PROGRESSIVE ARCHITECTURE

# newsletter

NOVEMBER 1951

- News is almost all bad this month. It is small consolation to architects and engineers to know that the critical situation in steel and aluminum will "probably" be eased by "mid-1952." The unexpectedly harsh cut-downs in almost every category of buildings (brought about by low percentages of metals grants, compared to requests from claimant agencies) were in most cases unexpected. Realists knew that commercial building was going to be hit hard -- $86 millions in applications to NPA for the fourth quarter were denied in the N.Y. regional office alone -- but it was the set-back in institutional and even industrial building that was a shock.

- Architects and engineers, among other parts of the building industry, are reasonably angry at what seems to be inefficiency and confusion -- confusion in NPA and just plain ineptness on the part of some of the claimant agencies.

- Strongest claim seems to have been made for housing, which will get almost sufficient "A" materials, under self-certification system, to build the 850,000 units which would satisfy housers both in government agencies and in the house-building industry. Their trouble will be ultimately with the "B" materials, where pinch is yet to come. Worst situation is in schools, where A.I.A. and industry committee is frantically trying to supply factual information to a technically weak claimant agency, and where the present inadequate fourth-quarter allotment of 94,614 tons of steel will apparently be cut still further (to 92,296 tons, according to Manly Fleischmann's reported forecast) in first quarter of '52.

- It is the small firm, once more, which is going to suffer most. Military construction program, as A.I.A. President Glenn Stanton has pointed out is, so diversified that smaller firms could do much of the work, but in actuality the contracting agencies turn to the large, combined architectural-engineering office.

- Some architects are taking advantage of future promises of easier procurement by persuading clients to go ahead with drawings, in the belief that materials can be obtained in third or at worst fourth quarter of next year, when construction phase is reached.

- To make things tougher, NPA has now ruled that any shipments later than seven days after the beginning of a quarter must be charged against that quarter rather than the one for which it was granted. Thus materials shipped after October 7, even though alloted originally to the third quarter of '51, will be charged against the fourth-quarter allotment of the customer.

- Latest construction figures available are for September, which showed a slight drop from August, as well as from September '50 Private work continued down ($235 million below last year) and public work up about the same amount. Industrial and military construction, of course, continued to hit all-time record levels. With the new $5.8 billion military construction bill signed by the President, this trend should continue at an accelerated rate for armed services work, will

(Continued on page 2)

# newsletter

drop off for industry during last quarter, due to the steel situation.

- Forty-one areas have now been designated as critical because of defense requirements. Relaxed credit restrictions, liberalized mortgage insurance and aid for "provision of essential community facilities and services" go with such designation by HHFA and Office of Defense Mobilization.

- That some benefits may come in a roundabout way from the restricted use of materials was indicated by a statement from Yale & Towne that they were simplifying a number of builder's hardware items "to the exclusion of elaborate and ornate hardware." Simplification and standardization, in this field and some others, may result in what Y & T calls "more efficient production because of the longer production runs possible with simplified product lines."

- Joe Mason, former building editor of "Good Housekeeping," is the new executive editor of "Architectural Record."

- Sponsors of the Indianapolis Home Show announce a competition for the design of a house, open to architects, designers, draftsmen, and students without geographic limitations. Four prizes; first prize $500 and $800 additional for architectural services if winner is "capable and available." Entries due December 16, 1951. Information from Edward D. Pierre, Architectural Adviser.

- Urban Land Institute has published an excellent summary of basic town planning data under the title of "Planning Community Facilities for Basic Employmment Expansion." Costs $3.00, address 1737 K St., N.W., Washington, D.C. Citizens' Housing and Planning Council of New York recently published informative article by Ira S. Robbins on status of co-operative housing at the moment.

- Stanford University, California, has published proceedings of its recent School Plant Planning Conference as a 152-page booklet.

- New York Chapter, American Institute of Decorators, has opened an employment agency for the decorative arts, with Helen Hutchins as Director, at 211 E. 49th St., New York City.

- Yale is instituting a course in photography (from techniques to its role in graphic design) under Herbert Matter, open to students enrolled in the Department of Design.

- Brownsville, Texas, is advertising the fact that it needs a "multiple-story parking garage" and will render "maximum assistance" to interested entrepreneurs.

- Russel Wright has been elected president of the Society of Industrial Designers.

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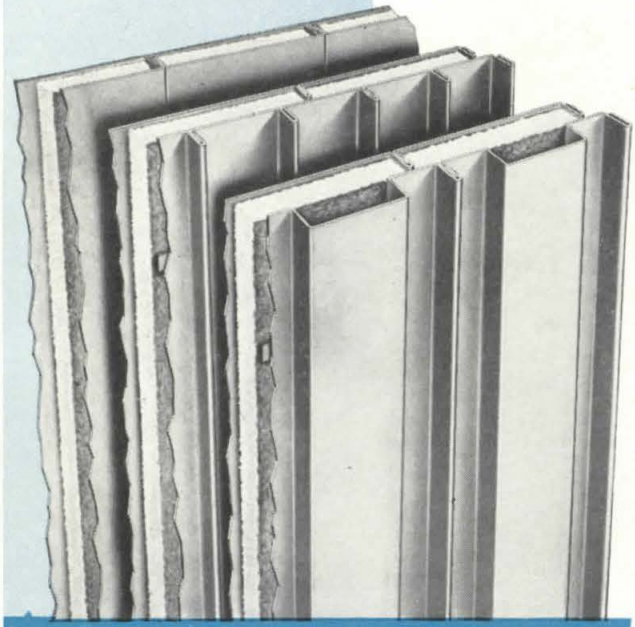
# INSULATED METAL WALLS

for INDUSTRIAL and COMMERCIAL BUILDINGS

## ALUMINUM, STAINLESS or GALVANIZED STEEL



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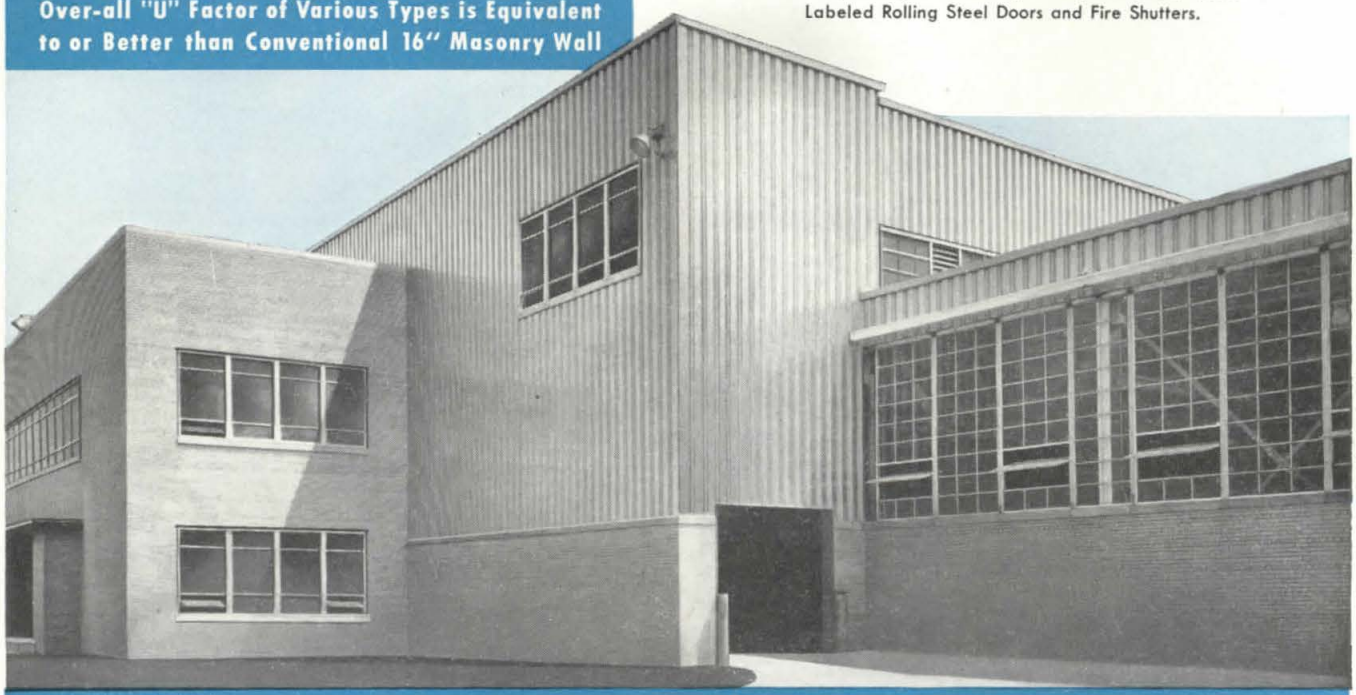

Mahon Insulated Metal Walls employed in construction of a new plant for Ford Motor Company in Cleveland, Ohio. F. A. Fairbrother and Geo. H. Miehls Architect-Engineer. Albert Kahn Associated Architects and Engineers, Inc., Consultants. H. K. Ferguson Company, General Contractors.

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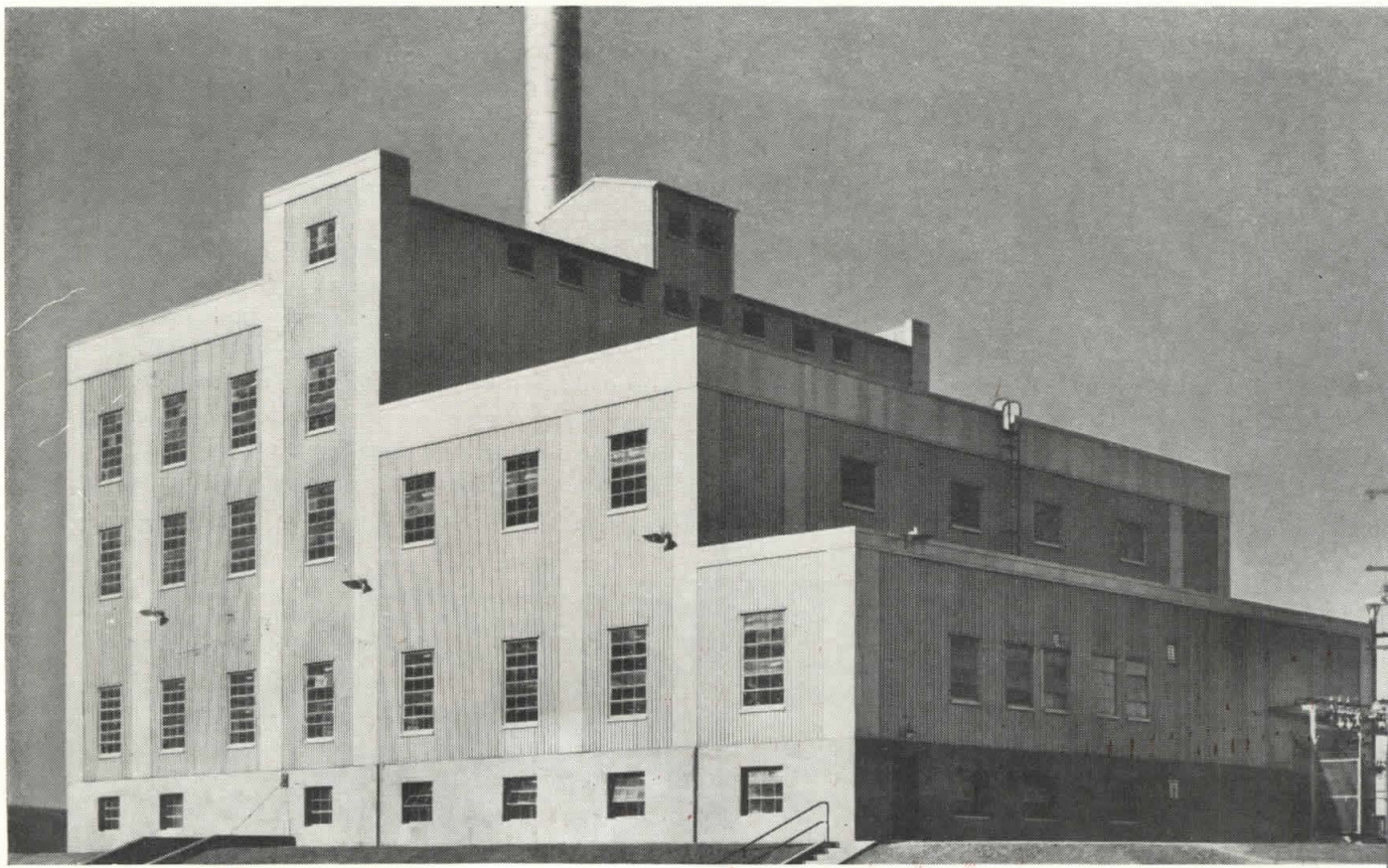
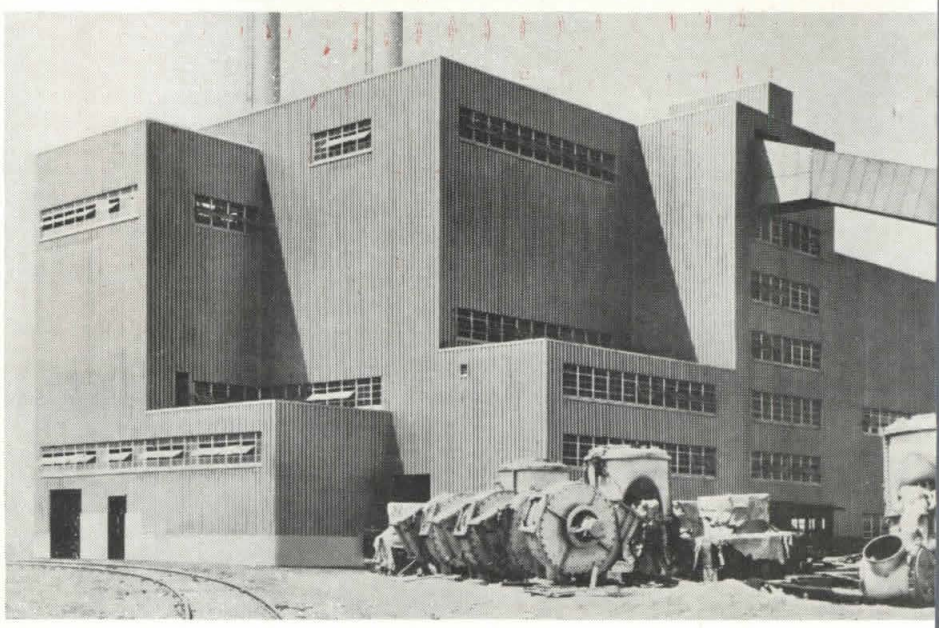


▲21,000 sq. ft. of Stainless Steel were used in the walls of this new power station built for the Northern States Power Company, Minot, N. D. Designed by Pioneer Service and Engineering Company, Chicago. Wall materials were fabricated and erected by The R. C. Mahon Company, Detroit, Michigan.



➤William J. Neal Station was erected last winter with temperatures ranging from 10° above to 50° below zero for Central Power Cooperative, Inc., Voltaire, N. D. Erection of 44,900 sq. ft. of Stainless Steel walls presented no difficulty even in such low temperatures. Designed by Vern E. Alden Company, Chicago. Wall materials were fabricated and erected by The R. C. Mahon Company, Detroit.

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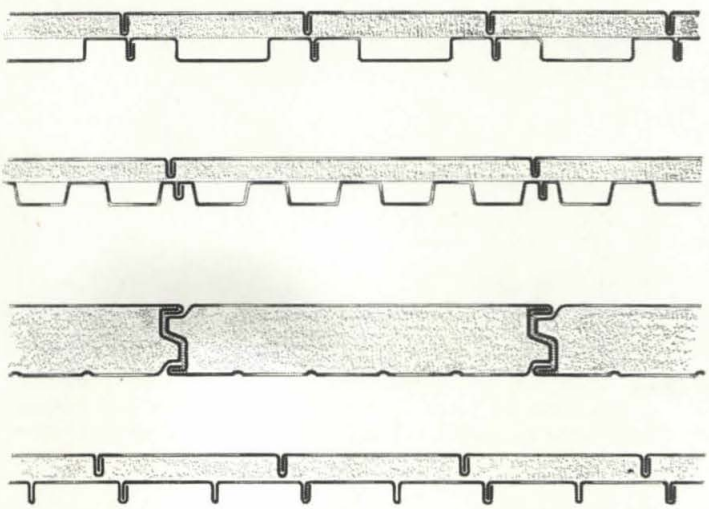
**Typical cross-sections of insulated Stainless Steel walls of various wall manufacturers**



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# U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

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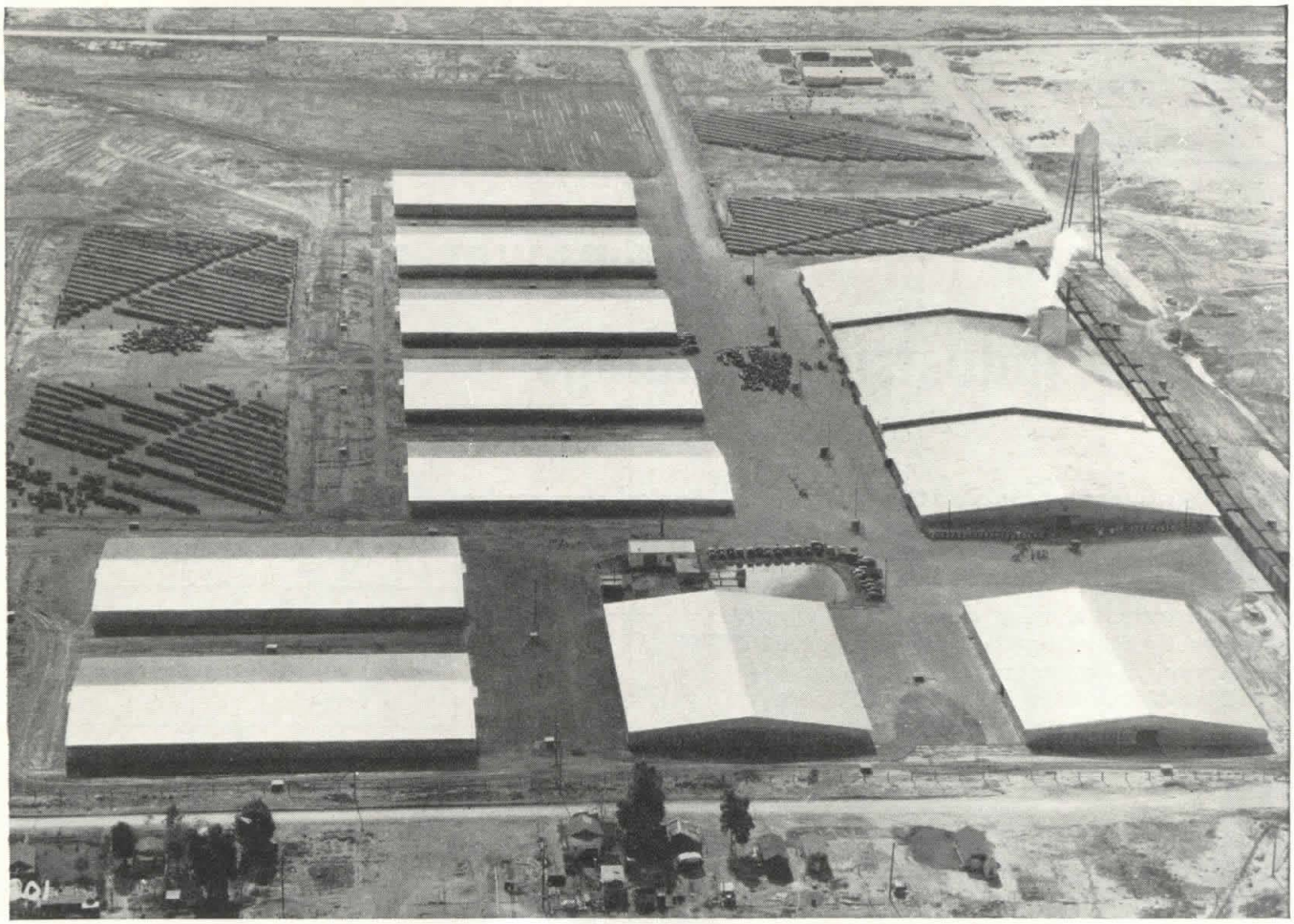
UNITED STATES STEEL



**THESE TEN BUILDINGS** of the Calcot Compress & Warehouse of the California Cotton Cooperative Association, Bakersfield, are entirely covered with Kaiser Aluminum corrugated roofing. One of the largest aluminum roofing installations in the nation, the buildings cover nearly 1,000,000 square feet. Each warehouse is 250′ x 158′, large building is 800′ x 300′.

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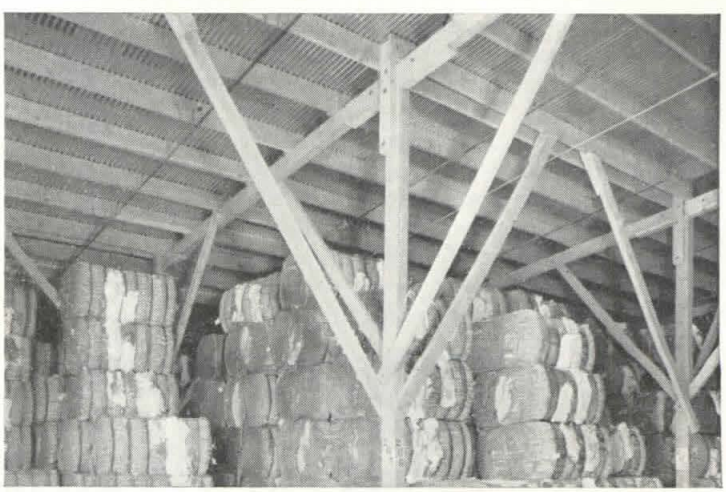
**TEMPERATURES IN CALIFORNIA'S** San Joaquin Valley often reach 110 degrees. But inside the big cotton warehouses and compress building at Bakersfield it's 20 degrees cooler during hot weather, and management estimates worker efficiency is 20 per cent greater—due to the reflectivity of Kaiser Aluminum Roofing.



**KAISER ALUMINUM ROOFING** is unusually resistant to corrosion, never needs painting. The name "Kaiser Aluminum" stamped on every sheet assures trouble-free service: It's *solid* aluminum—not clad or veneered. Sheets are light, easy to handle, quickly applied—and don't require expensive, heavy supporting structures. Because they're strong, no sheathing is needed.

**KAISER ALUMINUM SHADE SCREENING** on windows of this medical office building in Phoenix keeps interiors cooler during hot weather. Tiny louvers stop the sun's rays, screen out insects, but freely admit comfortable light and air. Kaiser Aluminum Shade Screening makes up for lack of roof overhang in helping to screen the sun.

