel, for example—design C-6059—is suitable for several styles of architecture, yet it does not sacrifice beauty and good detail. Many other Curtis mantel designs are available for your choice.

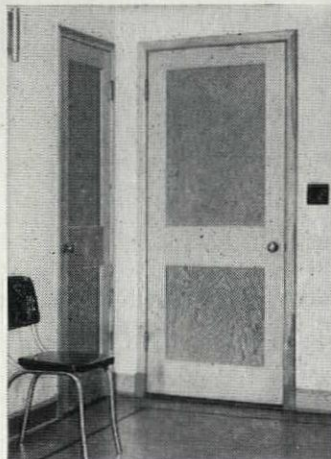


especially women

respond to the charm and convenience of a well-placed Curtis china case. This one—design C-6558—is made either for flat wall or corner installation. Curtis cases, available in many designs, are quickly and easily installed in any room.

men too

appreciate the additional value of Curtis Prespine doors. Curtis Prespine—the new Curtis wood product—won't warp, shrink or mar. Its surface duplicates the natural grain of ponderosa pine—takes natural finishes beautifully. Curtis doors with Prespine panels are available in several styles for any desired finish.



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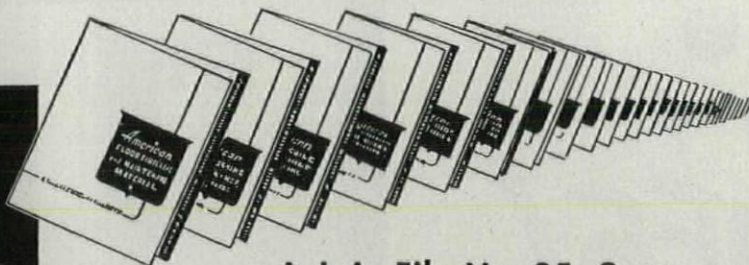


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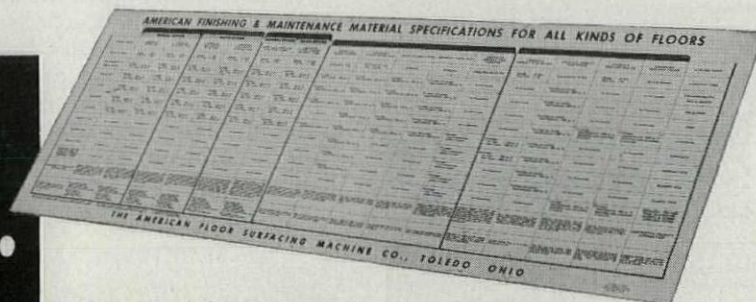
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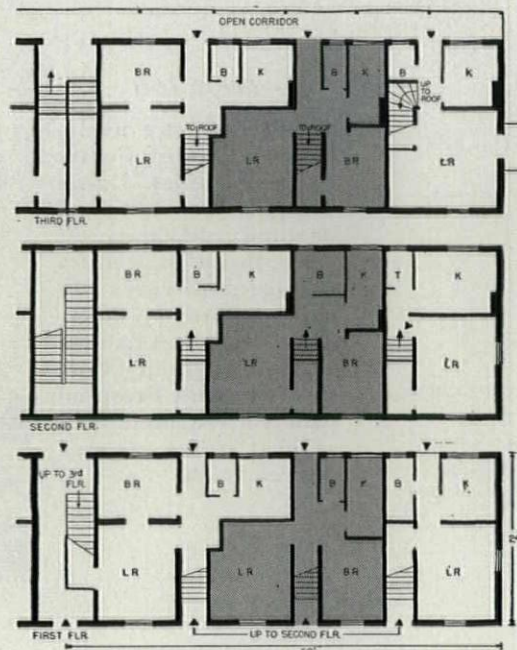
REPORT FROM GREECE

ing the top six apartments served by a lateral balcony (as is often done elsewhere), and this balcony is reached by one central stairwell which serves *only* the third floor. Each individual apartment on this floor has, in addition, its own private flight of stairs to its own private area of roof. These stairs are located over the stairs which serve the units below, but do not communicate with the lower floor. Thus the scheme requires seven stairwells to serve 12 families on the two top floors.

Even more unusual than this multi-stairwell plan—and one more justifiably realistic—is the *expandable row house*. This expansion is (Continued on page 82)



Three-story walk-up

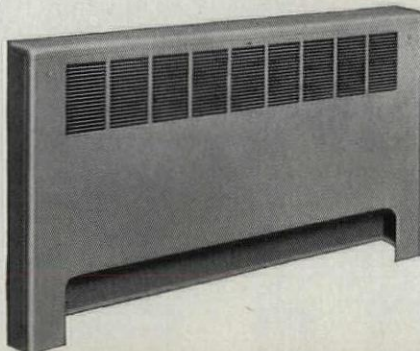


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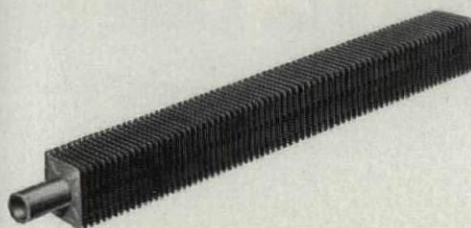
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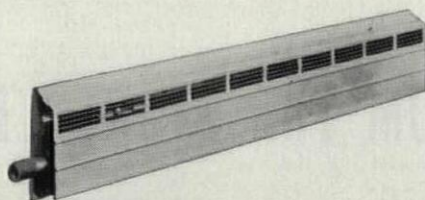
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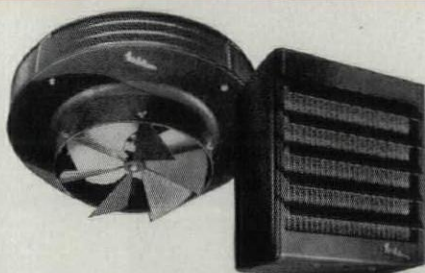
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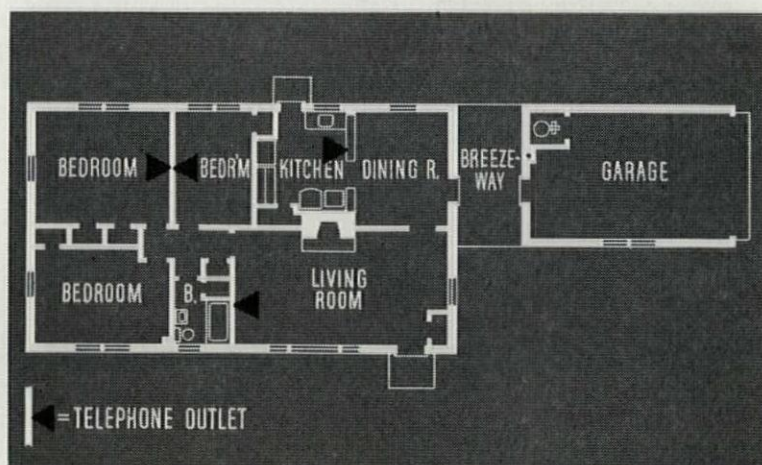
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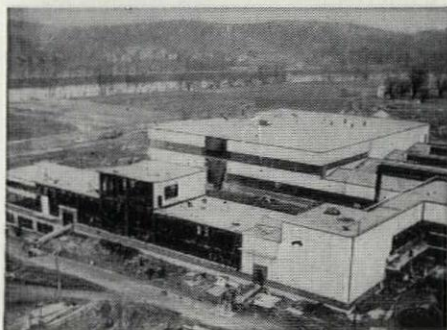
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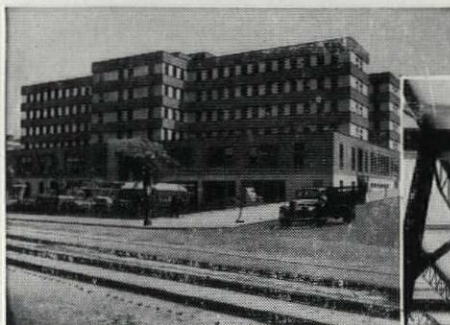
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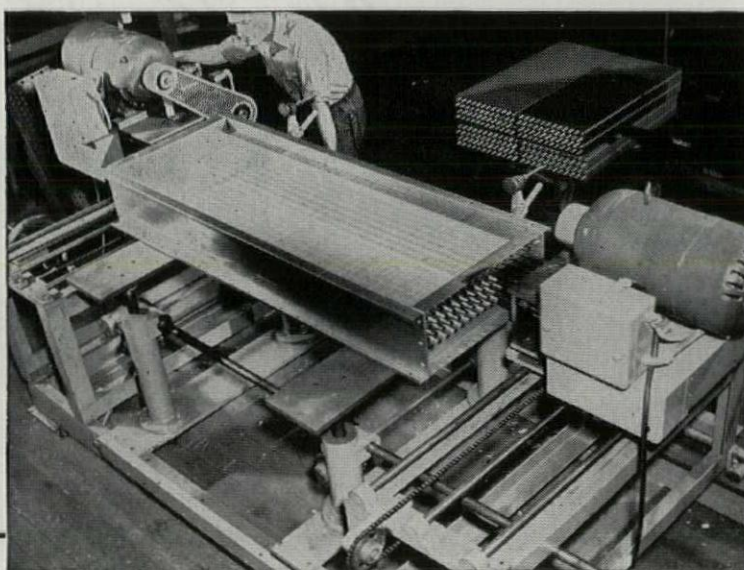
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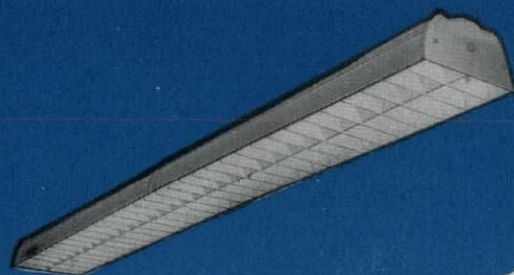
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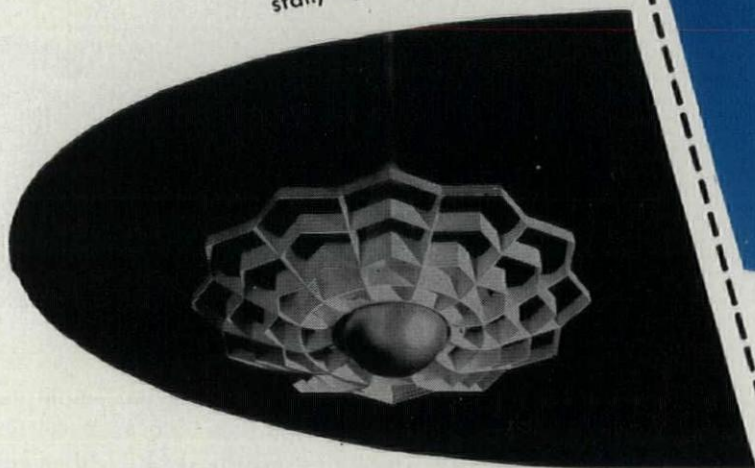
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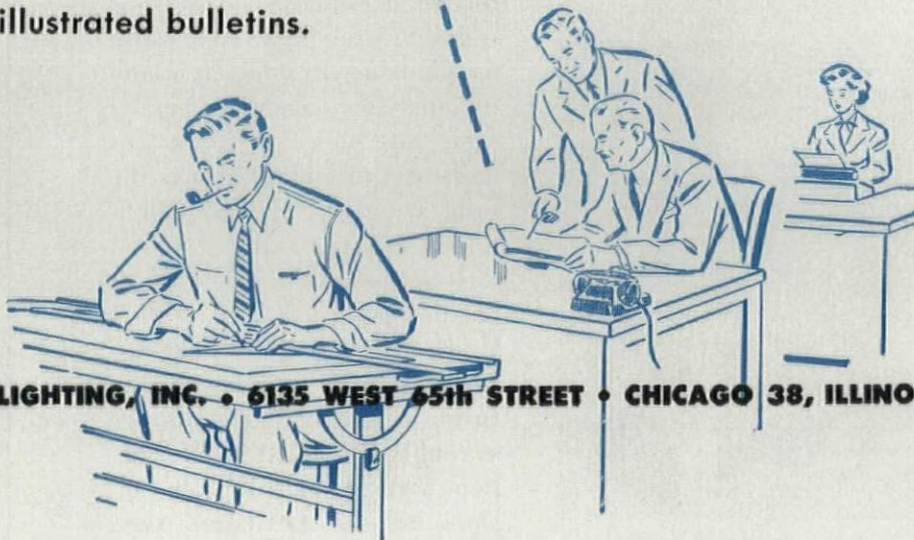
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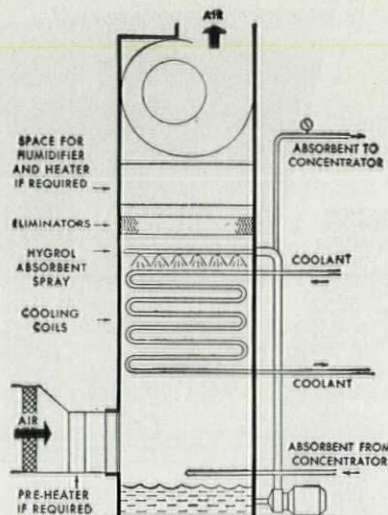


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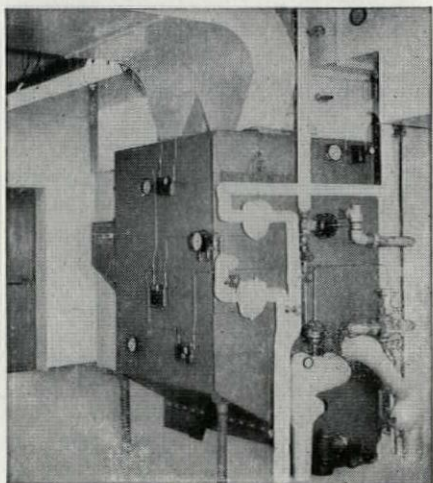
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REPORT FROM GREECE



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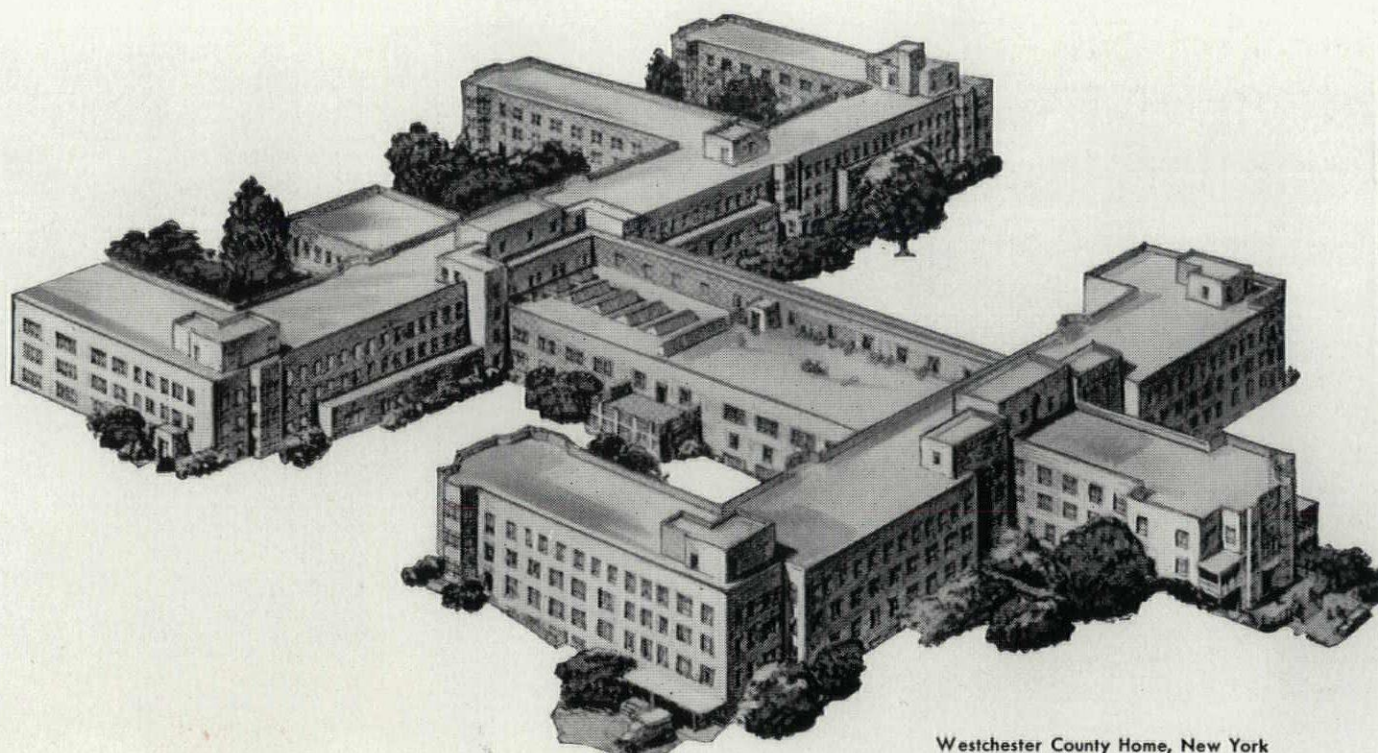


Village school

achieved by nothing so simple as an added story, or further units to make an increased length. It is achieved by adding new rooms to the back of existing apartments, provision having been made for this in the original plan. This can be done on both the ground floor and to the top floor apartments.

The two features of row house expandability and a private garden for each flat are the most interesting and rewarding in the new Greek architecture. The nonhousing construction is more conventional. Nearly all of it is logically based on using as much local material (e.g., stone) as possible. Among the larger new buildings are many sanatoria, hospitals and clinics. The most numerous are schools, of which almost 700 are under construction or major repair. The interiors of these are so rudimentary that no plaster, no ceilings and no finished floors can be provided.

Too much of the postwar Greek architecture—like that which preceded it in the 1930's—is unfortunately symmetrical for symmetry's sake. This dismal condition stems directly from the National Polytechnic School. In the five year architectural course there, students spend *four years* studying classic buildings, making careful drawings and reconstructions and fashioning anachronisms from a brilliant but long-dead past. There is no greater collection of buildings in the history of architecture than those on the Acropolis, dominating the Polytechnic. Conversely, there is no greater stupidity or crime against students than to teach them to parrot and bastardize these structures today.



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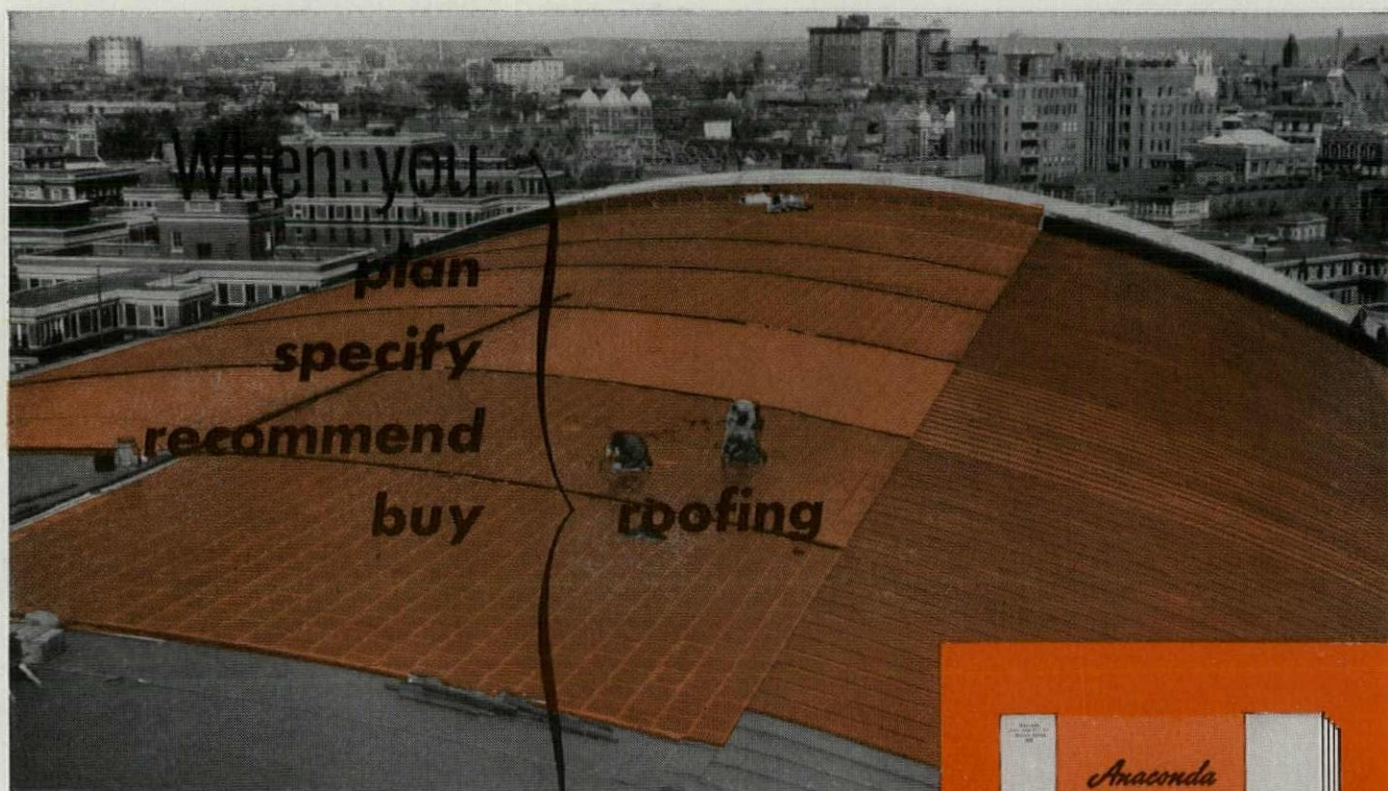
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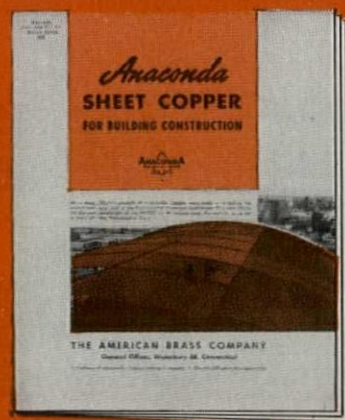
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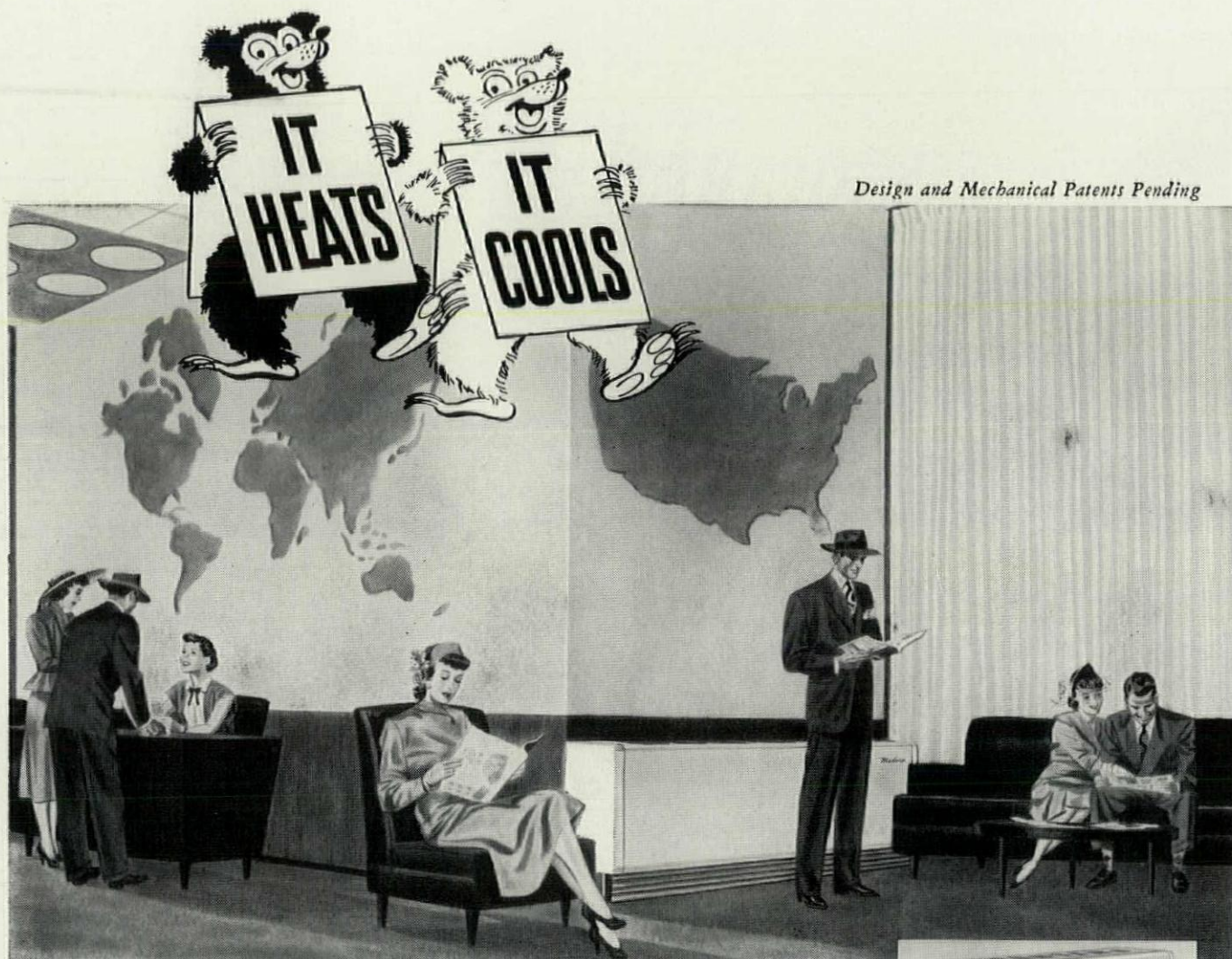
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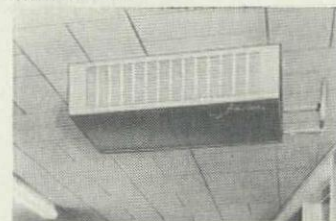
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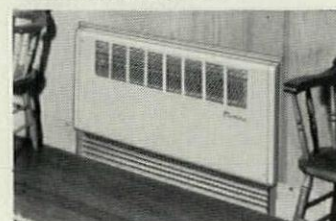
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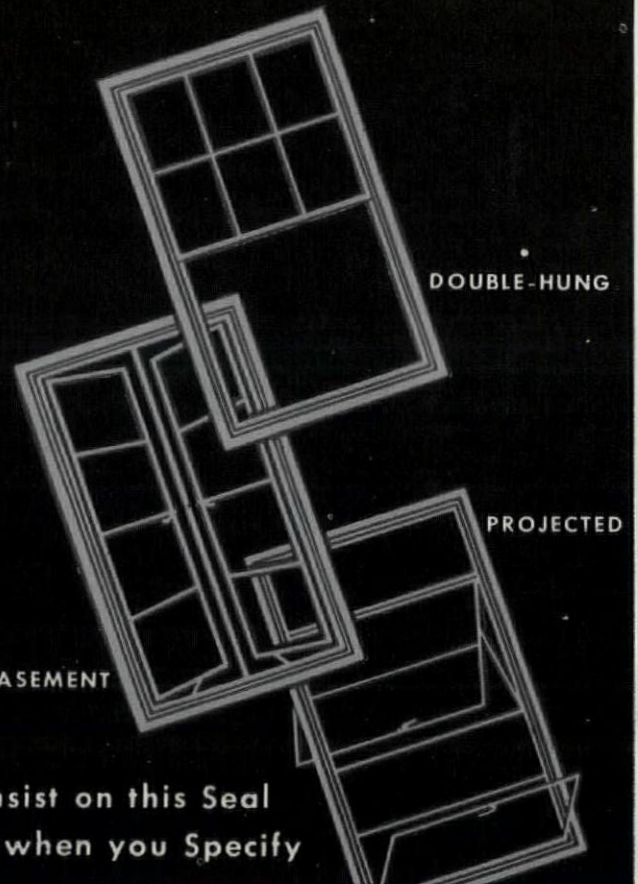
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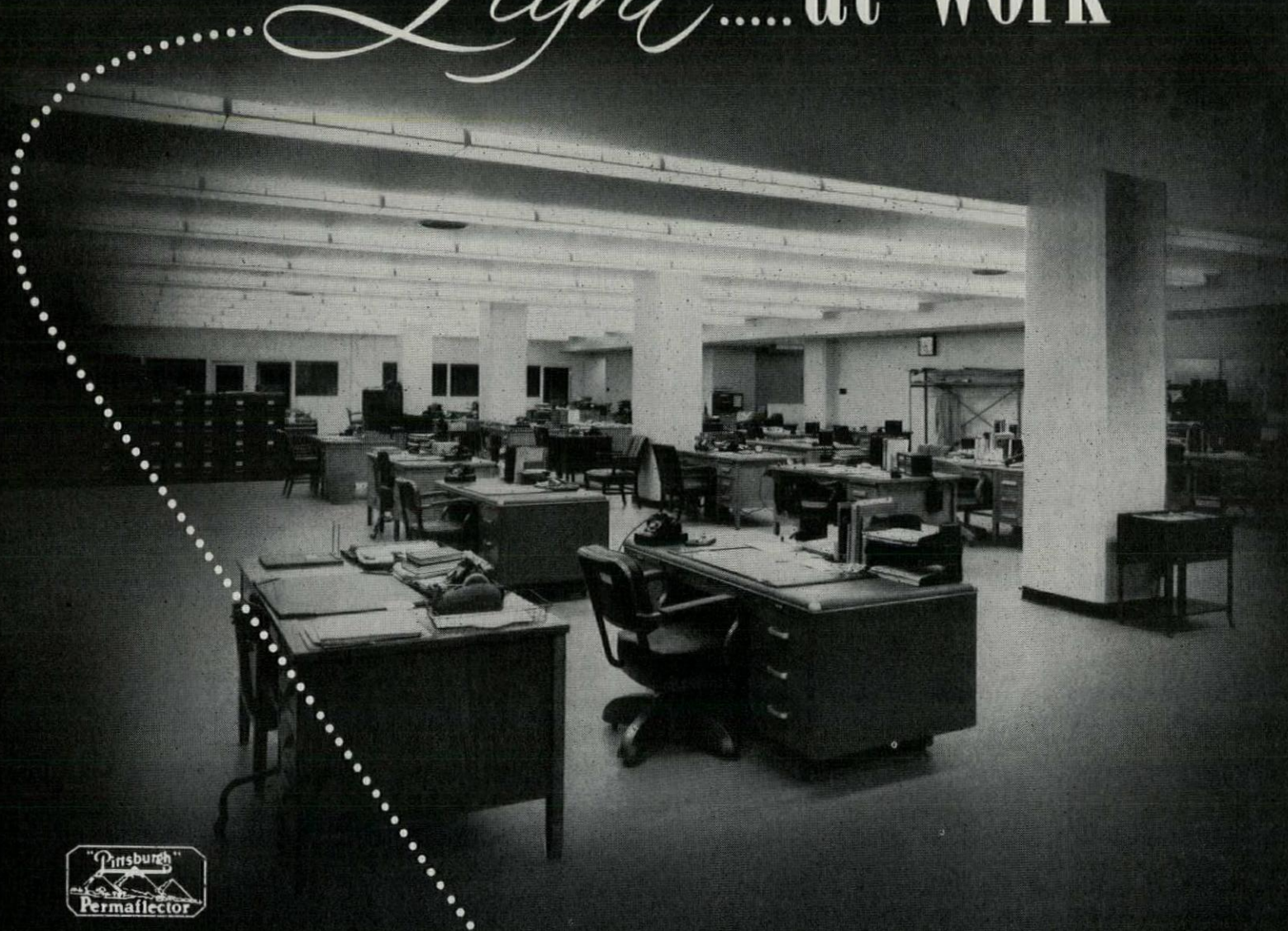


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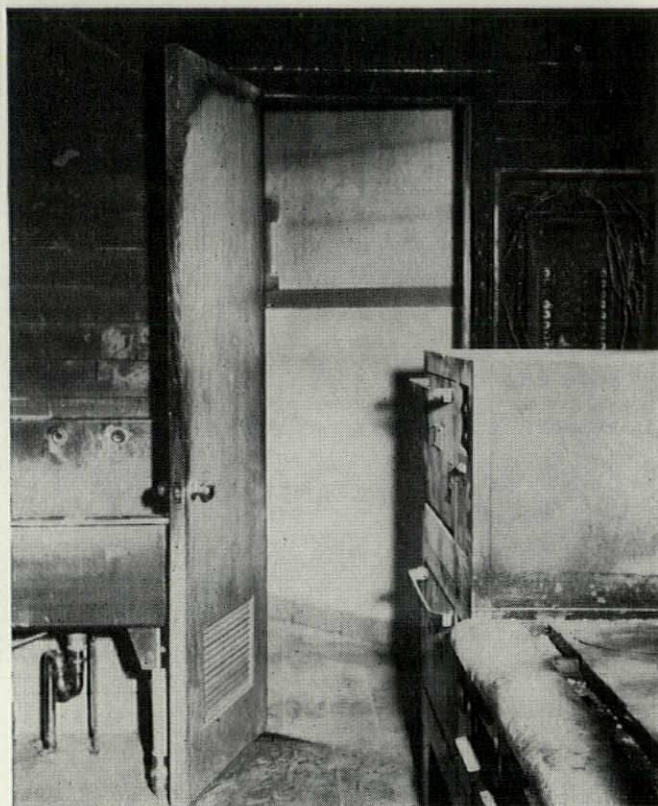
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All these doors were subject to direct water for at least one hour, plus the heat and steam caused by the fire.

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(signed) Clayton B. Frye



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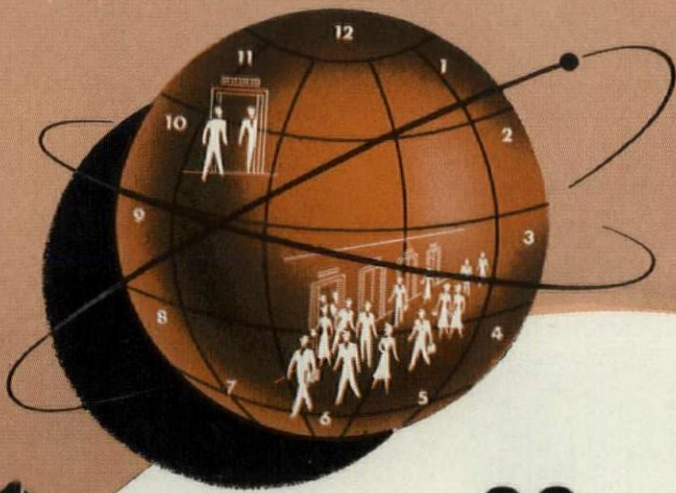
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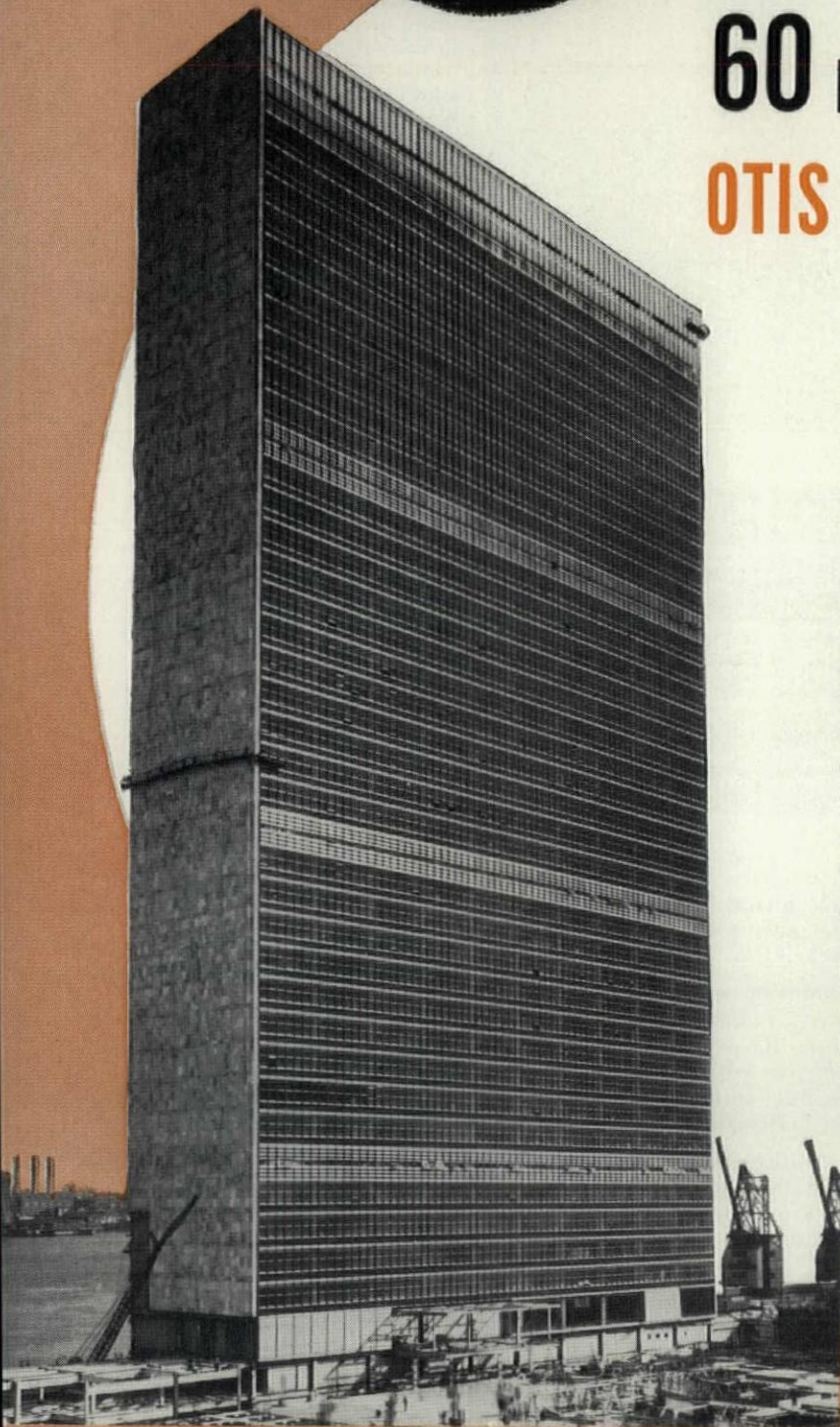
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Secretariat Building UNITED NATIONS New York City



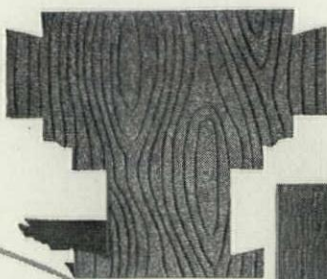
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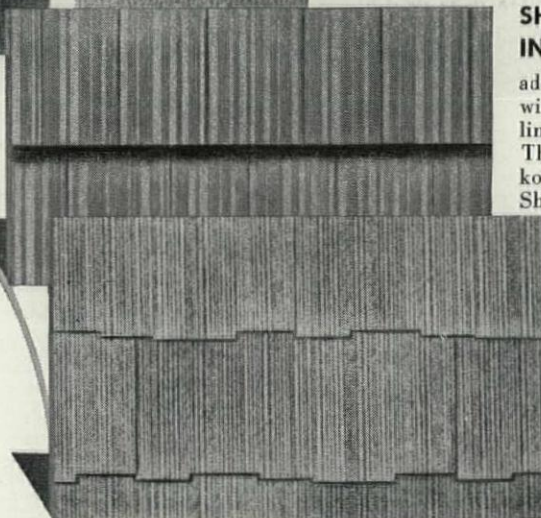
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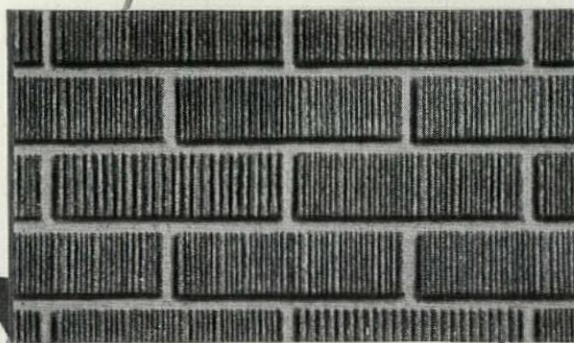
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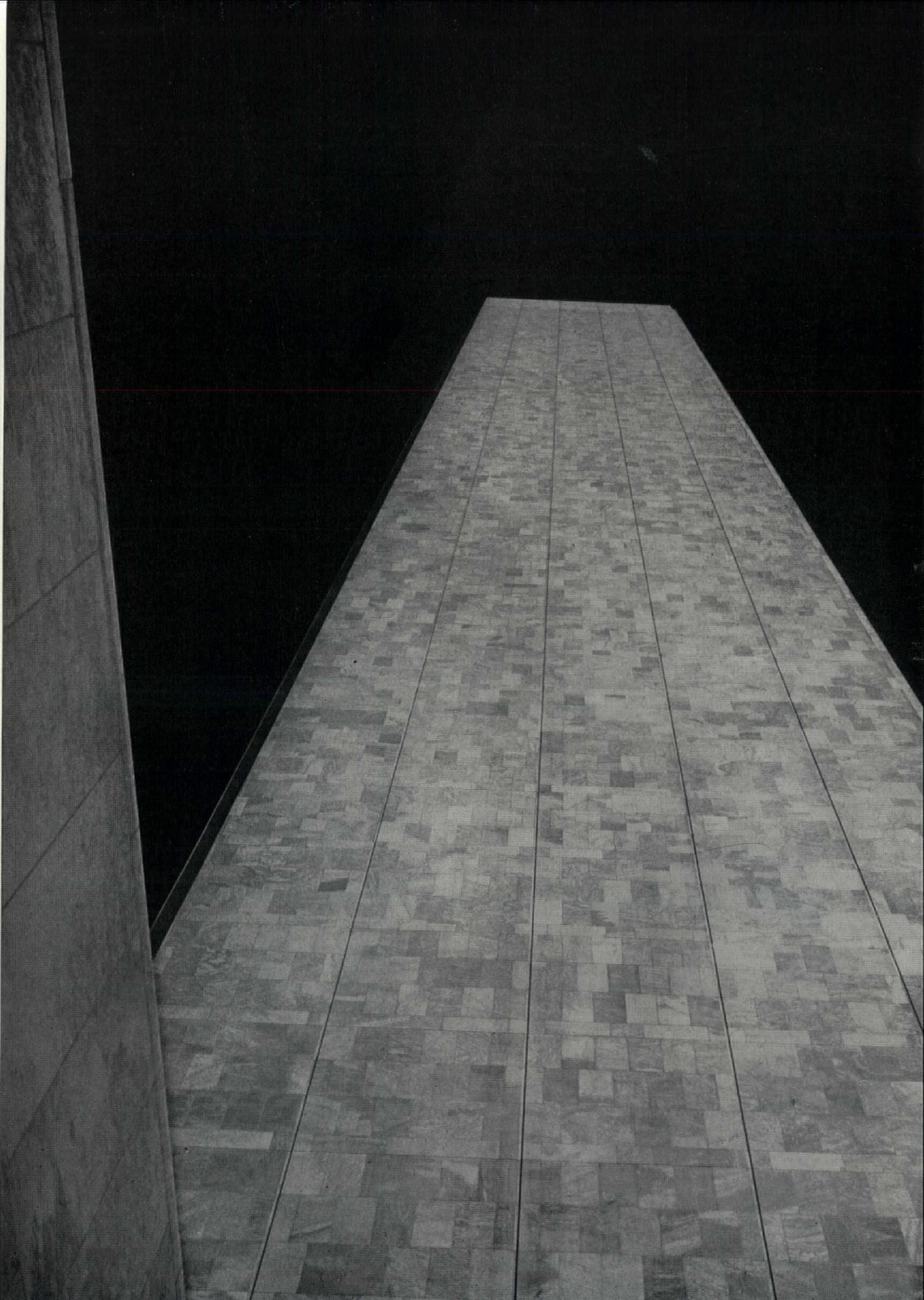
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THE MAGAZINE OF

SKYWARD VIEW OF THE SECRETARIAT'S MONUMENTAL MARBLE SLAB

(Photo: J. Alex Langley)





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Photo: Bruce Elkus

THE SECRETARIAT

A Campanile, a Cliff of Glass, a Great Debate

At 2 a.m. one Sunday late in August the moving vans started to pull away from New York's moon-lit East River. As they turned North on battered First Avenue, past boarded-up facades and piles of concrete pipe, the huge tower they had left behind loomed black and lonely at the edge of a bulldozed wilderness. Standing there next to the glistening river, the black tower looked taller than anything else on skyscraper-studded Manhattan Island.

A few hours later the picture changed. The sun began to come up over the low skyline of Queens, and the first rays struck the huge glass facade in a concentrated pinpoint of fire. The tower now rapidly turned a shining, greenish blue, its marble ends a warm gray. The mists cleared and the avenue slowly came to life. The Secretariat of the United Nations Headquarters was ready to face its first week of operations.

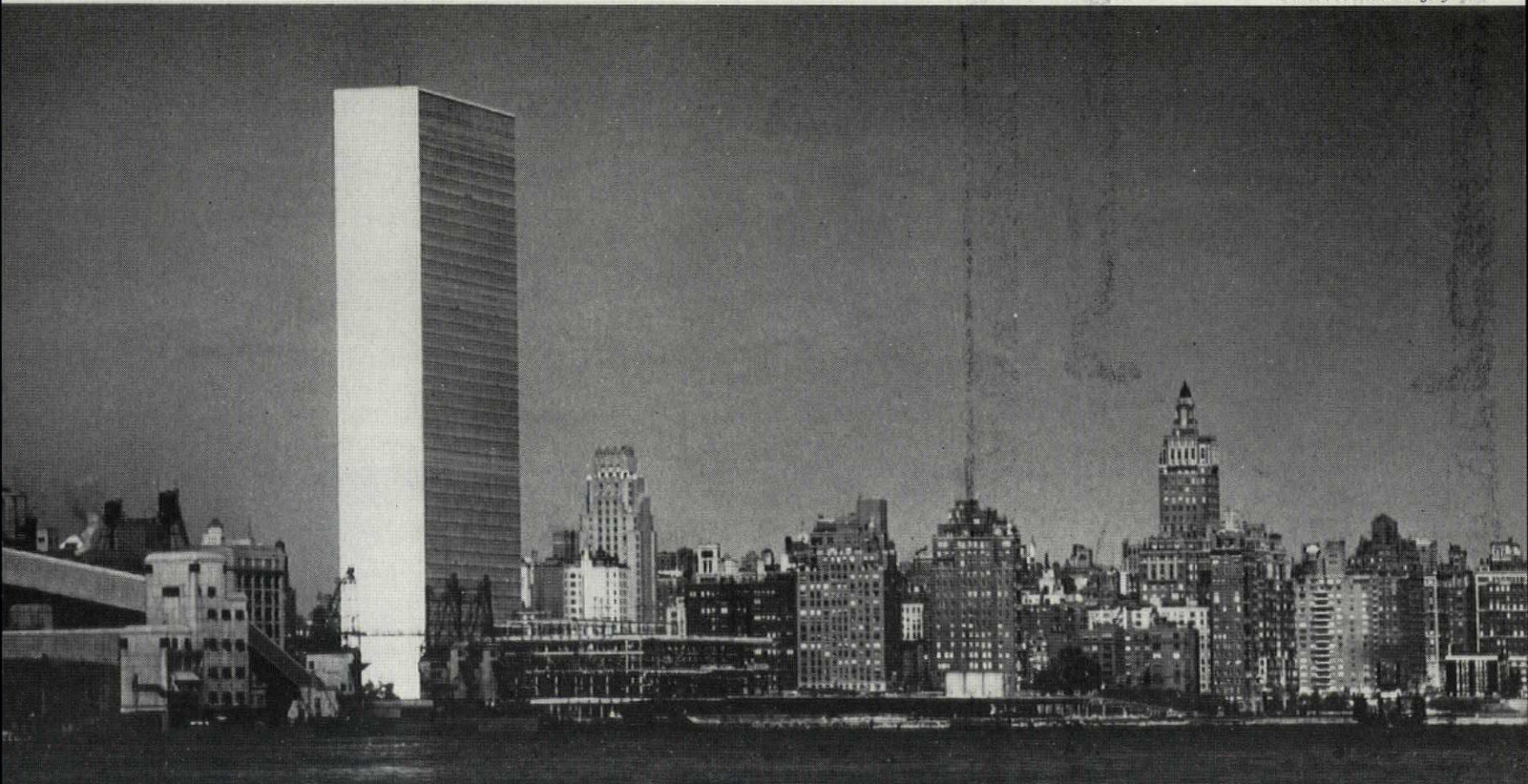
Not since Lord Carnarvon discovered King Tut's Tomb in 1922 had a building caused such a stir. Just as Carnarvon's discovery influenced everything from cigarettes to women's skirts, so the new Secretariat would change the face of every city in the Western World. The reasons were that the architects of the Secretariat had tried to answer more burning architectural questions than had been answered in any other large building constructed in the 20th Century. Some of them had been answered before; others would be answered again—and, perhaps, very differently. But these questions had been asked time and again, and now, at mid-century and in a single building, it was possible to evaluate the answers. These were the questions: What is a 20th Century monument? How workable is the vertical city? Has modern architecture succeeded in fusing esthetics and technology? Is climate worth controlling? Is the "Skyscraper Style"

vertical, horizontal or what? Does architecture-by-committee work? And where do we go from here?

To discover how well these questions had been answered, BUILDING's editors asked some of the leading architects and critics in the U. S. and abroad for their comments. These comments are printed on pages 103-107—not as so many individual statements but as an open forum. For the Secretariat was, above all, everybody's business—its merits and its shortcomings—if any—were a matter for open discussion, a public issue, and BUILDING's editors decided to treat them as such.

The ensuing debate disclosed a number of things: a widespread pride that international modern architecture had been called upon to serve the modern, international community; a feeling that it had met the challenge nobly and with assurance; and scattered regrets that, here and there, it had not quite measured up to the task. For many, also, there was disappointment in the fact that the great architect from the prairies had not been called upon to do the job. When Frank Lloyd Wright was asked his views on the UN Headquarters in 1947, he told the *New York Times*: "Grass the ground where the proposed UN skyscraper would stand. Buy a befitting tract of land, say a thousand acres or more, not too easy to reach. . . . Sequester the UN. Why does it not itself ask for good ground where nature speaks and the beauty of organic order shows more clearly the true pattern of all peace whatsoever?" The fact was that, however, mistakenly, the UN peoples did not yet seem ready to "grass the ground." Perhaps architecture could not be judged by such majority vote alone; but if the Secretariat were so judged, its architects could be confident of the verdict.

Photo: J. Alex Langley



THE NEW CAMPANILE

Its antecedents are in France, Brazil, England and the U.S.

There had been more than a dozen architects at work preparing the general scheme for the United Nations Headquarters (some of their discarded solutions are shown on page 99); there had been one Director of Planning selected to execute the scheme with the technical know-how, the finesse, the organizational genius which American skyscraper construction demands. Wallace K. Harrison, as Director, had filled the clay-model shapes with the intricate entrails demanded by modern American office standards. He had developed "Scheme 53" into a full-blooded building, a monument to the last best hope of its time.

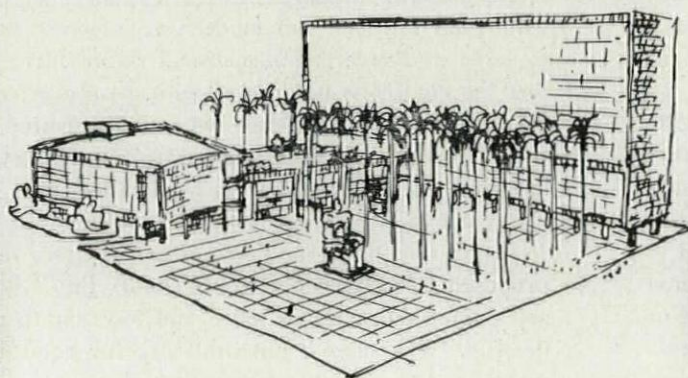
Yet while the shining prism on the East River was now

primarily Architect Harrison's baby—a baby he had nursed over the years with loving care—Harrison himself would be the first to say that the baby had been adopted, that its true ideological fathers had been some of the pioneer "international" architects of the 20th Century: Mies van der Rohe, Gropius, and—above all others—Le Corbusier. While all of them had taken many a cue from such earlier American pioneers as Sullivan, Wright and Burnham, the tall, solid-edged slab, the cliff of glass, the vertical garden city that now stood on Manhattan's edge was born in Le Corbusier's mind almost 30 years ago.

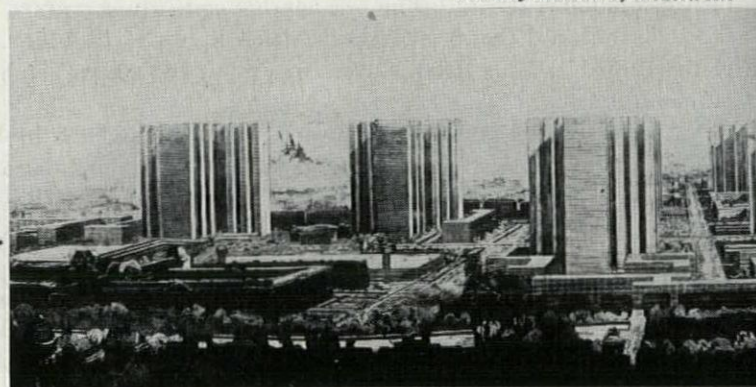
Courtesy Museum of Modern Art



*Pavillon Suisse,
Le Corbusier, 1932*



*Second Scheme by Le Corbusier, Rio Ministry of
Education & Health, August 1936*



Plan Voisin by Le Corbusier, 1922

The plastic form . . .

Among the fantastic wealth of ideas contributed to architecture by Le Corbusier there are three that shaped the Secretariat:

► The concept of a *vertical city in a park*, made up of free-standing towers with plenty of greenery and light all around; this he demonstrated in his Plan Voisin, Ville Radieuse, and other projects.

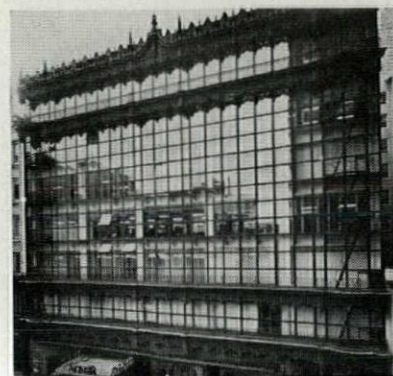
► The concept of a *tall, rectangular slab*, with windows along its broad facades, solid planes along its narrow edges. Best Le Corbusier examples: The Pavillon Suisse and the Brazilian Ministry of Education Building. (But nowadays Le Corbusier is less orthodox than his followers, opens up the narrow edges of his buildings as well as the broad facades, as in the new Marseilles apartments.)

► The concept of a *Civic Center* consisting of 1) a tall slab like an Italian campanile; 2) a separate, low and somewhat free-shaped form (the General Assembly in this case); and 3) a series of horizontal buildings that "hyphenate" the group into a coherent whole. The finest of such groups were designed by Le Corbusier in his project for St. Dié after the war, and in his second scheme for the Rio Ministry of Education.

These three ideas—the vertical garden city, the solid-edged slab, and the asymmetrically composed civic center—gave the United Nations group its plastic form. But if the form of the Secretariat was unquestionably Le Corbusier's, the technology that went into it—from curtain wall and modular planning to high-velocity air conditioning—was just as unquestionably American. The glassy veil suspended over a structural

cage had been tried by Willis Polk in 1917 in the Hallidie Building in San Francisco. The glass facade (in a cast iron frame) had been the trademark of many an American post-Civil War loft structure. The modular planning that Le Corbusier likes to emphasize in his own work was fully developed in Burnham's "plan factory" in the 1890's, and even better crystallized in Frank Lloyd Wright's houses of the first decade of this century. And if one were to look for the antecedents of wholly air conditioned office buildings (which, after all, make Le Corbusier's glass walls possible), one would have to give credit to Wright's Larkin Building built in 1904.

So the Secretariat was plastically a work in the manner of Le Corbusier, and it was technologically, and as an organizational feat, an American product. In his justifiable fury against the Beaux-Arts mannerisms of American architects, Le Corbusier never acknowledged the degree to which an American architectural tradition underlay his own advance. Now, in the person of the Director of Planning, America had produced an architect in its own great tradition, capable of fusing the



*Hallidie Building,
San Francisco,
by Willis Polk, 1917*

Moulin Studios

esthetic accomplishments of international modern architecture with the technological accomplishments which made it livable.

... and U. S. technology

"What gives our dreams their daring," Le Corbusier once said "is that they can be realized." While he tended to deprecate American *architecture*, he was ever respectful of American engineering, always felt that, in the end, his dreams must be realized in the U. S. He had no illusions about the immense problems of vertical transportation implied in his vertical city, of climate control behind a sheet of glass, of bracing thin and tall slabs high in the wind. Now his esthetic ideas were given the acid test of American technology.

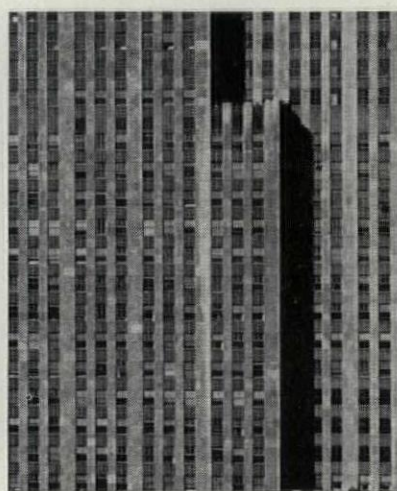
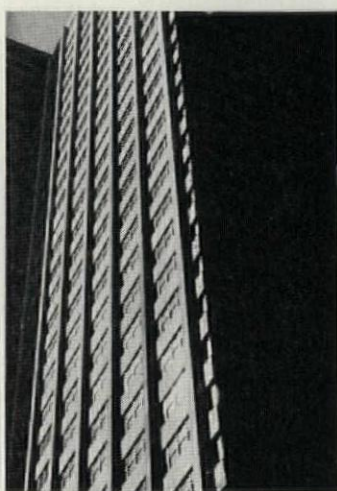
The acid test as administered by the Director of Planning proved the worth of the esthetic idea. On pages 108-111 will be found an analysis of the cost of the Radiant City in terms of air conditioning, lighting, vertical transportation and structural organization. But beyond solving the mechanical core of

the Radiant City, Wallace Harrison tried to settle an ancient controversy in skyscraper esthetics that had stirred up American architects for several decades. The question: Should skyscraper facades be vertical, horizontal, or what?

Discounting the eclectic aberrations of the second and third decades of this century, the debate had swung back and forth from the exponents of the "Vertical Style" to those of horizontality piled upon horizontality. Raymond Hood had tried them both—the verticals in his Daily News Building, the horizontals at McGraw-Hill. A little later, Howe & Lescaze went both vertical and horizontal in the Philadelphia Savings Fund Society Building, and Rockefeller Center went vertical all the way. In the late Thirties and after World War II, set-back zoning began to defeat the "Vertical Style" except where owners were willing to sacrifice rents for the sake of good architecture, as in Mies van der Rohe's steel-fluted apartment buildings on Lake Michigan. Now, in the Secretariat, with the sky the limit, Architect Harrison had taken his stand in the old controversy.

Ewing Galloway

Hedrich-Blessing Studio



*Daily News Building,
Raymond Hood*

*McGraw-Hill Building,
Raymond Hood*

*Philadelphia S. F. S. Building,
Howe & Lescaze*

RCA Building, Rockefeller Center

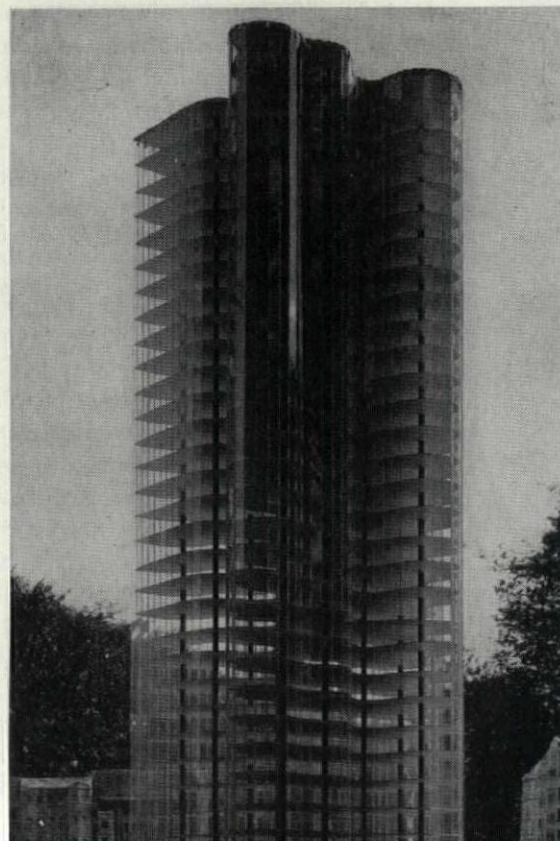
*Lakeshore Apts., Chicago
Mies van der Rohe*

The Cellophane Style

He had taken his stand with Willis Polk's Hallidie Building, with Mies van der Rohe's 1920 Glass Skyscraper, with the advocates of sealed, packaged and controlled climate. The Secretariat tower executed by Harrison became a relatively orthodox structure of fireproofed steel, closed off (and braced) at the short ends with rigid and tall slabs of marble. Over the long sides of this regular frame Architect Harrison now slipped a kind of "cellophane" veil of heat-absorbing glass, a shimmering, mirror-like fabric interlaced with silvery threads of aluminum, quite frankly independent of the powerful structure which it was designed to seal off from the elements.

The resulting package was not only a demonstration of certain technological possibilities of climate control (see pp. 108-109); it was also a fascinating demonstration of the many architectural properties of glass. When BUILDING first discussed the Secretariat in June 1949, before it was completed, the editors called it a "vast marble frame for two enormous windows . . . a mosaic reflecting the sky from a thousand facets." Now that the Secretariat was finished, the "reflective mosaic" aspect of the facade had become so striking that the building might better be described as a vast marble frame for two enormous mirrors—544 ft. tall, 287 ft. wide, reflecting the clouds drifting in from over the Atlantic on one side and the spires of Manhattan on the other. The mirror-quality of the

Glass Skyscraper, Mies van der Rohe, 1920



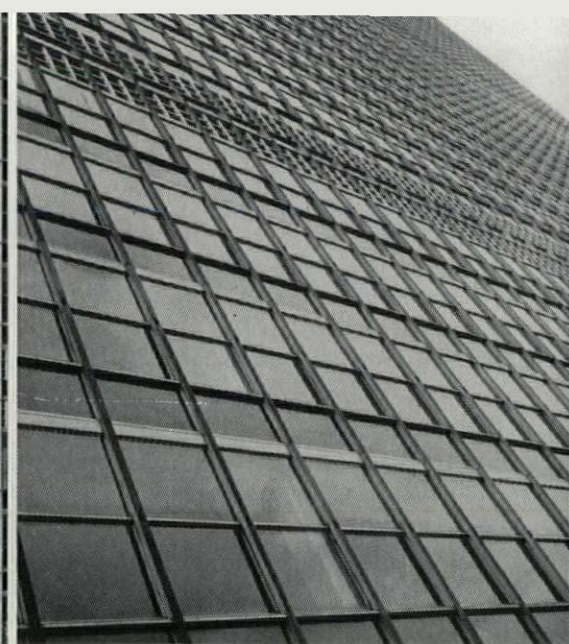


A vast mirror.

Bruce Elkus



A large window.



A woven fabric.

Ezra Stoller, Pictor

glass facade was, of course, nothing new. Mies had said about his 1920 Glass Skyscraper that "the important thing is the play of reflections." But since the Secretariat's glass veil was a brilliant blue-green (with masonry painted black behind wire-glass spandrels), the mirror qualities of the glass facade were demonstrated more strikingly than ever before. With fine regard for these effects, Architect Harrison had selected dark grey venetian blinds for all offices—a further aid to the reflective qualities of the facade.

The shimmering fabric did make a package; but unlike the clinging aluminum and glass package of Pietro Belluschi's Equitable Building in Portland, the Secretariat's glass facades were treated as independent, free-hanging screens with a texture and life entirely of their own. This texture was due largely to the projecting aluminum tracery with which the sheets of glass were tied together. These aluminum ribs avoided the slick, streamlined look of London's *Daily Express* Building, whose all-glass facade has about as much texture to it as an automobile fender; instead, the Secretariat's shimmering veil had depth as well as surface; its aluminum separators cast small shadows, reflected light in brilliant, glistening silver sparks, and were themselves mirrored in the surrounding glass. Moreover, the venetian blinds behind the glass, and the slanted soffits above each window, gave the facade an additional quality of lightness, like that of a semi-transparent backdrop on a gigantic stage. And, finally, the texture and depth of the glass screen made it subject to an infinite number of color changes in the course of each day; for not only did it reflect each change in the color and brilliance of the sky; it also changed its own texture and color as the depth of the many shadows of metalwork on glass changed with the position of the sun.

Inside the Package

Once the rectangular shape of the campanile was established, certain interior plan-forms began to jell also. While the original design panel was developing the plastic form, squads of assistant designers were busy roughing out floor plans, preparing alternative mechanical arrangements, studying space and equipment requirements. Some of these studies were based on earlier office-building work in the U. S., particularly on the extensive research undertaken by Harrison & Abramovitz when they were busy on the *TIME & LIFE* Building project after the war. But while such antecedents had been determined by the strict economies of American office-building, the Secretariat was to be more than that—and, at the same time, somewhat different in function. It was to be a monument in addition to

being a workshop, a collection of committee-rooms in addition to office cubicles, a self-contained community isolated from the many central services of midtown Manhattan.

Because in a monument esthetic considerations are paramount, a number of fascinating solutions for the Secretariat were rejected. Most important of these was to treat the elevator tree as a separate entity, linked or attached to the rectangular office block. But to express the elevator shafts with brutal frankness would have meant to step back their silhouette as successive banks dropped out—and the result (see cut) would have been a somewhat dated "dynamism" not unlike that of the R.C.A. Building. Similar esthetic or practical objections defeated other proposals; and the unadorned rectangle became the unanimous choice of the Board of Design.

With the elevator-tree in the core of the building, the office plan was developed in logical order. Since the view toward the East River was preferred, VIPs' offices were strung along that side of the rectangle; and since VIPs need secretaries in anterooms, it was logical to arrange for an added slice of office space between the exterior offices and the main corridor. Consequently, the structural bays along the East facade became unusually deep (28 ft. 4 in.) to contain VIP-offices, secretarial anterooms and main corridor; the interior bays were built 18 ft. 2 in. deep to take the width of two elevators; and the bays along the West facade, where smaller VIPs will have their offices, were reduced to 20 ft. 8 in. in depth (a large chunk of which is taken up by filing space, secretarial pools, etc.). The only place where the unequal spacing shows (since the end walls are sheathed in marble) is in the main lobby.

The gross area of each Secretariat floor is about 19,000 sq. ft.—adequate if the operations of the Secretariat are highly departmentalized, but likely to tie up elevators where large departments overflow into other floors and require a great deal of inter-floor traffic. It will be interesting to see how much inter-floor bustle will occur in the slice between 11th and 20th floors (most of which is occupied by one large department and a three-story archives) and how seriously this will affect elevator-timing.

When the Secretariat's architects talk about a vertical city rather than an office building, they are referring to the innumerable and complex functions concealed within the rectangular glass and marble envelope. Reading from top to bottom, the envelope contains the usual, esthetically troublesome penthouse and mechanical equipment floors. Beneath them is an apartment for the building's No. 1 citizen, the Secretary General (he has his own fireplace—perhaps the highest

Daily Express Building, London, 1931.



in Manhattan). There follow some three dozen office floors, interspersed with pipe galleries every ten floors or so. There are special offices for each Assistant Secretary General (with panelled conference rooms); then there are the archives, more offices, an employees' lounge, a health clinic, local bank, press, radio and TV facilities, and lobbies. Total population: More than 3,500—from all corners of the globe.

How well is this vertical city going to function over the years? Within the limits of the UN site, the answer will probably be "very well." Rarely has an American skyscraper been so fully equipped mechanically; rarely have such extensive provisions been made for future improvements (including provisions for TV outlets in every office, telephones on every desk); and rarely has a metropolitan project paid so much attention to transportation, to parking facilities, to recreation in adjoining parks.

Where the UN project falls down—and each of its architects knew it—is in providing living space for those who work in it.

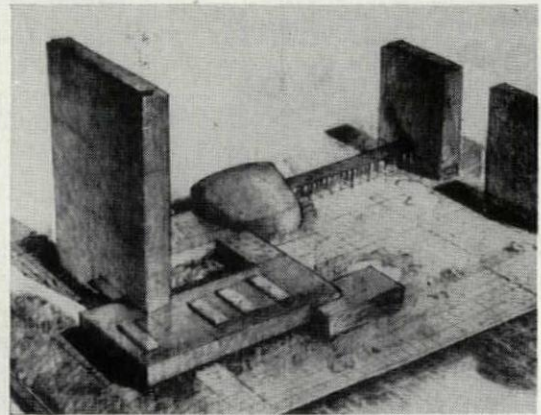
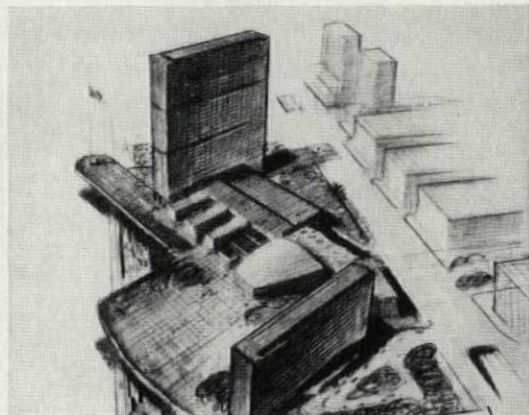
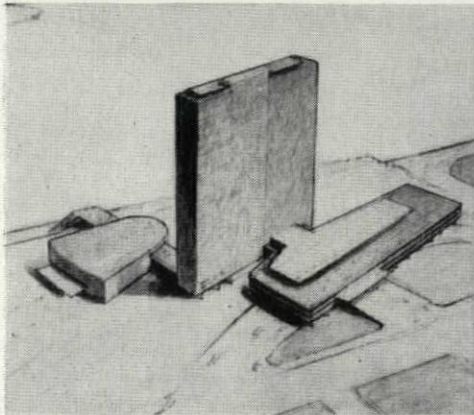
If the vertical city is to be judged by the success or failure of the UN, then the judges should remember that this is merely one half of Le Corbusier's concept, that to make it work in city-planning terms, the face of much of the surrounding area might have to be radically changed.

Fortunately, this has been perfectly understood by most architects. Already the UN concept is being extended in several parts of the country: Next month, *BUILDING* will preview the new administrative center for the Ford Motor Co., to be located near Dearborn, Mich., in a huge country estate with plenty of living space for all employees, and placed around a gigantic parking garage whose roof forms a kind of planted piazza between office skyscrapers. Here will be the ideal demonstration of a vertical city in the sun and in the landscape. This will be the kind of center against which Frank Lloyd Wright's horizontal "organic order . . . the true pattern of all peace" may some day be measured. But until that time, the glistening Secretariat tower would take on all comers.

Glass walls facing due East-West.

Glass walls facing due North-South, Ralph Walker favored this.

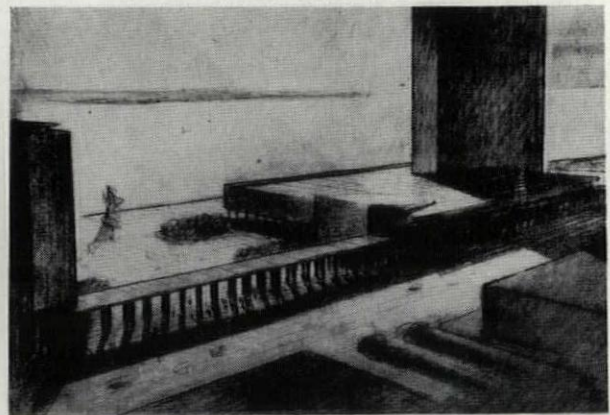
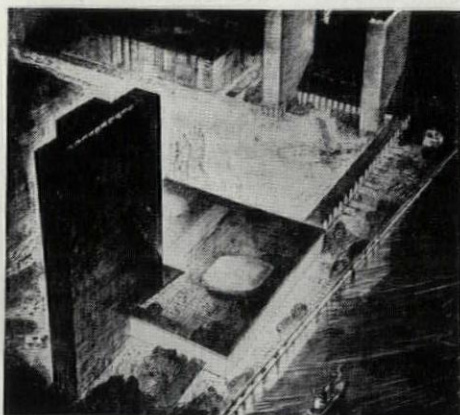
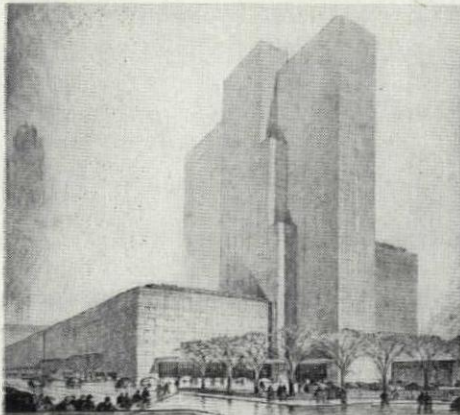
General plan proposed by Ssu-ch'eng Liang (China)



Exposed elevator tree attached to Secretariat.

Scheme 17: Approach from 47th Street.

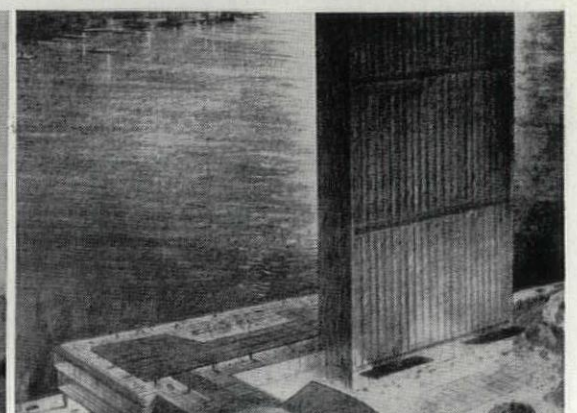
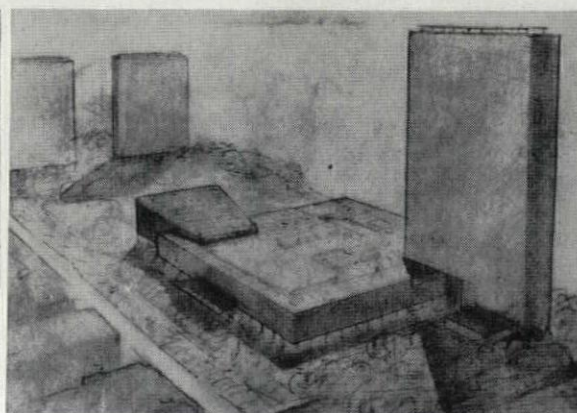
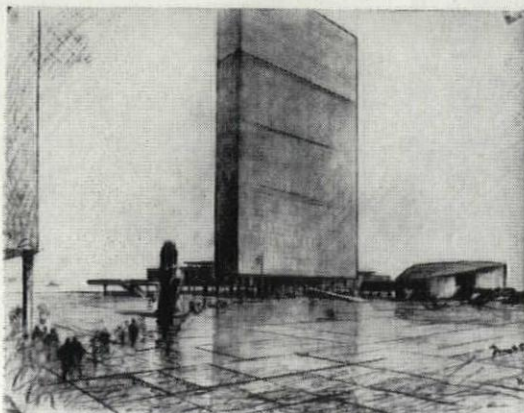
Colonnade along 1st Avenue, proposed by Robertson (U.K.) and Antoniadis (Greece).

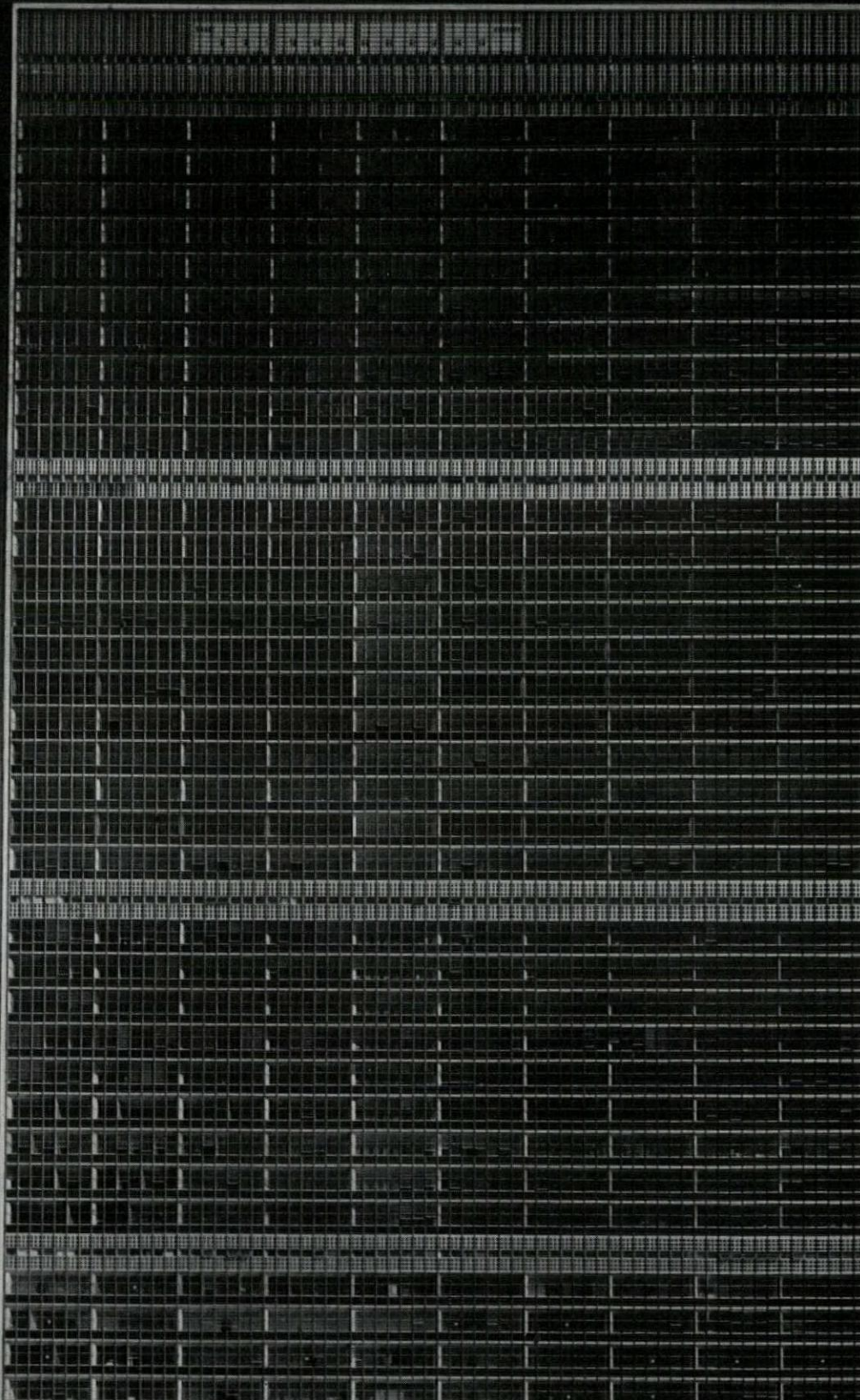


Scheme 32: Proposal by Oscar Niemeyer (Brazil).

Scheme 23A: Proposal by Le Corbusier (France).

Combination of schemes 23A and 32.



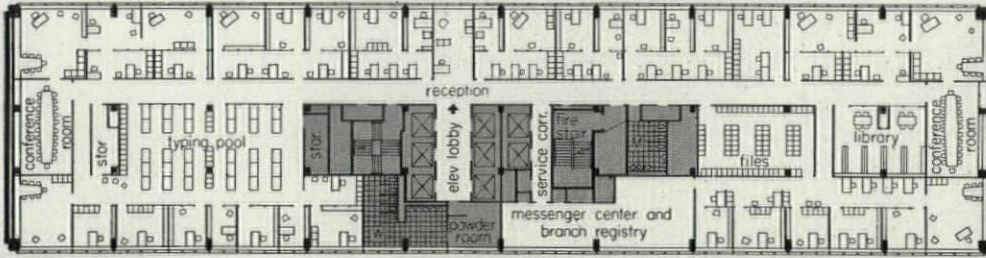


- 39 Mechanical Equipment
- 38 Secretary General and Special Missions
- 37 } ASG* (Administrative and Financial Services)
- 36 }
- 35 ASG (Security Council Affairs)
- 34 ASG (Legal; and Security Council Affairs)
- 33 ASG (Trusteeship; and Non-self-governing Territories)
- 32 Trusteeship; Non-self-governing Territories; and Social Affairs
- 31 Social Affairs; and Economic Affairs
- 30 Mixed
- 29 ASG (Social Affairs; and Economic Affairs)
- 28 Mechanical Equipment
- 27 Social Affairs; and Economic Affairs
- 26 Mixed
- 25 Technical Assistance Program
- 24 UN International Children's Emergency Fund
- 23 Unassigned
- 22 Headquarters Planning Office; UNESCO; FAO; WHO; Monetary Fund; World Bank
- 21 ASG (Conference and General Services)
- 20 }
- 19 } Archives
- 18 }
- 17 Conference and General Services
- 16 Mechanical Equipment
- 15 }
- 14 }
- 13 } Conference and General Services
- 12 }
- 11 }
- 10 }
- 9 } ASG (Public Information)
- 8 }
- 7 Conference and General Services; Switchboard
- 6 Mechanical Equipment; Administrative and Financial Services; and Personnel
- 5 Employees' Lounge and Health Clinic
- 4 }
- 3 } Public Information—Press, Radio; and Bank
- 2 }
- 1 Lobby

* Assistant Secretary General

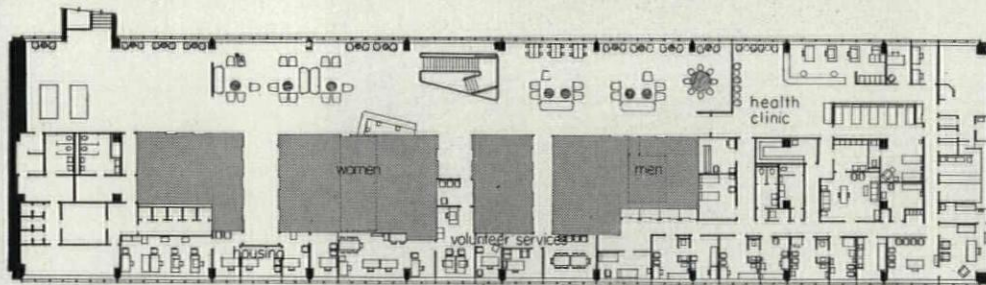
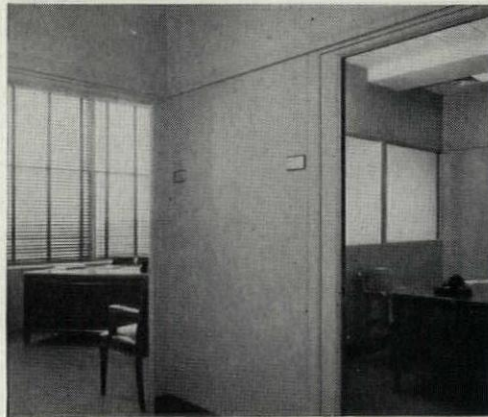
Photos: Ezra Stoller, Pictor

Typical Conference Room with panelled walls. Assistant Secretary General office behind glass screen.



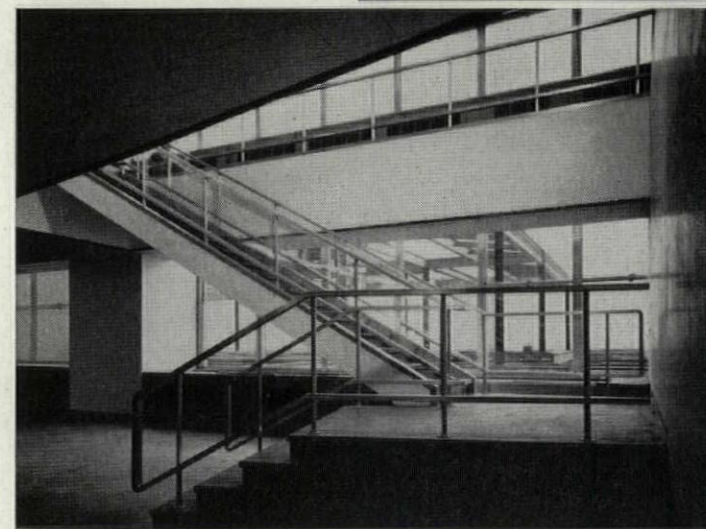
TYPICAL UPPER FLOOR

Below: Office space along East wall. Exterior office at left, anteroom at right. Opposite: Typical fire stair.

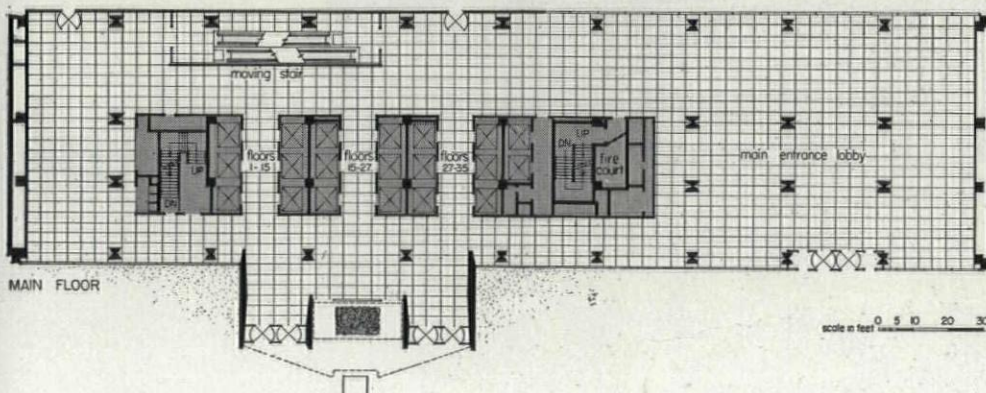


FIFTH FLOOR

Interior stair between fourth and fifth floor leads up to employees' lounge. Meeting Halls now under construction in background.

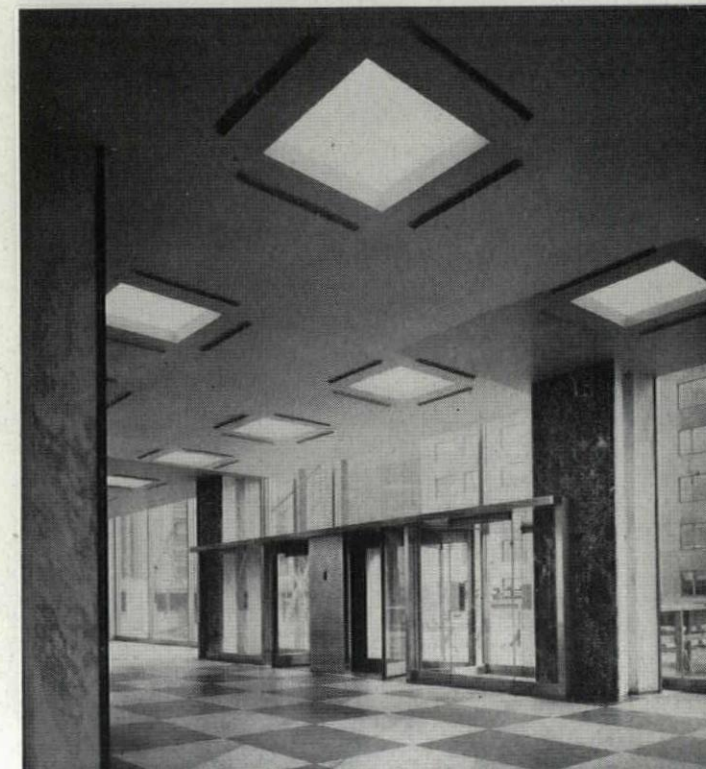


View of main lobby showing secondary entrance at South end of building, special combination lighting/airconditioning fixtures in ceiling. Columns are sheathed in marble.



MAIN FLOOR

scale in feet 0 5 10 20 30





A GREAT DEBATE

PARTICIPANTS:

ROBERT E. ALEXANDER,
Los Angeles, Cal.

JOHN A. ANTONIADES,
Athens, Greece

HARRIS ARMSTRONG,
St. Louis, Mo.

PAUL BEIDLER,
Easton, Pa.

PIETRO BELLUSCHI,
Portland, Ore.

RICHARD BENNETT,
Chicago, Ill.

JOSEPH N. BOAZ,
New York, N. Y.

V. BODIANSKY,
Paris, France

J. GORDON CARR,
New York, N. Y.

SERGE CHERMAYEFF,
Chicago, Ill.

WINSTON ELTING,
Roselle, Ill.

NORMAN BEL GEDDES,
New York, N. Y.

PERCIVAL GOODMAN,
New York, N. Y.

PHILIP L. GOODWIN,
New York, N. Y.

BRUCE GOFF,
Norman, Okla.

WALTER GROPIUS,
Cambridge, Mass.

VICTOR GRUEN,
Detroit, Mich.

TALBOT HAMLIN,
New York, N. Y.

ALBERT HENRY HILL,
San Francisco, Cal.

HENRY RUSSELL HITCHCOCK,
Northampton, Mass.

CALEB HORNBOSTEL,
New York, N. Y.

GEORGE HOWE,
New Haven, Conn.

ROBERT ALLAN JACOBS,
New York, N. Y.

GEORGE FRED KECK,
Chicago, Ill.

ROBERT WOODS KENNEDY,
Boston, Mass.

ROBERT A. LITTLE,
Cleveland, O.

IAN McCALLUM,
Architectural Review, London, Eng.

RICHARD J. NEUTRA,
Los Angeles, Cal.

WILLIAM L. PEREIRA,
Los Angeles, Cal.

RALPH RAPSON,
Cambridge, Mass.

PAUL RUDOLPH,
Sarasota, Fla.

WALTER SANDERS,
Ann Arbor, Mich.

R. M. SCHINDLER,
Los Angeles, Cal.

SIR OWEN WILLIAMS,
London, England

WILLIAM W. WURSTER,
San Francisco, Cal.

L. MORGAN YOST,
Kenilworth, Ill.

Editor's Note: The following "round-table discussion" was manufactured from a series of detailed replies to a questionnaire submitted by The Magazine of BUILDING to a number of architects and critics in the U. S. and abroad. To dramatize different points of view in relation to the various questions, the "round-table" technique of presentation has been used. An effort has been made not to quote anyone out of context, and the words attributed to the "round-table" participants are strictly their own. Each phase of the discussion is preceded by a question posed by the editors.

1. MONUMENTALITY—Do you like the monumental character of the UN group?

HOWE: Yes. The Secretariat is a masterly example of the power of architecture to express monumentality by the use of the rectangle alone. It is a triumph of unadorned proportion.

CARR: Monumentality and efficiency are not usually bed mates. Of the two, I vote for efficiency.

BELLUSCHI: I think the monumental character was needed to stir up the imagination of the people.

GOODWIN: Yes.

HITCHCOCK: It's not monumental enough.

McCALLUM: The successful contrast between the complex, sophisticated Assembly Building and the stark, slab-like Secretariat would appear, from many angles, to be vitiated by the startlingly prosaic Meeting Halls Building.

GOFF: If the "character" (?) of this group is monumental, it is of a hackneyed shop-worn sort, a collection of clichés from the dead past and the dead present. . . . Where is the new monumentality this problem calls for?

HILL: In the abstract, the utter simplicity of the geometric form has a breath-taking dignity and monumental character which is a magnificent expression of what the UN should be.

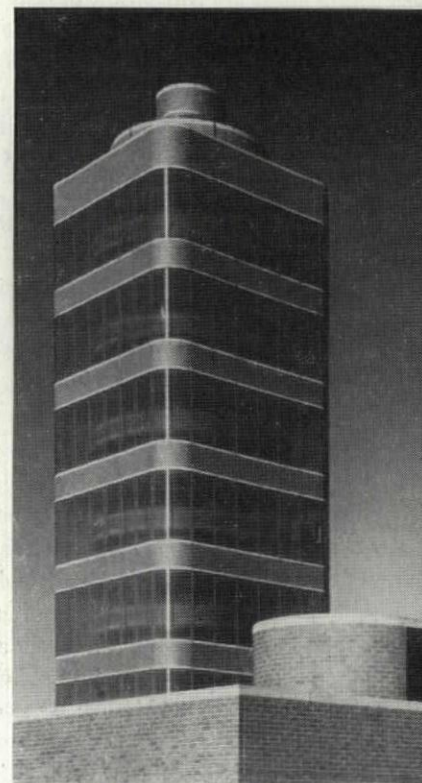
WURSTER: Because it sums up many small divisions to give large unity.

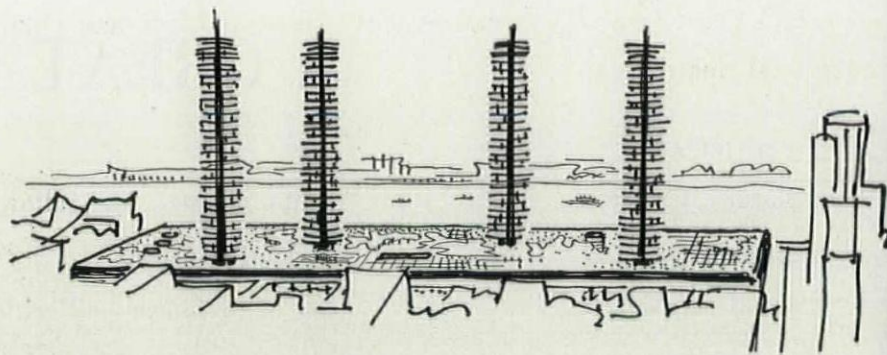
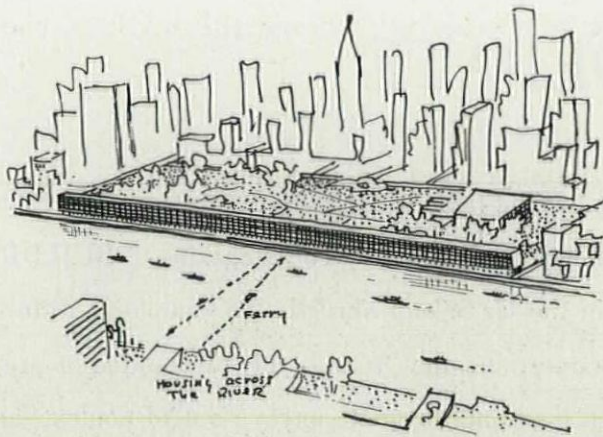
NEUTRA: The Secretariat pleases me more than any other building in New York, I should say.

ALEXANDER: I like the monumental character of the UN group strictly as an abstract design solution . . . but I should have preferred a radically different site selection.

GOODMAN: Character, whether monumental or other, is derived from function, psychological and physical. . . . Any architect knows that a building 600 ft. high is not functional except in terms of land speculation. . . . Let us consider for an instant several other possibilities: 1) Build a single 55 ft. wide office building close up against the river drive and extending the full six blocks, 12 stories high, mounted on columns so that there are views of the river through the architecture. The remainder of the plot is a park in which the major assembly buildings are placed. Under the park, a great parking garage. Thus, the office buildings would face on one side the river, on the other a large park . . . ; OR 2) Let us build the entire six blocks to a height of two or three stories in a gigantic rectangle . . . on top of this, amid landscaped gardens, we place three or

GOFF: "The new monumentality."
S. C. Johnson tower by Wright, 1950





GOODMAN: Proposal 1. and proposal 2.

five slender prisms of glass and steel to house the UN people; OR 3) Use the old League of Nations buildings. A new architecture (and I say this sadly, as an architect) does not necessarily create new ideas.

HAMLIN: I feel that the basic plan is not monumentally related to the rest of the city. Whether the treatment of the large open space to the North will succeed in making this integration is as yet uncertain.

WILLIAMS: I cannot regard the buildings as either monu-

mental or utilitarian; neither architectural nor engineering, in brief—without rhyme or reason, but that is not to say unsuited to their purpose. . . .

SANDERS: "Monumental" is perhaps applicable to the UN Headquarters, but not in the historic sense that it implies sacrifice of performance for emphasis on form. . . . The UN group appears to me to be direct in its expression and therefore easily comprehended. . . . If this is "monumentality" the Headquarters are monumental—and I like it!

2. COLLABORATION—Do you think the project proves the success of this sort of architectural collaboration? Do you want to suggest alternatives?

ARMSTRONG: There were only two possible procedures: Either the collaborative effort which was used in the important preliminary work, or a competition which as we all know is fraught with many and formidable pitfalls.

RAPSON: *No building group can achieve a dignity and strength worthy of the UN ideal without the fullest collaboration* (our italics—Ed.)—collaboration in every sense from inception to completion.

NEUTRA: I believe in architectural collaboration, but the selection of collaborators probably ought to be mutual and spontaneous, so that there is a minimum of hardship and disappointment while the job is seen through together.

HITCHCOCK: One architect should have been commissioned, probably Corbu. . . .

GOFF: How could Frank Lloyd Wright have been denied this opportunity?

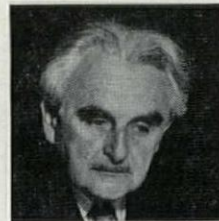
SANDERS: A single architect might easily have endowed the structure, consciously or unconsciously, with a degree of his own individuality. To be truly representative of the many peoples who seek and work for peace, anonymity of design was a requisite.

HILL: The Secretariat expresses one handwriting, notably that of Oscar Niemeyer and Le Corbusier. I believe it should have been in the hands of one man with the collaboration of the entire group; the "one" should have been Frank Lloyd Wright or Eric Mendelsohn.

ELTING: A single architect with some greatness in him might have been better assurance for a great building.

BOAZ: Le Corbusier, of course.

HAMLIN: One could have had a great international competition and from it chosen a board who would have been the actual architects right through from beginning to end.



NEUTRA:
"Spontaneous collaboration."



BODIANSKY:
"Objectivity and tact."

SCHINDLER: Ideas cannot be manufactured, and the mixing bowl will never replace the womb.

JACOBS: This was an amazing job of leading a symphony of prima donnas to a successful conclusion. . . .

McCALLUM: Individualism, cooperation and competition all have their merits; the choice must rest on the circumstance. I understand . . . that the design of the UN buildings involved an unusual mixture of all three—as such the outcome is vastly more successful than an acquaintance with human nature would lead one to expect.

PEREIRA: Harrison and his associates have my deepest admiration.

BODIANSKY (Member of original design panel): I must express my admiration for Harrison for the objective and tactful manner with which he organized the cooperation of 15 architects and engineers from the different countries.

ANTONIADES (Member of original design panel): Harrison . . . is an *excellent* and skillful architect, and he handled all matters with great tact and ability; this is how a spirit of friendship and harmony reigned throughout the duration of our collaboration. This spirit should serve as an example to the other committees of the UN!

3. EXECUTION:—How well do you think the Director of Planning retained the spirit of the original design?

BELLUSCHI: I think the Director of Planning has done as well as expected.

HORNBOSTEL: I feel that Harrison has done a superb job.

GEDDES: As far as I can gather, the principal credit should go to him.

BOAZ: Scarcely a single finish detail is in harmony with the thinking behind the space composition.

HITCHCOCK: I haven't at hand the relevant material to judge, but I should say the spirit had been gutted, if the metaphor can be forgiven.

RUDOLPH: Each cut in budget, each change in program and much of the detailing resulted in solutions which were inferior to the original designs.

KENNEDY: I am disappointed . . . I believe that to have retained the original character in the face of what must be an extremely complicated operational situation and in the particular context of current U. S. techniques and practice would have been a superhuman task.

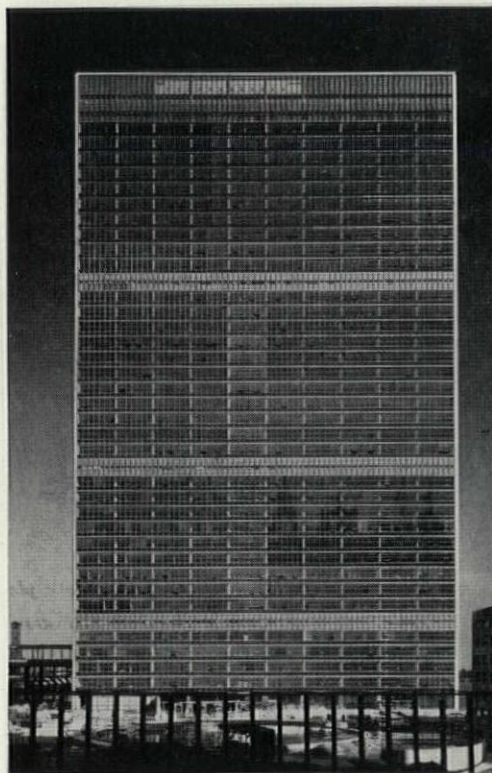
ARMSTRONG: The Director of Planning retained the spirit of the original collaborative design very well.

WURSTER: Very well, indeed.

CHERMAYEFF: The geometry and texture of Le Corbusier's sketch are there and make their point, but—oh—the "executed" detail and the concept do not jell. . . .

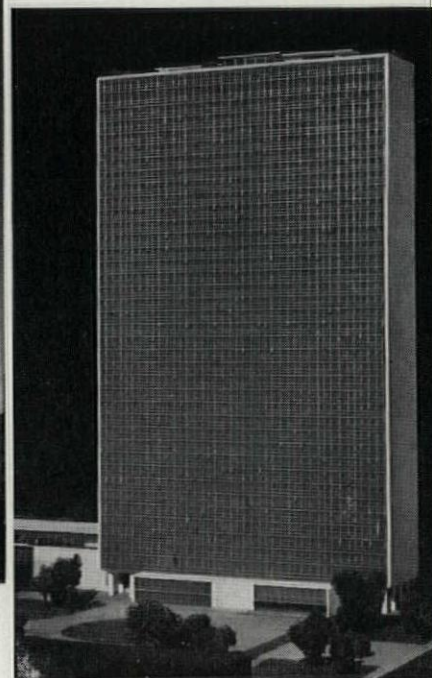
GOODWIN: The Director of Planning has improved on the original design.

SANDERS: He has added to it in definitive terms.



UN Secretariat above,

"Scheme 53" model at right



4. GENERAL IMPRESSION—How do you like the looks of the Secretariat Building?

GROPIUS: The first time I came across the building when it was half finished the impact and effect were positive and rather overwhelming.

HITCHCOCK: I like the *looks*. . . .

BOAZ: I like its general aspect—but a loud NO for each and every detail.

SCHINDLER: The Secretariat is a geometrical shape covered with geometrical patterns, and its enlargement does not convey monumentality but size.

ELTING: The Secretariat impresses one with its size, certainly. How much it has substance and how impressive it is in form I cannot say. . . .

HILL: I do like the Secretariat tremendously, but I feel that the kindergarten elements of common sense have been completely, arbitrarily thrown to the winds. . . . For example: If a glass wall is to face East, what justification is there to treat

the West wall of glass in the identically same manner?

RAPSON: A living symbol of a united world is not achieved by dropping a tower of marble and glass, with false glass spandrels in the midst of a thousand others. . . . A basic mistake in site selection was made.

ARMSTRONG: The Secretariat continues to look better and better each time I see it.

WURSTER: It's beautiful.

LITTLE: Yummy!

ALEXANDER: It sends me. . . .

McCALLUM: In the state in which I saw it, and with the reservation that I consider many buildings look their best when only partially complete, I thought it the most beautiful building in New York.

NEUTRA: Better than almost any structure I could glance at from a taxicab.



GROPIUS:
"Rather overwhelming."



HAMLIN: "Visually
expressive and effective."



HOWE: "A triumph of
unadorned proportion."



KENNEDY:
"I am disappointed."



GOFF: "Cliches from the dead
past and the dead present."

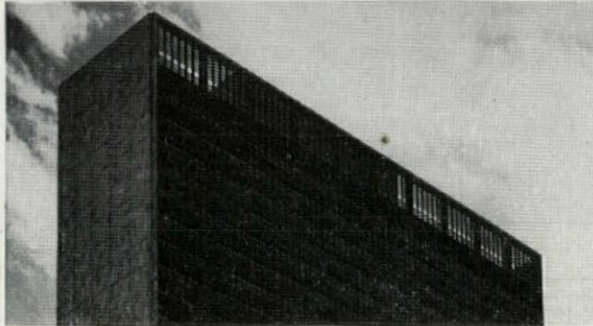
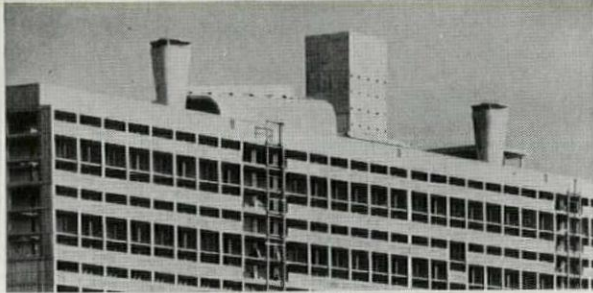


McCALLUM:
"Most beautiful in N.Y."

5. SPECIFIC DETAILS—Do you want to comment on any of the *exterior* features, such as the aluminum grilles, the glass spandrels, the marble facades or the equipment enclosure on the roof?

HITCHCOCK: The aluminum grilles are plausible enough in the middle perhaps, but a more plastic treatment would have been desirable at the top. The glass spandrels seem to promise a window wall not really present. The solid marble facade is extremely handsome—the best thing about the building; but did that not require excessive sacrifices? Some openings could have been introduced without disturbing the plane effect.

Fenno Jacobs



Bruce Elkus

HITCHCOCK: "A more plastic treatment." Above, *Marseilles apartments by Le Corbusier*; below, *UN Secretariat*.

NEUTRA: The marble somehow does not—from a distance—look like marble, a material which one is not used to seeing in association with an industrial type of beauty, as this glazed shaft has. From far away, I find people guessing that it is mottled, galvanized steel, instead of appreciating the marble.

HAMLIN: The enormous open grille . . . attempting to hide (but not succeeding in doing so) the elevator penthouses, etc., is a piece of facade architecture gone riot. There must be some real three-dimensional solution for this problem.

BOAZ: The whole thing is nothing better than embarrassing. Didn't anybody even care?

RUDOLPH: The visual change in texture expressing the mechanical equipment floors seems very successful. One is somewhat irked by the unequal spacing between these mechanical galleries: the proportions on the exterior face suffer from lack of preciseness because of this spacing.

ARMSTRONG: I think it is unfortunate that the expression of floors filled with pumps and pipes should be permitted to mar the total serene simplicity.

MCCALLUM: I find the horizontal bands a disturbing element in the upward sweep of the eye. The effect is exhilarating now; it would be far more so without them.

RUDOLPH: The glass spandrels are most successful. Perhaps there is more lasting interest in the varied shapes and more subtle proportions found in the great glass wall of Le Corbusier's *Pavillon Suisse*. The equipment enclosure on the roof maintains the simple silhouette of the Secretariat, and thus acts

as a beautiful foil to the more irregular silhouette of the Meeting Halls and General Assembly. It is therefore justifiable.

HORNBOSTEL: The grille type facing at the mechanical equipment floors does not bother me . . . but I raise the question whether . . . the whole use of mechanical equipment floors could have been answered in another way. I am in perfect agreement with the glass spandrels on the East facade but definitely question it on the West. The solid marble facades were a striving for monumentality, but since they are so narrow and tall they look as though they will fall out. . . .

RUDOLPH: The marble facades may be an oversimplification although certainly effective in juxtaposition with the East and West facades. The attempt at expression of the columns at the corners does not seem successful, primarily because they have been sheathed with the same marble that forms the curtain walls of the North and South ends—thereby robbing the marble walls of their expressiveness. I don't think that a slab-like material can ever successfully sheathe a structural member.

GOFF: Shades of Washington, D. C.!

BELLUSCHI: The solid marble on the North and South is illogical, arbitrary, and therefore disturbing. . . . We become enamored with a stylistic form and torture the insides to fit. The marble is carried on the edge of the roof (East and West) as if the designers were dealing with a piece of furniture. . . .

GOODWIN: The general effect is very distinguished, and these details do not detract from it.

NEUTRA: Certain devices to increase uniformity of appearance, and again to diversify it, or make more pleasing those utilitarian features on the top, than they would be by sheer neglect—can bother the conscience of the architect. . . .

GRUEN: Criticism of details such as grille-type facing of pipe galleries, roof equipment enclosure, etc., seems to me to be insignificant in relation to the overall solution and impression.

How about *interior* details, such as the upswept soffits above windows, or the V-shaped ducts at outside columns?

BEIDLER: Concerning the upswept soffit—what better way is there to hang venetian blinds, or how else can you make a thick floor construction appear to be only several inches thin? As for the V-shaped ducts, these are an ingenious device for they not only provide an uninterrupted vertical chase, but also, coincidentally I am sure, make a heavy column appear to be only a few inches wide.

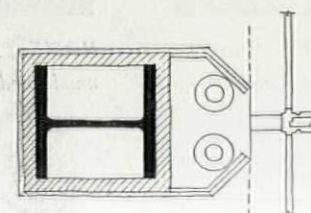
RUDOLPH: The upswept soffit seems to be the most awkward detail forced on the Secretariat Building. The whole relationship of column to curtain wall on the East and West side does not seem very well conceived, complicating as it does the interchanging of office partitions.

HORNBOSTEL: I have no objection to the V-shaped aircondition ducts, but, as I said earlier, I feel that the advancement

RUDOLPH: "More subtle proportions in the *Pavillon Suisse*."

Right: Exterior column plan and slanting window soffit.

Courtesy Museum of Modern Art



of technical knowledge today could have solved the whole problem of airconditioning through another means.

HAMLIN: My main comment on the interiors is that the sill height is much too low for double-hung windows in a building of this height. The feeling of insecurity is terrific.

HILL: To me it is against human nature to put a man in a glass-walled-box—with venetian blinds as the only solution for his comfort. . . .

GRUEN: A short inspection tour of the interior convinces that it fulfills the needs of an office building in a simple, practical and efficient manner.

Esra Stoller, Pictor



Typical office interior. Note flexible ceiling fixtures and partitions.

6. THE FUTURE—What influence will the UN Secretariat have upon modern architecture?

GOFF: I don't think it will have any constructive influence on *architecture* because architecture is growing and living and seeks roots in authentic soil. No doubt there will be many imitations of this imitation for office buildings that are *just buildings*, as this one is, but nothing so dead to start with can possibly inspire a living architecture. It can be no more than a crutch for the lame and the blind who, too, can only fake simplicity, who can never understand that true simplicity must be earned, who are powerless to earn it. If the UN can really stand for something, it will be in spite of, not because of this group of buildings. Architecture could have helped.

HOWE: The most significant influence may be (after hearing comments from business men, our masters, I can't say "will be") to justify architects, who now seem to be threatened by a romantic reaction, in the opinion that the possibilities of a reasoned expression of function through structure in unadorned proportional form, have not yet been exhausted.

YOST: Its influence on the world and on peace is the question. Architects are small stuff compared to that, and should not start their private war.

JACOBS: It is, of course, just another step forward as a fine contribution to the art of architecture. . . . In spite of all that may be argued, one cannot help but feel Le Corbusier's touch—a small enough reward for his years of struggle.

KENNEDY: The idea of an office building such as this has been in architects' minds for over thirty years. It is intensely interesting finally to be able to see the reality with all its attendant technical and cultural modifications. . . . I would hope, now that it has been achieved, that it will not be repeated.

HITCHCOCK: The most significant influence of the Secretariat will, I imagine, be the end of the use of glass walls in skyscrapers—certainly in those with western exposure, unless exterior elements are provided to keep the sun off the glass. In other words, the building seems to me an end, not a beginning, and roughly speaking some twenty years out of date in terms of its expression.

SCHINDLER: Let's hope that the UN buildings are the final apotheosis of the approach to architecture called the "International Style" and that we will finally realize that 1 plus 1 equals 2 is true only in mathematics, but that in nature and art 1 plus 1 must become 3.

ARMSTRONG: No comment. History will tell.

HORNBOSTEL: Since the building is one of the first attempts to find symbolic, emotional, and monumental character within the modern vernacular, it will just be copied all over the place, and in about 90 per cent of the cases the copies will make no sense whatsoever. . . . The Secretariat is a superb answer to an office building. It should be explained in such a way that architects will not just copy but will utilize the thinking that has gone into answering the problem.

MCCALLUM: I hesitate to prophesy—except along Delphic lines—but suggest that good architects will be stimulated by it, and will learn from its faults, which will only be fully revealed when the building is in operation. Plagiarists will copy its slab-like form, and perhaps its large areas of glass (as in most such cases, success will result where requirements happen to demand such form and finish, failure where not). Others will dub it an "upturned egg box," or "human filing cabinet," and will not be influenced by it.

HAMLIN: The chief result of the Secretariat seems to me to be already felt in many quarters—it is not only the fact that a contemporary building can be as imaginative in its handling of materials, as elegant in its details, as any building in any past style, but also the feeling that the architect's job now is no longer the mere finding of adequate functional solutions but is even more the creation of visually expressive and effective experiences. . . . Whether Le Corbusier's "cliff of glass" itself was the ideal solution is another question, and to seek impressiveness of height in a city distinguished for its high buildings is perhaps a silly aim. . . .



HITCHCOCK:
"Not a beginning."



SCHINDLER:
"Apotheosis of the
'International Style'."

KECK: The Secretariat's only present monumentality is its size. . . . I doubt it will have much influence upon architecture except as a reminder that we need a new concept of monumentality which is now lacking in the UN group.

BENNETT: Beauty is a "promise of function." The UN buildings, by showing men can work together, promise us a world in which all men *could* function together in peace. That world would be a flexible world. That world would allow for variety and growth. That world would not succumb to elementary mathematics and judge 22, 22, 22 ft. bays somehow noble and 20, 18, 28 ones something bad—especially when the latter corresponds to use, and the former a possible, microscopic economy and drafting board convenience. That world would honor the architects who worked together and their Director of Planning, who not only retained their spirit, but nourished it. That world, taking for granted change and sometimes improvement in architectural details, would care little for the amount of effect the buildings had on architecture, be grateful for their inherent promise of faith to all men and women of good will. That world would have supplied the final meaning of the UN group as a symbol—let us, as architects now, be proud of what our fellows have so well wrought for that world to be.

THE SECRETARIAT'S ORIENTATION

—why architects sited the building as they did, and how this affected its mechanical features

Of all architectural criticism directed against the UN Secretariat, most vehement is that opposed to a great glass wall facing the western sun. Out-of-towners who have lived through one of New York's really hot summers are torn with pity for unsuspecting foreigners who, in years to come, may roast behind a thin protection of glass and venetian blinds.

The cudgel against the present design was originally taken up by Le Corbusier who protested to Warren Austin: "My strong belief is that it is senseless to build in New York, where the climate is terrible in summer, large glass areas which are not equipped with a 'brise-soleil.' I say this is dangerous, very seriously dangerous."

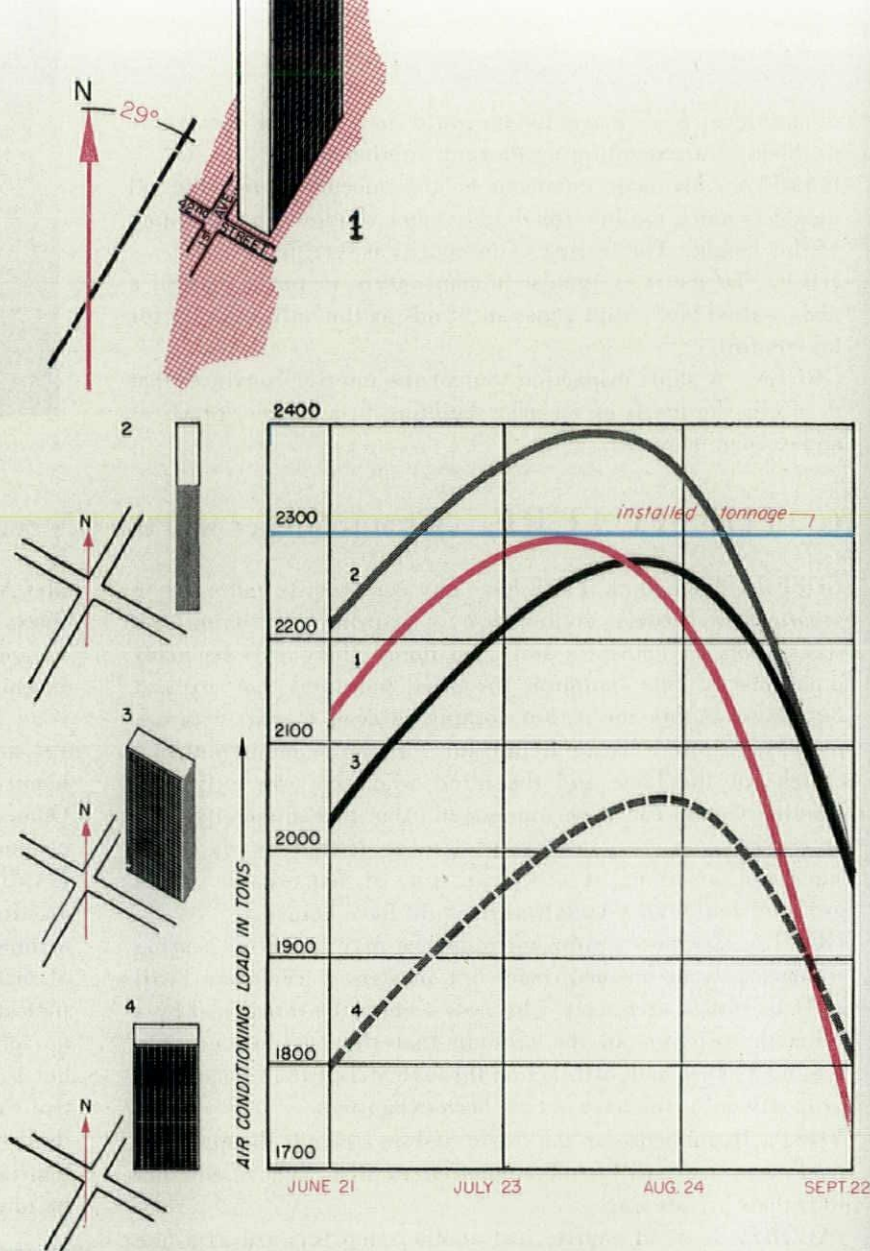
A few American architects have been equally critical of the great glass facade and the building's orientation. "Air conditioning and venetian blinds are pitted against the powerful sun," said one. "Some other answer could have been found for the west wall and the terrific sun," sums up many opinions. Critics point out that while the western sun is a summer fireball, simply turning the existing design 90° would put a blank wall to the west and glass walls to the north and south—an ideal combination.

The censors would have an unassailable position except for two points: 1) the efficiency of modern air conditioning which could make an inside office in hell quite comfortable, and 2) the little appreciated fact that Manhattan island does not lie due north and south. New York's so-called north-south avenues run 29° east of north. So the Secretariat's much-lamented west wall actually faces more nearly northwest than west—and receives much less sun heat than might be imagined.

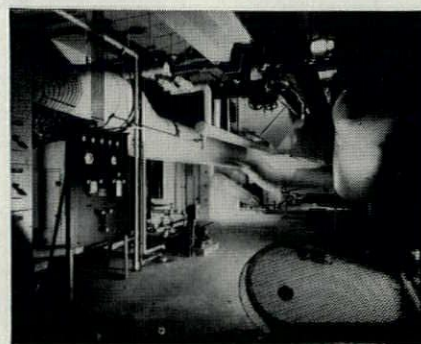
The orientation study above, made for the UN Planning Office by Engineers Syska & Hennessy, clearly shows the difference between the orientation which exists (case No. 1) and what the air conditioning load might be if the building were turned 90° (as in case No. 3) or if its glass walls faced true east and west (as in case No. 2), or north and south (case No. 4).

If the glass walls were parallel with 42nd Street (rather than First Avenue), one wall would face approximately southwest and throughout the summer season would lap up almost as much sun as is now the case. By August 1, the present northwest wall has the following sun load (BTU'S per hour per square foot of unshaded glass) as compared with a theoretical southwest wall which the building would have if it were parallel with 42nd Street, according to the 1950 ASHVE Guide.

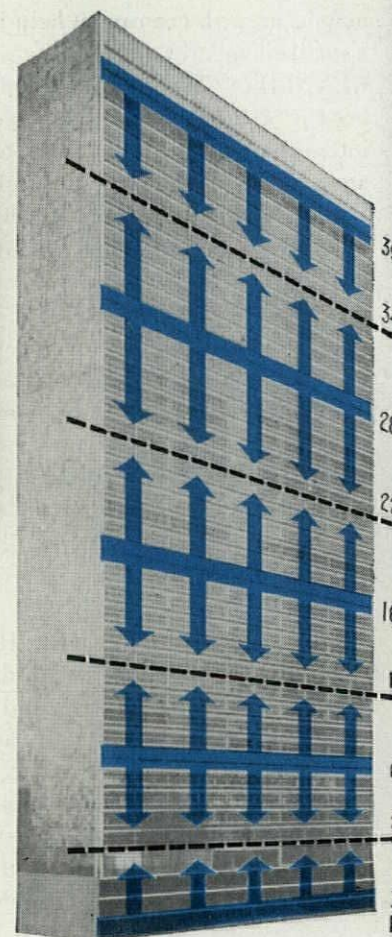
Time	Northwest Wall	Southwest Wall
8 a.m.	14	14
9 a.m.	15	15
10 a.m.	16	16
11 a.m.	16	22
12 noon	16	62
1 p.m.	16	110
2 p.m.	30	144
3 p.m.	76	156
4 p.m.	122	147
5 p.m.	141	118
6 p.m.	106	62
7 p.m.	18	6



Above: Plan No. 1 is existing orientation. Curves show air conditioning load for each of four possible sitings.



Secretariat has four pipe galleries plus added equipment in basement, each supplying floors as shown at right. Building-wide rows of louvers at each mechanical floor are used for fresh and exhaust air. Photo above shows part of a mechanical floor, which permits concentration of most heating, air conditioning, electrical, telephone and other such equipment.



The two walls have approximately the same sun load until 11 a.m. when the existing orientation begins to show an advantage. From noon until 4 p.m. the present orientation is definitely cooler, as the sun strikes a southwest wall with considerable more force than a northwest wall. Hour by hour during the heat of the day a glass wall parallel with New York's cross-town streets would be building up heat.

By 5 p.m., however, the situation alters (as of August 1). The sun has moved into the northwest quadrant and the present orientation of the Secretariat gets more heat than if the building had been sited differently. From 5 to 7 p.m. the northwest wall is warmer.

As curve 4 shows, the best theoretical orientation for an office building with two glass walls is to put the glass on the true north and south. This was considered, but the long, narrow site would not esthetically accommodate a building set diagonally across it.

During experiments with models in several orientations, the planners found several good reasons for orienting the building as they did. From midtown New York and from Queens, the Secretariat looks better as it is now located. If it were parallel with 42nd Street a shadow would be cast across the site. If the building were moved to the north end of the plot (so the shadow would fall off the property), there would not be a suitable entrance.

What price orientation?

None of the critics has argued that the Secretariat is just another office building. That it should be a great monument to the United Nations is accepted. The argument has been concerned with the price that personnel working in the building must pay in comfort because of the sun load, and whether the cost of additional air conditioning is justified.

The above curves showing air condition tonnage are the "money curves" because tonnage means money. The maximum load for

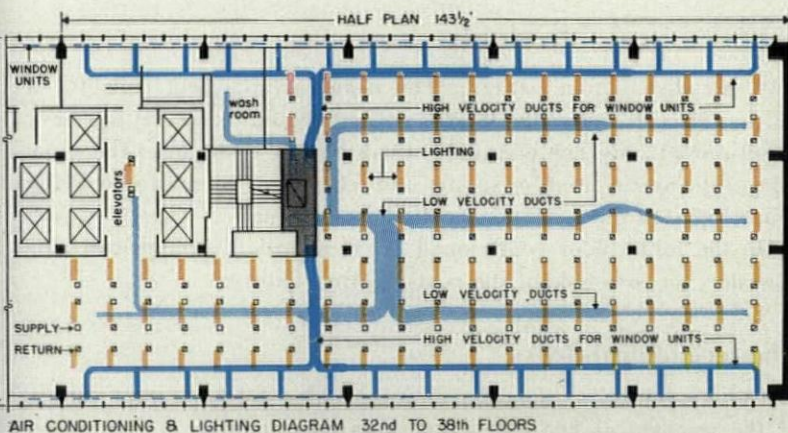
which an air conditioning system is designed is approximately the same for orientations No. 1 and No. 3. Engineers estimate that both initial and operating costs will probably be about 2½ per cent higher for the present orientation.

As for comfort of personnel, the planners believe they have installed enough capacity to insure summer comfort for all workers. Sky glare is a separate problem. Since the typical office worker keeps his venetian blinds half way down even in conventional buildings, there is little doubt that UN workers will too.

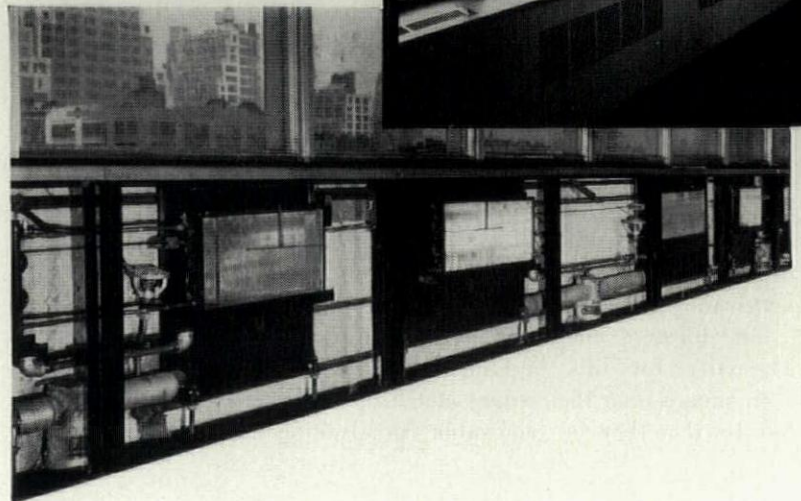
The cost of air conditioning and heating was approximately \$3 million, or \$6 per sq. ft. This compares with \$4.50 to \$5 per sq. ft. for several other New York office buildings which average 22 per cent of their facades in light openings rather than 68 per cent as in the Secretariat.

Could the cost have been reduced?

But \$3 million is still a lot of money for air conditioning 36 floors. (The first basement is used for offices and is also conditioned). Could this figure have been cut? While Le Corbusier was not arguing for sunshades to lower air conditioning costs, it is on such economic grounds that external shades are being recommended for a number of other office buildings, especially in the south and southwest. The UN Planning Office made an exhaustive study of sunshade devices and dismissed them as uneconomical in the New York area and a snow and ice hazard. Double glazing was also studied and rejected on economic grounds. Light-colored venetian blinds, while reflecting more sun heat out of the building than the dark gray blinds selected, were not used because they would make an irregular pattern as seen from the street. An idea the Planning Office did buy, however, was heat absorbing glass. It cost 25 per cent more than plate glass but was justified on the grounds that it would cut down the sun load enough to pay for itself.



Arrangement and abundance of lights and grilles (left) gives great flexibility. For each seven-window bay (photos right) there are six air-conditioning units, plus ceiling diffusers for interior zones, making possible several partition arrangements. Lower left: diffuser, with ducts exposed in dropped ceiling area which serves as return air chamber.





Secretariat's lobby has cove lighting that bounces fluorescent light from concealed tubes. Rectangular slots are air grilles.

Design of the air conditioning system

There is nothing revolutionary about the air conditioning system. Below the windows are air conditioning units as used in many other new buildings. Interior zones are cooled or warmed with conventional forced air. For winter heating, the windowless north and south walls have hot water wall panels. The first floor has hot water floor coils. Mechanical floors are heated by steam unit heaters, and typical floors by hot water circulated through the window units.

The air conditioning system has three features that make it slightly different from a typical office building. Because UN personnel come from all over the world and have such variations in ideas of comfort, the temperature range for private offices is wider than usual. The window units will provide a spread of over 12°. Temperature in interior zones, however, is set by building engineers.

The second unusual feature is the amount of flexibility that has been built into the design. There are six air conditioning units per seven window bay because the bays are used for offices of several different sizes. Space that is arranged in one pattern this year may be divided differently next year.

Another flexibility feature related both to air conditioning and lighting is that the standard fluorescent light with its integrated air diffusers can be shifted 1 ft. in any direction. This permits changes to existing partitions without losing control of supply and return air. Unusual flexibility was built into the electrical system.

Air diffusers above the ground floor were a new design made especially for this building. Requirements were that they be 1 ft. square, that their edges match the ceiling pan and the lighting fixture, that they be removable for cleaning and that they have a

360° air distribution pattern. The usual arrangement calls for a diffuser at each end of the fluorescent fixture, but some fixtures have a diffuser at only one end, and others two at each end. The same type of diffuser is used for supply and return air, the return air being drawn up into the space above the hung ceiling.

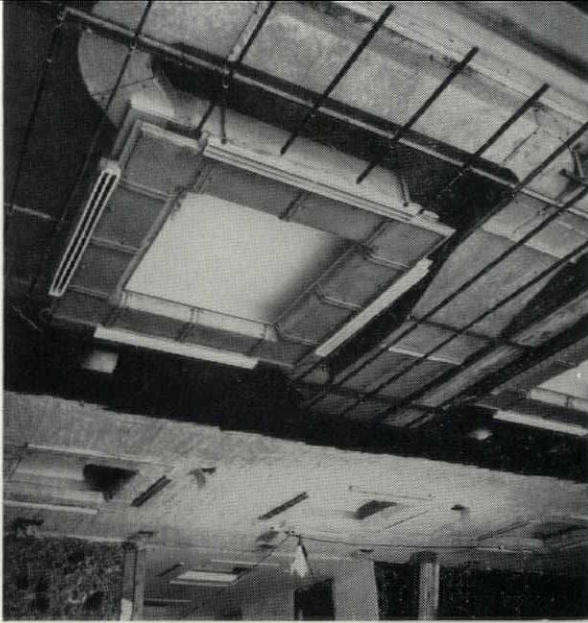
On the lobby floor conditioned air is supplied through two narrow slots on each side of the cove lighting fixtures.

The mechanical floors

The accompanying diagram shows the pleasant horizontal pattern of the mechanical floors and the areas they handle. Refrigeration and air conditioning equipment in the third basement provides chilled water for the entire UN Center and conditioned air for the first basement and the ground floor. Locations of the mechanical floors were influenced by the elevator transfer floors, the house tank requirements for plumbing and fire purposes, the transformer vault on the 28th floor, the size of the chilled water risers and the air conditioning and ventilating duct areas. Each of the mechanical floors is occupied by equipment which is not part of the air conditioning system. Approximately 26 per cent of the building's net area is used by mechanical and service space.

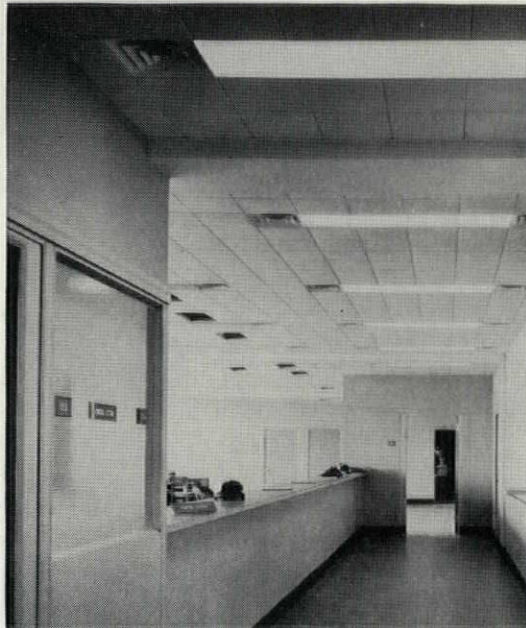
Lighting

Lighting in the Secretariat is sharply divided between the lobby and the up-stairs offices. For the lobby Lighting Consultant Abe Feder designed a series of square plastered coves (see photograph) which hide fluorescent tubes. He also designed a down light for



Lighting was especially designed for lobby to hide light source and to combine lighting and air conditioning outlets.

Upstairs lighting is inbuilt fluorescent troffers with louvers. At one or both ends of fixture are integral diffusers.



incandescent bulbs for use in the area near the elevators. (While the magnificence of the building's exterior leads the visitor to expect something equally fresh and grand in the lobby, he doesn't find it, and it may be that the lighting fixtures could have contributed a bit more drama.)

Above the ground floor the lighting is strictly utilitarian. Syska & Hennessy made a study of both incandescent and fluorescent fixtures as to original cost, maintenance, replacement and operating expense. Flush incandescent units utilizing prismatic lenses with 200 watt bulbs would have cost \$3,934 per bay over a ten-year period. Inbuilt fluorescent troffers with prismatic lenses and three 40-watt tubes would have cost \$2,481. Inbuilt fluorescent troffers with louvers and three 40-watt fluorescent tubes would have cost \$2,362. The contract went to the third type: troffers with louvers.

As seen from the outside, the Secretariat will be one of the few buildings of its size in the country that presents a pleasant, uniform fluorescent light pattern. There will not be the hodgepodge of various kinds and arrangements of fixtures that most buildings present to the street. The Secretariat at five o'clock on a winter evening will be as attractive as in summer sunshine.

If the lobby lighting of the Secretariat is not quite as dramatic as one might expect, the lighting engineers are quick to point out that they are saving their strength for the other buildings. While the exterior mass of the Secretariat gets the visitor's attention as he approaches the group, undoubtedly the interiors of the Assembly and the Meeting Halls will command their attention once he enters. It is in these buildings, still unfinished, as well as in the outdoor lighting plan, that the real lighting drama will occur.

CONSTRUCTION OUTLINE: **STRUCTURAL STEEL**—American Bridge Co. **CONCRETE WORK:** Cement—Alpha Portland Cement Co., Atlas Portland Cement Co., and Lehigh Portland Cement Co. **HARDENER**—Preservative Products Co.; **Mesh**—Fireproof Products Co. and American Steel & Wire Co.; **Reinforcing Steel**—Bethlehem Steel Corp.; **Steel Accessories**—Carroll-McCreary Co. **STONE WORK:** Marble—Vermont Marble Co.; Granite—John Swenson Granite Co. **ALUMINUM:** Aluminum Company of America. **INSULATION:** Fibrespray—L. H. Larkin, Inc.; Fibre Board—Celotex Corp.; Foam-glas—Pittsburgh Corning Corp.; Metal pan type—Johns-Manville Corp.; **Acoustical plaster**—Kelly Island Lime & Transport Co. **CAULKING COMPOUND:** Kuhls Co. **DAMP-PROOFING:** Flintkote Co.; Truscon Laboratories and Armstrong Cork Co. **ROOFING:** Tile—Ludowici-Celadon Co.; water-proofing—Barrett Division, Allied Chemical & Dye Corp. **SHEET METAL:** Republic Steel Corp.; International Nickel Co. and Bethlehem steel Corp. **CERAMIC TILE:** American Olean Tile Co. and Mosaic Tile Co. **ALUMINUM WINDOWS:** General Bronze Corp. **GLASS:** Libbey-Owens-Ford Glass Co., Mississippi Glass Co., Pittsburgh Plate Glass Co. and Blue Ridge Glass Co. **PLASTERING:** Gypsum partition tile—U. S. Gypsum Co.; Finishing plaster—National Gypsum, U. S. Gypsum Co. and Newark Plaster Co.; Finishing lime and acoustic plaster—Kelley Island Lime & Transport Co.; Neat and bond plaster—National Gypsum Co. and U. S. Gypsum Co.; Finishing lime—Woodville Lime Products Co.; Keene's cement—Best Bros. Cement Co.; Portland cement—Atlas Portland Cement Co. and Lehigh Portland Cement Co. **ACOUSTICAL CEILINGS:** Johns-Manville Corp. **MILLWORK AND CABINET WORK:** Fox Bros. Mfg. Co., U. S. Plywood Corp. and Roddis Plywood Corp.; Fireproofing—Protexall Co.; Veneers—Monteith & Co. **METAL DOORS:** Sheet metal—Bethlehem Steel Co.; Enameled hollow metal—Atlantic Metal Products Co.; Stainless steel—General Bronze Corp.; Tempered Glass—Herculite, Pittsburgh Plate Glass Co. **DRY-BUILT PARTITIONS:** Hollow metal—E. F. Hauserman Co. Sheet metal—Republic Steel Corp. and U. S. Steel Corp.; Sheetrock—U. S. Gypsum Co.; Glass—Pittsburgh Plate Glass Co.; Toilet partitions—Henry Weis Mfg. Co. **PAINTING AND FINISHING:** Devoe & Reynolds Co., U. S. Plywood Corp., U. S. Gypsum Co., Truscon Laboratories, Breinig Bros., Inc., Columbus Coated Fabrics Corp. and Cleveland Paint & Varnish Co. **VENETIAN BLINDS:** Slats—Flexalum, Hunter Douglas Corp.; Head and Rails—Levolor Lorentzen Inc.; Tape—M. Klahr, Inc. **HARDWARE:** Lockwood Hardware Mfg. Co. **FLOOR FINISH:** Asphalt Floor Tile—Johns-Manville Corp.; Ceramic tile—American-Olean Tile Co.; Chenille carpet—Mohawk Carpet Mills, Inc. **ELECTRICAL:** Panelboards, and Busway—Trumbull Electric Mfg. Co.; switchboards, underfloor duct, conduit, switches and receptacles—General Electric Co.; Wire and Cable—General Cable Co.; fire alarm system, watchmen's stations, misc. systems—Acme Fire Alarm Co.; Lighting Fixtures—Globe Lighting Products Co., Inc., E. F. Caldwell Co. and Holophane Co. **ELEVATORS AND ESCALATORS:** Otis Elevator Co.; Cabs, Doors, Frames—The W. S. Tyler Co.; Cable—American Steel & Wire Co.; Escalator enclosures—General Bronze Corp. **SPRINKLERS:** Pipe—Bethlehem Steel Co. and National Tube Co.; Valves—Kennedy Valve Mfg. Co.; Fittings, Hangers, Sprinkler Heads—The Grinnell Co., Inc. **PLUMBING:** Pipe—Chase Brass and Copper Co., National Tube Co., A. M. Byers Co., Central Foundry Co., Universal Concrete Pipe Co. and Halsey Taylor Co.; Fittings—Illinois Malleable Iron Co., Acheson Mfg. Co., Walworth Co., Central Foundry Co., Universal Concrete Pipe Co.; Valves—Fairbanks Co. and Chapman Valve Mfg. Co.; Plumbing Fixtures—American Radiator-Standard Sanitary Mfg. Corp., Speakman Co. and (drinking fountain) Halsey Taylor Co.; Lead Products—Glaser Lead Co.; House Tanks—Quaker City Iron Works; Hot Water Heaters—Patterson-Kelley Co.; Hot Water Regulators—Powers Regulator Co.; Fire Standpipe Equipment—Croker Fire Prevention Co. and Walter Kidde Co.; Drinking Water Units—Frigidaire Div., General Motors Corp.; Soap Dispensing Equipment—U. S. Sanitary Specialties Co. and American Dispenser Co.; Floor Drains—J. A. Zurn Mfg. Co.; Pumps—Peerless Pump Div., Dayton-Dowd Co.; Insulation—Robt. A. Keasbey Co. **HEATING, VENTILATING AND AIR CONDITIONING:** Weathermaster Window Units—Carrier Corp.; Fans, Blowers—American Blower Co.; Filters—American Air Filter Co.; Air diffusers—Anemostat Corp. of America; Pumps—Worthington Pump Co.; Steel Sheets—Bethlehem Steel Co.; Tanks—Buffalo Tank Co. **CONVEYORS:** Sneed & Co. **PNEUMATIC TUBES:** Airmatic Systems, Inc. **DUMBWAITERS:** Elevator Supplies Co., Inc. **MAIL CHUTES:** Cutler Mail Chute Co.; Sheet Metal—American Brass Co. and U. S. Steel Corp.; Glass—Pittsburgh Plate Glass; Hardware—Yale & Towne Mfg. Co. **ROLL-UP STEEL DOORS:** The Kinnear Mfg. Co.

WHERE DO WE GO FROM HERE?

For the Office Building, a New Look

The new glass building on the East River had done a great many things: it had supplied a monumental symbol for the UN; it had produced a fine example of the free-hanging glass-and-metal curtain wall; it had given an impressive demonstration of the power of technology to control climate; it had proved that architectural collaboration (even among determined individualists) was not impossible. What had it done to point the way for the tall office skyscraper of the future?

The answer was already to be found in projects all over the world. In the U. S., just a dozen Manhattan blocks from the Secretariat, Lever Brothers were excavating for their new glass tower on Park Avenue (BUILDING, June '50); not far from Detroit, Ford was about to go to work on a similar office project; in Dallas, Chicago, Indianapolis and Pittsburgh, gleaming towers faced with metal and glass were either going up, or were in the works. The "UN Look" was beginning to sweep the country.

What was happening was not so much a new analysis of office space in the light of the Secretariat's lessons—for in that respect the building on the East River had made no attempt to contribute striking experiments; instead, the impact of the Secretariat was making the steel-and-glass prism more palatable, more acceptable to conservative investors' tastes. Just as the modern Secretariat had supplied a monumental symbol for the UN, so the UN had, in turn, given modern architecture an aura of respectability, an association with world-wide prestige. The problem now would not be how to persuade an owner to put up a modern building; it would be to prevent him from blindly cribbing the "UN Look" and UN details where they made no practical sense.

For the World, a New Point of View

But more than any of these architectural details, the collaborative job itself would exert a lasting influence upon the United Nations. In an organization hamstrung from the start

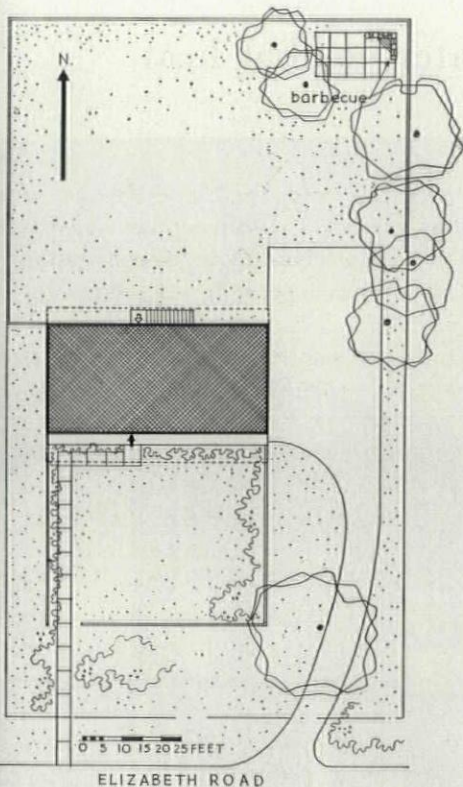
by sabotage and conspiracy, the work of the design panel under the leadership of the Director of Planning was a rare—and with all its shortcomings—an impressive demonstration of the possibilities of international cooperation. In the months that have passed since this collaborative effort was concluded, bitterness and recrimination have sometimes made more headline news than the more positive accomplishments of the design panel. But now these more positive accomplishments could no longer be denied; a magnificent monument to them stood, 544 ft. high, for all to see. It was true that the collaborators had argued and disagreed—and it would have been a shocking demonstration of cultural sterility if they had not. It was equally true, however, and infinitely more important that in the end they had all agreed on one scheme, on one solution.

Last month the tall, self-effacing man who had worked hard for this agreement sat in his unpretentious office in Rockefeller Center and tried to review what was important to him in this job. "It was a UN job—a collaborative job. The collaborative aspect is the most important, more important than any individuals and their special contribution. If I were to start giving credit to individuals, I'd be giving credit to Corbu, to Mies, to Ray Hood, to Markelius, to every single panel member, to Sullivan—to everyone who did pioneer work in the first half of the century. Just leave me out of it. . . ."

But although Wallace Harrison might prefer to be left out of it, the world would judge differently. In an age that was desperately trying to catch up with technological progress and was finding present moral and political means inadequate, Wallace Harrison had set a magnificent example. Out of the job that he had helped to do, he emerged the unwilling hero. The sword would strengthen the UN in many parts of the world; but the patience and tact of diplomacy and cooperation might produce results more lasting. It was fitting and eminently satisfying that the new kind of architect—the coordinator, planner, artist, technician—should have given so convincing and stirring a proof that our last, best hope could, with good will, become reality.

Bruce Elkus





Front of the Ryan house in San Antonio faces south, makes effective use of louvred wooden fences to create privacy without stopping the important southerly breeze. Four-foot roof overhang is louvred to cut the sun's rays, also to deflect the golfball-sized hailstones which occasionally pelt San Antonio. Milton A. Ryan, Architect and Builder.



All photos: Ulric Meisel

FOUR SAN ANTONIO HOUSES

set new design and quality standards for merchant builders

House buyers in San Antonio this summer had the unique chance to choose high design houses from among no fewer than four well-planned subdivisions. The usual city this size is lucky to have one, but San Antonio is no usual city. It knows how to live. Years ago, its alert citizens showed how a meandering river could be converted into a secluded old-world walk in the midst of busy downtown. The builder houses are in the same spirit of gracious good living.

One reason for the town's happy collection of good subdivision houses is that it is the home base for the Southwest Research Institute's famed Quality House Program. The four projects are among 36 which the Program has sponsored since it was conceived by Revere Copper & Brass Co. and *THE MAGAZINE OF BUILDING*. Today, under the co-sponsorship of Revere Copper & Brass Co. and Crane Co., the program is a potent force towards hastening the day when good design will be taken for granted in merchant builder projects.

Sponsoring good houses is only half the Institute's housing pro-

gram. The other half consists in doing research to improve building technology. Best known of the Institute's experiments is the Youtz-Slick concrete slab construction system. (*BUILDING*, June 1950). Other materials and methods now being developed in its laboratories include lightweight aggregate blocks, plastic wall finishes and a slab that eliminates the need for perimeter footings.

The Institute sets some stiff standards for builders who want its seal of approval. Houses must be designed by a registered architect. More important, they must be *well-designed*. The price tag limit for an approved house is limited to \$20,000, and the builder must plan to put up at least ten of them. Says C. W. Smith, director of the Program: "This is no model-house proposition. Our aim is to get a planned subdivision of well-designed houses, not just one or two units spotted around." How well the Institute is carrying out this aim may be seen in the four houses shown on these pages, all of which are located in San Antonio.

1. Louvered sunshades, stilt foundations and roof water combat heat

This house on stilts makes good sense. Architect Milton Ryan takes advantage of a sharply sloping lot and sets most of his redwood-plank house on graceful concrete cylinders. The results are two-fold: 1) the house is set high to take full advantage of the breezes and 2) a spacious garage and sheltered rainy-day play area are provided underneath the living quarters.

Stilt houses are not new. Primitive men used them for protection against the elements—and other men. More recently, stilt houses were popular among the early modernists of the Thirties. The main criticism of these second-story houses is that many of them gained a trick but lost contact with the ground. Architect Ryan has logically confined his stilts to the rear of the house where the ground drops 10 ft., and left a snug ground-hugging front close to street level. In front it's a ground level house; behind it's a second-story house but the transition is unforced and natural.

Although he oriented his house to the breeze, Ryan knew that no amount of careful orientation is a match for San Antonio's wilting summertime heat. To lower indoor temperatures without resorting to the expensive alternative of air conditioning, Ryan provided a neat variation on the old idea of flooding the roof with water to cool the house. Most such systems provide merely for a still-water defense against the sun's rays; Ryan's system, however, provides for continually flowing water. The water is brought to the roof through a special flow valve during the summer with the aid of the pump which operates the radiant heating slab system during the winter. On warm days, water is continually pumped through a 1½ in. pipe to the roof, which is pitched 8 in. from front to rear. To keep the water spread evenly across the roof, Ryan has installed six 1½ in. galvanized iron baffles at three-foot intervals. (Picture, opposite.) As the water overflows each of the baffles, it moves to a drain on the low side of the roof where it is returned to the water circuit.

On a very hot day, the system will lose about 50 gallons through evaporation alone. This heavy use of water costs the owner of the house about \$4 extra a month during the summer but he feels that this is low-cost comfort. The roof-cooling system brings interior temperatures down an average of 15°. If the system is not running on a hot day, the roof will get as hot as 170°; when it is running, the water will cut this down to under 120°.

An unexpected psychological advantage of the roof-cooling system, according to the owner of the house, is the low, gurgling noise that the water makes as it is pumped onto the roof. This is especially true at night, when other noises are stilled. Says the lady of the house: "It sounds just like a mountain stream and it makes you feel cooler just to hear it!"

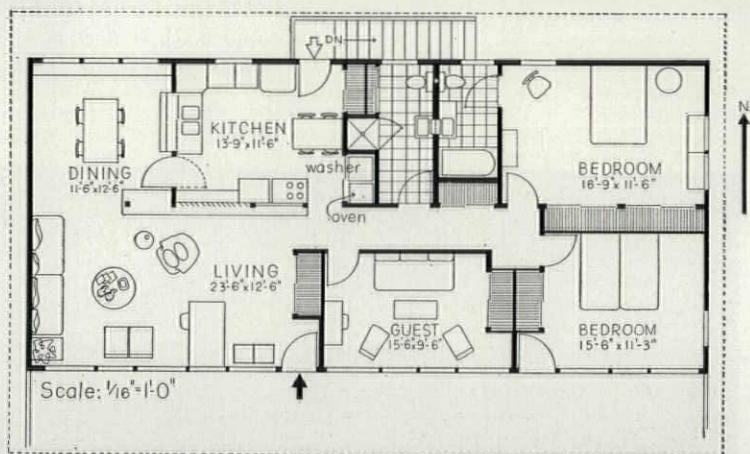
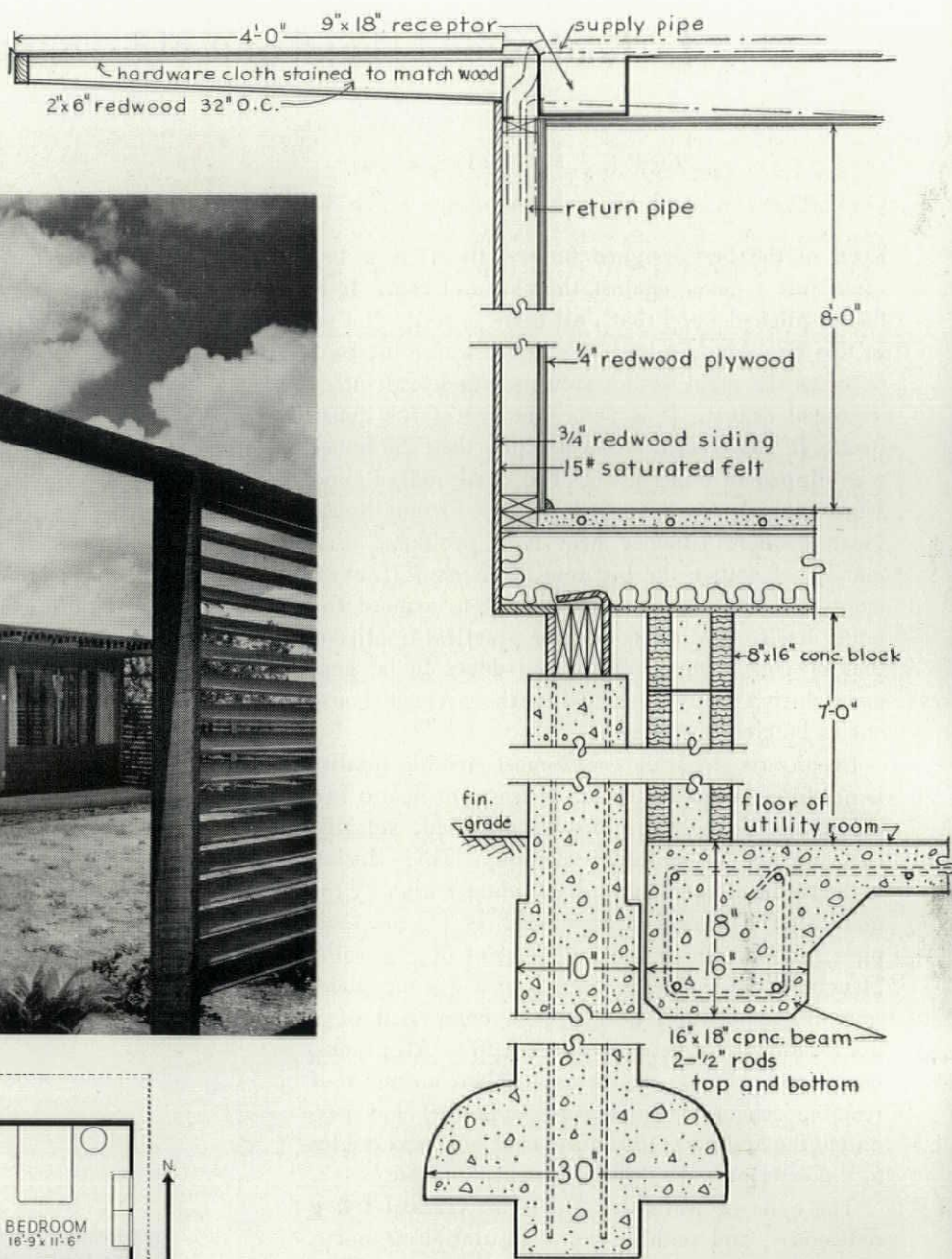
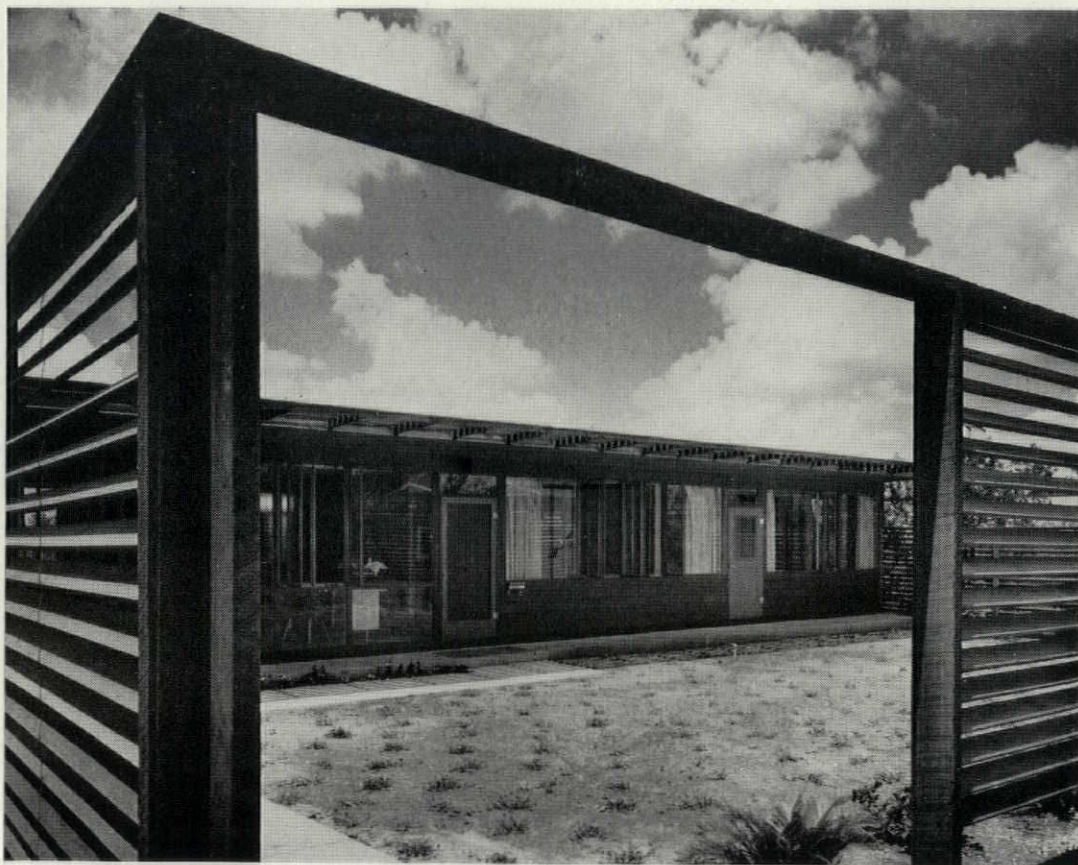
The roof-cooling system cost about \$350 to install, over and above the cost of the radiant heating system. The house was sold for \$19,000.



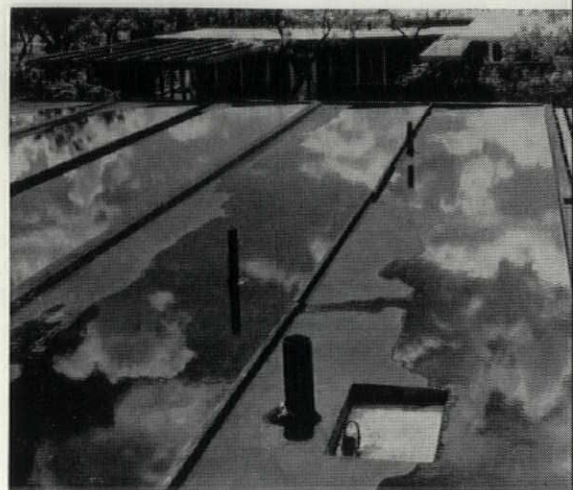
CONSTRUCTION OUTLINE: Foundation: Reinforced concrete columns and footings, paper forms, Sonoco Products Co. Exterior walls—redwood, siding, 15 lb. saturated felt, studs. Ceiling—light weight insulating plaster, Perlite, Great Lakes Carbon Co. INSULATION: rock wool. SHEET METAL WORK: Flashing—copper, Revere Copper & Brass Co. WINDOWS: Sash—Metal Window Products Co.; Glass—double strength. FLOOR FINISH: Cork—Armstrong Cork Co. WALL COVERINGS: Plywood, Roddis Plywood Corp. PAINTS: Interior, Lowe Bros.; Exterior walls, Samuel Cabot Inc. HARDWARE: Sargent & Co. KITCHEN EQUIPMENT: Range and refrigerator—Hotpoint Inc.; Sink and cabinets—Youngstown Div., Mullins Mfg. Corp. BATHROOM EQUIPMENT: Crane Co. HEATING: hot water radiant, copper tubing, Revere Copper & Brass Co.; Boiler—Bryant Heater Div., Affiliated Gas Equipment Inc.; Water heater—Crane & Co.



MILTON RYAN, Architect and Builder.



Typical cross-section, above, shows concrete still detail. Drilled and reamed concrete columns were formed above grade with heavy paper forms which, when removed, leave a continuous spiral bead circling the column from top to bottom. Note also roof detail of water drain for the continuous-flow roof cooling system. Picture below shows partially flooded room and drain.



2. Roof of odd shape and big size protects a small rectangular plan

COCKE, BOWMAN & YORK, Architects

GEORGE S. McCRELESS, Builder

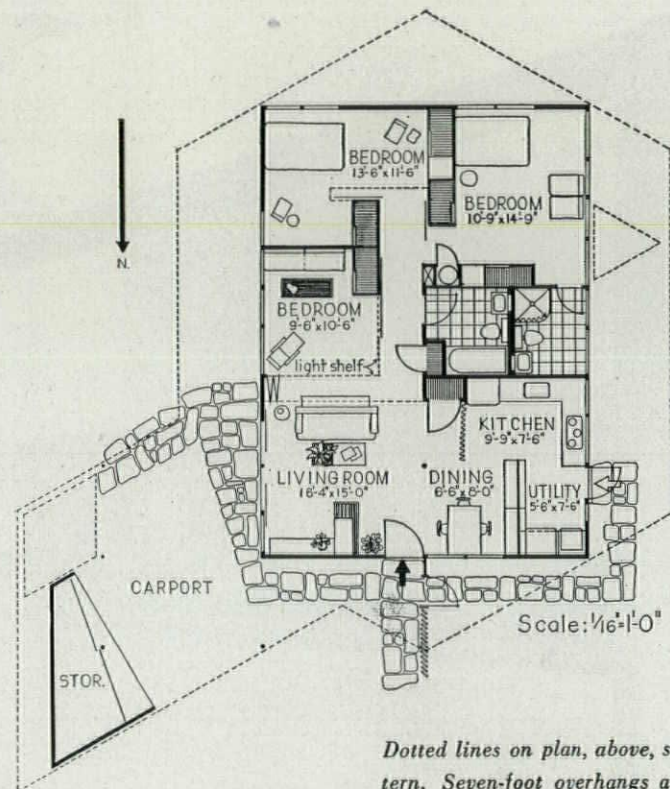
Even in the best-designed houses, the roof is too often just a cover against the sun and rain. It is flat or pitched—and that's all there is to it. Not so in this San Antonio builder's house where the roof becomes the main design focus, a wonderful bit of overhead drama. It is twice the size of the house itself. It was erected on steel pipes, then the house was slipped in underneath. The result makes good sense not only for a Texas house but for any house located where summer heat is a problem. Primarily, of course the big roof, with its 7 ft. overhangs, creates a great pool of shade around the house itself. And it has another practical quality—that of permitting windows and doors to be kept open during rainy spells when the average house has to be closed up tight.

Despite its size, this roof's most striking quality is not bigness but lightness. It seems to float a few inches above the house itself—detached, yet still carrying out its protective function. This illusion is the result of some carefully studied design by the architects. The roof is supported by $1\frac{1}{2}$ in. steel pipe columns which are independent of the walls. Structurally, the roof is 2 x 6 in. t & g wood plank spanning compound beams, each comprised of a 2 x 8 sandwiched between two 2 x 10's. All planks, beams and columns are exposed. Their unique roof framing scheme (see diagram opposite) has permitted the architects to run the roof beams at angles to the exterior walls, adding further interest.

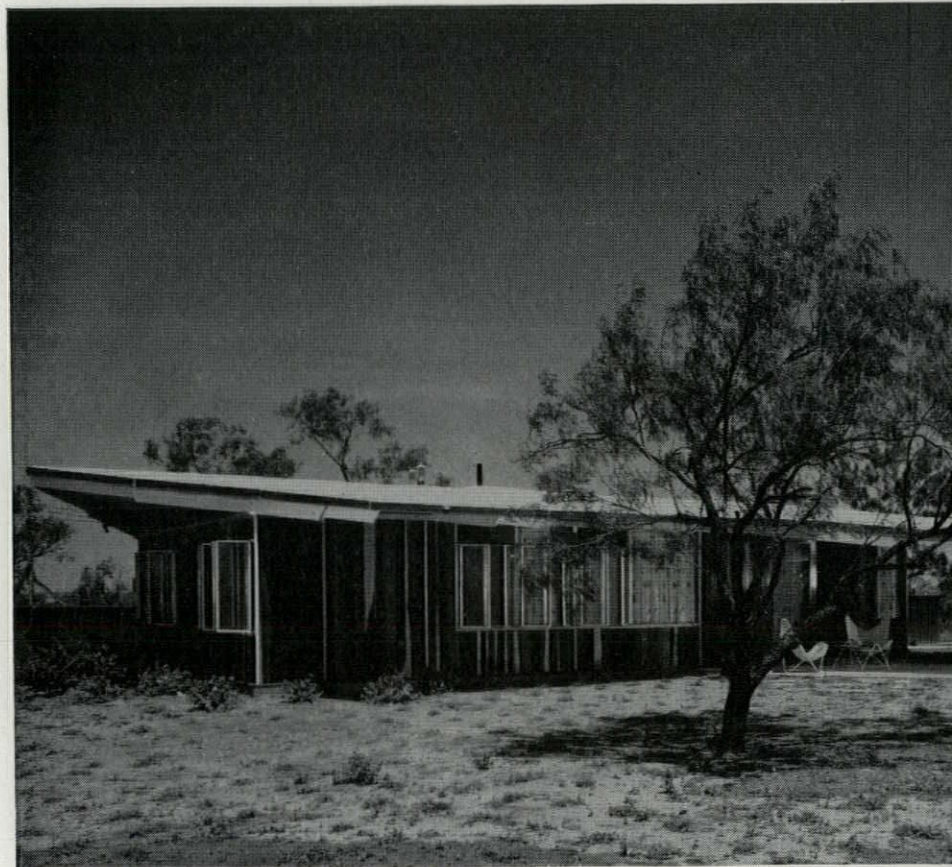
The exterior walls are 2 x 6 in. vertical t & g redwood—and nothing else. Insulation is not a major factor in sub-tropical San Antonio. A 55,000 BTU wall heater takes the chill off the house during the short cold spell. By not furring out the exterior walls, almost 5 per cent extra floor area has been added to the house. Builder McCreless has been careful to make his one-plank wall as weathertight as possible. He used a deep ($\frac{1}{2}$ in.) groove and a long ($\frac{3}{8}$ in.) tongue, sealed each joint with mastic.

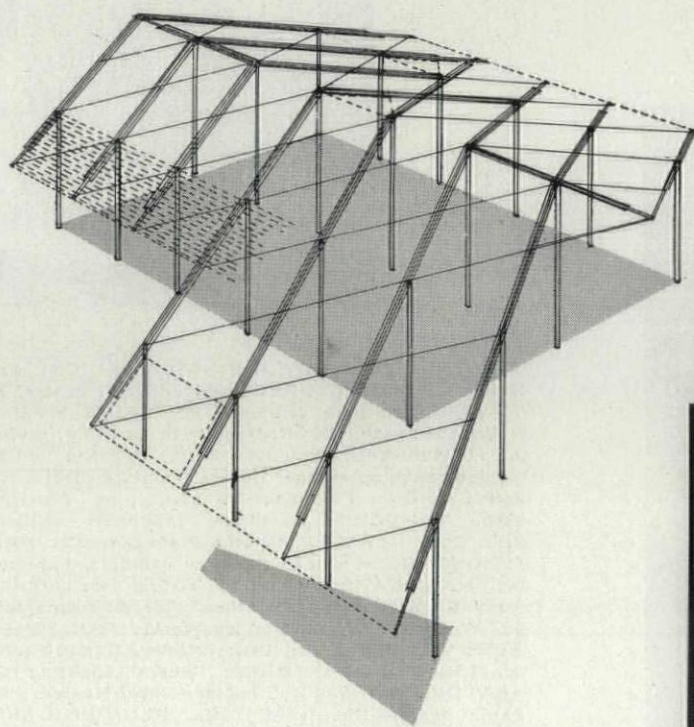
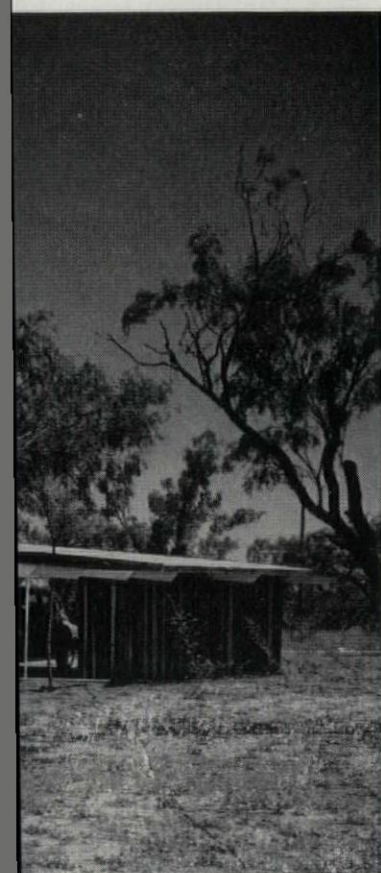
The interior of the house exhibits a sense of spaciousness through open planning seldom seen in subdivision houses. The living area—with an alcove that can be closed off to make a third bedroom—takes up over 40 per cent of the floor space. Sliding glass doors opening up to the carport extend the room's open feeling to the outdoors. (They also lead to the criticism that when the family car is in the carport, it is practically in the living room.)

This house was sold recently for \$18,000. Builder McCreless plans to build 27 more. Since he thinks that the recently boosted down payments (\$6,700 on a \$18,000 house) are too stiff for most of his potential customers, he has asked the architects to design several smaller versions of their original house. McCreless' fee arrangement with the architects is \$800 on the original house and a \$300 royalty for each duplication.

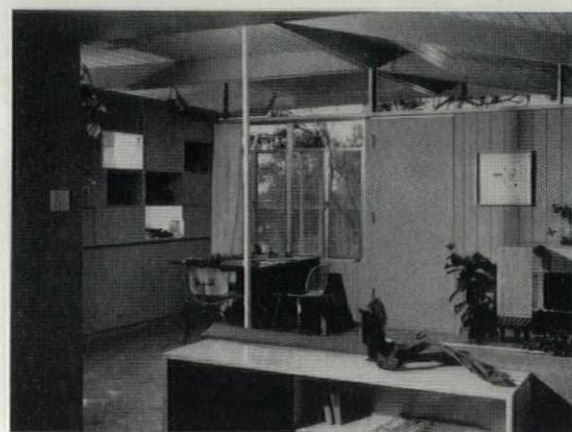


Dotted lines on plan, above, show angled roof pattern. Seven-foot overhangs are continued around most of the house to create atmosphere of cool shade at all points. Triangular cutout on western overhang is to provide room for a tree trunk. Note-worthy feature of floor plan is the large amount of interior and exterior storage space.



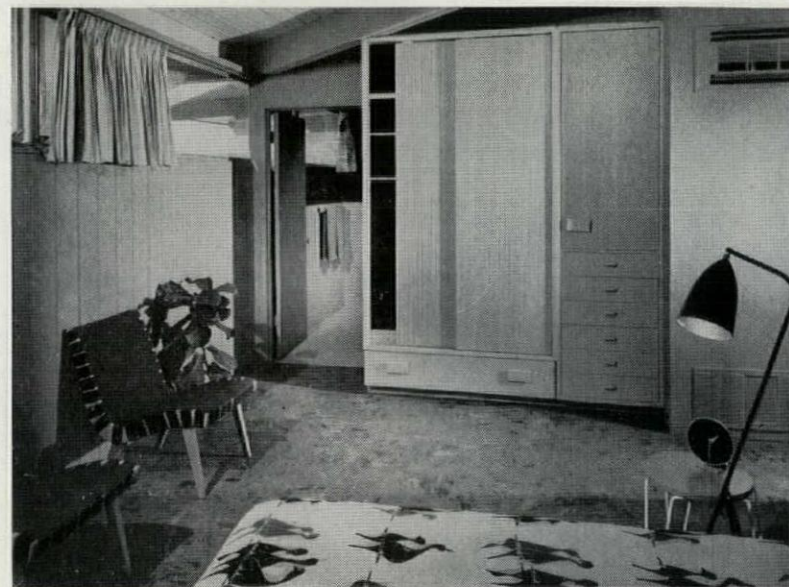


The fixed glass in the gable ends, shown above, adds to the roof's illusion of lightness but has the practical disadvantage of being hard to clean. Apparently the architects felt the need of an additional light source, because the gable extends 8 ft. beyond the house at the ridge.