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# Kaiser Aluminum

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p/a

# VIEWS

### OBSESSIVE CONCENTRATION

*Dear Editor*: I was greatly heartened by your words "the best defense against war is peace," with which you have wound up the otherwise rather disheartening debate on defense from the atom bomb in September 1951 P/A.

It is rather shocking to see architects and planners, men professionally devoted to construction, trying to sell their services and their pet schemes as indispensable for winning a war of unconscionable destructiveness. Is it so difficult to understand that this obsessive concentration of all thoughts on means of fighting a war means surrender to the idea that war is inevitable? Once that idea is accepted, anything that is good for the other side is bad for that very reason, however desirable it may be in itself, and the way is blocked to any peaceful settlement, which by its very nature must be advantageous to both sides.

Let us hope that the debate in P/A, by showing the futility of any attempt to achieve security by means short of peace will help to redirect the minds of Americans towards the search for peaceful alternatives to the cold war.

HANS BLUMENFELD
Chief, Div. of Planning Analysis
Philadelphia City Planning Commission

### SAVED FOR CHAOS

*Dear Editor:* As a third-year student in the Architectural College of the University of Southern California, I am a member of a group whose project for the next six months will be the design of the "perfect" neighborhood, a community for five thousand people. For two weeks we have been reading, thinking, and writing upon the opening phase of the design, the investigation of human beings revolving around the question "What is the good life?" Answering this question has reinforced my belief that the foundation for the good life is freedom from fear. For me, all other freedoms spring from this. People unafraid are people secure, people who know the meaning of mutual love and respect, people who know their future to be one of growth and development, people who know the joy of work which builds this good life for all.

With this belief I cannot but feel horror and anger at the unthinking acceptance by the majority of the contributors to "The Architect and Civil Defense," of the inevitability of war. The amount of work which has been put on the design of bomb shelters, protection, and dispersal is proof enough of this. And with those who use war as the basis for urban redevelopment, it is but one step further to the premise that the physical destruction which accompanies war will open the way for the remaking of man's environment.

But to take a stand against civil defense as a factor of war preparations means that one must follow with a stand against war itself. Your statement "the best defense against war is peace" presupposes this action. We are a nation in which all effort may soon be channeled into the so-called defense effort.

We who are planners and future planners must oppose this drive toward war with the courage, strength, and knowledge which come as the natural result of our desire to see man and his society established in an integrated, harmonious environment.

If rearmament is not stopped and supplanted with planned construction for peace, the men and women who emerge from under the cover of steel and concrete which they have thrown over themselves will not have been saved. For those who *can* plan, those who did not succumb to fear, will not be there to help. They will have been above when it happened, still trying to avoid the catastrophe, and their knowledge, their reason, and their love of mankind will have gone with them.

JOHN R. POINTER
Los Angeles, Calif.

### THE PEACEFUL ARTS

*Dear Editor*: I found the controversy on "Architecture for Civil Defense" enriching and stimulating.

I think architects are citizens . . . and people too. (Maybe I'm prejudiced!) And as citizens and human beings we ought to treat the question of our survival with due seriousness. It would be well for us to devote some of the skill, energy and thoroughness, which we so often reveal in our designs and structures, toward a relentless, objective reevaluation of the *premises* upon which our belief in the need for atomic defense rests.

Contemporary architecture and city planning are, by their very nature, peaceful arts. The open planning and glass walls of modern structures demand a tranquil, secure environment — in sharp contradistinction to the town palace of the Italian Renaissance or the Medieval feudal castle. Are we going to sacrifice the fruits of centuries of toil and genius without a struggle? Are we rushing to shed our identity as architects and planners to become fortification engineers?

Can architects ignore the world of politics? Of course they can—and with about as much success as if they were to ignore the law of gravity. I think architects should individually and jointly let the world know that they refuse to consider atomic war inevitable until every peaceful channel for settling world differences has been fully tried and thoroughly exhausted.

HAROLD J. LEVY
Brooklyn, N.Y.

### LONG-RANGE BETTERMENT

*Dear Editor:* On behalf of the Committee on National Defense, A.I.A., I wish to convey the Committee's congratulations on the way in which PROGRESSIVE ARCHITECTURE has presented both "the pros and cons of architecture for civil defense" in the September 1951 issue. The committee feels that it is extremely important that full publicity be given the profession's role in national and civil defense. We also believe that the broad scope of national defense includes protective shelters within critical target areas and strategic decentralization of industry and population. Both these programs can be planned for defense and the long-range betterment of the national economy.

The Committee has recently resolved: "that a sound program of civil defense for American cities requires the mobilization of slum-clearance and redevelopment programs, parkways and arterial highways, parks and open spaces, and other civic improvements; and their planning in such a manner that our present solidly built cities are gradually compartmented into communities better adapted to defense, as well as to family life."

MORRIS KETCHUM, JR., Chairman
Committee on National Defense, A.I.A.
New York, N.Y.

### LIGHTING THE STAGE

*Dear Editor*: As an advertising man, I read P/A from cover to cover every issue. Now, after several years, I finally have some comments on one of your articles. I refer to Carl J. Allen's discussion of lighting the school stage.

For many years now, I have been interested in the amateur and semi-professional theater—from a technical

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p/a VIEWS

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standpoint. Working with various theatrical groups, I have staged and helped to stage productions in quite a few schools. My particular interest is in lighting.

School stages and auditoriums fall into two general classifications, as far as I'm concerned: (1) stages which are unequipped; and (2) stages which are wrongly equipped.



Allen has certainly presented the ideal stage-lighting system. But I shudder to think how much it would cost. So would the average school board. Allen will be the first to admit that last-minute economies are often made at the expense of the stage. As a result, the usual new school stage is poorly equipped, yet the cost of this equipment would pay for a good system many times over.

Installation cost is one of the jokers. Everything is wired in, using continuous power channels or rigid conduit buried under tons of concrete and plaster. Changes are almost impossible to make. And the cost of control boards, like those mentioned in the article, run into tens of thousands of dollars.

In my opinion, the only built-in electrical equipment on a stage should be a 600 amp. main switch. Everything else should be portable. We can take a tip from the traveling New York shows. They carry their own switchboards, cables and lights—and achieve effects that would put *any* school auditorium to shame. And I'll bet that the equipment these shows use doesn't cost one fifth as much as the average school installation.

These shows don't use auto-transformer dimmers. They're too heavy and too expensive ($180 vs. $70 for a comparable resistance dimmers). Their control boards consist of a big wooden box filled with dimmers. They don't bother with expensive rotary switches and motor drives. They carry a big trunk full of cables, and connect the lights with them.

They don't bother with a couple of hundred lineal feet of footlights and borderlights. They use a couple sections of footlights and borders, but only to fill in the shadows left by the spotlights. They don't worry about spun Alzak reflectors and heat-resistant glass color filters. They're too expensive, too heavy and too fragile.

Actually, of course, all this is unimportant *if* the system is installed exactly as Allen plans it and *if* there is a real expert to operate it. But in the main, I think that schools would have better stage lighting, at low cost, if they installed a truly portable system as outlined above. And in the bargain, students who have an interest in stage lighting would gain valuable experience in the installation and operation of the equipment.

DAVID F. BARBOUR
Pittsburgh, Pa.

●

Dear Editor: *The New York shows and their traveling counterparts operate as David Barbour describes. The equipment is usually rented based on the needs of one specific show. Experienced stage electricians spend considerable time installing such equipment with its maze of connecting cables. Resistance dimmers must be used, as usually only direct current is available. Admittedly,*

(Continued on page 12)

# *Examine* these two industrial interiors built with versatile, durable, easy-to-maintain

# STARK GLAZED FACING TILE

Washington Post Newspaper Building, Washington, D. C. Architect: Albert Kahn & Co. Associates. General Contractor: John McShain & Co.

Sterling-Winthrop Research Institute Laboratory, Rensselaer, N. Y. Architect: W. Stuart Thompson. Contractor: Grove-Shepherd-Wilson and Kruge.

Each of these industrial interiors performs an entirely different function . . . yet Stark Glazed Facing Tile is ideal for both!

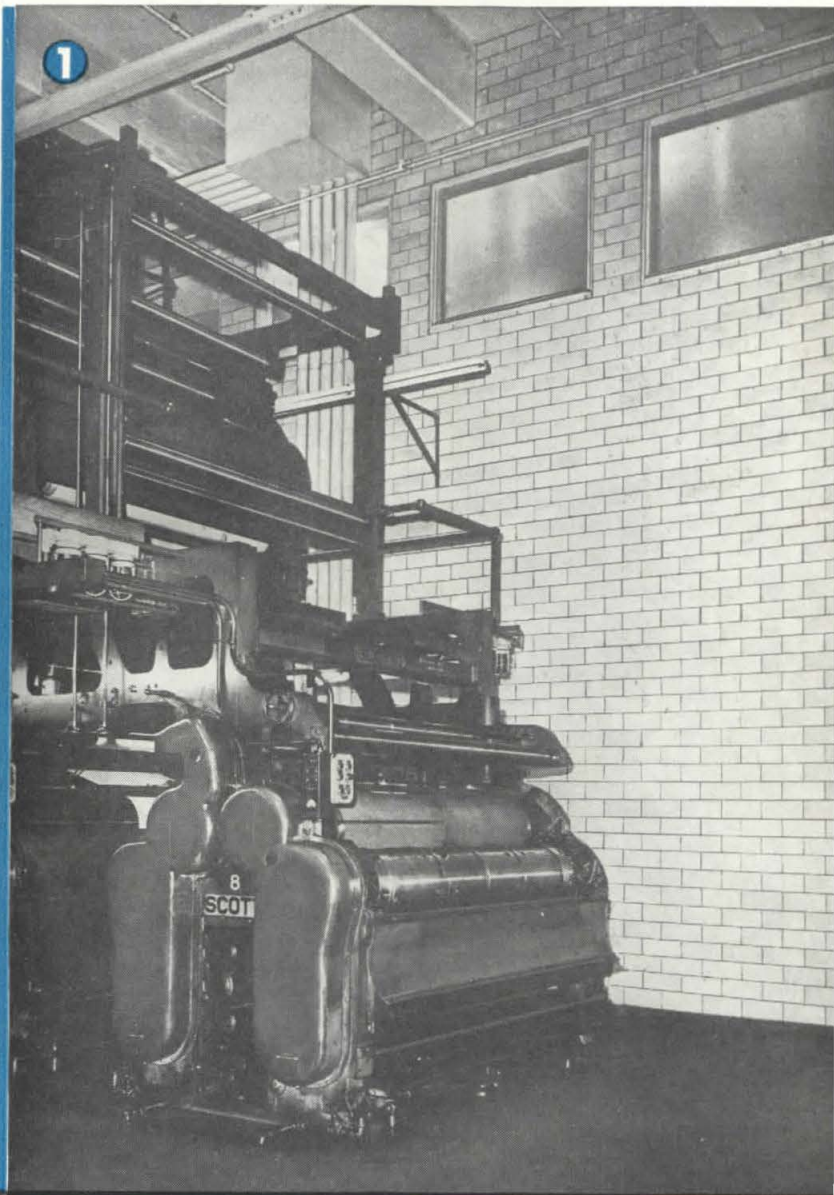
In the first interior . . . rugged durability is the keynote plus low maintenance.

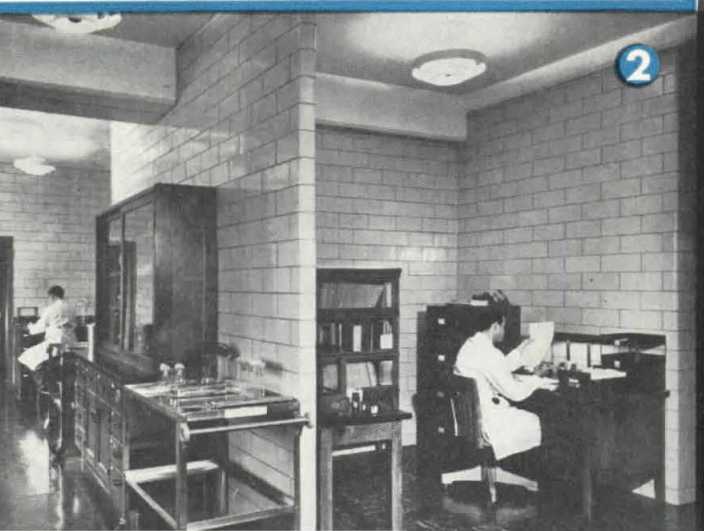
In the second . . . spotless good looks, excellent lighting and ease of maintenance are all important.

Stark Glazed Facing Tile fulfills all these requirements. It's good looking. It's rugged. It's easy to clean and keep clean. It helps create ideal lighting conditions. It never needs painting or redecorating.

Produced in modular sizes, Stark's Facing Tile builds a *wall* and *finish* in one . . . goes up fast . . . saves construction time and cost.

OUR NEW BROCHURE on Modular Masonry is available to architects, engineers, contractors, building owners and administrators. It contains much valuable information and will be sent free to you upon request. Write Dept. PA-11. See Sweet's Catalog 4f-St.




## STARK CERAMICS, INC.

(formerly The Stark Brick Co.)

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15 East 26th Street . . . . . New York 10, N. Y.

p/a VIEWS

(Continued from page 10)

*such operation would give the maximum experience in electrical stage craft.*

*The school stage, on the other hand, must be ready to handle a wide variety of stage presentations with a minimum of set-up time. The students are not skilled electricians and every safeguard should be provided for their safety. It is for this reason that the bulk of the wiring is permanently installed. Resistance dimmers are lowest in cost and can give satisfactory performance if the load they are to control is kept within 10% of their capacity. For the fixed-load part of a control board they can be the logical answer. Where an interconnecting type board is being considered and the wattage on the dimmers will vary, then the auto-transformer type are needed to give the desired flexibility.*

*Several developments have been made which help the minimum-budget stage. The reflector and projector lamps with their adjustable holder accessories are one example. They have rejuvenated many a school stage at relatively low cost. The portable-package type dimmer boards are another example. This development permits even the smallest school stage to enjoy dimmer control merely by moving in the portable dimmer when required. It also permits a number of schools to use the same dimmer control board.*

C. J. ALLEN
General Electric Co.
Cleveland, Ohio



**BULWARK OF SECURITY**

*Dear Editor:* The July issue of PROGRESSIVE ARCHITECTURE has been read with a great deal of interest. It is very gratifying when a national publication as well known as yours devotes so much time and effort to furthering hospital planning of a high order.

I believe that it is only through a review of the past, understanding of the present, and appreciation of the future in the hospital planning field that it is possible to make the progressive advances which we need so much. The health of the people of our country, individually and collectively, is one of the important bulwarks of our national security. Well constructed and adequately designed hospitals based on community needs as determined by the communities, when related to those in other communities are intimately related to the Nation's health.

I feel that it is through such publications as July 1951 P/A that the free expression of ideas can become one of the bases for a high standard of health care.

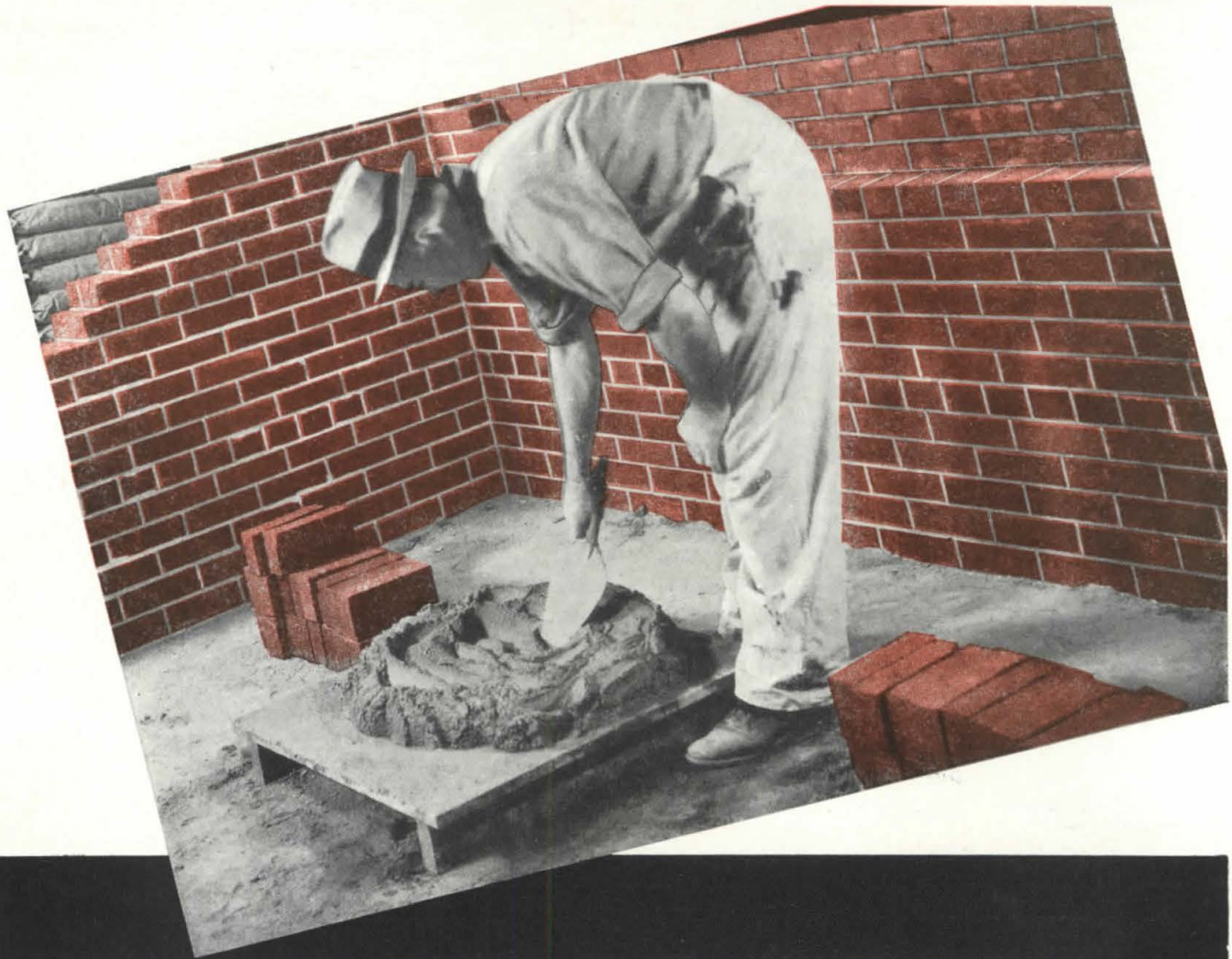
J. MASUR
Assistant Surgeon General
Chief, Bureau of Medical Services
Public Health Service
Washington, D.C.

**NOTICES**

**New Addresses**

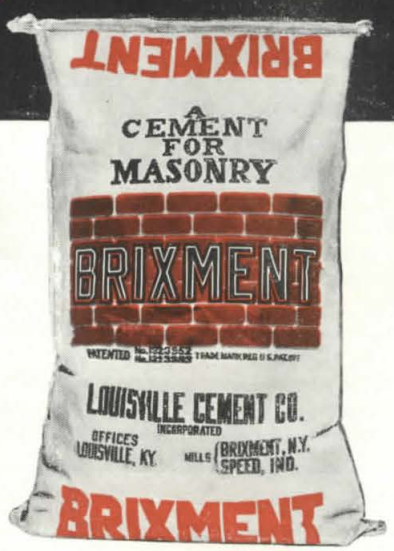
C. WILLIAM PALMER, Architect, 409 Griswold St., Detroit 26, Mich.

BOYD HILL, Architect, 2502 Tribune Tower, Chicago, Ill.



# BRIXMENT

## *is more plastic!*




ONE of the most outstanding characteristics of Brixment is its plasticity. Its working qualities are comparable to those of lime putty. Because of this unusual plasticity, a bag of Brixment will carry three full cubic feet of sand, and still make good workable mortar. . . .

This exceptional workability makes it easy for the bricklayer to secure neat, clean brickwork, with the brick properly bedded and the joints well filled. The final result is a better job, at lower cost.

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

**Why** does "rain" often form inside roof spaces of a crowded store or school? (pages 19, 32)

Why does moisture gather on a water-and-vapor-proofed concrete floor? (page 32)

Why is it wrong to vent cold roof spaces to a warm inside space? (page 33)

Does a concrete floor slab lose heat only at the edges? (page 40)

In what direction does heat flow by Conduction? Convection? Radiation? (pages 11, 15)

Do "dead air spaces" exist with respect to heat flow? (page 16)

Why do metals radiate and absorb less heat than wood, plaster, rockwool? (pages 13, 46)

Why replace low-conductive air with denser materials of greater conductivity, i.e. ordinary insulation. (pages 11, 13, 14, 29)

## The answers to these and numerous other problems of heat and vapor flow are found in the pages of the New 1951 Edition of

# SIMPLIFIED PHYSICS of Vapor and THERMAL INSULATION

### *By Alexander Schwartz*

Written in simple language easy to understand, yet accurate and complete enough to gratify the scientist. Crammed with information the engineer, architect, public official, builder, contractor, insulator, heating installer, need. Hundreds of universities and technical schools use previous editions as a text.