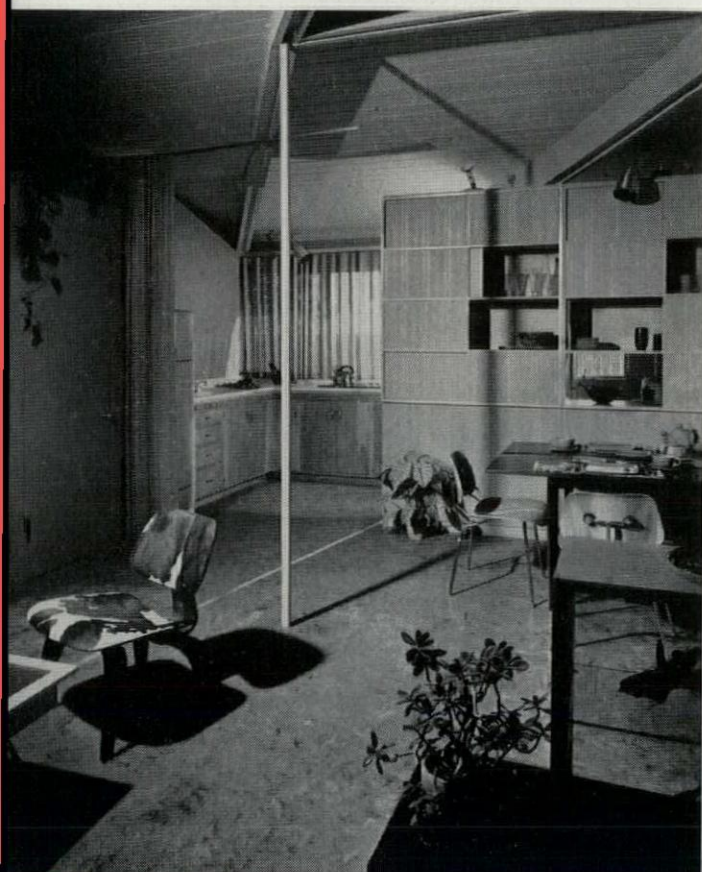




Picture above shows the possibilities of open-planning the living room, with the glass doors open to the outside and the hinged doors which form the third bedroom pushed against the wall. The hinged doors hang on a track built into a decorative light trough which crosses the living room, then runs down the hallway to the bedrooms. The steel pipe shown above is the only one of these roof supports which is located in a habitable area. It serves as a separation point between the living room and dining area, also as an irresistible skinny pole for kids.



CONSTRUCTION OUTLINE: FOUNDATION: concrete slab. **STRUCTURE:** Compound roof beams, 1 1/4 in. galvanized pipe columns. **EXTERIOR WALLS:** Natural redwood. **ROOF:** Douglas fir planking; roofing felt—Certain-Teed Products Corp.; crushed marble topping; flashing—copper Revere Copper & Brass, Inc. **INSULATION:** Fiberglas—Owens-Corning Fiberglas Corp. **WINDOWS:** Aluminum casements—Williams Bros. Corp. **GLASS:** Pittsburgh Plate Glass Co. **PARTITIONS:** Redwood and Fabricon cabinets, Fabricon, Inc. **HARDWARE:** Kennatrack sliding door hardware—Jay G. McKenna, Inc.; other, Yale & Towne Mfg. Co., Westwood Co. and Stanley Works. **PAINTS:** Exterior, Valentine & Co., Inc.; Interior, Martin-Senour Co. **LIGHTING FIXTURES:** General Lighting Co. **HEATING:** Gas-fired wall heater—Royal Heaters Inc.; water heater—Rheem Mfg. Co. **PLUMBING FIXTURES:** Kohler Co. **KITCHEN:** Wood Cabinets with tile counters—Aztec Tile Co.; waste disposer—Given Mfg. Co.; electric oven and range—Thermador Electrical Mfg. Co.; refrigerator and washing machine—Hotpoint, Inc.



3. Private patio, open-planned interior are design bonuses in this \$8,500 unit

DeHAVEN PITTS, Architect

WALTER LOWERY, Builder

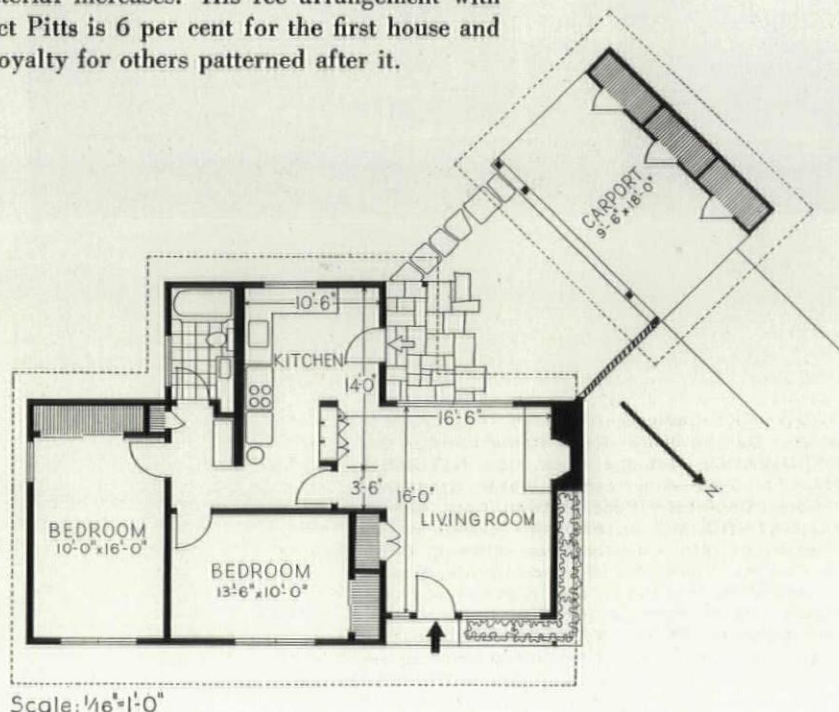
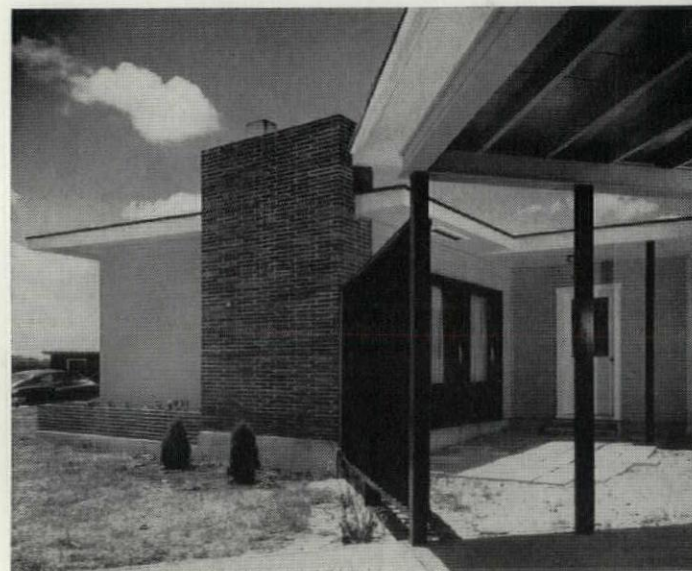
This modest house—the cheapest of the four sponsored by the Quality House Program in San Antonio—comes closer than any of the others in trying to square good design with the needs of low-priced subdivision housing. Architect DeHaven Pitts was commissioned to design an \$8,500 house. Not only did he keep well within his budget but he provided a number of living amenities which are usually lacking in houses this size.

The most important of these is the well-planned outdoor patio between the kitchen and the carport. It was created by placing the carport at an angle to the house, then connecting the two structures with a baffle-board fence (picture below). The result is a private outdoor living area at the cost of little more than the lumber to make the fence—plus some good planning by an architect. Also noteworthy is the provision of a goodly amount of outside storage space, a chronic lack in most small houses.

With an interior space allowance of less than 900 sq. ft., Architect Pitts decided to open up the living room and kitchen into one unit, separated only by a low storage cabinet. This, plus the fact that both these rooms open up to the large outdoor patio, helps modify the actual small size of the house's living area.

Production costs were kept low by simple framing and the use of stock parts throughout. To add interest to his otherwise plain facade, the architect wisely specified a large-sized fireplace wall on the north side of the house.

Since completing plans for this house, Builder Lowery has started work on 27 similar units. Although his house was originally priced at \$8,000, he has raised this \$500 because of post-Korean labor and material increases. His fee arrangement with Architect Pitts is 6 per cent for the first house and a \$50 royalty for others patterned after it.



4. Tight floor plan is made spacious by adding low cost "garden room"

NED COLE, Architect

WALTER STEVES, Builder

The chief attraction in this house is the garden room which Architect Ned Cole has provided between the living room and the carport. It was obtained simply by extending the truss roof with regular roof framing members to get extra space at a cut rate with only the cheapest walls of glass and wood for enclosure. (The plastic partition along the carport side would have been needed to screen the view of the car in any case.)

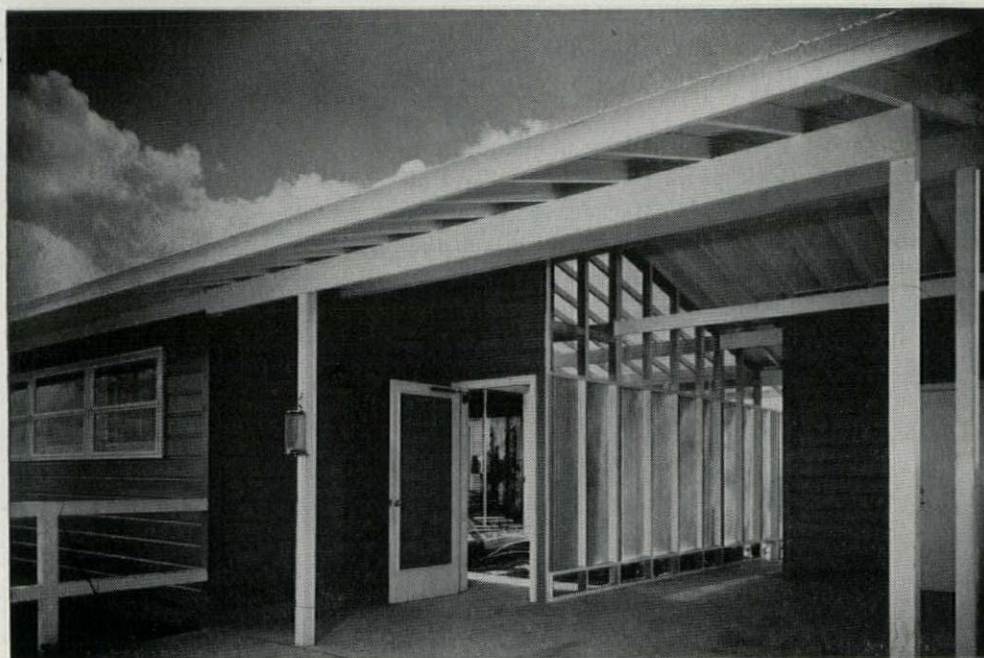
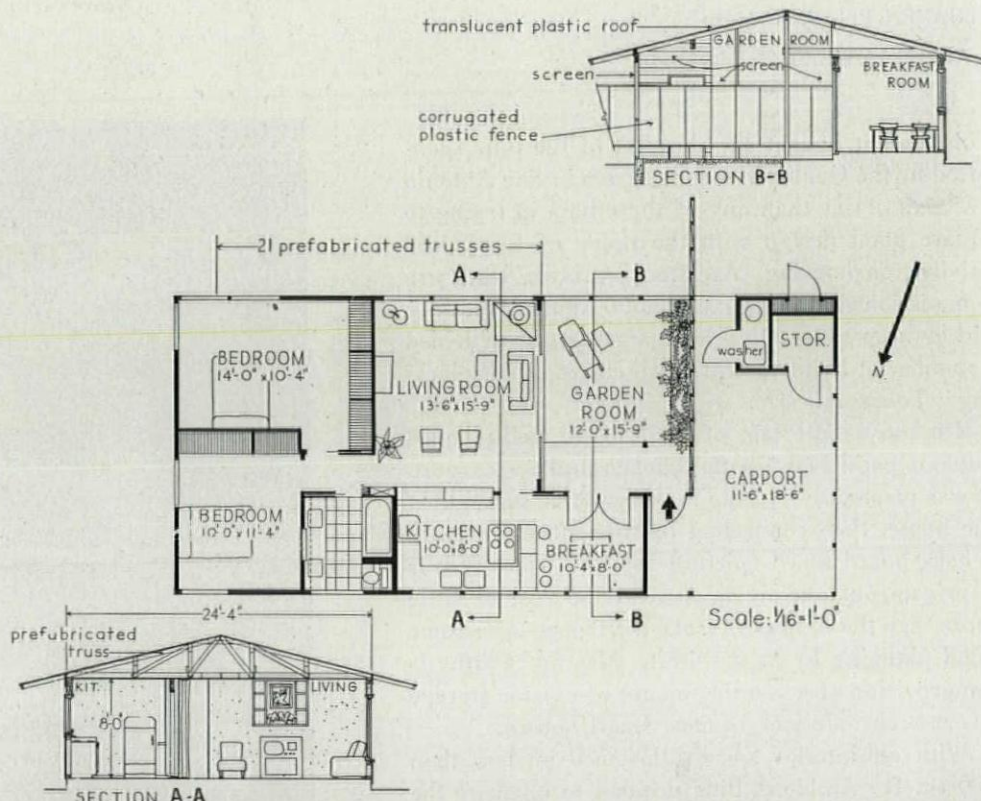
This is a small house—only 733 sq. ft. without the garden room. But its whole character is changed by framing in an additional 110 sq. ft. of space. The floor-to-ceiling doors between the living room and the garden room can be opened to double the effective size of the living area except during San Antonio's short periods of inclement weather. (The garden room is unheated.)

Builder Walter Steves calls the garden room "the cheapest room in the house." Foundation and flooring costs were negligible since the floor is mostly grass. The carport side of the room is covered with green asbestos-impregnated plastic sheets nailed to the studs. The south wall is fixed-glass panels. Although the rest of the house is truss-roofed, Architect Cole provided conventional exposed framing for the garden room roof to increase the sense of openness. On the south side, the roof is of clear plastic panels to allow sunlight to flood the room.

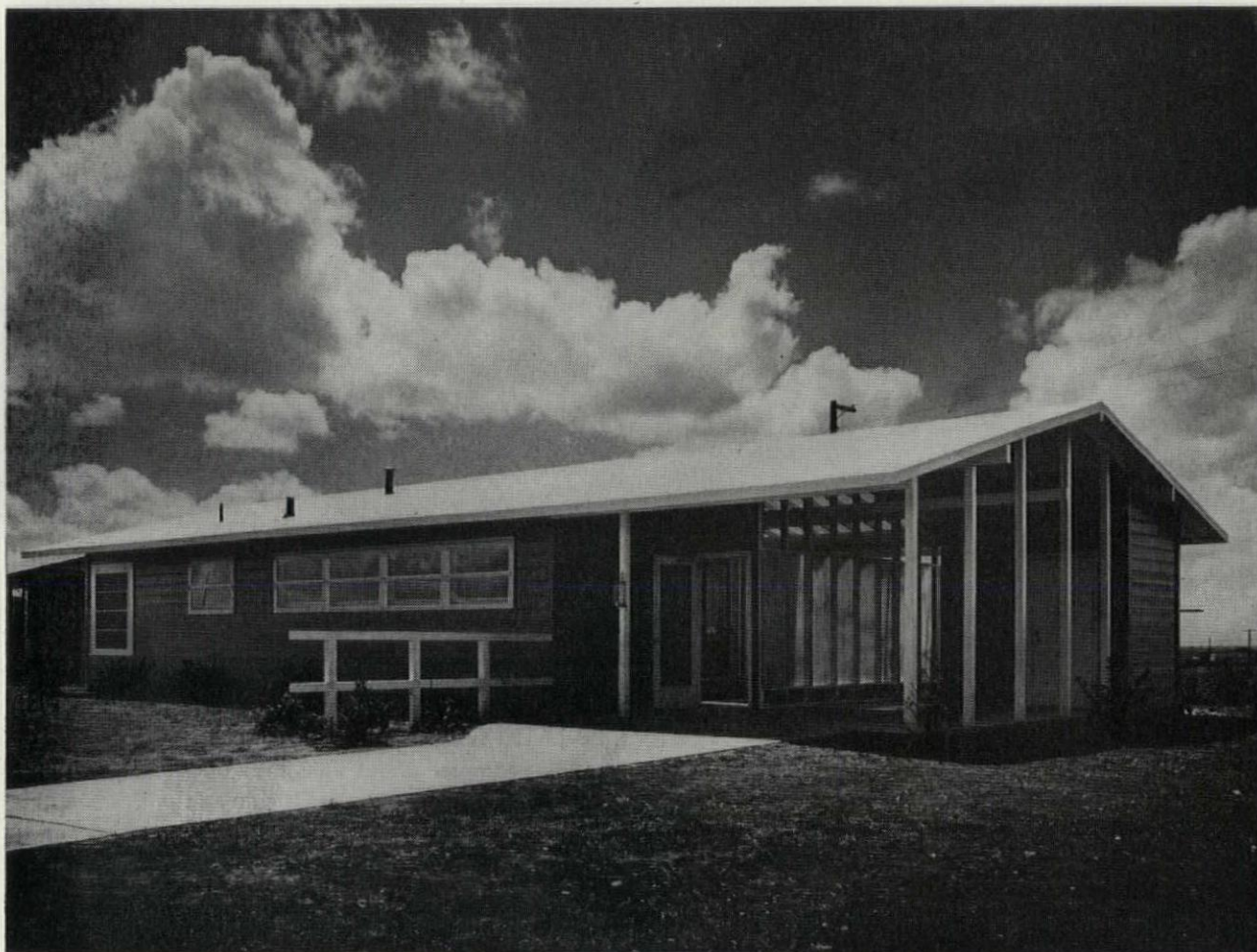
By way of postscript, it should be noted that the garden room has been changed somewhat in the month since the pictures on these pages were taken. The retired Army major who bought the house (for \$10,875) had the floor cemented over, leaving only the planting area intact. He preferred the easy maintenance of a cement floor to the pleasant footing of a grass plot. With this change made, the owner is completely satisfied with his garden room—where he intends to spend most of his leisure time until chilly weather forces him indoors.

Builder Steves and Architect Cole have been collaborating for almost a year on individually designed houses for Steves' Eastwood Village subdivision. The architectural fee, based on this continuing program, was \$420 for this house.

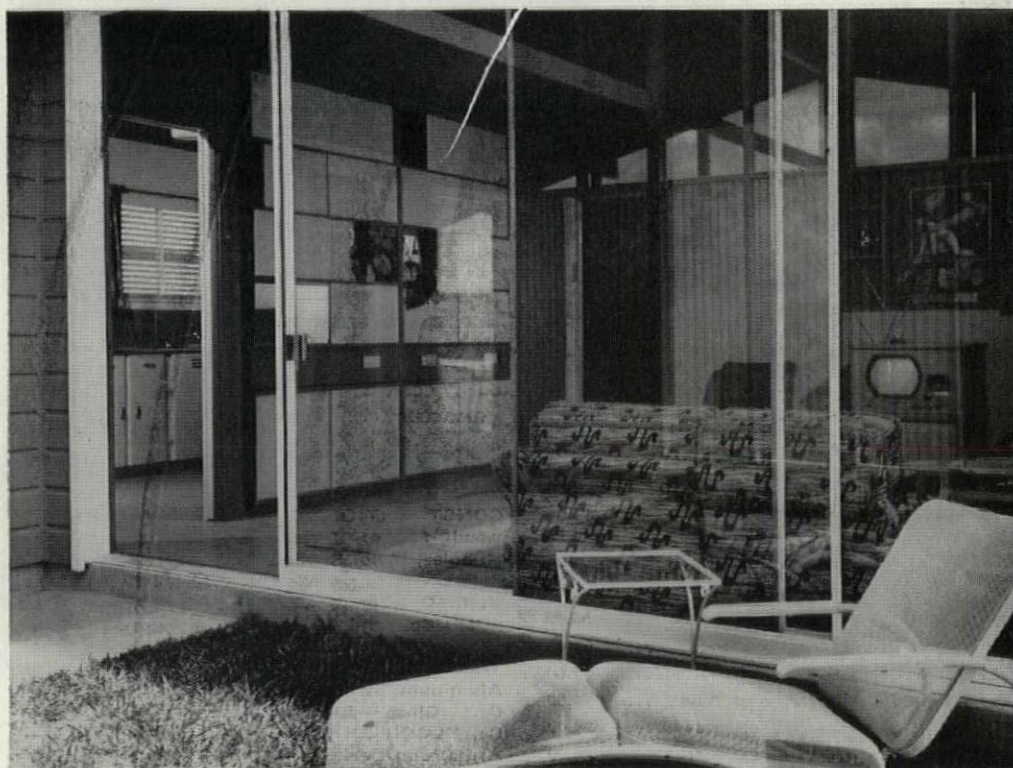
CONSTRUCTION OUTLINE: FOUNDATION: Concrete slab, 2 ply, 15 lb. felt membrane, hot mopped asphalt—Johns Manville Corp. STRUCTURE: Exterior walls—1 x 8 in. wood siding, 15 lb. asphalt felt—Johns Manville Corp.; ½ in. gypsum board—National Gypsum Co.; Ceiling finish—Gypsum board and Textone, National Gypsum Co. ROOF: 3-ply built-up asphalt and felt covered with marble aggregate—Johns-Manville Corp.; Deck: ¾ in. plywood—U. S. Plywood Corp. INSULATION: rock wool—Johns-Manville Corp. WINDOWS: Sash—double-hung wood, Carr, Adams & Collier; awning-type (wood), Hahn Sash & Door Co.; Glass—double strength. FLOOR COVERINGS: asphalt tile—Kentile, David E. Kennedy, Inc. PAINT: oil—Seidlitz Paint and Varnish



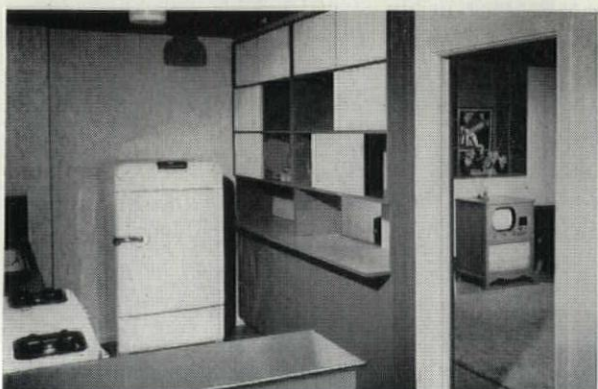
Co. WOODWORK: Cabinets—Fabricon, Inc., Frederic Blank & Co.; Garage doors—Rezo, Paine Lumber Co. Ltd. **HARDWARE:** Schlage Lock Co. **KITCHEN EQUIPMENT:** Sink—American Radiator Standard-Sanitary Corp.; Cabinets—Wood, Biltwell, Carr, Adams & Collier. **BATHROOM EQUIPMENT:** Lavatory, tub and toilet—Briggs Mfg. Co.; Cabinets—Biltwell, Carr, Adams & Collier; Tub enclosure—ceramic tile, Mosaic Tile Co. **HEATING:** Warm air, gravity flow Jet Flow, Royal Heater Co.; Water heater—Crane Co. **UNUSUAL NEW MATERIALS:** Sliding glass doors—Arcadia Mfg. Co.; Vanity and kitchen counter tops—Consoweld, Consolidated Water & Power Paper Co.; Garden room wall—Corrulux Corp.; Garden room roof—Cel-o-glass, E. I. DuPont de Nemours & Co., Inc.



Inclusion of garden room and carport under one all-embracing roof gives the house a long, low-slung appearance not normally found in an 850 sq. ft. house. Picture directly above shows how sunlight streaming through plastic roof in garden room enhances illusion of bigness in the living area.

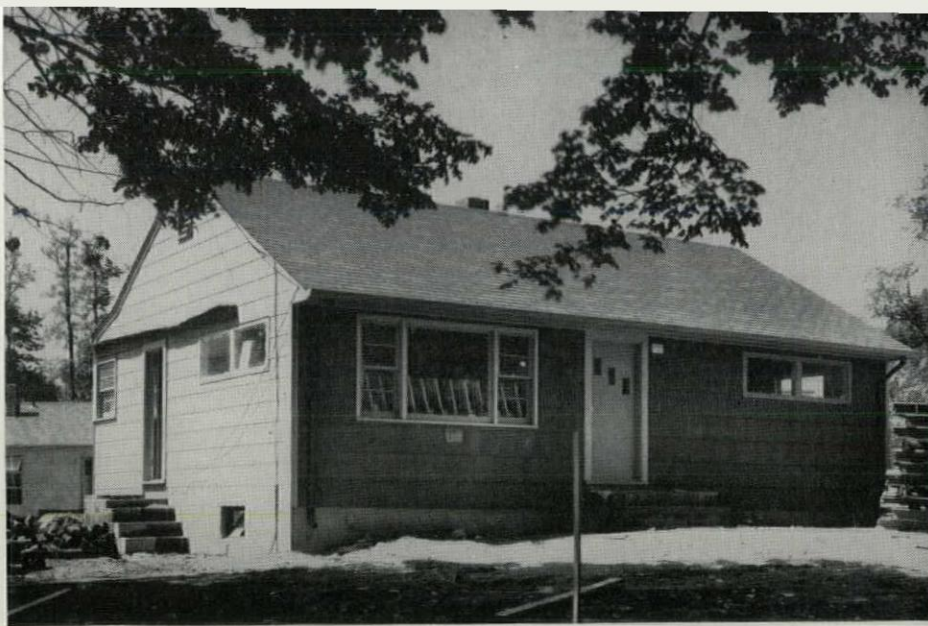


Storage wall unit between kitchen and living room (pictures, above and left) was designed by Architect Cole. Similar non-load-bearing storage partitions are used in the house's bedrooms. Trussed roof construction makes this possible.



MODEL HOUSE REMODELED

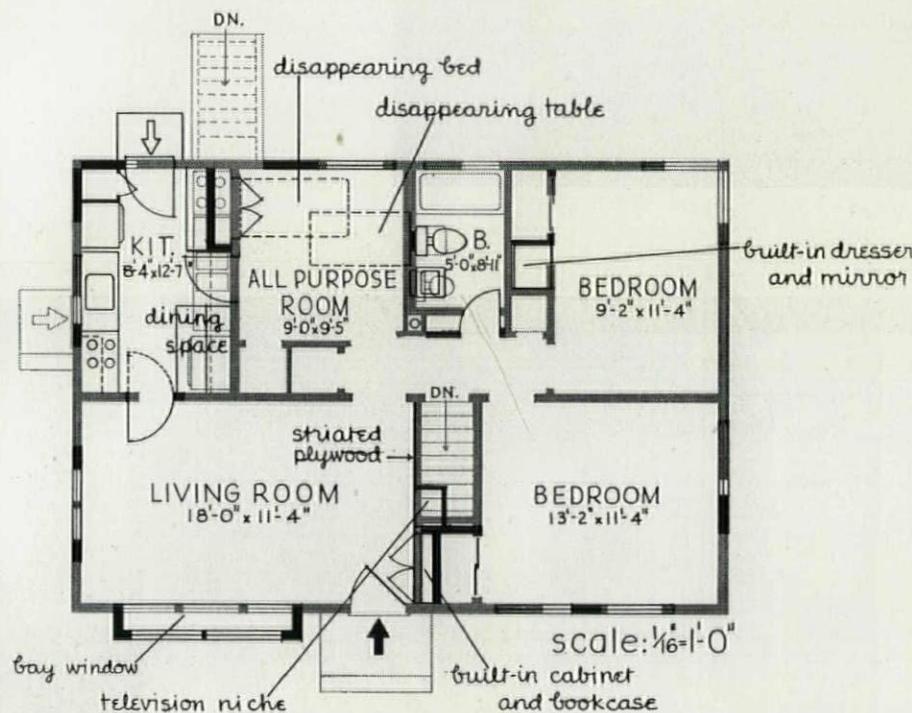
to include a dozen design improvements
for better living and quicker sales.
Multi-purpose room with disappearing bed and
table makes seven rooms out of five



LOCATION: North Plainfield, N. J.

NETHERWOOD ESTATES, INC., Builders

JOSEPH C. HAZEN, JR., Designer (improvements)



COSTS OF DESIGN IMPROVEMENTS

Soffit entry light	\$ 2.00
Flush-type front door (saving) ..	(6.00)
Bay window (less one side window)	53.00
Built-in cabinets and bookcase ..	54.00
Television niche	17.00
Striated plywood wall finish ...	11.50
Built-in dresser & mirror	36.00
Flush ceiling fixtures (three) ...	6.00
Fluorescent kitchen and bathroom lights	6.00
One less kitchen window (saving)	(6.00)
Kitchen—"wunderoom" door	24.00
"Wunderoom" triple window	13.50
Built-in, disappearing dining table	37.50
Built-in, disappearing bed	79.50
Color styling service	4.00
	\$332.00

CONSTRUCTION OUTLINE: WALLS:

wood frame; Exterior finish—asbestos shingles, Tilo Roofing Co.; Sheathing—Celotex Corp.; Inside finish—Sheetrock, U. S. Gypsum Co., Weldtex, U. S. Plywood Co. and (bathroom) plastic tile, Vikon Tile Co.; ROOF: Asphalt shingles, Tilo Roofing Co. WINDOWS: Sash—Aluminum awning type, A. B. C. Steel Co.; Glass—Libbey-Owens-Ford Glass Co. FLOOR FINISH: Kitchen—Linoleum, Armstrong Cork Co.; Bathroom—Kentile, David E. Kennedy Inc. BATHROOM EQUIPMENT: Briggs Mfg. Corp. and (medicine cabinet) Miami Division, Philip Carey Mfg. Corp. KITCHEN EQUIPMENT: Cabinets and sink—Crescent; Faucet—Wunderflo, Ravenna Metal Products Co.; Range—Welbilt Stove Co. and Hotpoint, Inc.; Refrigerator—Hotpoint, Inc.; Fan—Fasco Industries Inc. HEATING—Hot air; Oil-fired furnace—York Shipley Corp.; Grilles—A. & L. Engineering Co. HARDWARE: Russell & Erwin Mfg. Co.

These two houses were built by the same builder, on the same foundations, with the same materials and for the same purpose—each was designed to be the model house for Netherwood Estates' 134-house subdivision in North Plainfield, N. J. But the one on the left was recognized as a dud before it was completed and was never opened to the public. The one on the right, redesigned inside and out, was a quick success—3,000 people were attracted to its opening, and the project was sold out in four weeks at \$10,685 per house.

The difference between an ordinary and an extraordinary operation was a little design imagination plus the expenditure of an extra \$332 on each house for a long list of improvements, capped by a highly flexible multi-purpose room whose trade name "wunderoom" became overnight a new word in the language of New Jersey.

The first house suffered from lack-luster planning and design. Outside, the windows were poorly proportioned and unrelated, the door with its three staggered lights was more revolting than inviting, finish materials were few in kind and monotonous in texture, color was a sad gray, made even sadder with pink trim. Inside, the floor plan failed to make the most of the limited space (870 sq. ft., excluding full basement). In brief, the house and, in turn, its advertisements could boast nothing new or different. Worse yet, it was to be repeated 134 times without variation.

An experienced industrialist in the textile container and allied fields, Arthur S. Gittlin was a neophyte land developer relying on this project to launch a 500-house program on various central Jersey sites. But he was also a smart neophyte. Realizing that he was building a mistake, Gittlin supplemented the initial work of his architect with fresh design advice. Since many identical foundations were already started and since FHA and VA commitments based on the original house were already made, major design changes would have entailed heavy losses in time and money. However, without changing walls and partitions, considerable improvement was made in the appearance, livability and sales appeal of the house, and the copy writer was given plenty to talk about in his advertisements.

Outside, the remodeled fenestration, including a half dozen bay window variations, is comprised of different arrangements of one size sash. A flush-type front door was substituted—an improvement which saved money. The out-of-scale entry lamp at the side of the door was replaced with a flush fixture in the soffit. Exterior texture and appearance were enlivened by various combinations of asbestos shingles, clapboards and vertical siding and by a thorough



Photos: Above and left, Ben Schnall; others, Richard Garrison

styling of the entire project by Color Expert Beatrice West.

Inside, improvements were made in every room. The living area was made bigger by the addition of the bay window (its additional cost was partially offset by the elimination of one window from the side wall) and more interesting and livable by 1) building cabinets and bookcases into the back of the too-deep bedroom closet, 2) projecting a television niche into the waste headroom over the basement stairs and 3) finishing the balance of the end wall with striated plywood.

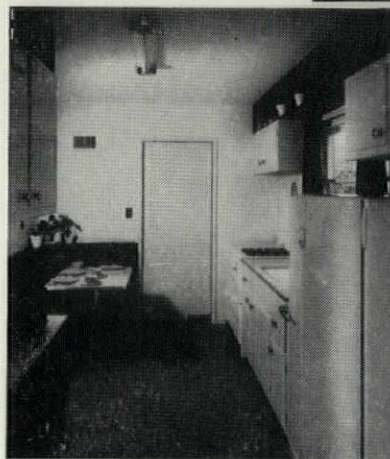
The bedrooms were improved by replacing the pendent light fixtures with better looking flush fixtures at an added cost of \$2 each. (Fluorescent fixtures were substituted in the kitchen and bathroom.) To save floor space in the small corner bedroom, a dresser with a mirror was built into excess closet space. The minute bathroom was enlarged about 4 sq. ft. by simply moving the door partition 1 ft. toward the hall where the extra square feet were going to waste.

Moving the outside kitchen door from the side to the rear and completely glazing it improved the exterior appearance of the house, made it easier to add a carport to that side of the house, made the door handier for backyard living and dining, eliminated one of the two kitchen windows and left the long outside kitchen wall available for the sink (under the window) and an unbroken row of other kitchen equipment.

Most important of the improvements was conversion of the small (9 x 9½ sq. ft.) third bedroom into a multi-purpose room which could be used either as a bedroom, dining room, den (photos, right), guest room, nursery or playroom and could be changed quickly from one use to another. This was accomplished by cutting a door through to the kitchen, stealing some space from the kitchen to make room for a permanently installed disappearing closet-type bed, recessing a disappearing dining table into the thick bathroom plumbing partition and replacing the two small high windows with a triple-decker floor-to-ceiling window. Including the flush ceiling light, the improvements in this room alone cost \$156. But the expenditure paid big dividends. Called the "wunderoom," this multi-purpose space proved to be the most popular feature of the house and gets most of the credit for Netherwood Estates' successful advertising and sales program and for the warm reception given Developer Gittlin's succeeding projects of similar houses in Plainfield (180 units), Hamilton Township, Trenton (145 units) and Eatontown (65 units).



Living room end wall contains cabinets, book shelves and television recess—furniture which would otherwise have crowded the room.



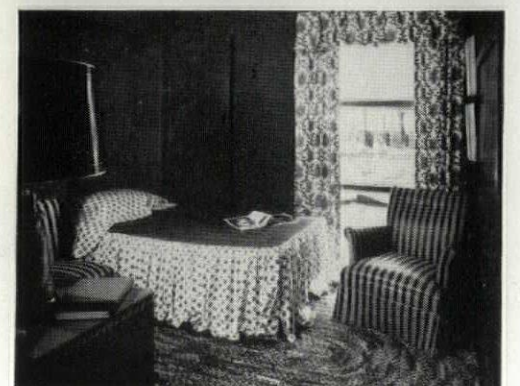
Multi-purpose room, furnished as a "den" has floor-to-ceiling window overlooking backyard.



With built-in table unfolded from its wall recess, the multi-purpose room is quickly converted for dining.



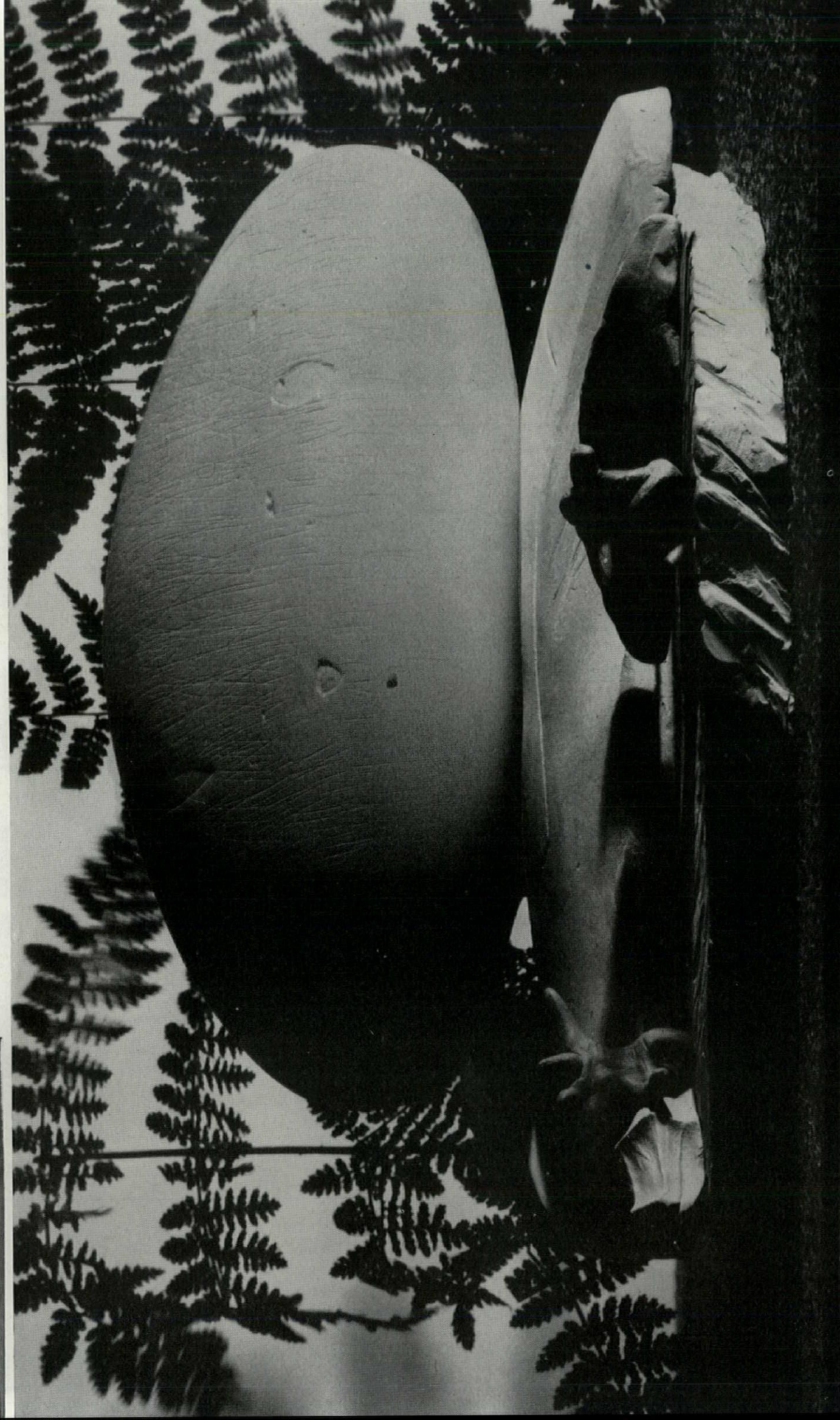
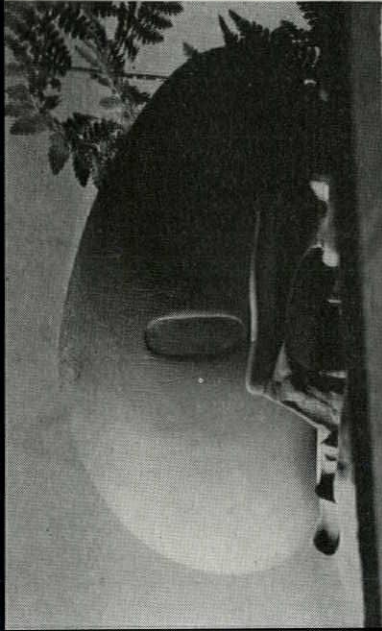
Disappearing bed built into a shallow closet adds a third bedroom to the house. FHA, VA count it as such.



THE ENDLESS HOUSE

FREDERICK KIESLER, Architect

*The house embedded in its concrete foundation.
Picture left shows stair entrance from below
and ramp entrance leading into main living area.*



"No, no," said Professor Thruigg, "this object is distinctly not an egg. And it's not a pebble among ferns—it's 25 ft. high and 66 ft. long. —No sir, that does not make it a baby whale landed on the beach, nor Easter island money, nor a new Hollywood roadside bar, although your guess that it's a home for a primitive tribe comes close."

The professor leaned forward, took a firm grip, "I must ask your serious consideration of Architect Frederick Kiesler's idea of an 'endless' house."

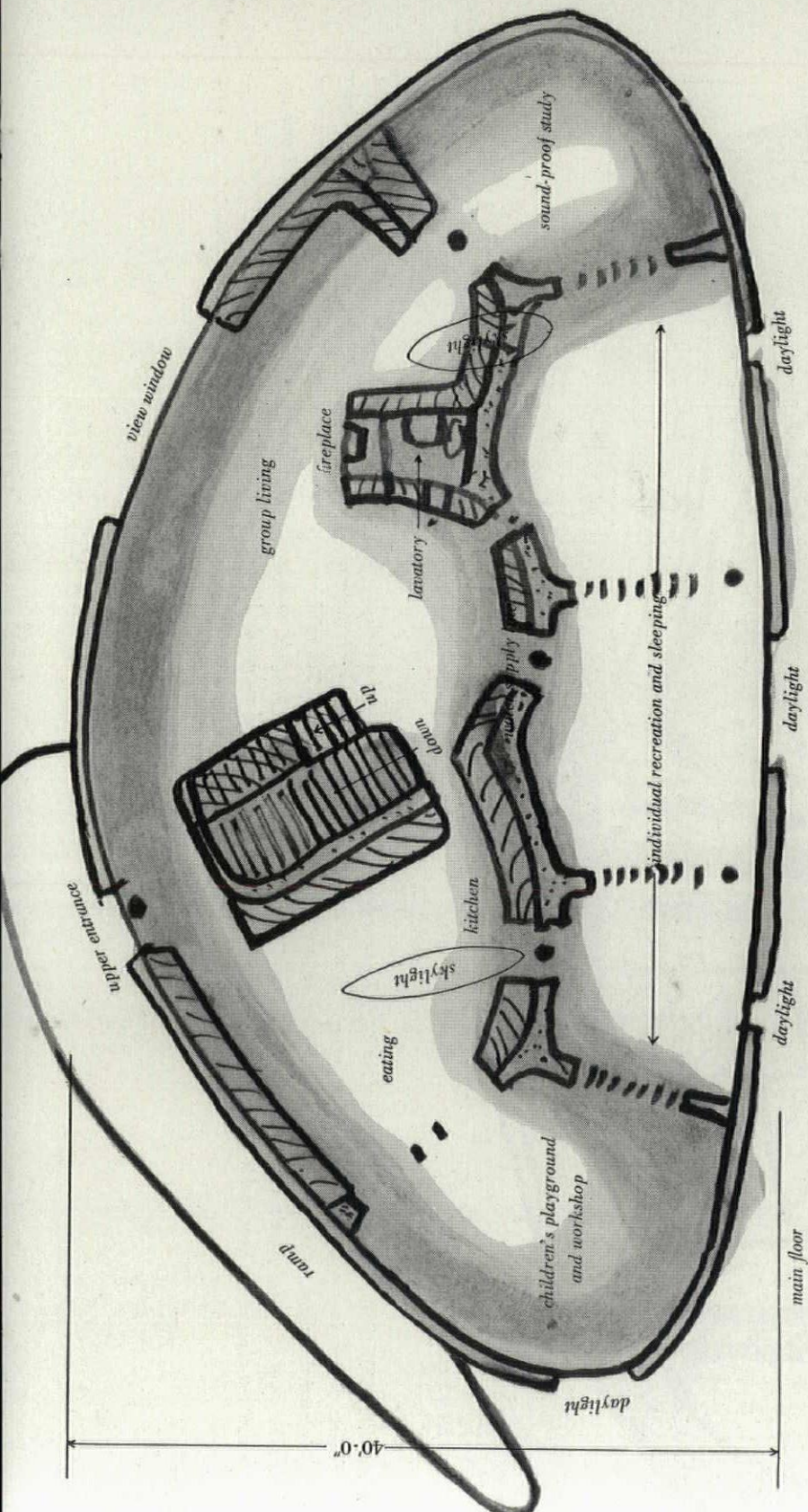
"You see, every once in a while Art has to assert its rights. For some thousands of years mankind has lived in houses built square. Now Kiesler asks why not live in a house built in free space, a house with *no* straight lines and *no* sharp angles!"

"It must strike you, post-war carpentry being what it is, that this would have advantages. But practicality is not whereof I speak. It's this habit Kiesler has of asking, why not?"

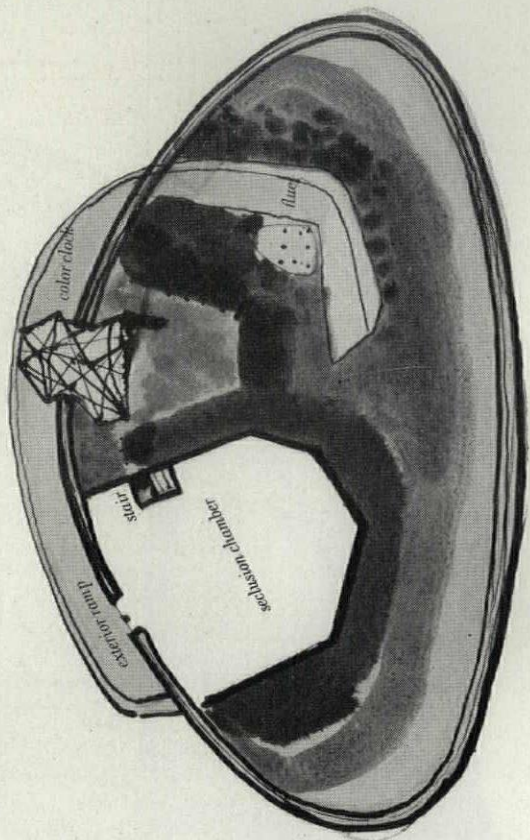
"Why not, after all those glass houses, let the family crawl up into a cave and pull the cave in after them, the way our ancestors took refuge in block-house forts? Why not build the house all in one piece like a piece of sculpture, instead of making careful joints between a wood roof and brick walls, between a brick wall and concrete slab foundation? Planetaria are built that way—a spider web of reinforcing rods with concrete sprayed over them! It's simple. Or again why not build a house with ribs the way 'shell concrete' hangars are built? . . . You say the hangar ribs don't go around under, the way Kiesler's house ribs would have to? Nothing to it, my boy, don't bother me with mere details, why not build 'em like a ship—a ship's ribs go round under and are heaviest at the bottom, too!"

Professor Thruigg looked around him with an air of having solved problems in a hurry.

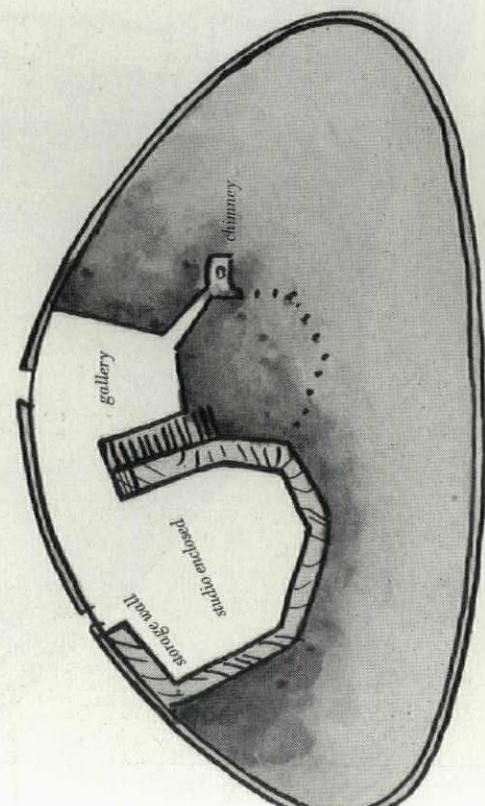
"The windows? Bend 'em in the way you do in Studebaker cars front *and* back! Ought to be easy to slip in some operating sash. And why not a fine free carelessness about window shapes, like the tower of the Chrysler Building? Then why not have a totally free-flow floor plan for a change, one where the vacuum cleaner has not a corner to contend with? The fixed parts of the house plan are in the middle of the floor and are set by the service tree: plumbing, heating, and



ARCHITECT KIESLER: "The Endless House is through its formation and construction more economical with regard to materials . . . , fuel consumption, space-coordination, management and maintenance than post-and-lintel house concepts. The interior spacing equals a one-family house consisting of: five bedrooms, one studio and playroom for children, one oversized living room, kitchen and dining space, a study and library, adequate bathing facilities and storage space. The entrance is through a center stairway or from a ramp outside the house . . ."

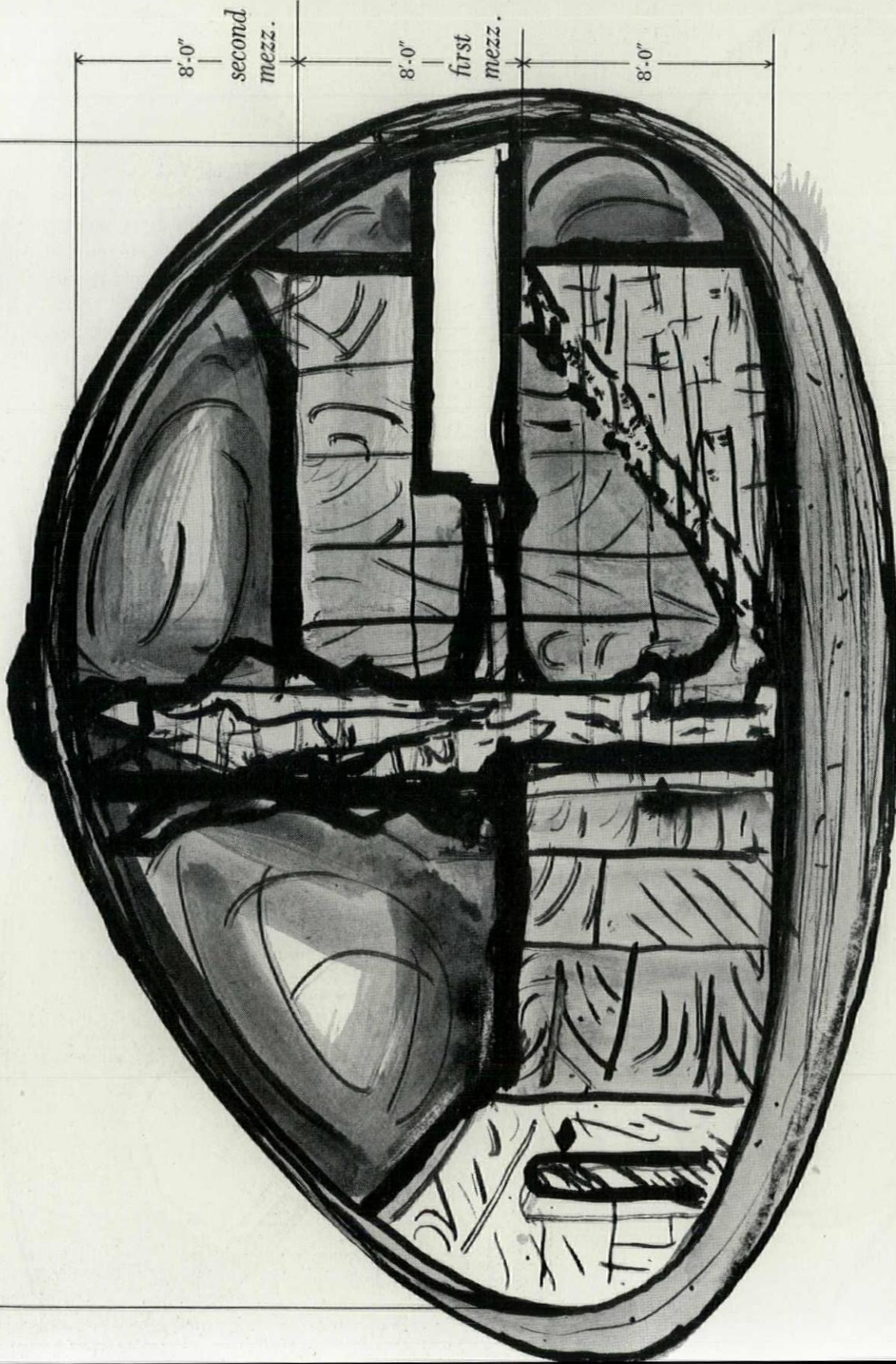


second mezzanine



first mezzanine

40'-0"



cross section.

ARCHITECT KIESLER: "The construction of the 'Endless House in continuous tension' can be safely carried through in a single material, such as concrete or reinforced plastics (including glass) through wet-construction over molds on location.

This one-family house . . . consists of a shell which diminishes from a basic thickness of 1 ft. to a section of 2½ in. on its top level. The reinforcement-ribs which are 3-6 ft. apart protrude towards the interior from 8 to 20 in., and are mostly 1½ to

5 in. thick. The space between the ribs is used for two layers of different insulation blankets over which the interior covering is laid. Another method is to form a cross-netting of ½ in. steel rods and a layer of 2½ in. of sprayed concrete."

wiring ducts and conduits all bunched together. And why not keep *them* free-flow too? Plumbers always have so much trouble—I mean setting them in straight lines. For the temporary partitions you can build 'storage walls' and there is no special reason why they need be straight either, for more than the length of a single plank.

"As for living in such a house, you must admit that no one can prove it would not be charming—and ever so cozy. Every room an endless variation, as in Nature. . ."

The professor stared into the silence. "You ask why he calls it the 'endless' house? One explanation, the geometrical, is found in the folk-song: 'A ring that's round, it has no end.' Again, historically, the house rounds the cycle, carries man whence he came . . . Does so biologically too," added the professor.

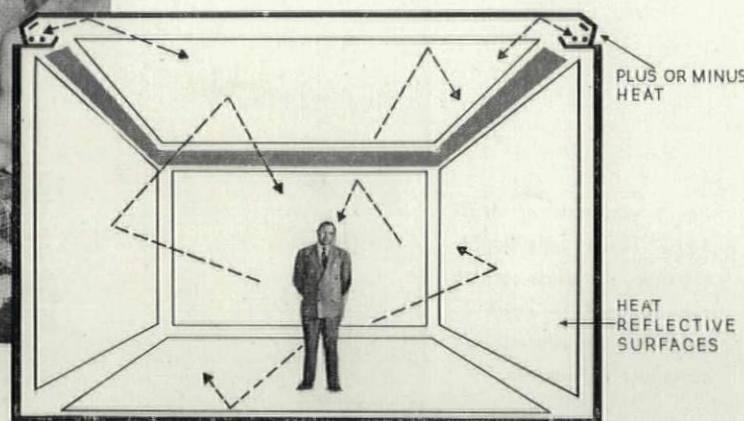
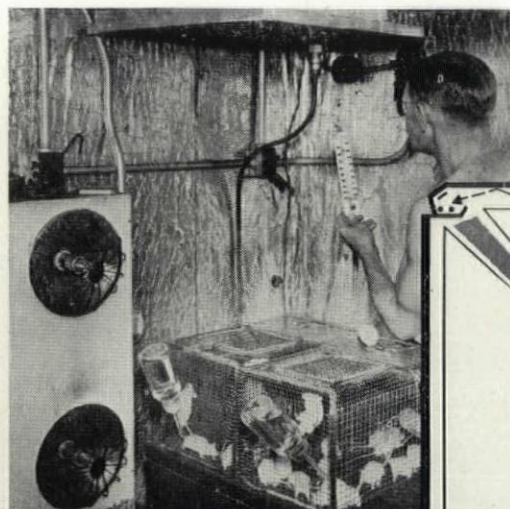
"You ask whether you students should design *all* houses that way now? On no! But seriously, Architect Kiesler should have the chance to do so. A dozen times over he has proved his ability—but then," said Professor Thruigg with a sudden inspiration, "we don't even need Architect Kiesler as an example to prove the value of the artist's 'why not'—the value of what is so vulgarly called the 'folly.'"

"Remember for example how comfortably Florida and California people used to live in nice houses with thick walls, small windows, and a wonderful coolness? Along came architects and asked 'why not live in glass?' And when the owners complained of random visitors looking through the front wall, the architects asked why not drapes, shades, hedges, screening fences and all kinds of Special Orientation? It gave the people a wonderful view where they only looked at one another before. And for the heat produced by all that glass, why not roof overhangs and fancy louvers? said the architects.

"It is all *quite* expensive," remarked Professor Thruigg, meditatively, but it yields Architectural Interest.—And think of the Sharp Detailing!"

"No, my friend, I did not say *that*!" objected the professor, sitting up suddenly. "But you never know until you try. And, as the poet William Blake has remarked, 'By persisting through folly is how we become wise.' Then, too, considering the many disagreeable follies of this age, isn't it nice to be invited into one that is really so warm and friendly? Why not?"

Laboratory studies showed that men and mice could be comfortable in air which varied in temperature as much as 60 degrees if reflective conditions were good. New house applies this principle.



EXPERIMENTAL COOLING-HEATING SYSTEM

cuts fuel bills by use of heat reflective surfaces in rooms

by CLARENCE A. MILLS, Ph.D., M.D.

On the edge of a bluff overlooking Cincinnati stands a new house which is also the laboratory for one of the most unique experiments in building today. This house makes use of a principle which has long teased scientists: If radiant heat put into a room were held there through use of heat-reflective surfaces, the heating problem could be considerably diminished, saving a great deal of fuel in cold climates. And with proper radiation conditions, the air circulating in the room might not have to be heated at all, but could be drawn directly from outside and used at outdoor temperature. Much the same would be true about air temperature in summer, scientists knew. Summer air temperature would not have to be lowered greatly for comfort if the human body's excess heat could be radiated away constantly.

Now Dr. Clarence A. Mills, Professor of Experimental Medicine at the University of Cincinnati, has indicated in his new house that this principle may be applicable to normal construction. By making all interior surfaces of his house reflective to heat and using a simple radiant coil circling each room, he has cut his winter heating requirement radically. Even more interestingly, he has designed a system to cool his house radiantly in summer: The same surfaces which reflect his winter heat are used in summer to direct the excess body heat of room occupants to a refrigerant coil which also circles each room. The coil pulls excess body heat from the people in the room without cooling the air radically, and since it is a very compact cooling surface, the problem of condensation can easily be met.

To the right is Dr. Mills' discussion of his experimental system, which may be the seed for a great change in today's heating and cooling methods.

Man's energy—his mental initiative and physical vitality—is in large measure dominated by the ease with which he can get rid of his body's waste heat. So long as he can dissipate this heat readily, he is an energetic and industrious individual; when his heat loss becomes difficult, he tends to slump into a relaxed vegetative existence.

Half of humankind over the earth faces year-round difficulty in such body heat loss and is held down to a sluggish pace of life. Another quarter needs cooling half of each year. Only in outer temperature regions does winter heating become of real importance and then only for a minor fraction of all the human race. Biologically speaking, therefore, hot weather cooling has far greater importance than cold weather heating to mankind as a whole. So it is natural that the conditioning system for my new house actually approaches the problem through cooling.

Twelve years ago our laboratory studies at Cincinnati General Hospital demonstrated the biologic feasibility of reflective radiant conditioning irrespective of air temperatures or humidity. (Further encouragement came from the conviction widely held among medical people that the sharp contrasts between inside and outside air in air conditioning tend to increase respiratory troubles.) Our studies also gave some hint of the structural and operative economies which might result.

These principles had to wait until this year for field-testing, however, when my new home, "Reflection Point" was completed, and I moved in.

In drawing up plans for the house, we purposely included no particular structural specifications bearing on the conditioning system. So far as the reflective radiant conditioning was con-

Cove in living room shows how heating and cooling coils are exposed through house. All ceiling, wall, and floor surfaces (under carpet) are reflective, including drapes.



South elevation of Mills house shows considerable expanse of glass which can be used to drink in sun heat in winter, and curtained in summer.



Ellsworth Photography

cerned, our interest centered only on the inner surfaces facing the room occupants. We therefore used a regular frame structure. It contains no conventional insulation and has a heat loss rate calculated at 133,000 b.t.u./hr. at 0°F. outside when the indoor temperature is held at 70°F.

Of its 1,600 sq. ft. of exterior wall surface, 600 sq. ft. are of single-pane glass (mostly $\frac{1}{4}$ in. plate). The house is "solar" in type only in being oriented on an east-west axis, with a 4-ft. roof overhang which keeps the summer sun off the south wall but lets the more slanting winter sun's rays flood freely into all rooms with southern exposure. It sits on an un-insulated concrete slab. Its roof is flat, without air-space or insulation.

Reflective interior finish

The difference between this and other good modern houses is inside. All side-walls and ceilings are papered with embossed and tinted foil wall-coverings. Vital to my plan is the fact that the lacquer used in applying the pigments to the foil surfaces was heat-transparent, and only those pigments were used which did not lower the foil surface reflectivity more than 10 per cent below the 97 per cent exhibited by uncovered foil. Application of the foil wall-coverings to the wallboard walls was the same as for conventional wallpapers, except for the addition of 2 per cent of sodium chromate to the gluten paste to minimize possible seepage damage to the foil. *These foil wall-coverings function as effective heat "mirrors" with a reflectivity close to 90 per cent for radiant heat.* At the same time they constitute an 80 per cent effective barrier to radiant heat emission into the room from exterior sources. All foil surfaces used were decorated by embossed patterns, so that heat rays striking them would be broken up into an even intensity throughout the room. Shadows or hot and cold spots were thus avoided.

Floor treatment consisted of placing ordinary foil insulation paper face-upward on the concrete slab, then covering this with waffle design foam-rubber carpet underlay with the waffle design downward to give point contact with the foil. Finally this was covered with nylon carpeting whose surface heat-reflectivity is almost twice that of wool.

Treatment of each large glassed area to control radiant heat flow either inward in summer or outward in winter was by one of three methods: 1) aluminum slat Venetian blinds, 2) aluminized draperies and 3) draperies woven with a heavy nylon warp and an inner facing of almost 80 per cent foil yarn exposure for heat

reflectivity. Careful tests showed that either type of cloth drapery stopped roughly 80 per cent of radiant heat, while the aluminum Venetian blinds stopped slightly less.

Our structure thus functioned fairly well as a *reflective box for inside radiant heat*, with its interior radiant environment largely independent of that outside. All this was accomplished with no effort at conventional insulation to prevent kinetic flow into walls, floor, and ceilings from contiguous air on either side.

How to add or subtract heat

In this heat-reflective box was next installed a cove or trough around each room near the ceiling, in the bottom of which lay freon coils for radiant heat removal in summer and electrical resistance rods for radiant heat input in winter. These troughs were lined with sheet aluminum and equipped with drain pipes to carry away moisture condensing on the cold freon coils in summer. Radiant heat input in winter or its removal in summer was by reflection from the foil ceiling covering.

The only air cooled in summer was that lying in the trough; careful tests demonstrated no spillage of this chilled air over into the room. In winter heating, the resistance elements heated only the air layering upward against the ceiling. No heating rods were ever allowed to go above 250° F., so that there would be no emission of the skin-irritative shorter wave-lengths.

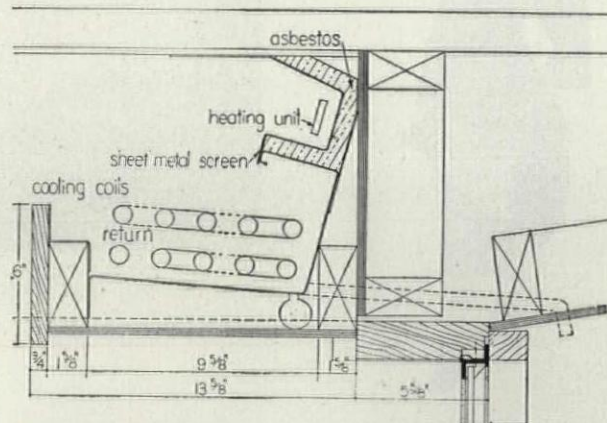
Controls

Just off the central hall are located five thermostats, one for cooling control and four for heating. When air temperatures are above 76° F., cooling is made available to any part of the house. It does not reach any room, however, until the individual room switch is thrown to open that room's solenoid valve. The four other thermostats make available four different degrees of voltage and heating capacity for the elements in any room whenever the room switch is thrown on.

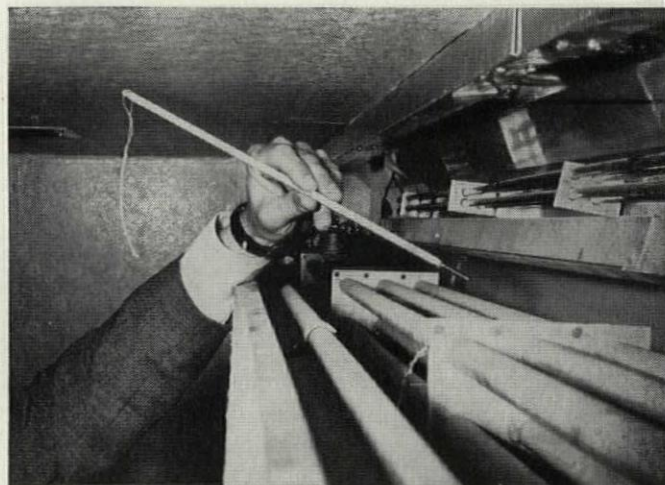
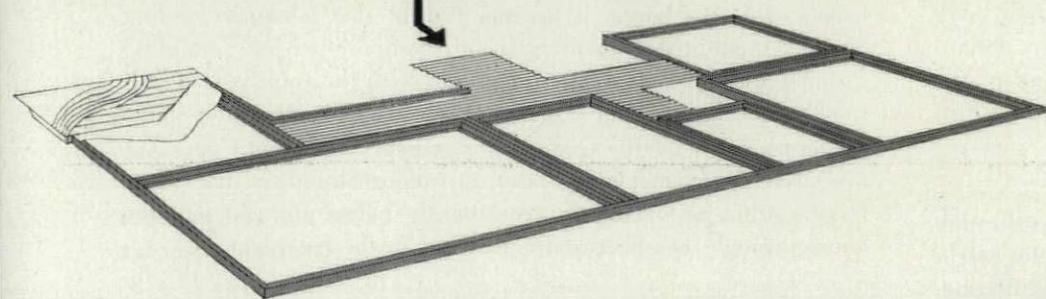
(All this took considerable planning and electrical equipment but most future reflective radiant conditioning installations will presumably use hot and cold water circulating through cove elements, rather than using electrical resistance elements and freon coils. We chose direct electric resistance heating for study purposes only, because of its accuracy of metering, control, and maneuverability. In commercial installations one would use the cheapest fuel available.)



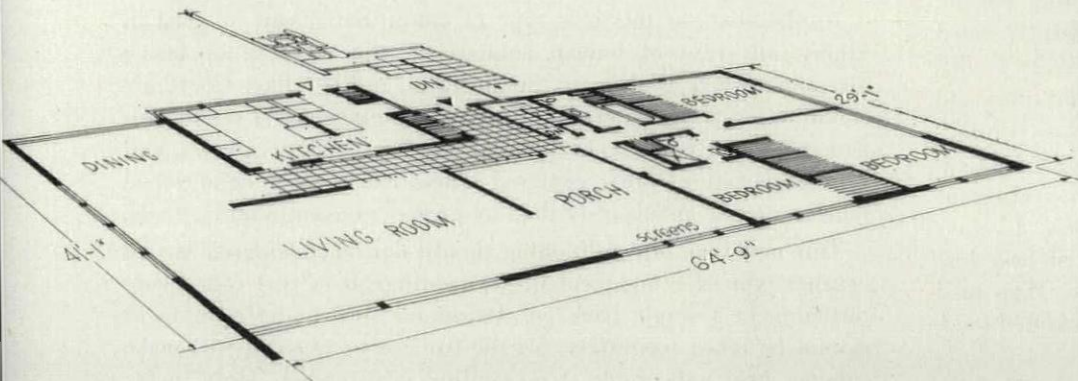
Coves run through house as shown in plan views below. Outdoor air is brought in, cleaned by electrostatic filter, and discharged through plenum ceiling in hall at outdoor temperature and outdoor humidity. House is pressurized so air leaks out, not in.



Heating is done by cove-within-cove, the two electric resistance elements at top. Refrigerant is circulated in lower pipes which may be varied in number to accommodate load. Reaction of system is so fast it can be switched off and on like the lights.



Courtesy Popular Mechanics



View into dining room, below. Acoustics trouble was anticipated because of wide use of metallic finish, but coves in ceiling help diminish reverberation.

ROBERT A. DESHON, Architect
JOHN R. SCHOTT, Associate Architect
JAMES E. ALLAN, Engineer
ROBERT J. STEVENS, Decorator
J. N. PORTER, Designer Control System
MOSSMAN CONSTRUCTION CO., General Contractor

SPECIAL EQUIPMENT: Electric air filter unit, American Air Filter Co. Electric heating elements, Cincinnati Gas & Elec. Co. Frigidaire cooling system, General Motors Corp. Automatic controls, Minneapolis-Honeywell Regulator Co. Aluminum foil wall covering, Reynolds Metals Co. Sheet aluminum, Reynolds Metals Co. Aluminum venetian blinds: Columbia Mills, Inc. Nylon carpeting, Nye Wait Co. Under-rug cushion, U. S. Rubber Co., "Milium" reflective fabric for draperies by W. J. Rand Co., Deering-Milliken & Co., Inc. Other fabrics, Goodall Fabrics, Inc.

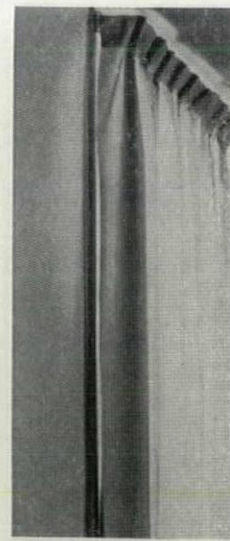
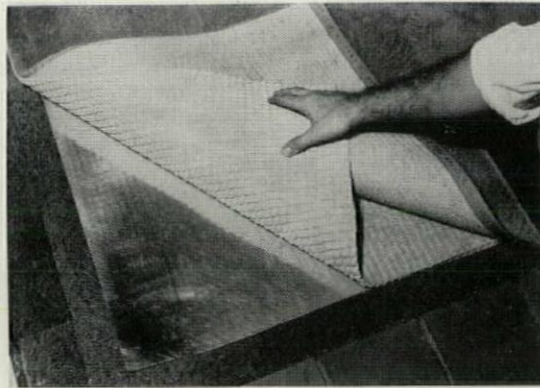


Foil on floor is placed under waffle carpet pad so carpet is not in contact with foil unless someone is standing on that spot.

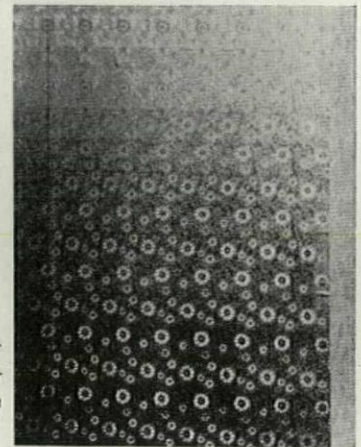


Reflective principle has been tried in clothing too, with aluminum fabric coat lining.

Deering Milliken



Reflective drapes, above, and embossed aluminum reflective wallpaper mirror more than 80 per cent of radiant heat.



The house has an air filtering electrostatic unit in the basement equipped with a fan of 300 and 1,000 c.f.m. calculated capacity for pumping the filtered outside air up into the house. This cleansed air enters the main floor through the entire central hall ceiling* (of perforated aluminum sheet) without perceptible drafts anywhere even at a 1,000 c.f.m. volume. There is no heating, cooling, or humidity change in this air, nor is there any re-circulation. Its primary purpose is for ventilation and pressurization of the structure so that all crack or aperture seepage will be outward.

Operational results

In nine months of use, we have achieved indoor comfort through reflective radiant conditioning at roughly one-third of the calculated heating or cooling loads for conventional air conditioning.

We have had entirely satisfactory heating operation at 62 per cent below conventionally calculated loads during this period. Heating was required on 13 of the 19 days in one carefully noted test run. On these 13 days there was an average of 12.2° F. difference between inside and outside mean daily temperatures and an average electrical wattage consumption of 0.213 k.w./hr./F.° temperature differential. Considering a kilowatt of electrical energy as equivalent to 3,410 b.t.u., it took only an average of 726 b.t.u./hr. to produce needed comfort during these 13 days requiring heating, whereas conventional calculations of heat loss from the structure indicated a need of 1,900 b.t.u./hr. Heat load actually required *was thus only 38 per cent of the calculated load.* (See chart page 131.)

Preliminary cooling load observations during the past summer indicated equally great savings with the new system. Really accurate cooling studies must await another summer's heat, for there were no reflective curtains over the large glassed areas during the early summer's severe warmth, and other items of change and adaptation through the summer months made accurate quantitative studies impossible. However, we did observe a fairly comfortable cooling effect throughout the house with roughly 1½ tons of refrigeration (18,000 b.t.u.+) whereas much more than this amount of refrigeration would have been required in this house for comfort by conventional air cooling. On the summer's hottest day (96° F. maximum, with 78° relative humidity), inside maximum temperature was 89° F. and a wet-bulb reading the same as outdoors. Even so, fair comfort for sedentary activity was achieved and a sweat-free siesta was possible.

In laying out the cooling system the engineers made radiant cooling provision for the removal of 500 b.t.u./hr./person, cal-

culating for 12 people in the living room, eight in the dining room, five in the study, three in each bedroom, two on the porch, and three in the kitchen, or a total calculated cooling capacity of 18,000 b.t.u./hr. for the whole house. Toward the end of the summer, as we achieved more complete control of radiant heat leakage into the house, it became evident that adequate cooling could be attained regardless of air temperature or humidity. Power requirement for the compressor, with the cooling on in all rooms, was slightly over 2 kilowatts per hour of operation.

Condensation on the cold coils was heavy on humid days but produced no detectable reduction in indoor humidity, due to the large volume of outside air continually being pumped into the house through the electrostatic air filter in the basement.

The future

Applications of this new type of conditioning can be used in almost all types of human habitations, except those of heavy occupancy such as theaters, auditoriums and the like, where air conditioning seems likely to be more advantageous. Private residences (old or new), apartment houses, hotels, ships, planes, and a great variety of other enclosed spaces can thus be conditioned much more advantageously than by present conventional methods.

This new type of conditioning should not be considered as just another type of economical winter heating. It is year-round conditioning in a single package. Its winter fuel-saving advantages cannot be taken separately, for the foil wall-coverings will make summer heat unbearable if no cooling is provided. Only in far northern regions or tropical highlands without indoor heat problems could its fuel saving for heating purposes be used alone.

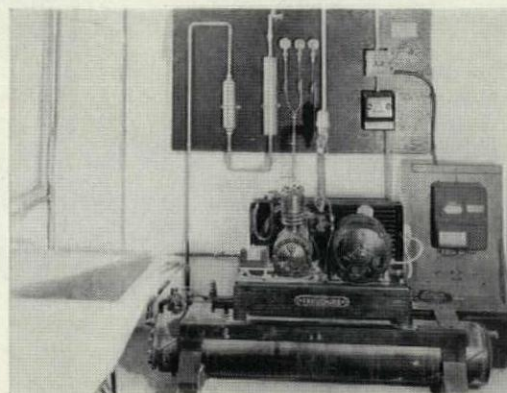
This new system should not be thought of as a luxury to be available only to the fortunate few. The foil wall-coverings will be priced in the same range as any good grade of conventional wallpaper. The installation of the radiant heating-cooling system should cost about the same as a good hot-water radiator system, but it should operate at about one-third the conventional fuel load.

Our next step will be to set up rooms with identical heat loss, cubage, and exposure values, to determine more exactly the conversion factor to be used in going over from conventional air conditioning calculations to those applicable to the new system. These rooms will be ready for operation by early November and should yield the desired information within the following two months. The system should therefore be ready for practical use by the early spring of 1951.



Conventional appearance of interior is achieved despite careful conservation of reflectivity and the open coves near ceiling which execute the whole conditioning job.

Cooling pipes are powered by relatively small compressor (1½ ton). Right, Dr. Mills at his recording apparatus. Electric heat is used for precise collection of data.



HEATING DATA FOR 13 HEATING DAYS BETWEEN SEPT. 24 & OCT. 12 INCLUSIVE

Date	Mean Temperature			Minimum Temperature		Day's Kilowatt Consumption	BTU Requirement For a Day's Heating		Calculated BTU Saving By Reflective Radiant System
	Inside	Outside	Difference	Inside	Outside		Reflective Radiant System	Conventional Airconditioning Calculated at 70°	
9/27	70.3	62.5	7.8	65	57	15.9			
10/7	70.9	63.8	7.1	63	52	30.8			
10/11	69.0	61.6	7.4	61	52	62.3			
Average	70.1	62.6	7.4	63	53.7	36.3	123,783	337,440	63%
10/8	68.1	57.4	10.7	66	54	60.8			
10/10	69.2	58.8	10.4	64	52	55.5			
10/12	69.0	57.2	11.8	63	50	37.7			
9/26	70.0	57.7	12.3	62	43	51.0			
10/6	70.3	57.2	13.1	63	44	71.3			
10/9	66.6	53.3	13.3	63	50	116.1			
Average	68.8	56.9	12.0	63.5	49.4	65.4	223,014	595,080	63%
9/25	67.7	52.1	15.6	60	40	88.2			
10/4	67.3	51.8	15.5	59	42	56.5			
10/5	67.8	52.6	15.3	60	40	80.4			
Average	67.6	52.2	15.5	59.7	40.7	75.0	255,750	811,680	68%
9/24	66.3	47.0	19.3	57	39	102.8	350,548	1,048,800	67%
PREDICTED DATA FOR EXTREME CONDITIONS									
(calculated)	60	32	28	52	20	145.6	496,496	1,732,800	72%
(calculated)	52	0	52	25	-10	270.9	923,769	3,192,000	71%



DOCTOR'S HOUSE-AND-OFFICE combines medical efficiency with a lake view

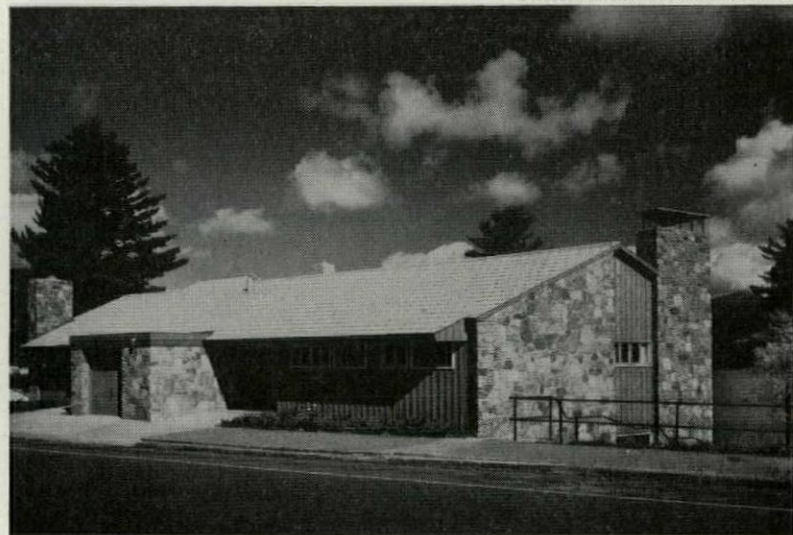
LOCATION: Lake Placid, N. Y.

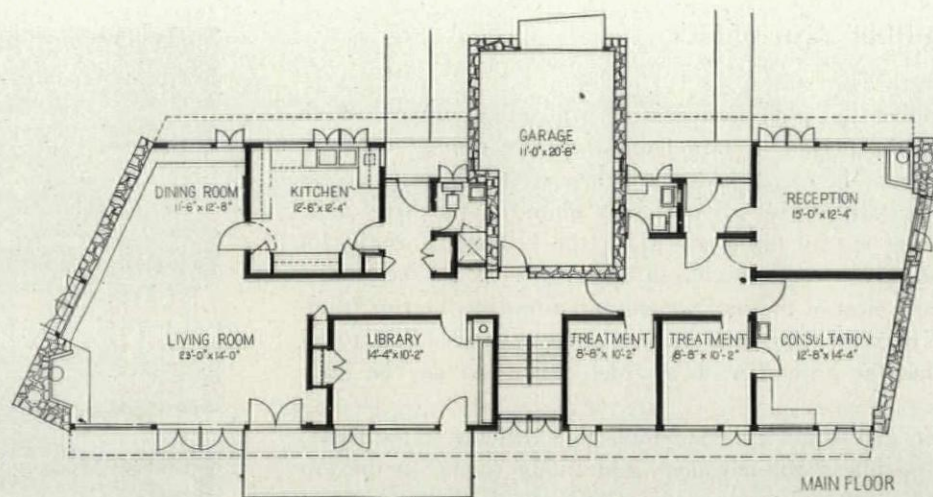
PAUL BEIDLER, Architect

This residence and headquarters for a country doctor has a plan as all-round as its owner's life and practice are sure to be. It serves, too, as an example of the solid and unaffected building style which should be seen more often in our resort towns.

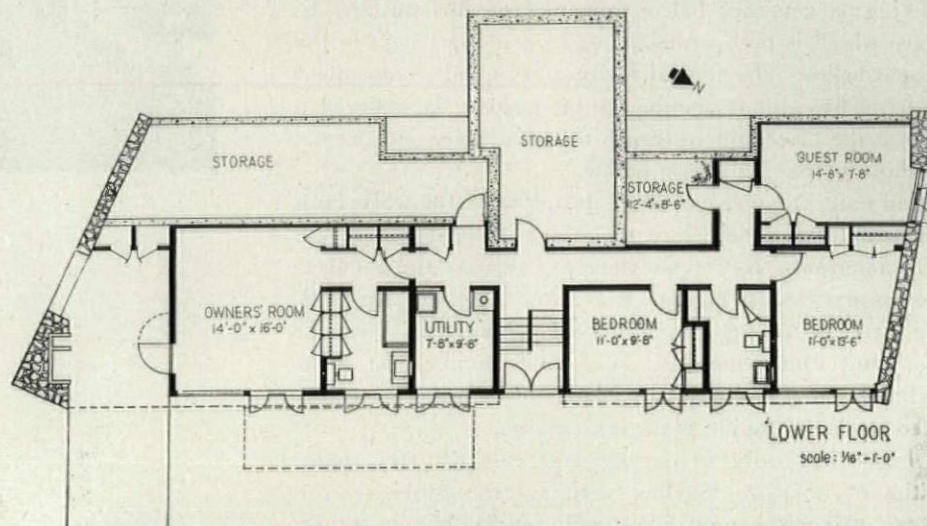
Its site presented almost every possible problem: a narrow lot; a steep slope; a view to the northeast; and a front on the main street, crowded in summer. The doctor's personal requirements were also demanding. Among the features Architect Beidler has achieved are: 1) direct access from garage to street for a quick getaway in all weathers; 2) complete separation of entrances and rooms in home and office; 3) fullest advantage of the lake view; 4) extra bedrooms arranged for a growing family and also suitable for renting during summer months. His straightforward design, which fitted these myriad requirements like a glove on a ten-toed mastodon, proved so baffling to the local building officials that approval was held up for many months. Its sheer logic, however (attested by other architects in the community), at last raised the go-ahead signal.

Photos: Lionel Freedman, Pictor





MAIN FLOOR

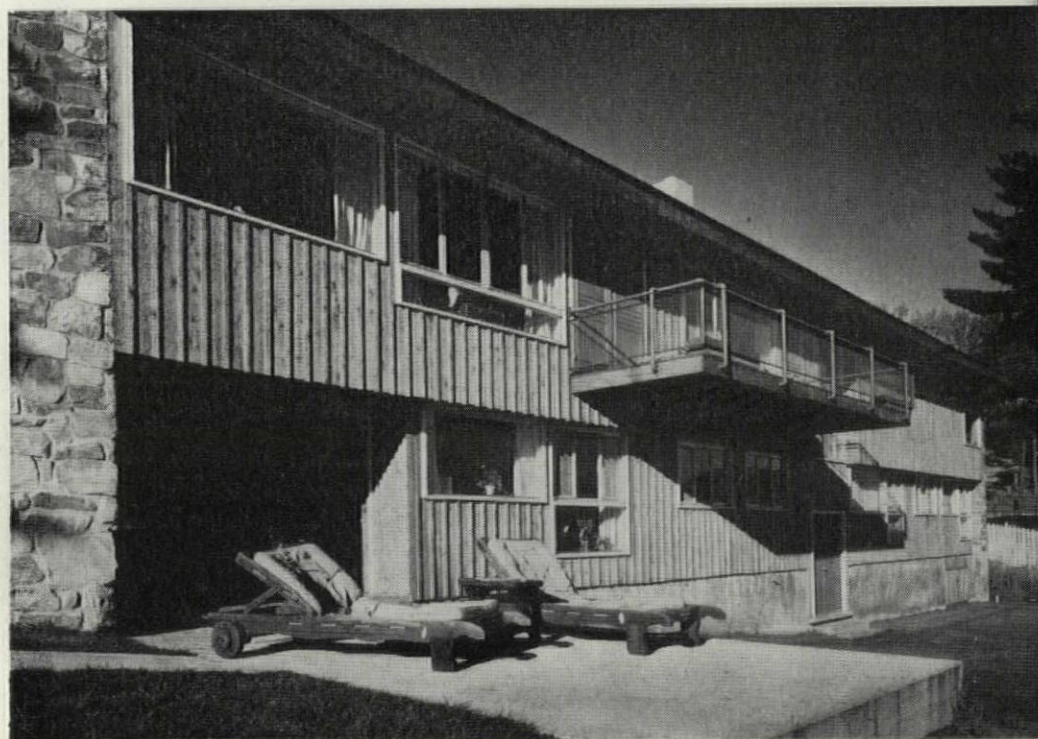


LOWER FLOOR

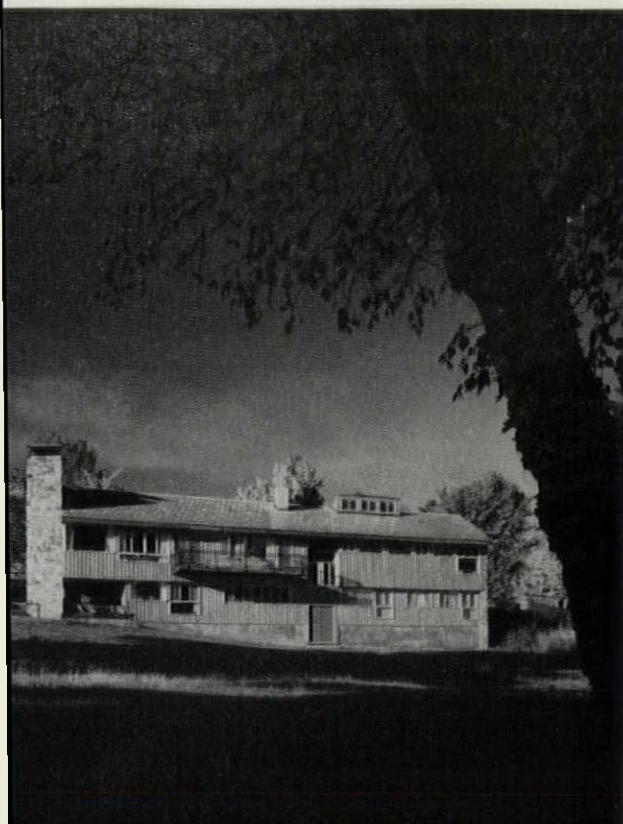
scale: 1/8" = 1'-0"

Angled side walls of masonry (see plans right) allow this house to take full advantage of the view on a steep narrow lot. Central placement of garage and stairs gives privacy to both office and home areas. Placement of bedrooms on a lower level adds to privacy and allows them to be on the "view" side of the house.

A compact business-like front faces the street (below left), with the garage jutting forward to create a distinct separation between office and home entrances. The lake-side view of the house (below) gives a truer picture of its large size. Clerestory windows at the right side of the roof bring light and air to the central hall in the office section.



Outdoor as well as indoor living areas are provided on both levels. Upstairs, the library has a full length balcony; below, the master's bedroom opens on its own terrace. A rectangular cut in the masonry (see the side view of house on opposite page) lets in the southern sun to the inner protected half of the terrace.



DOCTOR'S HOUSE AND OFFICE

Corner-stone of the plan is a central protruding garage, which neatly divides the private section from the office rooms. On both sides of this are set the entrances, each with separate, sheltered access from the street. Having set all necessary doors on the street side, Architect Beidler spread his house along the full width of the lot securing for all major rooms a view of the lake. Thick masonry walls at each end bear most of the roof weight and allow the interior framing to remain regular. The small window areas at each end are token of the fact that the ground on both sides may some day be fully built up.

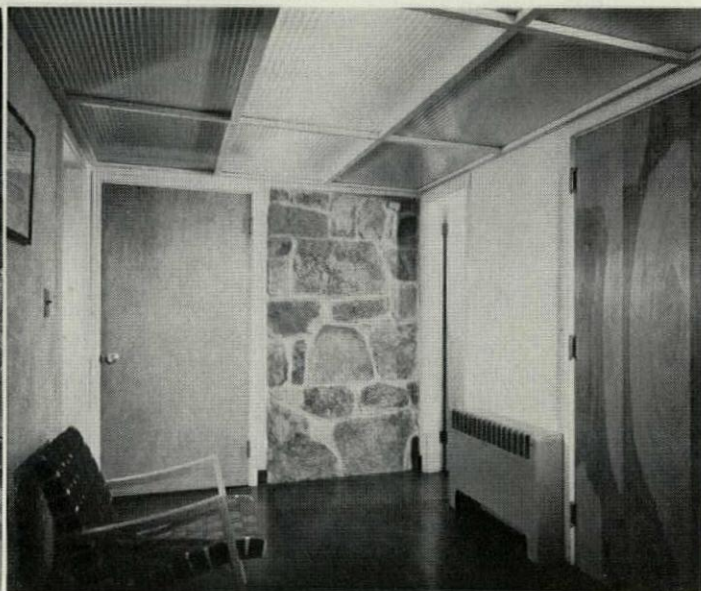
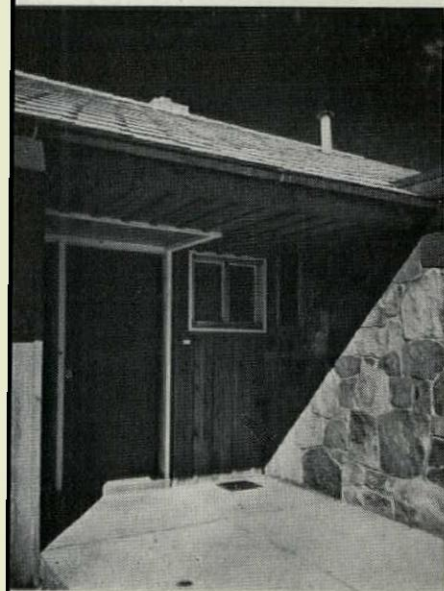
Like so many California hillside houses (but very few in the East), Beidler's design places the entrances and living rooms on the top level; sets bedrooms and storage space beneath. Both floors allow for outdoor living: a generous balcony opens from the upstairs library; a terrace which is both protected and open is set next to the master's bedroom below. The central staircase is equally convenient for all house areas, has a door opening on the garden. It serves also as buffer between the office and residence upstairs; between owner's bedroom and those of paying guests below.

Fieldstone and natural wood are the materials used for walls both inside the house and out. They show themselves appropriate to the unpretentiously handsome living quarters as well as the medical sanctum. The masonry walls at each end allow fireplaces for both halves of the house—adding psychological as well as physical warmth to the long winter months. To further combat the rural winter, the windows are restricted to small aluminum casements, with large fixed panes of double glass for viewing.

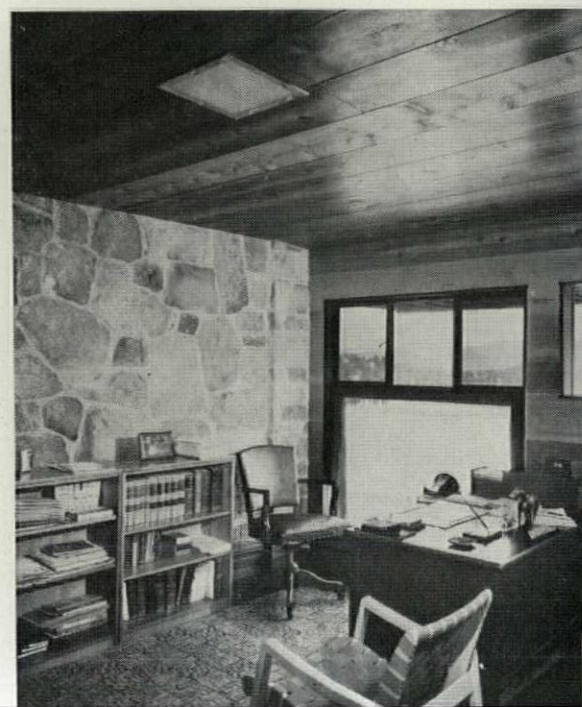
While this house is hardly in the low-cost category, the many special amenities of its plan, together with a large provision for built-in furniture, make it a good investment for \$11.85 per sq. ft.



Interior of the residential area (shown above and on the opposite page) is open and cheerful in spite of necessary precautions against the harsh climate. Above is the fireplace on the open terrace next the master bedroom; opposite are dining and living areas. The view from the large living room windows is underlined by window seats.



The doctor's offices (below) show that fieldstone and fir can create a friendly and efficient work space. Photos trace the patient's progress from the recessed entrance (far left); through the central hall (left) lighted by a clerestory set above its ceiling of corrugated glass; and (below) into the doctor's consultation room.

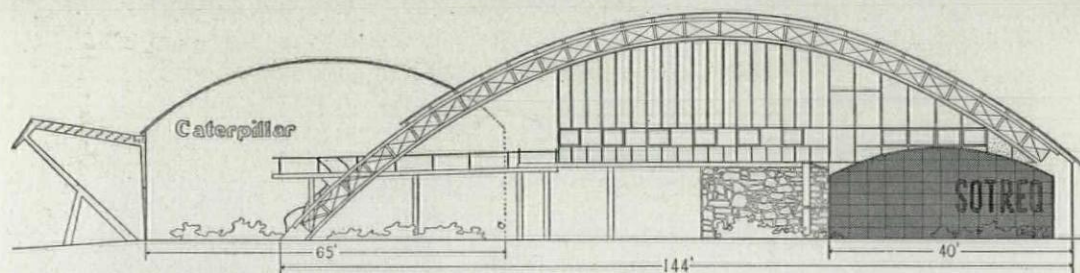


CONSTRUCTION OUTLINE: FOUNDATION: Concrete; Waterproofing—Aquila, Prima Products, Inc. STRUCTURE: Exterior walls—1 x 8 in. fir board and battens; celotex sheathing, The Celotex Corp.; 2 x 4 in. studs; 1 x 8 in. cedar board on plaster interior finish. ROOF: Asphalt shingles, Johns-Manville Co. FIRE-PLACE: Damper—H. W. Covert Co. WINDOWS: Sash—Aluminum casement, A. B. C. Equipment Co.; Glass—Double, Pittsburgh Plate Glass Co.; Screens—Aluminum, A. B. C. Equipment Co. FLOOR COVERINGS: Asphalt tile—David E. Kennedy, Inc. PAINTS: Interior—S. C. Johnson Co.; Exterior—Benjamin Moore & Co. WOODWORK: Doors—Rezo flush panel, Paine Lumber Co. Ltd.; Garage doors—Stanley Works. HARDWARE: Schlage Lock Co. KITCHEN EQUIPMENT: Range, Refrigerator, Sink, Dishwasher, Cabinets—General Electric Co.; Ventilating fan—Emerson Electric Co. LAUNDRY EQUIPMENT: Sink, Washing machine, Drier—American Radiator-Standard Sanitary Corp. BATHROOM EQUIPMENT: Lavatory, Tub, Toilet—American Radiator-Standard Sanitary Corp. Shower—Milwaukee Stamping Co.; Cabinets—Hoegger, Inc. HEATING: Hot-water baseboard—Warren Webster Co.; Boiler, burner—General Electric Co.; Radiators—Warren Webster Co.; Thermostat—Minneapolis-Honeywell Regulator Co.; Water heater—General Electric Co.



Photos: Lionel Freedman, Pictor





LOCATION: Rio de Janeiro, Brazil
MARCELO MILTON AND MAURICIO ROBERTO,
Architects

ARCHED INDUSTRIAL BUILDING integrates display, repair and office space

As light, tight and precise as a spider-web is this new multi-purpose building for a tractor company in South America. The easy curves and neat tie-pieces of its showroom-workshop-warehouse-offices combine much of a web's visual appeal with its complex inner purpose. Fortunately for the many visitors already attracted by the building, its interior is as pleasant as its exterior is inviting.

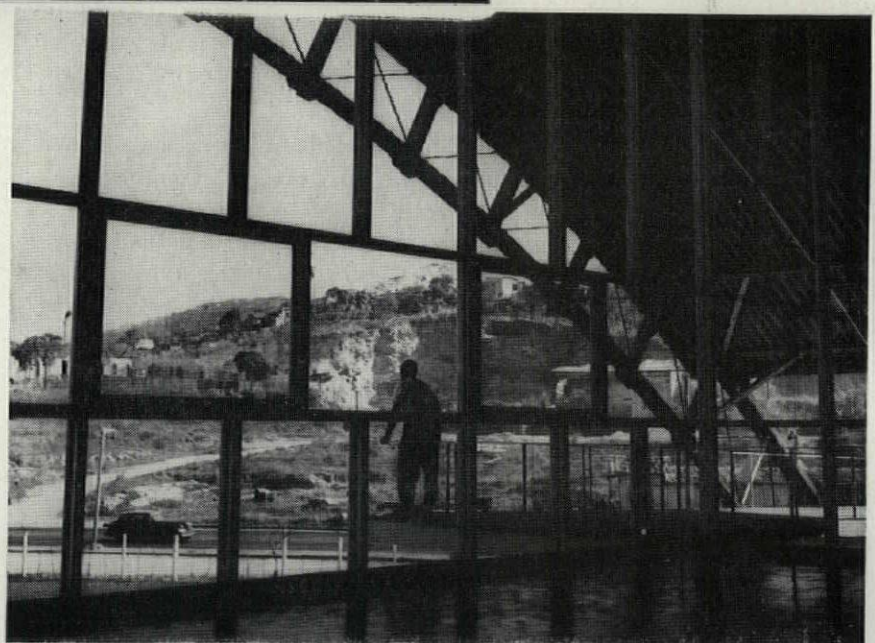
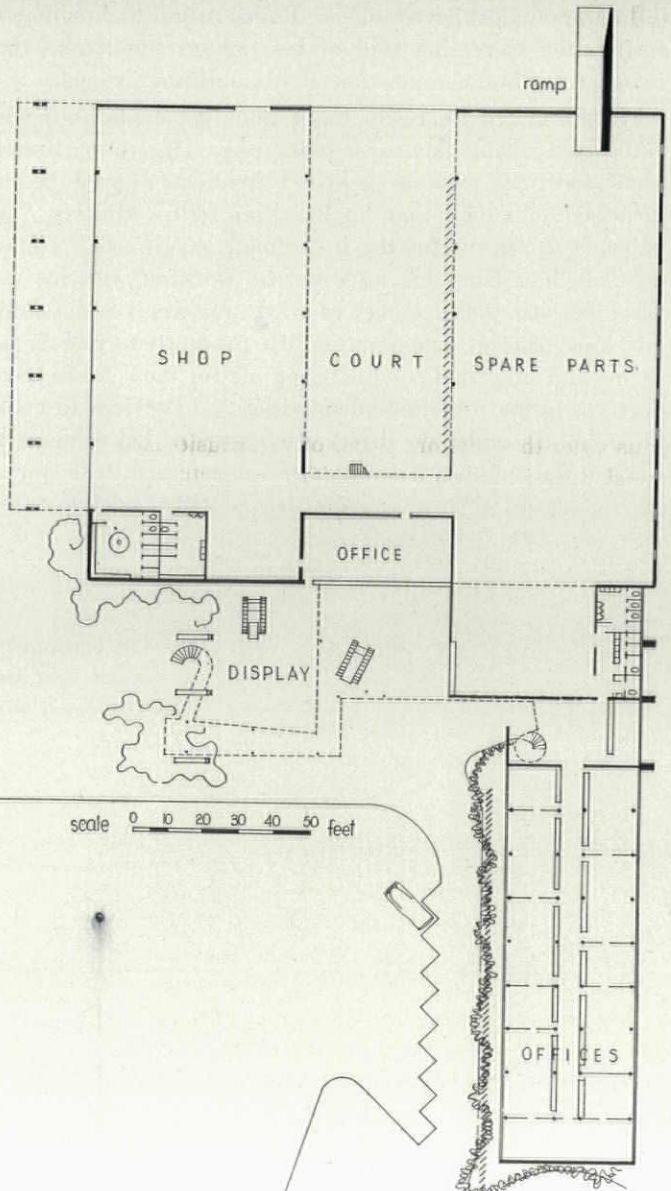
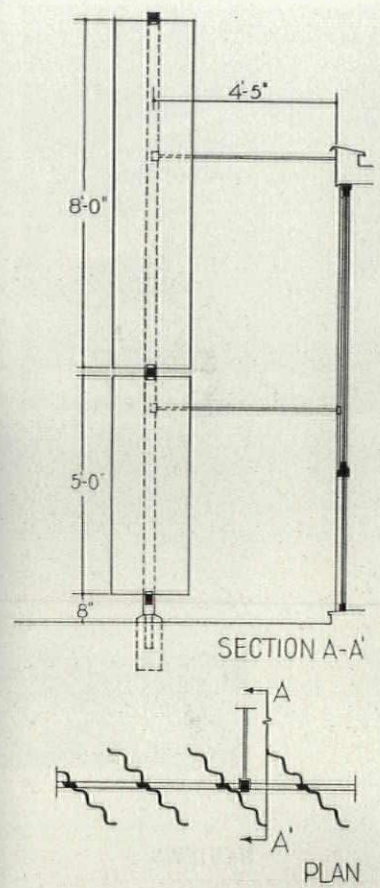
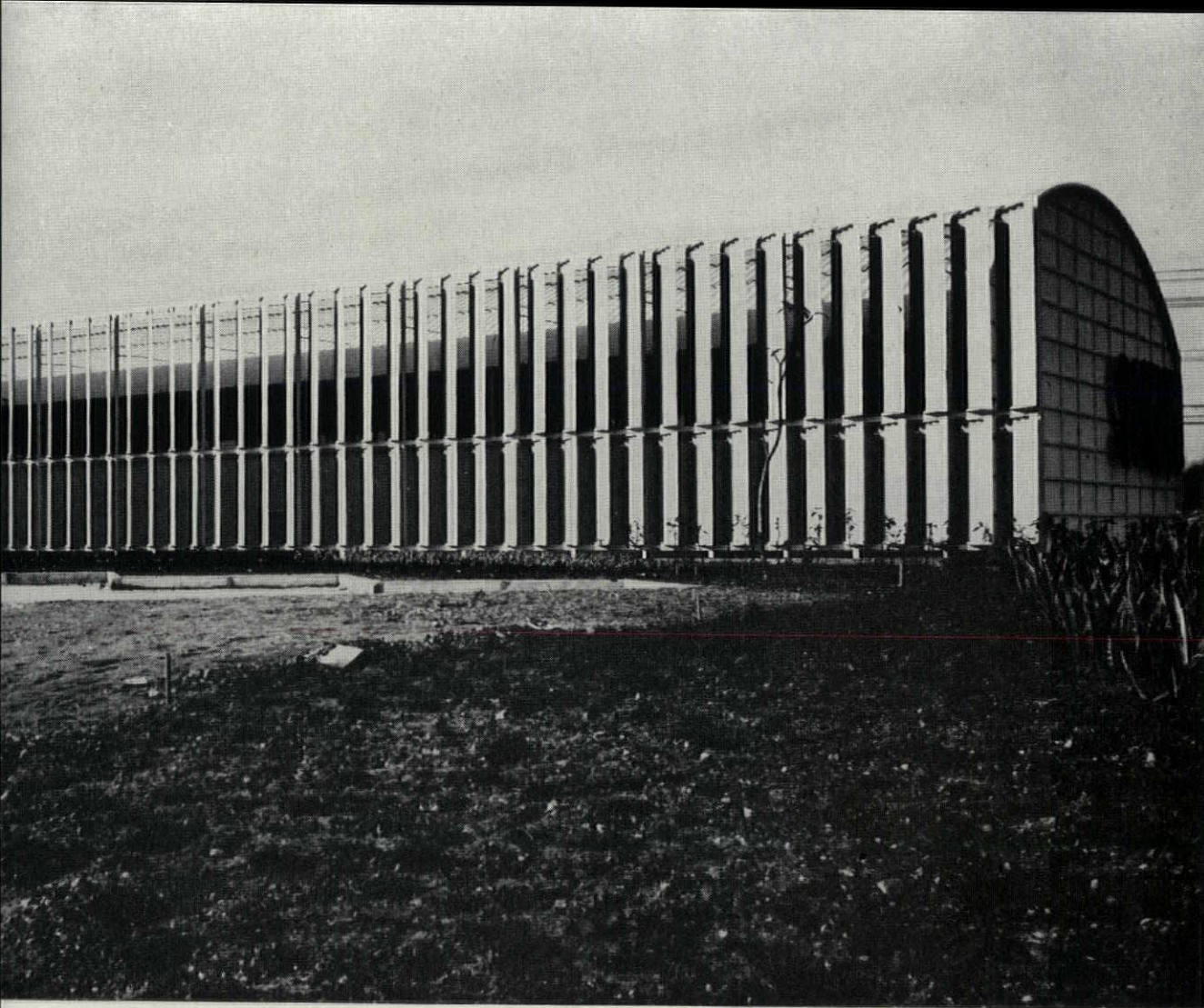
Central in its design is a triple arch of wood, 148 ft. long, whose ends are set in reinforced concrete. Within this giant sweep, roofed with corrugated asbestos cement, are gathered all the company's public services. The mild climate of Brazil allows the ground level to remain unenclosed as an open-air exhibit space for farm machinery and equipment. A sales office overlooks the exhibit from the right, its presence rendered attractive and emphatic by an exterior wall of rich gold local stone. The illusion of lightness and great freedom is increased by a broad court which opens directly behind the sheltered showspace.

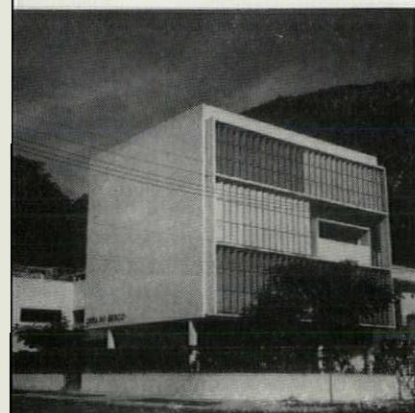
For the further benefit of visitors, an exterior stair and

gallery of reinforced concrete allow the exhibit to be viewed from above. These also serve as a pleasantly dramatic entrance to the visitors' lounge which occupies the large glassed-in upper level. Located here are a refreshment bar, a small lecture-projection hall and a conference room.

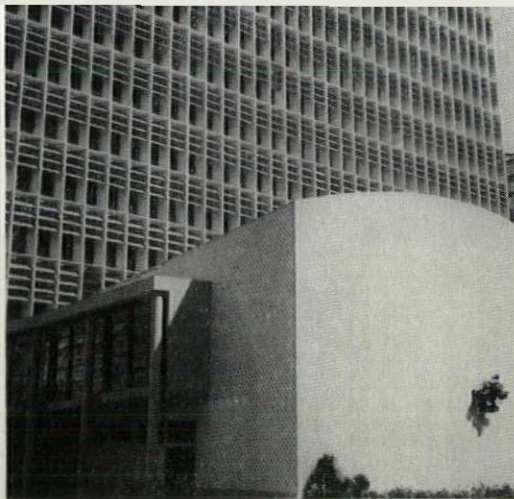
Three service wings (all of concrete) stretch out from the public areas. The workshop and warehouse are housed behind the central arch in two parallel buildings, each with a 60 ft. span, and separated from each other by an open court. The long office wing, 38 ft. wide, stretches forward from the entrance toward the road.

The sun-baffles of each of these wings rivals in interest the glass-and-gallery pattern of the main span. Heat and direct sunlight is kept from the vulnerable north side of the workshop by a tilted canopy, 21 ft. wide, with fixed louvers and diagonal bracing. Both the warehouse and office wings are equipped with movable vertical fins of corrugated asbestos. In addition to these structural sun-shields, the offices and enclosed visitors' areas can be air-conditioned.

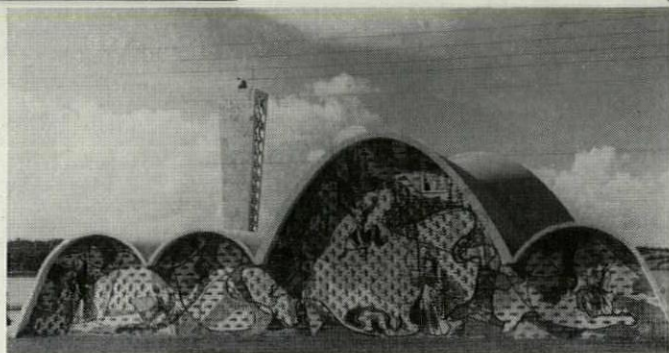




1937—Day Nursery with asbestos sunshades (left) was Niemeyer's first building.



1937-43 — Ministry of Education (left) is Brazil's most famous structure.



1942—Church of St. Francis of Assisi, Pampuhla, shows Niemeyer's use of concrete vaults and a tile mural by Portinari.



1943—Weekend House at Pampuhla (below) has three levels and a ramp integrating it with the garden by Burle-Marx.

REVIEWS

OSCAR NIEMEYER

THE WORK OF OSCAR NIEMEYER edited by Stamo Papadaki. Reinhold Publishing Corp., 330 W. 42d St., New York, N. Y. 230 pp. 9 x 9 in. illus. \$9.

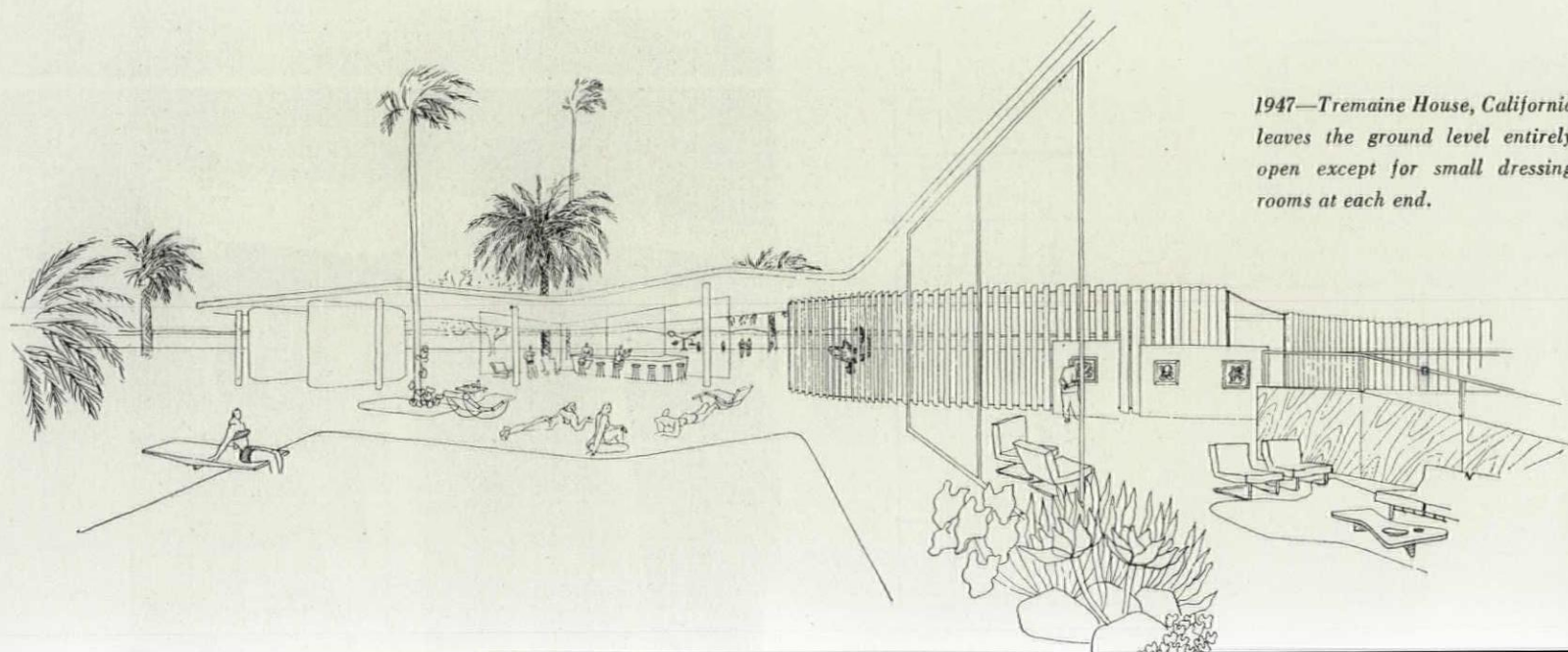
With the work of Oscar Niemeyer, South America takes her full place in world architecture. This young man, now only 43 years old, has in the past decade added an assured and distinctive flavor to modern design. As Lucio Costa, Brazilian architect and Niemeyer's erstwhile master, says, "his work . . . is clear evidence of the unlimited artistic possibilities of new construction techniques." It brings to the rather rigid outlines of earlier function structures, "an approach conditioned by . . . colonial baroque and the physical aspects of his country."

Photographs of Niemeyer's most famous buildings have appeared and reappeared in publications around the world. In this new book, however, they appear for the first time in their

full chronological development. Plans, details and photographs portray the increasing skill of his famous sun-breaks, the increasingly subtle composition of his building groups.

The Foreword by Lucio Costa adds some interesting notes to the so-far scanty Niemeyer biography. This young Brazilian, whose swift rise to fame surprised architects around the world, surprised none more than his Brazilian fellow-workers. "When he came to see me for the first time," says Costa, "I tried to dissuade him from his intention of working with me in my office, because the turn-over of work was small and would not give him sufficient remuneration. He promptly turned the tables on me and suggested compensating me for the right to take any part . . . in my professional activities . . . Previous to his mere three months under the direct orientation of LeCorbusier there was not the slightest indication of his imminent trajectory."

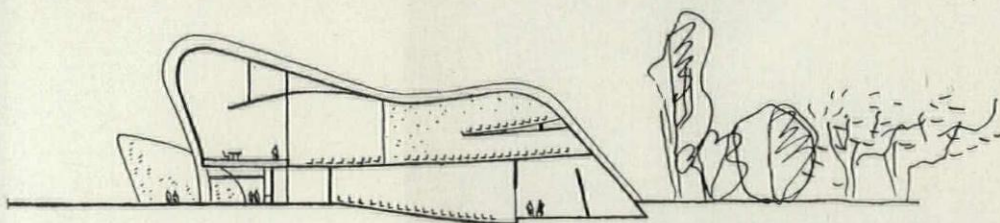
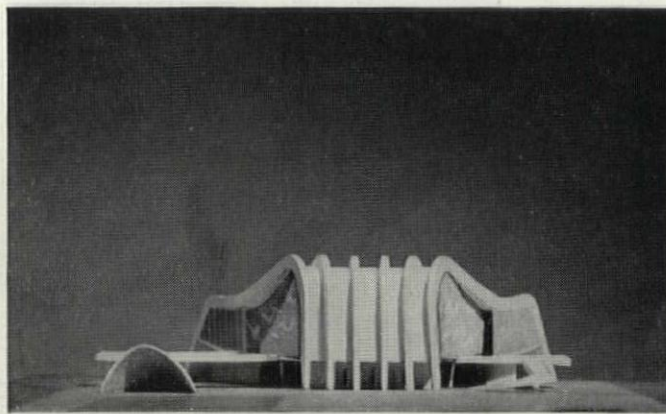
(Continued on page 158)



1947—Tremaine House, California leaves the ground level entirely open except for small dressing rooms at each end.



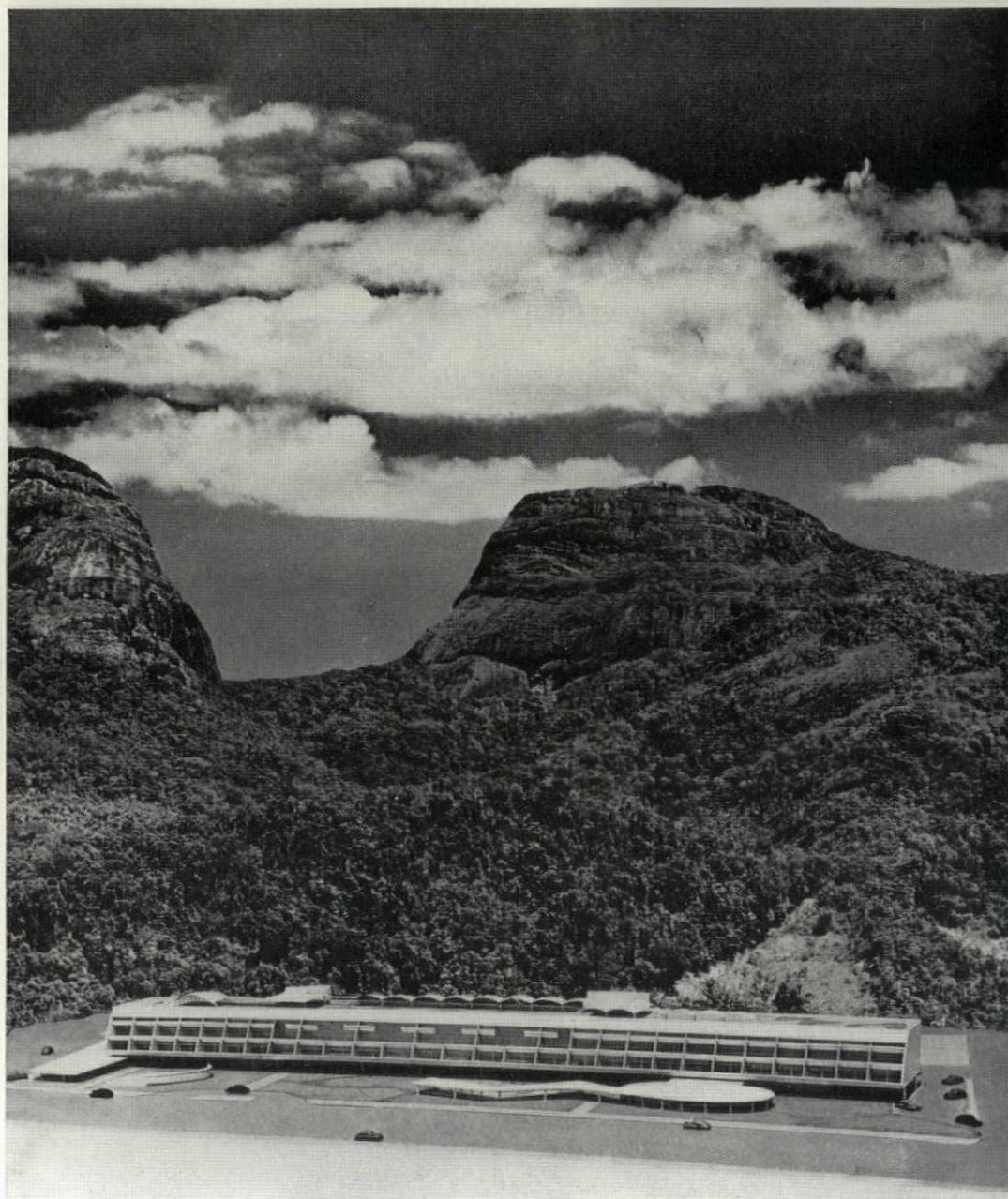
1948—Twin Theaters for the Ministry of Education (above) fit harmoniously with their famous predecessor. Model at right shows front view and outdoor bandshell. Sketch below reveals placement of auditoria set on top of one another with stages at the opposite ends.

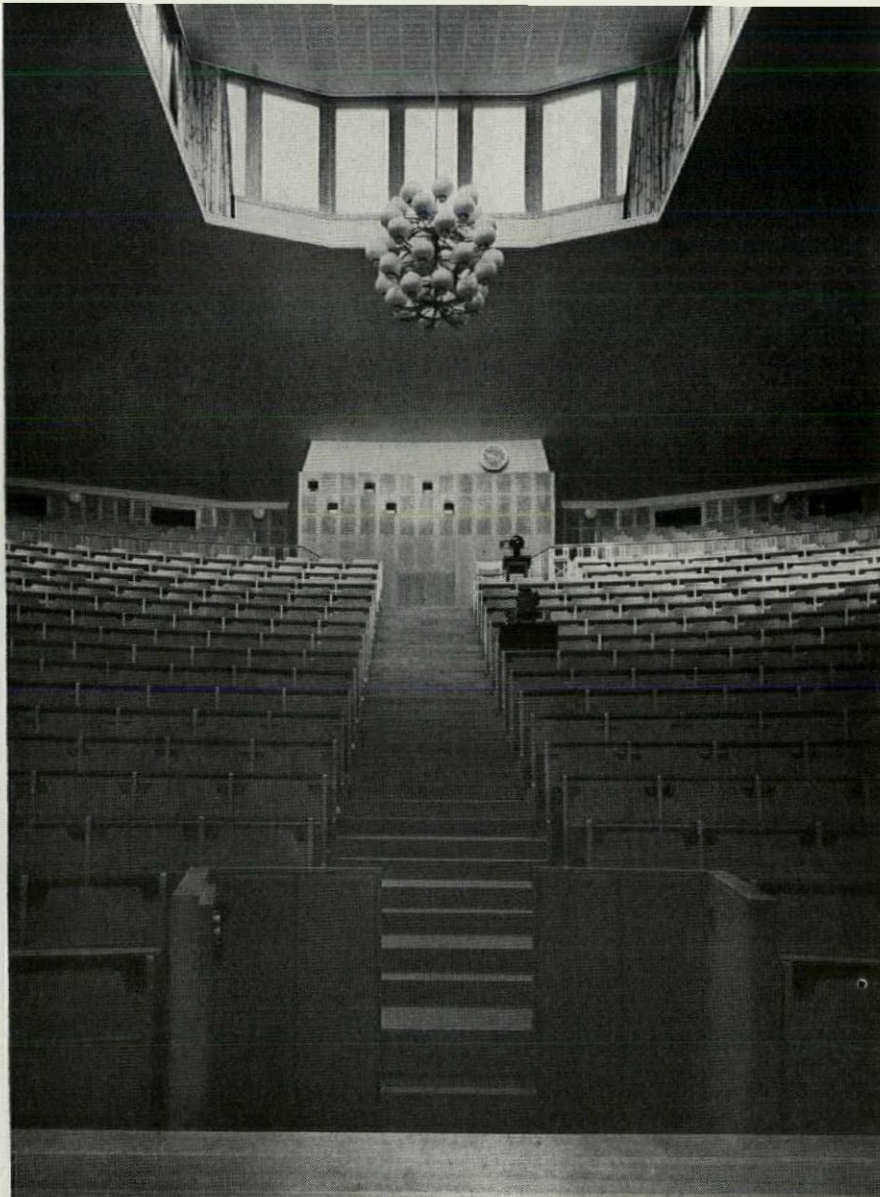


1949—Publishing building in Rio (right). Since the plant is used for early morning work, the east face (on hillside) is equipped with sunbreaks as well as the north.



1949—Hotel Regente Gavea is a resort hotel with 170 apartments now under construction in Rio. The two upper floors provide duplex units; each one facing the sea side has its own balcony. At lower left in the photo is a large garage. A typical concrete swirl forms the entrance and roof of a large restaurant-casino.





SCHOOL IN SWEDEN

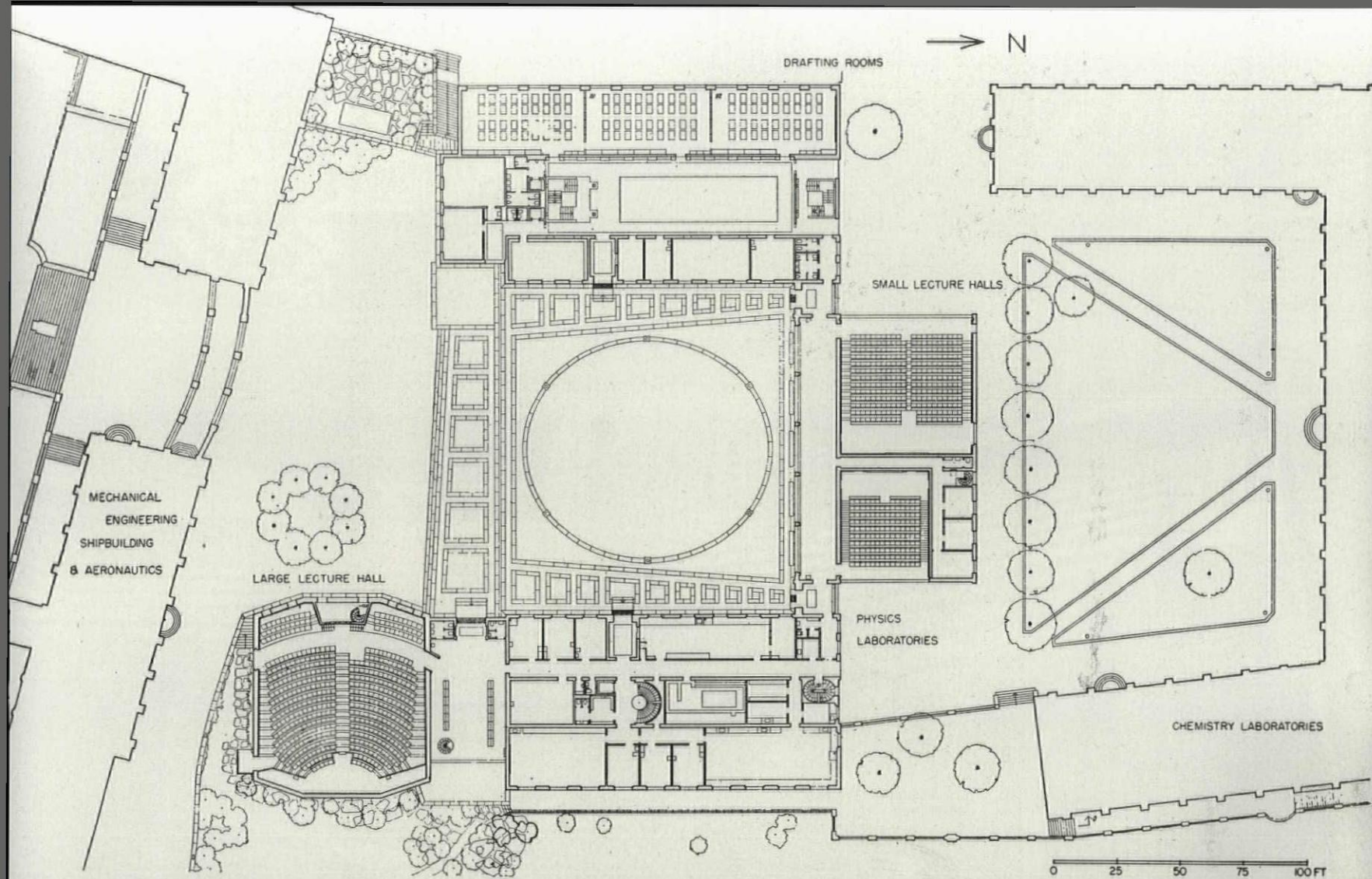
Technical high school features a top-lighted auditorium, shows Swedish mastery of detail and proportion

NILS AHRBOM AND HELGE ZIMDAHL, ARCHITECTS

Here is fresh evidence that the Swedes have not lost their special gift for crisp, fresh design. By crabbid U. S. city school standards, this technical high school for wintry Stockholm is lavish in its consumption of space. Yet the details shown here and on the following pages prove that the Swedes can also achieve beauty with an economy of means rarely surpassed by American designers. Fine proportions, expressive handling of materials, imaginative use of simple forms and advanced building techniques were the chief tools of the architects.

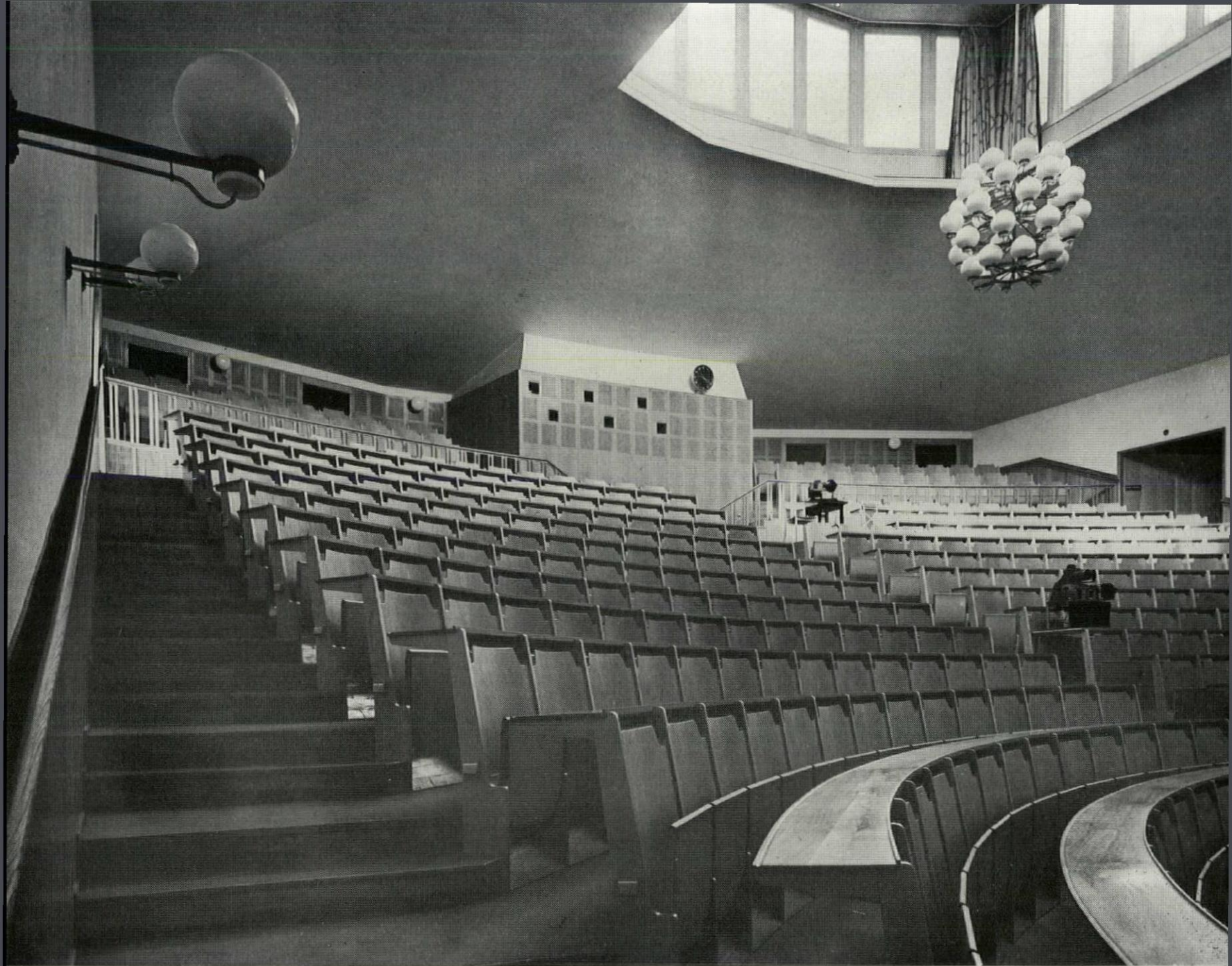
Newest part of a large complex of high school facilities, this three-building unit overlooks a spacious court which opens to the south at the summit of a rugged hill. For U. S. purposes the most stimulating building in the unit is a top-lighted 500-seat lecture theater, linked to a five-story physics and photo laboratory by a low coatroom-foyer (photo, right). Other buildings around the court are a low structure containing offices and two small lecture halls, and another five-story unit housing classrooms and drafting rooms around a handsome, but extravagantly proportioned stair and corridor well. (Details, pages 144 and 145.) The simple brick exteriors of all the buildings were closely related to existing structures on the north and south.

The large lecture theater is a pace-making example of school auditorium design. Sited next to the entrance drive for easy access by both students and public, it is a modified octagon, crowned with a sparkling clerestory dome of glass and copper which floods the auditorium with daylight (photo, above).



All photos: American Swedish News Exchange, Inc.

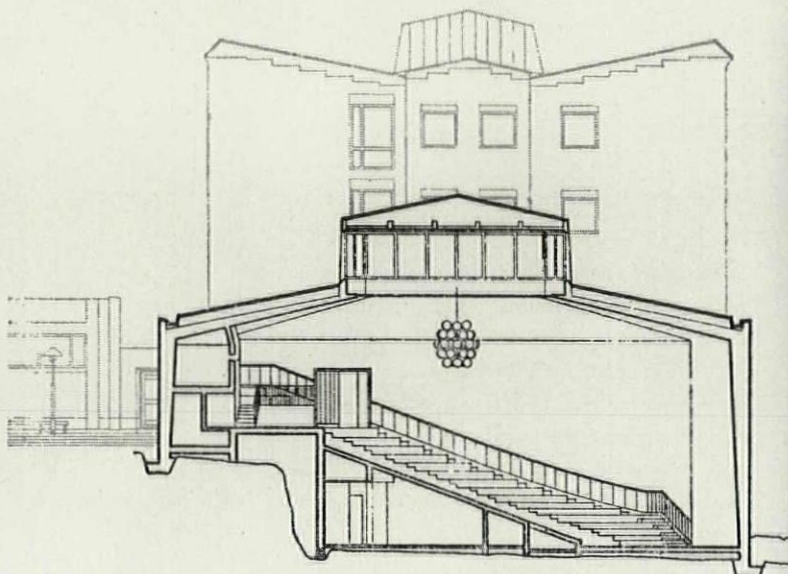


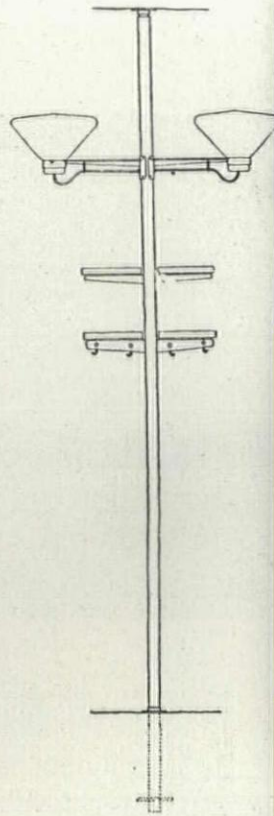
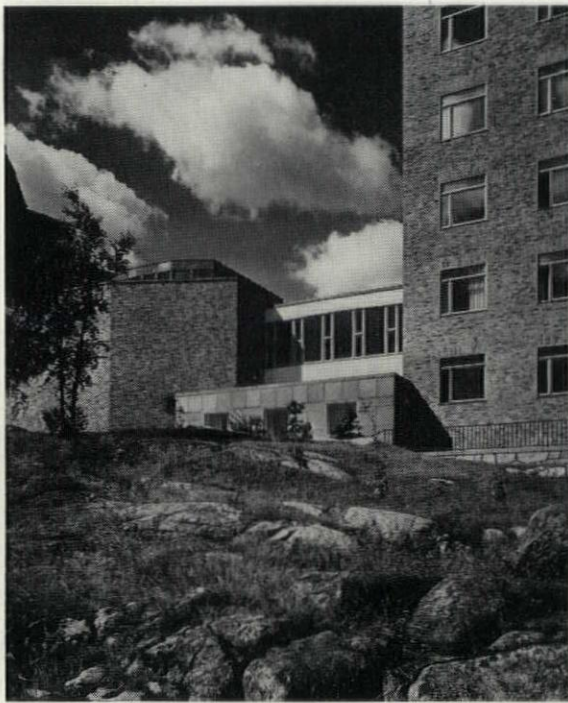


Within the hall, subtle integration of structure, lighting, ventilation and acoustical treatment achieves a rare degree of design harmony. The walls and roof are a membrane of reinforced concrete, tapered in section for maximum lightness and angled to prevent the sound reverberations produced by parallel wall surfaces (detail, right). Acoustically favorable shape of the room is augmented by sound-absorbing material behind slotted oak panels and on underside of seats which flip upright when unoccupied, thus balancing the acoustics when auditorium is half-full.

Fan rooms beneath the sloping floor of the auditorium force fresh, heated air into the hall through slots behind the stair rails on the side aisles (photo, above). Return grilles are in the steps under the seats.

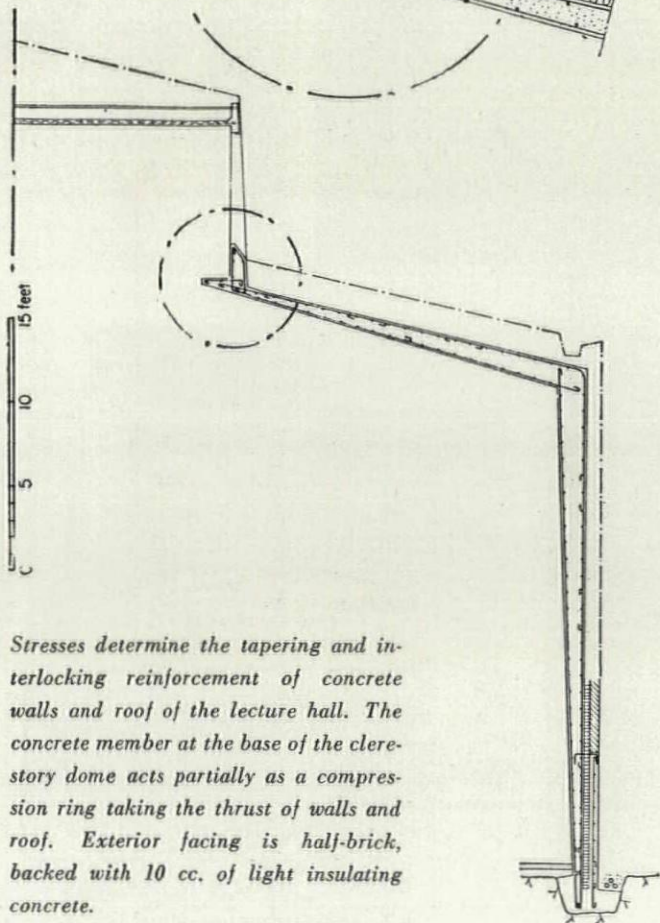
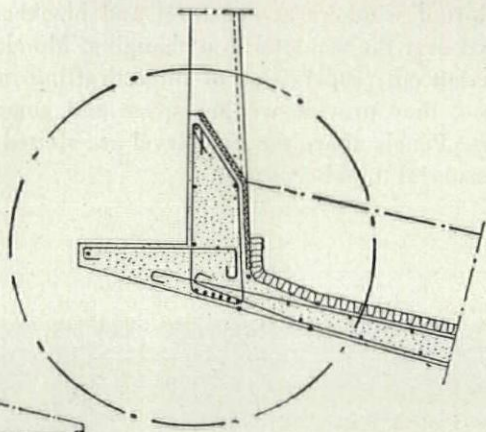
Chief decorative accents are the graceful side-lights of brass, iron and opal glass and the dramatic light cluster suspended from the clerestory dome. With characteristic Swedish freedom, the architects have provided lighting fixtures which are both a playful recall of earlier forms and an effective modern device for emphasizing an unbroken area of space.



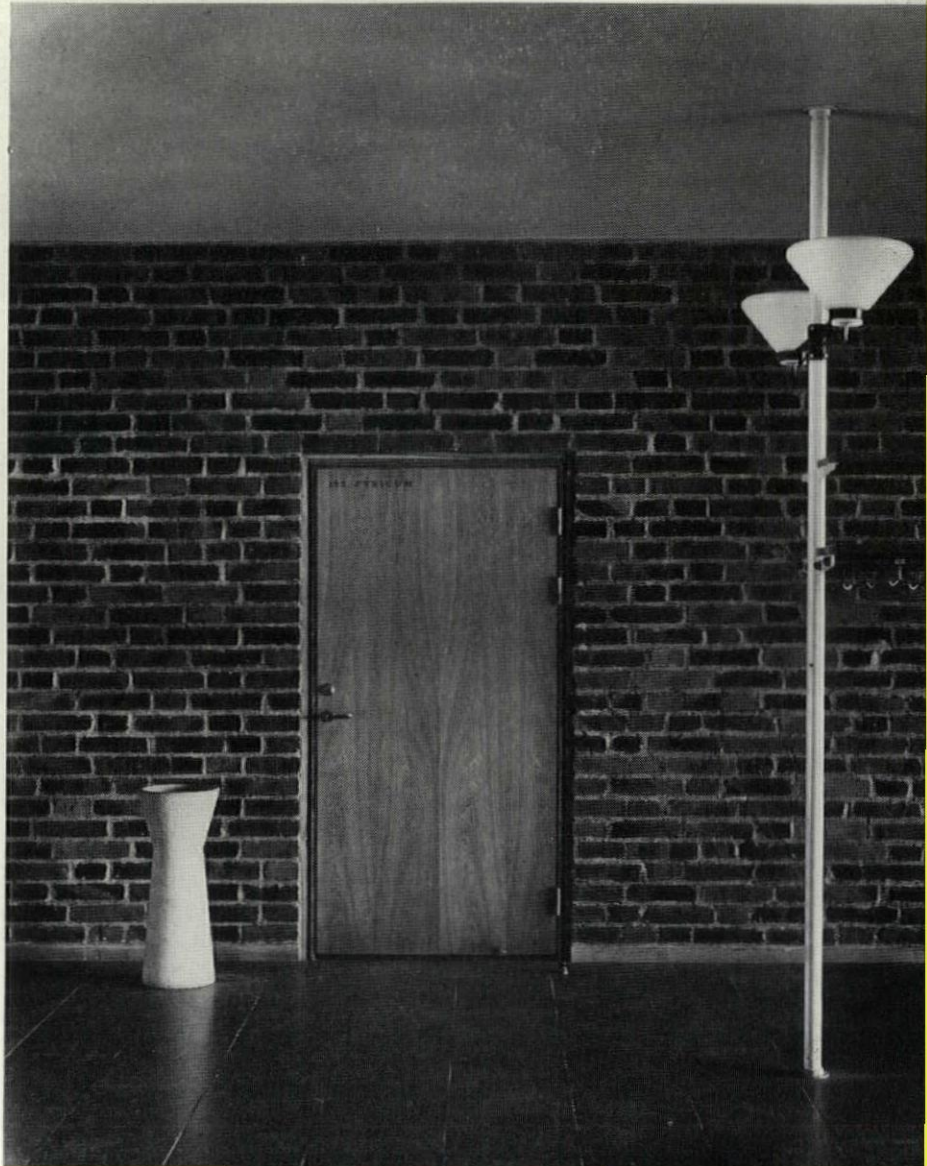


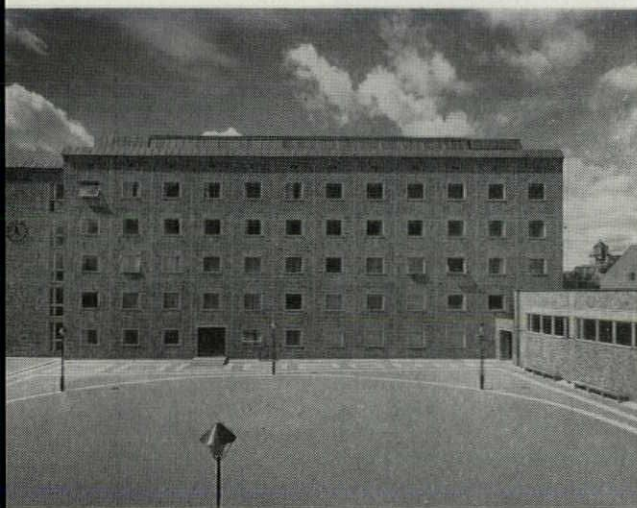
A sharp change in exterior treatment (photo, left above) defines the combined coatroom and foyer which links the physics building with the large lecture hall.

Within the brick-walled foyer (photo, above) a striking special pattern is created by white posts supporting wooden coat racks and slender lighting fixtures which echo the lighting motif of the main hall.

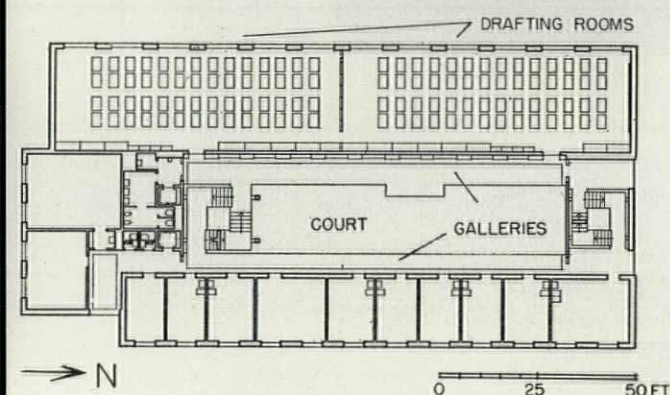


Stresses determine the tapering and interlocking reinforcement of concrete walls and roof of the lecture hall. The concrete member at the base of the clerestory dome acts partially as a compression ring taking the thrust of walls and roof. Exterior facing is half-brick, backed with 10 cc. of light insulating concrete.

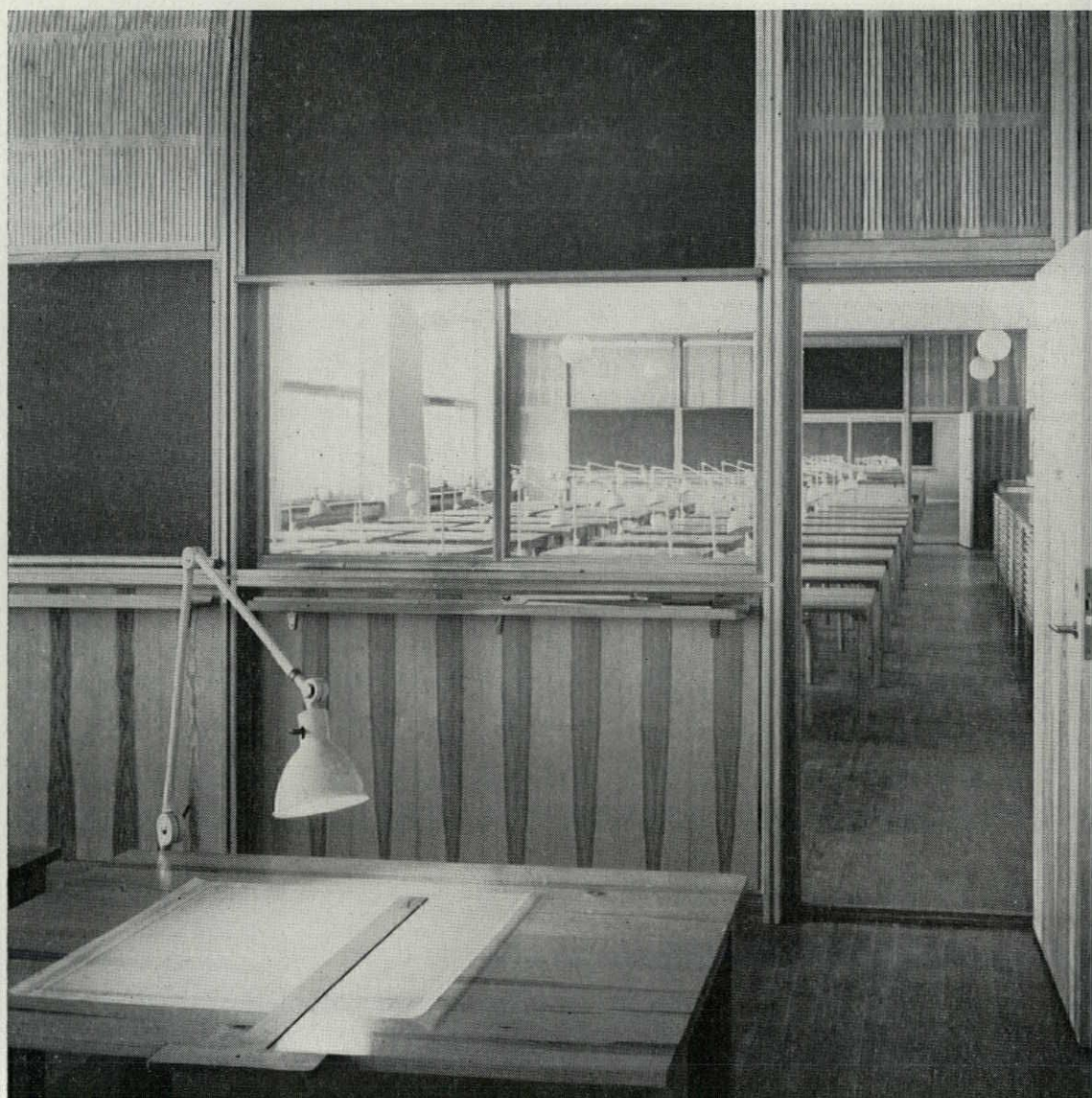
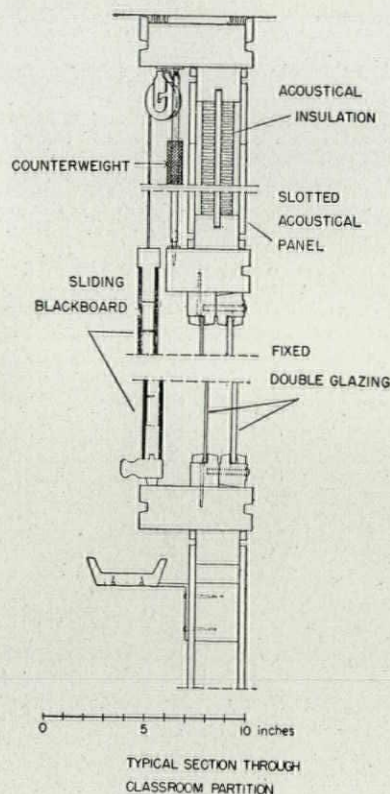




The core of the five-story western building is a spacious, skylighted well housing stairs and cantilevered corridor-balconies leading to classrooms on either side. Admittedly an extravagance by U. S. standards, this light-filled patio has the tonic effect of outdoor space, sheltered and warmed throughout Sweden's long, severe winters.

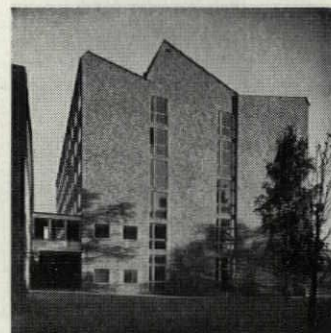


On the eastern side of the central well small mathematics classrooms and instructors' offices overlook the concentrically paved court through appropriately scaled awning-type windows (photo, left). Spacious drafting rooms on the opposite side of the building are lighted by similar windows of larger size. Partitions between the drafting rooms (photo, below) are made up of spruce plywood panels, soundproof windows at eye level and blackboards which may be raised or lowered over the windows in a changing, Mondrian-esque pattern. Raised, they permit easy supervision of three drafting rooms by a single instructor; lowered, they provide writing space and complete seclusion from the other rooms. Panels above the door level are slotted and backed with sound absorbent material to aid acoustics.

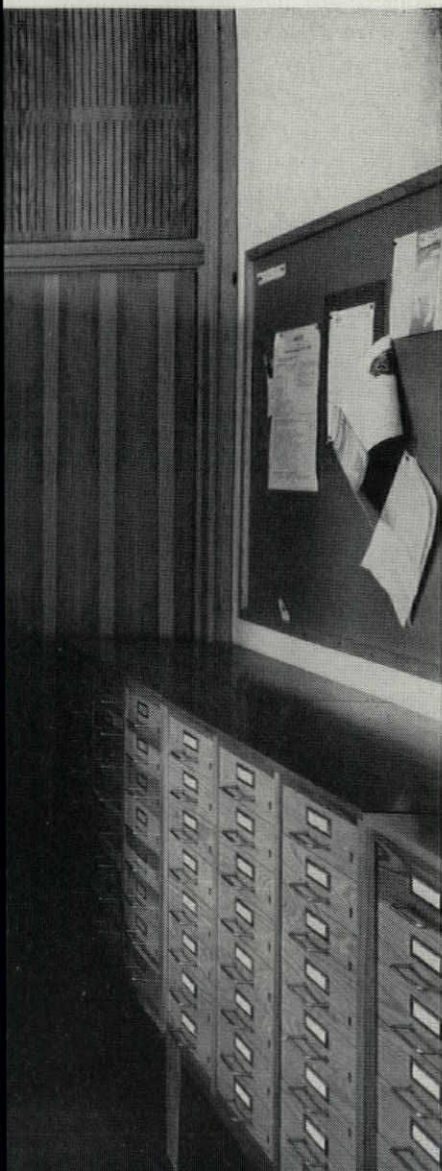




North facade of this building is a direct expression of its three main elements—drafting rooms, skylighted stairwell, small classrooms.



Detail below is typical of sensitive Swedish handling of proportions and materials. Lightness of stair rail and lighting fixture contrasts with heavy forms of stone ash-receiver and structural column. Spruce door in a bright blue wall leads to classroom.



Eastern sunlight pours into the central well through a double glass skylight, warming the building's heart and accenting the airy structure of corridor balconies. (photo above) The steeply pitched ceiling of white acoustical tile absorbs sound and serves as a reflector for both natural and artificial light. Panels between indirect lighting fixtures on the east wall are new, flush-type radiators with welded vertical tubes. Boldly sculptured wall opposite has oak panelling, (slotted for acoustics) and recesses for coats set between closets for storage of teaching materials.



Wind velocity (mph)	Duration (sec)	Overpressure (psi)	Miles	Feet	Damage
					Limit of light damage at 8 miles.
50	1.25	1.5	12,000		Light damage to window frames and doors, moderate plaster damage, complete window damage.
			2.25		
60	1.23	1.7	11,000		Flash charring of telegraph poles. Roof and wall covering on steel frame building damaged.
			2.0		Partial damage to structures in area.
70	1.20	2.0	10,000		Blast damage to majority of homes. Severe fire damage expected. Flash ignition of dry combustible materials.
			1.75		
80	1.15	2.4	9000		Heavy plaster damage
					Moderate damage to area.
100	1.12	2.9	8000		Severe damage to homes, heavy damage to window frames and doors. Foliage scorched by radiant heat.
			1.50		
125	1.06	3.6	7000		
			1.25		Structural damage to multistory brick buildings.
160	0.98	5.2	6000		Severe damage to entire area. Severe structural damage to steel frame building. 9-inch brick walls moderately cracked.
			1.0		Electrical installations and trolley cars destroyed. Multistory brick building completely destroyed.
200	0.90	7.4	5000		12-inch brick walls severely cracked.
					Steel frame building destroyed (mass distortion of frame). Light concrete buildings collapsed.
270	0.77	10	4000		Reinforced concrete smoke stack with 8-inch walls overturned. Roof tiles bubbled (melted by heat). 18-inch brick walls completely destroyed.
			0.75		
380	0.62	16	3000		
			0.50		Virtually complete destruction of all buildings, other than reinforced concrete seismic design.
550	0.45	24	2000		Limit of severe structural damage to earthquake-resistant reinforced concrete buildings. Reinforced concrete building collapsed, 10-inch walls, 6-inch floor.
			0.25		Mass distortion of heavy steel frame buildings. Loss of roofs and panels.
800	0.37	36	1000		Decks of steel plate girder bridge shift laterally
			0		Air Burst of an Atomic Bomb.

A-BOMB-RESISTANT BUILDINGS

If cities of the U. S. should be struck with atomic bombs, here is the kind of building that will stand up best:*

It will be constructed along the lines of the Pacific Coast's earthquake-resistant buildings, with a heavily reinforced concrete frame or integrally poured reinforced concrete attached to a steel frame. It will have unusually strong connections between structural members to withstand great lateral force on its sides or a crushing vertical force on its roof. It will be designed to withstand pressure that first pushes and then pulls.

It will not have curtain walls, brick or concrete block weight-bearing walls, or walls or roof of corrugated iron. It will have a minimum of windows and they will be covered with plastic rather than glass. It will be standing far enough from other buildings so that fires started elsewhere will not jump the gap. Its water tank for fire-fighting measures will be inside the building.

Who is vulnerable?

One answer to the question of who may be vulnerable is provided by the National Security Resources Board which suggests a building owner draw a three-mile circle around his facilities and then list what lies inside. He may be in a target area if there are important industrial plants, oil storage or refineries, paint or chemical plants, public utilities, important transportation facilities, military establishments, dams and bridges, or any factories that help feed the military machine.

* According to the Atomic Energy Commission's recent 438-page book, *The Effects of Atomic Weapons*; \$1.25 from the Supt. of Documents, Washington, or \$3 in the trade edition from McGraw-Hill or Rinehart.



840 FT.: from "ground zero" (point beneath explosion) terrific blast moved bridge 3 ft., bending rails but leaving steel poles standing.



1300 FT.: reinforced concrete school suffered roof collapse when columns on blast side gave way. It was completely burned.

U. S. Signal Corps

Air Force

—design lessons from Hiroshima and Nagasaki

But the owners of establishments lying outside the three-mile range have little cause to relax. As any air force bombardier can testify, it is easy to miss a target. An enemy bombardier flying at 30,000 or more feet at night, bombing by radar through heavy clouds, might drop bombs many miles from his intended target. The moral: no building in or near an industrial area is completely safe.

How the bomb does its work

Architects and engineers can design bomb resistant buildings better if they understand the rudiments of how an atomic bomb causes damage. When an atomic bomb is exploded in the air a ball of fire about 900 ft. in diameter is created that has a temperature of 7,000° C. A shock wave forms around the fire ball that moves rapidly out like a solid wall. Behind this initial blast wave comes a great wind at a speed of 800 mph. A mile out the wind drops to 200 mph and at 1½ miles to 100 mph. After the wind comes a partial vacuum which exerts a negative pressure, like a wind blowing in the opposite direction. Shock wave, wind and vacuum lose their force at around three miles. As the accompanying diagram shows, an area of complete destruction is caused within one-half mile of ground zero (the point below the explosion), there is severe damage up to one mile, minor structural damage to two miles, and some damage beyond, as far as eight miles. Much of the damage is from fire sucked into the low pressure area in the center.

Authors of *The Effects of Atomic Weapons* emphasize that there is an important difference between the effects of an atomic blast and from a conventional, high-explo-

sive bomb. The great power of an atomic bomb sets up a unique destruction feature called mass distortion of buildings. While an ordinary bomb usually damages only part of a large structure, an atomic blast can engulf and flatten whole buildings. Because the shock wave of an atomic explosive is of relatively long duration, most structural failures occur during a small part of the positive phase while the pressure is constant.

In Japan the great blast from atomic bombing completely collapsed small masonry buildings. Light buildings and residences were demolished by blast and fire. Steel-framed factories were denuded of roofing and siding, and only twisted frames remained. At close range nearly everything was destroyed except reinforced-concrete smoke stacks. Many buildings that from a distance appeared sound were found to be damaged and gutted by fire.

Multi-story reinforced-concrete buildings

There were many multi-story, reinforced-concrete frame buildings in the bombed areas. They varied in resistance according to design and construction but generally suffered remarkably little damage. Those designed to be resistant against earthquakes, with a height limited to 100 ft. and designed for a lateral load of 0.1 times gravity, suffered least.

Close to the explosion, the vertical component of blast was more important and there was heavy damage caused by downward force on the roof. Roofs were pushed down and left sagging or failed completely. The remainder of the structure was less damaged than similar buildings further from ground zero.

At greater distances, the lateral force was greater, causing roof slab failure and buckling by lateral compression. In floor systems, failure occurred in the bay between the first row of interior columns and the affected wall. Buckling was upward.

The lateral force also caused cracking of concrete and overstressing of concrete and steel at haunches and connections. First floor columns were cracked diagonally, probably caused by the higher shearing force in the first story from lateral pressure. Exterior walls on the side toward the blast were dished inward. Floors were most affected by direct blast where pressure equalization was not possible, being worst over enclosed basements when higher floors were undamaged. There was heavy damage to false ceilings, plaster and partitions. Windows were broken up to 12,000 ft. Brick and other facings were blown off, even when the structures were not seriously damaged.

Multi-story steel-frame buildings

There was only one building of this type—in Nagasaki—4,500 ft. from the burst. The building was of heavy construction except for the roof which was of thin concrete supported by unusually light steel trusses. The downward failure of the roof, which was dished 3 ft., was the only structural damage. There were reinforced concrete buildings at the same distance which were undamaged but the bomb survey experts found insufficient evidence to make a comparison.

Industrial buildings and equipment

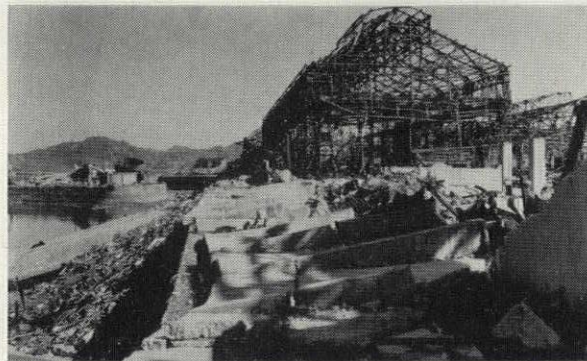
There were many steel buildings used for factories, of shed type and sawtooth de-

Acme



2000 FT.: weakness of load-bearing brick wall is proved in this church which had only front wall standing after blast swept through.

Air Force



1 MILE: while concrete walls collapsed (foreground), steel frame of some plants stood up, but most frame buildings were ruined.

Life Photo



4 MILES: due to skip effects of blast, some buildings were damaged as far out as eight miles. Wood had poorest resistance.

signs. Roofs and sidings were corrugated sheet metal or of asbestos cement comparable in construction to those in the U. S. First effect of the blast was to strip off the siding and roof material but this was not instantaneous and therefore a large, impulsive force was applied to the frame. Severe damage occurred up to 6,000 ft.

Close to the explosion, buildings were pushed over bodily and at greater distances many were left leaning away from the blast. The long, slender columns offered little resistance. Some columns failed by a combination of lateral force, causing flexure, at the same time that a heavy down load came from blast on the roof. This caused buckling and collapse. Roof trusses were buckled by compression from blast on the exposed side. Asbestos cement on roofs and siding broke up more readily than corrugated sheet iron and transferred less force to the steel frame with less structural damage. The combination of blast and fire badly distorted the steel frames.

Wood trusses, used to support some roofs, were more vulnerable to blast and fire than steel. Concrete columns were used in some cases with steel roof trusses. Such columns were more resistant to buckling than steel because of smaller length-to-diameter ratio.

Buildings with load-bearing walls

Small buildings with load-bearing walls collapsed. Larger buildings with cross walls and of heavier construction were more resistant but failed at distances up to 6,200 ft. In buildings left standing, cracks were found at the junction of cross walls and side walls.

Timber-framed buildings and housing

Observers found that while the quality of workmanship in framed wood buildings was high, little attention had been paid to engineering principles. Mortise and tenon joints were weak points and connections generally were poor. Construction was poorly adapted to resist wracking action. In Nagasaki, housing collapsed up to 7,500 ft. and there was structural damage to 8,600 ft. Roofs, wall panels and partitions were damaged to 9,000 ft. and beyond.

Probable effects in the U. S.

Americans cannot assume that Japanese construction was inherently more flimsy than in this country, and that bomb damage here would necessarily be far less. Many Japanese buildings were designed to withstand earthquakes and were actually stronger than typical U. S. structures.

In Japan reinforced-concrete, earthquake resistant buildings were designed for a

lateral force equal to 10 per cent of the vertical load. Multi-story buildings in this country are generally designed to withstand a wind load of 15 lbs. per sq. ft. For an average six-story, reinforced-concrete frame building this would be roughly equivalent to 2 per cent of the vertical load. However, most buildings have a lateral strength far in excess of this figure, so direct comparisons are unwise.

Buildings in the U. S. that could best stand up to atomic blast are those in the 11 western states that have codes specifying earthquake resistant buildings. Such construction costs only 10 or 15 per cent more.

While buildings directly under an atomic blast have little chance for survival, those outside the "total destruction" area can be given a far greater chance if these "Do's and Don'ts" are heeded:

The Atomic Energy Commission says:

DO THIS

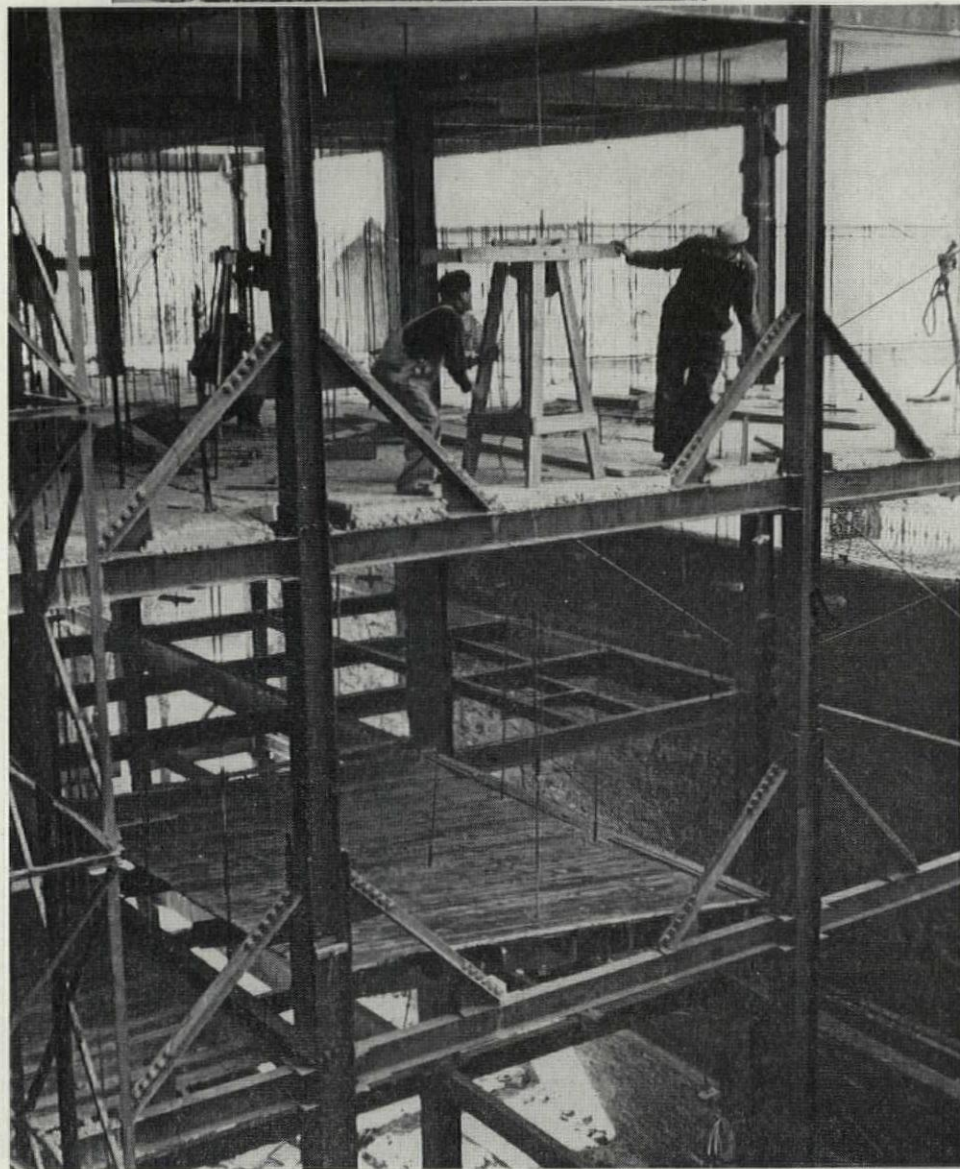
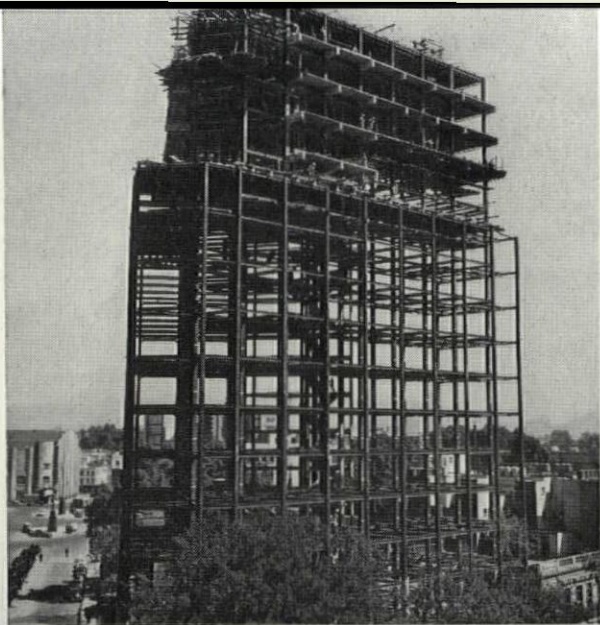
- ▶ **Design for a horizontal wind component of 90 lbs. per sq. ft. and a vertical component of 70 lbs. per sq. ft.**
- ▶ **Use earthquake-resistant construction methods with heavily reinforced concrete frame or integrally poured reinforced concrete attached to steel frames.**
- ▶ **Use sturdy connections between structural members.**
- ▶ **Use a profusion of bracing.**
- ▶ **Design so that any main structural member can be cut and still leave building standing.**
- ▶ **To prevent rupture of column splices, join the column reinforcing rods at splices by butt or lap welds and by hooking the rods at roof level.**
- ▶ **Design the roof so it will withstand a strong downward force.**
- ▶ **In both roof and floor beams, reinforce the steel along the tops of the beams to withstand negative pressure in case a high-explosive bomb comes through roof and explodes inside. Reinforcing for shear loads should consist of vertical stirrups.**
- ▶ **To protect personnel use glass windows only where essential. A partial measure of protection is to use wire glass plus half-inch wire mesh inside nailed securely to the frame.**
- ▶ **Consider plastic materials as a substitute for glass in windows.**
- ▶ **Build enclosed stair wells, interior tanks for fire sprinkler system, fire walls, fire doors.**
- ▶ **Build a strong central control room from which fire-fighting and emergency measures can be directed.**
- ▶ **Leave space around building so that fires in adjoining building will not jump the gap.**
- ▶ **Build an inside shelter.**
- ▶ **In old buildings to prevent total collapse, add bracing and shoring, or new transverse, reinforced concrete walls.**

DON'T DO THIS

- ▶ **Don't build a military or industrial building with curtain walls.**
- ▶ **Don't use load-bearing brick walls or concrete block walls.**
- ▶ **Don't use precast concrete slab roofs.**
- ▶ **Don't use ordinary reinforced concrete construction. Bombs may rupture the column splices.**
- ▶ **Don't use saw-tooth roof construction.**
- ▶ **Don't use more windows than absolutely necessary.**
- ▶ **Don't install false ceilings or fasten equipment to ceiling that will easily fall and injure personnel.**
- ▶ **Don't depend on shielding from nearby buildings.**
- ▶ **Don't forget that fire damage is often greater than blast damage.**
- ▶ **Don't use corrugated iron for sheathing a building.**

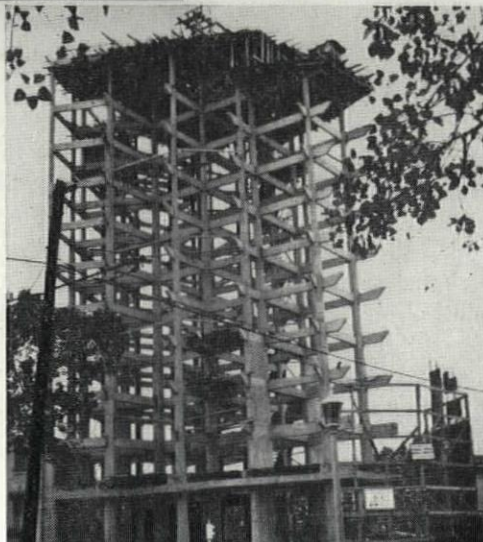
POURING CONCRETE SLABS FROM THE TOP DOWN

Mexican system places seven floors in seventeen days



Forms are being lowered after three days in place (photo above) in preparation for pouring of the next slab down. It takes only two men to do the job.

Reinforced concrete building frame (right) is about to be floored from top down, with roof already in place. Steel frame structure (top of page) is further along.