56 pages of Facts, Figures, Charts, Illustrations, and Explanations of Heat and Vapor Flow; Vapor Permeability; Condensation; Dry Rot; Conduction and Density; Convection; Radiation and Emissivity; Reflection and Absorption. Suggests solutions and illustrated techniques for practical problems of insulation installation, condensation, protection against heat loss or intrusion, radiant heating; cold storage.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# PROGRESS PREVIEW

Under construction at Philadelphia's International Airport is an $8 millions Terminal Building, key structure of a $40 millions Improvement Program undertaken by that city to boost air traffic. Photo *(above)* was made several months ago. The models are of a mobile gangplank *(below)* to be tried there and the finger-type terminal, to be completed late in 1952. *Photos: Leet Bros. Co.*

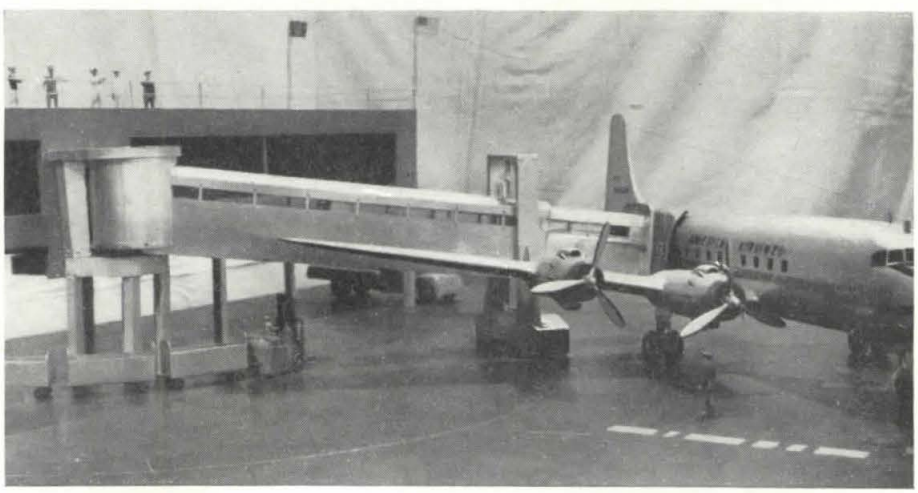
## terminal building for an international airport

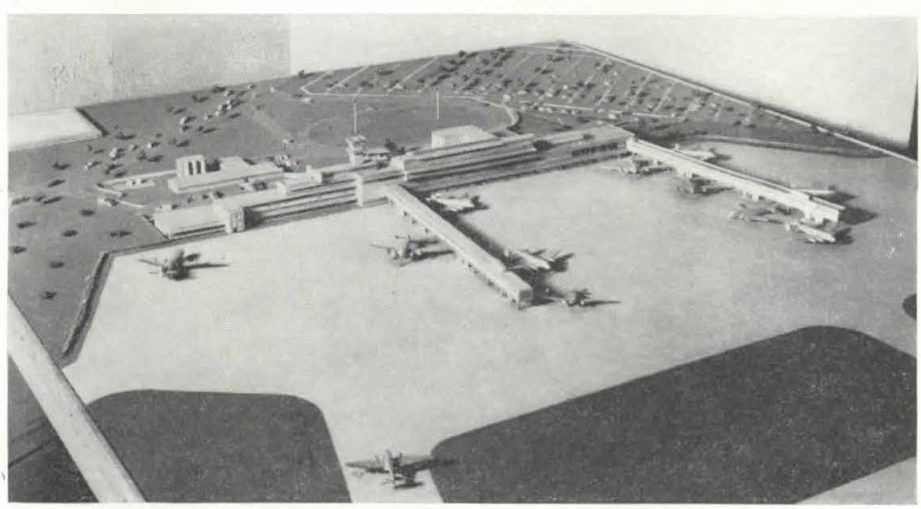
Anticipating a steady increase of air freight and travel business at Philadelphia International Airport, local authorities and civic leaders have initiated a major Improvement Program expected to provide for twice the present traffic load during the next 20 years. More flights per hour, more freight and passengers aboard larger new planes, stricter aeronautical requirements and safety provisions were factors heeded by Airways Engineering Corporation, Washington, D.C., and Carroll, Grisdale & VanAlen, Philadelphia, architects for the new terminal, in designing the expanded airport.

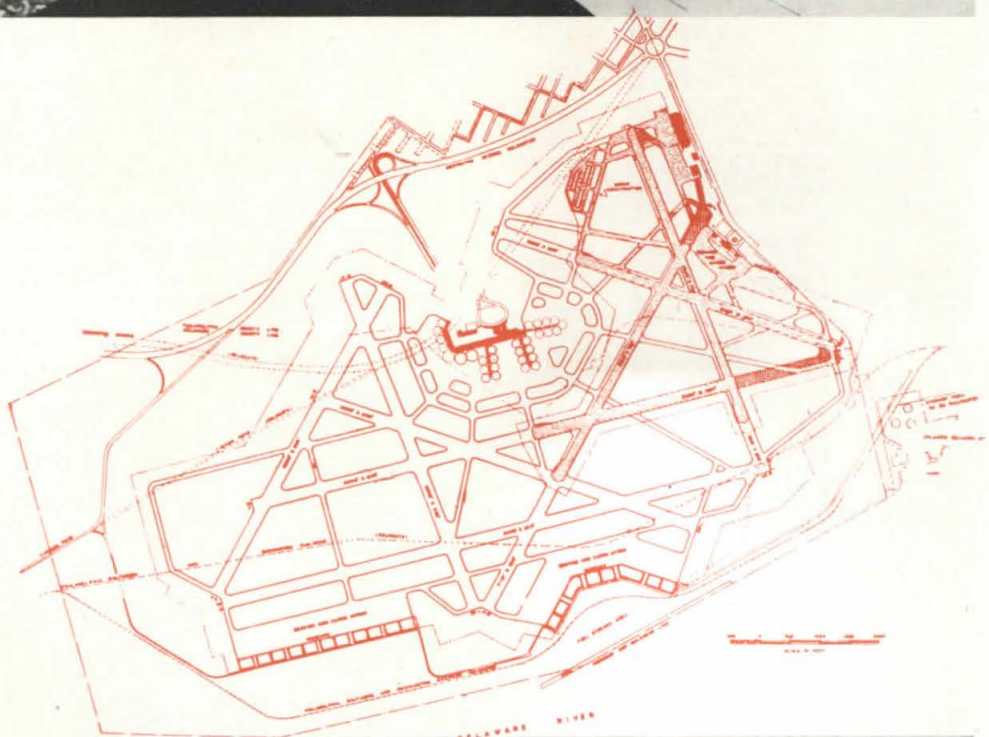
When completed, late next year, the impressive Terminal Building will represent an expenditure of some $8 millions and the engineers estimate that the balance of the facilities within the Terminal area—approach roads, car parking areas, loading apron, aircraft servicing and handling facilities — will cost approximately $6 millions more. The International Airport will ultimately represent an investment of some $40 millions.

The essential functions of a great airport terminal will be segregated by floors in the new building, as follows:

*Basement*—all servicing facilities for aircraft, functioning from covered pits in the loading apron. This includes fueling, electric engine







starting power, conditioned air (warm or cool), and water, air, and direct sewage connections.

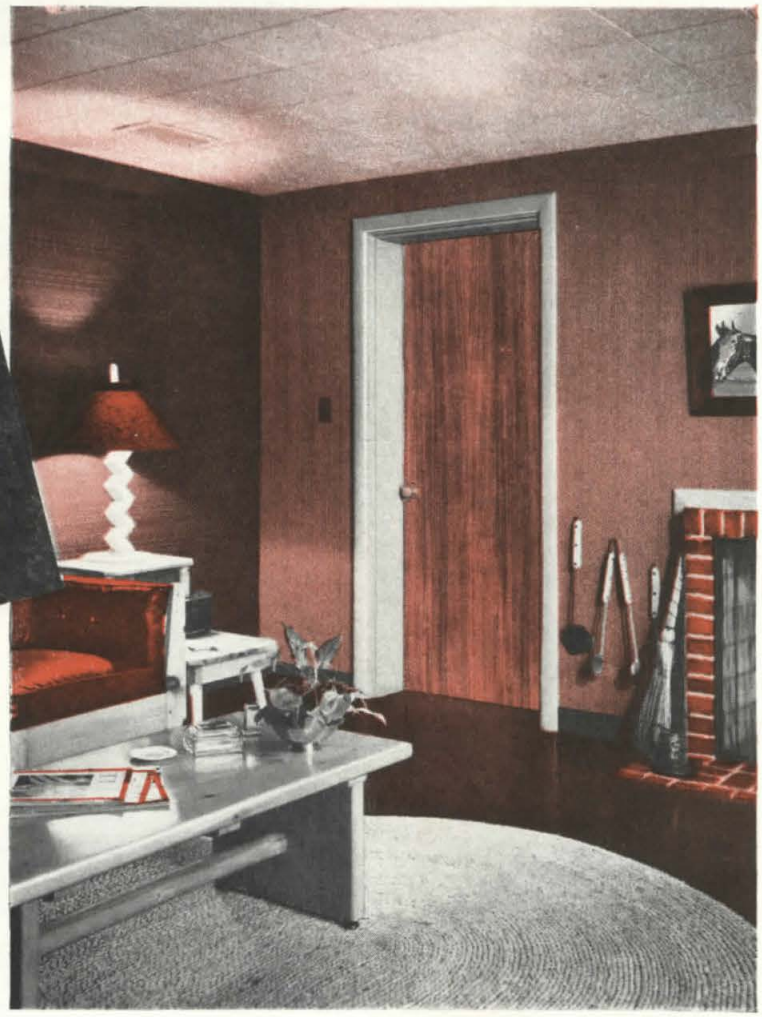
*First floor*—operational handling of baggage and cargo.

*Second floor*—passenger and public facilities such as ample ticket counters and waiting rooms, several dining rooms for different standards of service, sleeping rooms, space for shops and exhibits rented to concessionaires. Equipment will be installed to insure rapid handling of incoming and outgoing baggage, zoned public announcement system, modern communication systems (telephone, telescribe, pneumatic tubes), automatic-electric flight announcement boards, and the government and airline operational complexes. Especially comfortable for passengers will be the covered gangplanks affording direct access from planes to this second floor.

*Penthouse* — observation gallery and decks for visitors.

The detailed design for the enlargement of the airport was produced by Airways Engineering Corporation (runways, taxiways, apron, grading, drainage, paving, etc., on the field and also the operational facilities outside and inside the Terminal Building). Extent of the expansion is indicated by the drawing (*right*) of the new airport with present runways and structures shaded. It will occupy 500 acres and

(Continued on page 18)



# MENGEL MAHOGANY *Flush* DOORS

## add Greatly to House Values—

## YET COST LESS THAN MANY DOMESTIC WOODS!

Everyone knows the sales magic of "Mahogany". The very *word* means extra luxury, extra quality, extra value. . . .

Now Mengel offers you *Mahogany* Flush Doors at remarkable savings.

**You can equip any building with these beautiful African Mahogany doors for *less* than comparable doors faced with many *domestic* woods!**

Why? Because The Mengel Company operates its own logging concession and mill in the best Mahogany section of Africa, and imports this King of Woods in tremendous volume. Then Mengel manufactures its famous doors in two of America's greatest factories, geared to the mass production of highest-quality doors.

Choose Mengel Mahogany Doors and you get doors of unbelievable beauty. In both Hollow-Core and Solid-Core types, they are the *greatest door values in America!*

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Plywood Division, Louisville 1, Ky.

Gentlemen: Please send me full information on Mengel Mahogany Flush Doors—Hollow Core and Stabilized Solid Core.

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(Continued from page 16)

2000 adjacent acres have been reserved for future expansion. The site is just 6 miles southwest of the Philadelphia business area, on the Delaware River and the Essington Industrial Highway.

●

Newest device for passenger comfort to be installed at the new Terminal Building will be a mobile covered gangplank designed by Henry M. Henion, vice president of Airways Engineering Corporation. As a test installation, one of the gangplanks will be attached to a finger of the building extending onto the loading apron.

First shown earlier this year at a meeting of Airport Operators Council, in Memphis, Tennessee, as a scale model, the gangplank is offered by its designer as an answer to the problem of reducing the number of gate positions (and ramp space), reducing loading and unloading time (passengers can use the enclosed gangplanks while plane is being unloaded and serviced), and sheltering passengers from inclement weather and "prop blast."

The enclosed, telescoping gangplank, designed to swing out from the side of a terminal building or an apron finger structure, is 51 feet long and supported at the end by a stanchion that is self-powered to operate in the 180° arc of a narrow radial track set flush in the apron. When it is in position pointing toward the cabin door of a plane, an operator or gate man in the open nose of the telescoped gangplank pushes an electric button that causes the gangplank to extend to meet the plane door and provide a covered passageway for the occupants. It is particularly suitable for a terminal building where passengers are accommodated on the second floor, but also can be raised to serve as a ramp if necessary to reach up to a cabin door.



## NOTICES

### Scholarship

The Department of Landscape Architecture, Graduate School of Design, Harvard University, offers a scholarship with an income of $600, equal to the tuition fee. Candidates must have received their Bachelor's degree, or equivalent, within the past four years; students who are candidates for the degree in June 1952 are also eligible.

All inquiries should be received before December 1, 1951, and should be addressed to: The Chairman, Dept. of Landscape Architecture, Robinson Hall, Harvard University, Cambridge 38, Mass.

### New Practices, Partnerships

HENRY CHURCHILL, Architect, announces the dissolution of his partnership with KLINE FULMER, and the continuation of

(Continued on page 20)

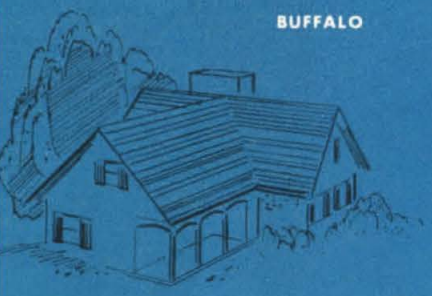
RK

BOSTON

SAN FRANCISCO

In a recent wiring test study, Martin Holman & Sons, Cincinnati builders, installed "Plug-In" Strip in this house, providing 125 electrical outlets. In another identical house, 22 ordinary duplex outlets were installed. Yet the "Plug-In" Strip installation cost only 1/5 more and added only 1/3 of 1% to the total construction cost of the house. Needless to say, this builder switched to "Plug-In" Strip . . . and "Plug-In" Strip is now helping him sell his houses over competition.

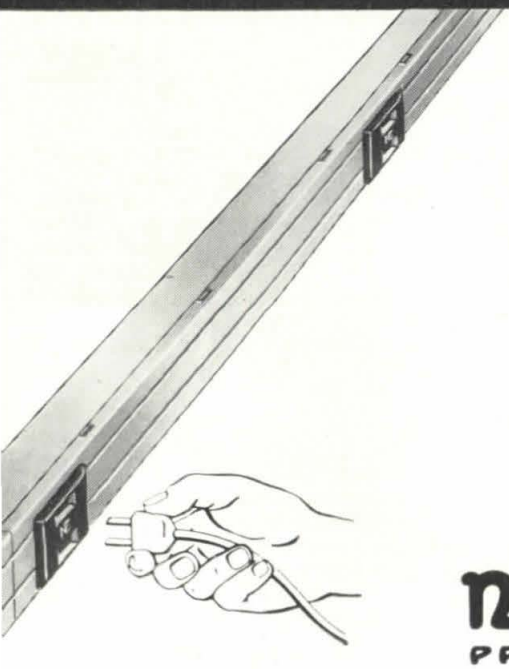
BUFFALO



CHICAGO

AS

# Architects and builders everywhere are specifying "PLUG-IN" STRIP!



Modern homes deserve the ultimate in electrical convenience. That's why architects and builders are including National Electric "Plug-In" Strip in their building plans. "Plug-In" Strip provides a spread of electrical outlets—every 6″ or 18″—all around the room. The freedom it allows for furniture arrangement, the outlets it provides for electrical appliances, lighting, radios, TV—give any home *added sales appeal.* Home owners get much more outlet convenience per wiring dollar because "Plug-In" Strip *actually provides outlets cheaper—3 to 1.*

You should be familiar with "Plug-In" Strip and what it can do for you. There are three types of "Plug-In" Strip available: Type CF-2 for constant service; Type CF2-G for grounding equipment; and Type CF-3 for either constant service or automatic switch control. All listed by Underwriters' Laboratories, Inc. Write for our catalog for complete details.

***Sold through leading electrical wholesalers.***

EVERYTHING IN WIRING POINTS TO

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1328 CHAMBER OF COMMERCE BUILDING, PITTSBURGH 19, PA.

## NOTICES

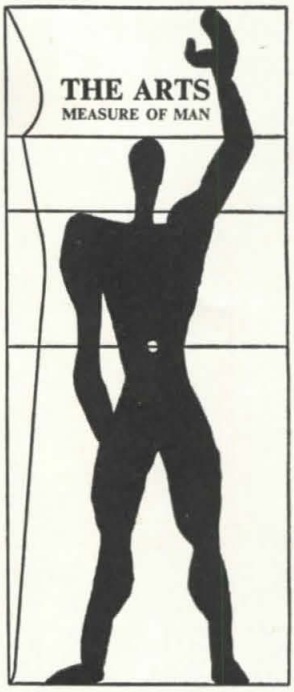
(Continued from page 18)

his practice at 19 W. 44 St., New York 18, N.Y.

HARRY E. STOCKER has become affiliated with BROWN-GUENTHER-BOOSS, Architects and Engineers, 1860 Broadway, New York, N.Y.

### Forum Series

THE ARCHITECTURAL LEAGUE OF NEW YORK offers for this fall a series of eight weekly forums *The Arts—Measure of Man*, analyzing human achievements in the arts. The meetings, open to the public, will be held every Wednesday evening, starting October 3rd at League headquarters, 115 E 40 St.




The first forum, with HAROLD R. SLEEPER, President of the League as moderator, presented editor JAMES MARSTON FITCH, historian TALBOT F. HAMLIN and anthropologist GLADYS A. REICHARD on the panel discussing "Arts and the Man."

The seven other forums will cover these fields, "Spatial and Structural Form," "Color, Light, and Texture," "Motion and Repose," "Expression," "Logic in Visual Arts," "Critical Analysis of the Nature of Art," "Greatness in Art."

PIETRO BELLUSCHI, BUCKMINSTER FULLER, JACQUES LIPCHITZ, and dancers from the Katherine Dunham school will be among those participating in the panels. Tickets for the eight forums, are available at the Architectural League.

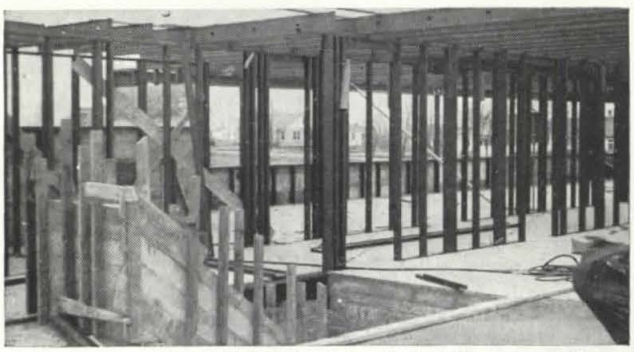
### Appointments

BERNARD E. LOSHBOUGH has been appointed Housing Specialist of the National Security Resources Board. Mr. Loshbough, graduate in architecture of Notre Dame, was former Administrator of the Connecticut State Housing Authority.

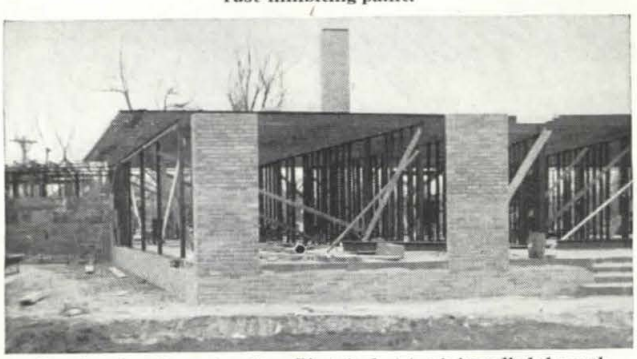
R. L. BIESELE, JR., Professor and Chairman, Department of Electrical Engineering, Southern Methodist University, has been named Research Professor of Engineering to allow him to devote full time to his research activities, particularly in the field of daylight and illumination.

*Architect saves time and money in new hospital construction with*

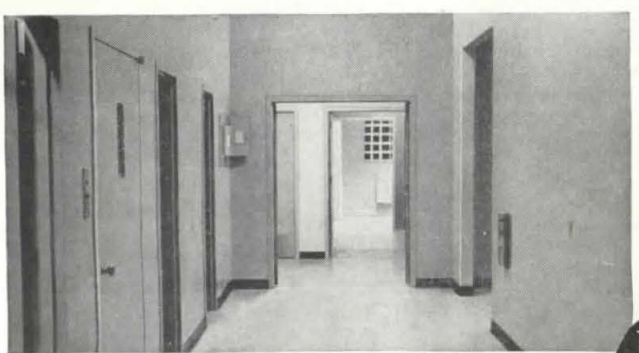
# STRAN-STEEL® FRAMING



Interior view of Redfield (S.D.) hospital under construction. Stran-Steel framing comes pre-cut, pre-punched, treated with rust-inhibiting paint.



Exterior view of construction. Electrical wiring is installed through factory-punched holes in framing members.



Spick-and-span interior of the hospital shows how flush finishing of walls and doors lends convenience, promotes sanitation.

Architects are quick to recognize the many advantages of Stran-Steel *nailable* framing in commercial and industrial construction. Read what Mr. A. McWayne, of Perkins and McWayne, architects and engineers, Sioux Falls, S.D., says:

> "We are well pleased with the Stran-Steel construction as incorporated in the hospital at Redfield, South Dakota . . . Stran-Steel offers many possible savings in time and cost of construction."

Mr. McWayne says that Stran-Steel framing permitted complete enclosure of the building to allow interior work to proceed before exterior completion. This means that sub-trades (electrical, plumbing and heating) were not held up waiting for bricklayers, concrete workers, etc., to finish their jobs. Man-hours were saved and costs held down.

*If you are planning a school, hospital or industrial building, it will pay you to investigate Stran-Steel framing. Complete literature available on request, or see Sweet's catalog service, architectural ( 3c/Gr ) and builders' ( 3a/Gr ) files.*

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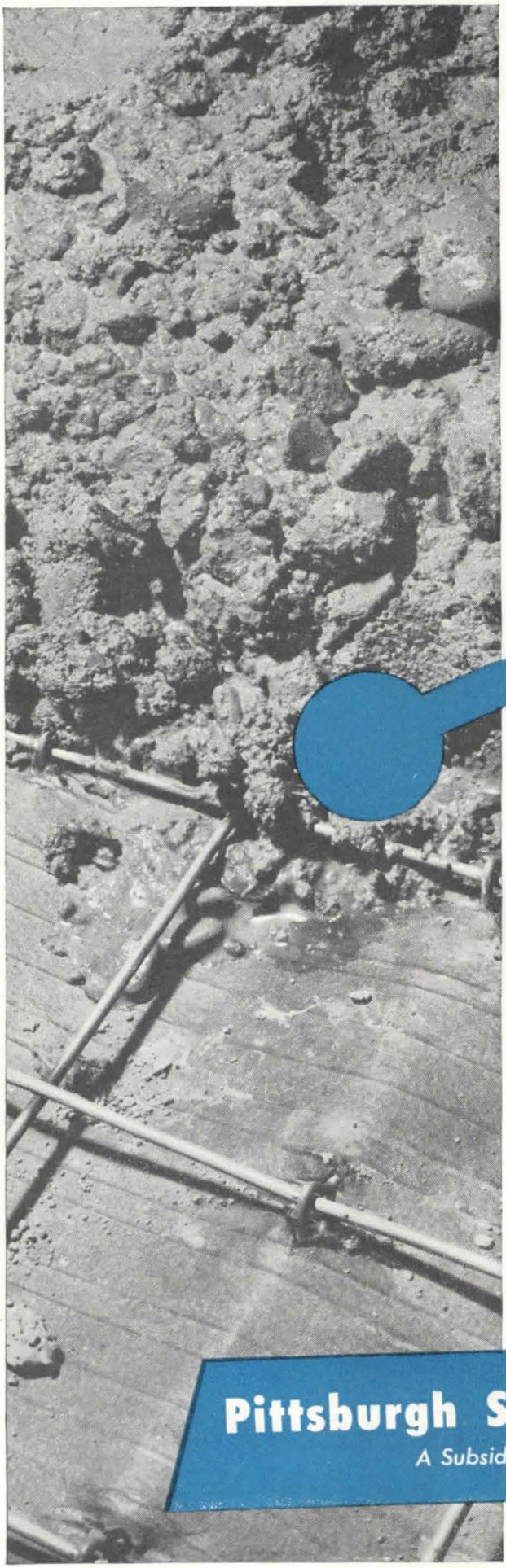

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## Floor Lath

## assumes its proper position in a concrete slab

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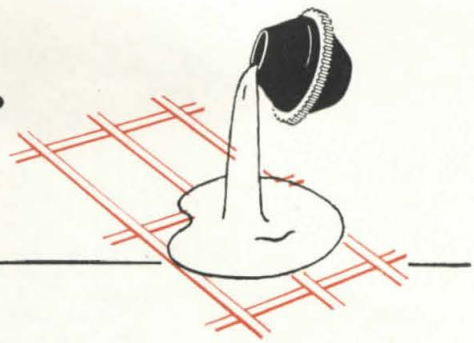
**Pittsburgh Steel Products Company**

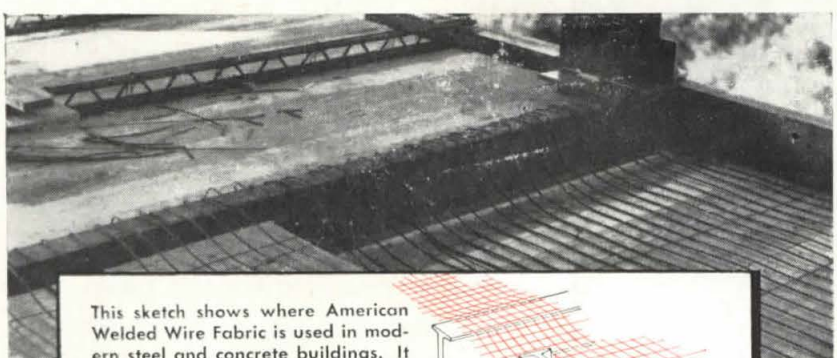
*A Subsidiary of Pittsburgh Steel Company*

## For steel and concrete buildings...

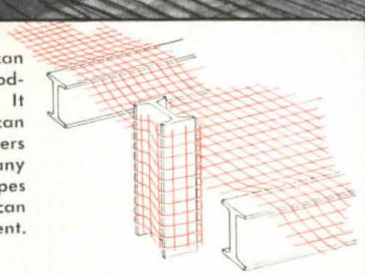
# American Welded Wire Fabric



This apartment building is typical of modern steel and concrete construction. In floors, walls and ceilings, on beams, girders and columns, the continuous reinforcement of American Welded Wire Fabric keeps concrete in place, prevents cracking, helps strengthen structural members.



This sketch shows where American Welded Wire Fabric is used in modern steel and concrete buildings. It reinforces walls, floors and roofs, can be draped over beams and girders and wrapped around pillars. Many uses of concrete in irregular shapes are made practical by American Welded Wire Fabric reinforcement.



AMERICAN Welded Wire Fabric reinforcement has been used extensively in building construction. Wrapped around structural steel members, it fortifies the concrete against cracks caused by stresses and strains due to deflection of the structural members, normal temperature changes, and extraordinary temperature variations accompanying fire.

This fabric reinforcement possesses adequate tensile strength. It is easily shaped to structural steel. It comes in rolls and sheets, aids speedy construction. Structural steel beams, when wrapped with Welded Wire Fabric and enclosed in concrete fireproofing, are usually designed as composite beams.

Its adaptability, efficiency and economy have made American Welded Wire Fabric the most widely used reinforcement for concrete. You will find it in floors, walls, roofs and ceilings of all sorts of structures, in highways, sidewalks and driveways, in tunnels, bridges and approaches.

U·S·S American Welded Wire Fabric is available in every locality from jobbers' and dealers' stocks — supplemented by prompt mill shipment to identified projects.

When you are planning any kind of concrete construction, our technical staff will be glad to supply complete data on specific designs and standard styles of fabric. Write to our nearest sales office today, you incur no obligation.

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If you do it with permanent walls, it's costly to make even the slightest space change. If you use an opaque wall, you cut down on your light, because it can't spread from room to room. You need light—yet you want privacy.

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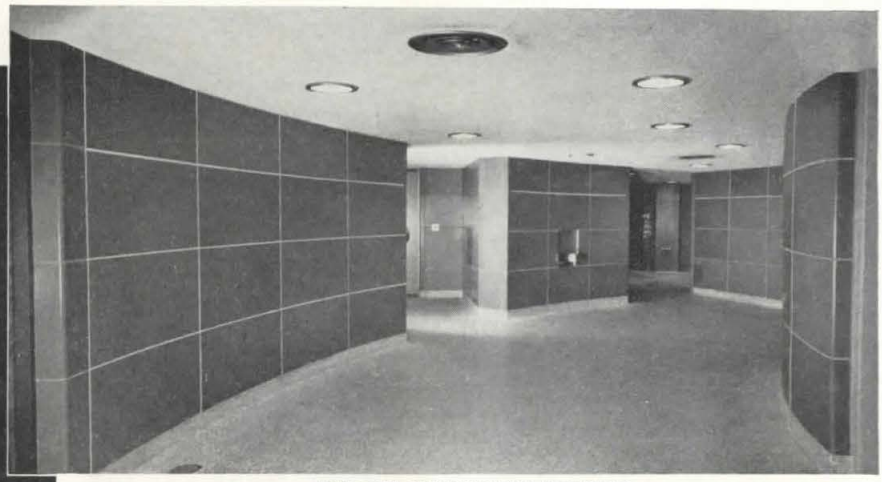

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*Designed by* TVA Engineers and Fellheimer & Wagner
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*Enduro-Ashlar Architectural Terra Cotta, in blue glaze, provides an unusually pleasing interior in this handsome building. Units are 24 x 42 inches.*

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ate of California Building, housing the ivision of Highways, Department of ublic Works in Civic Center, San Fran-sco. Equipped throughout with Vene-ans fitted with LEVOLOR de luxe metal eads and bottom bars. Division of Ar-itecture, State of California, architects.

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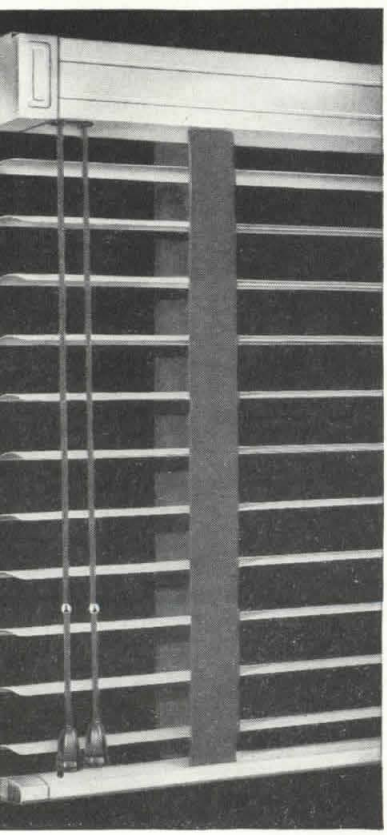
## *served, in turn, by Venetians made with LEVOLOR products*

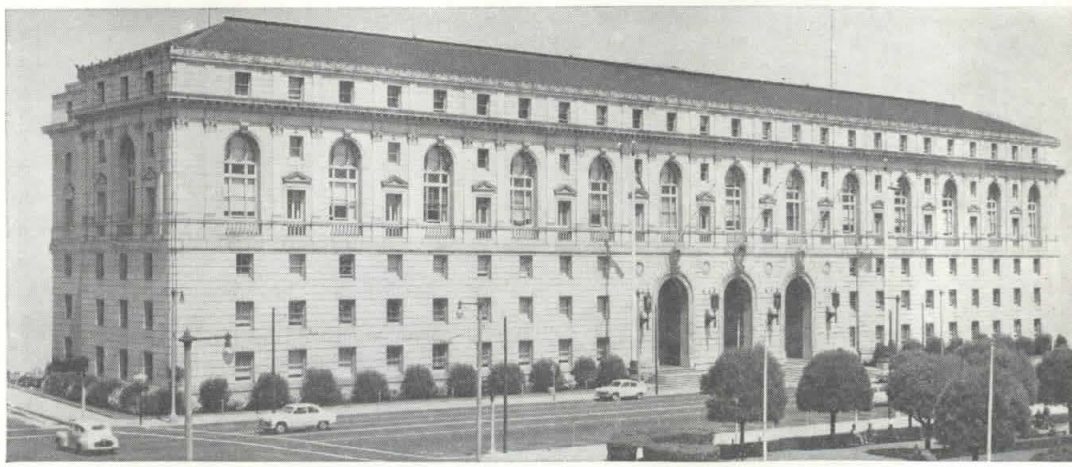
When it came to selecting Venetians for two of California's state buildings in San Francisco's Civic Center, specifications called for blinds equipped with LEVOLOR de luxe metal heads and bottom bars *throughout both buildings*.

What better endorsement of the long service, smartness of design and smooth operation that are built into parts produced by LEVOLOR!



are features that set LEVOLOR-built tians apart: smart, enclosed head that es finest precision-built hardware; dur- springy plastic-coated metal slats; ends disappear in the sleek bottom All are chip-, mar- and stain-resistant. one gentle pull makes tilt-cords even, ks to the LEVOLOR patented tilter anism.

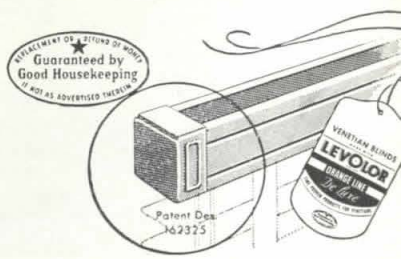
*ur catalog in Sweet's Architectural File, 3A, and Sweet's File for Builders, 3E-5.*



California State Building in Civic Center, San Francisco, recently re-equipped throughout with Venetians fitted with LEVOLOR de luxe metal heads and bottom bars. Division of Architecture, State of California, architects.

Send for your free copy of the LEVOLOR *Architects Manual for Venetian Blinds* (AIA 35-P-3) . . . 16 pages giving you all the factual and visual assistance you need for any installation.

Levolor Lorentzen, Inc., 391 West Broadway, N. Y. 12, N. Y.




LEVOLOR-built Venetians ar identified by this head desig and this tag.

*Specify* **LEVOLOR** Trade Mark

*Time-proven Products for Venetians*

# 168 Miami Beach Hotels—

## WHERE ONLY THE BEST IS SPECIFIED—CHOOSE

# BRIGGS *Beautyware*

PLUMBING FIXTURES

### NEW PROOF OF BRIGGS POPULARITY AND RELIABILITY!

Owners of the luxurious hotels which line the ocean front along the glittering Gold Coast of Miami Beach must furnish their bathrooms with care and discrimination. That's why, since 1938, 168 of them have chosen Briggs Beautyware plumbing fixtures—*mostly in color!* Briggs gives them charm and beauty which delight their paying guests! Briggs assures durability and fade-proof, stain-proof finish, impervious to the damaging effect of tropical weather conditions. And, best of all, Briggs Beautyware gives them famous decorator colors in the height of style and good taste at *only ten per cent more than white!** Talk about public acceptance! One Miami plumbing contractor has recently installed 3300 units *in color* in apartments, projects, private homes, hotels and motels in greater Miami. This localized example of Briggs popularity is reflected in similar stories from practically every state in the nation!

**Briggs color is only ten per cent more than white when purchased in complete sets!*

BRIGGS MANUFACTURING COMPANY, 3001 MILLER AVENUE, DETROIT 11, MICHIGAN

# *Specify* FLEUR·O·LIER

## and know what lighting you'll get

It isn't necessary to *hope* you'll get satisfactory lighting from your fluorescent installation. Specify FLEUR-O-LIER equipment and you'll get these advantages:

**1.** FLEUR-O-LIER luminaires have been assigned a Fleur-O-Lier Index System rating by Electrical Testing Laboratories, Inc., after careful testing. This rating tells the exact illuminating characteristics of the unit. Complete photometric data and coefficients of utilization are provided.

**You know what you're getting**

**2.** FLEUR-O-LIER luminaires are certified by ETL to assure they meet rigid specifications covering mechanical and electrical features. They all use CERTIFIED BALLASTS and CERTIFIED STARTERS.

**You know what you're getting**

**Coefficients of Utilization**

LUMINAIRE DISTRIBUTION DATA

MEAN VERTICAL

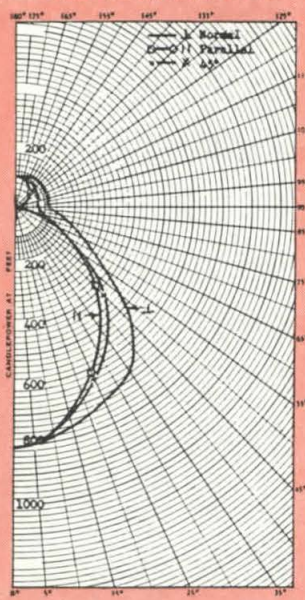
| ZONE | CANDLE POWER AT 4 FEET | ZONAL LUMENS | ZONE | CANDLE POWER AT 4 FEET | ZONAL LUMENS |
|---|---|---|---|---|---|
| 180° to 175° | 82.0 | | 90° to 85° | 43.0 | |
| 175° | 82.0 | 8 | 85° | 55.0 | 60 |
| 165° | 83.0 | 23 | 75° | 104 | 109 |
| 155° | 83.5 | 38 | 65° | 171 | 175 |
| 145° | 82.0 | 52 | 55° | 289 | 259 |
| 135° | 74.5 | 58 | 45° | 438 | 339 |
| 125° | 66.0 | 59 | 35° | 565 | 355 |
| 115° | 60.5 | 60 | 25° | 650 | 301 |
| 105° | 53.5 | 57 | 15° | 740 | 209 |
| 95° | 44.8 | 49 | 5° | 815 | 77 |
| | | | 0° to 0° | 825 | |

LIGHT FLUX VALUES

| ZONE | LUMENS/LUMINAIRE | PER CENT | ZONE | LUMENS/LUMINAIRE | PER CENT |
|---|---|---|---|---|---|
| 0°–30° | 587 | 13.0 | 0°–90° | 1884 | 41.0 |
| 0°–40° | 942 | 20.5 | 90°–180° | 404 | 9.0 |
| 0°–60° | 1540 | 33.5 | 0°–180° | 2288 | 50.0 |

**These enable the specifier to select the proper unit for the job.**

CANDLEPOWER DISTRIBUTION

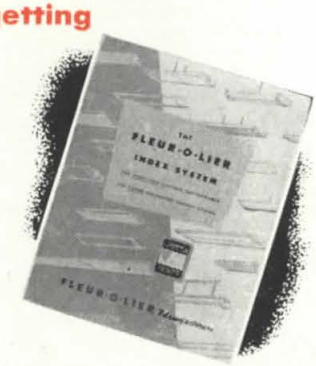



**A complete photometric test of the luminaire is provided.**

## *Free Booklet*

Write for your free copy of the new booklet giving complete details of the Fleur-O-Lier Index System.

Ask also for Electrical Testing Laboratories' report on performance ratings assigned to the 300 Fleur-O-Lier fixtures.





**The Fleur-O-Lier label indentifies units that meet precise specifications and are ETL certified.**

## FLEUR·O·LIER *Manufacturers*

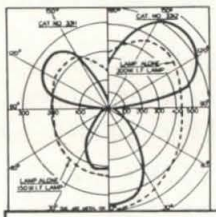
**2116 Keith Building • Cleveland 15, Ohio**

**Fleur-O-Lier is not the name of an individual manufacturer, but of a group of fixtures made by leading manufacturers. Participation in the Fleur-O-Lier program is open to any manufacturer who complies with Fleur-O-Lier requirements.**

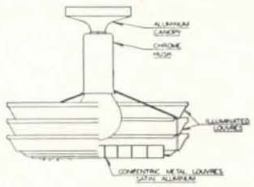
# ART METAL gives explicit data to speed specification writing and installation planning for all types of INCANDESCENT LIGHTING

**DIRECT INDIRECT**

LUMINOUS LOUVRED METAL BOWLS



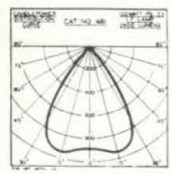
No. 3311 11½" Dia. 11" O.A. 150W
No. 3312 14⅞" Dia. 13" O.A. 300W
FINISH: Silvertint.
Concentric Metal Louvres Baked Satin Aluminum.
Made of Aluminum.



***Performance and construction details are given for all products.***

**ROUND RECESSED**

PYREX GLASS LENS



No. 481

This candlepower distribution curve was made with a 150 Watt I.F. Lamp. The distribution of light is extremely wide. The spacing of the units should not exceed one and one quarter times the mounting height above the working plane. This unit is for general illumination.

| Ceiling | 75% | | 50% | |
|---|---|---|---|---|
| Walls | 50% | 30% | 50% | 30% |
| Room Index | COEFFICIENTS OF UTILIZATION | | | |
| J | .11 | .09 | .10 | .09 |
| I | .16 | .13 | .16 | .14 |
| H | .19 | .16 | .18 | .16 |
| G | .23 | .19 | .21 | .19 |
| F | .26 | .22 | .24 | .22 |
| E | .28 | .24 | .26 | .24 |
| D | .30 | .26 | .28 | .26 |
| C | .32 | .28 | .29 | .28 |
| B | .33 | .29 | .30 | .29 |
| A | .34 | .30 | .31 | .30 |

Maintenance Factors—.85 Clean .75 Average

SPECIFICATIONS: These Round Recessed Units are of Single Unit construction as the reflector functions as the housing. This is made of 18-gauge Aluminum finished specular. The cast plaster ring holds the reflector and the lens frame together as a unit. The trim is drop hinged. The lamp operates in a vertical position. The unit is practically dust-tight. Approved by Underwriters' Laboratories, Inc.

| | A | B | C | D |
|---|---|---|---|---|
| 11" | 10¾" | 13½" | 15¼" | |
| 8½" | 7¾" | 10½" | 12¼" | |

DIMENSIONS

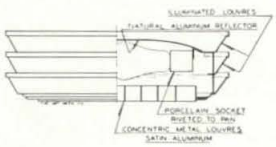
**DIRECT**

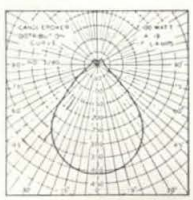
LUMINOUS LOUVRED METAL BANDS

SPECIFICATIONS

The fixture shall be a luminous louvred band unit comprised of three equally spaced aluminum bands so designed as to illuminate themselves and the ceiling. The reflector shall be finished natural aluminum and contoured to direct all the light downward. Holes shall be provided in the top band for mounting on either 3½" or 4" outlet box. Two porcelain medium base sockets shall be riveted to the reflector. The bottom of the fixture shall consist of a louvre made of concentric metal rings finished baked satin aluminum and spaced to provide 45° shielding. Concentric metal ring louvre lifts out for replacement of lamps. The fixture shall be approved by Underwriters' Laboratories, Inc. and shall be labeled as evidence thereof. The fixture shall be as manufactured by The Art Metal Company.

No. 3279 11½" Dia. 3¾" O.A. 2-75W
No. 3280 14⅞" Dia. 4¾" O.A. 2-100W
FINISH: Silvertint.
Concentric Metal Louvres Baked Satin Aluminum.
Punched for mounting on either 3¼" or 4" outlet box.
Made of Aluminum.





No. 3280
Concentric Metal Louvres have 45° cutoff.

| Ceiling | 75% | | 50% | |
|---|---|---|---|---|
| Walls | 50% | 30% | 50% | 30% |
| Room Index | COEFFICIENTS OF UTILIZATION | | | |
| J | .18 | .17 | .17 | .16 |
| I | .21 | .20 | .21 | .20 |
| H | .23 | .22 | .22 | .22 |
| G | .25 | .24 | .24 | .23 |
| F | .26 | .25 | .25 | .24 |
| E | .28 | .27 | .27 | .26 |
| D | .30 | .28 | .28 | .27 |
| C | .30 | .29 | .29 | .28 |
| B | .31 | .30 | .29 | .29 |
| A | .31 | .31 | .30 | .29 |

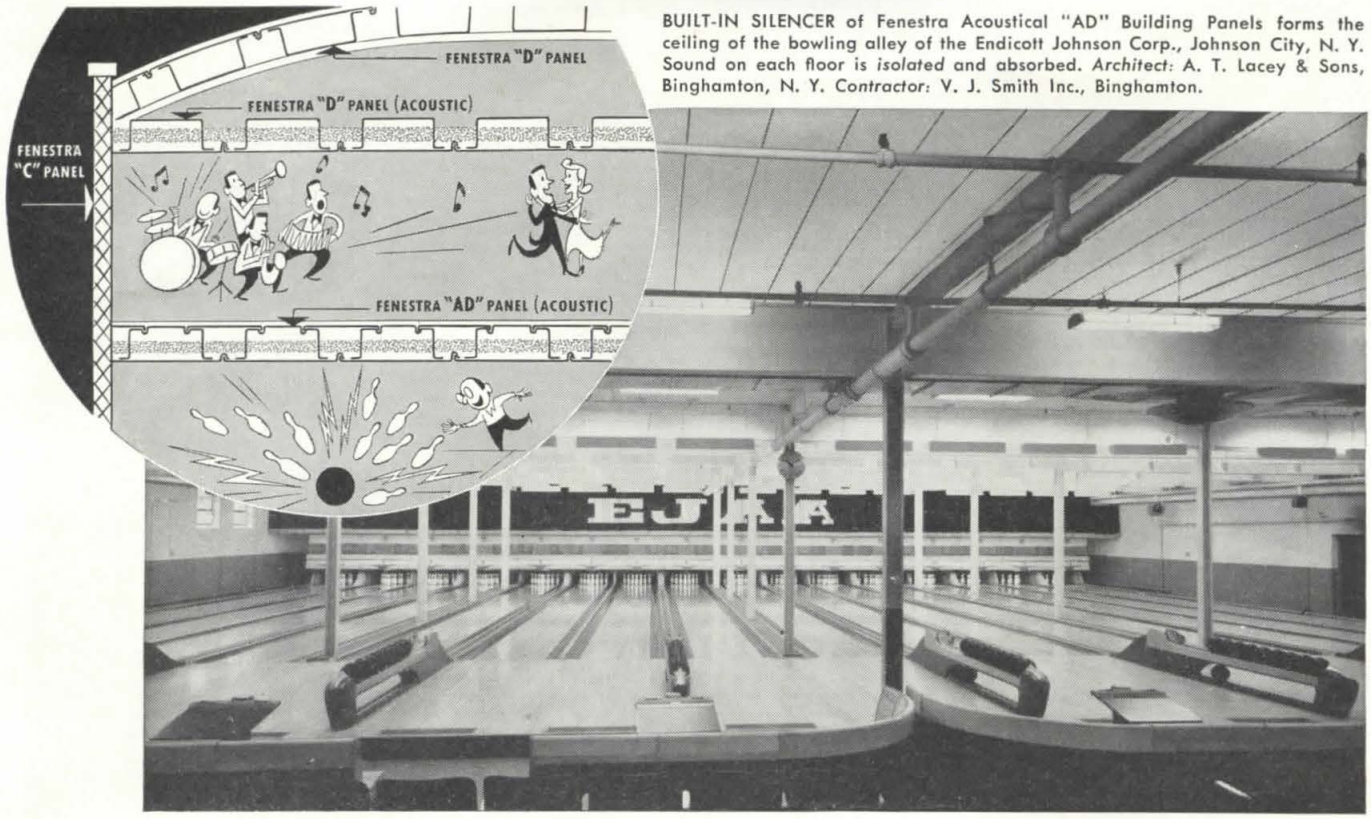
Maintenance Factors—.85 Clean .75 Average

***Write for the complete product coverage catalog of***
**INCANDESCENT UNIFIED LIGHTING**
**Unified in Design Characteristics**

## THE ART METAL COMPANY

**CLEVELAND 3, OHIO**

Manufacturers of Engineered Incandescent Lighting




BUILT-IN SILENCER of Fenestra Acoustical "AD" Building Panels forms the ceiling of the bowling alley of the Endicott Johnson Corp., Johnson City, N. Y. Sound on each floor is *isolated* and absorbed. *Architect:* A. T. Lacey & Sons, Binghamton, N. Y. *Contractor:* V. J. Smith Inc., Binghamton.