"Decimbrar-Cimbrando," engineer Manuel Gonzales' method of pouring concrete floor slabs from the top story down (literal translation, descend and re-erect) is going big in Mexico City. In the four years the system has been in use, Gonzales' construction firm, Construcciones y Representaciones, has completed 34 major buildings. The young company, which started in 1946 with six engineers and 20 workmen, now has a staff of 25 engineers and more than a thousand workmen, and work currently under construction includes a 14 story hotel and an 18 story office building.

In a reversal of the usual building custom which says to place concrete slabs first on the lowest floors, then work upward, Gonzales waits for completion of the frame before pouring the first slab, and then makes it the roof slab. One reason the system is particularly successful in Mexico City and would be in other similar climates, is that torrential rains are common daily occurrences part of the year, and it's a very good thing to have a roof to work under. But the biggest advantages are economy and speed. In an average 15-story building in Mexico City, the usual cost of placing 15 concrete slabs (each 3,230 sq. ft. and 4 in. thick) would be 8,500 pesos per slab. Using the DC system, Gonzales reduces his cost 22 per cent to 6,600 pesos per floor. He estimated the work-time saved on a recent job to be 31 days—when he placed seven concrete floors in 17 days.

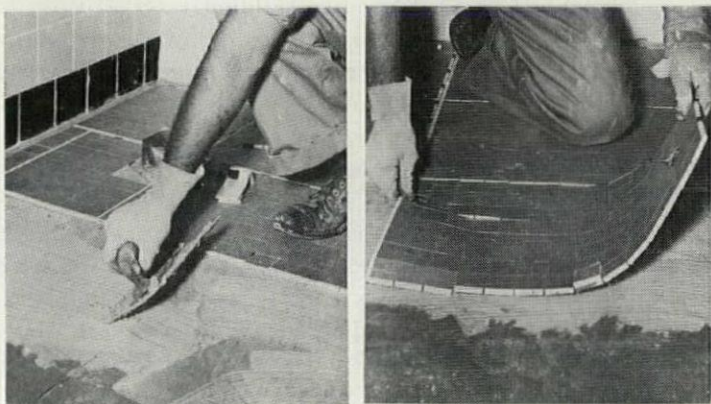
The roof slab is poured on wood forms supported on wooden scaffolding, but after that the forms begin their descent on four $1\frac{1}{2}$ in. steel rods per bay (see pictures) using no shoring. When the forms are dropped down a story and ready to take concrete, more supporting rods are added before the pour. The point of support for the slab being poured is generally not the slab immediately above, but the floor above that, in order to space out the application of load and give the concrete time to set and gain strength.

The method is covered by several patents, and has been licensed for use by several companies in Southwestern U. S. Metal forms, as well as wooden ones, have been used successfully.

TILE MASTIC SAVES ONE-FIFTH of installation costs, permits tile use on dry-built walls

Builders who have been using mastic for tile installations report it has several advantages over mortar:

- ▶ Tile can be laid against almost any kind of background including dry-wall construction.
- ▶ Tile laid in mastic is as much as 20 per cent cheaper to install than tile used with the traditional lath and plaster backing because the work goes easier and faster.
- ▶ For remodeling jobs the use of mastic eliminates tearing out old plaster walls.
- ▶ Mastic dries so fast that rooms can be used next day.



When a "floating" process is used, mastic is spread 1/16 in. thick.

Glued paper holds floor tiles together, speeds installation.

Greatest use of mastic in the past few years has been in dry-built houses where tile would otherwise not have been used at all. The adhesive quality of mastic permits tile to be used against wall board or other dry-built panels at a minimum of cost and trouble.

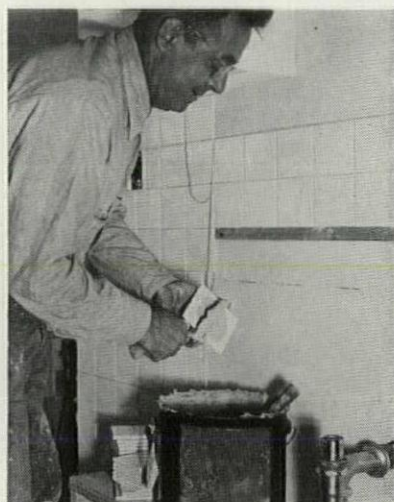
The St. Louis area is representative of places where both builders and tile contractors have accepted the new adhesives. Thomas J. Dolan, head of a large tile installation firm there, began using mastic last year and now says he can bid from 15 to 20 per cent less on a job if he uses mastic.

"On many jobs it works better for everybody," he says. "It gives the householder more ceramic tile at no increase in cost, it leaves better profits for both the tile contractor and the general contractor, and it means easier and more continuous year-around work for the tile setters."

Dolan is installing tile with mastic in the 1,050 houses of Hathaway Hills where there are 270 sq. ft. of tile in bath and kitchen. Three tile setters and three helpers are doing 14 rooms (about 2,000 sq. ft. of tile) per week—a much faster rate than could be done with mortar.

At his 600-house Duchesne Village the first houses were tiled with mortar. Then Dolan switched to mastic and cut his cost \$15 per house. Using mortar, two men required from 3 to 3½ days to cover 230 sq. ft. With mastic they cut this time to 2 days or less. Dolan also has the contract for tiling 1,392 bathrooms at the Audubon Park apartments. His schedule calls for finishing 17 bathrooms a day, which means his nine 2-man crews have to move at a remarkably fast clip.

"It would probably have been impossible to set tile at this rate in mortar at this particular time," says Dolan. "It would have taken twice as many men—and it would have been almost



A tile setter at Hathaway Hills in St. Louis applying mastic wall tiles by "buttering" each piece.

impossible to find that many, since tile setters are in extremely short supply."

Another advantage is that adhesives will not freeze. With mortar-set tile, rooms must be kept above freezing while tiles are applied. With adhesives, lower temperatures may be kept in the daytime and stoves at night can be eliminated.

From the tile setters' viewpoint, greatest advantage of mastic is the weight reduction. Every pound of sand and cement has to be carted to the room where it is used, often on the second floor. The foreman on the Duchesne job is 63-year-old Fred Karsten who not only directs four crews but does his share of tile laying. He explains that to set the 230 sq. ft. of tile in each house would involve 4,000 lbs. of sand, 600 lbs. of cement, a mixing box and 320 lbs. of reinforcing wire—all carried by the tile setters. The same job is now done by carrying in one 50-lb. can of adhesive. "With adhesives," Karsten comments, "a man is good for 10 or 15 more years of work than if he uses mortar."

Adhesives are applied by either a "buttering" process—spreading adhesive on the back of each piece—or by "floating," in which adhesive is put on the wall and then the tile pressed into place with a slight twisting motion.

Cost of mastic is about the same as for mortar. One of the newer mastics, "3 M," made by Minnesota Mining & Mfg. Co., for example, has a list price of about \$4 per gallon. One gallon will cover up to 60 sq. ft. with the floating method and 10 ft. less if the buttering method is used.

A recent survey by the Tile Council of America showed that of 636 tile contractors who answered a questionnaire, nearly 70 per cent had used adhesives. Of those using the new method, 83 per cent had applied it in remodeling jobs and 71 per cent had used mastics on new work. While some contractors favor adhesives for all tile work, the vast majority still use the older method. No one knows what proportion of tile installations are made with adhesives. While they run a poor second to mortar now, their use is definitely on the way up.

Many architects have become acquainted with mastic when modernizing hotels, hospitals or restaurants. They specify an adhesive installation because it permits tile to be laid against existing walls without the need for costly ripping out of walls which must be rebuilt with new mortar. When the time element is critical, as in hotels, tile setters can do their work at night and the room can be rented the next morning.

STOPPING DRAFTS IN CLASSROOMS

New unit ventilator kills down-window drafts in schools before they can reach the pupils.

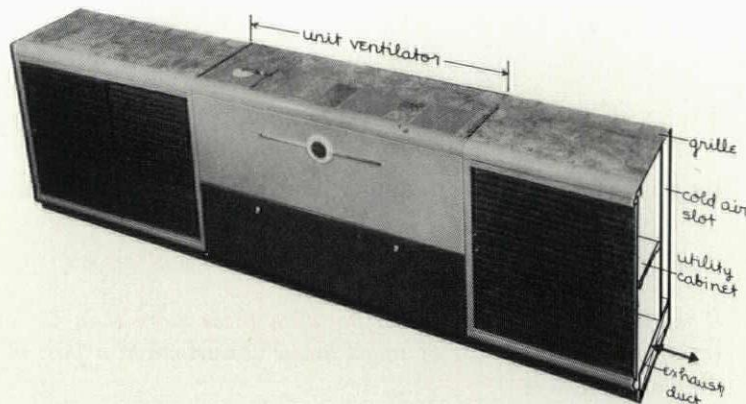
One good way to eliminate drafts is to intercept them. This is the basic idea behind a clever new system for schoolroom ventilation designed by the Herman Nelson Co. for classrooms to counteract the great draft producing effect of the new large windows.

For more than 30 years this company's unit ventilators have brought air into classrooms by a jet directed up toward the ceiling from the cabinet set under the window of the one exterior wall which is usual in classrooms. This part of the system has not been changed. Fresh air is mixed and warmed when necessary by steam or hot water coils in the cabinet, then propelled upward in a stream creating agitation over the entire ceiling surface. The slightly turbulent air sinks down among the students, becoming less agitated as it settles. In classrooms with conventional windows the air then was recirculated quietly into the base of the ventilator near the floor or exhausted through a vent in the other side of the classroom, usually the hall side. This circulation system was designed for and worked well in conventional classrooms before architects who were hungry for natural light began to enlarge windows.

But with the new large windows a flaw appeared. Glass will be cold in winter no matter how well the room is heated, and may sometimes be as much as 50° colder than the room itself. The bigger new windows, which contained as much as 240 sq. ft. of glass, caused a relentless downdraft of cold air. This draft spilled onto the floor after sinking down the window wall, and caused discomfort in several places, including the engineers' minds. Primarily, it was an annoyance to the row of students sitting nearest the window in winter, because the cold air which slid off the window would not mix with the warmer air which had sifted down from the ceiling. Not only did it form an unhealthy direct draft, but it also caused some bad secondary drafts: one into each exhaust location—the one on the hall side of the room as well as the one in the unit ventilator (see top diagram, right).

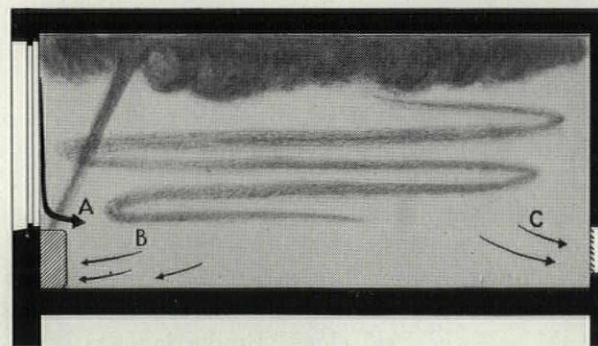
The new design solves the difficulty of the cold window downdraft by changing the location of the exhaust to intercept it before it hits the floor. There is only one exit point now, instead of two, and this one exhaust is a long slot placed at the base of the windows to draw off the cold current directly from the bottom edge of the cold glass. Normal room circulation also is drawn into this slot. The manufacturers have determined that the size of the exhaust and its placing keeps the air moving across the room toward the window at a slow, undisturbing rate.

The usual way to combat downdrafts from windows is to place a source of heat directly under the window, but engineers for this new system claim advantages to their method over the solution-by-heat. In the first place they point out that cold air

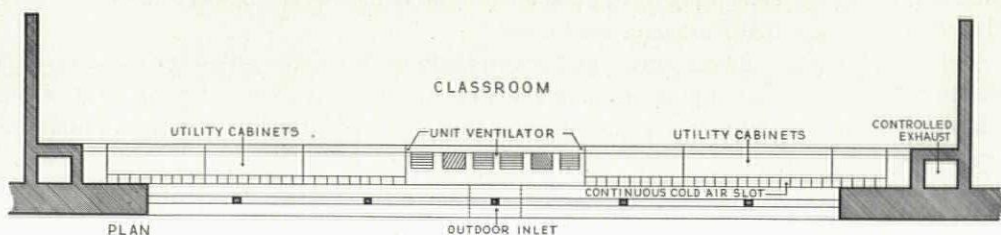
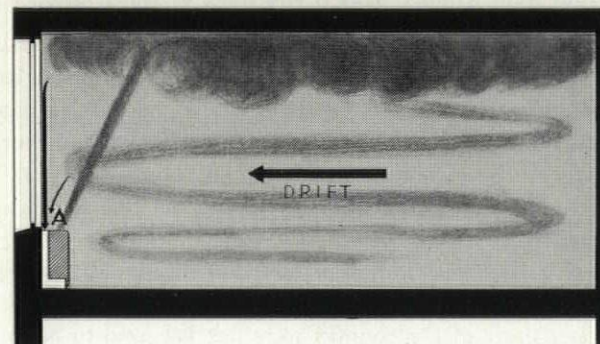


and hot air are reluctant to mix, that if they did mix, the window problem would not be severe. Their studies show that warm air rising from a source just under the window is forced inward toward the center of the room by the falling cold air, and eventually the cold air piles up heavily and breaks through the warm up-current, making cold drafts in the room. The other disadvantage of this old method is that it can be operated only when the classroom as a whole is in need of heating. This need for adding heating to a classroom is not constant, since the emission of heat by the pupils often carries the load, once the room has been heated up to comfort. But the cold downdraft from windows is constant, unlike the intermittent heating requirement, so it is difficult to calculate how to heat against it without overheating the room.

Outdoor air circulated by this new unit ventilator is pulled in through a wall inlet under the window. It is tempered by heating or by mixing with the room air before being shot up at the ceiling. Automatic controls determine how much room air should be recirculated, and how much new air should be taken in. Air to be exhausted from the room through this unit ventilator can be expelled to the outdoors through a shutter in the under-window wall, or through lockers or coatrooms as required in the particular application. In its most complete form the system comes with cabinets which run the length of the classroom under the window, but less expensive versions are available.



Old system (section above) and new system (below) both shoot conditioned air from sill unit to ceiling for circulation. But new system takes out air, including downdraft (A) through slot in sill and eliminates drafts (B) and (C).



INGERSOLL'S UTILITY UNIT:

its post mortem proves again that prefabrication usually has rough going

When a large, experienced corporation loses more than \$4 million trying to lower the cost of small house construction, a post mortem should be of value.

In 1946 the Ingersoll Steel Division of Borg-Warner began producing a prefabricated mechanical core with a complete bathroom, kitchen and furnace. Last year the Unit was quietly taken off the market after three years of hard work had failed to build up sales to a profitable basis. Reasons for the failure have now been studied and are a multi-million-dollar lesson to anyone who designs, makes or distributes building materials.

In all building history, never had prefabricated housing equipment been launched with more loving care than Borg-Warner gave its new bathroom-kitchen-furnace package in the Spring of 1946. In those early postwar months, when millions of people were crying for a mass-produced, cheap house, the new Utility Unit appeared at a psychological moment when everything seemed in its favor.

Much study and planning had gone into the creation of each part of the design. More than 200 building codes had been analyzed to make the Unit acceptable everywhere. To avoid labor trouble in the field—that common enemy to most prefabrication—the Company had been careful to employ full-scale union labor in the factory to do its final assembly and a former union official to guide its program over any rough spots that appeared. To show architects and builders exactly how the new Unit could be installed, a dozen houses were designed by such top-flight architects as Edward Stone, Hugh Stubbins and Harwell Harris and constructed in Kalamazoo, Mich. Behind the project were the experience and resources of an eminently successful manufacturing organization that planned to make most of the parts needed in the Unit.

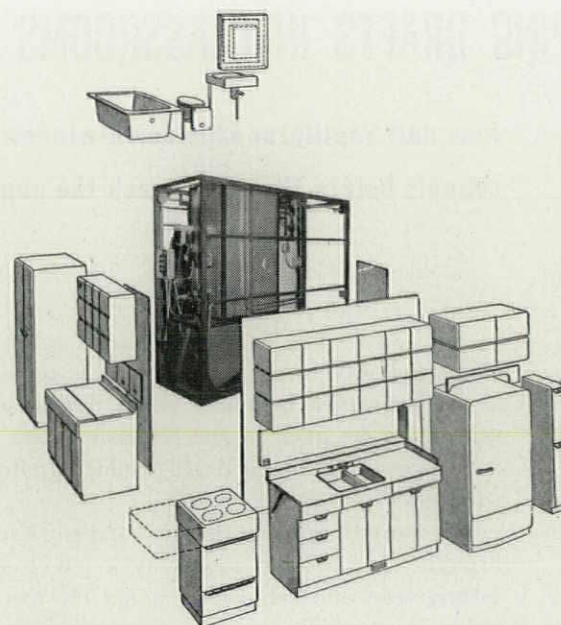
Roy Ingersoll and his son Bob were generally applauded for their effort, for they were making a vigorous attempt to do what had long been recommended: Use America's production and assembly techniques to reduce the huge number of parts that have to be hand-assembled at the building site.

Despite the Ingersolls' careful planning, salesmen in the field always had tough sledding. During the brief three years of its life, one trouble after another dogged the Unit. Total sales added up to something over 5,000—or less than the figure hopefully announced as the goal for 1946 alone. Production was never high enough to bring the low cost benefits of mass production. With the Unit never out of the red, Borg-Warner finally decided that enough was enough. In the Spring of 1949 it stopped manufacturing and wrote off its losses.

What went wrong? Was it one thing or many things?

Sales resistance was due to no one easily described reason, but was as varied and complex as the building industry itself. First there was the resistance that greets any new and untried product. The Unit was certainly novel, as no package of its size had ever been marketed successfully. Neither architects nor builders were accustomed to having the design of their bathroom, kitchen and furnace frozen for them by a manufacturer.

A basic sales limitation was that the design was appropriate only to slab-on-ground houses. And in 1946 potential house buyers in many parts of the country were not yet used to basementless houses.



Some builders found the back-to-back design of the kitchen and bath too inflexible. They claimed this fixed pattern prevented them from shifting room arrangements in large developments. Other builders looked over the deluxe kitchen that Donald Desky had designed and decided it was either too fancy for cheap houses, or that a family that could afford such a kitchen would want more than one bath—and yet in the standard unit there was no provision in the mechanical core for two baths.

Another design criticism was that the kitchen sink was placed against an interior wall—a violation of the American housewife's traditional desire to look out a window as she washes her dishes.

The design of the warm air furnace bothered some builders. Those in the South felt it was too large for their mild winters. Some in the East objected to the pot-type design which was unfamiliar to their customers. An idea of how complex requirements can be in different areas can be gained from the combinations finally offered with the Unit: 1) gas furnace, gas water heater and gas cooking range; 2) oil furnace, electric water heater, electric range; 3) oil furnace, gas water heater, gas range. Water heaters were originally of 30- or 40-gallon size, but later an optional 50-gallon tank was offered.

In some areas of the South, builders criticized plumbing arrangements as being expensively complex. A simplified design was eventually offered that saved \$35. In fact, the basic mechanical core was redesigned to provide a less elaborate package which had simple plumbing and no heating unit at all. Other design changes had to be made before the Unit could overcome prejudices in some localities.

Was price too high?

Another fundamental factor in sales resistance was the price. Builders without prejudice against the design got out their scratch pads and by adding up what it would cost them for bathtubs, sinks, gas stoves, furnaces, cabinets and other parts discovered they could buy the parts cheaper themselves than through Borg-Warner. The \$1,500 installed price was often several hundred dollars out of line. This was notably true for operative builders who built several hundred houses a year. Yet this was the very market that B-W had aimed for; it originally announced that it would not take orders for less than 50 units at a time. To the little builder, however, whose purchasing power was small, higher prices were no objection and something to be passed on to the home buyer. It was to these builders that most sales were made.

Prices were high for two reasons. First, Borg-Warner never carried out its plan of manufacturing within its own organization most of the equipment going into the Unit. It made the core, furnace, plumbing

(Continued on page 154)

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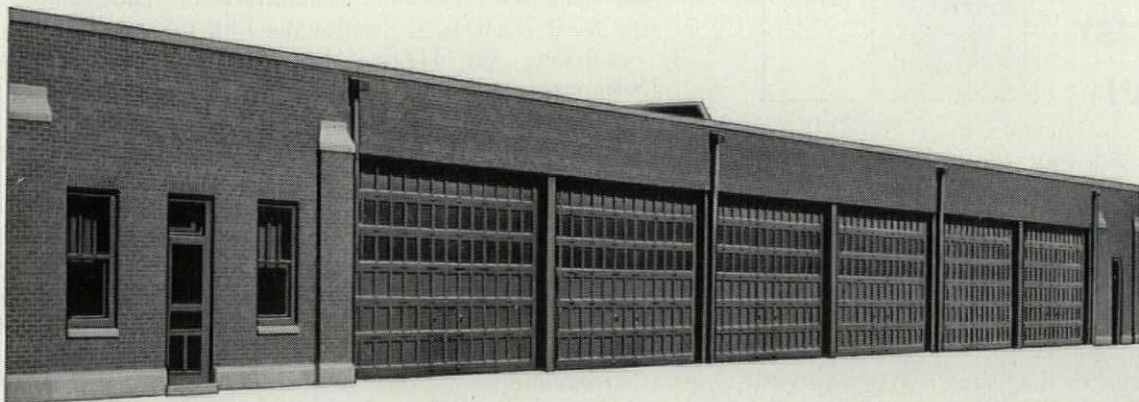
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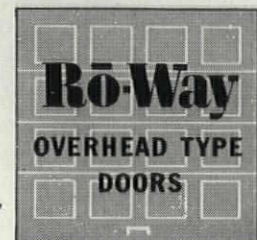
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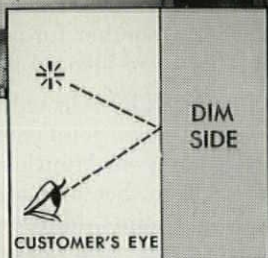


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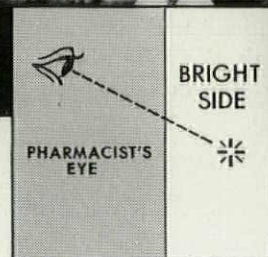
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INGERSOLL'S UTILITY UNIT

(Continued from page 152)

pipes, refrigerator, and late in the deal the bathtub. But the many other items were bought outside. Even on such products as the refrigerator, which the refrigerator division of B-W sold to the Ingersoll division, there was no family savings. Any large operative builder buying in quantity got the same price that Ingersoll did. The same was true of most purchased items. Thus, the primary reason for factory prefabrication—lower costs—was not fulfilled.

A basic reason for the original high price of the Unit, and for eventual failure, was that B-W never got out of the category of being an assembler of other firms' products. Eventually the Unit price to builders was less than \$1,000 (to which the installation charges had to be added), but by this time the supply market had eased and builders could look around more freely for what they wanted. And at the lower rate, there was no margin of profit for Borg-Warner.

Building trades unions—traditional delayers of prefabrication—didn't like the Unit but they were not a major handicap. In many areas labor's old guards put up their customary resistance that made for harder work for salesmen and built up distribution costs. A combination of union restrictions and building codes kept the Unit out of Chicago and San Francisco. In at least one area, the electricians' union insisted on rewiring the furnace controls. Borg-Warner's labor specialist was able to persuade most unions to handle the Unit but there is no doubt that the threat of labor problems kept many builders from using it.

Despite the fact that some 200 codes had been studied and theoretically overcome, B-W salesmen soon found that local interpretation of codes could seldom be predicted. Code administrators demanded dozens of changes in the basic design. Trouble with local codes was the greatest single problem. To achieve national distribution, B-W had to offer four different soil stack assemblies and five underground piping assemblies. In the waste lines, petty changes demanded by code officials required many expensive variations. In some areas lead pipe for a certain purpose was insisted upon, while elsewhere brass or cast iron had to be used.

Looking back to 1946, it is now clear that one of the most serious problems was distribution. Because B-W was supplying plumbing and heating equipment direct from manufacturer to builder and thus by-passing the usual channels, it handled the Unit through speciality distributors and dealers. The old-line jobber was left out of the picture. This was a basic error, as events proved because "the jobbers killed 'em" as one ex-B-W salesman has said.

Eventually the local plumber, hired to hook up the job, had to get pipe, fittings and other equipment he needed. He found the jobber in no mood to give out any of his much-sought-after supplies for a job on which someone else was making the profit on the stuff he usually sold. Nor did local plumbers like to short-circuit the jobber they had long bought from. A Washington architect who used one Unit had such trouble finding a plumber to connect the equipment that he decided it wasn't worth the effort.

It was also learned through bitter experience that in small communities the big jobber was often the only man with credit or who knew the credit rating of the builders. Some of the speciality distributions B-W used did not have enough capitalization to get credit, which on 50 Units ran to over \$50,000. Nor would they act as bankers for the little builder, as well-heeled jobbers habitually do. Eventually Borg-Warner distributed through recognized plumbing and heating jobbers and the master plumber. This greatly eased installation problems.

From Borg-Warner's unhappy lesson in prefabrication, should it be concluded that any similar attempt is bound to fail? A number of men who were intimately connected with the Utility Unit say no. They believe that a unit designed close to what the small builder wants, and at a price at least 10 per cent cheaper than the parts can be bought for separately, has a good chance for success. But they agree there must be flexibility in the parts, so that a builder can buy as much of the full unit as he wants, and flexibility in arrangement. They are almost unanimous in their emphasis on distribution through the well-used channels. But the price is the pay-off. A builder must get more for his money—otherwise there is no excuse for prefabrication.

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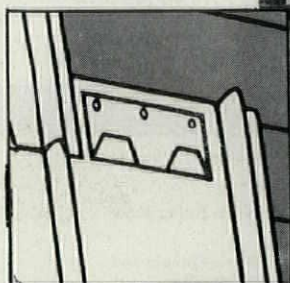
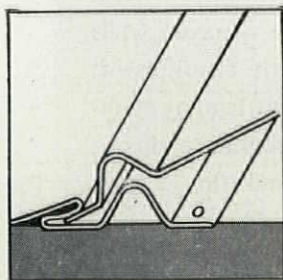
In These Homes:

22 Different Forms of ALUMINUM BUILDING MATERIALS

The swift rise of Aluminum in home building, as in all types of construction, goes farther than the eye can see. The soft grey of a roof may signal Aluminum immediately...on the house below...on farms and industrial buildings throughout the country. Aluminum gutters attract attention by their trim lines and neutral, harmonizing tone. Aluminum windows bespeak, at once, modernity in home building. Screens, storm doors and storm windows, louvres, flashing...all proclaim aluminum. Even the painted weatherboard corner pieces, in the house at the right, are distinctively aluminum by their straightness and neat fit.

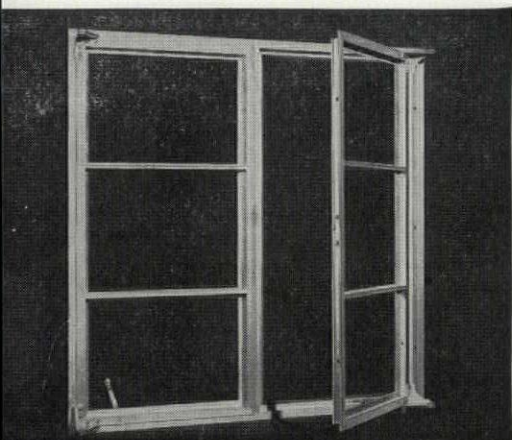
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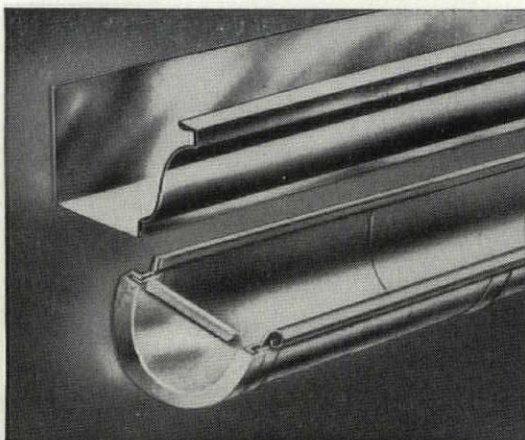


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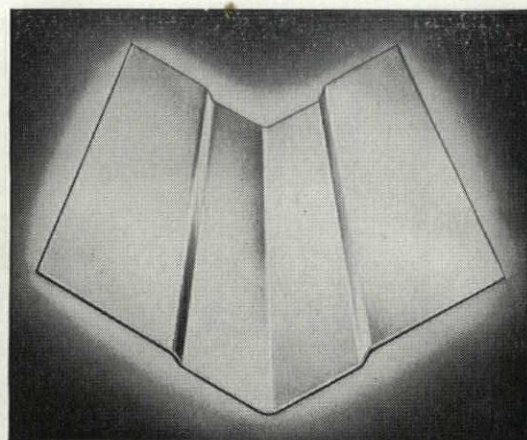
REYNOLDS



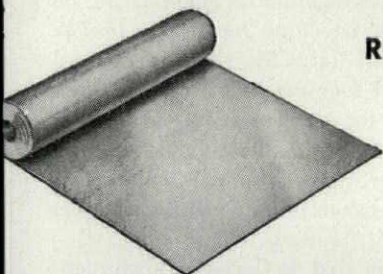
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REYNOLDS *Lifetime* ALUMINUM GUTTERS AND DOWNSPOUTS in 5" Half-Round as well as in the Ogee style shown in profile here and as applied in the house below. Choice of smooth or stipple-embossed finish. Also 6" Half-Round Industrial Gutters, stippled.



FLASHING, ACCESSORIES, NAILS. Complete accessories, including Formed Valleys for use with all types of roofs. Flashing .019" thick in 50-ft. rolls, 14", 20" and 28" width; also flat sheets 28" by 6', 8', 10', 12'. .024" flashing same dimensions flat and in rolls 20" wide. Aluminum Nails in all standard types.



REYNOLDS ALUMINUM REFLECTIVE INSULATION.

Embossed aluminum foil on both sides of kraft paper (Type B) or one side only (Type C). Perfect vapor barrier as well as efficient insulation in compact form—250 sq. ft. in each 15-lb. roll. 25", 33" and 36" widths. Also board types (foil on cardboard) for exposed applications.



At this home, Reynolds Aluminum is used in 21 forms. These include windows, insulation, gutters and downspouts, thresholds, storm doors and windows, duct work, louvers, nails, weatherboard

corner pieces, basement grills, flashing, trim molding, screens, aluminum paint for prime coating. Details of major building products are presented above.

For literature on all these products write to

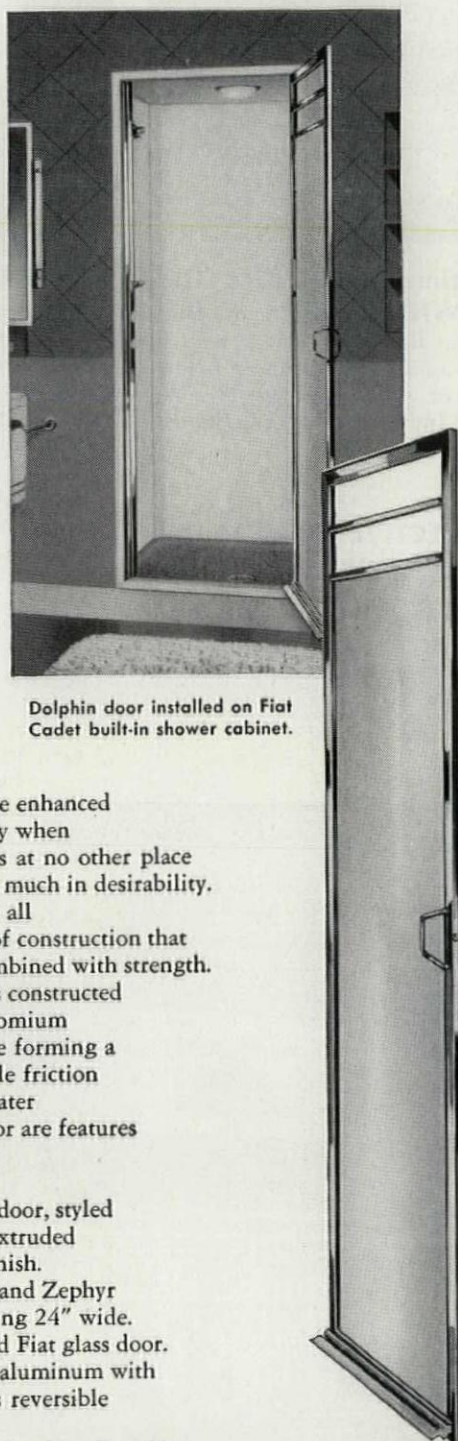
Reynolds Metals Company,
Building Products Section, 2000 S.
Ninth St., Louisville 1, Kentucky.

ALUMINUM



FIAT GLASS SHOWER DOORS

... dress up
the bathroom



Dolphin door installed on Fiat Cadet built-in shower cabinet.

A Fiat glass door greatly improves any shower. Tile, marble, structural glass, or metal showers are enhanced in appearance and practical usability when equipped with a Fiat door. Perhaps at no other place in a house can so little cost mean so much in desirability.

¶ The solid extruded metal used in all Fiat doors is a much superior type of construction that permits a fine elite styled frame combined with strength.

¶ The Fiat Dolphin shower door is constructed of extruded solid brass, heavily chromium plated with continuous piano hinge forming a smooth-working, rigid door. Double friction bullet catches, offset handles and water channel to prevent dripping on floor are features that mark the Dolphin as the finest in shower bath doors.

¶ The Zephyr is a medium priced door, styled same as the Dolphin but made of extruded aluminum with satin aluminum finish. Standard size of both the Dolphin and Zephyr shower doors is 72" high for opening 24" wide.

¶ The Neptune is the lowest priced Fiat glass door. Made of one piece heavy extruded aluminum with satin finish. Size 24" x 64" and is reversible for left or right hinging.

¶ All Fiat doors are simple and easy to install on Fiat shower cabinets, tile, marble or structural glass showers.

Fiat shower doors have neat, modern styling combined with maximum strength.



FIAT METAL MANUFACTURING COMPANY

Three Manufacturing Plants

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In Canada—Fiat showers are made by the Porcelain and Metal Products, Ltd., Orillia, Ontario

REVIEWS

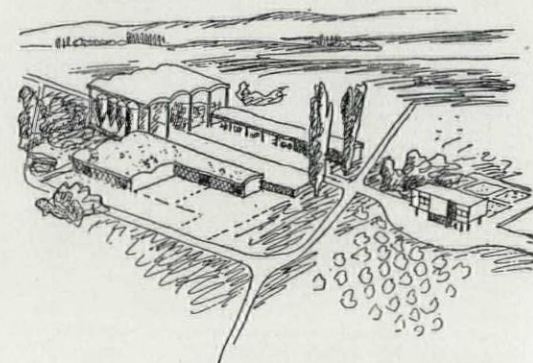
(Continued from page 139)

Niemeyer's "trajectory," which has been as steady as it was swift, appeared first in his Child Center (1937)—less than a year after LeCorbusier's visit. Today, 13 years later, his projects are vast and legion. Even better, they bear the promise of being only the start of many good things to come.—S.K.

THE FOUR ROUTES by LeCorbusier. The British Book Center, Inc., 122 E. 55th St., New York 22, N. Y., 206 pp. 5½ x 8½. Illus. \$3.75.

Highways, railways, waterways and airways are the heroes of LeCorbusier's book most recently distributed in this country. (It was written between 1937 and 1941.) As an 'organic' thinker, LeCorbusier has here amplified his earlier ideas rather than added to those already expressed. His plea for the segregation of motor traffic on elevated 'highways' needs no repetition. In *The Four Routes* he elaborates his vision of rational coordination of all four means of travel. Motor traffic should be for shorter runs and smaller towns. Railways only for long hauls and restricted to express stops. His view on airways is less specific—a paean to its possibilities rather than an analysis of its needs.

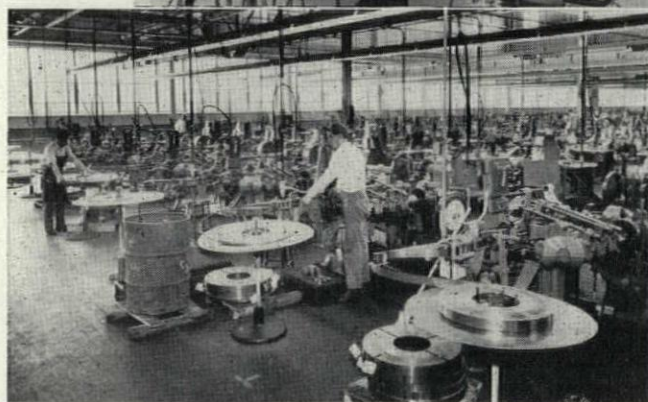
Those who claim that LeCorbusier's solutions stir up more problems than they solve will not change their opinion by reading *The Four Routes*. He possesses, however, a verbal magic in presenting a subject vividly—a magic which no thousand-page report can equal.



To the discussion of better farm-planning, which in the U. S. has been left mainly to engineers and social workers, LeCorbusier adds his ideal of the "radiant farm." His farm (recalling his earlier house definition, "machine for living") is "an exact working implement . . . an arrangement of buildings designed to house a definite stock of implements and equipment, live-stock and stocks of food and straw. Its first care is to house the peasant family—before anything else!" . . . (His sketch is reproduced above.)

"In the 'radiant farm' the home section is independent of stable, cattle-sheds, pigsties, hangars and barns; it is situated at the axis of these general services, a post of command. . . . All this is the result of standardized parts, applied to a metal framework easily mounted. . . . The scheme for the individual farm is as exact as that of any manufactured object or of any element of industrial administration."

(Continued on page 166)



TINNERMAN PRODUCTS, INC., CLEVELAND, OHIO
McGEORGE, HARGETT and ASSOCIATES, Architects and Engineers • THE
SAM W. EMERSON COMPANY, General Contractors • THE LONG
PAINTING CO., Decorators — all of Cleveland.

(Above) Office of George A. Tinnerman, General Manager. The large, modern cafeteria seats 500 for meals; it can also be quickly converted into an auditorium seating 1000 persons. Many types of the Speed Nut Brand of Fasteners are produced on the Four-Slide Presses in the new plant of Tinnerman Products, Inc.

SYMBOLIC of the ingenious, modern products which they make, the new factory and office building of Tinnerman Products, Inc., Brooklyn Village, Ohio, represents the ultimate in production engineering, architectural styling and harmonious decoration.

Ultra-modern color styling has been achieved in the office-building portion through the use of carefully-selected Pratt & Lambert deluxe colors. These distinctive colors are not only functional but are rich in decorative value. They diffuse light and minimize eye-strain.

Similarly, the P&L Lyt-all Industrial Maintenance System was used in the manufacturing

areas, including sight-saving, machine-tool colors. Fatigue is lessened, safety measures are improved, spoilage is reduced, and production is increased through the adoption of this practically-proven painting system. Operating efficiency is thus combined with economical maintenance.

Authoritative color planning and practical painting specifications are available from the nearest Pratt & Lambert Architectural Service Department. Inquiries are welcomed.

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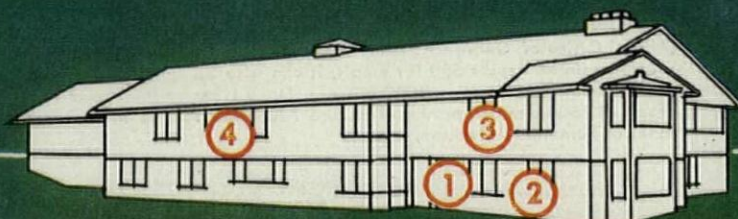
"OUR HOME NEEDED 4 Thermostats FOR COMFORT!"



Says CEDRIC ADAMS
Noted CBS Radio Personality

RESIDENCE OF MR. and MRS. CEDRIC ADAMS
MINNEAPOLIS, MINNESOTA

Architect, NORMAN R. JOHNSON, St. Paul, Minn.
Builder, CARL M. HANSEN, Minneapolis, Minn.



THE friendly informality of Cedric Adams' newspaper column and news broadcasts have long made his name a household word in Twin Cities homes. Today, a national TV and radio personality, Cedric's easy, comfortable manner and broad smile have won millions of new friends across America.

Recently he built himself a new home in Minneapolis. It was designed from stem to stern for pleasant living. The heating system received the special attention it required in a home of this type—zone control of different living areas to maintain ideal temperature conditions in all rooms at all times.

The Adams home has four properly

located Honeywell thermostats. While some homes require but 2, larger homes may require 5 or more thermostats, depending upon the number of rooms, area of ground covered, exposures to sun or storm. But most larger homes can't get along comfortably on one thermostat. The next home you are commissioned to design may be one of them.

In any event, we suggest that you consult your nearby Honeywell field engineer. His broad experience in zone control will serve as an important aid in determining the proper number of controls needed for best results. Meanwhile, write for the informative folder, "Residential Zone Control Applications and Specifications."

This Home Has **FOUR** Thermostats

- ① In the Recreational Area
- ② Also in Recreational Area
- ③ In the Living Area
- ④ In the Sleeping Area



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WINTER'S BEAUTY is captured by this window, but winter's sting never penetrates the insulating wall it presents to unpleasant weather. It's an Andersen WINDOWALL... it contributes to its owner's pleasant living both as window and as wall.

Here are pictured the two best reasons why Andersen WINDOWALLS are made of wood. Wood frames the view with depth and beauty; and wood insulates. Though it was

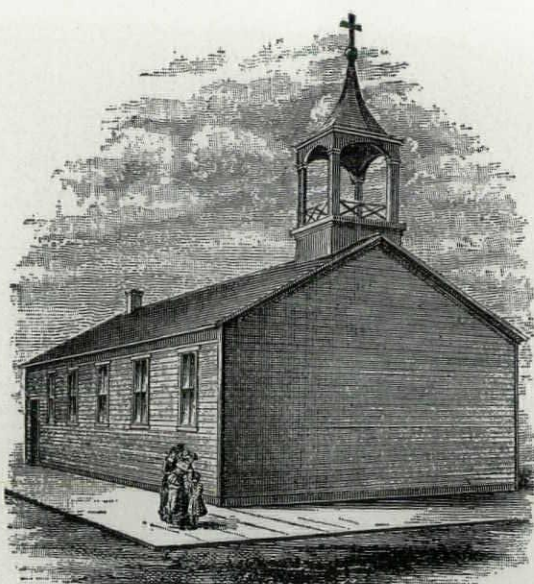
12 below zero when this picture was taken, there was no trace of condensation on wood members.

See Detail Catalog in Sweet's Architectural and Builders' Files, or write us for further information. The complete WINDOWALLS Tracing Detail File will be sent on request to architects and designers at no charge. Andersen WINDOWALLS are sold by lumber and millwork dealers.

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Exuberance and fast construction, typical 'northwest' qualities, are seen in the Mormon carving above and St. Mary's Church (left).

REVIEWS

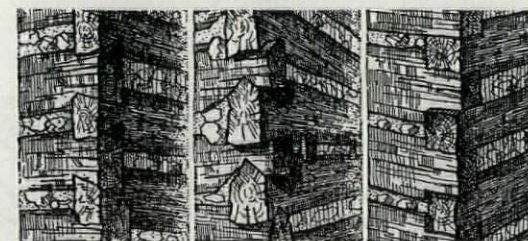
ARCHITECTURE OF THE OLD NORTHWEST

TERRITORY by Rexford Newcomb. University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill. 176 pp. 47 fullpage plates. 9 x 11½. \$20.

In a country as large and varied as the U. S., studies of sectional development in architecture have a special value. They allow a tracing of the individual elements which now play an important part in our national culture. The old Northwest Territory, which became a part of the U. S. in 1787, was a homogeneous section including the present states of Ohio, Indiana, Illinois, Michigan, Wisconsin and Minnesota. It was then composed of a few French and English outposts surrounded by untouched forestland, and lacked even the 5,000 males that were necessary to make it officially self-governing. This book traces its growth in the methods and materials of building down to the Civil War almost a century later.



The highest architectural heritage of the old Northwest Territory was the clay-and-timber house introduced by French settlers from Quebec. Its very elaborateness, however, together with a series of fires, reduced its possible scope of influence. First coherent local pattern was the now-classic log cabin which attained its widespread recognition in this area. It had been introduced to Pennsylvania by Swedish settlers, but in the 1800's it became a midwest trademark. As Author Newcomb points out: "The log cabin . . . could be constructed of material taken from the land in clearing and put together with the same tools as those used in felling the trees . . . a combination of economy and convenience admirably adapted to the American frontier."



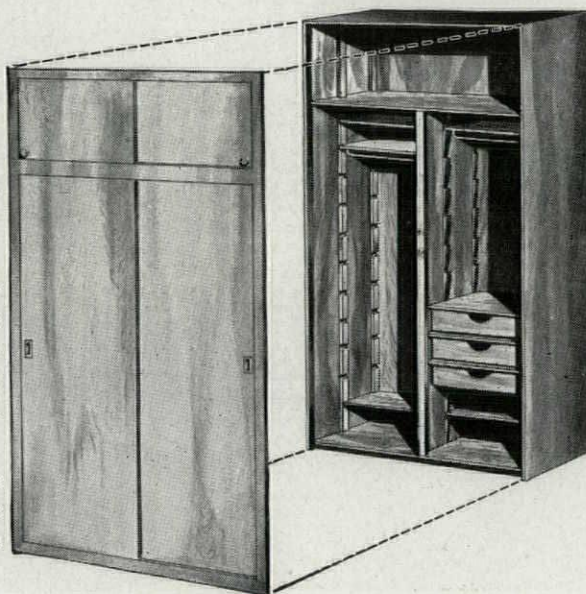
The pioneer's rapid mastery of wood for light and swift construction led to his one vital contribution to modern building—"the balloon frame." In 1833 George Washington Snow produced in St. Mary's Catholic Church of Chicago, Ill. a structure whose lightweight members were held together by nails. The cost-saving and rapidity of this system was immediately noted by the farm journals and it soon became a widespread practice up and down the frontier. To this day it is almost universally used for small house construction in the U. S.

(Continued on page 168)

Get More (and Better) Storage With MENGEL WALL CLOSETS!

Prefabricated Mengel Wall Closets have five important advantages over conventional closets:

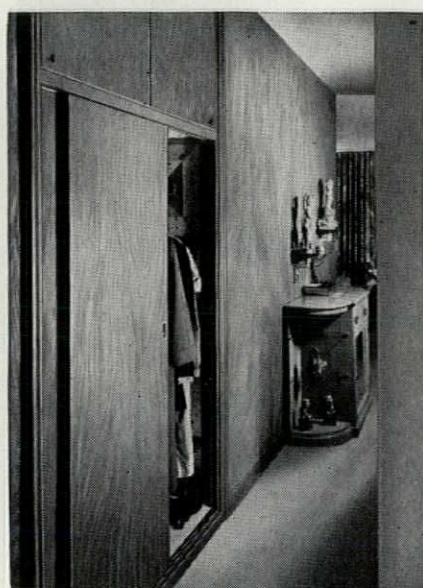
- 1 Modern construction eliminates thick, expensive wood studs, lath and plaster . . . offers greater storage space for equal cost, or equal space at lower cost.
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- 5 Separate top compartments utilize space ordinarily wasted . . . ideal for semi-permanent storage.



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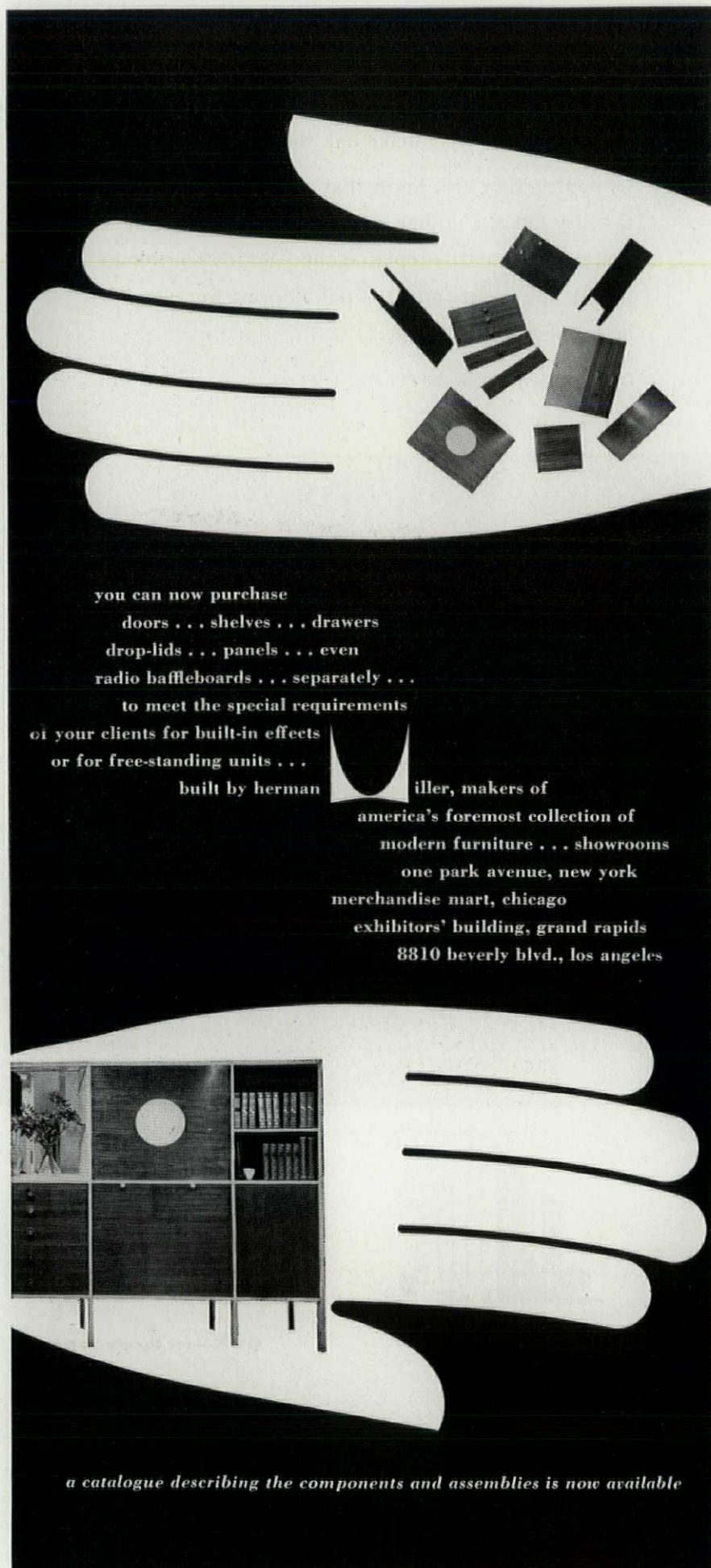


oak—for low-cost homes



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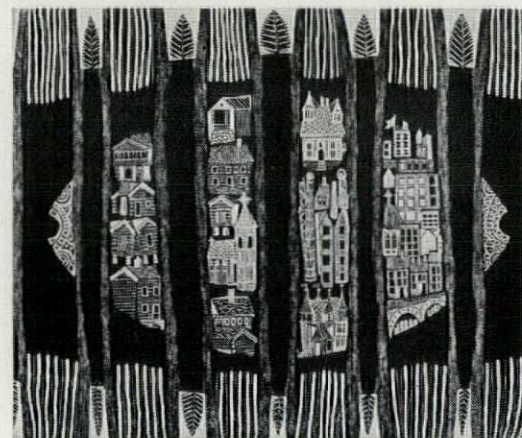
a catalogue describing the components and assemblies is now available

REVIEWS

Author Newcomb, while not overlooking these actual "Northwestern" contributions to the nation's construction progress, seems more impressed by local skill in copying designs than inventing them. The great majority of his handsome photographs are devoted to more or less handsome imitations of Georgian, Roman, Greek and Gothic Revival houses and churches. Even the 'balloon-framed' St. Mary's is swallowed up in a chapter entitled "Greek Temples on the Illinois Prairie." A notable exception to this conventional design was the Mormon temple at Nauvoo, only one of whose pilasters has survived its destruction. This lively sun image (p. 166) now adorns—alas—the front of an Illinois duckpond.—S.K.

NORWEGIAN ARCHITECTURE throughout the Ages. With a historic survey by Georg Eliassen. H. Aschehoug & Co., Sehestedggt. 3, Oslo, Norway. Text in English. 424 pp. 9¼ x 11¼. Illus. 78 kroner.

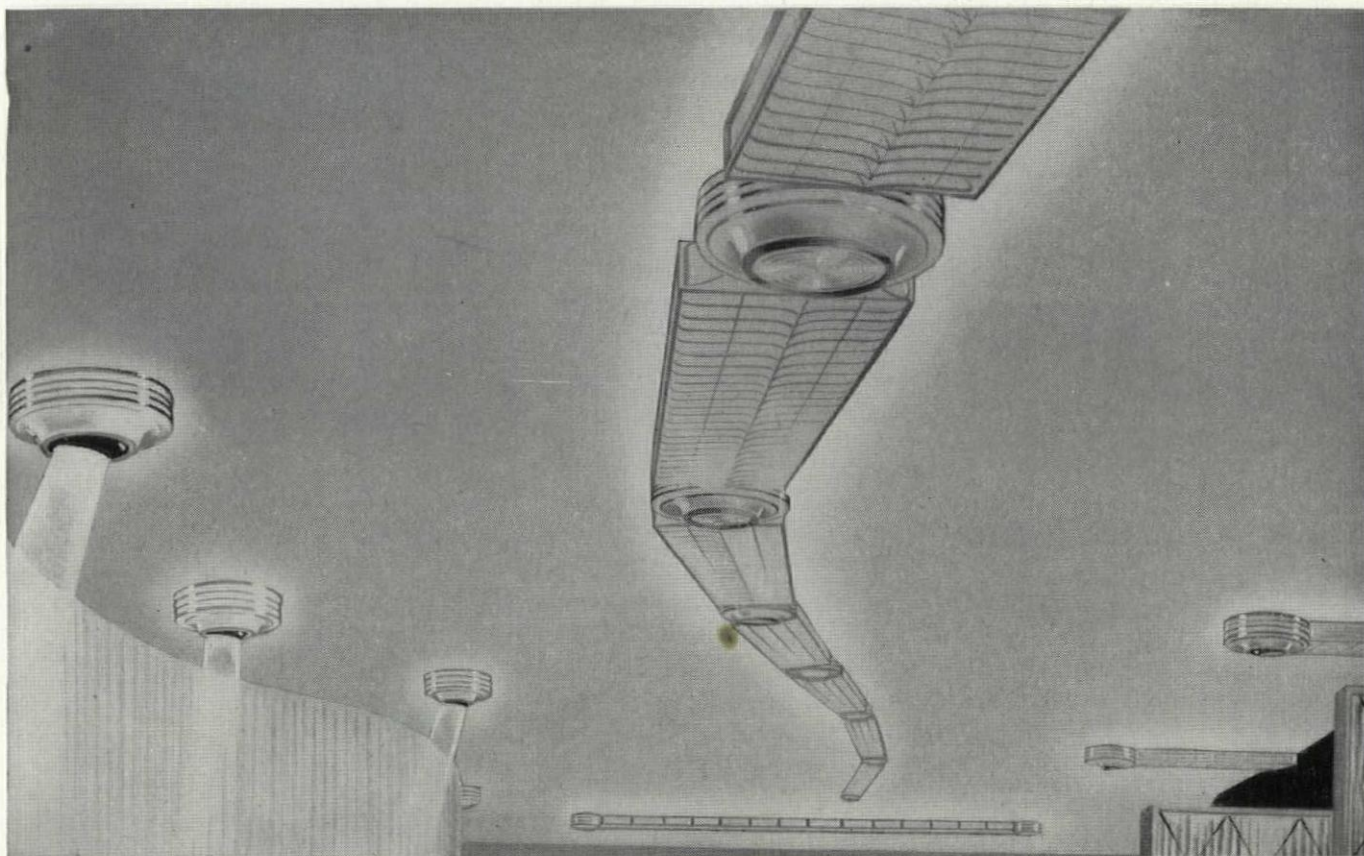
This book is not only the first detailed and coherent account of Norwegian architecture—it has an interesting history of its own. Research for it was begun during the German occupation by a secret committee of architects who wished "to utilize the long blackout evenings." The group worked at its task, not knowing whether



the book would ever be finished or, if finished, be allowed publication. Its aim was "an easily absorbed survey, lacking heretofore, which would act as a source of inspiration for the present and coming generations of Norwegian architects." The editors' apology for the book's incompleteness seems unnecessary to an outsider, who can only be impressed by the originality and variety of its material. What does seem—very literally—a shame, is the poor quality of its photographic reproductions. Of the hundreds of excellent and interesting photographs included in the book, not one was clearly printed. (The contrast of the interior with the rich woodcut on the cover—shown above—is remarkable.)

In the text introduction, Editor Georg Eliassen demonstrates how firmly the roots of Norwegian architecture are set in geography. Two types of building predominate through the ages: the seagoer's dwelling and the sod-covered house in the mountains. The gradual development and

(Continued on page 174)



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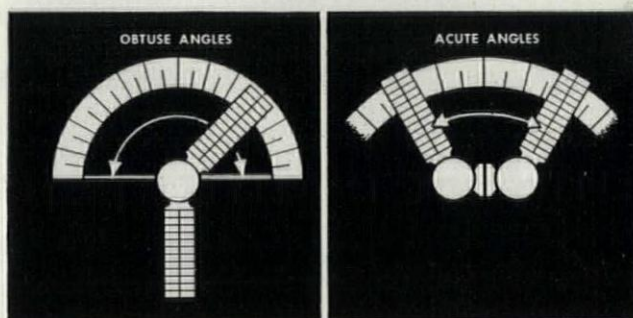
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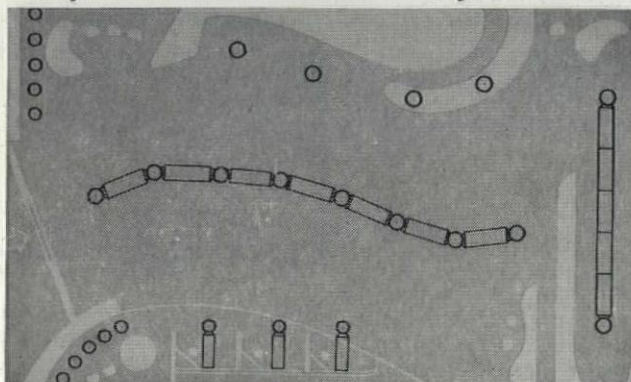


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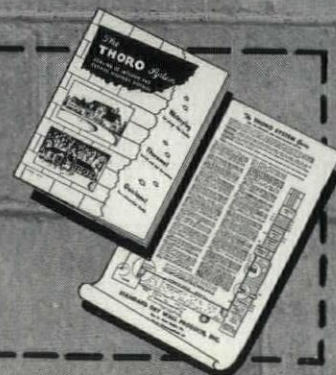
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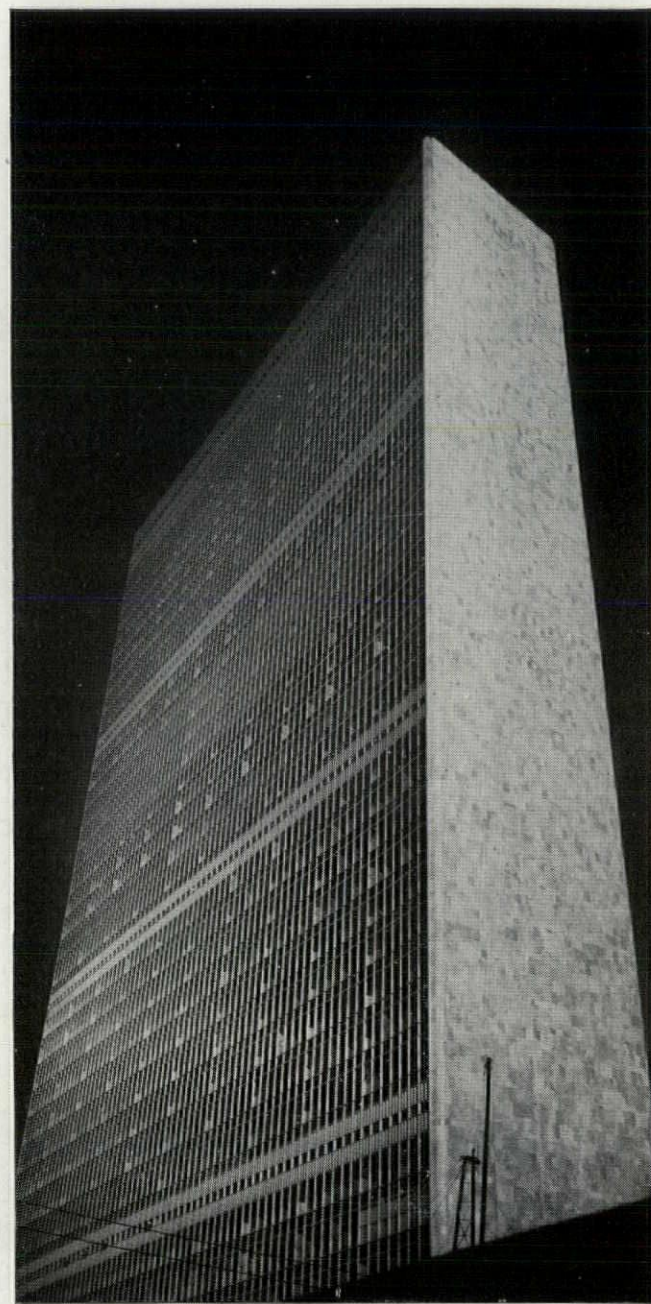
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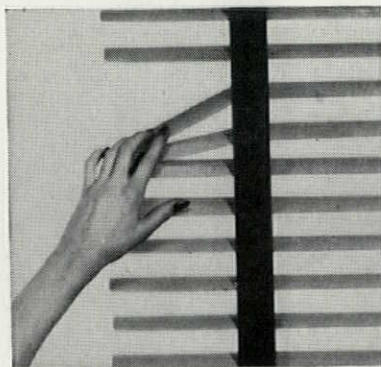
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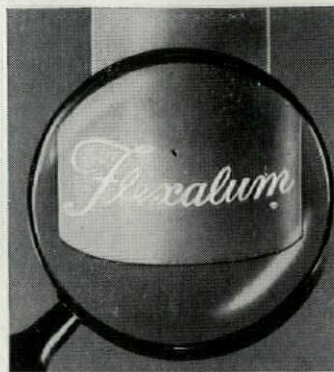


The United Nations Secretariat on the East River Drive, New York City

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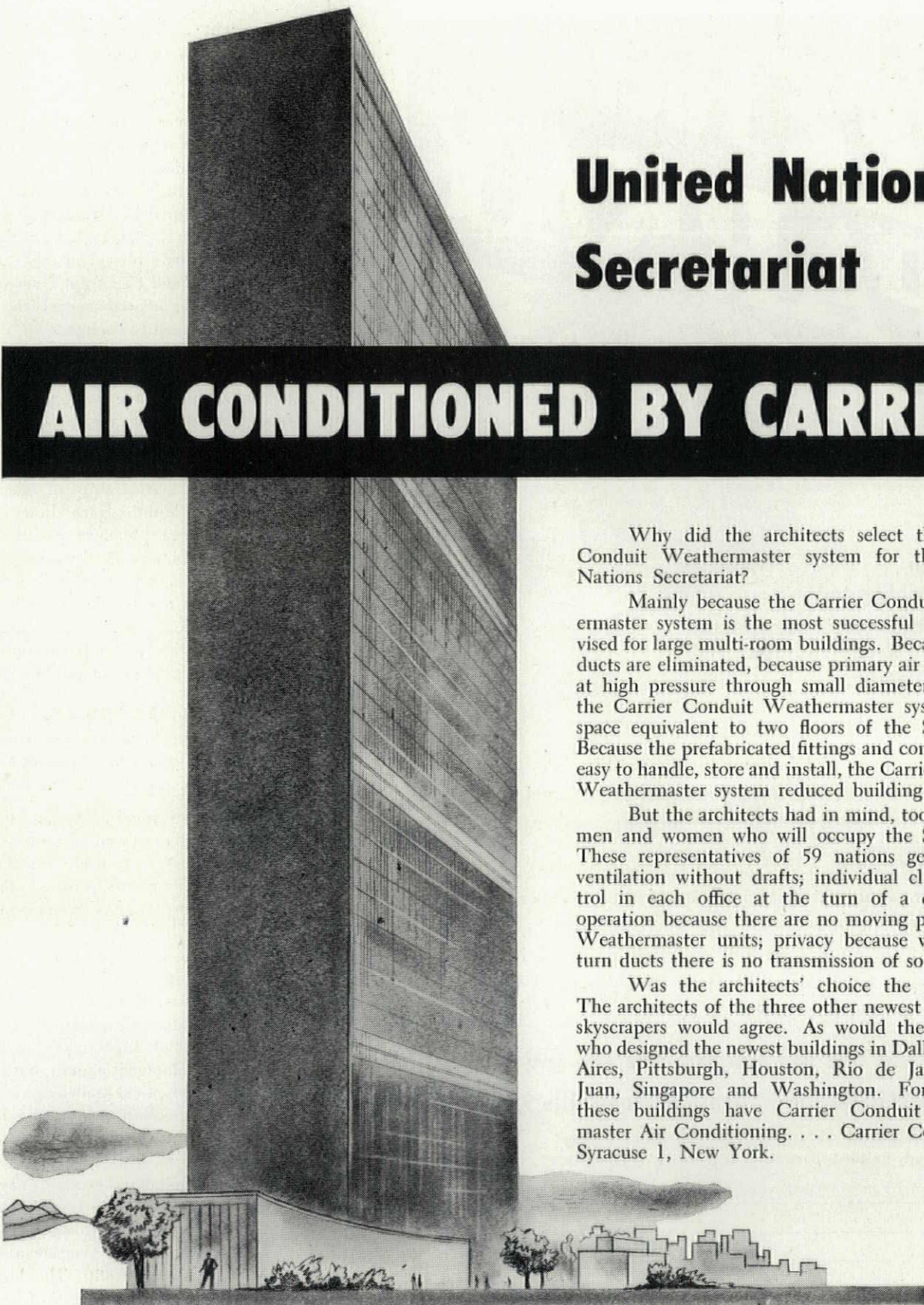
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United Nations Secretariat

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But the architects had in mind, too, the 4000 men and women who will occupy the Secretariat. These representatives of 59 nations get constant ventilation without drafts; individual climate control in each office at the turn of a dial; silent operation because there are no moving parts in the Weathermaster units; privacy because without return ducts there is no transmission of sound.

Was the architects' choice the right one? The architects of the three other newest New York skyscrapers would agree. As would the architects who designed the newest buildings in Dallas, Buenos Aires, Pittsburgh, Houston, Rio de Janeiro, San Juan, Singapore and Washington. For many of these buildings have Carrier Conduit Weathermaster Air Conditioning. . . . Carrier Corporation, Syracuse 1, New York.

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REVIEWS

refinement of these types, in spite of lapses caused by war and sickness, makes up the main story of the book.

A decline set into Norwegian architecture when the once-invincible Viking ships were driven off the seas by German and Dutch double-deckers, a decline intensified by the Black Plague and the Wars of Reformation. Subsequent domination by Denmark and alliance with Sweden further weakened the native arts. From the time of their revival in the 1840's, however, (when Ibsen and Grieg put Norway back on the map of world consciousness) the creative tide has become steadily stronger.

Norway's welcome for modern architecture after a LeCorbusier exhibit in 1930 was, the authors believe, "too easy and too quick." Its best products, however, as shown here, seem worthy to stand up with the top level of other more mechanically-advanced countries. The architectural partnership of Gudolf Blaksted and Herman Munthe-Kaas shows especially varied competence. Modern architects (like Ove Bang and Magnus Poulsson) reveal how well native traditions adapt themselves to modern use.

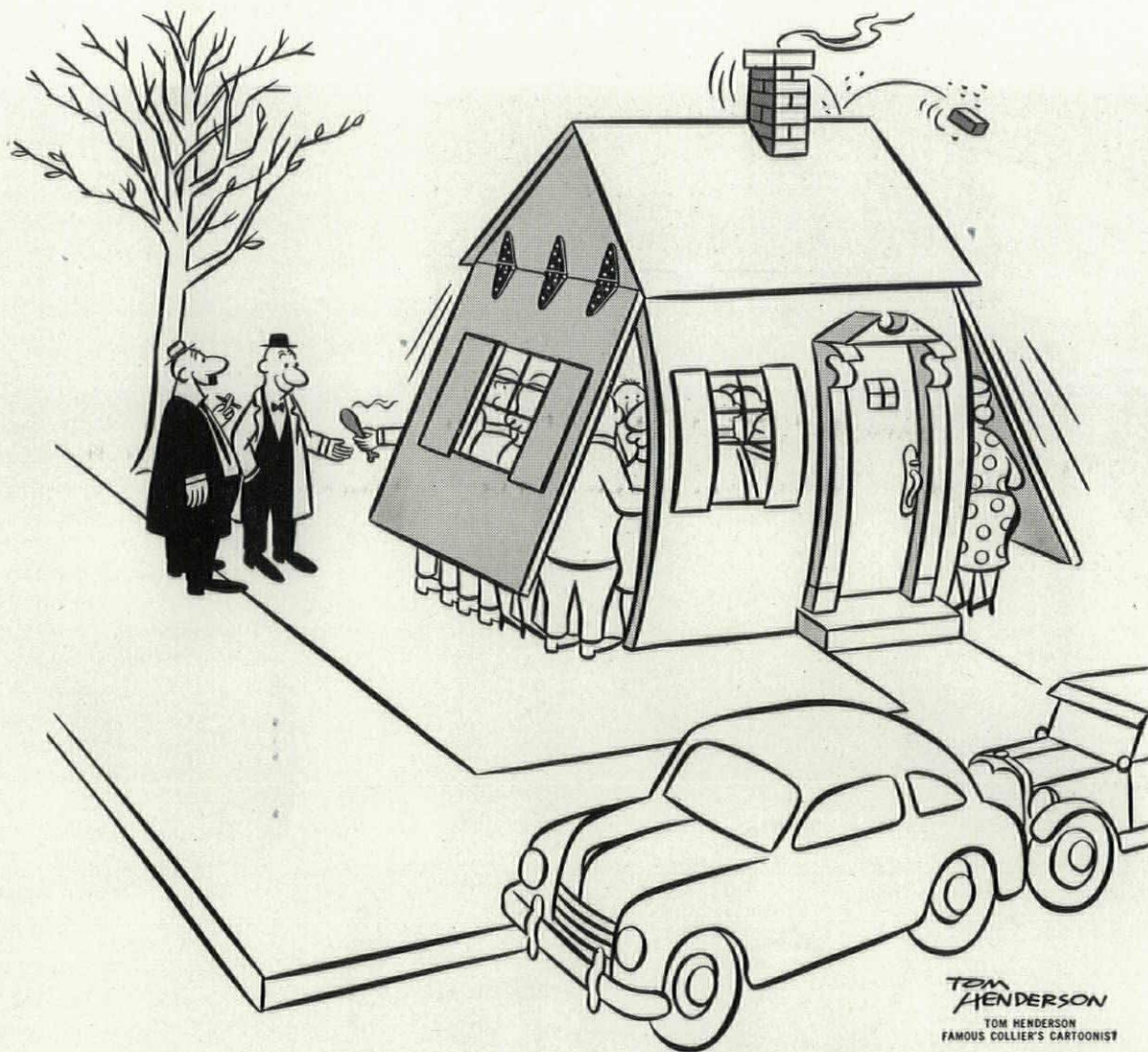
When such a valuable research document has been assembled, cannot some auxiliary group—UNESCO or the Norwegian Government perhaps—see that it gets fitting publication?—S.K.

THE URBAN PATTERN—City Planning and Design by Arthur B. Gallion and Simon Eisner, D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. 446 pp., 7 1/2 x 10 1/4. Illus. Bibliography. \$12.

Although this critical analysis of the city pattern will find its biggest audience on the campus (its format of time past, present and future works well with classroom lectures) there is much meat here for the city councilman, the traffic engineer, the builder developer, the architect of two houses a year—anyone in fact who has a financial or spiritual stake in an urban community. Messrs. Gallion, Dean of University of Southern California's school of architecture, and Eisner, technical director of Los Angeles' community redevelopment agency, combine academic thought and practical knowledge in exceptionally readable text. With clarity and logic befitting city planners, they dig to the roots of urban problems and hack away with small axes.

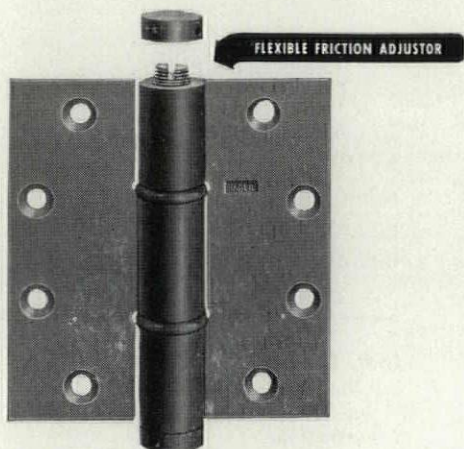
In an introductory section, *The City of the Past*, the urban form is traced from man's first move out of a cave up to the boned-girdle grids that were pressed over American cities for purposes of business profit. The book notes that the distinction in the pattern of cities is marked by the transitions from a slave to a mercantile economy and from slingshot to gunpowder warfare, and that "neither the presence nor the absence of geometrical form has affixed itself upon a people or a period as a conclusive expression of society. It is rather the manner in which the forms have been manipulated and the purpose for which they have been devised that give significance to the physical patterns of cities."

The authors study the industrial city, its fac-
(Continued on page 180)



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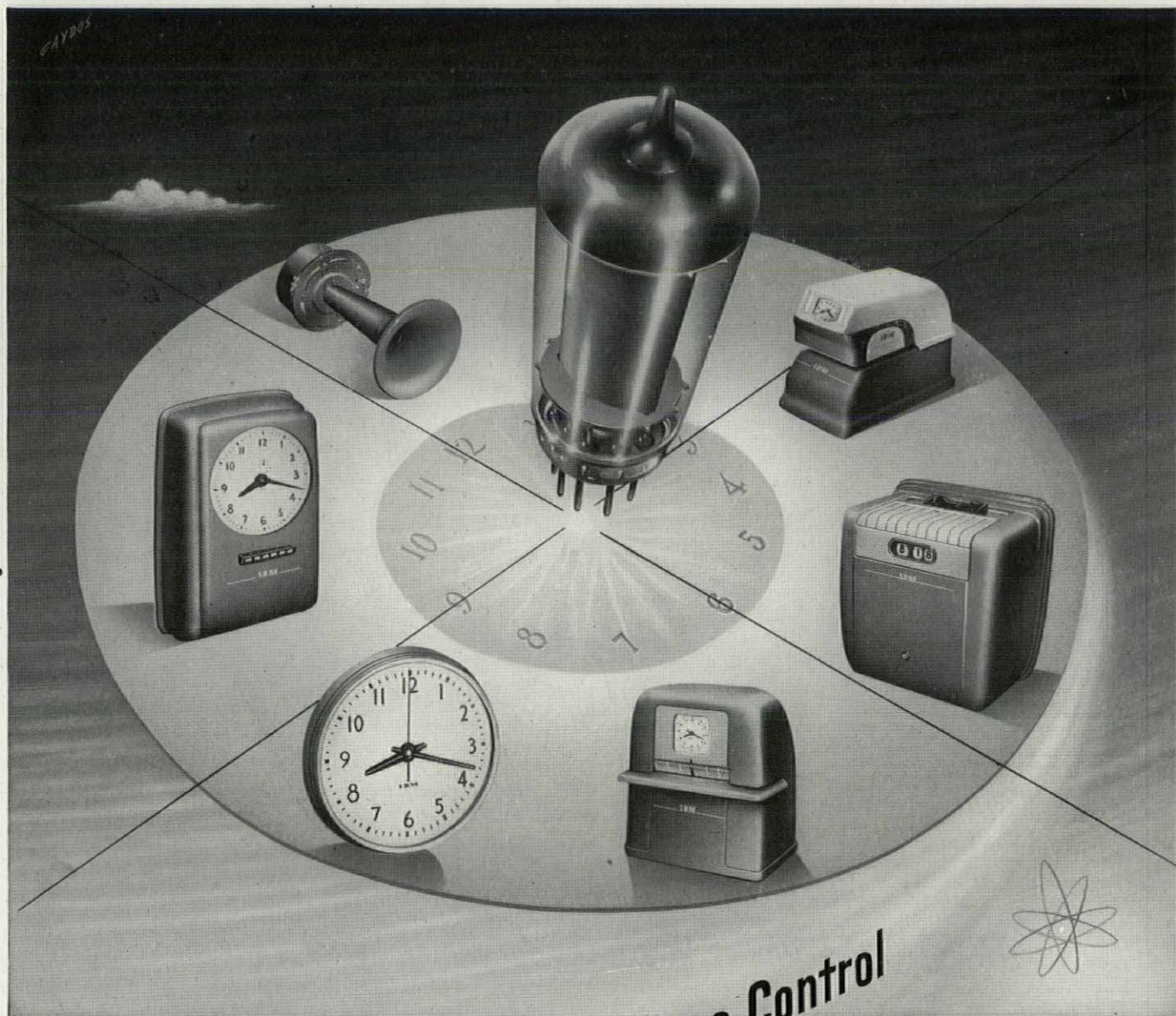
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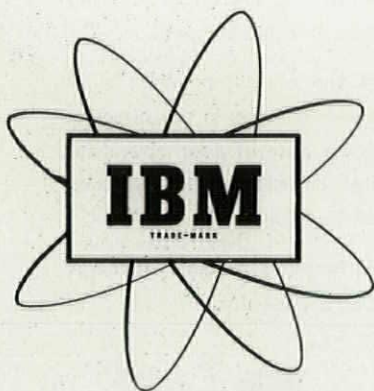
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Scale model photo courtesy United Nations Photo Department of Public Information.

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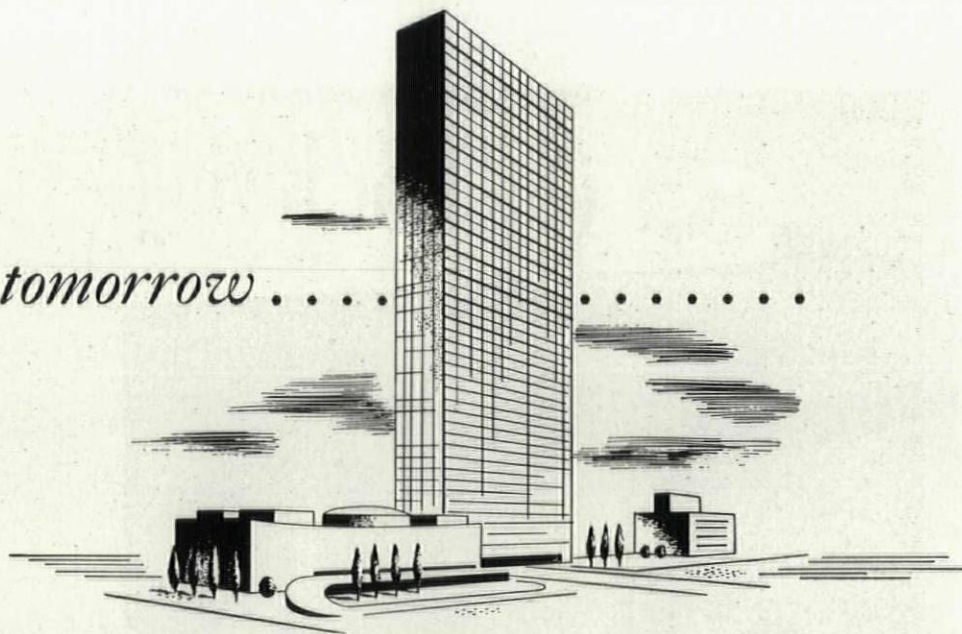
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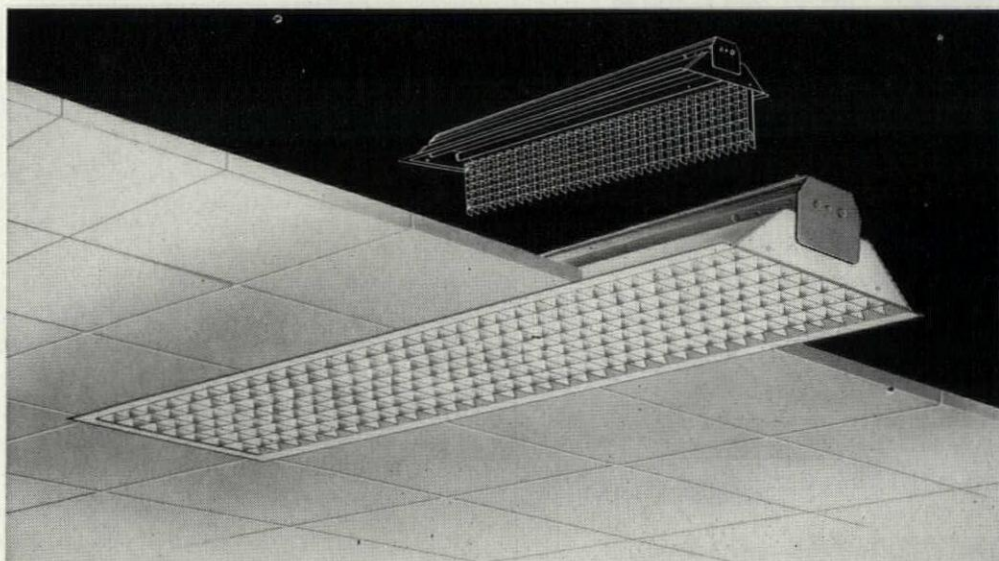
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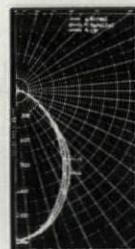
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UNL fixtures are available in 2, 3, and 4-light fluorescent and 2, 3, and 4-light four and eight foot slimlines in all MA ratings. These fixtures are adaptable for use with louvres, Albalite glass, and all types of flat and curved Holophane Controlenses*. Highlighting is achieved with recessed spotlights in either continuous runs or individual mounts.
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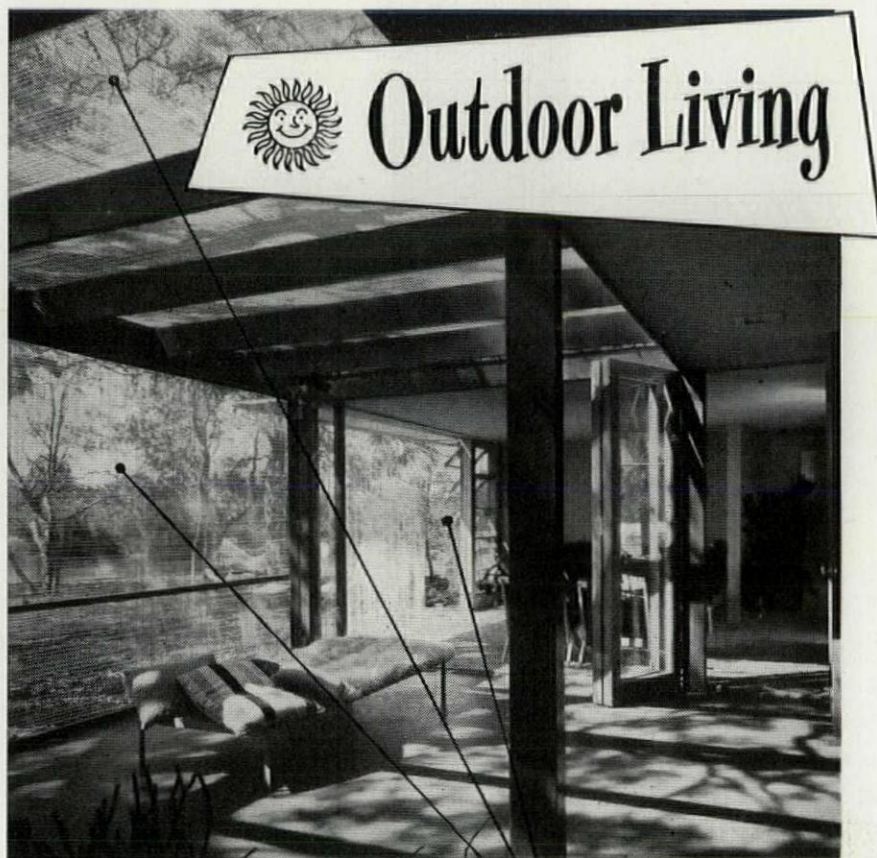


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REVIEWS

tory core and slum environs. Here in the vicious cycle of spiralling land values and unchecked population are seen the immediate origins of evils rampant in today's cities. In a comprehensive treatment of current housing, zoning, integrated land use and circulation, Gallion and Eisner suggest controlling obsolescence through democratic processes. The law of eminent domain they believe should be interpreted more vigorously for condemnation of buildings—even thriving businesses—and land that hinders community welfare. Population densities could be regulated and new buildings required to provide within their plans adequate parking space for occupants. Most howl-raising of all, the authors would have the tax scheme inverted so that renovation or complete removal of an old building for a new one would be induced after 35 years. "It would be practicable to establish a tax base for new buildings and thereafter increase the tax rate from year to year" gradually for about 20 years and then rapidly. "A major improvement would cause a building to revert to a proportionately lower tax bracket rather than be penalized by an increased assessment according to current policy. Improved construction standards would be encouraged because they would benefit by lower tax brackets rather than be discouraged by the present *ad valorem* system."—M.N.G.



THE PHYSICAL PLANNING OF ISRAEL, the Legal and Technical Basis by K. H. Baruth. Shindler & Golumb, 41 Great Russell St., London, W. C. 1, England. 115 pp. 5½ x 9. Illus. 15/.

The townplanner for one of Israel's largest cities, Haifa, presents here a coherent scheme for the development of his newly independent country. He brings to the task not only experience but great enthusiasm for its possibilities.

Unfortunately, Mr. Baruth makes little attempt to fit his suggestions into the framework of building now going on in Israel. The book tells what "should" be done without a sufficient background of actual movements or popular thinking. These are vital since Mr. Baruth's plans demand wide power for a National Planning Ministry to control all land use. Speculation would be outlawed—all increase in land value resulting from permitted use would be paid to the Ministry if the land were subsequently sold. (The photo above shows Nahalal, Israel's first cooperative settlement.)