# LOOK! an acoustical ceiling, a floor or roof ... *all in one money-saving package!*

Now you can save time, labor, materials, *money* and get a better job to boot. Fenestra* Acoustical "AD" Panels form a *built-in* silencer with a sound reduction coefficient of 0.80! Racket is isolated in each room, and absorbed. There's your answer to a noise problem that smashes worker-efficiency to the thundering tune of a reported $4,000,000 per day.

These long-span panels are *structural.* They form a finished ceiling and subfloor, or roof. Speedily and easily erected, these long-span panels are going into every *kind* of building. You can paint them without hurting their acoustical efficiency a bit. They're noncombustible.

**DETAILS ON THE FENESTRA "AD" PANEL PACKAGE:**

**Size:** Up to 24' long, 16" wide, 3", 4½", 6" and 7½" deep. 18 to 13-gage USS steel.

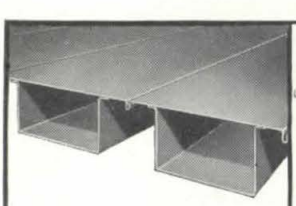
**Elements:** Cellular panel with ⅛" holes, 946 per square foot, in bottom surface. Wire-chair insulation support. 1" thick, 4¼-lb. density glass fibre sound insulation, coated on one side.

Send coupon for details. Or call the Fenestra Representative (listed under "Fenestra Building Products Company" in your Yellow Phone Book).

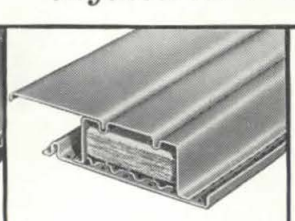
*Trademark

## *Fenestra* PANELS • DOORS • WINDOWS

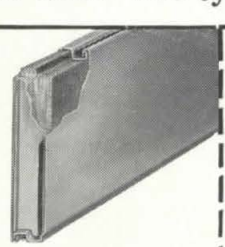
*engineered to cut the waste out of building*



"D" Panels for floors, roofs, ceilings. Standard width 16". Depth 1½" to 7½".



Acoustical "AD" Panels for ceiling-silencer-roof. Width 16". Depth up to 7½".



"C" Insulated Wall Panels. Standard width 16". The depth is 3".

DETROIT STEEL PRODUCTS COMPANY
Building Panels Division
Dept. PA-11, 2253 E. Grand Boulevard
Detroit 11, Michigan

Please send me, without obligation, information on Fenestra Building Panels.

Name_____

Company_____

Address_____

## Military Bases . . . Essential Industries . . . Defense Housing . . . Schools and Hospitals

# Matched Trane Products Serve National Defense Everywhere

Matched Trane Products are completely coordinated for selection, installation and operation together. An infinite number of combinations can be easily fitted together to form the most suitable type of system for each individual heating, ventilating, cooling or air conditioning problem.

**Military Bases**—Buildings by the thousands from smallest chapel to the mighty Pentagon, need heating in one form or another. Trane Convectors team up with Trane Steam Specialties, Unit Heaters, Heating Coils, Fans and Wall-Fin to create just the right conditions in military bases everywhere.

**Essential Industry**—Critical dimensions and critical worker efficiency have to be kept under close climate control in the manufacture of munitions. Trane Reciprocating Compressors combine with Trane Climate Changers to hold close tolerances and make men efficient.

**Defense Housing**—Easy-to-install economical heating units required for multiroom projects. Trane Convectors matched with Trane Hot Water Products provide sparkling warmth for hundreds of housing projects so vital to the defense program.

**Schools**—The right combination of ventilating and heating is a must in modern education—Trane Unit Ventilators provide clean, fresh tempered air—Trane Convectors, the supplemental heating in countless schools and colleges.

**Hospitals**—Correct humidity and temperatures are essential in the hospital operating room to speed the surgeon and protect the patient. The new Trane Operating Room Air Conditioner fits in conveniently to furnish the exact conditions required.

***Whatever your heating, ventilating, cooling or air conditioning problem is, look for the answer in the Trane line.***

This housing project contains almost a thousand Trane Convectors in addition to Trane Trap Valves and Pumps.

The Merle Abbot School—so successful was the first installation of Trane Unit Ventilators that more were ordered for a new addition.

Trane Air Conditioning equipment tucked into an out-of-the-way corner is used to cool the twin operating rooms in this hospital.

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**MANUFACTURING ENGINEERS OF HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT**

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Eastern Mfg. Division . . . Scranton, Pa.
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## Now 3/16" gauge KENCORK offers all these advantages at low cost

**SPECIFY KENCORK BY NAME** *because of its...*

✓ ...**low cost.** Kencork costs less than most wall-to-wall broadloom...is far easier and more economical to clean ...outlasts carpeting by years. And, with the new 3/16" gauge Kencork, this luxury Floor and Wall is in the reach of even the most modest building or remodeling budget.

...**appearance.** No artificial binders of any kind color the natural shadings of the pure, top grade cork. Kencork's tones are a random blend of rich nut brown providing subtle shadings that blend with any decorative scheme ...harmonize with any color plan.

...**durability.** Approximately six inches of tough cork are compressed under heat and pressure. The result is a tough, resilient tile. Kencork Floors in daily service for over 35 years look like new...retain all their quiet, warmth and comfort underfoot.

...**installability.** Kencork is quickly, easily and economically installed over any smooth interior surface that is not exposed to sidewalk grit and grime.

...**availability.** Nine conveniently located Kentile, Inc. offices and over 3,000 Dealers throughout the country assure prompt attention to your needs. Look under FLOORS in your classified phone directory for the Kentile Dealer nearest you. In Canada—at T. Eaton Co., Ltd.

...**service.** A *nation-wide* system of trained representatives plus a comprehensive selection of technical literature, are available to help solve any flooring problem.

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The greater plasticity of Duraplastic concrete is due to billions of tiny air bubbles entrained in the mix. They minimize water gain and segregation. As a result, finished concrete made with Duraplastic is also fortified against the effects of freezing-thawing weather.


General Contractor: Turner Construction Co., New York, N. Y. Ready-mixed concrete supplied by Metropolitan Sand & Gravel Co. New York, N. Y.

## YET DURAPLASTIC* COSTS NO MORE

It sells at the same price as regular cement. Complies with ASTM and Federal Specifications. For free booklet telling how Duraplastic can help you on your next job write: Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

*"*Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company*

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PA-D-131

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*AIR-ENTRAINING PORTLAND CEMENT*

A UNIVERSAL ATLAS PRODUCT

**Makes Better Concrete at No Extra Cost**

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*NEW PLANT OF LEVER BROTHERS COMPANY, LOS ANGELES, CALIFORNIA*

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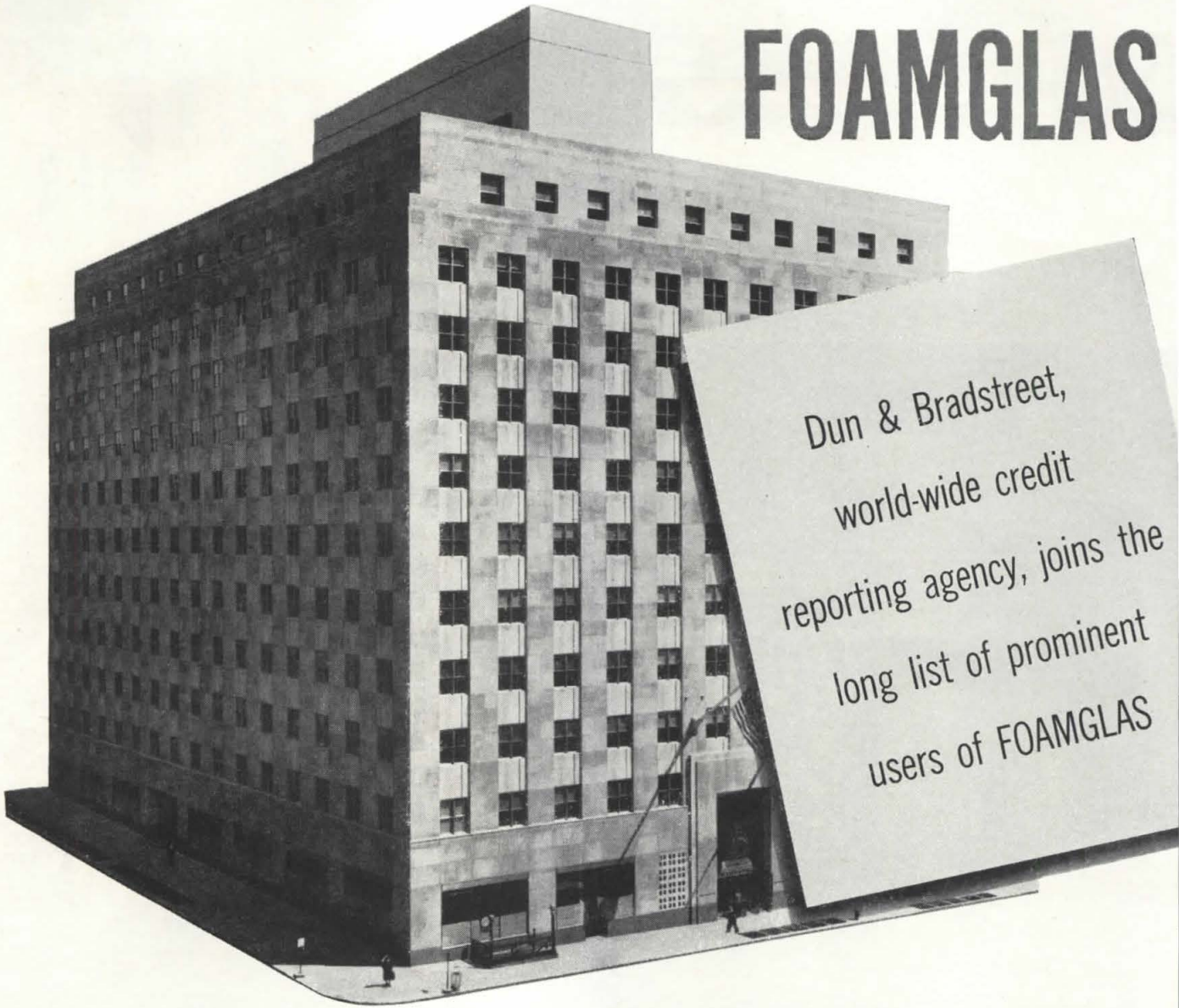
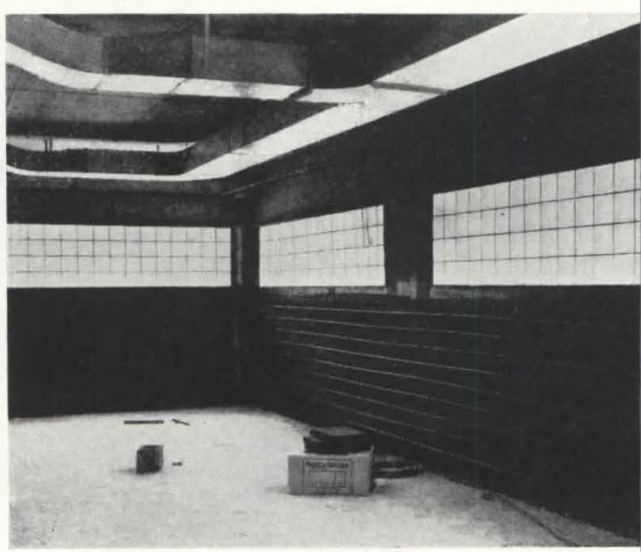
# FOAMGLAS



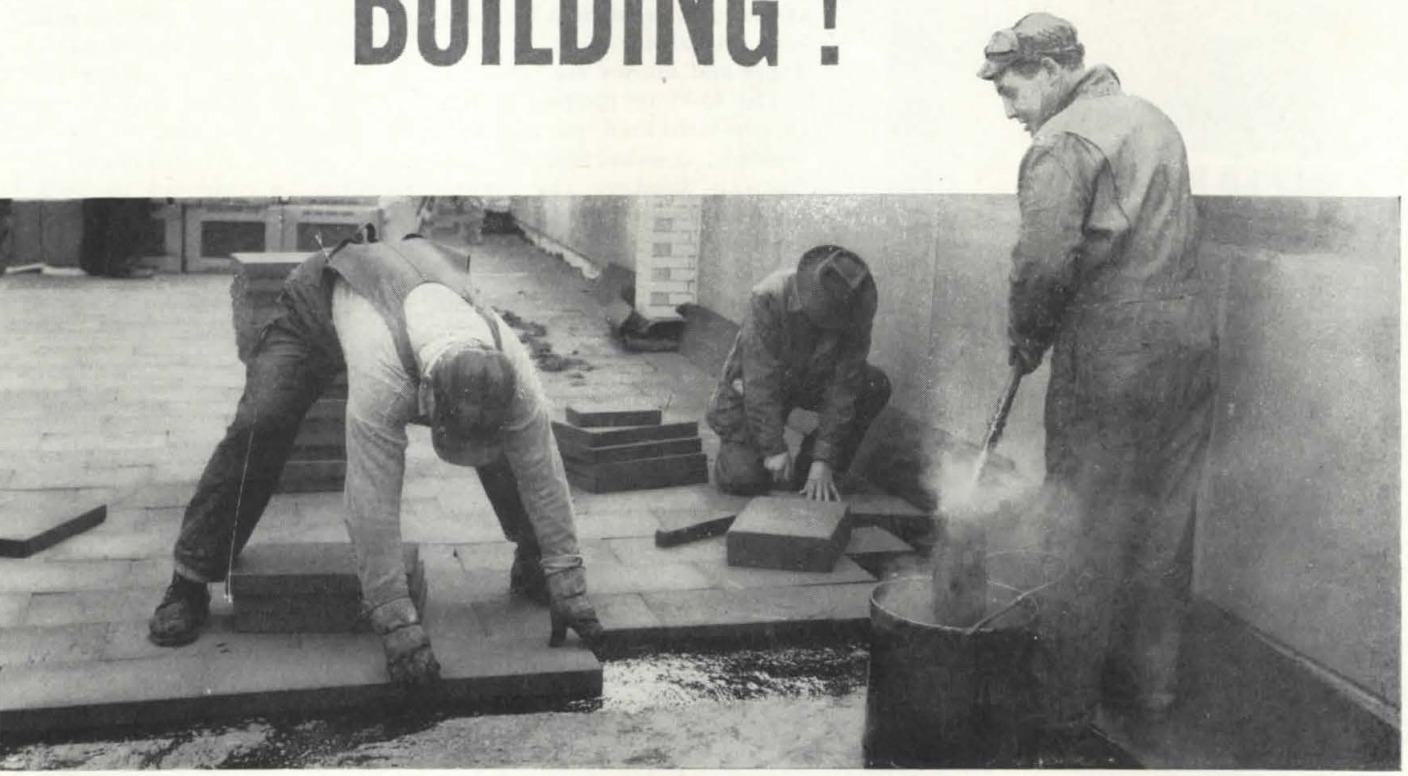


**IN THIS BASEMENTLESS HOME,** FOAMGLAS is being installed around the perimeter of the floor slab. This reduces cold transfer and heat losses, thus increases the efficiency of the warm air duct heating system. FOAMGLAS has also been used successfully under floor slabs. Rigid and strong, it provides ample support for normal loads. Being highly resistant to moisture, it needs no additional vapor barrier.



**IN THE FARMERS' MUTUAL LIABILITY** Building, Indianapolis, Indiana, FOAMGLAS facilitates heating and air conditioning. Here you see the big blocks of cellular glass insulation, laid up between outer wall and heating pipes, in the radiant-heated walls. Architects: Lennox & Mathews & Associates Inc., Indianapolis, Indiana.

# TOPS OFF ANOTHER FAMOUS BUILDING!



**THESE WORKMEN** are laying FOAMGLAS on the roof of Dun & Bradstreet's new home office building in New York City. FOAMGLAS, an effective barrier to heat travel and cold transfer, is easily handled, quickly laid. The strong, rigid blocks form a firm, even base for roofing felts, do not crush or sag, thus prevent damage to roofing. Architect: Reinhard, Hofmeister & Walquist, New York City. General Contractor: George A. Fuller Company, New York City. Roofer: Jacob Ringle & Son, Inc., Jersey City, New Jersey.

More and more plans—for large and small projects, for modernizing and for new construction—include insulation. And in more and more cases the recommended insulating material is FOAMGLAS.

For FOAMGLAS not only provides excellent insulation, it also *retains* its insulating value, year after year. It is being used successfully in walls and ceilings, on roofs, under floors and sidewalks. Unusually long service, free from costly repairs and maintenance, make FOAMGLAS the most effective and economical insulation you can recommend.

Get complete information about FOAMGLAS today. Just mail the coupon and we'll send you a sample of FOAMGLAS and your choice of our latest booklets.

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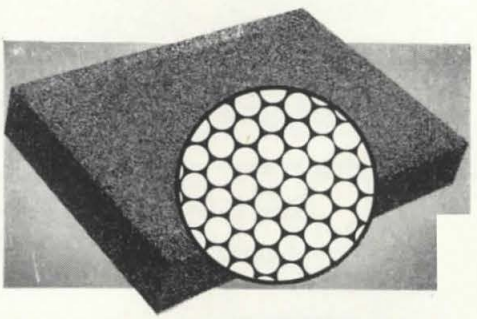
**PITTSBURGH 22, PA.**

PITTSBURGH PC CORNING ®

# FOAMGLAS®

*the cellular glass insulation*

***WHEN YOU INSULATE WITH FOAMGLAS...THE INSULATION LASTS***



The best glass insulation is cellular glass. The only cellular glass insulation is FOAMGLAS. This unique material is composed of still air, sealed in minute glass cells. It is light weight, incombustible, vermin-proof. It has unusually high resistance to moisture, chemicals and many other elements that cause insulation to deteriorate.

Pittsburgh Corning Corporation
Dept. X-111, 307 Fourth Avenue
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Please send me without obligation a sample of FOAMGLAS and your FREE booklets on the use of FOAMGLAS for: Homes ☐, Normal Temperature Commercial, Industrial and Public Buildings ☐, Refrigerated Structures ☐.

Name.....

Address.....

City.....State.....

# Q-floors in Hawaii

# ELECTRICAL LIFE INSURED

When architect Ossipoff decided to use Q-Floors in the Hawaiian Life Building, he insured the building forever against electrical obsolescence. Using the steel cells of Q-Floor as his raceways for every type of electrical system, he can have an outlet on any six-inch area of the entire exposed floor. The installation of a new outlet, now or twenty years later, calls for only a few minutes' work —drill a small hole, fish the wires and install the fitting.

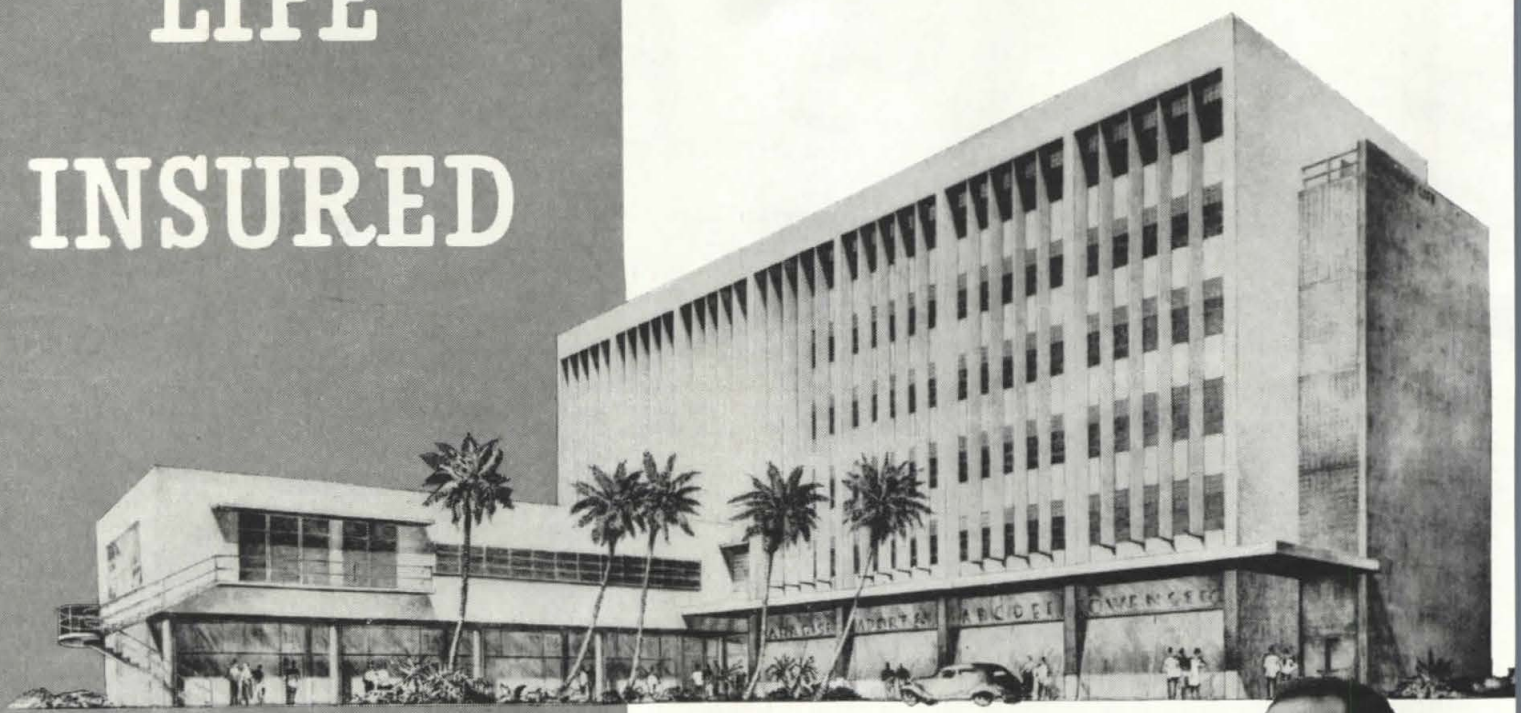
This saves a great deal of drafting room time because the outlets and partitions can be located after tenants move in.

The method of construction, however, is also modernized when Q-Floor is used. The steel units can be laid at the rate of 32 sq. ft. to the half minute. The floor goes up as fast as the framework and is used as a permanent working platform for all subcontractors. It also provides storage close to where the materials will be used. Time and money are saved as materials are handled only once.

The Q-Floor method eliminates the temporary materials used in old-fashioned construction; it is clean, dry and noncombustible; construction speed is not hampered by inclement or freezing weather. The biggest saving is in time—15 to 20% earlier completion date. This time represents a lot of money saved on labor, financing and by earlier occupancy.

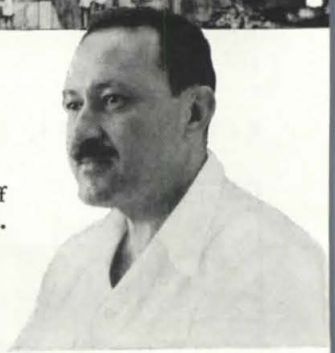
There are now Q-Floor buildings in every important city and the records of their speedy erection make convincing and profitable reading.

WRITE FOR THE LATEST Q-FLOOR CATALOG with a list of Q-Floor buildings and their architects.



Hawaiian Life Insurance Co., Ltd.
Honolulu, Oahu, T. H.

*Architect*—Vladimir Ossipoff
*Contractor*—E. E. Black, Ltd.



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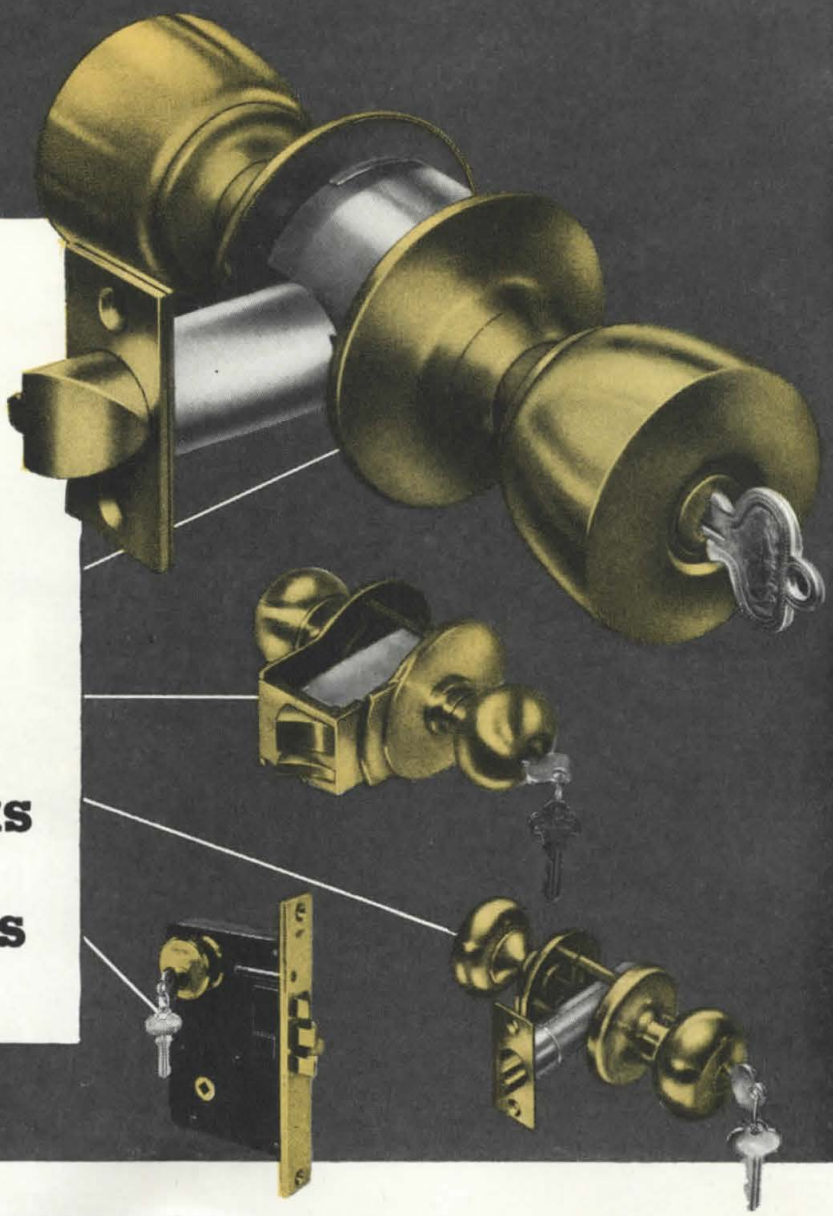

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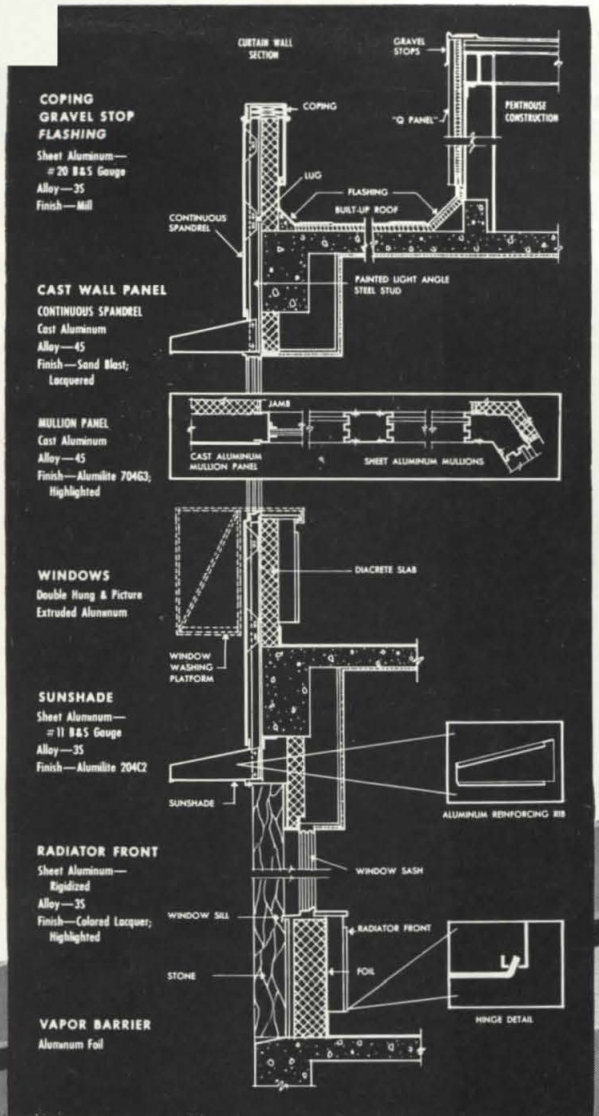
# THESE WALLS

## *Aluminum panels*




Bradford Hospital, Bradford, Pa. Thomas K. Hendryx, A. I. A., Architect. Ertel Construction Co., General Contractors. Alcoa Aluminum used for wall panels, windows, sills, sunshade, coping, hardware and trim.

# WENT ON FROM THE INSIDE

## *speed construction . . . . eliminate scaffolds*

HERE is a new type of construction that you will see more of in the future. These walls of Alcoa Aluminum panels, extending from one course of windows to the next, were installed from inside the building. Then backed up with insulating slabs of lightweight aggregates. Only platforms required were the building's floors. Materials were moved up on interior elevators.

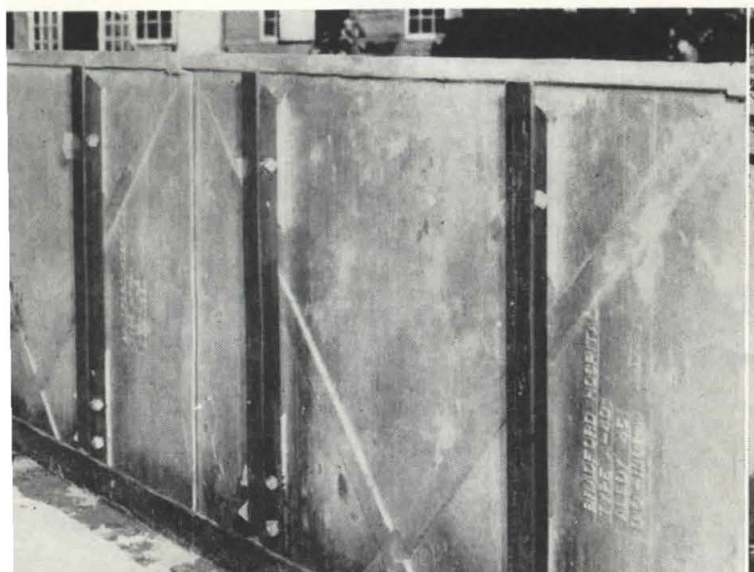
And because the exterior walls, windows, sills, sunshade and copings are long-lasting, weather-resisting Alcoa Aluminum, exterior painting costs were eliminated from the hospital's budget—forever.

Many of the aluminum application methods used here were pioneered by Alcoa. Today, although the supply of aluminum is limited by rearmament needs, Alcoa engineers are continuing to work with forward-looking architects on more efficient, more economical building for tomorrow. For information on any application of aluminum, call your nearby Alcoa sales office or write, ALUMINUM COMPANY OF AMERICA, 1890L Gulf Bldg., Pittsburgh 19, Pa.

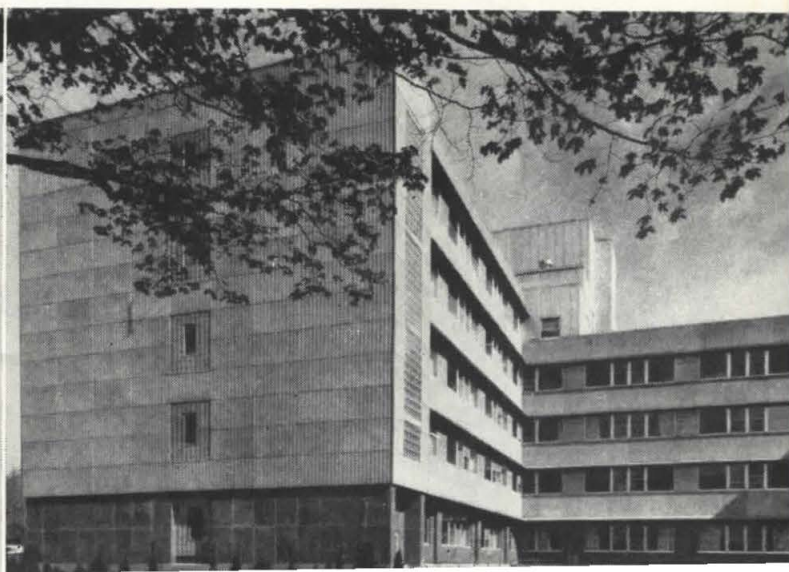
ALCOA

FIRST IN ALUMINUM ®

Large, light (4 lbs. per sq. ft.) aluminum panels are installed easily by two men. Anchor lugs inside the panels are bolted to light, angle steel studs and wall is ready for backup.



The variety of finishes available with aluminum, permitted the designer to achieve variety and harmony by blending aluminum sheet, extrusions, and sandblasted and polished castings.



Attention
Plumbers, Architects, Builders...

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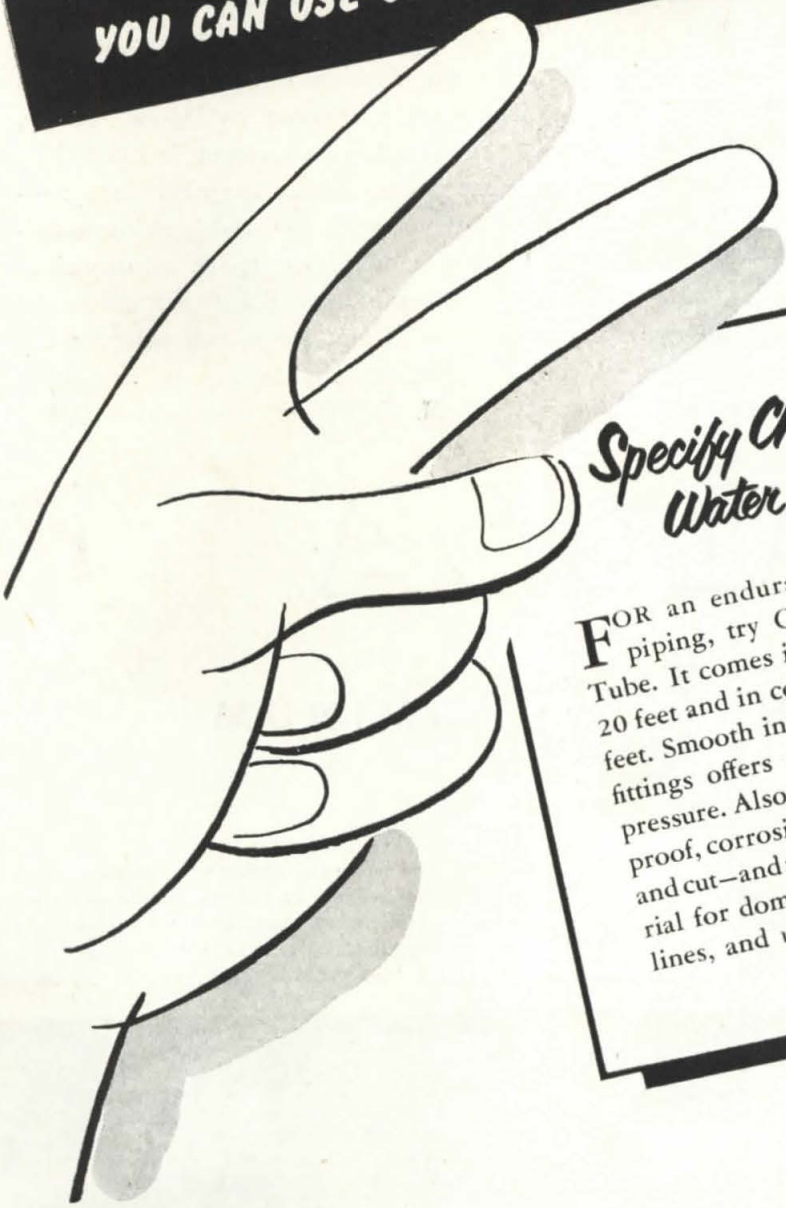

## *Specify Chase Copper Water Tube!*

FOR an endurable and versatile piping, try Chase Copper Water Tube. It comes in straight lengths of 20 feet and in coils of 40, 60 and 100 feet. Smooth inside finish of tube and fittings offers no resistance to water pressure. Also add these features: rust-proof, corrosion resistant, readily bent and cut—and you have the perfect material for domestic water lines, process lines, and underground applications.

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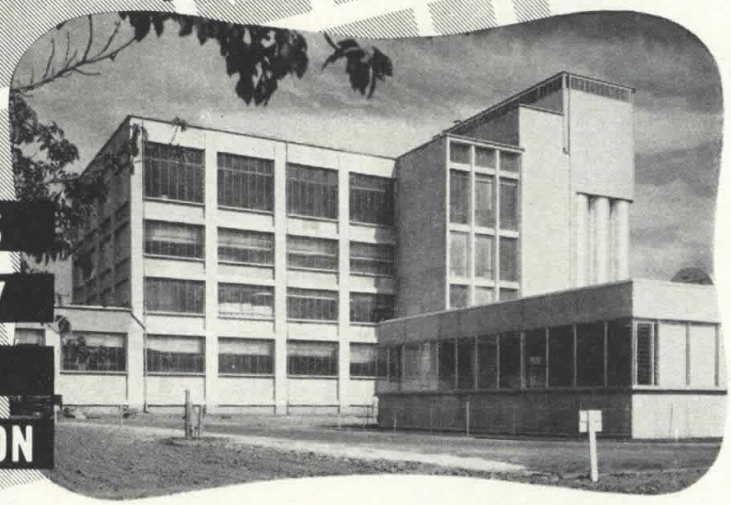

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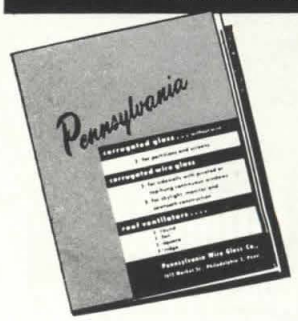


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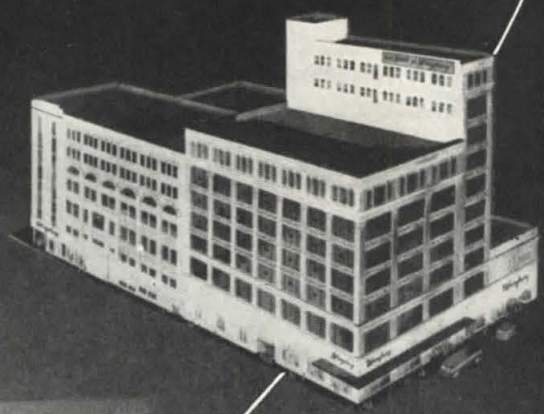




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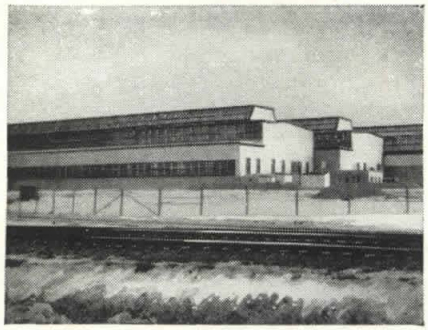
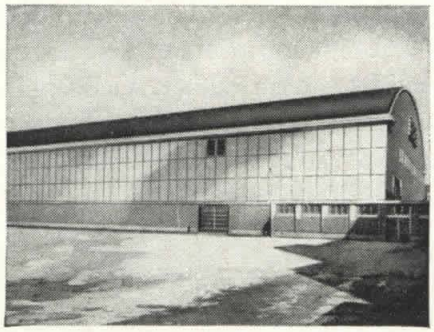
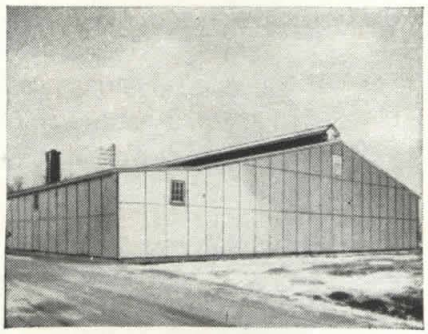


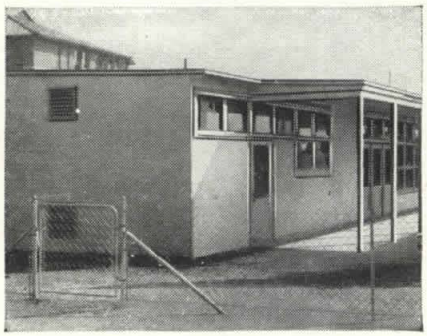
Foundry building of Cemesto Panels, Bucyrus-Erie Co., Milwaukee, Wisc. Archt.: Worden-Allen Co. Contractor: Permanent Const. Co.



Cemesto Panels used in University of Minnesota Winter Sports Arena. Architect: C. H. Johnson & Assoc., St. Paul. Contractor: Sauers Const. Co.



Practical, thrifty building of Cemesto Panels at The Ohio Mushroom Farm, Lima, Ohio. Contractor: F. H. Clausing of Lima.



Attractive, economical use of Cemesto Panels in the Alexander Hamilton Nursery School, one of 80 such units erected in Los Angeles, California.

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Their versatility permits important economies in the design, erection and maintenance of *permanent, insulated* structural roof decks, curtain walls and partitions. No wonder more and more engineers and architects are specifying Cemesto Panels for industrial, commercial, institutional and defense emergency buildings of every type!

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Due to their high *built-in* insulation value, Cemesto Panels make any building cooler, more economical to air condition in summer . . . warmer, thriftier to heat in winter. They promote more comfortable, healthier working conditions that pay off in improved employee efficiency, reduced accidents, increased production!

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Almost 21 years of varied use in all climates, all over the world, have proved the stability and permanence of Cemesto Panels. Discover how this modern marvel of building materials can help *you* build better, faster . . . and *at less cost . . . now!* Mail coupon below for complete information.

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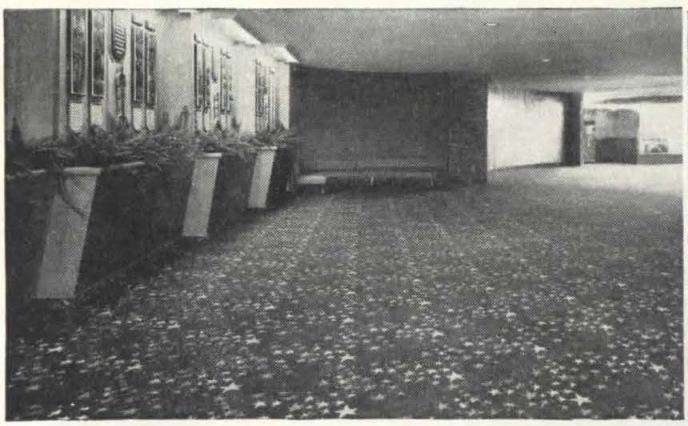

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*sponge rubber rug cushion*

• makes any carpet luxury carpet • sheds no loose hair or fibers • cleans easily with vacuum • lasts year after year under rug after rug • is moth and vermin proof • non-allergenic.