(Continued on page 186)

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New Lift for LOFT with PLEXIGLAS

When you want more impact in storefront identification *without* changing basic design—use PLEXIGLAS. The traditional storefront sign of this Loft Candy Shop in Philadelphia, for example, became three-dimensional and completely luminous when reproduced in this acrylic plastic.

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Interior lighting gives this translucent, 3-dimensional PLEXIGLAS display complete luminosity at night—so that shape, design and colors are the same as in daylight. The giant PLEXIGLAS candy box is 11½' long, 6½' high, 10½" deep, built of white translucent material with red and blue decorations and letters solvent-welded to background panels. Interior lighting consists of 20 mm cold cathode hairpins. Signs float in stainless steel frames and can be opened or removed for easy maintenance. Design: Van Sciver Associates, Philadelphia. Fabrication: Amplex Manufacturing Co., Philadelphia. Lighting and Erection: Modern Sign Advertising Co., Philadelphia.

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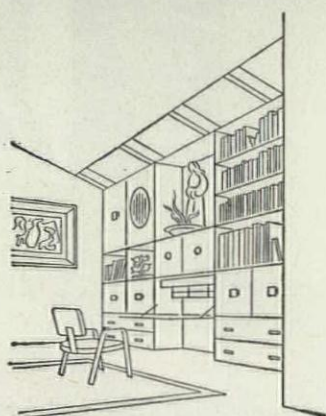
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Background

TO IMPROVE the design of builders' houses—and to interest more architects in the average American home—the National Association of Home Builders and Architectural Forum, the Magazine of Building, are jointly sponsoring the small house design competition outlined on the opposite page. Awards total upwards of \$100,000, including national, regional, local and special awards, such as described here.

Within this over-all competition is a special awards competition to stimulate the practical and imaginative use of all types of built-in features.

Small homes, wherein space is at an absolute minimum, present a storage problem which is a disagreeable factor to the owner, a sales disadvantage to the builder, and a distinct challenge to the architect. The most obvious solution to the twin problems of storage space and furniture arrangement in cramped rooms is the proper use of "equivalent space" in the form of storage partitions, cabinets, fixed furniture and other built-in conveniences.

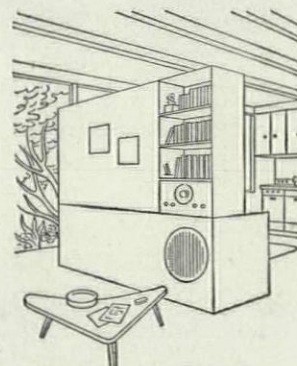


Sponsorship; Entries

DOUGLAS FIR Plywood Association believes the solutions to the problems of "equivalent space"—in the form of built-in conveniences affecting design, livability and salability of small homes—are worthy of more complete investigation.

Therefore—and because plywood is the logical material for such built-in conveniences—the Douglas fir plywood industry is sponsoring special awards for plywood built-in features within the NAHB-FORUM House Design Competition.

The NAHB-FORUM competition program covers conditions governing over-all competition and awards; section 21 of the program gives information about the Plywood Built-In Features Competition. A copy of the over-all competition program may be obtained by sending coupon on next page to Carl G. Lans, Professional Advisor, NAHB-FORUM Competition, 9 Rockefeller Plaza, New York 20, N. Y. Timing of the Plywood Built-In Features Competition is concurrent with that of the NAHB-FORUM Competition; closing date is December 15, 1950.



Entry Requirements

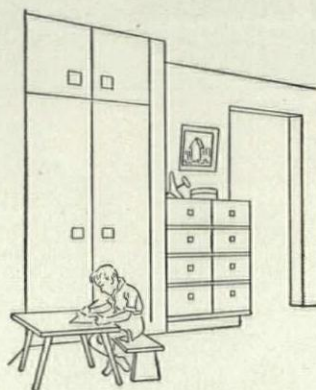
IN ADDITION to the basic drawings required of entrants in the NAHB-FORUM House Design Competition, only the following are required to render an entry eligible for the Plywood Built-In Features Competition Special Awards:

1. A floor plan of the house and appropriate letter or symbols to indicate the location of the various built-in conveniences and the recommended use of plywood in their construction.
2. Pertinent construction details evidencing design feasibility and suitability to construction with Douglas fir plywood.
3. Delineation sufficient to portray the appearance, function and sales appeal of the built-in convenience.

Douglas Fir
Plywood

AMERICA'S

In Connection with the NAHB-FORUM House Design Competition



Awards

FIRST PRIZE	\$2,500
SECOND PRIZE	1,500
THIRD PRIZE	1,000
FOURTH PRIZE	500
10 HONORABLE MENTIONS (\$250 EACH)	2,500
TOTAL	\$8,000

Correspondence and Information

FOR INFORMATION ON Douglas fir plywood types, grades and sizes, competitors are referred to the 1950 Sweet's File Architectural, Section 5b2. Those competitors not having easy access to Sweet's may obtain the reprint of the plywood insert by writing the Association at the address below. Requests for this reprint will be filled by return mail. It is emphasized, however, that this booklet will be sent without letter of transmittal and accompanied only by an announcement folder on the Plywood Built-In Features Competition.

Competition regulations expressly forbid correspondence relevant to the competition. No information concerning the over-all Regional and National House Design Competition, other than presented in the NAHB-FORUM program, will be supplied either by the various sponsors or by the Professional Advisor.

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BUSIEST BUILDING MATERIAL

The NAHB-FORUM Design Competition

Sponsored jointly by the National Association of Home Builders and Architectural Forum, The Magazine of BUILDING, a house design competition is being conducted to stimulate improvement of small house design by bringing about a closer liaison between architect and merchant builder.

The sponsors hope the competition will not only improve American small home design but will prove mutually beneficial to both architect and builder: to the architect by opening up financial and social possibilities of a largely untouched field of design; to the builder by demonstrating the dollars and cents practicability of good design.

Briefly, the NAHB-FORUM House Design Competition is for a detached, three-bedroom home. No more than 1,000 sq. ft. excluding garage, breezeways, etc; no basement. The house shall be such that it can be sold at a reasonable profit for \$8,000 to \$11,000 excluding cost of built-in furniture and storage facilities which would replace regular furniture. Both national and regional awards will be made based upon sales appeal and functional and esthetic effectiveness.

The competition is being conducted in accordance with rules of American Institute of Architects; it is open to all architects, including A.I.A. members, and to designers, draftsmen and students of architecture who are residents of continental United States.

The competition is being conducted by Architectural Forum, The Magazine of BUILDING, as authorized by the sponsors. Complete data on the NAHB-FORUM House Design Competition, including registration, awards, eligibility, method of entry and presentation, are covered in the competition program available from Carl G. Lans, Professional Adviser, NAHB-FORUM House Design Competition. Use coupon below to obtain program.

CARL G. LANS, PROFESSIONAL ADVISOR,
c/o Architectural Forum, The Magazine of BUILDING,
9 Rockefeller Plaza, New York 20, N. Y.

I intend to enter the NAHB-FORUM House Design Competition. Please send me the program, including the conditions governing the competition and the awards.

Name

Firm (if any)

Address

City State

Check one:

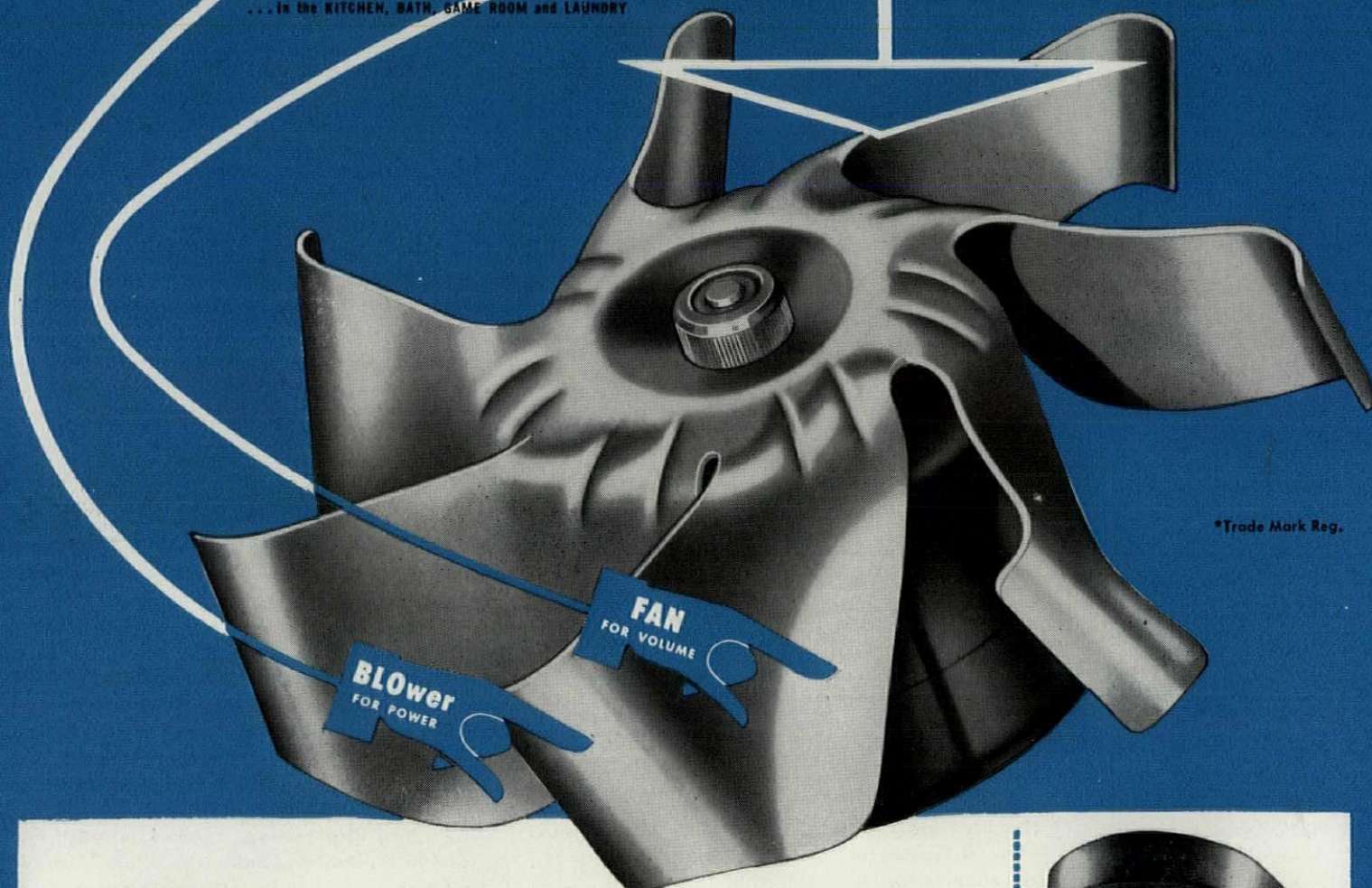
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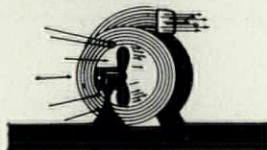


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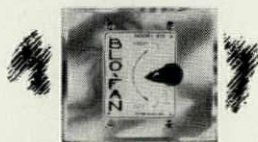
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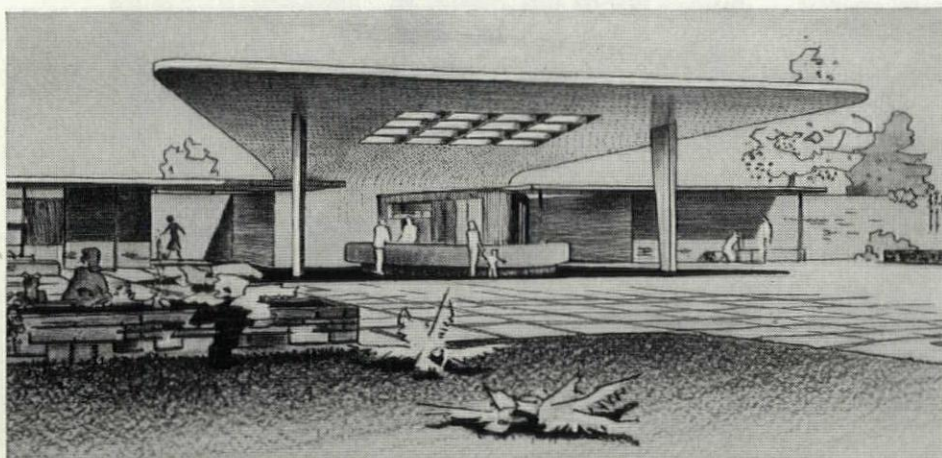
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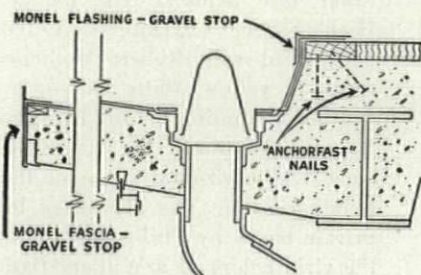
*Blo-Fan** AMERICA'S MOST IMITATED HOME VENTILATOR

PLANNED FOR PLAY — BUILT TO STAY. Architect's drawing of bath house entrance at St. Clair Metropolitan Beach, new Michigan play spot constructed by the Huron Clinton Metropolitan Authority. The two supporting beams are of steel, covered with long-lasting, corrosion-resisting Monel. All fasciae and gravel stops are also Monel. Architects: O'Dell, Hewlett and Luckenbach, Detroit 26, Mich. Fabricator: W. P. Hickman Co., Birmingham, Mich.

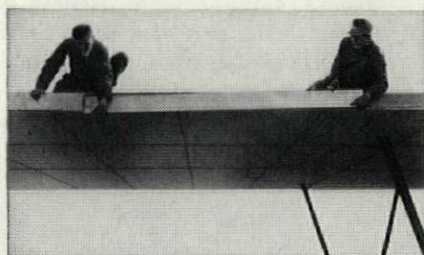


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DETAIL OF MONEL GRAVEL STOP DESIGN above beach entrance to bath house, from plans of O'Dell, Hewlett and Luckenbach. Specifications call for use of Monel "Anchorfast" nails—"The nails with the holding power of screws."



WORKMEN INSTALL MONEL FASCIAE on beach canopy which connects the cafeteria and bath house buildings.

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sheathed with Monel.

As we move around the 550-acre tract that was reclaimed from the low, swampy ground of the Lake St. Clair shore, we find that every building has Monel fasciae, Monel gravel stops. That all exposed flashings are Monel. That leaders and gutters on the administration building and cafeteria have been fabricated from the same rugged Nickel Alloy.

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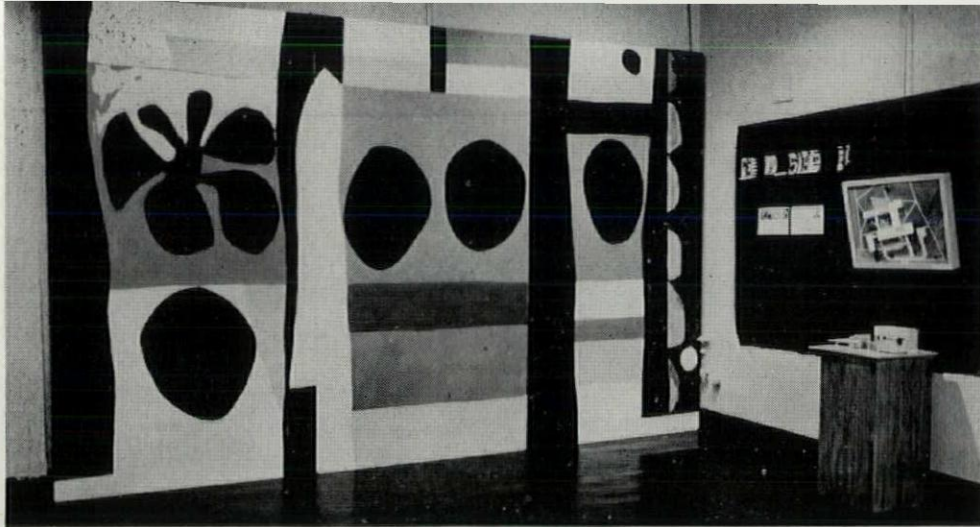
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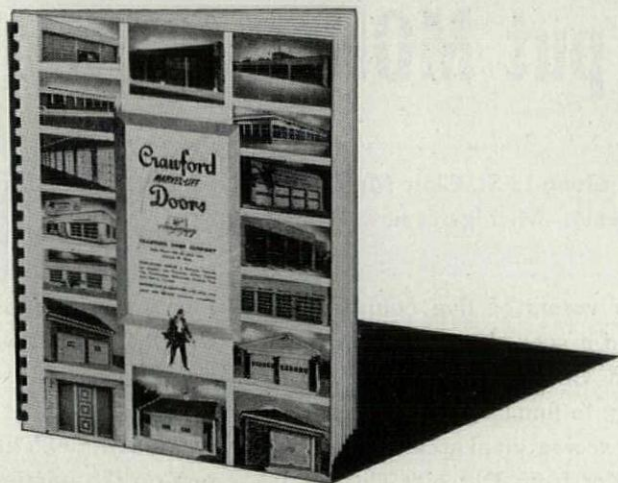
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MONEL... for the life of the building



The bold simple mural above brightens Attleboro High. Its placement is seen in the model.



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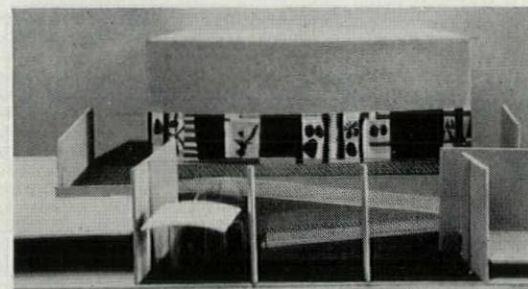
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REVIEWS

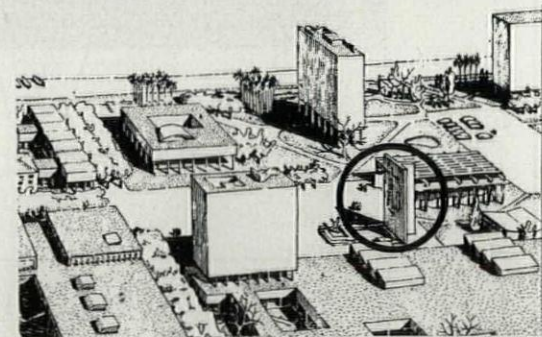


THE MODERN ARCHITECT AND MURALIST

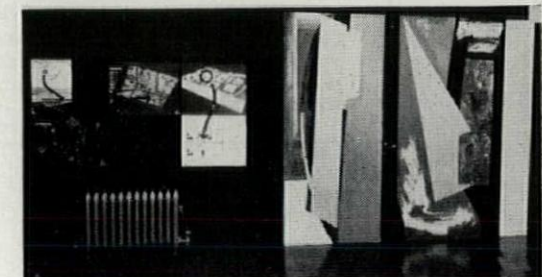
"Too frequently," says the Kootz Gallery of New York, in its catalog for an exhibit entitled *The Muralist & the Modern Architect*, "we see a magnificent concept in architecture levelled down in taste through the use of academic murals. The creative thrust of the architect requires an equally imaginative treatment by the muralist." Its exhibit presents the work of four well-known modern muralists as each might be placed in a project by a modern architect.

Hans Hoffman has designed a mosaic in primary colors for the 50 x 24 ft. surface of a bell tower (see below). The lounge of Attleboro High School (Architects' Collaborative) has been fitted with Robert Motherwell's series of forms in yellow, white and dark green. Adolf Gottlieb's painting for the living room of Marcel Breuer's dormitory at Vassar blends with the color and horizontal sense of the stone in the building itself. The glass-cage living area in a private house by Philip Johnson is enlivened by the vivid colors of a William Baziot's painting.

These four modern murals (in spite of differences in design, color and purpose) stand together in basic contrast to the picture murals of other days. Where the classic mural aimed at being a window—an ideal extension of the room's outlook—these modern murals boldly accept being part of a wall. Surrounded by the lavish window areas of modern building, they make the most of their solidity in the use of firm designs and broad flat color areas.—S.K.



The town plaza of Chimbote, Peru (Jose Sert & Paul Lester Weiner) is dominated by a mosaic belltower.



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LOW COST Inexpensive to buy...to install...to maintain.

BEAUTY Colorful Kentile floors can be designed in a wide variety of rich colors.

DURABILITY Colors can't wear off. They go clear through to the back of each tile.

SAFETY Provides a confident footing for all. Virtually fire-resistant.

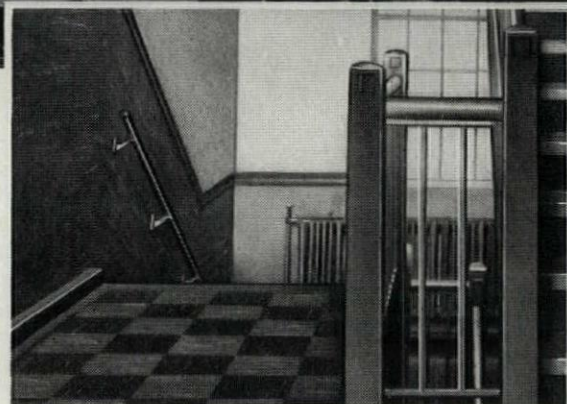
QUIET Kentile is a resilient material that cuts down noise and clatter of footsteps.

EASY TO CLEAN Mild soap and water keeps Kentile clean...occasional no-rub waxings keep it gleaming.

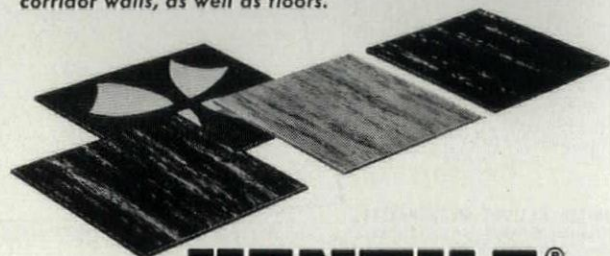
• For institutions, and for private homes, Kentile offers unique advantages that are quickly appreciated by your clients.

Kentile can be installed on concrete in direct contact with the ground. It can be laid over double T&G floors, or directly over plywood...and is also ideally suited for installation on radiant heated concrete slabs.

Kentile is laid tile by tile—meaning installation and labor costs are cut to a minimum. And you're sure of enthusiastic public acceptance when you specify Kentile, because of the large-scale advertising, with big color ads in leading magazines.



More and more architects are specifying Kentile for school corridor walls, as well as floors.



KENTILE®

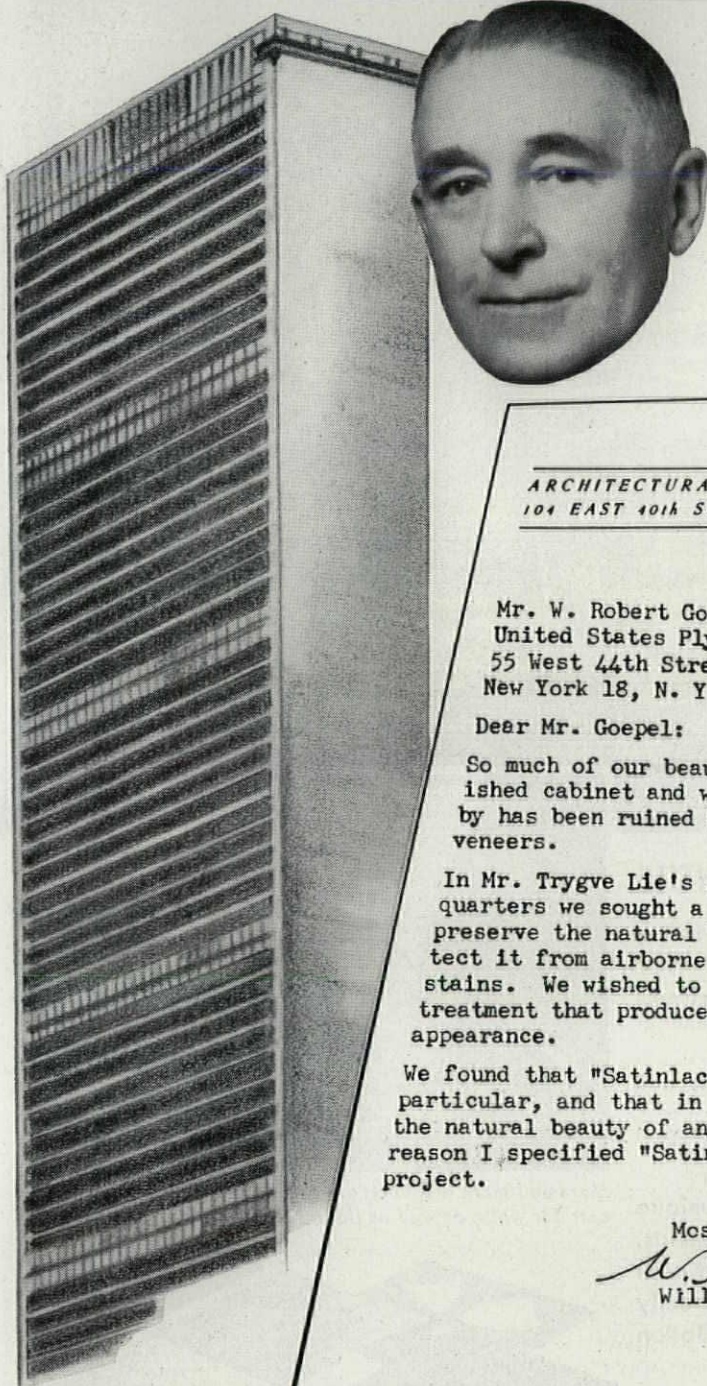
The Asphalt Tile of Enduring Beauty



DAVID E. KENNEDY, INC., 58 2nd Avenue, Brooklyn 15, N.Y.

"We specified Satinlac exclusively
in Mr. Trygve Lie's suite at the
United Nations Headquarters"—

Willard H. Barrows.



WILLARD H. BARROWS

ARCHITECTURAL SPECIFICATION WRITER AND CONSULTANT
104 EAST 40th STREET, NEW YORK 17, N. Y., MUrray Hill 3-1330

Mr. W. Robert Goepel
United States Plywood Corporation
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New York 18, N. Y.

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So much of our beautiful woodwork utilized for finished cabinet and wall surface treatment in years gone by has been ruined by the use of "built-up" varnish veneers.

In Mr. Trygve Lie's suite at the United Nations Headquarters we sought a finish treatment that would both preserve the natural beauty of selected woods and protect it from airborne dust, dirt and finger mark stains. We wished to avoid the use of any kind of treatment that produces a "built-up" varnish veneer appearance.

We found that "Satinlac" met this requirement in every particular, and that in reality it actually emphasizes the natural beauty of any wood surface. For this reason I specified "Satinlac" exclusively for this project.

Most sincerely yours,

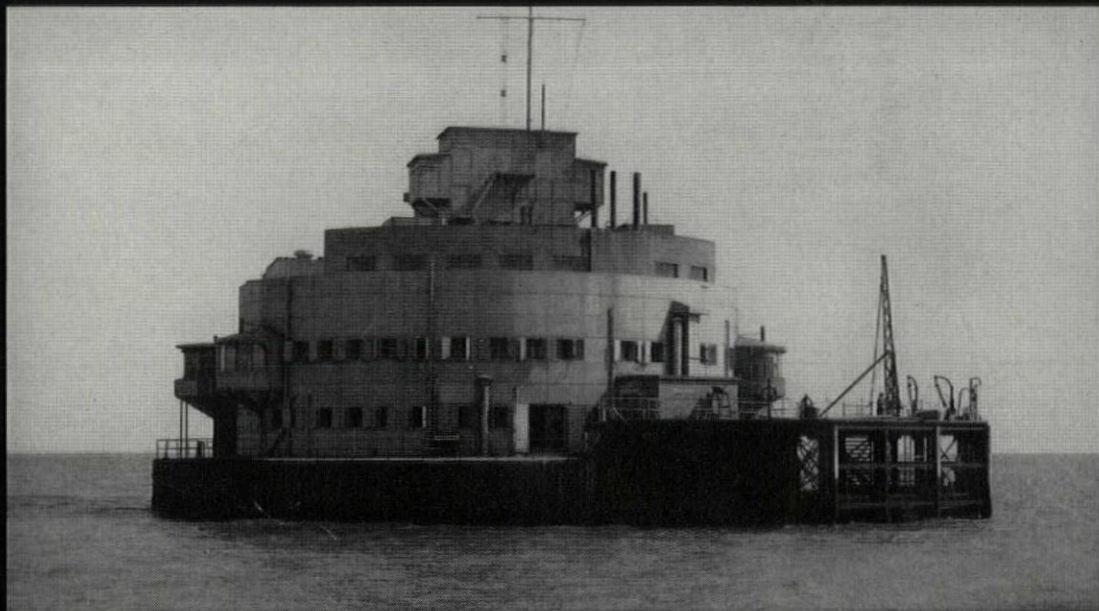
W. H. Barrows
Willard H. Barrows



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Planning Office
New York City, N. Y.
Wallace K. Harrison, F. A. I. A.,
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HOT-DIP GALVANIZED
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These Devoe Finishes cover over a million square feet of surface in the building:

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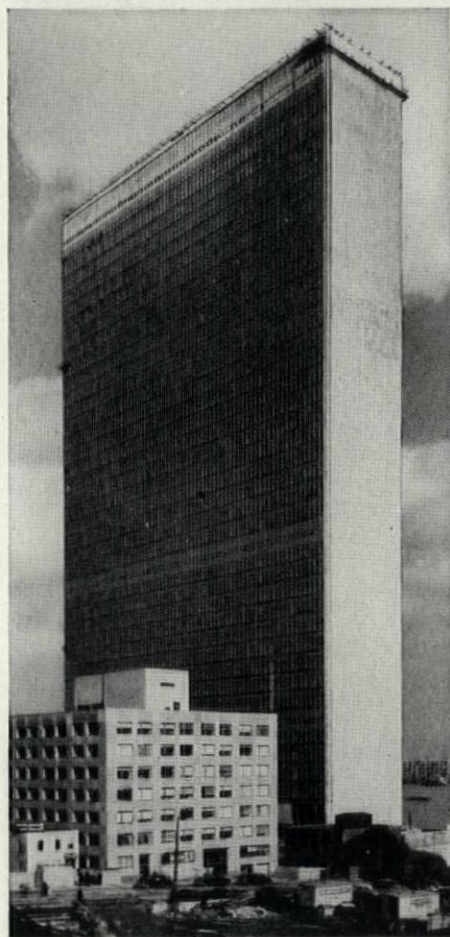
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United Nations



Secretariat Building

**USES OVER 250,000 POUNDS OF
CHASE COPPER TUBE AND BRASS PIPE**

Again the choice is Chase! 99% of the copper tube and red brass pipe in the heating, plumbing and air conditioning installations of the new United Nations Secretariat Building is Chase made.

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In conference rooms, offices, corridors . . . in fact, throughout the United Nations Secretariat Building the new square Anemostat Type E Air Diffusers provide stimulating, draftless comfort.

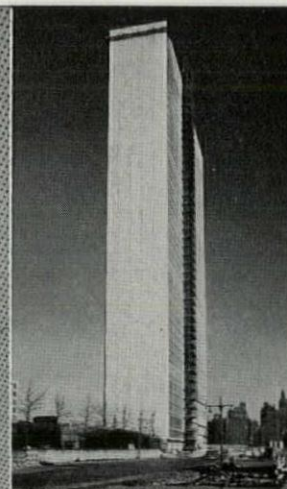
These new square Anemostat Air Diffusers offer *for the first time* . . . uniform circular air diffusion from a square outlet plus effective aspiration. This aspiration effect, the drawing of room air *into* the diffuser and mixing this room air with supply air *within* the outlet, is *the* important reason why Anemostats do a completely satisfactory job of eliminating annoying drafts and stale air pockets, equalizing temperature and humidity throughout the entire conditioned area.

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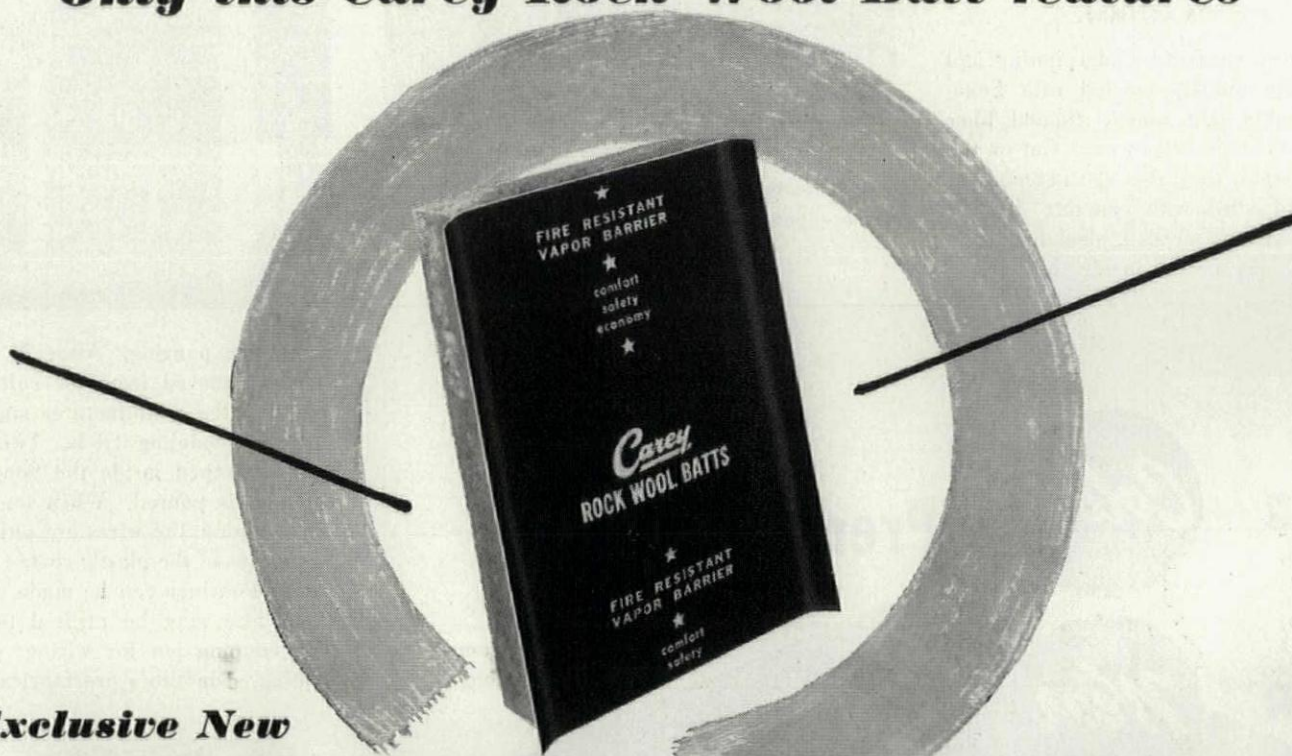
SECRETARIAT BUILDING OF THE UNITED NATIONS

Wallace K. Harrison, Director of Planning • Max Abramovitz, Deputy Director of Planning • James A. Dawson, Chief Constructing Engineer • Syska & Hennessy, Inc., Consulting Engineers • Fuller-Turner-Walsh-Slattery, Inc., General Contractor • Almirall & Co., Inc., Sub-contractors for Heating, Ventilating and Air Conditioning.

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Gives the complete story on the new Anemostat Types E and E-1 Air Diffusers. Write for your copy.

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Exclusive New

FIRE-RESISTANT VAPOR BARRIER

to provide comfort and savings with greater fire safety!



Sizes: Full—or Semi-Thick; 15" by 48"

NEW! NEW! NEW! Carey Folded Strip Blanket with Continuous Vapor Barrier

A practical, low-cost solution to the vapor condensation problem. Tough, asphalt-saturated vapor-barrier provides a continuous, unbroken surface to protect construction and insulation from moisture damage. New "folded" method of packaging eliminates distortion found in tightly rolled blankets, prevents twisting, breakage of bond between vapor barrier and insulation. Easy to handle and apply.

(Sizes: Full-Thick 15 in. x 24 ft., 30 sq. ft. to package. Semi-Thick 15 in. x 40 ft., 50 sq. ft. in package.)

Carey

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This extra life-and-property-saving protection is low in cost. And with its exclusive, *extra* protection, this new Carey batt gives you high thermal efficiency, resistance to moisture, vermin and decay. Installation is A-B-C simple.

You can't afford to overlook this new, safer insulation in your plans. It's one of many stars in Carey's complete line of rock wool insulation products. Mail coupon below for full information. Or ask your Carey dealer.

The Philip Carey Manufacturing Company
Lockland, Cincinnati 15, Ohio

Gentlemen: Please send me full particulars on:

- ☐ New Carey Rock Wool Batt with Fire-Resistant Vapor Barrier
- ☐ New Carey Folded Strip Blanket
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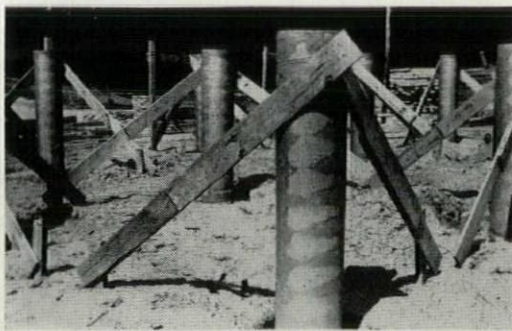
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PRODUCT NEWS

LAMINATED FIBER TUBING is economical formwork for concrete columns.

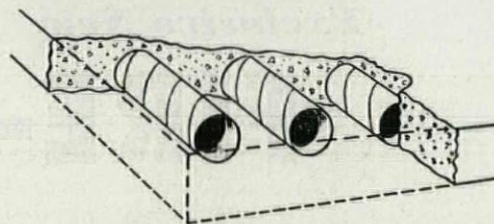
Forms for platform supports, underpinning and concrete piers are quickly erected with Sonotubes. These lightweight plastic treated fiber tubes are easy to handle and to saw. Cut on the job to desired height, the tubes are braced over the footings, and filled with concrete directly from the mixer. Where needed, steel beams or reinforcing bars may be set inside the column



Simple lumber bracing devices will keep the fiber forms aligned as the concrete is poured into them.



before the pouring. After 24 hours the tubing can be removed from the column surface. For this step the manufacturer suggests an old impression modeling trick. Two lengths of .032 wire are taped inside the Sonotubes before the concrete is poured. When the column is ready for stripping, the wires are pulled down and the two halves of the plastic coated forms fall cleanly away. Pourings can be made at angles, and the tubes also may be utilized to create ducts in slab construction for wiring, piping or radiant heating. Sonotubes are fabricated in lengths up



to 24 ft. with diameters of 3 to 24 in. Prices east of the Mississippi for the forms in carload lots (f.o.b. shipping point) range from \$67 per 1,000 ft. for the smallest to \$1,002 for the 24 in. Costs are somewhat lower in the West and in Canada.

Manufacturer: Sonoco Products Co., Hartsville, S. C.

PORTABLE CONVEYOR cuts danger and expense of carrying materials manually.

A workman scaling a ladder with a hod full of bricks is following not only a primitive building practice but a costly one. Field elevators are a luxury for small construction jobs and in large projects are not constantly accessible. The Brik-toter may be one solution to both the backbreaking task in the first problem and to the expense in the second. This 20 ft. long portable conveyor raises materials 10 ft. from ground level (or more, if a platform is built beneath its base—a pile of materials can serve this purpose). It handles cinder block, brick, short lengths of lumber, sand, lime and even glazed tile safely. Although it has a load capacity of over half a ton, the Brik-toter itself weighs 385 lbs. Two men can move it into position. Its bridge type trussed construction and torque frame are said to eliminate twist and sag. Fixed speed of the 12 in. wide vulcanized rubber belt is 60 ft. per min. Tension is adjusted by means of take-up screws and self aligning ball-bearings mounted in the slide. A totally enclosed 1½ h.p. gear motor furnishes the drive for the Brik-toter and a water-

(Continued on page 200)

BETTER Colors **WITH** Premium Quality

BETTER Wear

BETTER Floors

AZPHLEX
ASPHALT TILE

There are four good reasons why Azphlex grease-resistant asphalt tile offers such remarkable qualities:

- 1 **Tremolite Talc**, its mineral filler, is highly stable, and totally resistant to alkalis, acids and other chemicals. It is fine-grained and microscopically fibrous.
- 2 **Asbestos Fiber** used in Azphlex is of the Chrysotile variety, noted for its fine texture, flexibility, strength and resistance to fire.
- 3 **Thermoplastic Binder** is a polystyrene—a scientifically proportioned composition of low molecular weight—which is plasticized with aromatic, petroleum-derived oils and is unaffected by moisture, acids, alkalis, oxidation, etc. Uniformity and perfect blending are assured because the binder is cooked at high temperature in large batches.
- 4 **Color Pigments** used in Azphlex are permanent and alkali resistant.



When you specify grease-resistant, premium-quality Azphlex Asphalt Tile—you can know that you're giving your clients better, longer-lasting floors at lower cost. Get full information and sample tiles from your AZROCK-AZPHLEX Dealer, or write to Dept. A.

UVALDE ROCK ASPHALT CO.

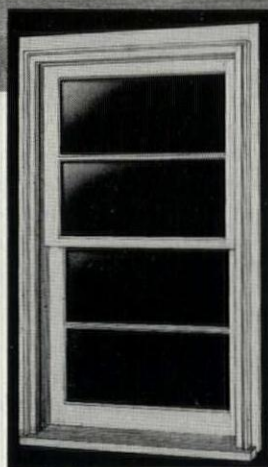
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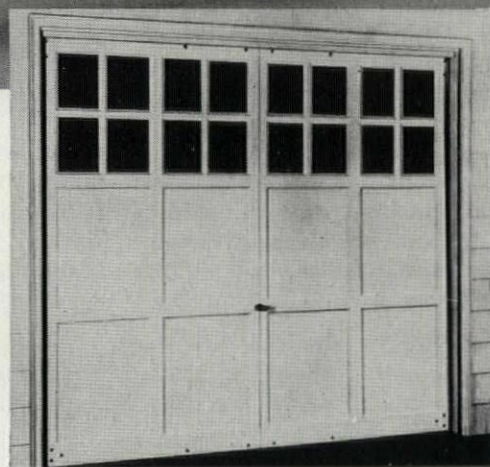


BILT-WELL WOODWORK is installed in "Hanley Hills" Homes, St. Louis, Missouri

Bilt-Well Products used: SUPERIOR WINDOWS, CARR-DOR GARAGE DOORS, BILT-WELL CORNER CABINETS, BILT-WELL COMBINATION DOORS



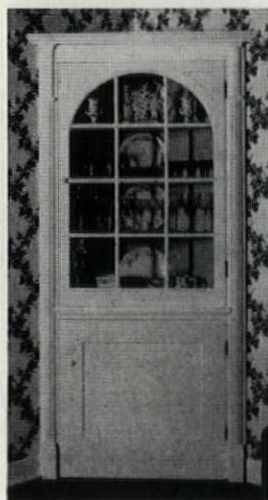
SUPERIOR Unit Windows



CARR-DOR Garage Doors



Center: Mr. Norman Schuermann, Builder
Left: Mr. John D. Adams, Sec. Gen. Mgr., Carr-Adams Mfg. Co.
Right: Mr. Harry M. Murray, Sales Rep., Carr-Adams Mfg. Co.



BILT-WELL Corner Cabinets

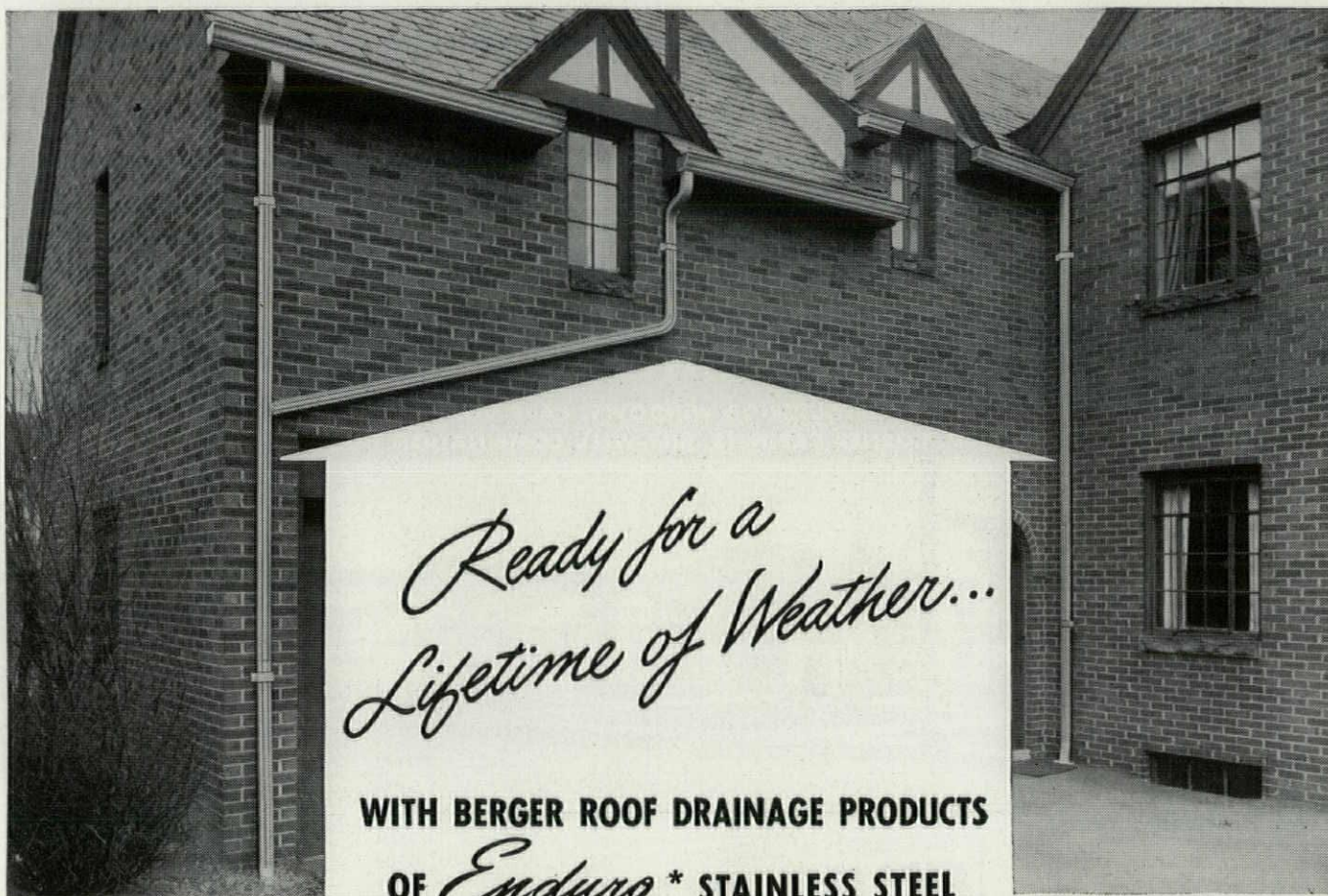
Bilt-Well Woodwork . . . known for over 84 years for its finer quality . . . manufactured of that fine wood, kiln-dried Ponderosa Pine which is scientifically treated to give a lifetime of satisfactory service . . . the choice of discriminating Architects, Dealers, Builders and Homeowners . . . enhancing the value, comfort and convenience of America's Homes. The product of master craftsmen devoting their skill and modern scientific methods to the old art of woodworking.



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North, south, east or west . . . no home escapes the ravages of weather. Roof drainage systems particularly are exposed. But, when made up of weather-resistant Berger Roof Drainage Products of ENDURO Stainless Steel, they can escape the damaging effects of ice, snow, sleet, rain, freezing cold and blistering heat.

Republic ENDURO Stainless Steel "gets along well" with weather . . . and with corrosive industrial atmospheres, too. It does not rust or tarnish . . . retains a soft, natural beauty through the years. Its high strength enables it to

stand up under heavy loads of ice and snow. It withstands severe temperature changes without expansion cracking or buckling. It resists abrasion and denting . . . does not bleed or discolor paint . . . requires little or no maintenance . . . lasts for the life of the building . . . costs your client less in the long run.

Service-wise or price-wise, there's no need today for specifying less satisfactory materials. Build for a lifetime of weather with light, weathertight Berger Roof Drainage Products made of Republic ENDURO Stainless Steel.

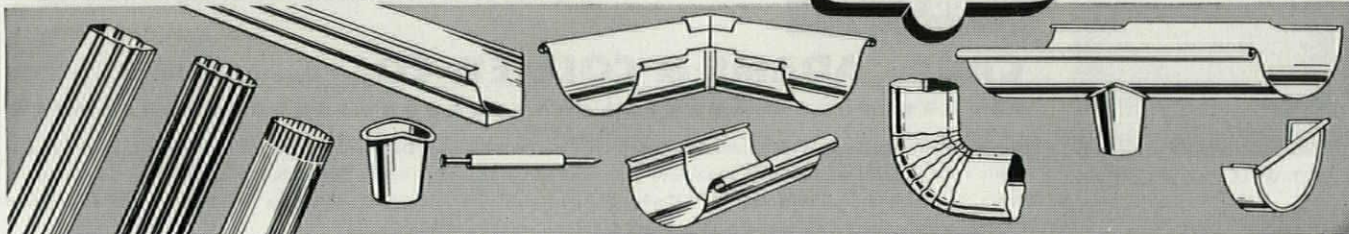
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◀ This illustration shows how this new AllianceWare lavatory complements an AllianceWare porcelain-on-steel bathtub.

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Smart New

WALL-HUNG
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PORCELAIN ON STEEL
LAVATORY



...IN GLEAMING WHITE OR COLOR

YOU'LL agree the moment you see it, this new AllianceWare lavatory is the finest porcelain-on-steel wall hung lavatory ever produced.

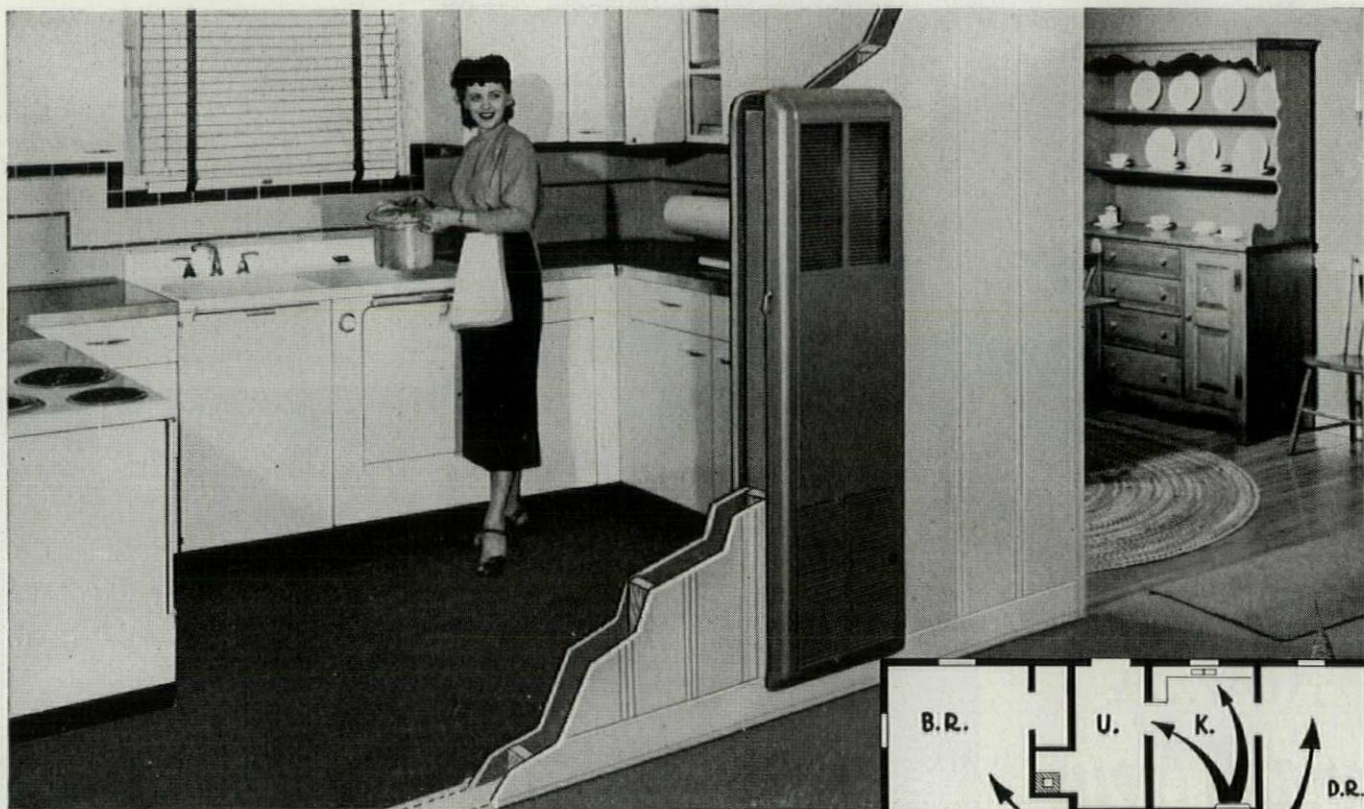
The bowl of this attractively designed shelf-back lavatory is deep and generous in size. The deep apron at sides and front creates a smartness of style in keeping with modern bathroom design. The shelf-back provides convenient space for holding toilet articles. Overall size of lavatory 20" x 18".

ALLIANCEWARE, INC. • Alliance, Ohio
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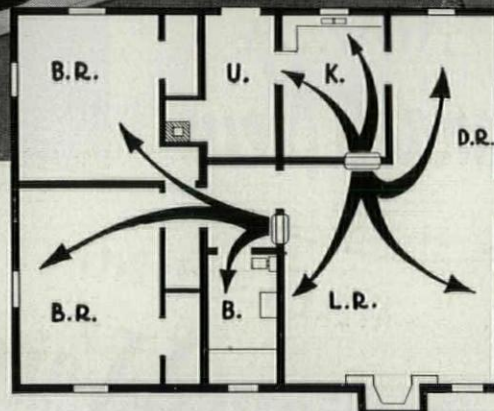
This lavatory is sturdily formed from 14-gauge steel, finished with AllianceWare superior wet-process porcelain enamel (in white or colors) noted for its smooth, chip-resisting, stainproof surface. Wall brackets furnished with each lavatory simplify installation.

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SAVES SPACE, INSTALLS EASILY

The modern heater that fits in the wall between studs. It extends out only 3 $\frac{3}{8}$ inches so takes no living space. Smart, modern style with a smooth, bright, luxurious finish that won't discolor, chip, flake or peel. And won't discolor wall or crack plaster. No ugly pipes show.

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Single Wall Model heats 2 average rooms with 25,000 BTU per hour input rating. Dual Wall Model, set in wall or partition, heats adjoining rooms. BTU per hour input rating 45,000. Separate controls to regulate temperature individually. Send coupon to find out why Coleman Gas Wall Heaters do such a dependable job of heating thoroughly—yet keep costs low.

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Fully automatic—for natural, manufactured and LP-gas. Amazingly fast recovery rate keeps plenty of hot water always on tap. 20-, 30-, 45-gallon capacities. Beautiful gleaming finish. Automatic temperature control and 100% Automatic Safety Shut-off Valve. Send coupon.



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America's leader in home heating

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Dept. AF-664-A, Wichita 1, Kansas

Please send information on:
☐ Coleman Gas Wall Heaters
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Name

Street

City Zone State



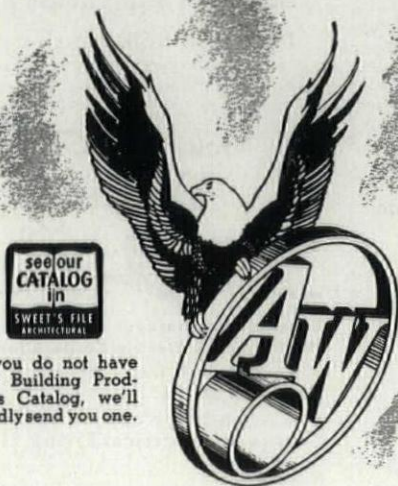
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*One-piece assembled
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Quality Welded Products Since 1918

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fabric wall coverings

for the UN Secretariat

Chosen for the UN Secretariat as for many neighboring structures—and for fine office buildings, hotels, hospitals, schools, apartments and homes nationwide—Wall-Tex has served architects and their clients for over 25 years. Its sturdy fabric base and safely washable finishes make it a wonderful value—a sound investment in wall decoration for every type of building.

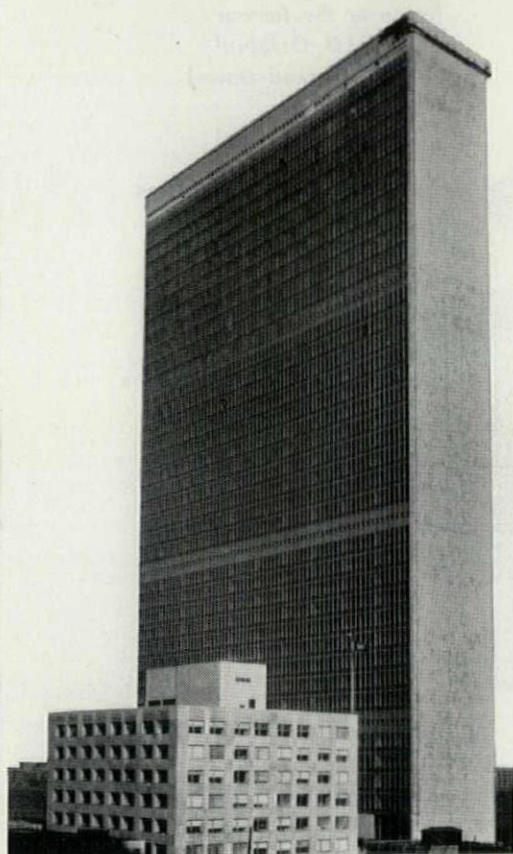


Photo by J. Alex Langley

New Wall-Tex File Folder contains technical information and essential data on Wall-Tex fabric wall coverings. Describes the many types, and includes sample swatches. Free to architects, builders and investment men.

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Dept. AF-110, Columbus, Ohio

Send your new File Folder on Wall-Tex and Sample Swatches.

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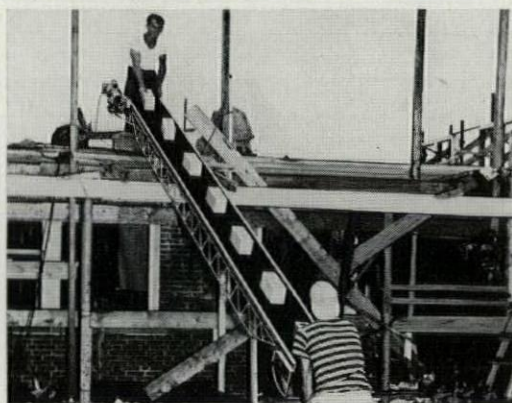
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MAIL
TODAY

PRODUCT NEWS

proof switch puts the conveyor in operation. The manufacturer has test figures showing that



the price of \$595 is more than paid for after 50 hours' use.

Manufacturer: Mar-Rail Conveyor Co., Pawtucket, R. I.

LIGHTWEIGHT ELECTRIC SANDER-POLISHER makes dry wall joints almost invisible.

Shaped for a comfortable grip and weighing just 5 lbs., Dremel's new aluminum housed sander-polisher handles easily, even on long stretches of ceiling finishing. It can be used to prepare surfaces for paint or varnish, to work off rough spots on woodwork and to give a smooth finish to joints in dry wall construction. Because its sanding surface is wider than the taped seams, the Model 2,000 produces a uniform nearly invisible joint. It delivers 14,400 strokes (each about 3/16 in. long) per min. in a reciprocal action which simulates craftsman hand sanding. Abrasive paper is held by cam type clamps and



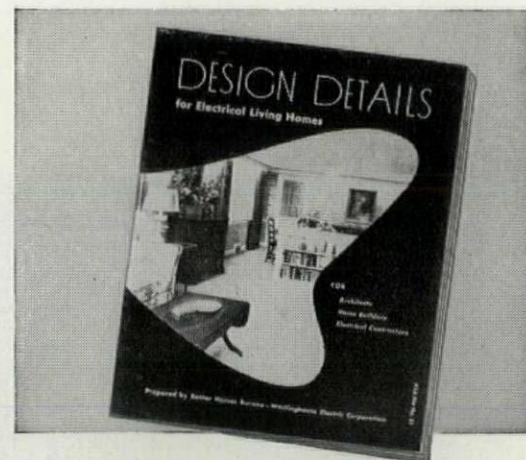
may be changed quickly. The sander will operate from any 110-120 v. 60 cycle AC outlet. Its \$24.50 price includes steel carrying case, 25 sheets of abrasive paper and a sheepskin polishing pad.

Manufacturer: Dremel Mfg. Co., Racine, Wis.

PREHUNG DOOR has jamb which adjusts to any wall thickness.

Assembled on the job in less than 20 minutes, the Redi-Dor jamb-door combination costs little more than a good flush door alone. Its jamb is divided in two sections: one grooved on three sides of the buck, the other tongued. The part of the jamb with door attached is set into one side of the finished wall and the other section in the opposite side. The two sections are then moved together until they hug the wall. An unskilled workman can set up and nail the Redi-Dor in

(Continued on page 206)



A New Book for Architects

The increasing use of electricity throughout the home emphasizes the importance of electrical planning.

To help with your planning, those electrical features that have won wide public approval have been incorporated in this "Design Details" book.

It fills a real need for construction details on valance, cornice, cove, soffit, pinhole spot, under-cabinet and other unusual lighting effects. Kitchen and laundry plans are also shown, as well as essentials of modern wiring. Photographs of actual installations illustrate these planning ideas. Architectural details are accurate and complete. A copy of this book will be sent to you on request to the Better Homes Bureau, Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Penna.

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Two full purpose materials for Toilet Compartments

... By Sanymetal

The development of highly corrosion-resistant steels presented Sanymetal engineers with the basic metal for fabricating Two Full Purpose Materials especially for the construction of toilet compartments. These Two Full Purpose Materials are known as Sanymetal "Tenac" (Baked-On Paint Enamel over Galvanized, Bonderized* Steel) and Sanymetal "Porcena" (Porcelain on Steel). Both of these Two Full Purpose Materials are utilized by Sanymetal in manufacturing these three types of Sanymetal Toilet Compartments (see Catalog ² in Sweet's Architectural File for 1950): ACADEMY TYPE (Overhead Braced); NORMANDIE TYPE (Floor Supported); CENTURY TYPE (Ceiling Hung) illustrated.

Ask the Sanymetal representative in your vicinity (see "Partitions" in your phone book for local representative) for samples of these Two Full Purpose Materials. They will help you to simplify toilet compartment specification.

This is Sanymetal "PORCENA" (Porcelain on Steel)

Sanymetal "Porcena" (Porcelain on Steel) is impervious to moisture, odors, cleaning and uric acids, oils and grease. It is rust proof. The flint-hard, glass-smooth surface is resistant to scratching, scouring, scrubbing and scribbling or defacement. It is an ageless and fadeless material that greatly reduces the cost of cleaning and maintenance. It has no equal for strength and durability. This Full Purpose Material presents a correct combination of the desirable qualities of the hardness of glass and the natural structural strength of steel. Sanymetal "Porcena" (Porcelain on Steel) is incomparable with any other finish or metal base material. It is available in 21 different colors.

This is Sanymetal "TENAC"

(Baked-On Paint Enamel over Galvanized, Bonderized* Steel)

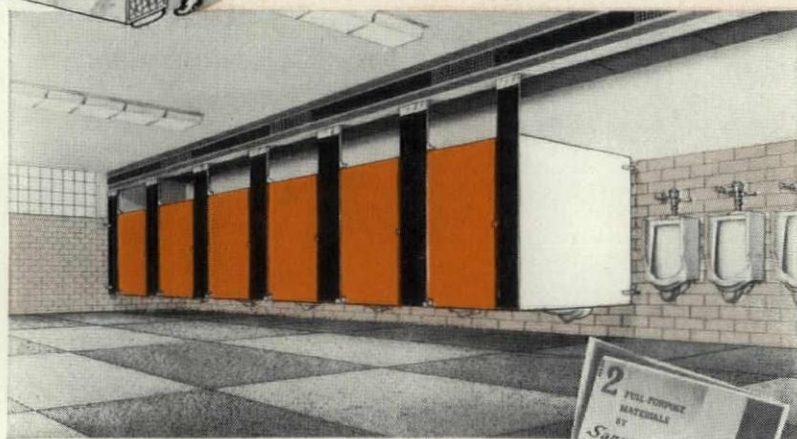
This Full Purpose Material is notable for the positive adhesion of the baked-on paint enamel to the metal and its resistance to corrosion. The basic metal or sheet of steel is first given the protection of a galvanized coating. Then it is treated with Bonderite* which provides a protective coating that grips the paint enamel finish. Then this galvanized, Bonderized* steel is given a primer coat of paint enamel which helps to assure smooth finish and adds more protection. The final finishing coat of baked-on paint enamel gives a perfectly smooth, lustrous, protective finish. Available in 21 different colors. This material offers colorful attractiveness, combined with low maintenance cost and long-lasting newness.

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STALLS AND DRESSING ROOMS BY

Sanymetal*

*Trade Mark Reg. U. S. Pat. Off.

*Treated with "Bonderite", a product of Parker Rust Proof Co.



Sanymetal CENTURY Type Ceiling Hung Toilet Compartments offer the utmost in sanitation and provide modern, distinctive toilet room environments for schools, institutions, terminals and all other public buildings.

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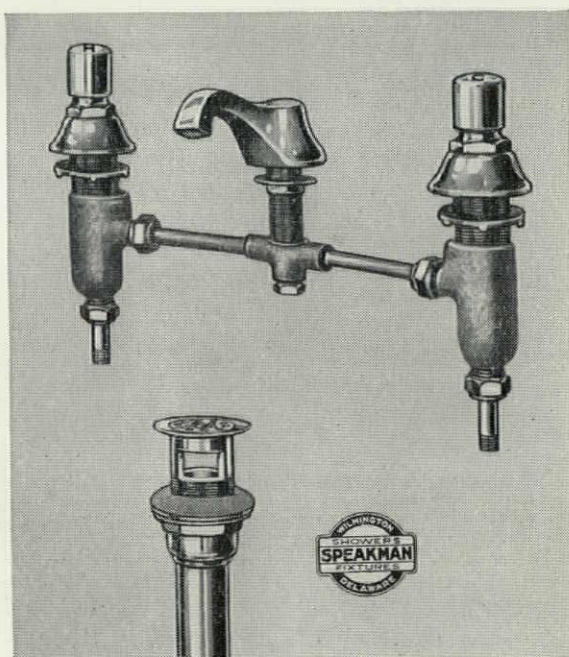
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No Rumble...**

**Only
ONE
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Part**



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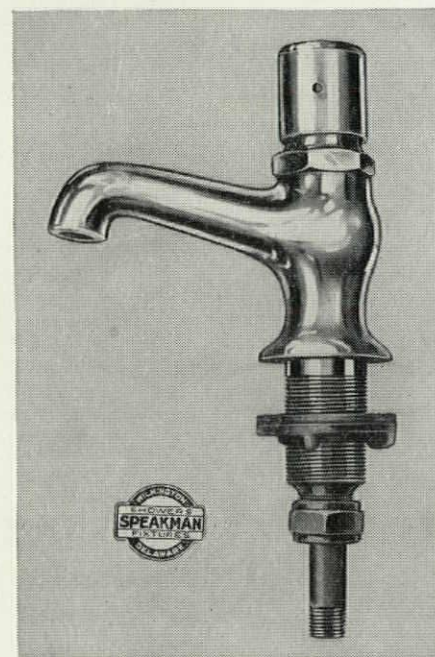
SPEAKMAN SELF-CLOSING METERING FIXTURES



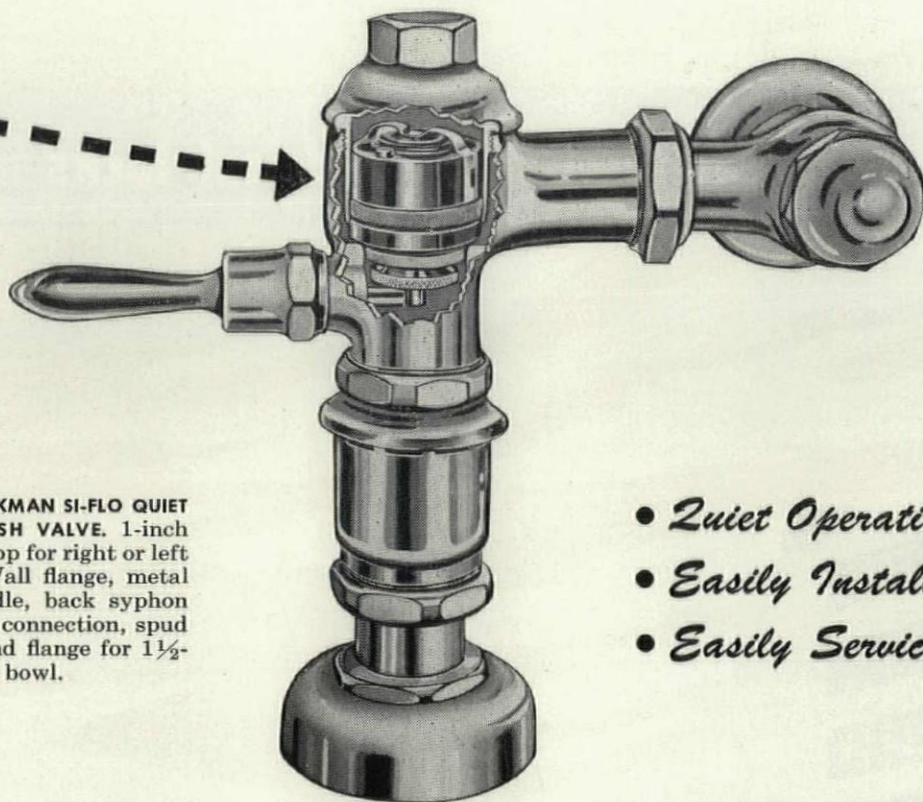
S-4170 — Combination Push-Button Metering Lavatory Fixture. Permits washing in running tempered water.

S-4320 — Push-Button Metering Basin Faucet — for single or separate faucet installations.

These fixtures can be regulated to meter water volume from a "dash" to 1½ gals. per valve—non-hammering, non-dripping, non-clogging renewable unit.



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- *Easily Installed*
- *Easily Serviced*

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SI-FLO—the original quiet operating flush valve—the valve that has made architects, engineers, plumbers and owners *quiet-conscious* in bathroom construction today. Three big advantages recommend *Si-Flo* for economical installation and long-service life in hotels, hospitals, schools, institutions, apartment houses and homes.

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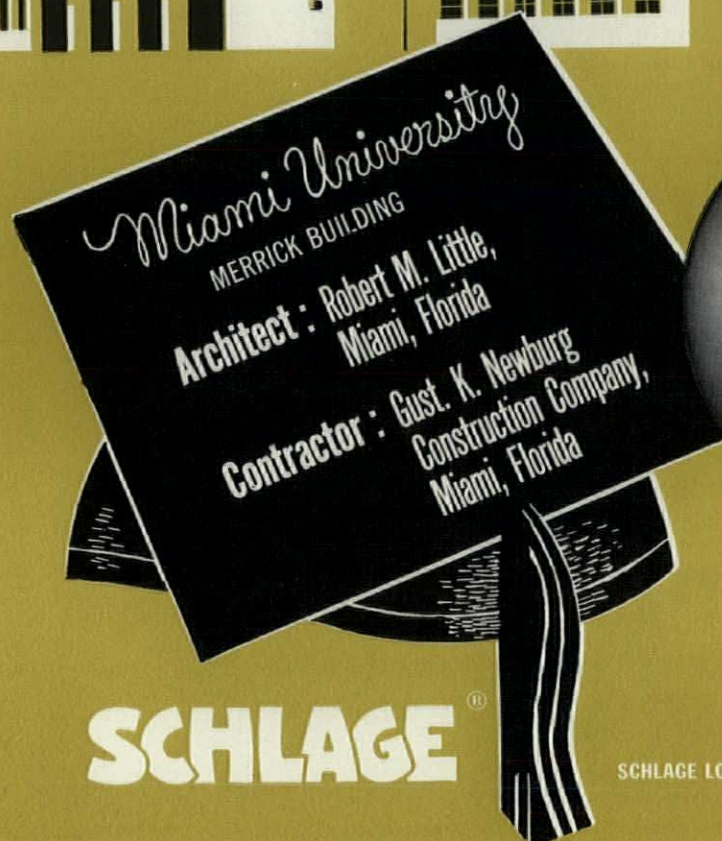


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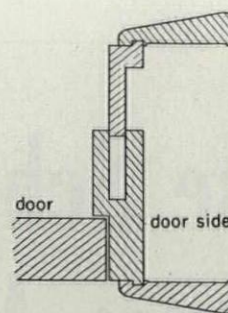
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New York 17, N. Y.

PRODUCT NEWS

place easily without refitting, plaster scraping, etc. All miters in the unit's construction are glued and doweled. Hinges on jamb are metal screw fastened to metal plates on back of jamb. Concealed shoes on bottom ends of the jamb hold it in position. Jamb and trim (smooth or Colonial style) are furnished in pine or whitewood, kiln dried to 8 to 10 per cent moisture. Paint grade flush doors are made of cativa, gum or whitewood, and stain grade of selected birch or cativa. One or two panel fir and hemlock doors

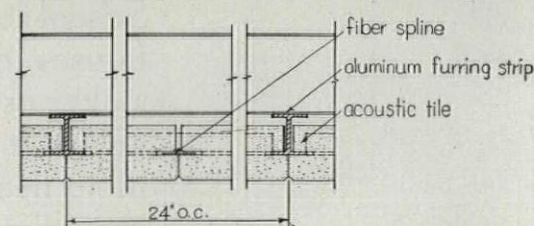


A tongued section of the door jamb slips into the grooved portion as the two are fitted together.

are also available. Standard widths range from 18 to 32 in. in 2 in. multiples. All are 6 ft. 8 in. high and 1 3/8 in. thick. Prices—which include hardware suitable for bedroom, bathroom or closet—range from \$25.94 for the 18 in. width in quantities of 50 or more to \$29.96 for the 32 in. Manufacturer: Wm. R. Lutze Co., 18 Bergen St., Brooklyn, N. Y.

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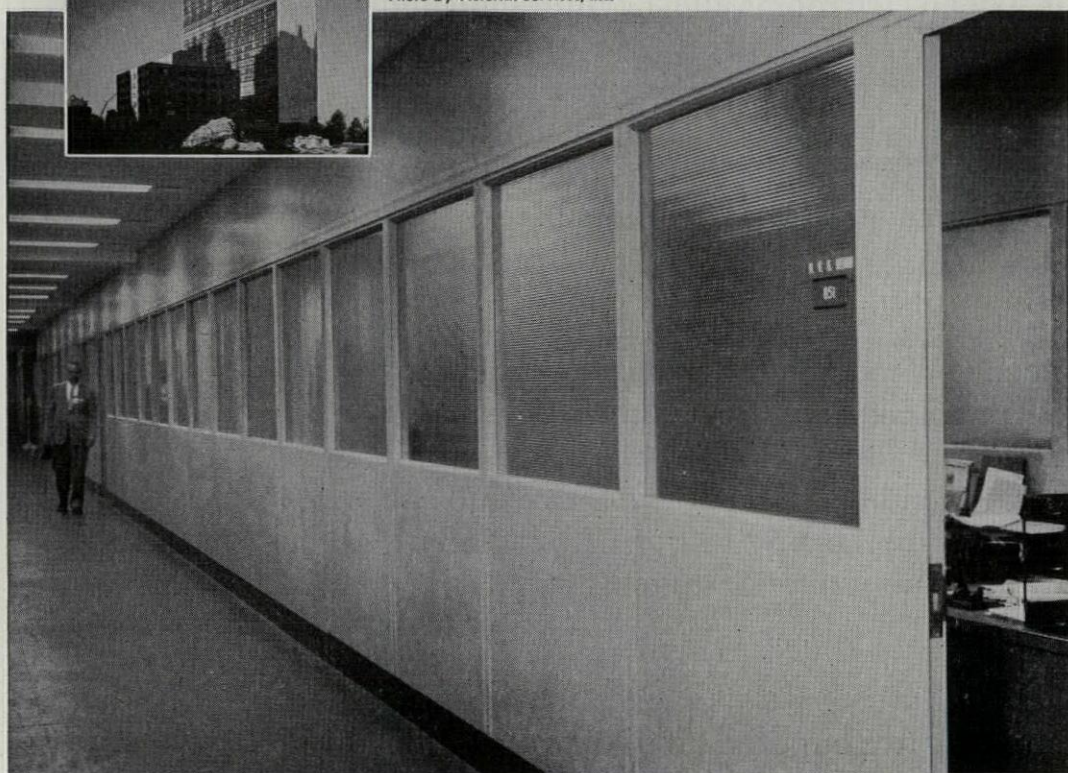
runner. Each tile is thus rigidly supported by an I runner flange and two reinforcement T spline flanges, yet may be removed easily at any time for access to area above. Tiles 12 x 24 in. are applied with the long dimension parallel to the runner. Erection costs are about 10 cents per sq. ft. for labor, 9 1/2 cents per sq. ft. for materials exclusive of tile.

Manufacturer: Midwest Acoustical & Supply Co., 1151 W. 69th St., Cleveland 2, Ohio.

(Continued on page 214)

PARTITIONS GLAZED with PLURALITE GLASS BRIGHTEN and BEAUTIFY INTERIOR of UN SECRETARIAT BUILDING

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Architect, Harrison & Abramovitz
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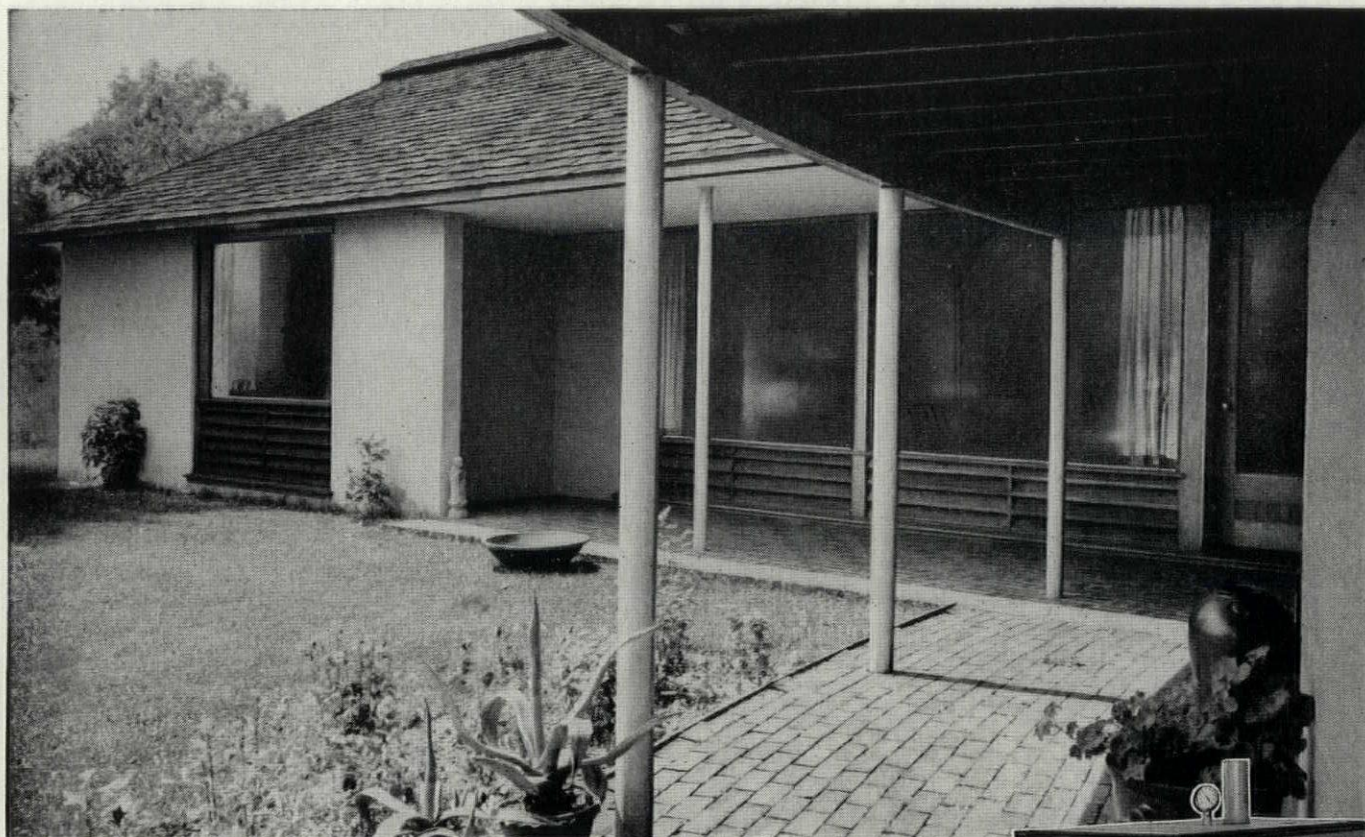
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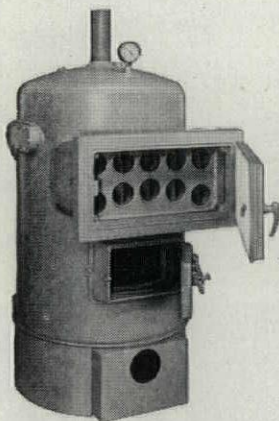


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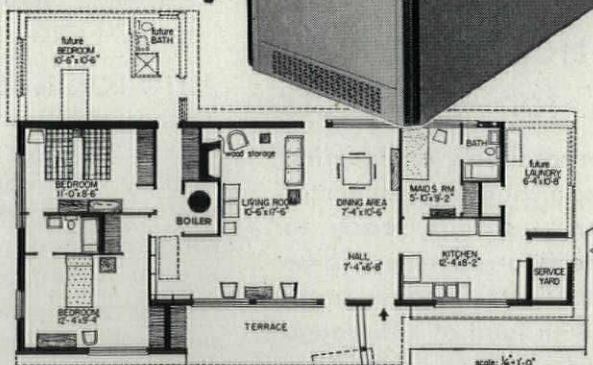
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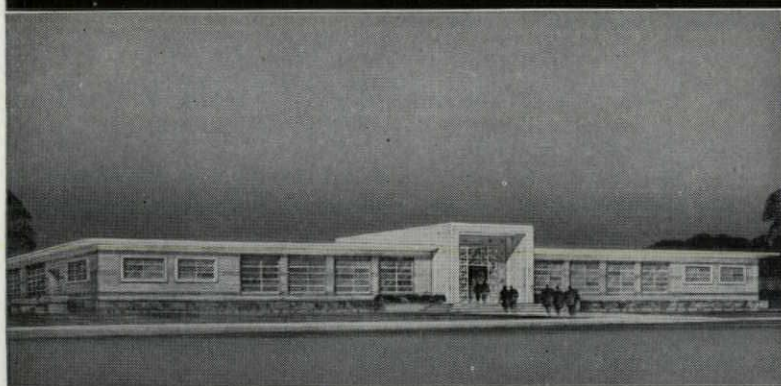
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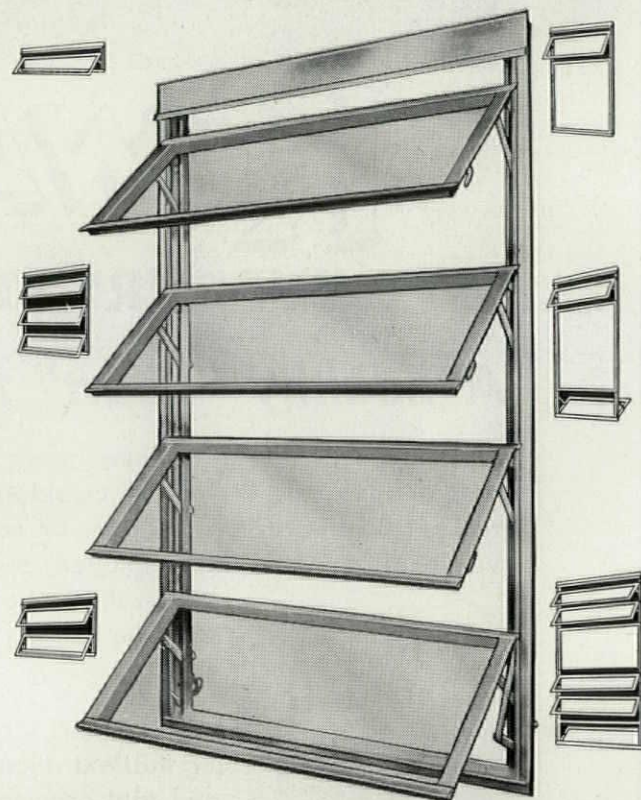
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Left -- Jacksonville, Fla., Junior College -- Arch. Kemp, Bunch & Jackson, Jacksonville; General Contractors: A. D. Newkirk & Son Construction Co., Jacksonville.
Right -- Residence of Mr. & Mrs. Ralph Smith, Toledo, Ohio -- R. B. Johns Co., Toledo, Designer and Builder.