*Source: U. S. Testing Company, Inc., test No. 22570, October 3, 1950, reported Spongex increased abrasion resistance 173%. This test and E1185 also credit sponge rubber rug cushions with an average thermal conductance of 3.00 Btu/hr/°F/sq. ft. over radiant heated panel; and reveal SPONGEX to be superior to all other rug cushions in retention of resiliency after aging and compression.

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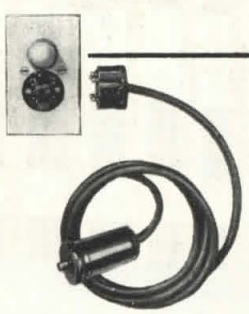
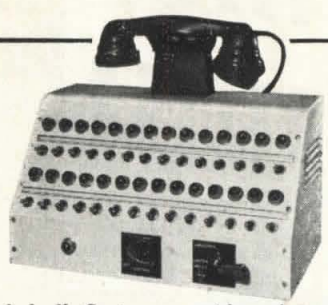
- *is a vital necessity in*
- *successful hospital operation*

AUTH communication and protection systems for hospitals provide facilities for quick contact between patients and nurses, nurses and doctors, staff executives and staff. They protect life, promote greater operating efficiency, reduce expense, and save time and energy.

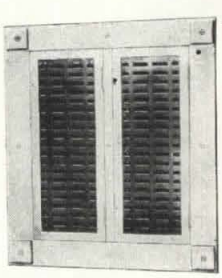


Nurses' calling Systems signal from patient to nurse.



Vokalcall Systems provide voice communication between patient and nurse.


Doctors' Paging Systems locate doctors in emergencies.



Staff Register Systems indicate presence or absence of Doctors and staff executives.

Intercommunicating Telephone Systems provide voice communication between key points.


Fire Alarm Systems warn fire brigade of existence and location of fire.

*In addition—*

- Night lights to provide soft illumination in corridors and rooms
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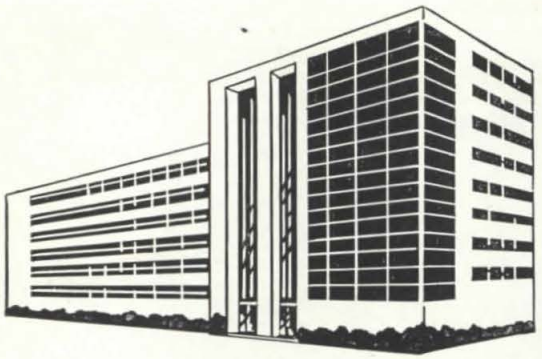
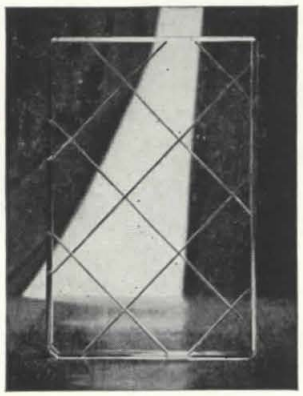
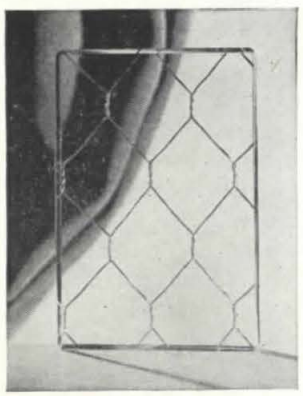




Polished Misco Wire Glass, highest achievement of the glass manufacturer's art, combines the utmost in protection with modern beauty.



Polished Wire Glass by Mississippi, approved fire safeguard, helps prevent drafts, is effective in holding fires within bounds of origin.


Now, more than ever before, it is necessary that constant vigilance is maintained and that every precaution is taken to insure against losses by fire.

Records show that many large loss fires result from exposure through ordinary glass windows.

Mississippi Wire Glass* affords constant protection at minimum cost in windows, doors, transoms, skylights, fire escapes, vertical shafts, partitions, exterior walls and all other places where fire or breakage protection is required... helps to avert tragic and costly fire losses that result from exposure through ordinary glass.

Specify Mississippi Wire Glass — the *original* solid wire glass upon which the Underwriters' Standard was based in 1899... the standard today by which all others are judged. Carried in stock by distributors of quality glass everywhere.

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- SCHOOL
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- MILITARY
- RECREATIONAL

Floor of Northern Hard Maple in Yakima Country Club, Yakima, Wash. Architect: Thomas F. Hargis, Jr., Yakima.

# in ANY service— NORTHERN HARD MAPLE

*the finest floor that grows*

## —takes tough use "in stride"

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Floor of patterned Northern Hard Maple in Koppy Tool & Die plant, Ferndale, Mich. Campbell Const. Co., Gen'l Contractors.

● Even those most familiar with Northern Hard Maple are constantly impressed with the way this handsomest of floors stands up under the severest of service. Often, in building, one has to forego something of beauty to be sure of sturdy endurance...or something of style to attain economy. But not with maple! The tough stamina that takes the beating of bowling alley and butcher's block is hidden in grain patterns of delicate loveliness, texture of satin smoothness, *resiliency* that resists even violent, pointed impact and pressure. And **MFMA** grading standards provide true economy with no penalty. Second and Third Grades (or Second-and-Better, Third-and-Better), in strips, blocks and patterned designs, produce floors of genuine beauty and unimpaired endurance. SEE SWEET'S, Arch. 13i/MA, for detailed specification data on **MFMA** Northern Hard Maple—"the finest floor that grows" —or write:

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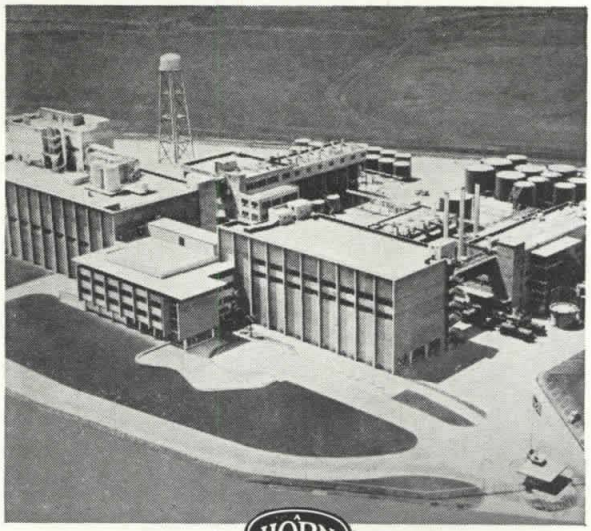
*BEECH AND BIRCH*



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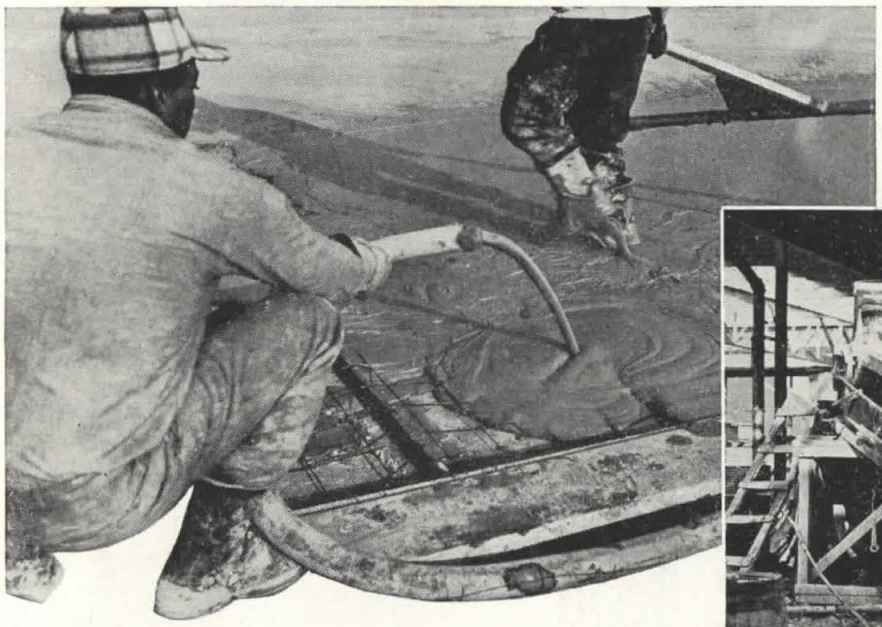
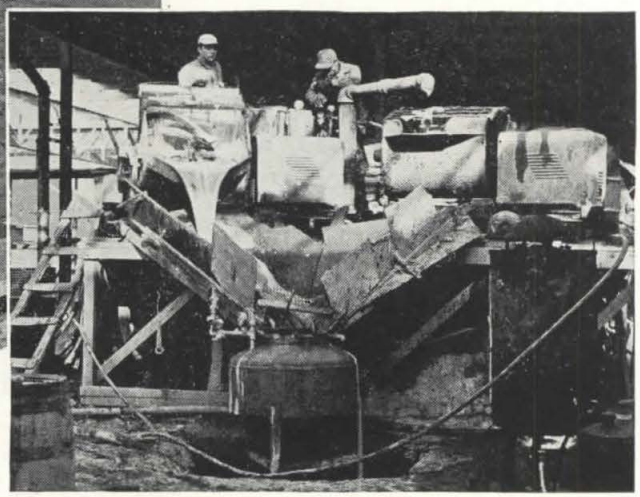
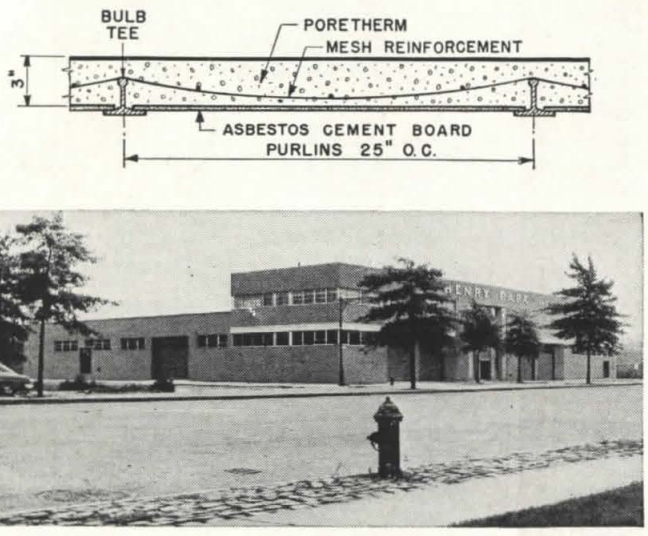


**'INCOR' SOAP-FROTHED SLURRY USED IN LIGHTWEIGHT, INSULATING ROOF-DECK**








Owner: **HENRY PAPE, INC.**, Warehouse, Garage & Office Building, Glendale, L. I.

Architect: **WALTER MONROE CORY,** New York

General Contractor: **W. J. BARNEY CORPORATION,** New York

Roof Contractor: **PORETE MANUFACTURING COMPANY** North Arlington, N. J.

'Incor', 4400 bags: **JAMAICA PARAGON PLASTER CORP.,** Jamaica, L. I.

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On this well-designed building, the 63,000 sq. ft. of Poretherm roof-deck consists of ¼" asbestos-cement sheets, supported on lower flanges of sub-purlins, and a fill of 3" poured-in-place, soap-frothed 'Incor' slurry —6" over refrigerated area.

The concrete on hardening bonds to the asbestos-cement sheets, providing ample strengths for safe working loads. Insulating value of 3" slab is equal to 1½" cork; weight, 10.5 lb. per sq. ft.

For this roof fill, slow-moving mixer blades fold a froth of liquid soap, water and air into the 'Incor'* slurry, to a smooth, even consistency. Then the mix is chuted into a pneumatic dispenser, kept in continuous operation by two mixers.

'INCOR' 24-HOUR CEMENT provides greater strength in less time, permits workmen to get on the roof sooner, thereby speeding completion. Another example of know-how, sparked by ingenuity, taking full advantage of dependable 'Incor' performance.

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# power and industry

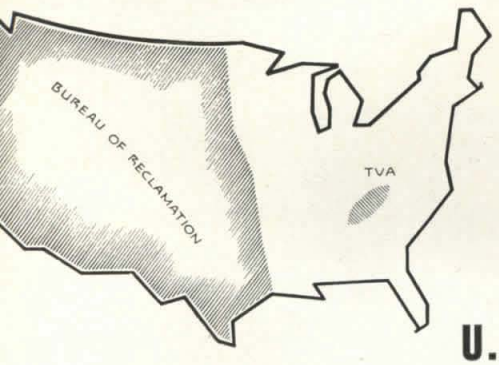
The architecture of power and industry involves more than the design of factories. First must come the production of power for industry to use, then the distribution of that power, then the construction of the industrial plant. The volume of industrial building is a measure of the need for power, and at the moment that measure is a great one. Industrial construction during the first seven months of this year amounted to $1,086,000,000 compared to $513,000,000 in the same period last year. Manufacturing capacity in the United States expanded in the five years following World War II at an annual rate of 6%, and now the program for defense alone calls for an increase in total industrial output of more than 5% during '51-52.

Tax amortization certificates for defense expansion of plant and equipment have been granted to hundreds of companies in every part of the country in recent months. Running through the list of companies awarded NSRB certificates, one finds a marked decentralization taking place. A comparison of expenditures for new plants and equipment in 1947 with approval of tax amortization certificates in 1951, shows that the North Central states dropped from 32.7% of the total in 1947 to 21.6% in 1951; while the South Central area west of the Mississippi River rose from 8% to 18.1%; the Mountain area from 1.3% to 4.8%; and the South Central area from 4% to 7% of the countrywide expansion. Industry, without any over-all plan to do it, is decentralizing and moving into sections which have not been hitherto primarily industrial.

This regional redistribution of industrial activity must go hand in hand with power availability and power distribution. Where new power is available, as in the TVA region, industry moves in. Where industry appears *before* sufficient power is available, power sources must be rapidly developed. The Midyear Economic Report of the President says, "The outlook for severe shortage of electric power continues in several parts of the country . . . Beginning of new projects planned and budgeted for this year cannot be put off." As a matter of fact, dollar volume of power utility construction is up 14.4% over last year; more than $7 billion will probably be spent on new electric power facilities in the next three years.

Electric power generated by harnessing our water resources has been a great factor in this power-searching decentralization of industry. There are many reasons for a water-resources program in the United States: navigation, flood control, irrigation, forest cover, fishery, recreation, sustenance, and power. Water power has always been important to industrial activity in this country, since the New England rivers turned the wheels of the earliest manufacturing plants. It is now possible for the Bureau of Reclamation to claim that it is the greatest power-producing agency in the world. TVA is working on a program which will allow it to supply 34 billion kw annually by 1954. A tremendous increase in the construction of Federal water projects is anticipated, and has been partially authorized.

All of the steps from the turbulent stream to the busy production line involve architecture. And there is a challenge in the architectural problem of designing the dynamic production centers for power and industry. On the pages that immediately follow, some of the basic structures for the production of hydro-electric and steam power are shown. The architectural problem starts there.




# U. S. Bureau of Reclamation Structures

*The following discussion was compiled from detailed notes especially prepared for* **P/A** *by Stephen H. Poe, Head Technical Editor, Denver Office, Bureau of Reclamation.*

The Bureau of Reclamation, U. S. Department of the Interior, is the Federal agency that is responsible for reclaiming the arid and semi-arid regions of the 17 Western States and Alaska and conserving and developing the land and water resources of these areas. Involved in this vast undertaking is the construction of dams, power plants, pumping plants, canals, tunnels, transmission lines, and related engineering works.

In addition to the irrigation of more than 5,000,000 acres of land which this work has accomplished since the Bureau's inception in 1902, it has resulted in numerous other benefits—generation of electric energy; supply of water to municipalities; prevention or control of floods; improvement of navigation; entrapping of silt that otherwise would have clogged rivers; conservation of wild life; and creation of recreational areas.

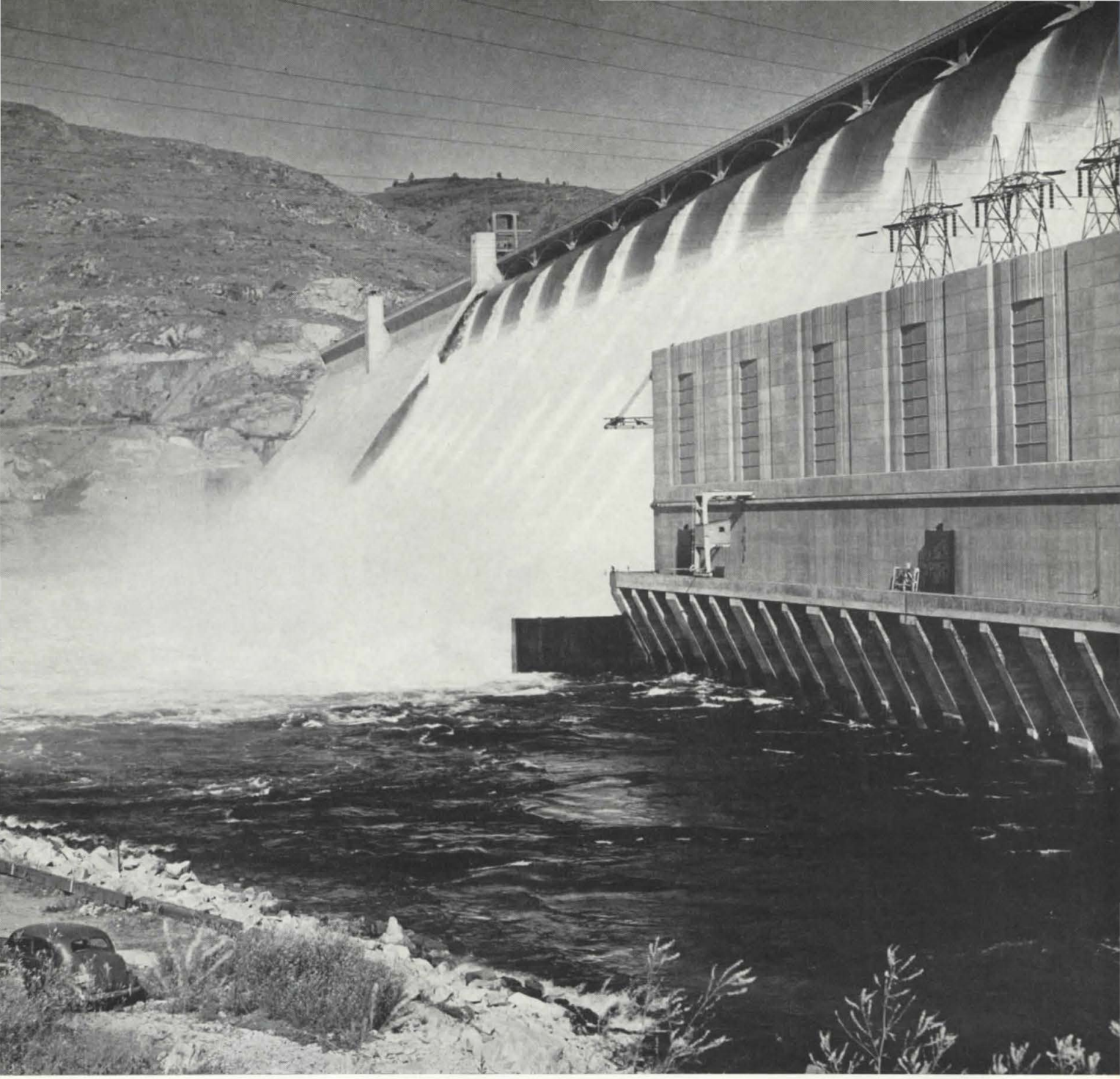
In this study, we show examples of work from three widely separated areas of the West—the Grand Coulee Dam in the Columbia Basin Project in Washington; Shasta and Keswick Dams, which are part of the vast Central Valley Project in California; and the Davis Dam Project, on the Arizona-Nevada border, south of the Boulder Canyon Project. Not only do these indicate the variety of projects required for reclamation work, but also the generally high level of the designing going forward under the Bureau's aegis.

The design problems involved in planning works of this sort are as various as the configuration of the land on which they are built. After the approximate site of a power plant has been chosen and the basic functions and requirements established, the planning process, including the all-important consideration of the relation of the dam to its related structures, is conditioned by numerous related factors, no one of which may be determined independently. Among these are: the type of dam to be used in forming the reservoir; whether of earth or concrete; the amount of flood waters to be spilled; the amount of maximum by-passing of water for irrigation or other downstream requirements; number and size of the units; access to the power-plant area; and space for the switchyard. Each power plant has its own set of conditioning factors, usually different from those of any previously constructed plant, and each requires special analysis and fresh determinations.

In the case of the Grand Coulee Dam *(on these two pages)*, structural design is not carried out through the use of any one particular practice, material, or standardization of procedure, but is a combination of many. Grand Coulee is the largest concrete structure in the world—4173 feet long, standing 550 feet above foundation, and containing about 10¼ million cubic yards of concrete. The central spillway is 1650 feet wide, and the waterfall is half as wide and twice as high as Niagara. The power plant is the largest hydroelectric installation in the world and consists of two 730-foot-long powerhouses, housing 9 generators each, on opposite sides of the river at the downstream face of the dam. Seventeen of the eighteen generators, each rated 108,000 kilowatts, have been installed. When installation is complete, the plant will have a rated capacity of 1,974,000 kilowatts, including three 10,000-kilowatt station-service units. The power plant also will supply electric energy to the Grand Coulee Pumping Plant, largest pumping installation in the world.