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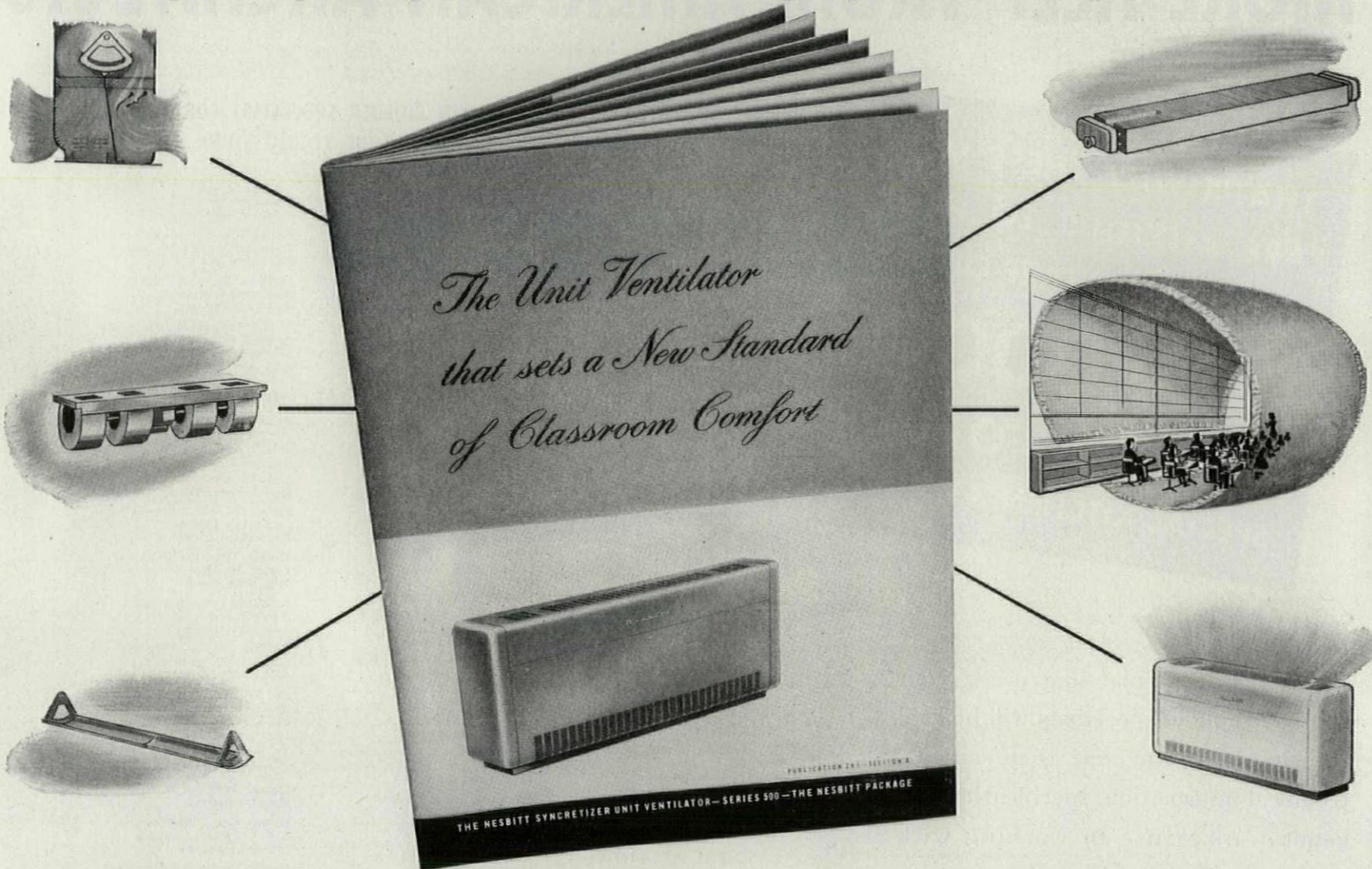
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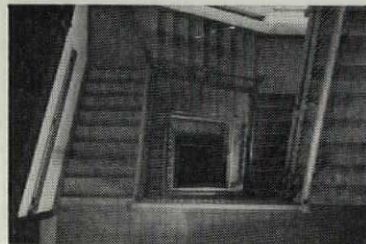
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CEMENT FLOOR AGGREGATE

Incorporated in cement or asphalt floor in proper proportion, it reinforces the cement and increases durability several times. Used in cafeterias and washrooms.



CERAMIC MOSAIC TILE

Provides non-slip protection for attractive mosaic floors around swimming pools, in shower and washrooms, and around the counters in cafeterias.

NORTON COMPANY

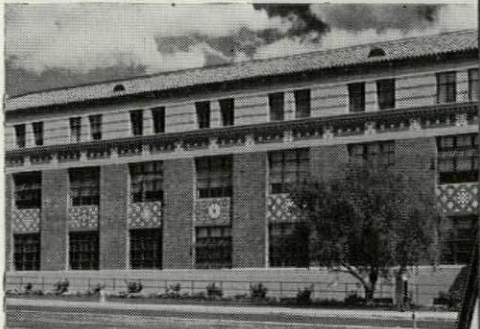


WORCESTER 6, MASS.

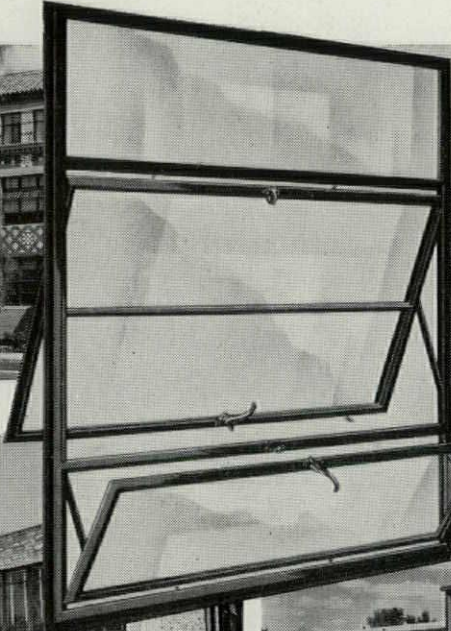


TRUSCON
Intermediate
Projected
STEEL
WINDOWS

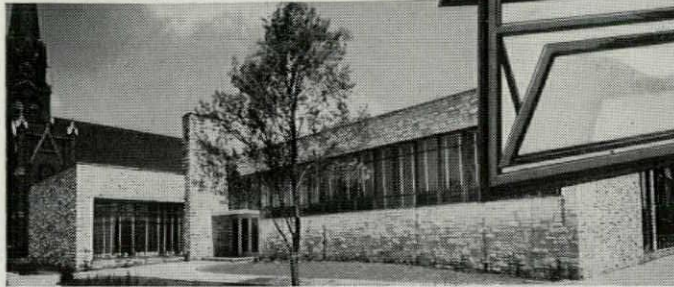
free *light*...



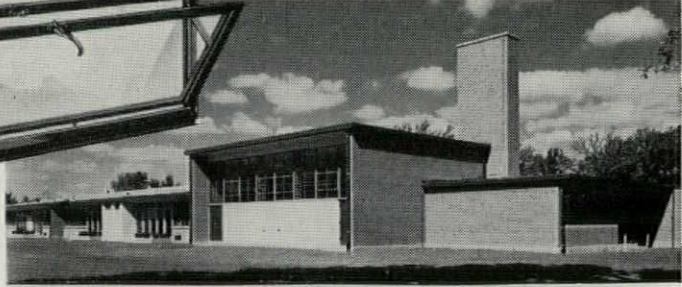
University of California, Los Angeles, California
Austin, Field & Fry, Architect; Jas. I. Barnes
Construction Co., Contractors



Penn Township Junior High School, Allegheny Co., Pa.
Joseph Hoover, Architect; Clement Martin, Inc., Contr.



South Chicago Library, So. Chicago, Illinois; Paul Gerhardt, Jr., Architect
Charles B. Johnson & Sons, Contractor



Deerfield School, Deerfield, Illinois; Perkin & Will, Architect & Engineer
Chell & Anderson, Contractor

free *air*...low maintenance

Generous glass areas admit a flood of nature's free sunlight, and permit economical, controlled room lighting. Outward projecting, rain deflecting ventilators may be kept open during inclement weather. Inward projecting ventilators prevent drafts by directing air currents toward ceiling. Exterior glass surfaces can be washed from room-side. Rigidity in even the largest ventilators is assured by a heavy one-piece casement-type vent frame section; electrically welded at the four corners. A wide range of types and sizes available, to achieve any architectural effect desired. Screens and shades easily attached. Illustrated literature giving complete details on request.



FREE Book on Truscon Steel Windows. Write for it. The Truscon Steel Company Manufactures a Complete Line of Steel Windows and Mechanical Operators... Steel Joists... Metal Lath... Steeldeck Roofs... Reinforcing Steel... Industrial Steel Doors... Coal Chute Doors... Steel Lintels... Concrete Reinforcing Bars... Welded Steel Fabric.

TRUSCON STEEL COMPANY

Subsidiary of Republic Steel Corporation

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Warehouses and sales offices in principal cities



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NATIONAL GYPSUM COMPANY • BUFFALO 2, N. Y.

Lath, Plaster, Lime, Sheathing, Wall Paint, Rock Wool Insulation, Metal Lath, Sound Control Products, Fireproof Wallboards and Decorative Insulation Boards.

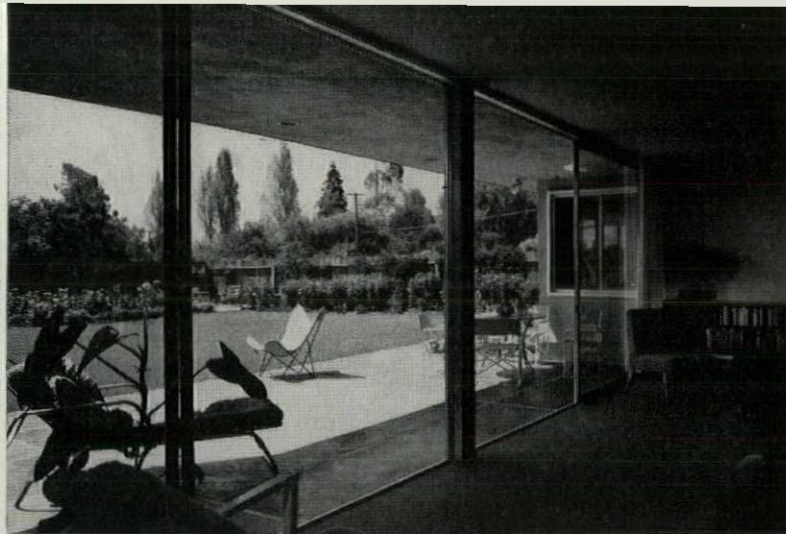
**You'll build or
remodel better with**

Gold Bond

PRODUCT NEWS

ALUMINUM WINDOWS AND DOORS slide open sideways.

Trim corrosion-resistant aluminum extrusions are used in the frame and sash of these handsome horizontally-operating windows and doors. Packaged complete with stainless steel weather stripping, standard hardware which locks automatically, neoprene stripping and aluminum glazing beads, the Glide units are available for single glazing, 1/2 in. and 1 in. double glazing. They are



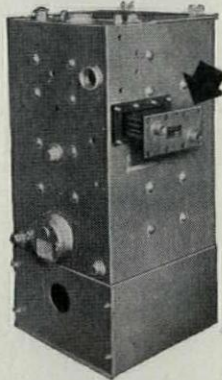
Tailor sized to individual design requirements, these horizontal sliding windows are adaptable to many types of residences.

*The boiler that
has boosted
small home
heating standards*

FITZGIBBONS '200' SERIES

Year-'round HOT-WATER

Arrow points to full-size TANK-SAVER® which provides instant hot water for domestic needs.



Architects, builders, development owners everywhere recognize that the new "200" Series steel boiler in basement or utility room is a powerful sales aid for the small home. Here's what it offers:

- Moderate price, without sacrifice of Fitzgibbons quality —
- Outstanding fuel economy —
- A.S.M.E. Code stamped construction, backed up by "Hartford" inspection after hydrostatic test. S.B.I. rating, too.
- Beautifully enameled silver and green jacket, with full blanket insulation.

Get the full story — mail the coupon.



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MEMBER



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Fitzgibbons Boiler Company, Inc.

101 Park Avenue, New York 17, N. Y.

Send me the "200" Series Catalog.

Name: Position:

Address:

City: Zone: State:

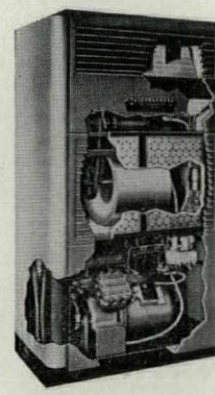
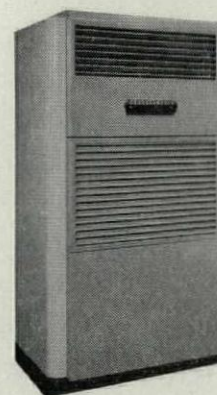
AF-11-50

made in any combination of fixed and vent sections and are built to the architect's required size up to maximum heights of 6 ft. 4 in. for windows and 10 ft. for doors, (providing the sliding sash is not less than 1/3 the height for proper balance). Moving panels, which operate on sealed ball-bearing rollers, can be designed to slide behind fixed panels of glass or into wall pockets. These sliding panels lift out easily from the inside for cleaning. A 6 x 4 ft. window sells for \$74 (not including glass) and an 8 x 5 ft. for \$98. Price for a 6 x 6 ft. 10 in. door is \$153 and for a 10 x 8 ft., \$227. The units' satin finish is protected with a wax coating and, if desired, anodizing is also provided. Screens of 16 mesh aluminum are made with simple clip attachments.

Manufacturer: Glide Windows, Inc., 228 N. Front St., Burbank, Calif.

SELF-CONTAINED AIR CONDITIONER is adaptable to commercial and home use.

To be placed in service, Unitaire air conditioners require only drain, water and electrical connections. These factory packaged units are made in three sizes: 2, 3 and 5 h.p. with respective cooling capacities of 24,000, 36,000 and 60,000 Btu per hr. They may be utilized for conditioning air in homes, stores or offices during winter as well as summer by addition of either steam or water heating coils and an outside air duct connection for ventilation air supply. Where attachment to ducts is desired, a return air connection is provided in place of the center rear panel. Each conditioner has a hermetically



sealed Freon 12 compressor, water cooled condenser, direct expansion coil with copper tubes staggered for maximum rate of heat transfer, and large capacity centrifugal fan. A welded steel frame supports all components of the

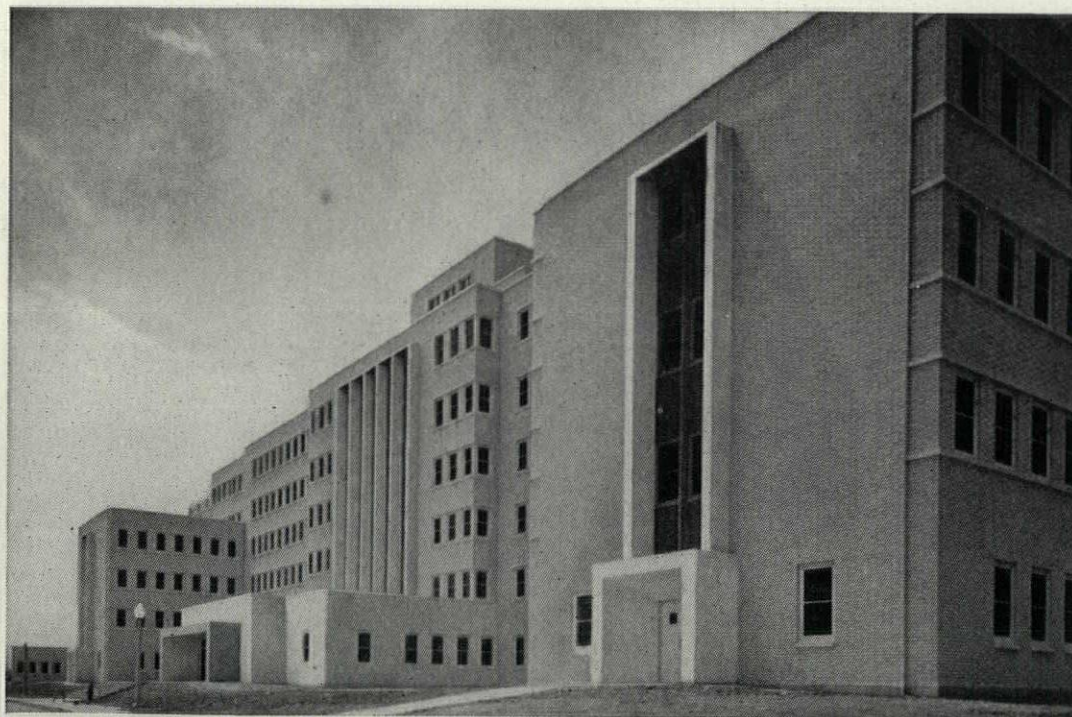
(Continued on page 222)

Architect-engineer
 WYATT C. HEDRICK

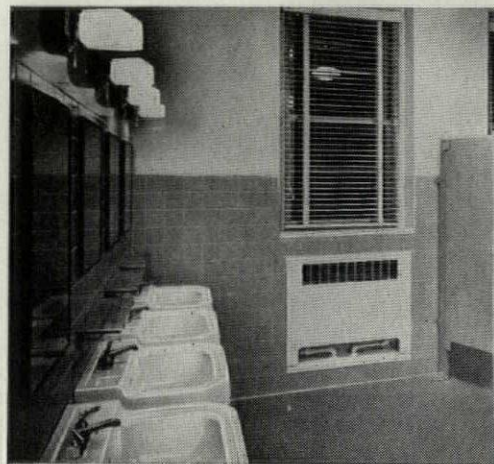
General Contractor
 ROBERT E. MCKEE

Plumbing Distributor
 SOUTHLAND SUPPLY CO., DALLAS

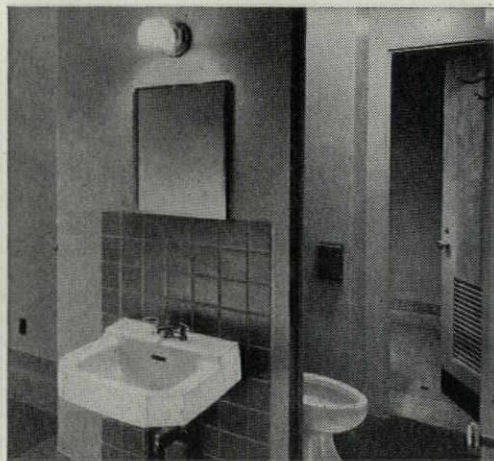
Plumbing Contractor
 FARWELL COMPANY, INC., DALLAS



KOHLER PLUMBING FIXTURES IN BIG SPRING, TEXAS VETERANS' HOSPITAL



Washrooms showing Kohler Chesapeake vitreous china lavatories, K-1745-C, with Centra chromium-plated brass fittings.



Like numerous other hospitals throughout the nation, the new U. S. Veterans' Hospital, Big Spring, Texas, which has 7 auxiliary buildings, 250 beds, is equipped with Kohler plumbing fixtures.

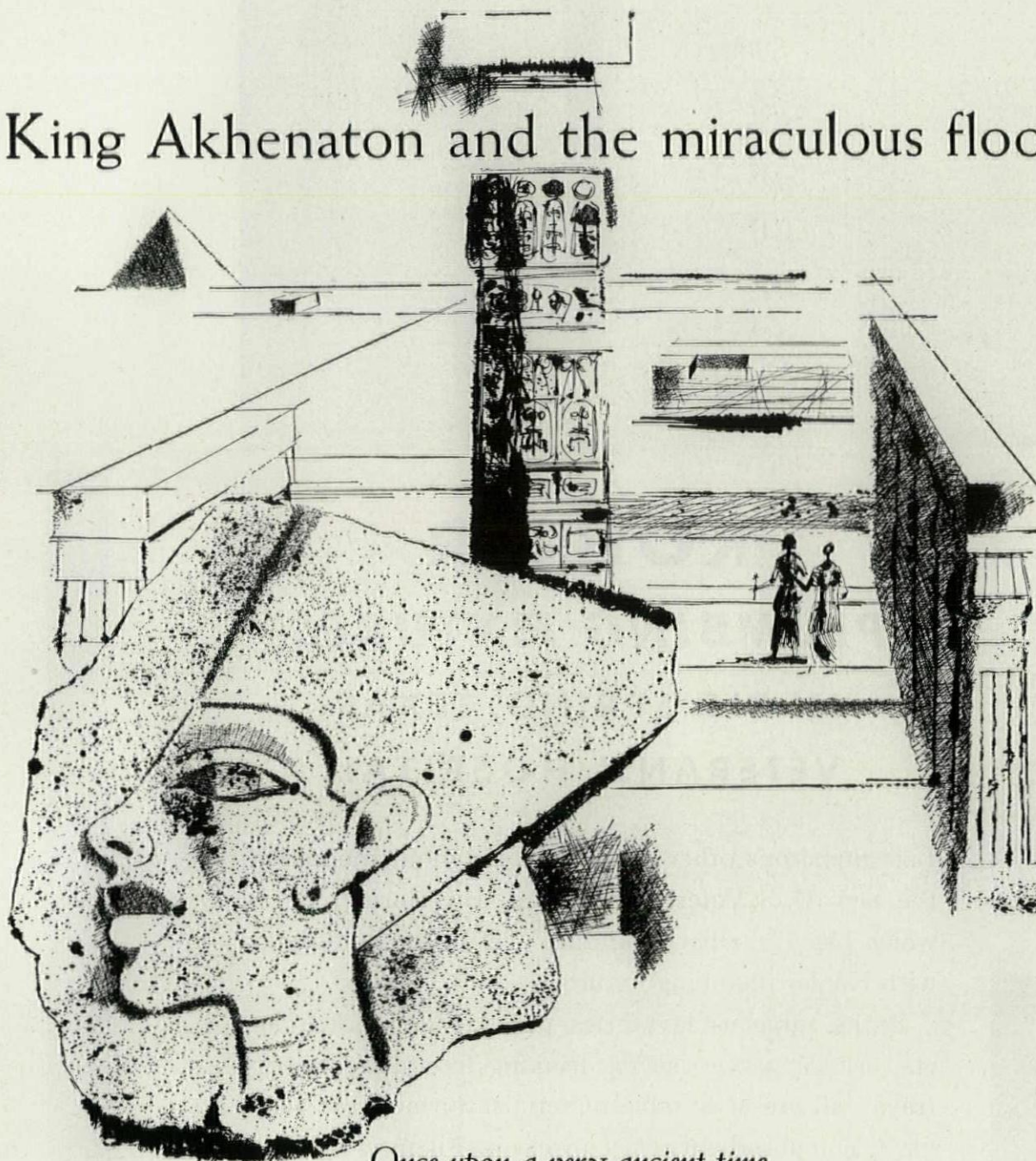
Baths, surgeons' lavatories, patients' lavatories, closets, urinals, service sinks, drinking fountains, laundry trays—all are of durable materials. Surfaces are glass-hard, non-absorbent, easy to clean. Fittings are engineered for efficient service, safety and economical maintenance. Fixtures and fittings conform to plumbing codes of all states. Send for full information.

Kohler Co., Kohler, Wisconsin. Established 1873.

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS • AIR-COOLED ENGINES

King Akhenaton and the miraculous floor



Once upon a very ancient time,

lived King Akhenaton of Egypt... a king most difficult to please. Akhenaton,

however, delighted in the large plaster panels that formed the palace walls. Delighted in the Nilotic plants and birds that brought the smooth plaster surfaces to life.

One day, someone bethought, "The plaster walls delight the King. Why not plaster also the floors of his Tell el-Amarna palace?" And it was done. Miraculous, their beauty...

Miraculous, too, how they withstood the ravage of time! And, no less miraculous, the vast improvements in plastered walls and ceilings wrought by 20th Century

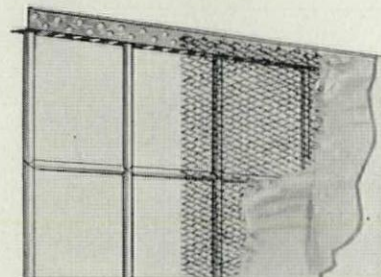
research. For example, from United States Gypsum have come new flexibility, fire protection, beauty and long life to meet modern requirements for partitions

—in RED TOP* plaster and U.S.G. plastering systems *to be sure!*

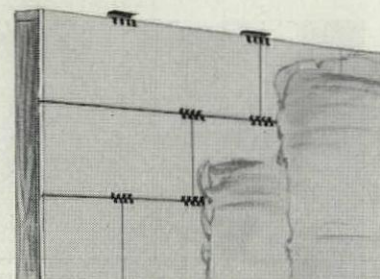
Make sure your plastering specifications call for...

USG

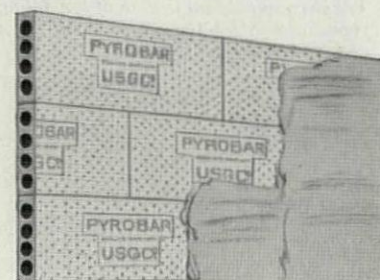
Products and Systems



For space saving and economy, specify 2" solid partitions of COLOR-RITE metal lath and plaster, or Solid ROCKLATH* plaster base and plaster. Each saves up to 5% total floor area! Furthermore, these partition systems offer similar economies in cost, are lightweight and fire resistant.



For sound reduction between rooms, specify from a wide variety of USG sound reduction systems—including ROCKLATH or COLOR-RITE metal lath suspended on USG* Resilient Clips over wood studs, over USG TRUSSTEEL* Studs or over masonry (PYROBAR* tile, clay tile, cinder block).



For greater fire protection, consider PYROBAR and plaster for non-load-bearing partitions. Fire test rating is 4 hrs. when 4" x 12" x 30" Hollow PYROBAR is plastered on two sides. 30% to 50% lighter weight than other masonry partitions of like thickness. Provides excellent gypsum plaster bond. Low material cost. Large units lay quickly into wall. Fewer joints save mortar. Ease of cutting reduces waste.

...

For technical details on these USG products and systems and other USG building materials, consult Sweet's Catalogs or your A.I.A. files. For further information, contact your U.S.G. representative, or write...



United States Gypsum

Chicago 6, Illinois

Specify: USG Plastering Products and Systems... To Be Sure

*T. M. Reg. U.S. Pat. Off.



Manufactured under
U. S. Patents Nos. 2182877, 2237531, 2271710

NEW JOBS FOR YOU— Waterproofing Spandrel Beams by REVERE-SIMPLEX REGLET SYSTEM

● The Revere-Simplex Reglet System is an economical and efficient method of flashing spandrel beams and column faces with enduring copper. This system offers the following advantages:

Affords greater moisture protection for the building.

Eliminates the necessity of flashing the entire face of each spandrel beam. In that way, it not only avoids interference with wall ties, stone anchors, angle bolts, etc., but also insures substantial economies through a large saving in flashing material.

Diverts all seepage to the exterior wall face, and prevents rusting of the steel work.

Is based upon the use of the Revere-Simplex Reglet, which is a simple, practical, easily installed receiving device for securing metal flashings in concrete. This patented reglet provides a permanent watertight connection between concrete and copper flashing, for all concrete surfaces.

The Revere-Simplex Reglet not only overcomes installation difficulties experienced with ordinary "open slot" metal reglets, but provides a substantial saving in cost as well. This is due to its many exclusive features, all of which cut down installation time and insure a superior flashing installation.

Write today for your copy of the new 6-page folder which describes the Revere-Simplex Reglet System for flashing spandrel beams. You can line up *new jobs*—make *new profits*—through the use of this new Revere product that enables you to bid competitively against mopped-on waterproofing!

Revere products now available through your Revere Distributor include: Sheet and Roll Copper for roofing, gutters, flashing, etc.; Lead-Coated Copper; Revere-Keystone Thru-Wall Flashing; Revere-Simplex Reglet and Reglet Insert Flashing; Revere-Keystone Vertical Ribbed Siding. A Revere Technical Advisor will always be glad to consult with you without obligation.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

*Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; Los Angeles and
Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.*

Copper Makes Common Sense

How you can build *Thermopane* for EXTRA VALUE at LOW COST

Read how it is being done by Russell Benjamin and other building developers

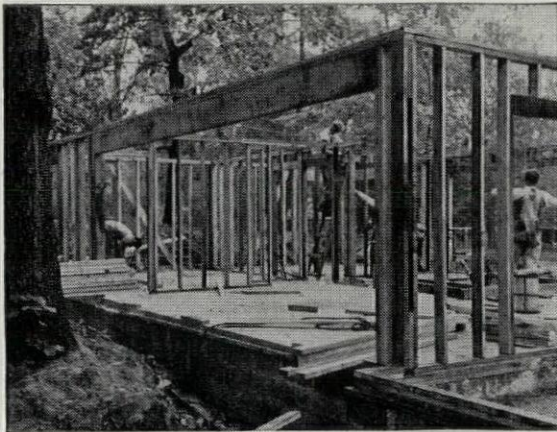
Builder Russell Benjamin and Architect Herman York recognized the appeal of big window areas when they planned the homes for Lyle Forest, Tenafly, New Jersey. They recognized the need for *insulating* those big windows for comfort and full use of floor space in winter. They recognized, too, that *Thermopane** is the insulating glass that people *know* and *want*.

And so they worked out a method of *Thermopane* window wall construction which is comparable in cost to standard wall construction with conventional windows. The secret lies in working with standard *Thermopane* sizes and in the way the

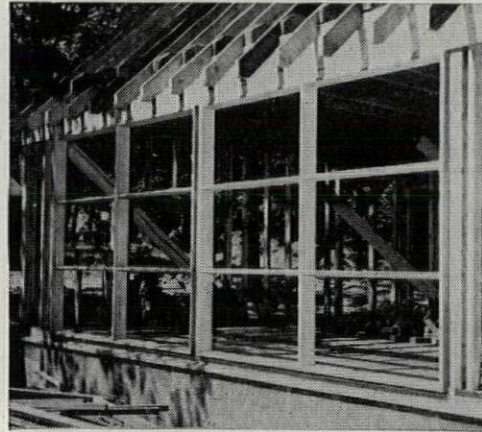
2 x 6's are routed and joined for framing. They used DSA *Thermopane* 1/2" thick with 1/4" air space between the two panes.

This adds a *lot* of extra value—the appeal of window walls that bring in the outdoors—plus attractive design, extra comfort and fuel saving. We thought you'd want to know about it. The pictures shown here give the basic steps. By mailing the coupon you can get the whole story—including detail drawings that will enable you to duplicate this low-cost method of building extra sales appeal into houses.

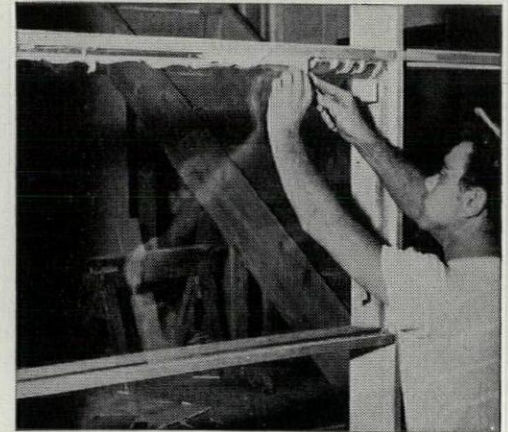
Thermopane is made in plate glass and in DSA—in more than 80 standard sizes, as well as special sizes, so you can use it in all kinds of windows. *®



1. Window wall header and uprights in position to receive the window wall frame of specially rabbeted 2 x 6's. (Framing details available—mail coupon.)



2. Window wall frame nailed into place, ready for insertion of either standard 45 1/2" x 25 1/2" *Thermopane* units or aluminum projected-type windows of like size.

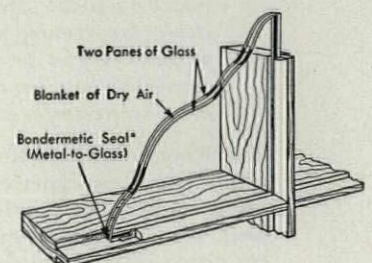


3. *Thermopane* unit in place. Frame has received a bed of glazing compound before insertion of the unit. Workman is filling voids prior to installation of wood stops.

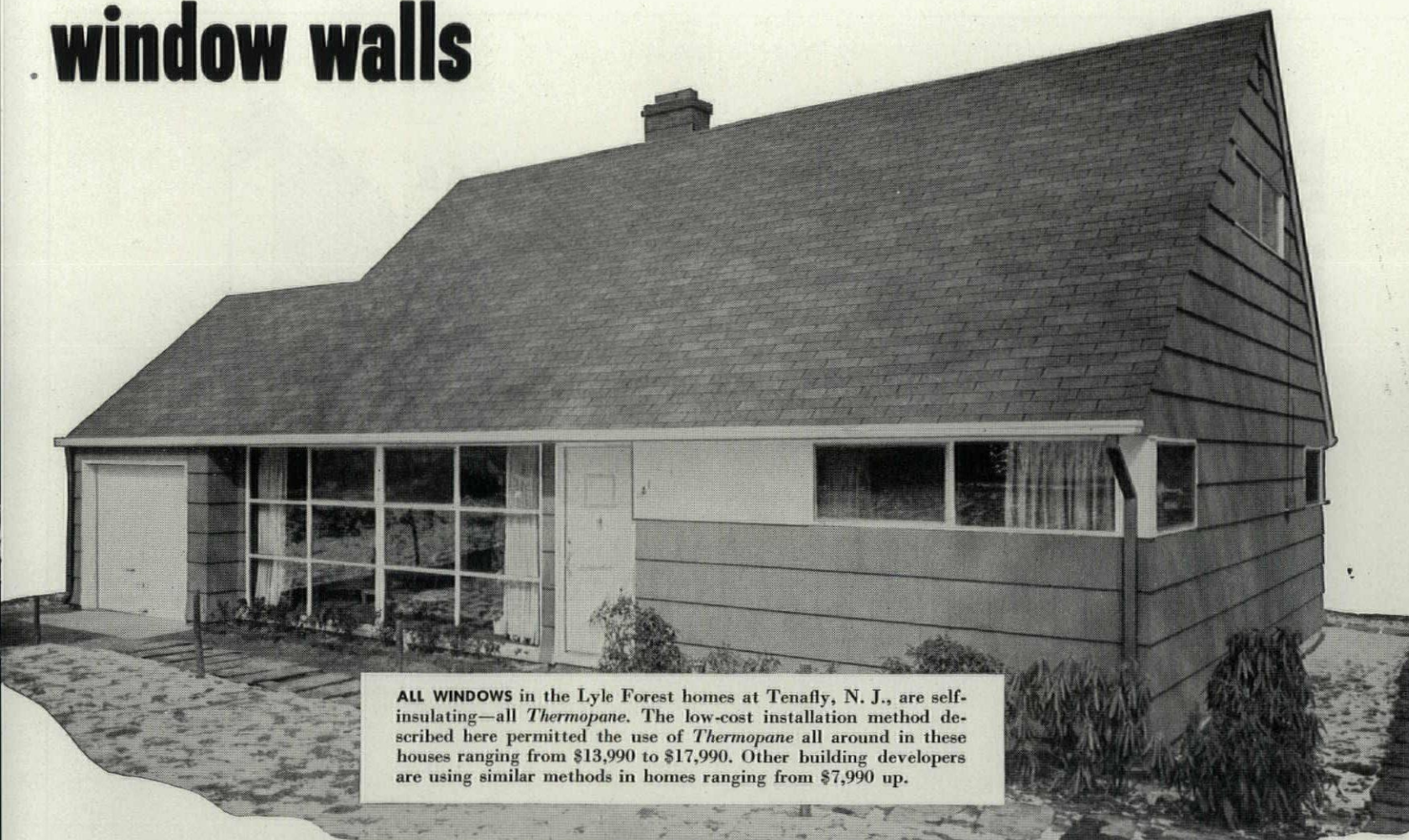


Thermopane

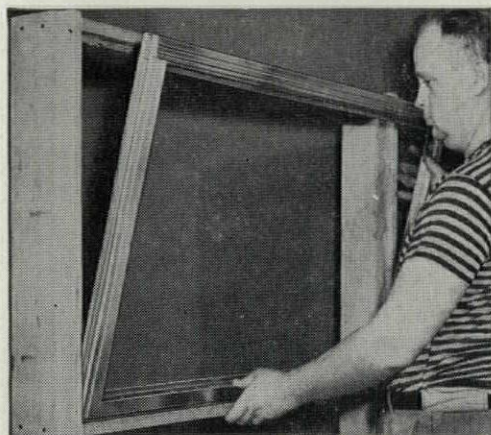
MADE ONLY BY LIBBEY-OWENS-FORD GLASS COMPANY
37115 Nicholas Building, Toledo 3, Ohio



window walls



ALL WINDOWS in the Lyle Forest homes at Tenafly, N. J., are self-insulating—all *Thermopane*. The low-cost installation method described here permitted the use of *Thermopane* all around in these houses ranging from \$13,990 to \$17,990. Other building developers are using similar methods in homes ranging from \$7,990 up.



4. Aluminum ventilators of projected type are inserted into openings of wood frame in a bed of glazing compound. Wood screws hold them in place.



5. *Thermopane* (standard 42½" x 22½" unit) is installed in aluminum ventilators as in any other face-glazed metal sash. Aluminum screen is installed from inside.

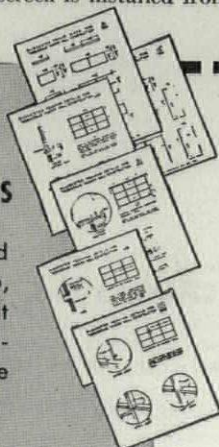


6. Final result, a sales-appealing window wall that makes the living room seem larger by being opened to the outdoors. *Thermopane's* insulation assures comfort in winter.

SEND FOR FULL INFORMATION...

Mail the Coupon... FREE DETAIL SHEETS

We will be glad to provide full details on framing and glazing of the window wall described here. Also, information on the ways other builders have built *Thermopane* window walls at low cost. Get the information now—it's a smart way to provide more house for the money.



Libbey-Owens-Ford Glass Company
37115 Nicholas Bldg., Toledo 3, Ohio

Please give me complete information on installation methods for low-cost window walls of *Thermopane*.

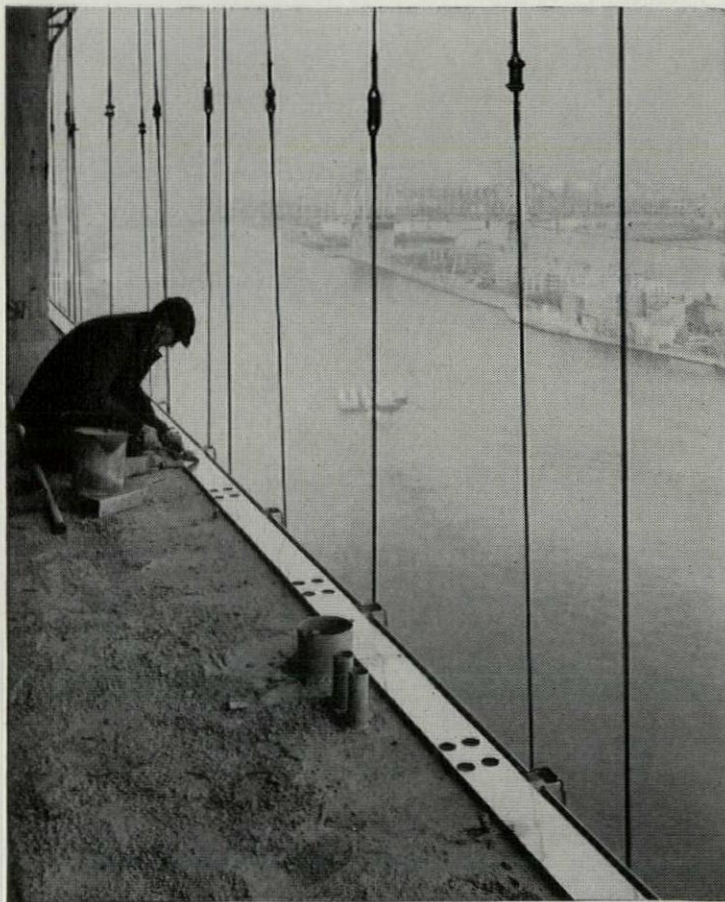
Name _____

Address _____

I am planning to build _____ houses in next 12 months

in \$ _____ class.

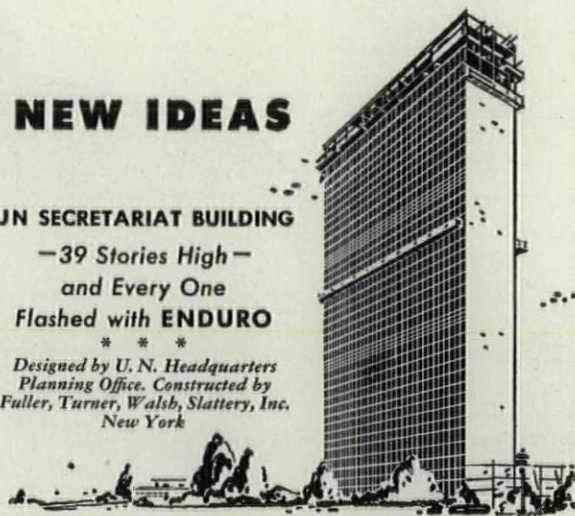
ENDURO—FLASHING WITH NEW IDEAS



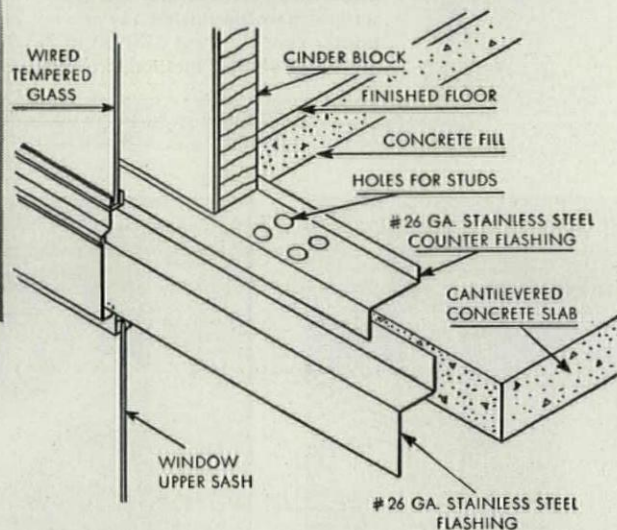
UN SECRETARIAT BUILDING

—39 Stories High—
and Every One
Flashed with ENDURO

Designed by U. N. Headquarters
Planning Office. Constructed by
Fuller, Turner, Walsh, Slattery, Inc.
New York



Rising high above the East River in New York City is this unusual structure with the two narrow sides of marble, the two wide sides a myriad of glass windows. To retain condensate and leakage, to divert it into window weep holes and thus prevent drainage down the mullions, ENDURO was pre-formed and soldered into continuous strips on every floor. The sketch below shows details of installation. The photo at the left demonstrates soldering of four-foot sections into continuous spandrel flashing. Holes shown accommodate vitreous ferrules of Nelson studwelds used to anchor windows.



There seemingly is no limit to the useful applications for Republic ENDURO Stainless Steel in architectural design, in building construction.

Here you see it used for flashing between floors of a famous building. You probably have seen it used, too, for mullions and spandrels, windows, curtain wall panels, entrance doors, stair railing, elevators, roof drainage materials, spires, marquees and countless other component parts of a building.

That's because ENDURO is so versatile . . . because it gives the designer a vast medium for expressing his ideas . . . because it gives the engineer a sound construction material.

ENDURO ranges in finish all the way from a soft, satiny lustre to the brightness of a polished mirror. It may be used both for harmonizing and contrasting

effect. It cleans easily. It is sanitary. Its striking beauty lasts indefinitely.

Functionally, it is tough and strong—with a high strength-to-weight ratio that permits safe use in thin sections. It resists rust and corrosion. It is equally strong at elevated or sub-zero temperatures. It cuts maintenance and replacement costs to lowest levels.

ENDURO is easily obtainable—readily workable. Distributors carry stocks and competent fabricators are located in principal cities.

Now, wouldn't you like to know more about this "magic metal" and the ideas it may bring to you? See Sweet's—or write us.



Enduro® STAINLESS STEEL

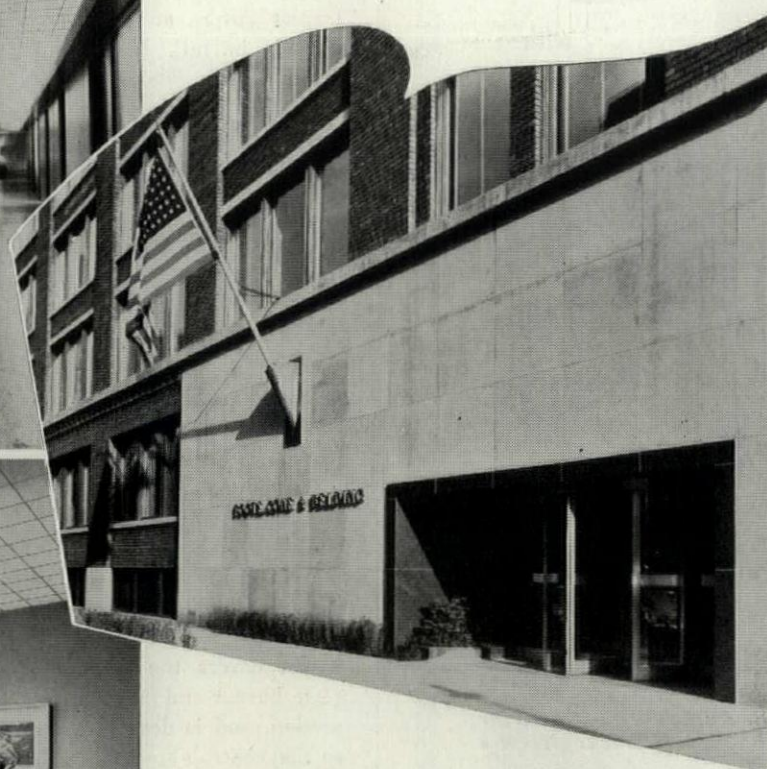
RUST-RESISTANT • CORROSION-RESISTANT • HEAT-RESISTANT • ATTRACTIVE • SANITARY • EASY TO CLEAN
EASY TO FABRICATE • STRONG • LONG-LASTING • LOW IN END COST • What more can be desired in a material?

REPUBLIC STEEL CORPORATION • Alloy Steel Division, Massillon, Ohio • GENERAL OFFICES, CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, N. Y.



Building: FOOTE, CONE & BELDING—Chicago
 Designer: Harper Richards
 Architect: Friedman, Alchuler & Sincere
 General Contractor: E. H. Marhoefer Co.
 Acoustical Contractor: General Acoustics Co.



Design for QUIET and BEAUTY

Fire safety and unusually high acoustical efficiency . . . soft, uniform light diffusion from the rich, attractive finish . . . all designed to add smart, decorative beauty to the modern office . . . all yours in one package with a Fiberglas* Textured Acoustical Tile Ceiling.

For complete specification information on Fiberglas Acoustical Tile—the lowest cost mineral-type *incombustible* acoustical material available—call your Fiberglas acoustical contractor, listed in the yellow pages of the phone book. Or, write to Owens-Corning Fiberglas Corporation, Dept. 67K, Toledo 1, Ohio.

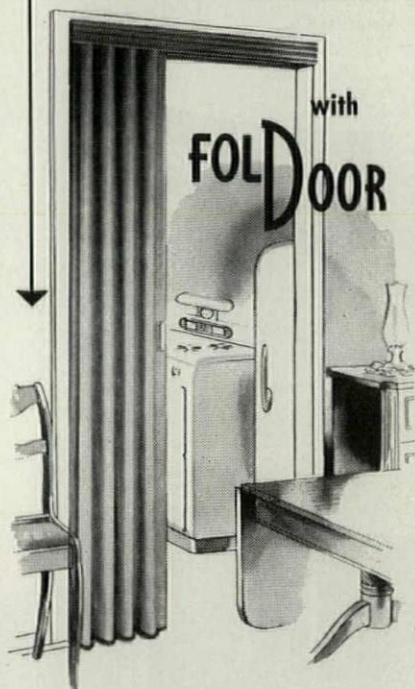


*FIBERGLAS is the trade-mark (Reg. U.S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with glass fibers.

- BUILDING INSULATION
- ROOF INSULATION
- ACOUSTICAL TILE
- FORM BOARD



**SAVE SPACE +
ADD FLEXIBILITY
+ ADD BEAUTY**



"Swing" is old fashioned in doors! FOLDOOR's the thing!

America's NEW folding-type door closure with the cornice that gives it a "finished look."

FOLDOOR is the answer to SPACE SAVING, to an unheard of FLEXIBILITY of room-arrangements, to new, up-to-the-minute BEAUTY.

FOLDOOR is the best looking door closure you ever saw. Folds into beautiful pleats into an unbelievably small space, can be operated by a child . . . and open or closed, retains its beautiful pleated lines to add charm to any room.

Built on a rugged, rust-resistant steel frame, FOLDOOR comes in a wide choice of beautiful, colored plastic fabrics to harmonize with any color scheme and is topped off with an attractive, formed cornice that gives it a "finished look."

FOLDOOR is the IDEAL closure for CLOSETS, ROOMS, ALCOVES, and can be used to excellent advantage as a PARTITION . . . fits into all homes, modern as well as period . . . just the thing for stores, schools, offices and institutions.

Available in STOCK and MADE TO ORDER sizes. Write for descriptive literature and specifications.

Excellent Installing Distributor Territory Still Open. Write for Information.



HOLCOMB & HOKE MFG. CO., INC.

1549 Van Buren Street, Indianapolis, Indiana

PRODUCT NEWS

Unitaire. Its cabinet, constructed of 18 gauge steel, is finished in semigloss two toned gray baked enamel. The smallest model covers a floor area 36 in. x 22½ in. and stands 68¾ in. high. It sells for approximately \$750, installed. The largest covers an area 44 x 22½ in. and is 77 1/16 in. tall. Installed price for this unit is about \$1,500. The units may be connected for one, two or three phase operation on 50 or 60 cycle sources.

Manufacturer: Westinghouse Electric Corp., Sturtevant Div., 200 Readville St., Hyde Park, Boston, Mass.

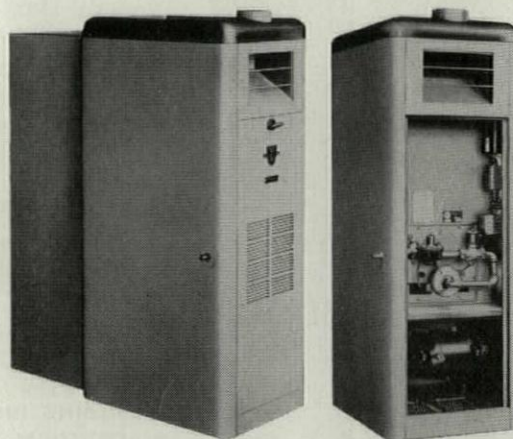
BOILER BURNER UNITS have tankless water heater coil.

York-Shipley's new line of boiler burners are being made in three sizes for either steam, hot water or vapor type heating. Featuring an interchangeable burner mounting, the PBOE models may be installed for oil firing and converted easily to gas at a later date. The oval jacket covers the complete burner and control section, and is designed so that controls are easily accessible. A tankless water heating coil is an additional feature. Boilers are made for 300, 400, 550 sq. ft. of steam radiation and equivalent for hot water. Prices range from \$575 to \$700, plus installation.

Manufacturer: York-Shipley, Inc., York, Pa.

FORCED AIR FURNACE may be installed in closet.

Factory assembled and wired, the SFA Hi-Lo furnace may be placed in a closet or, with filter and return air duct connections at the rear, utilized as a conventional basement unit. It features a built-in draft diverter, and raised port blue flame burners. Circulation by the electrically



driven blower is said to be complete and quiet. All controls are completely enclosed for compact appearance but, located in a single compartment, are easily accessible for inspection or repair
(Continued on page 228)

For an air conditioning system that's...

"ELECTRICALLY RIGHT"

specify



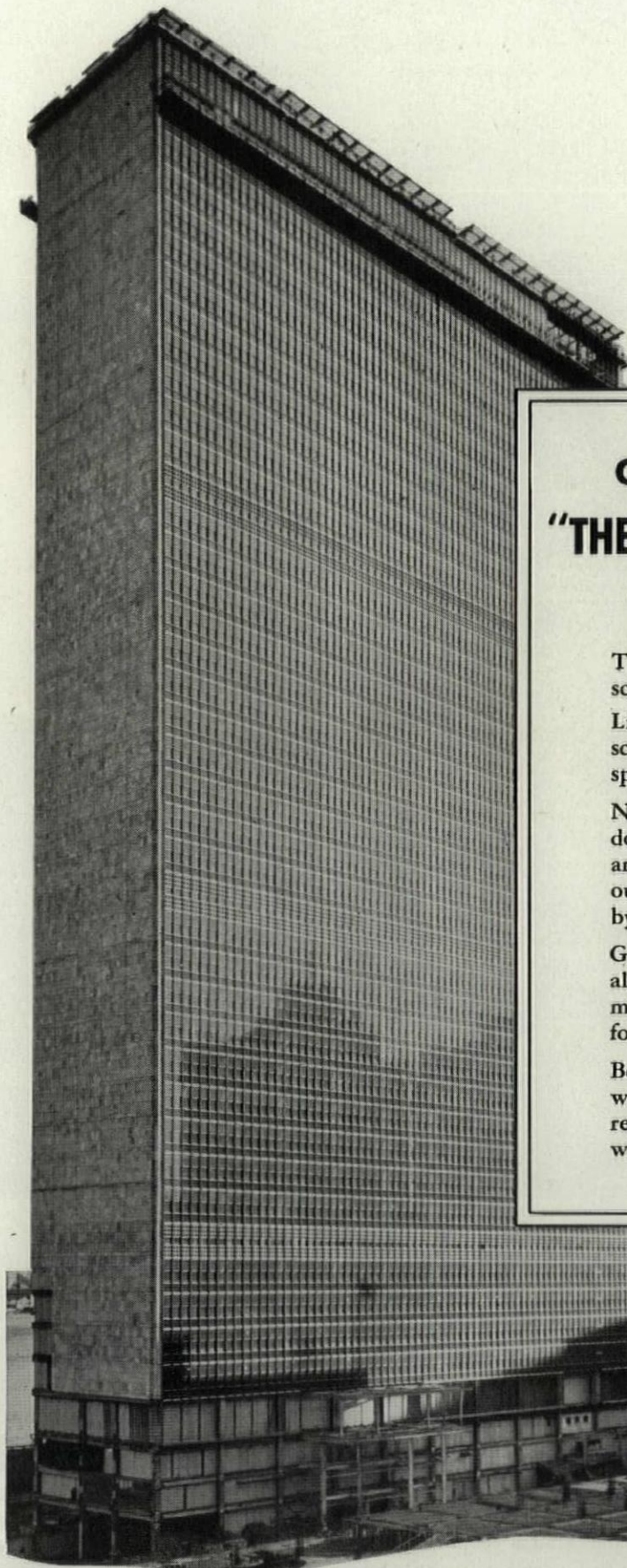
**MOTORS
and
CONTROL**

We did—for the new system on our main floor. Been running perfectly since the day it started—and not a single penny for repairs!



make a note today to mention G-E motors and control to your air-conditioning contractor, architect, or consulting engineer. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

GENERAL  ELECTRIC
665-108



GENERAL BRONZE BUILDS "THE WORLD'S LARGEST WINDOW"

(280 ft. wide x 500 ft. high)

The new UN Secretariat Building has been described as "two great windows, framed in marble."

Light, strong, beautiful, this magnificent new skyscraper has been planned for the future—both in spirit and structure.

Not surprising then, that the 5400 individual windows, the spandrel frames, the louvers and the architectural metalwork selected to brighten the outlook for the UN Secretariat were all supplied by General Bronze Corporation.

General Bronze—the world's largest fabricator of aluminum and other non-ferrous metals—has been making fine windows and architectural metalwork for more than 40 years.

Because of our unequalled facilities and experience, we are uniquely qualified to serve you when your requirements are great, difficult or unusual. We will be glad to discuss them with you at any time.

● Architects: United Nations Board of Design Consultants
Wallace K. Harrison, Director of Planning
Contractor: Fuller-Turner-Walsh-Slaterry, Inc.

GENERAL BRONZE CORPORATION

Stewart Avenue • Garden City, New York



WHAT'S THIS FRESH, NEW AIR IN "ALLEN'S ALLEY"?

Televising Allen's Alley (and Fred Allen) on Sunday's "Comedy Hour" sets up a host of heat problems, due to high-powered lights. Which is why Trane air-conditioning equipment was called upon to do the tough on-stage cooling job needed in NBC-TV's glamorous New York International Theatre.

There are thousands of Trane installations all over America. Radio and TV studios, big buildings, plants, stores, and homes—all are provided with the air conditions required for the greatest comfort, efficiency and health by Trane-engineered products.

Trane representatives are engineers—ready to work with architects, engineers or contractors in solving heating and air-conditioning problems.

BETTER WAY TO HEAT. Quick-heating, space-saving Trane Convectors team up with any steam or hot water system to provide better heat distribution and more comfort at low cost.

FREE BOOKLET! "Choose Your Own Weather." A 16-page picture story showing how Trane equipment heats and air-conditions a wide variety of buildings. Write for your copy.

TRANE

THE HOUSE OF WEATHER MAGIC

THE TRANE COMPANY, LA CROSSE, WISCONSIN
EASTERN MFG. DIVISION • SCRANTON, PA
TRANE COMPANY OF CANADA, LTD., TORONTO

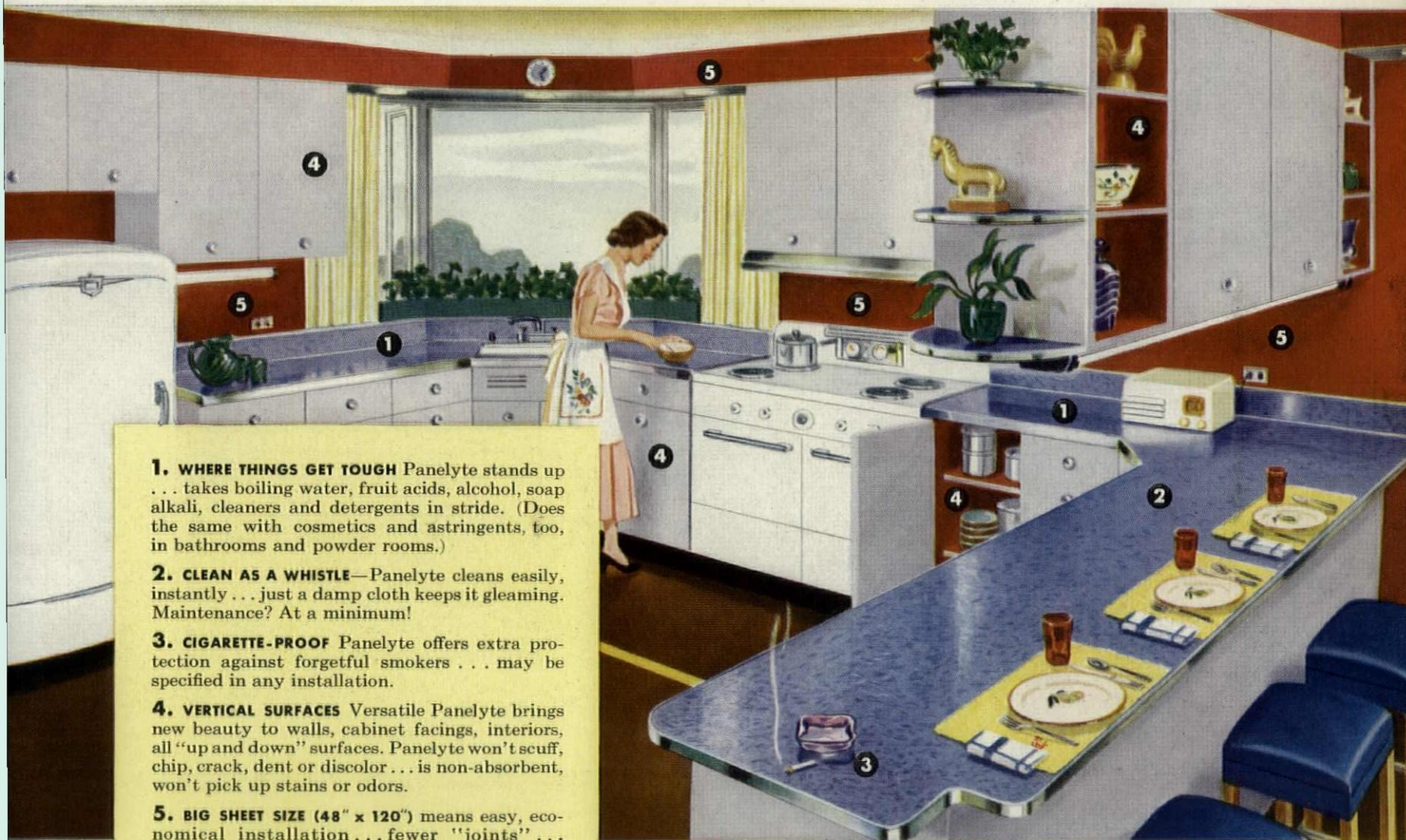
MANUFACTURING ENGINEERS OF HEATING AND AIR CONDITIONING EQUIPMENT • OFFICES IN 80 CITIES

IT'S TIME TO TAKE
A FRESH LOOK AT
DECORATIVE
SURFACING...

Here's the biggest news in decorative surfacing! It's **Panelyte**... St. Regis' new, beautiful, *high-pressure* laminated plastic for all working surfaces. See Panelyte's glowing, true-as-life colors... striking patterns... visualize their countless decorative possibilities in the design and creation of beautiful necessities. Then look *below* the surface, at the technical advantages Panelyte offers. ... **Panelyte** is hard, dense, strong and tough. It is harder to mar... withstands heavy impacts... resists abrasion as no other plastic surface does. (We've tested... we know.) Panelyte won't swell or shrink... is easy to work. Its big sheet size (up to 48" x 120") makes for easier, more economical installation with fewer seams.

Whether you're specifying surfacing materials for interior use... manufacturing a product that calls for such materials... using plastic surfacing in *any way*... it will pay you to find out all about new, beautiful **Panelyte**. Just use the coupon below.

See what **PANELYTE** can do



1. WHERE THINGS GET TOUGH Panelyte stands up... takes boiling water, fruit acids, alcohol, soap alkali, cleaners and detergents in stride. (Does the same with cosmetics and astringents, too, in bathrooms and powder rooms.)

2. CLEAN AS A WHISTLE—Panelyte cleans easily, instantly... just a damp cloth keeps it gleaming. Maintenance? At a minimum!

3. CIGARETTE-PROOF Panelyte offers extra protection against forgetful smokers... may be specified in any installation.

4. VERTICAL SURFACES Versatile Panelyte brings new beauty to walls, cabinet facings, interiors, all "up and down" surfaces. Panelyte won't scuff, chip, crack, dent or discolor... is non-absorbent, won't pick up stains or odors.

5. BIG SHEET SIZE (48" x 120") means easy, economical installation... fewer "joints"... greater beauty.

See Sweet's
Architectural File
Number 14a
9

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A few Panelyte distributorships are still available in certain territories.

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PANELYTE DIVISION, St. Regis Sales Corporation
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☐ Please send me Panelyte sample, color chart, specifications and full information.

☐ I am interested in a Panelyte Distributorship in _____ (City, State)

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Readers by the million will be seeing the Panelyte story in striking, full page, full color ads in such far-reaching magazines as **GOOD HOUSEKEEPING** and **BETTER HOMES & GARDENS**. You'll be using a *known and accepted* product, backed by the St. Regis name.



PANELYTE®
The Decorative Surface
BEAUTY FIRST — TO LAST

PANELYTE

A PRODUCT OF ST. REGIS PAPER COMPANY



Hydraulic Lift lowers soldier patient into "Hubbard Tub"...equipment typical of the modern therapy methods used at the Army's massive new Tripler General Hospital, on Oahu, Hawaii.

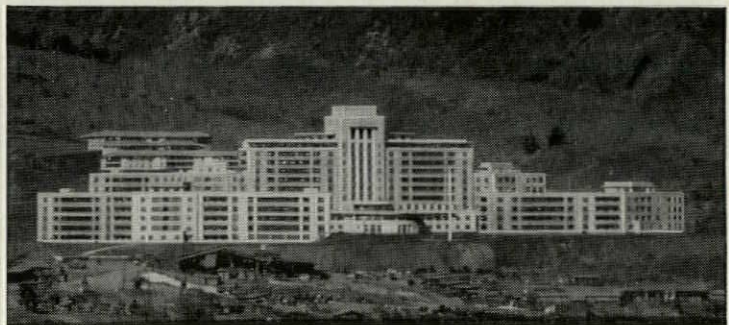
new army game

TODAY's Army plays it differently. Today's Army knows the tremendous value of *modern* medical responsibility toward its sick and disabled.

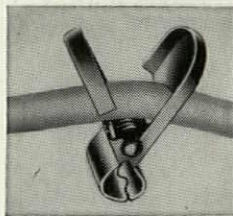
Witness, at the huge 1500-bed New Tripler General Hospital outside Honolulu, the use of every *modern* therapeutic aid available for patient welfare.

Witness the EDWARDS name on such vital services in this hospital as the equipment used to summon nurses to bedsides...to locate and page doctors...to warn unfailingly of fire...

...all EDWARDS equipment...all selected in further testimony to EDWARDS world leadership in signalling, communication and protection systems...all products of the greatest advance-design and precision engineering experience in the field.



Problem: To replace the *unsafe* safety pin used for keeping a nurse's call button within patient's reach...replace it with a *modern, surer means*.



Answer: THIS INGENIOUS CLAMP that grips like a bulldog, yet never rips the bedding! A modest achievement reflecting the same Edwards devotion to design improvement now responsible for the world's most accurate clock systems...loudest bells...most fool-proof fire-alarm stations.

Tell it to Edwards... whatever your problem in time, communication or protection equipment, we can solve it to your advantage.

Edwards Company, Inc., Norwalk, Conn. In Canada: Edwards of Canada, Ltd.

EDWARDS

World's most reliable time, communication and protection products

SERVING SCHOOL, HOSPITAL, INDUSTRIAL AND RESIDENTIAL BUILDINGS

4-Square Pressure Treated Lumber

OFFERS FROM THREE TO FIVE TIMES LONGER SERVICE LIFE

WHEN a special lumber item offers from three to five times longer service life, it is bound to attract your attention and command your interest. Weyerhaeuser 4-Square Pressure Treated Lumber is such a product.

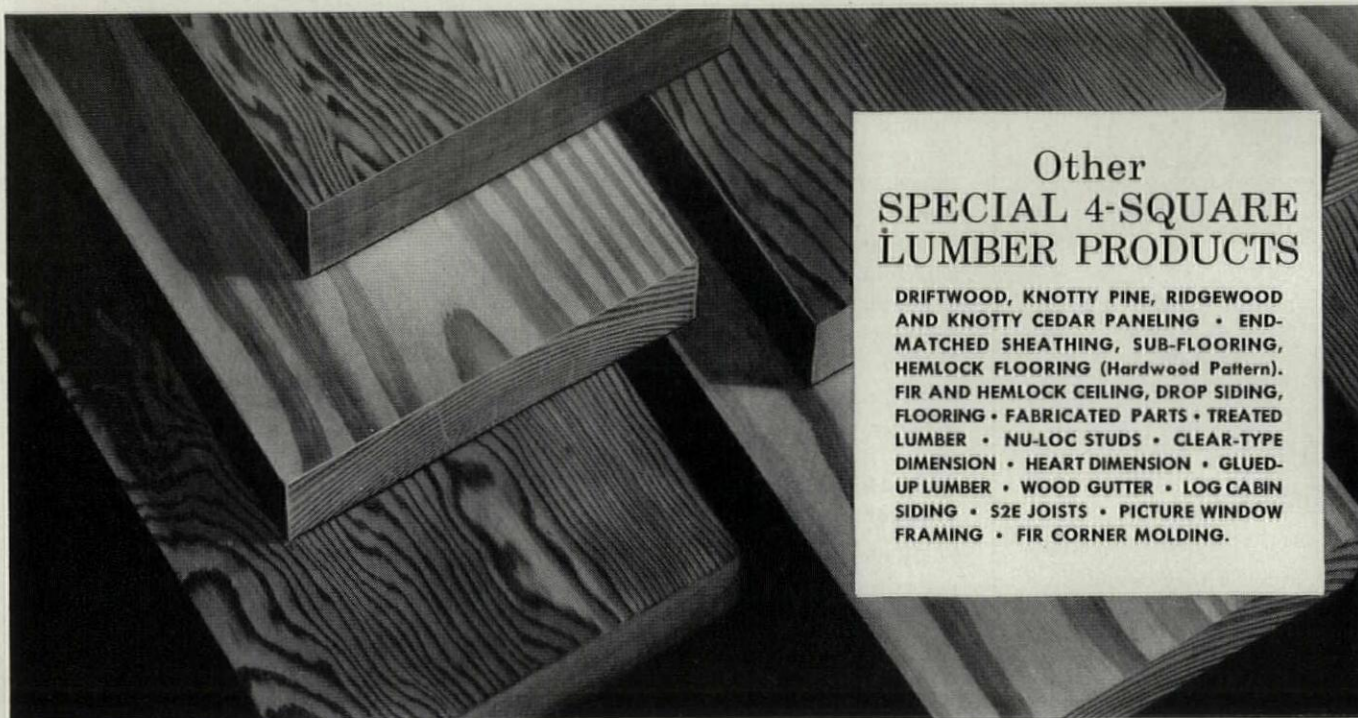
The pressure treatment of lumber, with Wolman salts, assures protection to wood endangered by rot or termites. Wherever wood contacts the ground, concrete or masonry . . . or is exposed to moisture traps, excessive humidity or condensation . . . 4-Square Treated Lumber should be used for real economy.

The extra value of this pressure treated lumber for durability under adverse conditions is definitely established by its long record of service in residential application

and farm construction, as well as varied industrial uses.

4-Square Lumber, pressure treated with Wolman salts, is clean, odorless, paintable, non-corrosive and non-leaching. It is as easy to handle and work as ordinary lumber. It is treated in accordance with the processes prescribed by the American Lumber and Treating Company and the American Wood Preservers Association.

Designers will find that 4-Square Pressure Treated Lumber serves a special need in modern construction. It adds longer life and greater utility to structures. Weyerhaeuser Pressure Treated Lumber is available through 4-Square Lumber Dealers in the regular items in retail stocks.



Other SPECIAL 4-SQUARE LUMBER PRODUCTS

DRIFTWOOD, KNOTTY PINE, RIDGEWOOD
AND KNOTTY CEDAR PANELING • END-
MATCHED SHEATHING, SUB-FLOORING,
HEMLOCK FLOORING (Hardwood Pattern).
FIR AND HEMLOCK CEILING, DROP SIDING,
FLOORING • FABRICATED PARTS • TREATED
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SIDING • S2E JOISTS • PICTURE WINDOW
FRAMING • FIR CORNER MOLDING.

Design for
**COMFORT, BEAUTY
and ECONOMY**
with
**SPECIAL 4-SQUARE
LUMBER PRODUCTS**

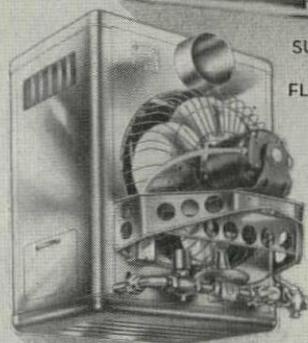
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LUMBER AND SERVICES

WEYERHAEUSER SALES COMPANY
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REZNOR

Automatic Gas Unit Heater



SUSPENDED
OR
FLOOR TYPE

as advertised
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POST

Extra
NO MATERIALS TO BUY ...
EASIER INSTALLED

Warm your store, factory or office with one complete package—no boiler, no steam lines, no duct work—just install a Reznor gas unit heater, the world's biggest seller. Save material, save time, save expense.

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Send me 20-page catalog in full color

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PRODUCT NEWS

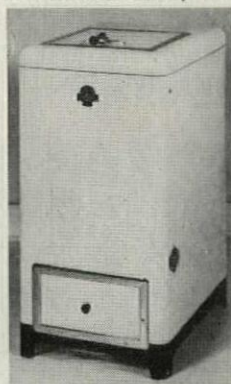
without disturbing other wiring. The return air duct for basement installations, shipped knocked down, may be attached to either side or the back. Filters and automatic controls are supplied with each furnace. A Hi-Lo with a Btu input of 62,500 lists at \$226.56; the 125,000 Btu model sells for \$331.25. Others have inputs of 80,000 and 100,000 Btu. All are available for natural, manufactured, or LP gas.

Manufacturer: Security Mfg. Co., 1630-48 Oakland Ave., Kansas City 3, Mo.

GARBAGE INCINERATOR is cool, odorless; can be installed in kitchen.

Using low heat to dehydrate garbage and burnable trash, the Calcinator remains cool enough during operation to be installed in the kitchen or utility room. The new models have a sturdy self leveling base, and automatic draft and stack temperature controls which are said to improve the efficiency of the calcination process. The gas fired unit has a visual inspection and lighting port. Its Hi-Lo burner gives the user a choice of two rates of disposal. Price for the deluxe model with white porcelain cabinet is \$114, and \$99.50 for the standard, finished in gray crackle. Standard and deluxe electric Calcinators sell for \$119.50 and \$134.50. Prices do not include installation.

Manufacturer: Calcinator Div. Valley Welding & Boiler Co., Bay City, Mich.



GARBAGE DISPOSER works quietly on low power.

Every element in General Electric's garbage disposer has been redesigned so that the new units consume less electrical power and operate 50 per cent quieter than the manufacturer's earlier models. A shredding mechanism which macerates bones and fruit pits to tiny particles has been incorporated into the machine to speed up the disposal process. For the user's complete safety, the appliance will not work after the control has been locked in position until the cold water is turned on. The water throws an electric switch which starts the machine. Grease is congealed by the cold water and drain lines are kept clear, making it impossible for the impact of food waste bulk to break the water seal and allow dangerous gasses to escape from sewage lines into the kitchen. The new disposer is made in two models, the FA-4 and FA-41, which will fit almost any sink having a drain outlet 3½ to 4 in. in diameter. Although the new disposers are smaller and about 15 lbs. lighter than previous ones, they have the same food waste capacity. Both carry \$124.95 price tags.

Manufacturer: General Electric, Appliance & Merchandise Dept., Bridgeport 2, Conn.

(Continued on page 234)



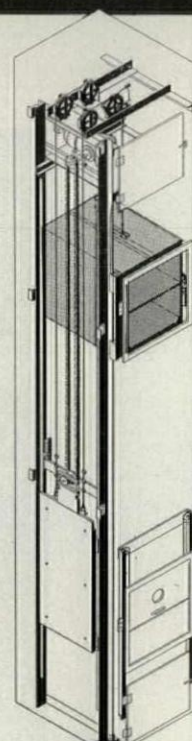
SPECIFY THE Sedgwick ROTO-WAITER

for { SAFE
DEPENDABLE
ECONOMICAL

TWO-STOP ELECTRIC DUMB WAITER SERVICE

Fully Automatic Roto-Waiters ...

- 1 Never overtravel
- 2 Are completely factory assembled and tested
- 3 Operate automatically, safely with push-button control and doors interlocked
- 4 Require only minimum clearances
- 5 Have an overload safety device for safe operation
- 6 Cut costs with simplified motor and control equipment
- 7 Require no heavy load-bearing supports, except at bottom
- 8 Are easy to install



Available
in Standard
and Special
Sizes

COMPLETE SEDGWICK LINE MEETS EVERY REQUIREMENT

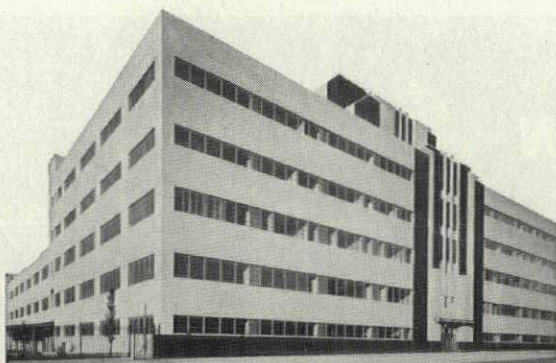
In addition to the Sedgwick Roto-Waiter, Sedgwick also builds Multi-Stop Electric Traction Dumb Waiters for three or more landings—with a wide selection of specially engineered control equipment and signal systems to suit individual needs. Other Sedgwick Dumb Waiters—including both electrically and manually operated types—are likewise available in a wide range of sizes and capacities. Specify, too, Sedgwick Steel Dumb Waiter Doors for complete satisfaction.

Write for Illustrated Booklet AF1

Sedgwick MACHINE WORKS
88 Eighth Ave., New York 11, N. Y.

ELEVATORS • DUMB WAITERS • RESIDENCE ELEVATORS
STAIR-TRAVELERS • ROTO-WAITERS • SIDEWALK ELEVATORS
FREIGHT ELEVATORS • DUMB WAITER DOORS

THE MAXIMUM IN SAFETY...
THE ULTIMATE IN ECONOMY—SINCE 1893



Modern . . . Inside and Out!

New building of Smith, Kline & French Laboratories, nationally known manufacturers of ethical pharmaceuticals in Philadelphia, Pa.

Architects: The Ballinger Company
Builders: Barclay White & Co.

FOR WASHROOMS MODERN IN EVERY WAY . . .

It's Scott designed

Recessed
Towel Dispensers

and

Waste Receptacles

in the new
Smith, Kline & French Laboratories Bldg.

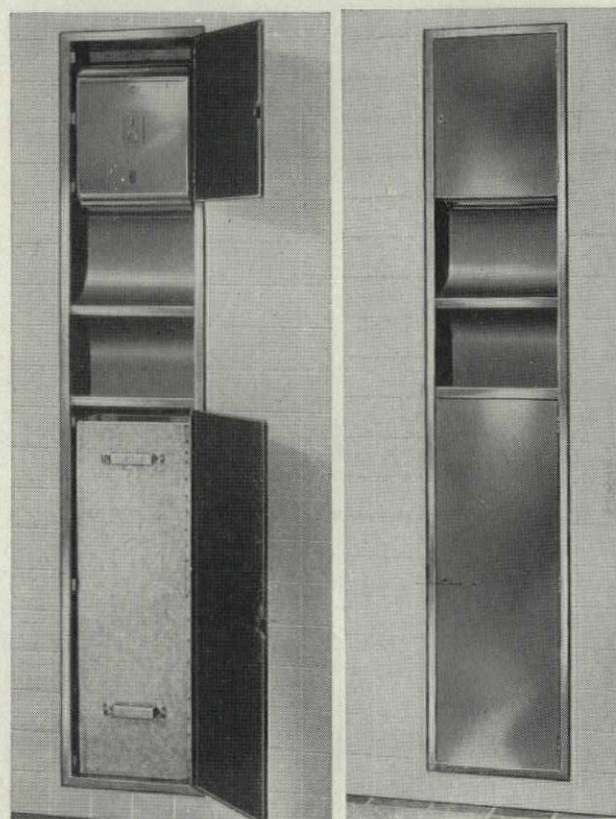
Seeking the best combination of utility and eye-interest in their new research laboratories and manufacturing plant, Smith, Kline & French insisted on modern fixtures throughout . . . and modern Scott fixtures in every washroom.

For maximum efficiency . . . over-all attractiveness . . . and all-important cleanliness . . . Scott No. 945 recessed towel dispensers and waste receptacles were specified for the installation. Like many other Scott fixtures, they harmonize well with latest architectural trends.



SCOTT
Symbol of
Modern Washrooms

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



Scott No. 945 towel dispensers and waste receptacles—recessed flush with the wall as shown—make attractive, efficient washroom units. (Left: panel doors open. Right: closed and ready for service.)

Next time you're planning washrooms for a client, consider the advantages of ScotTissue Towels and fixtures: attractiveness *plus* efficiency.

And for valuable suggestions in planning modern washrooms, make use of the services of Scott trained consultants. Their know-how—gained from servicing over 300,000 washrooms—is yours for the asking! Contact Washroom Advisory Service, Scott Paper Company, Chester, Pennsylvania.

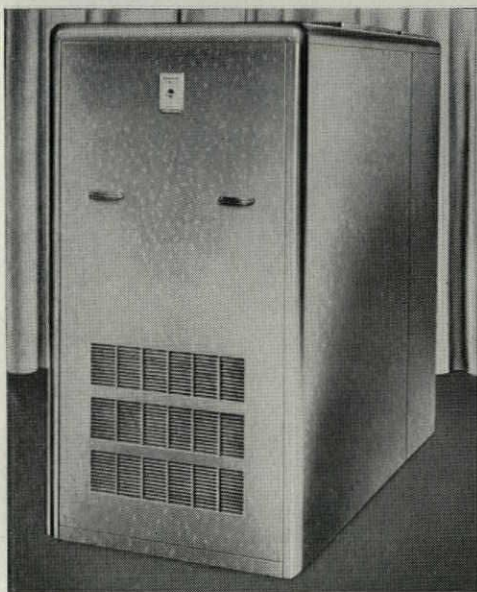
—Send for FREE dimension and installation drawing!—

WASHROOM ADVISORY SERVICE, Dept. S
Scott Paper Company, Chester, Pennsylvania
Please send me free drawing of Scott No. 945 recessed wall fixture.

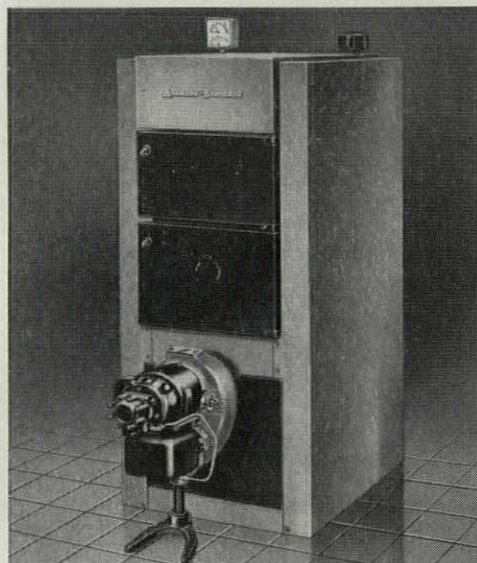
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Company _____ Title _____
Address _____
City _____ Zone _____ State _____

AMERICAN-Standard

First in heating . . . first in plumbing



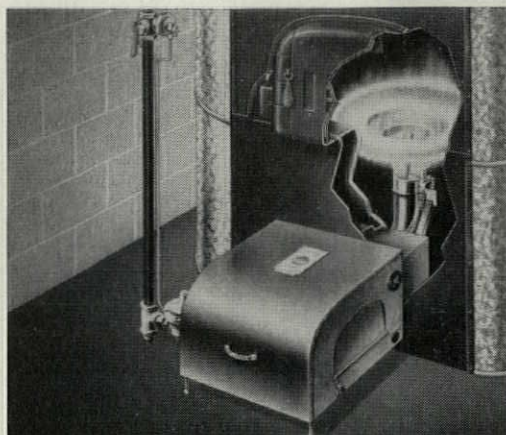
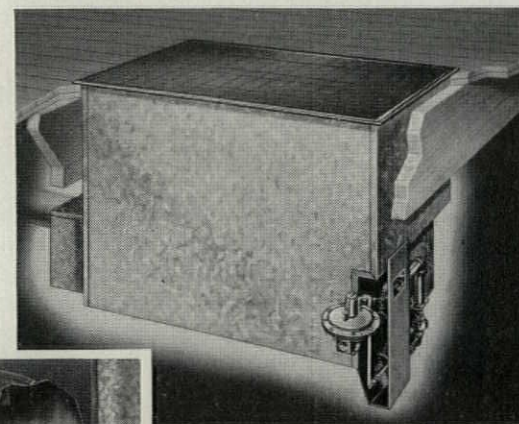
WINTERWAY: This brand-new, efficient, basement type winter air conditioner is made in two sizes—100,000 and 120,000 Btu capacity at register—to meet the oil heating requirements of small and medium size homes. The Winterway has a sturdy steel heating element with wrap-around type radiator that completely encircles the shell. Flue can be located on either side.



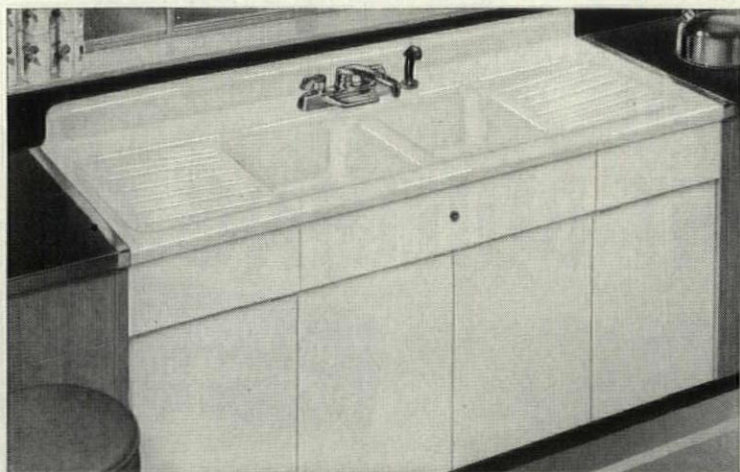
ARCOLINER: The famous Arcoliner Wet Base Boiler (for steam and hot water systems) is now also available in this new model for hot water only. This limitation has made possible important cost savings while still retaining full American-Standard quality. This economical boiler offers all the advantages of completely automatic heat plus the convenience of year 'round hot water. Jacket extension optional.

New products
to choose from when
you're selecting quality
heating equipment
and plumbing fixtures

NAVAHO: This new gas floor furnace is only 27½" deep, takes up very little floor space. It can be installed easily in small buildings with or without a basement, and requires no excavation. Factory-assembled, it is available in three sizes with Btu input per hour of 25,000 to 50,000 and can be supplied with flat floor grille or dual wall register. It burns manufactured, natural, mixed, butane, propane or butane-air gas.



STANFLAME: Wide modernization activity and the rapid increase in gas heating facilities give special interest to this new conversion burner. Of a vertical, upshot type, the Stanflame operates efficiently with boiler, furnace, or winter air conditioner . . . burns manufactured, natural, mixed, liquefied petroleum, or LP-air gas. Available in two sizes, with easily adjustable input feature.



SINK CABINETS: These handsome-looking, smooth-front, steel cabinets, designed for the famous Hostess Sinks, provide lots of storage room and are fitted with just about every modern convenience. They harmonize with base and wall cabinets of any design.



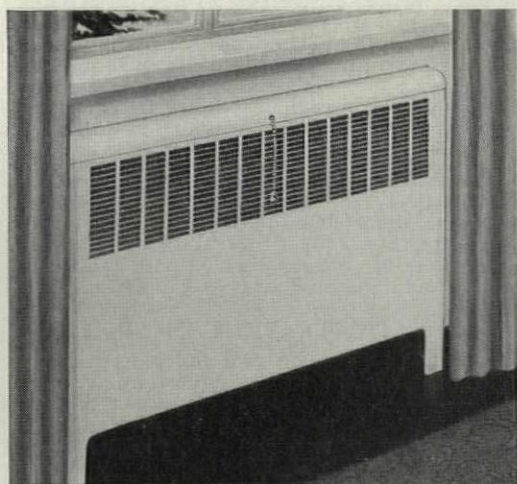
TRIWELL SINK: A double-compartment sink with handsome new fitting, the Triwell Sink is both good-looking and practical. It has a covered third well between the regular compartments containing a hidden, removable garbage basket of non-tarnishing chromium-plated brass. Easy to clean, easy to keep clean.

THE NINE products shown here are representative of the many new additions during 1950 to the American-Standard line of heating and plumbing products—the most complete in the industry. These new additions give you still wider flexibility in designing and styling . . . afford even greater choice of units to fit today's varied needs. Their engineering and construction advantages assure long, efficient service.

With the new American-Standard Catalogue it is amazingly simple to choose quickly and accurately just the right plumbing fixtures and fittings for every job. Your Heating and Plumbing Contractor will be glad to give you full information on the *complete* American-Standard line. **American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Pennsylvania.



DRESSLYN: The new Dresslyn is both a lovely lavatory and a distinctive dressing table combined in a single unit. Available in two styles, two sizes, and in 31 color combinations, it features a deep-bowl lavatory of genuine vitreous china . . . has plenty of storage space and ample counter top area.



NEW MULTIFIN CONVECTORS: The New Multifin line of convectors, designed for installation in all hot water or steam systems, includes sizes ranging from a small 18-inch high, 4-inch deep unit to a large 38-inch high, 10-inch deep unit. There are 63 stock model sizes for either free standing or recessed installations, plus special service models to meet special building requirements.



SANISTAND FIXTURE: The Sanistand Fixture offers women the same convenience and sanitation the standing urinal does for men . . . makes washrooms cleaner, neater . . . reduces rest room maintenance. Enthusiastic approval by thousands of women in extensive test installations has led to hundreds of permanent installations.



LOOK FOR THIS MARK OF MERIT

Serving home and industry
AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

VERSATILE ZONOLITE* AGGREGATES

Proved Indispensable in TODAY'S LIGHTWEIGHT BUILDING

Unique Characteristics Provide Manifold Usefulness

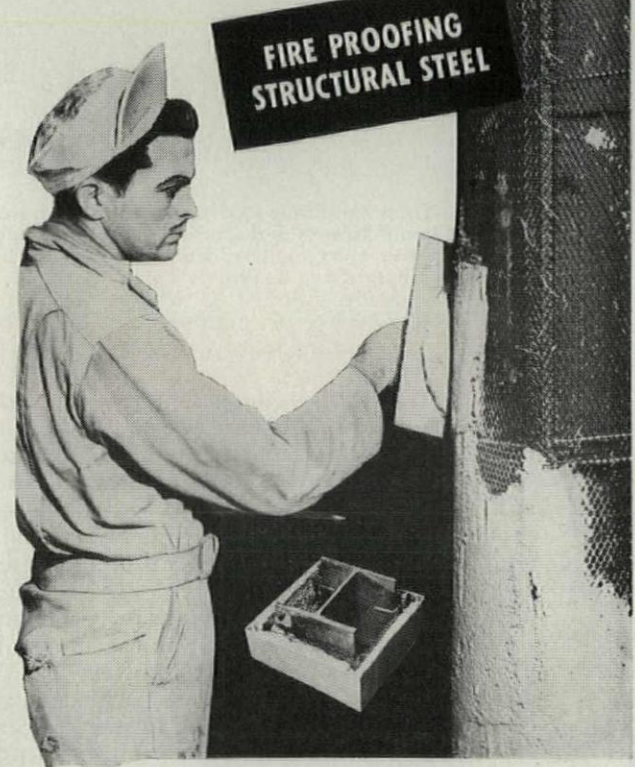
FOR MODERN CURTAIN WALLS, *Zonolite* Vermiculite concrete* can be employed as a back-up with all types of facing materials, providing extreme reductions of weight and bulk. Three inches of Zonolite concrete permitting fire-safety equivalent to 8" of brick, yet weighs only $\frac{1}{3}$ as much. Its thermal insulation value far exceeds that of brick or regular concrete.

WALLS — CEILINGS — FIREPROOFING: Up to 66% of dead weight in a building can be eliminated when Zonolite plaster is used for walls and ceilings and for fireproofing structural members. Zonolite Plaster Aggregate used in lieu of sand for suspended ceilings or partition walls and in place of conventional fireproofing for columns and beams permits the use of much lighter steel

members at correspondingly lower costs. Furthermore, Zonolite vermiculite aggregate is substantially cheaper to handle and store than the sand it replaces.

A sledge hammer blow merely dents Zonolite plaster and it won't chip when nails are driven into it. Plasterers prefer it, too, because of its lighter weight, easier spreading and fewer droppings.

FIRE-SAFE FLOORS & ROOFS: In short span roof decks, and in various types of floor construction, Zonolite vermiculite concrete unites superior insulation and fire safety with structural material—all applied in one operation. This same concrete—only $\frac{1}{5}$ the weight of "ordinary" concrete—can be poured as permanent insulation fill over any existing roof.



An estimated 5,000,000 lbs. of dead weight were eliminated in the construction of a 35-story bank building by the use of Zonolite concrete floors, suspended Zonolite plaster ceilings and the use of Zonolite plaster for fireproofing structural steel members as shown above. Savings effected by weight reduction more than paid for the extra fire-safety and thermal insulation which Zonolite aggregates made possible.

In recent Underwriters' Laboratories tests, columns fireproofed with Zonolite Plaster as pictured above were awarded a 4-hour rating for $1\frac{1}{2}$ " of plaster and 3 hours for 1" thickness. The saving in weight (see inset) as compared with solid concrete fireproofing is obvious.

FULL COOPERATION OFFERED

The uses of Zonolite concrete and plaster shown herewith will undoubtedly suggest many other possible applications such as their use in the new curtain wall construction. Mail the coupon today for a special file of useful reference material, or write us for information on your specific problems.

ZONOLITE COMPANY

Dept. AF-100, 135 S. LaSalle St.
Chicago 3, Illinois

ZONOLITE COMPANY—Dept. AF-100
135 S. LaSalle St., Chicago 3, Ill.

Please mail me special file of reference material on use of Zonolite vermiculite aggregates in plaster and concrete.

Name.....

Address.....

City & Zone..... State.....

*Zonolite is a registered trademark of Zonolite Co.

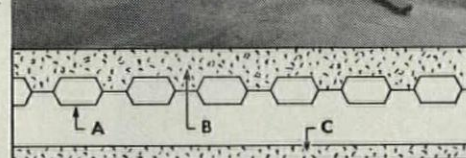


DIAGRAM ABOVE SHOWS:
(A) LIGHTWEIGHT STEEL FLOOR ASSEMBLY.
(B) 2" CONCRETE FILL.
(C) $\frac{3}{4}$ " VERMICULITE PLASTER
4-HR. Fire-rating granted by Underwriters' Laboratories.



Illustrated above (upper) the use of Zonolite concrete for the roof deck and (lower) of Zonolite plaster for walls and suspended ceilings. Combinations of 2" vermiculite concrete topping with a 1" vermiculite suspended ceiling over face of metal lath have received a 4-hr. fire-rating from Underwriters' Laboratories.

FROM EAST COAST TO WEST COAST...

When Quality Counts...it's

QUALITY CONTROLLED

MA-TI-CO
ASPHALT TILE
FLOORING



PARKLABREA, LOS ANGELES

Builder: Metropolitan Life Insurance Company
Architect: Leonard Schultze & Associates
Associate Architect: Kaufmann & Stanton
General Contractor: Starrett Brothers and Eken, Inc.
Flooring Contractor: Turner Resilient Floors, Inc.
Structural Engineer: Bowen, Rule & Bowen
Mechanical and Electrical Engineer: Lester R. Kelly

1947-48-49
MA-TI-CO
Quality-Proved
in Metropolitan
Life's East Coast
Developments

**NOW! Selected for
METROPOLITAN'S IMPRESSIVE
WEST COAST COMMUNITIES**

Because of the outstanding performance delivered by MA-TI-CO Asphalt Tile Flooring in Metropolitan's Peter Cooper Village, Stuyvesant Town, and Riverton in New York, MA-TI-CO is selected for Metropolitan's West Coast communities—Parklabrea (above) and Parkmerced, San Francisco.

These modern West Coast communities are the latest in an impressive list of MA-TI-CO installations that include apartment houses, public and private institutions, industrial plants, stores and private homes.

Wherever MA-TI-CO is used it provides enduring beauty, resilience and economy—qualities that make MA-TI-CO ideal for every type of installation.

Remember, MA-TI-CO's precision-cut square edges assure easier, faster installation—save you time and money on every job. When next you specify asphalt tile flooring, be sure it's MA-TI-CO. It's today's best all-around flooring.

GET TO KNOW MA-TI-CO

See our insert in Sweet's File Architectural, section 13. Or send us a letter on your business stationery, and we will mail you samples.

Dept. 611

MASTIC TILE CORPORATION OF AMERICA

Member: Asphalt Tile Institute

Factories: Newburgh, N. Y. • Long Beach, California

**PRECISION
TESTED**

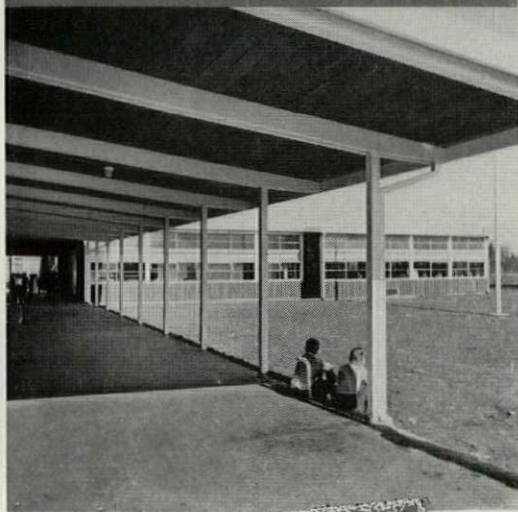
to conform to Federal
specifications for

Flexure
Indentation
Curling
Impact



A24

INEXPENSIVE
**BEAUTY and
PROTECTION**
FOR SCHOOL
CONSTRUCTION



Creslane Grade School,
Lane County, Oregon
Architects—Wilmsen and Endicott,
Eugene, Oregon
Exterior cedar boards and batts
finished with Cabot's #247 Creosote
Stain

**INSIST ON
CABOT'S CREOSOTE STAINS**

You can achieve striking exterior effects and at the same time assure long-lasting protection when you specify Cabot's Creosote Stains. Cabot's Stains cost $\frac{1}{3}$ as much as good paint. Contain 60-90% of refined creosote oil — best wood preservative known. Cabot's Stains penetrate deeply . . . bring out all the natural beauty of grain and texture . . . add years of protection against termites and decay. Available in a wide variety of non-fading colors — clear, brilliant hues to weathering browns and grays.

WRITE TODAY for Cabot's Creosote Stain Color Card and complete information. Many Cabot's Creosote Stain colors are unique and available from no other source. Samuel Cabot, Inc., 1150 Oliver Bldg., Boston 9, Mass.

PRODUCT NEWS



AUTOMATIC DISHWASHER cleans tableware in less than 10 minutes.

Handling dishes, silverware and glassware for six people, the Jet Tower dishwasher has a cleaning and double rinsing cycle of less than 10 minutes. At the end of that time the lid opens so that the dishes may dry quickly in their own heat. In operation, an electrically heated booster tank raises the water temperature to 180°. The water is then forced through perforations in a rapidly revolving square metal tube in the center of the tub. Before it is recirculated, the water is filtered by a strainer. The tub is treated with a sound deadening material which also helps retain the heat. Measuring 27 in. front to back at widest point, the Jet Tower is 36 in. high. Two models are being manufactured: a unit 27 in. wide, and a 48 in. electric sink-dishwasher combination. Both have tops of acid resistant porcelain enamel and a glass observation port on the lid, set flush with the work surface. The free-standing model sells for \$249.95 and the combination for \$359.95. A 40 per cent discount is available to builders on quantity orders.

Manufacturer: Mullins Mfg. Corp., Warren, Ohio.

PLASTIC TAPE forms continuous elastic skin a few minutes after wrapping.

Layers of a new insulating tape formulated on polyethylene resins weld into a homogenous mass shortly after being wrapped around a cable splice or tool handle. The plastic base keeps this self-bonding tape flexible despite severe weather conditions. It is not affected by temperatures ranging from 120° F. above zero to as low as 30° below zero, nor by corrosive fumes, sunlight or oxygen. Its positive seal is moisture and airtight. Price for a 30 ft. roll of clear tape 1 in. wide is \$1.48; \$1.56 for black.

Manufacturer: Bishop Mfg. Corp., 254 W. 31st St., New York 1, N. Y.

(Technical Literature, page 242)



**"Who Says . . .
REGULAR PHONES can
handle intercom needs?"**



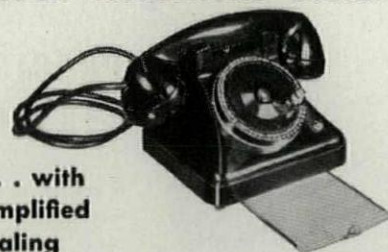
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And you'd be too if you were trying to handle pesky (to her!) intercom messages in addition to important outside calls. Stop wasting *her* time and *your* money. Get real efficiency by installing a Couch Private Phone system . . . free outside lines . . . replace regular phones used only for intercom calls . . . reduce unnecessary calls. From 2 to 50 phones, Couch has the system right for your needs. Write for information today.



Type 52 Four Button Model

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30 or 50 line systems . . . "one shot" dialing saves time, eliminates manually operated switchboard . . . simple, rugged, inexpensive.

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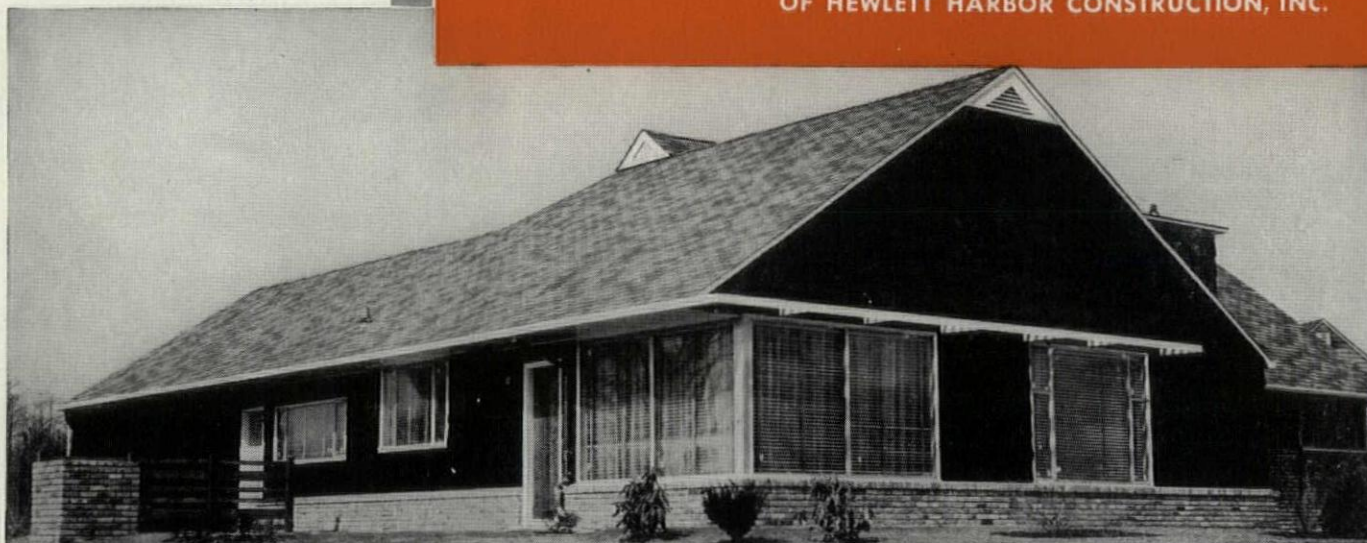
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No. Quincy 71, Mass.

Private Telephones for Home and Office . . . Hospital Signaling Systems . . . Apartment House Telephones and Mailboxes . . . Fire Alarm Systems for Industrial Plants and Public Buildings.

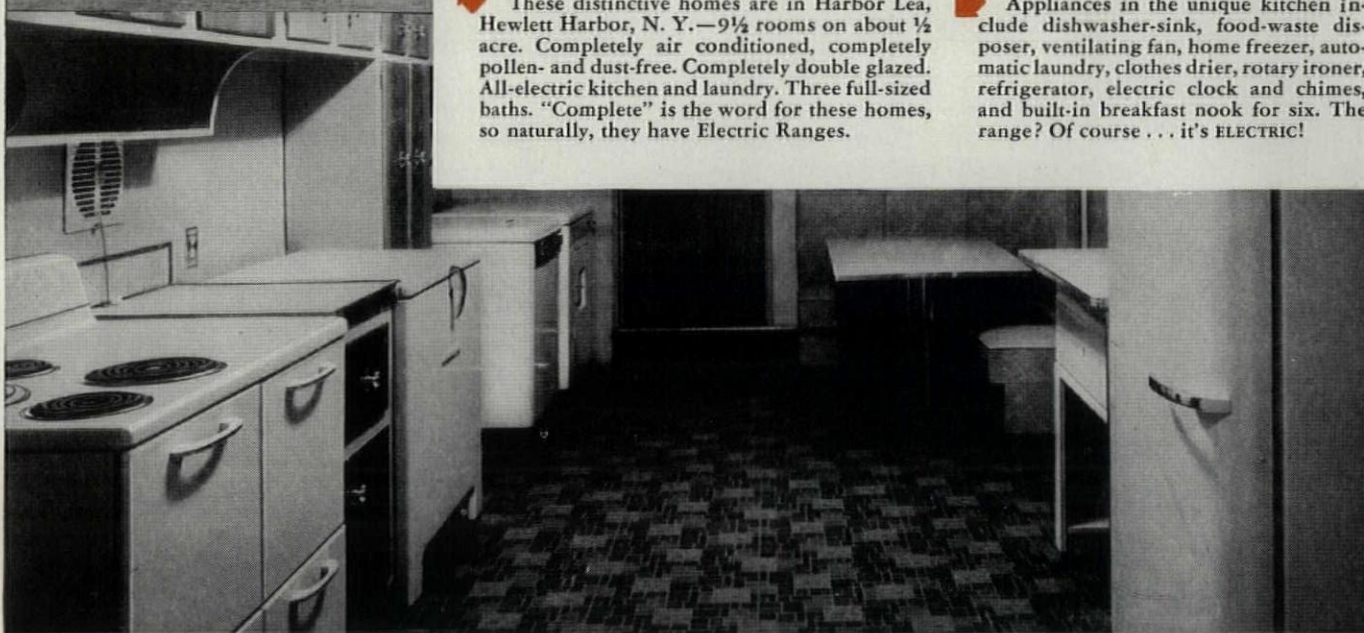
"Electric Ranges help sell homes," SAYS MR. E. A. BALLIN,

OF HEWLETT HARBOR CONSTRUCTION, INC.



These distinctive homes are in Harbor Lea, Hewlett Harbor, N. Y.—9½ rooms on about ½ acre. Completely air conditioned, completely pollen- and dust-free. Completely double glazed. All-electric kitchen and laundry. Three full-sized baths. "Complete" is the word for these homes, so naturally, they have Electric Ranges.

Appliances in the unique kitchen include dishwasher-sink, food-waste disposer, ventilating fan, home freezer, automatic laundry, clothes drier, rotary ironer, refrigerator, electric clock and chimes, and built-in breakfast nook for six. The range? Of course . . . it's ELECTRIC!



EQUIP
YOUR HOUSES WITH
ELECTRIC
RANGES

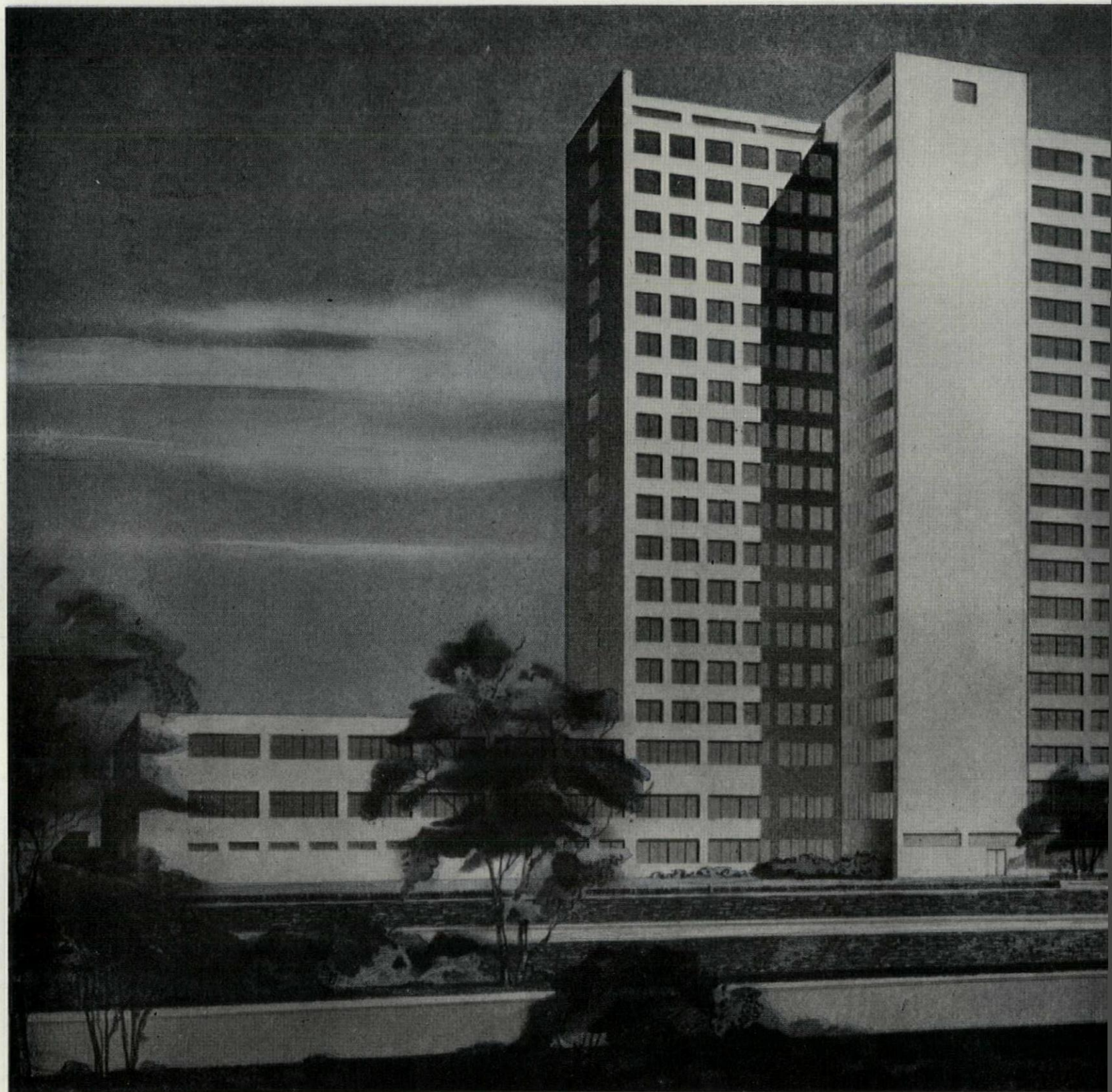


"Our Ballin '50 homes include the very newest and finest developments in building products, methods and appliances," says Mr. Ballin, "and for that reason they are equipped with modern, automatic Electric Ranges."

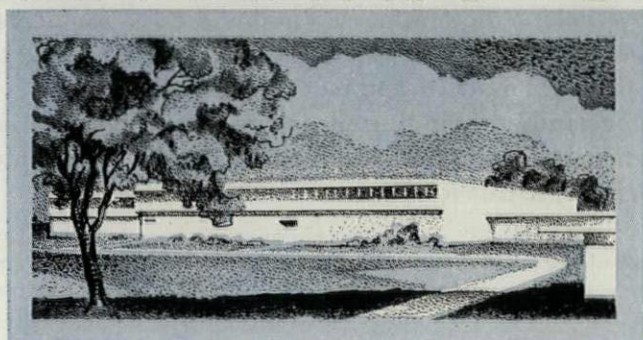
Home buyers are constantly demanding more and more built-in equipment. One way to satisfy these demands, as leading builders the country over have discovered, is to provide for electric cooking.

ELECTRIC RANGE SECTION, National Electrical Manufacturers Association, 155 E. 44 St., New York 17, N. Y.

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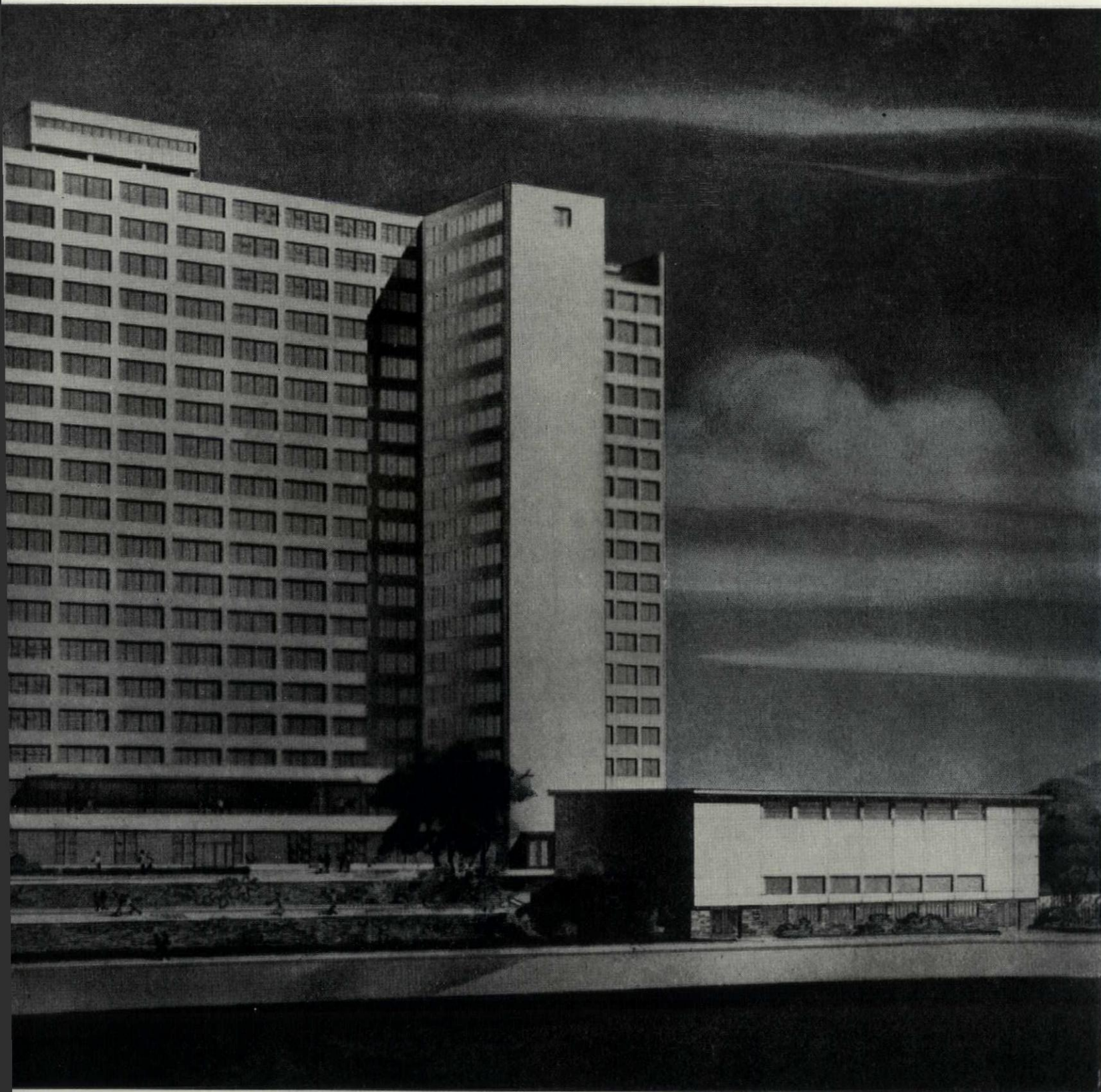
VETERANS GENERAL MEDICAL



Auxiliary buildings provide living and executive quarters

ANOTHER large-scale veterans hospital designed for maximum service efficiency and economical operation. The Veterans Administration and the U. S. Engineers have been widely commended for their successful efforts in achieving, through standardization, lower costs for consistently improved construction.

For John A. Johnson & Sons, Inc., this new hospital marks the fifth project under way for the Veterans Administration. These include 500-bed hospitals at Syracuse, N. Y. and Cincinnati, Ohio, two large projects embracing approximately thirty structures at Lebanon, Pa., and the Pittsburgh hospital, shown above, for the Corps of Engineers, U. S. Army, Pittsburgh District.



HOSPITAL, PITTSBURGH, PENNA.

These five projects, of which the Pittsburgh hospital, illustrated, has been initially designed for 19 stories, will represent a total investment in veterans care and welfare of between fifty-five and sixty million dollars, depending upon the decision as to ultimate capacity for the Pittsburgh structure.

*Built for the Corps of Engineers,
U. S. Army, Pittsburgh District.*

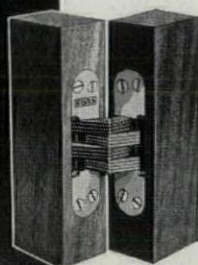
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A new brochure is now available which you will find interesting and of value if you have a construction problem.



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SOSS INVISIBLE HINGES
"the hinge that hides itself"

THE ULTRA-MODERN HOME OF THE NORTH
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Lang & Raugland, Minneapolis Architects, by using SOSS INVISIBLE HINGES, succeeded in creating modernistic interior effects in this building that could never have been realized with old style, butt type hinges!

These remarkable SOSS HINGES have NO UGLY, BULKY, PROTRUDING hinge butts to mar the graceful lines of modern design. They're the only hinge that absolutely assures the architect of the soft, smooth, streamlined, harmonious interiors that are so very necessary to really modern architecture. There's a weight-rated SOSS HINGE, operating on hardened steel links and roller bearings, for every type of installation.

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"Vertical Transportation For Modern Hospitals"—specific features which should be incorporated in hospital elevator planning.

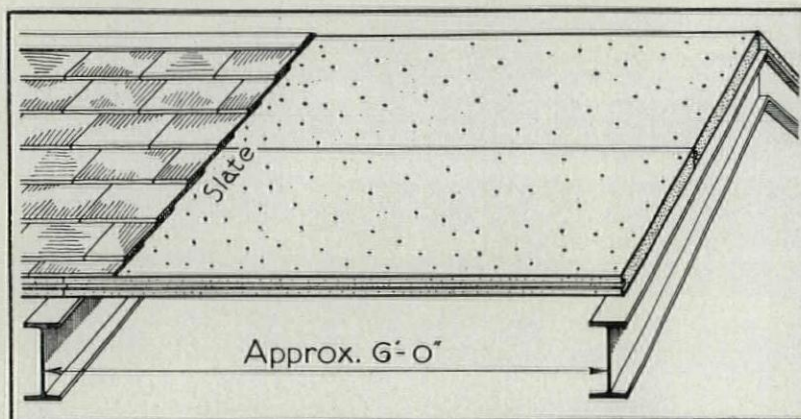
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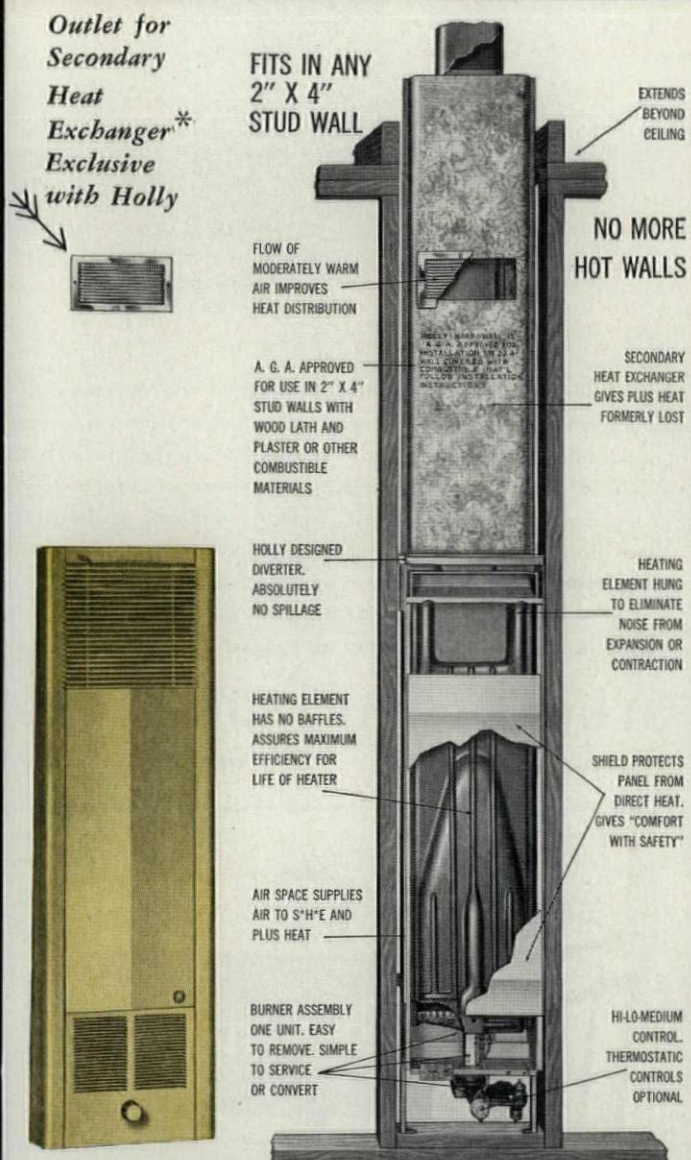
The Porete Plank makes the most economical roof deck for sloped roofs, where the steel purlins or rafters are on about 6' centers and where slate or tile has to be nailed to it.

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Now—an answer to all your heating problems. A gas-fired, recessed heater, fully vented, which is A.G.A. tested and approved under new 1950 Central Heating requirements. Approved for use in a 2" x 4" stud wall of combustible materials, with a minimum thickness of 4 5/8" or maximum of 5 1/2". No extra floor space or utility room is necessary. There are no ducts to run, no motors or gadgets requiring service. Initial cost to purchase and install is extremely low. Available in sizes from 25,000 to 45,000 B.T.U. input.

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A.G.A. approved under latest rigid 1950 central heating requirements for use with natural, manufactured or L.P. Gas.



Stubby flat floor furnace



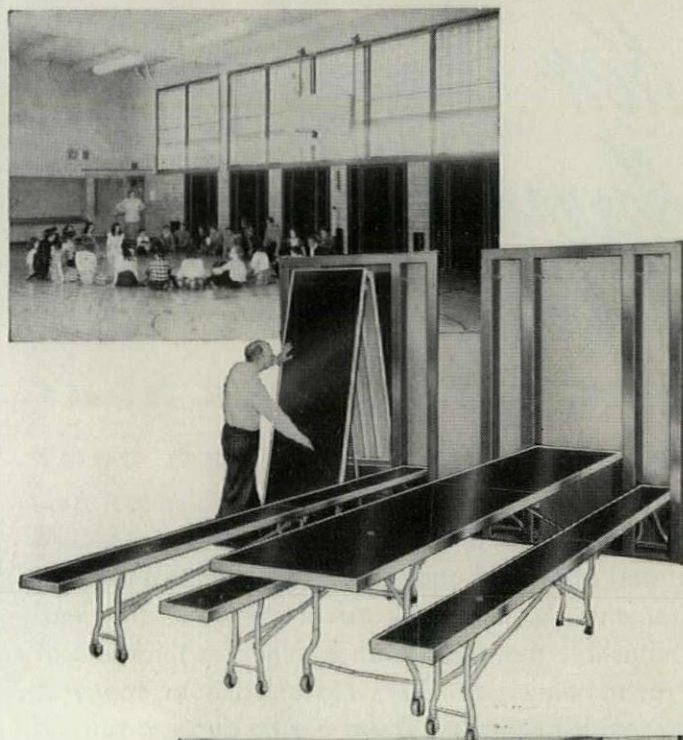
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a lot can happen in 8 minutes!



Tables and benches for 200 can be rolled down from the wall in 8 minutes.



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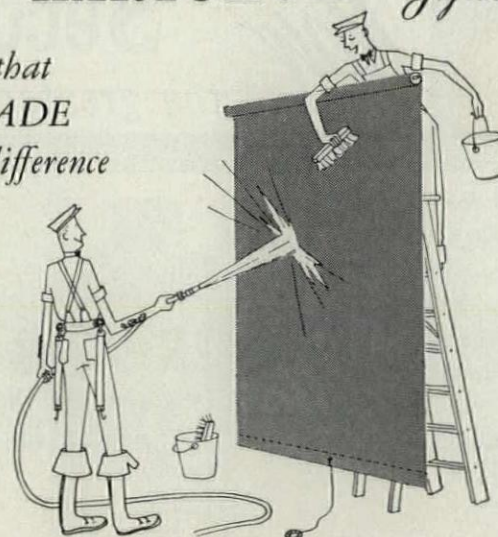
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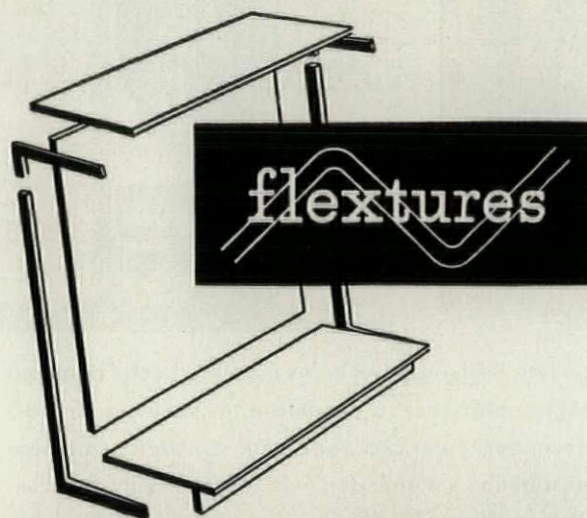
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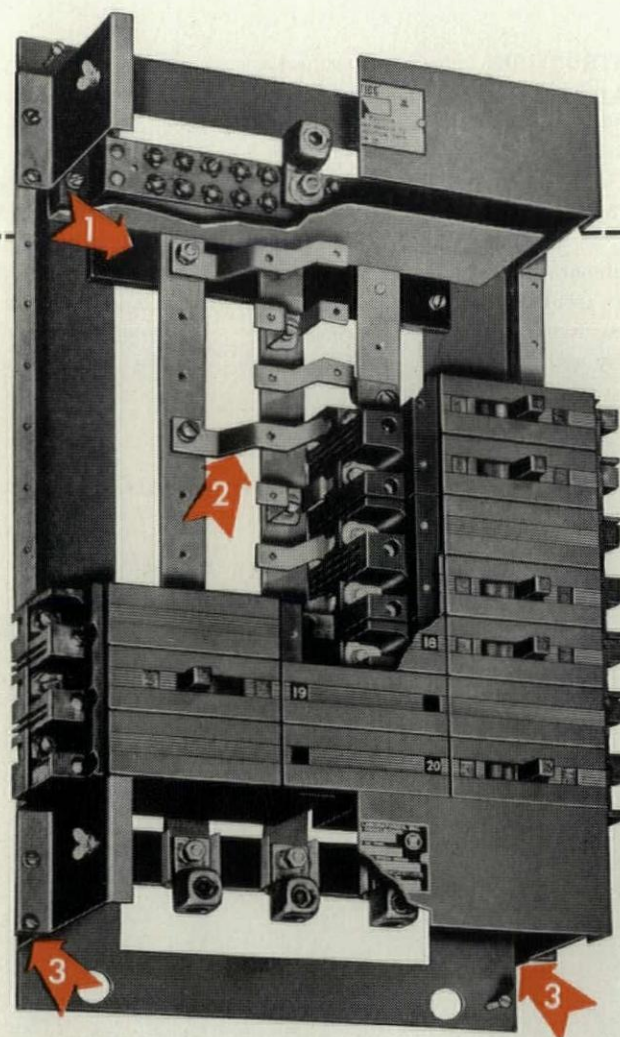
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Westinghouse
PANELBOARDS



TECHNICAL LITERATURE

TIMBER CONSTRUCTION. Timber for Military, Commercial and Industrial Buildings. Timber Engineering Co., 1319 Eighteenth St., N.W., Washington 6, D. C. 18 pp. 8½ x 11 in.

Timber construction, given a hardy boost in World War II, is now receiving fresh impetus because of imminent shortages of critical defense materials. This booklet is a pictorial record of big timber structures—factories, warehouses, hangars, railway structures, etc.—built in this

country. Photographs include examples of the three major timber construction systems: the Teco connector which fastens joints so that 80 to 100 per cent of the timber's strength may be utilized; glued laminations; and the graceful lamella arches. Advantages itemized (in addition to assured availability) are sturdiness, durability, and economy in construction time and in labor and material costs. The publication also lists roof truss and timber fabricators throughout the country and other literature on lumber.

ALUMINUM EXTRUSIONS. Drafting Standards. The Aluminum Extruded Products Div., The Aluminum Assn., 420 Lexington Ave., New York 17, N.Y. 52 pp. 6 x 9 in.

Anyone concerned with preparing extrusion section drawings of aluminum products—producer or consumer—should benefit from using the manual of drafting standards. Prepared by a group of leading aluminum product manufacturers, the publication outlines basic practices, standardizing them "as far as at this time seems practical." After an introductory chapter on definitions and identifications of the extruded products, the well illustrated booklet then covers tolerances, proper dimensioning and standard abbreviations. The information presented should facilitate the interchange of drawings between user and maker.

ADHESIVES AND COATINGS. 3M Adhesives, Coatings and Sealers. Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn. 32 pp. 8½ x 11 in.

Giving properties of more than 100 industrial adhesives, coatings and sealers, this new publication describes ten products formulated specifically for the building industry. These construction items include adhesives for installing ceramic tile, glass tile, cove molding, linoleum, acoustical tile, rubber tile and plastic tile. Most of the adhesives have "a high rubber content to insure long continued plasticity and resiliency." A caulking compound that "will not dry out, crack or shrink" for bedding double glazed windows is detailed, along with two spray coatings: one a sound deadener for metal stairs, ventilator shafts, and fan and motor housings, the other a translucent coating for windows which reduces glare and heat of the sun.

HEATING. National Unit Heaters. Catalogue No. 575 The National Radiator Co., Johnstown, Pa., 16 pp. 8½ x 11 in.

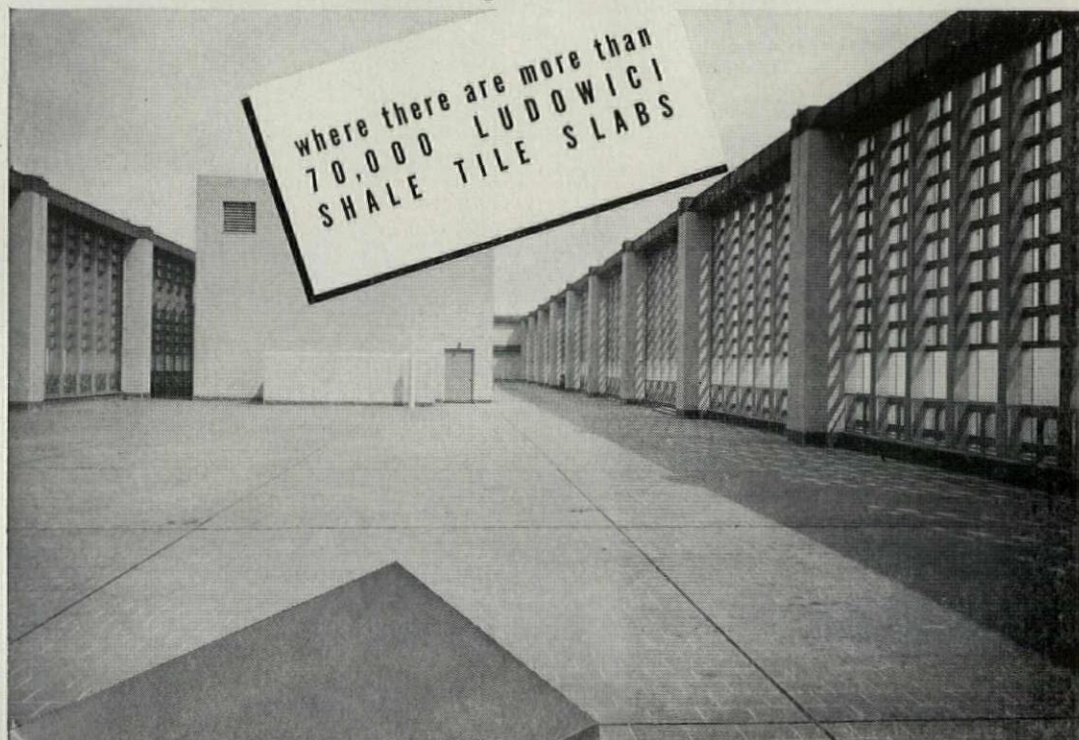
Describing installation and operational features of a new line of unit heaters for commercial, institutional and factory space heating, this two color catalogue is well written and illustrated. Especially useful is the application data concerning heat loss, air requirements, mounting height, and selection of size and type heater. Both the horizontal and vertical (down flow) models are said to be adaptable to either steam or hot water heating systems. Complete roughing-in dimensions and typical piping diagrams are shown, and instructions for installation and maintenance given.

CONCRETE MIXERS. Rex Moto-Mixers. Bulletin No. 50-10. Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis. 16 pp., 8½ x 11 in.

Cutaway views, job photographs and dimensional drawings illustrate features of the manufacturer's Adjusta-Hite and horizontal concrete mixers. Also presented is a complete table of specifications and mounting dimensions for all sizes.

(Continued on page 250)

the UNITED NATIONS promenade above Manhattan



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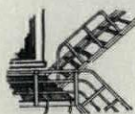
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HAVE the REAL

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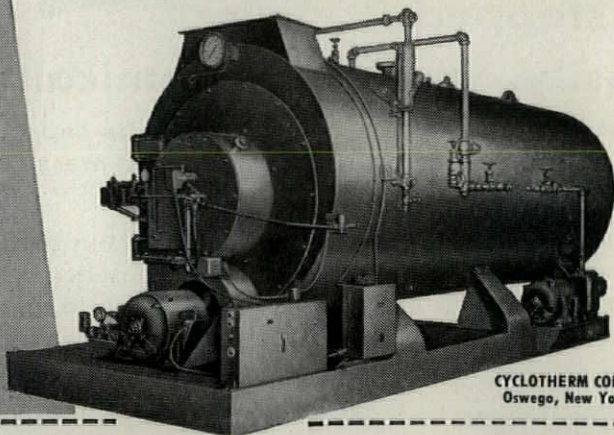
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SIZES available to fit your steam or water load for processing or heating. Low pressure to 200 psi fired with light or heavy oil, gas or combinations.



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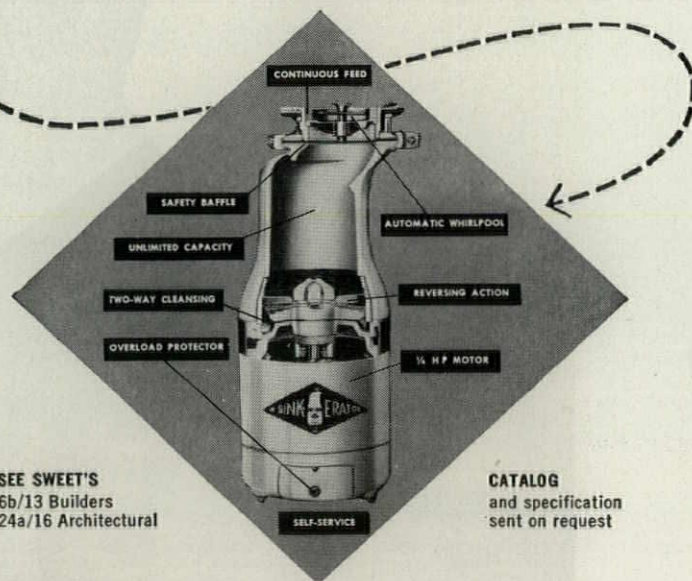
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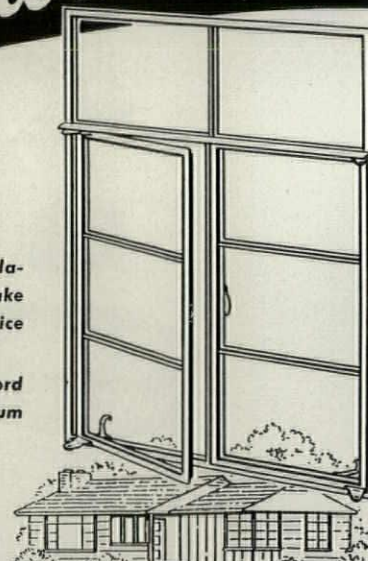
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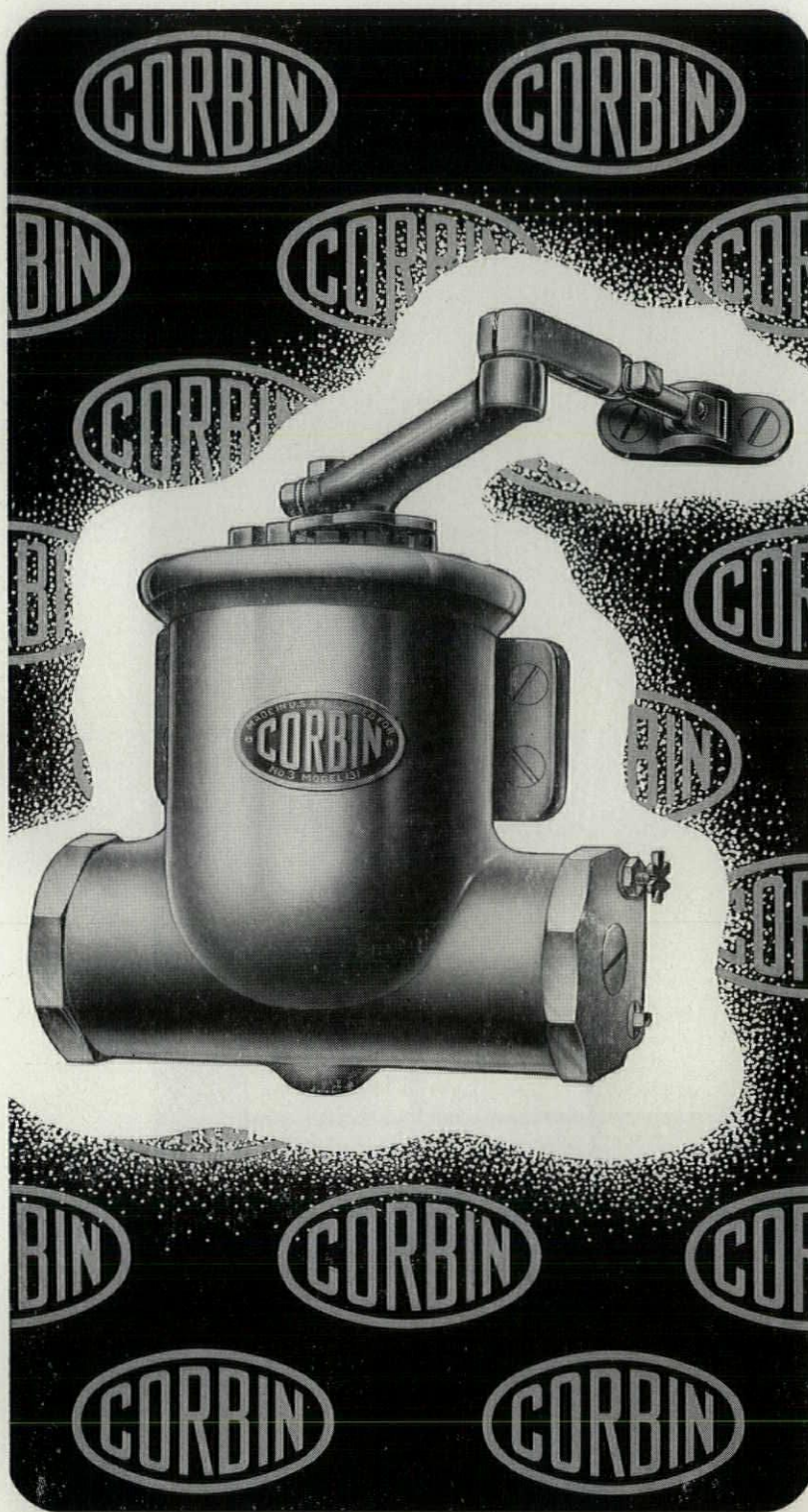
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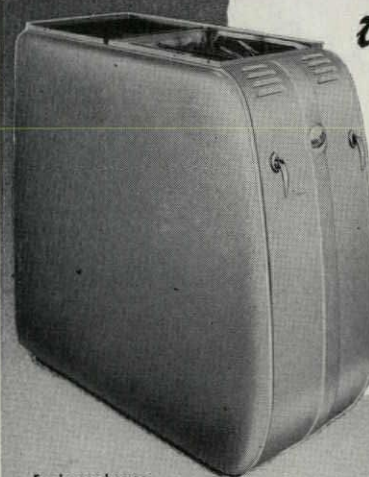
Servicised Deep Lip Safety Treads are made of a tough, resilient rubber compound in which Norton Alundum aggregate has been securely embedded throughout the wearing surface. Easily applied to any surface—old or new. Deep Lip Safety Tread is $\frac{1}{4}$ " thick by 3" wide, and comes in lengths up to 84" or less. Lip depth $1\frac{1}{2}$ ". Available in Buff, Gray, Green, Red or Black.

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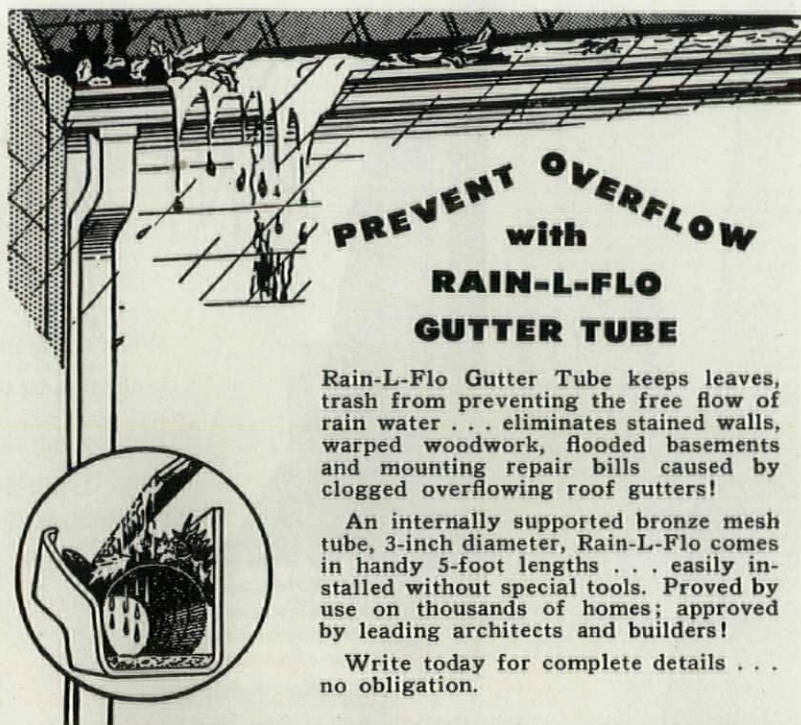


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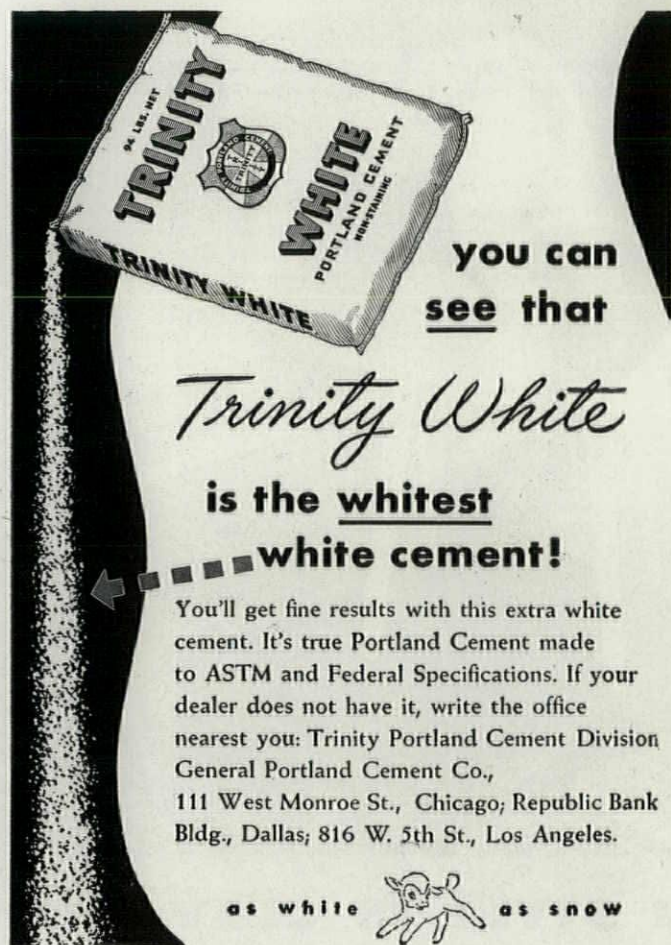
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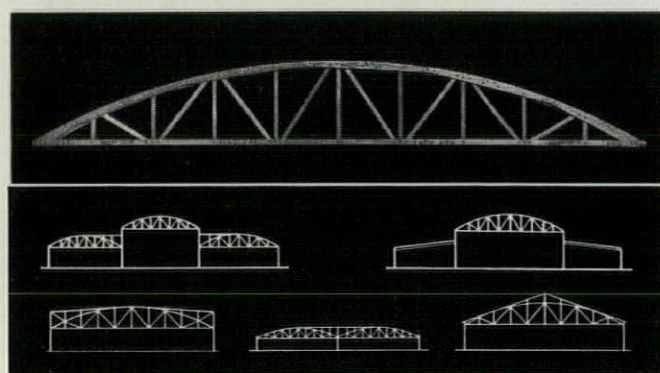
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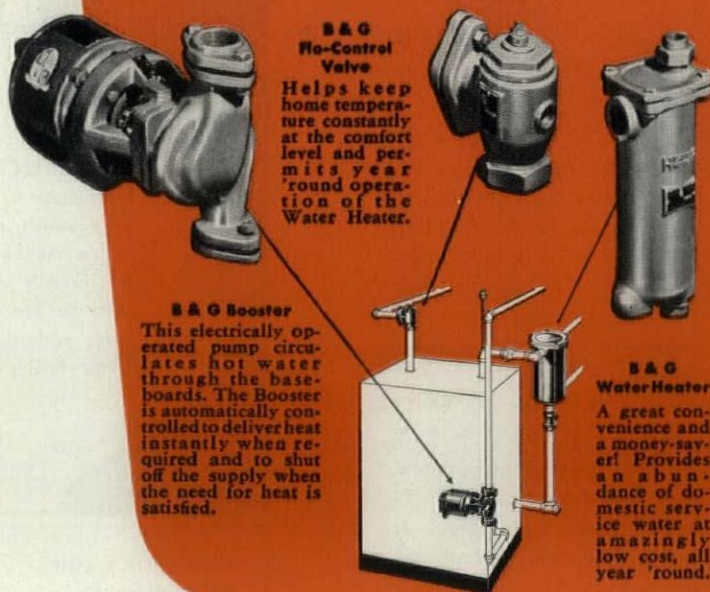
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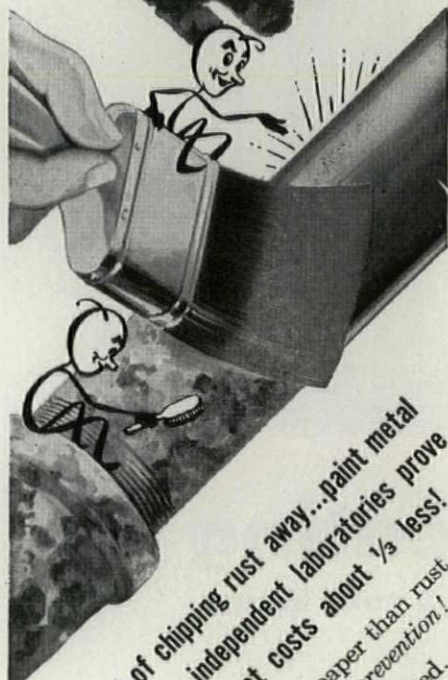
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TECHNICAL LITERATURE

ELECTRIC APPLIANCES AND WIRING. Design Details for Electrical Living Homes. Booklet B-4671. Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa. 24 pp. 8 1/2 x 11 in.

Many phases of "electrical living"—from kitchen ranges to special purpose outlets—and ways to plan for them—are discussed here. Photographs, plan views and wiring diagrams illustrate means of best utilizing floor space in kitchens and laundries. Several lighting schemes, designed for appearance as well as utility, are considered. Cornice, cove, recessed ceiling, and cabinet lighting plans are accompanied by construction drawings. The final section deals with minimum requirements for providing complete electric service in the contemporary home: outlets located to give service where desired; circuits having the capacity to serve the outlets; and service entrance which can carry present loads plus future additions.

FLOORING MAINTENANCE. Asphalt Tile Floors. Asphalt Tile Institute, 101 Park Ave., New York 17, N. Y. 8 pp. 3 x 5 in.

How to care for asphalt floors properly is the subject of this folder. Simple rules for cleaning and waxing are given, and proper protective fittings are recommended for use on furniture to prevent marring the surface of asphalt and other resilient floor materials. The instructions specifically caution against use of alkaline cleaning compounds or strong detergents; varnish, lacquers, shellac or plastic finishes. Neutral soap or cleaners are suggested for cleaning and water emulsion waxes for polishing asphalt tile.

HARDWARE. Pittco Checking Floor Hinge. Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh 22, Pa. 16 pp. 5 1/2 x 8 1/2 in.

Various types of Pittco checking floor hinges are listed and their performance characteristics described in this pamphlet. A chapter is devoted to information on setting hinges and adjusting speed of operation. Directions for selecting the proper hinge to cope with abnormal opening factors are also given.

HARDWARE. Hardware Finishes & Comparative Symbols. Ajax Hardware Mfg. Corp., 4351 Valley Blvd., Los Angeles 32, Calif. 1 page. 11 x 16 in.

This handy chart lists all the common builders' hardware finishes and indicates which of 29 manufacturers do and do not supply them. It also gives the companies' respective symbols corresponding to those of the U. S. Bureau of Standards. The guide should be a valuable aid to specification writers.

AIR CONDITIONING. Young Air Conditioning Units, Catalogue No. 7550, Young Radiator Co., Racine, Wis., 6 pp. 8 1/2 x 11 in.

Giving full details on the manufacturer's new air conditioning line, the catalogue outlines advantages of the units' sectional design and lists complete roughing-in dimensions and capacity data on the eight horizontal and vertical models.

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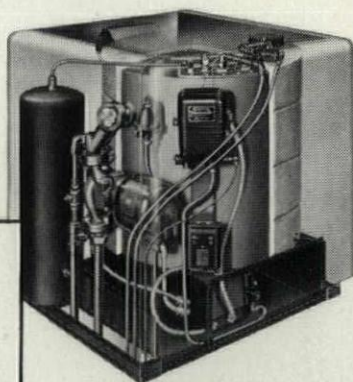
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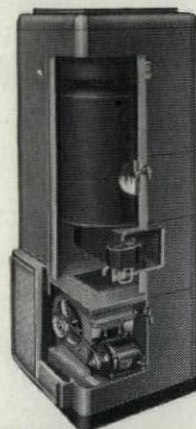
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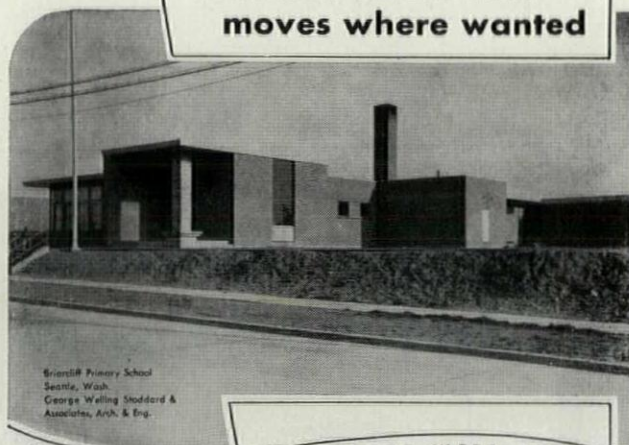
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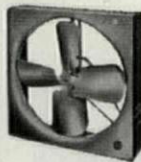
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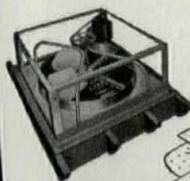
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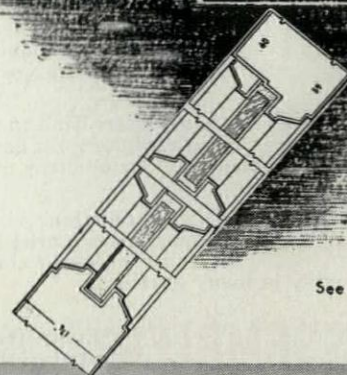
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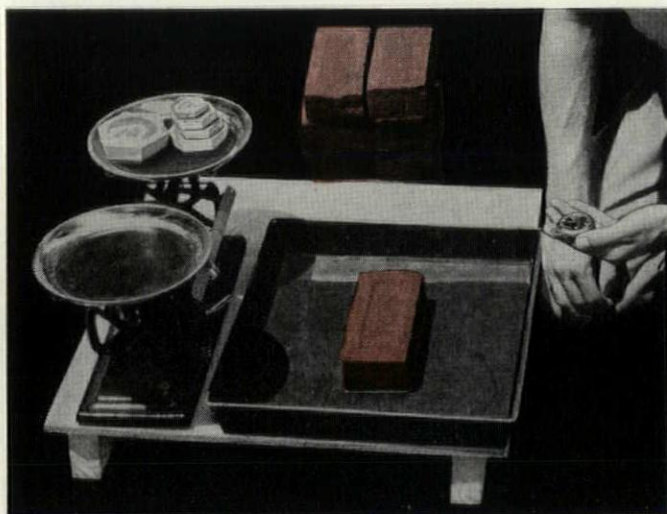


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When placed flat in $\frac{1}{4}$ -inch of water for one minute, a brick should gain not more than 20 grams (7/10 oz.)



A good bond was not secured here because the brick on which the mortar was spread had sucked the mortar dry, before the brick was laid.



A good bond was secured here because the mortar was not sucked dry too fast.

WET THE BRICK TO SECURE A WATERTIGHT BOND

WE SUGGEST THAT—

Brick taken from the scaffold should be tested for rate of absorption, as illustrated at top left. If the tested brick gains more than 1 ounce in weight, all brick should be thoroughly wet just before they are used.

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If the absorption rate of the brick is too high at the time they are laid, they will suck the water out of the mortar too fast, even though the mortar has high water-retaining capacity. A thorough wetting of the brick just before they are laid is the only way to be sure they will have a low enough rate of absorption.

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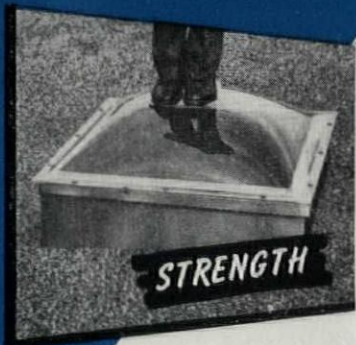
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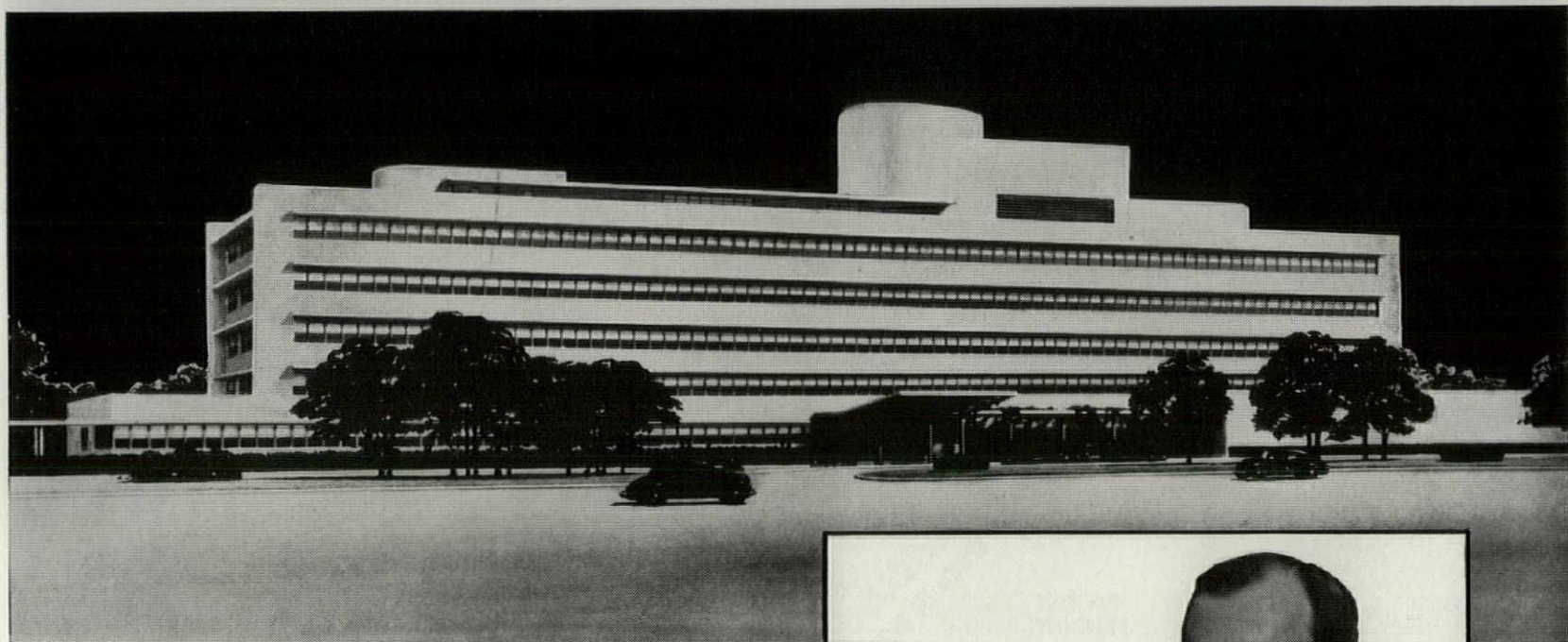
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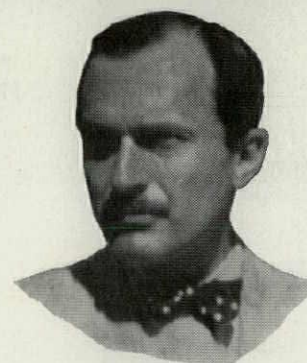
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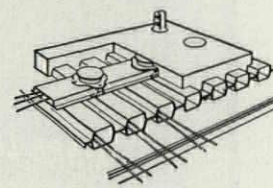


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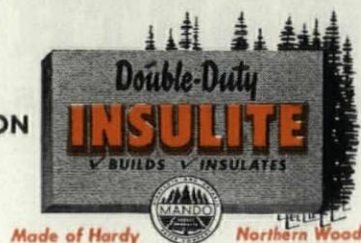
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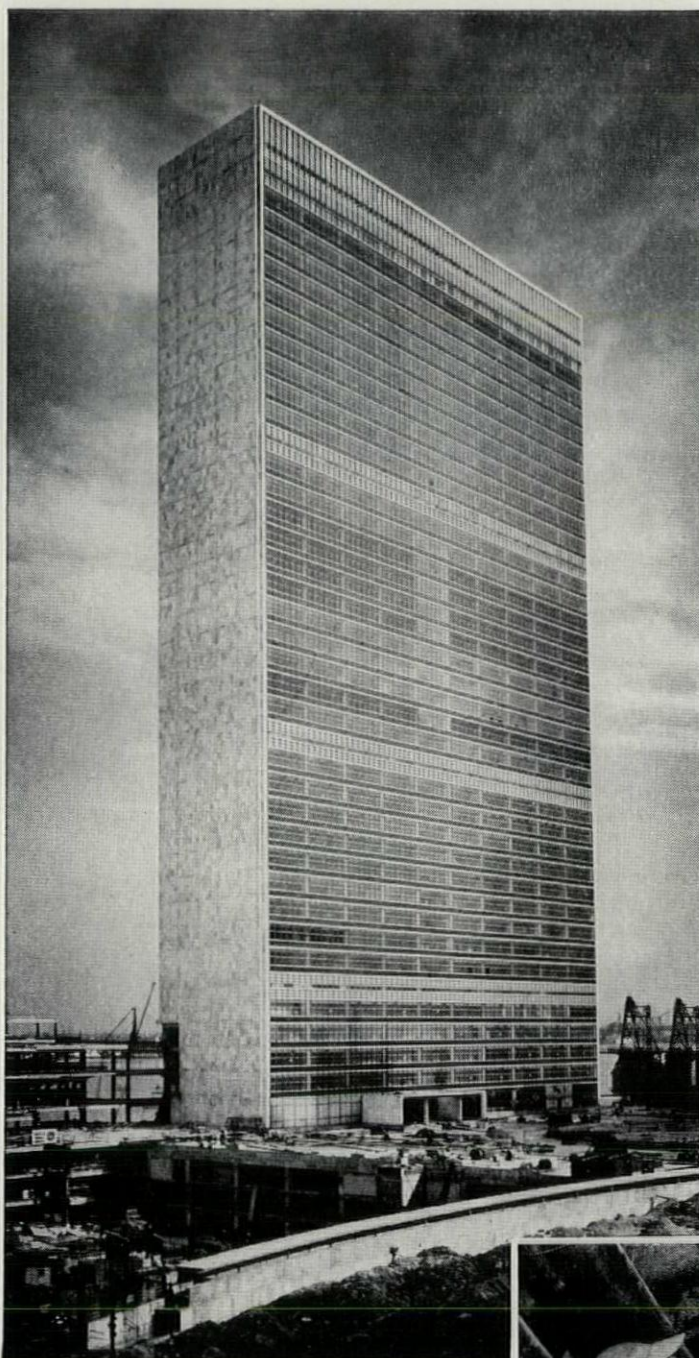
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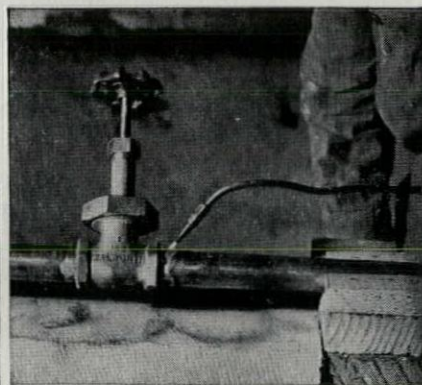
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Cut-away view of a Walseal Tee, showing sectional view of Silbraz joint; factory inserted ring of silver brazing alloy; and completed Silbraz joint.



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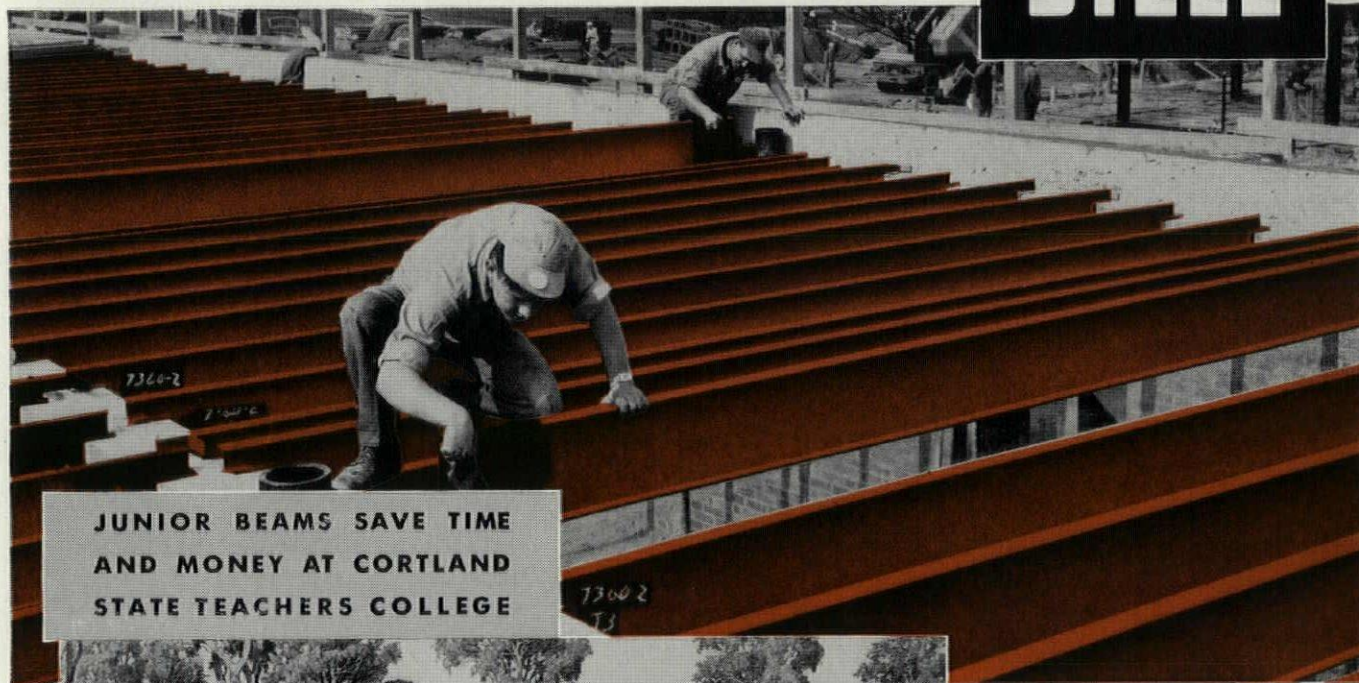
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An important example of this up-to-date building technique is the installation of 130 tons of J&L Junior Beam floor joists. Architect Carl W. Clark, selected Junior beams as the result of a continuous study which he conducts on the cost of materials and the relative economy of design.

Cortland State Teachers College clearly demonstrates the practical advantages of Junior Beam construction. Syracuse Engineering Company

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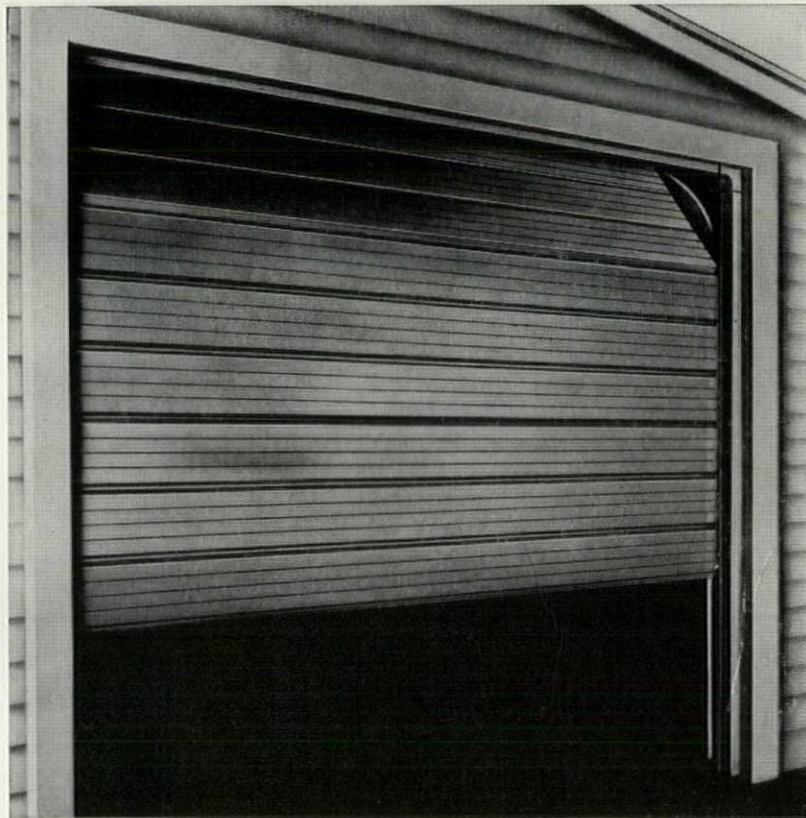
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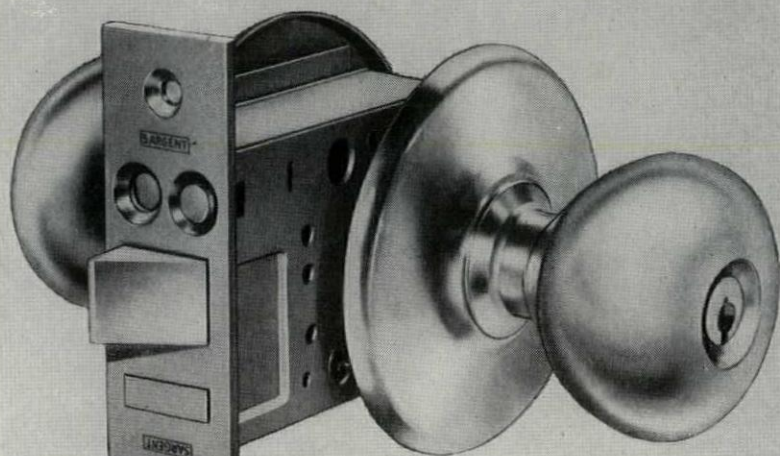
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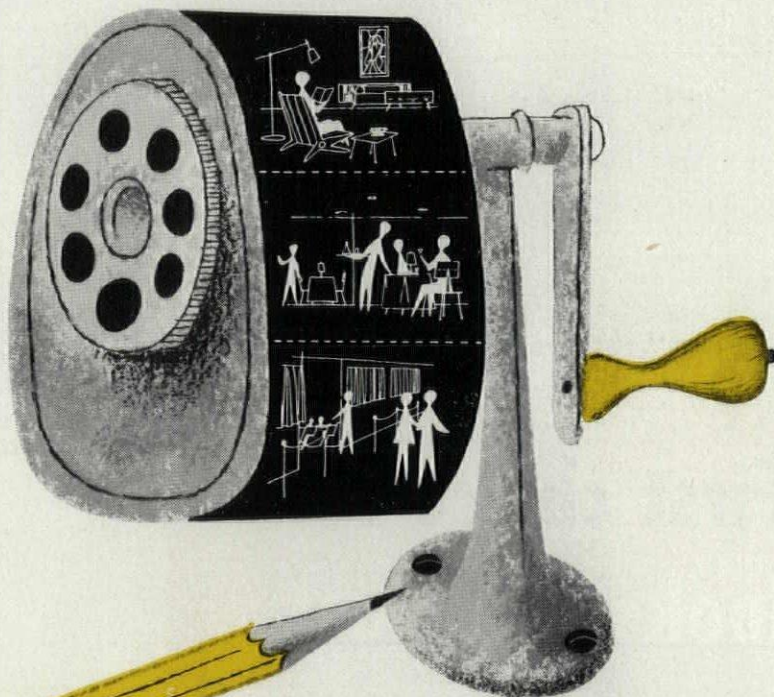
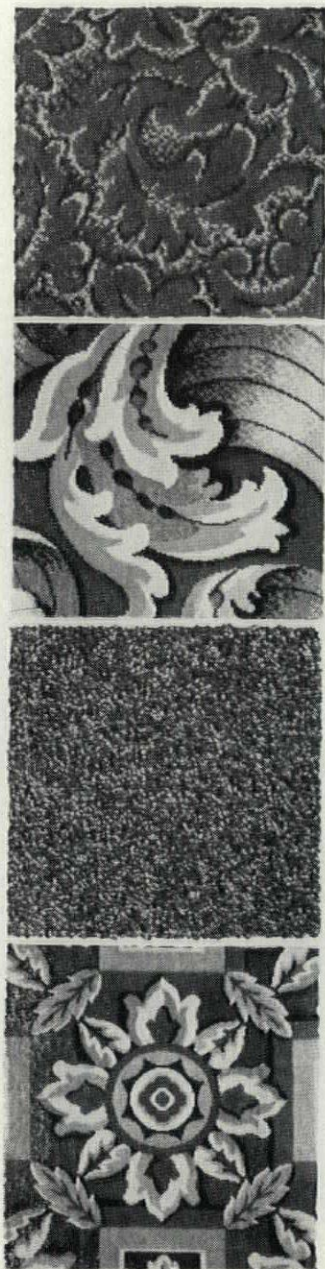
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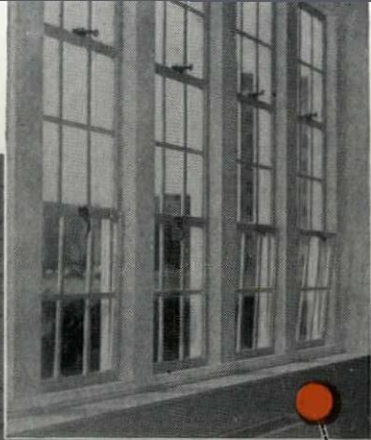
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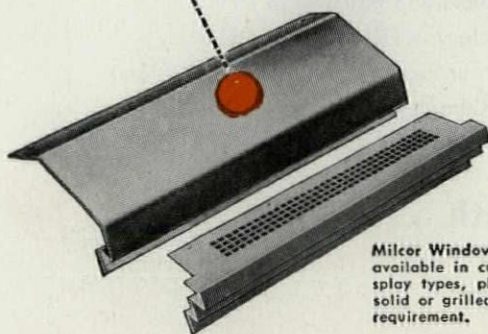
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