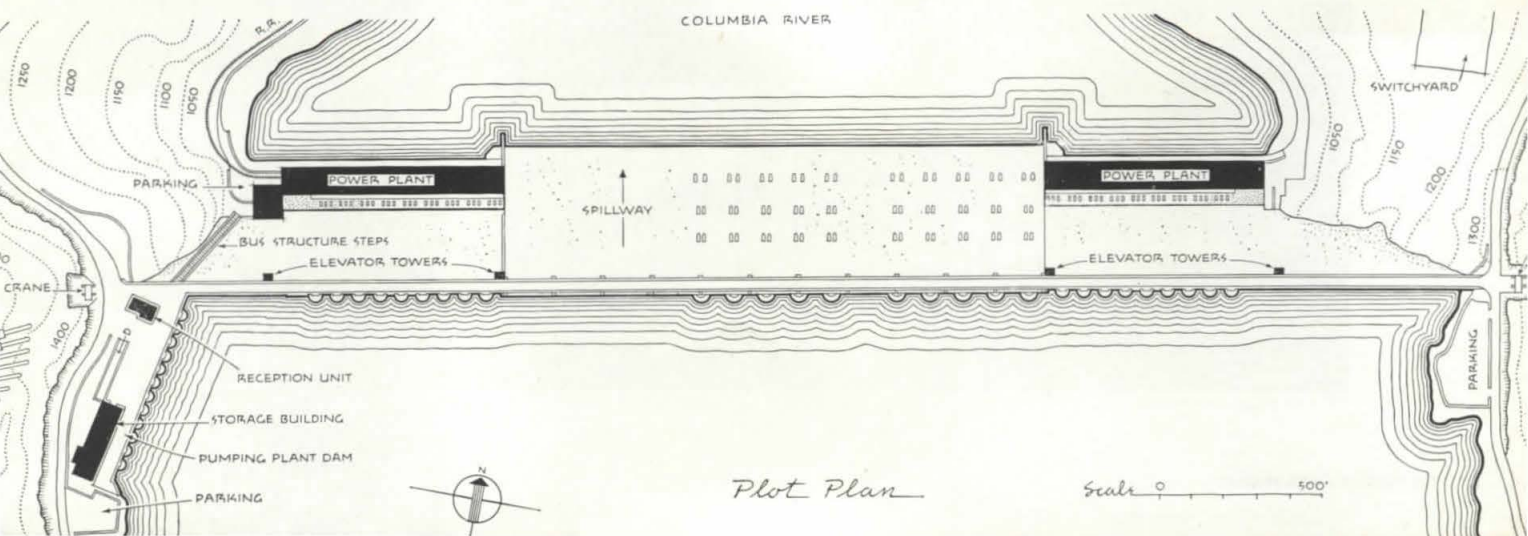
(Continued on page 59)

**Grand Coulee — largest concrete structure in the world. Interior view *(right)* is of the powerhouse shown in foreground of general view *(acrosspage)*. Its twin occurs at the opposite end of the dam.**
***Photos: Bureau of Reclamation***



## Grand Coulee Dam and Power Plant: Columbia Basin Project, Washington

**Gordon B. Kaufmann and Earl C. Morris, Consulting Architects**



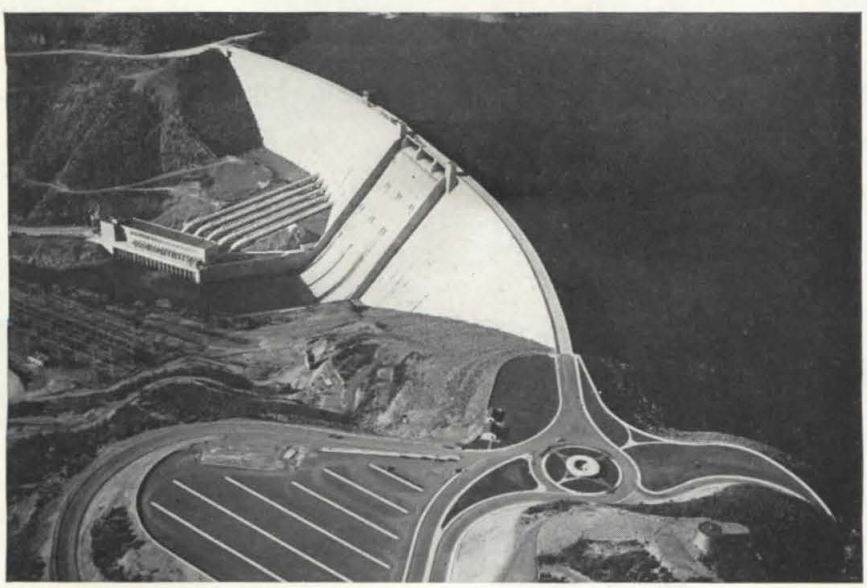
Shasta Dam and Power Plant are key features in the huge Central Valley Project that is literally remaking the map of California.

Below—the penstocks that feed the power plant.

Acrosspage—closeup view of power house, with dam in background.

## Shasta Dam and Power Plant: Central Valley Project, California

Gordon B. Kaufmann and Earl C. Morris, Consulting Architects



(Continued from page 56)

Electric energy produced from Grand Coulee's power plant is distributed principally through sub-stations near Spokane and Seattle, Washington, and near Portland, Oregon, to industrial plants and private and municipal power utilities. The plant is integrated with the Northwest Power Pool, a voluntary grouping of private, municipal, and Federal power systems in Washington, Oregon, Idaho, Montana, and Utah.

In the group of Bureau structures illustrated in this study, the hydraulic-power projects of which these are vital elements vary in type from a dam and power plant for straight production of power *(Davis Dam, Page 61)* to multiple-purpose projects providing for irrigation, flood control, power, and other purposes, including aid to navigation. In the latter category is the Central Valley Project in California, of which both Shasta Dam *(on these two pages)* and Keswick Dam *(overpage)* are units. This project, one of the largest multiple-purpose projects yet undertaken by the Bureau, has been built to store and distribute water for irrigating lands in the Sacramento and San Joaquin River Valleys; to repel salt water from the lands around upper San Francisco Bay; to produce electric power; to supply fresh water for municipal land industrial purposes; and to provide improvements for navigation and flood control.

Shasta Dam, on the Sacramento River, is the largest structure of the Central Valley Project. The dam, a variable-arch gravity structure, is of concrete, 602 feet high above the foundation and 3460 feet long at the crest. It contains 6,541,000 cubic yards of concrete. The power plant at Shasta, California's largest hydroelectric plant, houses five generators of 75,000-kilowatt capacity each, and two 2000-kilowatt station-service units. A recent newspaper article reported the inauguration of the irrigation aspects of the Shasta project, which Michael W. Strauss, Commissioner of the Bureau of Reclamation, described as literally remaking the map of California by filling "new man-made rivers by moving the rain." It will provide additional water for 500,000 acres of rich lands heretofore lacking only the water to make them fruitful, and it will also bring water to another 500,000 acres of dry but potentially abundant lands.

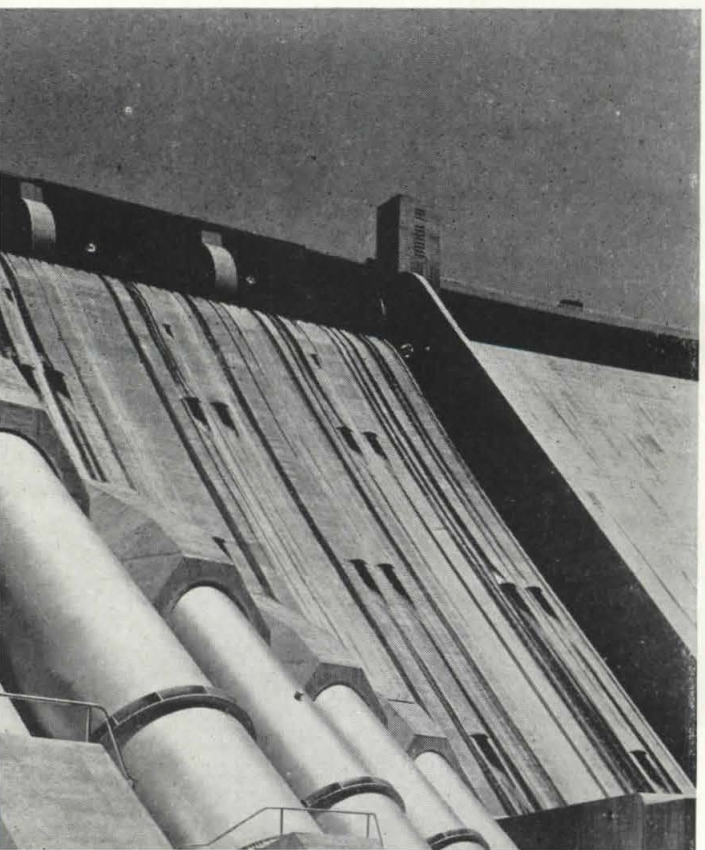
Keswick Dam and Power Plant *(overpage)* are also located on the Sacramento River, 9 miles downstream from Shasta Dam. Keswick's reservoir regulates the water released from the Shasta Power Plant. The power plant at Keswick contains three 25,000-kilowatt generators. Power generated by the 375,000-kilowatt-capacity Shasta Power Plant and 75,000-kilowatt Keswick plant is transmitted by an extensive system of transmission lines for operation of the project's pumping works, and also for sale to irrigation districts, municipalities, and other agencies.

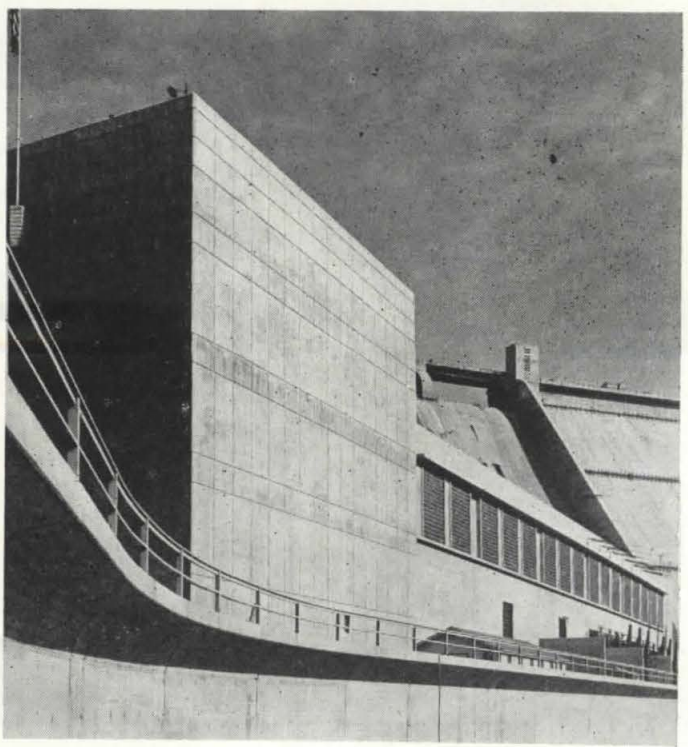
Davis Dam spans the Colorado River between Arizona and Nevada, about 67 miles downstream from Hoover Dam. The dam re-regulates the fluctuating water released from Hoover Dam and facilitates water delivery beyond the United States-Mexico boundary, as required by a treaty with Mexico, to provide that country with its share of Colorado River water. In addition, the project contributes to flood control; navigation improvements; irrigation and municipal water supplies; reduction of silt pollution; recreation; wild waterfowl protection, and related conservation purposes.

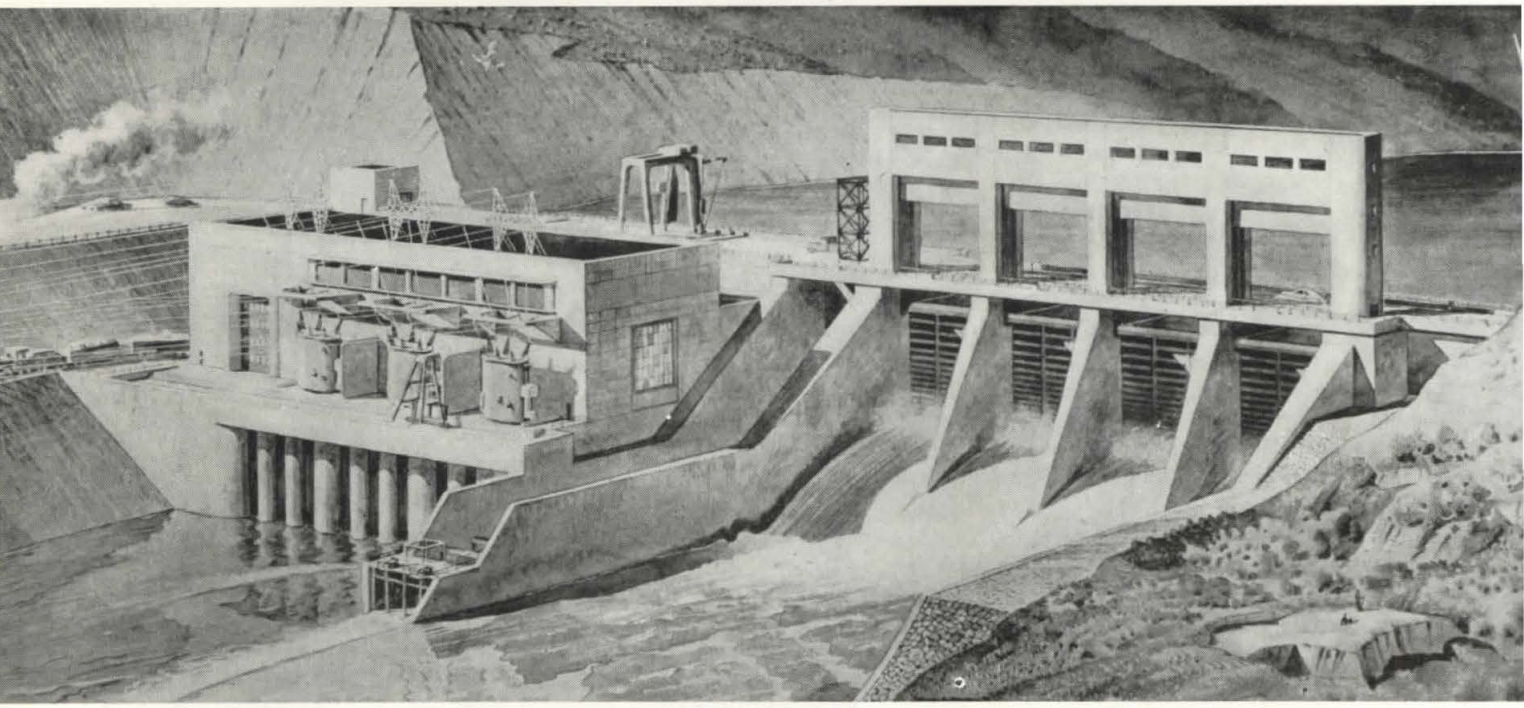
Unlike any of the others shown in this presentation, Davis Dam is an earth-fill structure, 200 feet high above foundation, 1400 feet wide at the base, and has a volume of more than 4,300,000 cubic yards of earth and rock fill.

Davis Power Plant, a semi-outdoor type, is a reinforced concrete structure and is located on the Arizona side of the river. Housing five 45,000-kilowatt generators, the plant has a total capacity of 225,000 kilowatts. The power plant is interconnected with other Bureau projects to

(Continued on page 61)

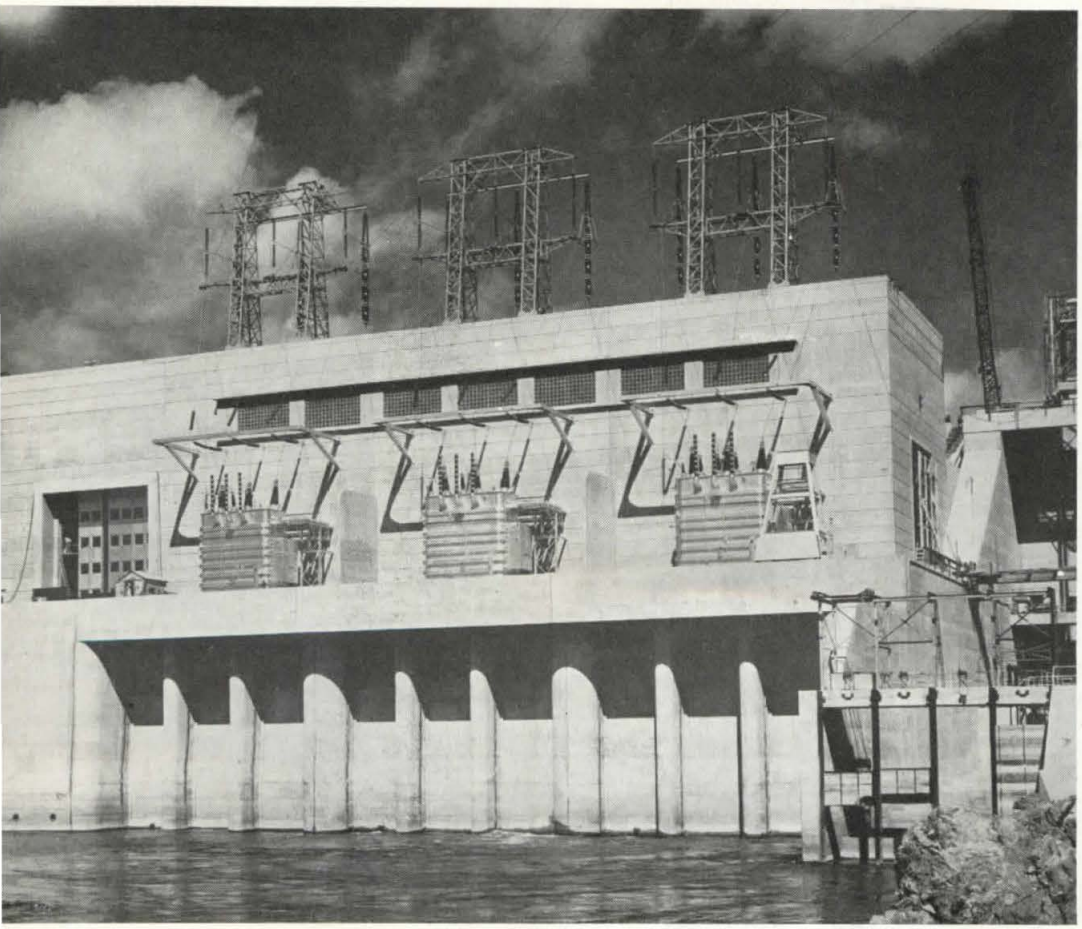




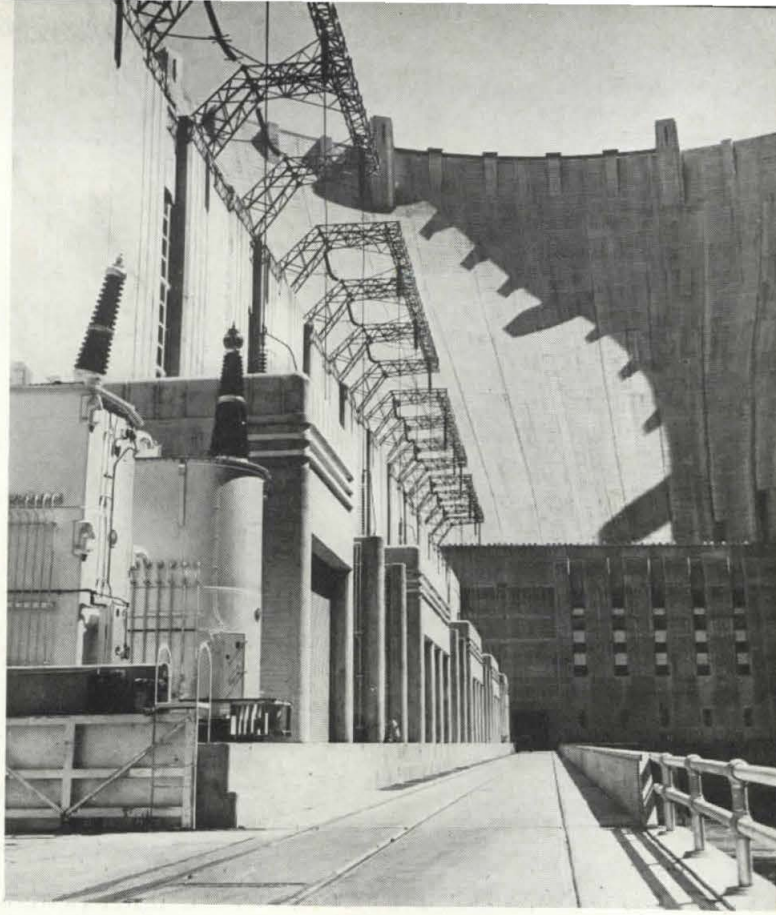


## Keswick Dam and Power Plant: Central Valley Project, California

**Gordon B. Kaufmann, Consulting Architect**



Keswick Dam and Power Plant work in conjunction with the Shasta installation, 9 miles upstream, to generate power for operating the Central Valley Project's pumping works and for sale to irrigation districts and others.



Right—closeup view of Hoover Dam, Boulder Canyon Project, with central section of the Power Plant in the background at the foot of the dam.

Below—proposed Bridge Canyon Dam for construction on the Colorado River, upstream from Hoover.

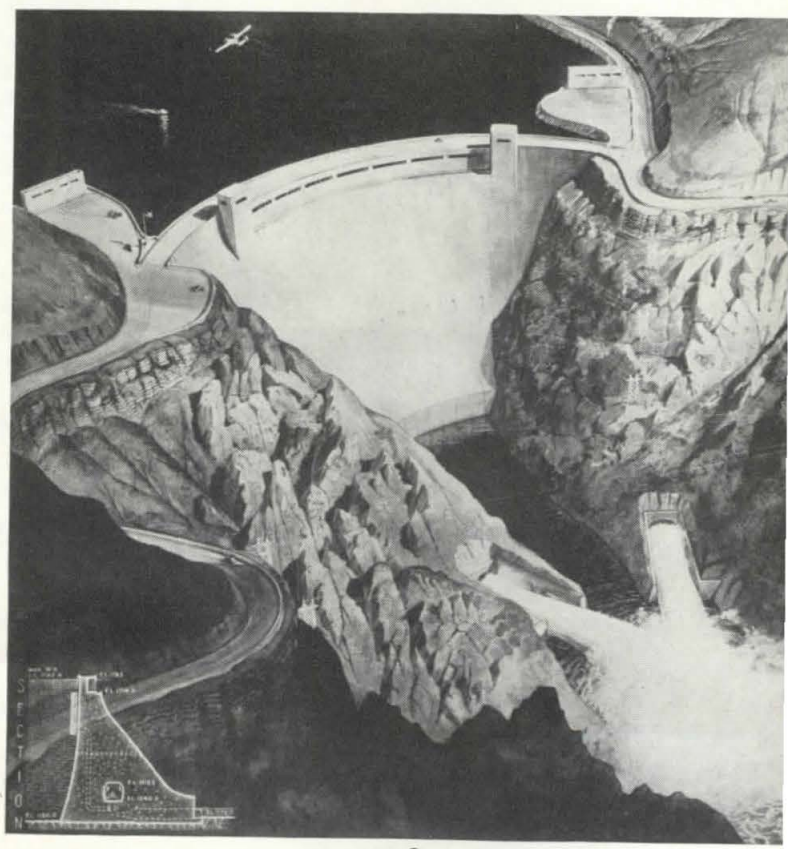
(Continued from page 59)

supply power to pumping plants in southwestern Arizona, southern Nevada, and southern California.

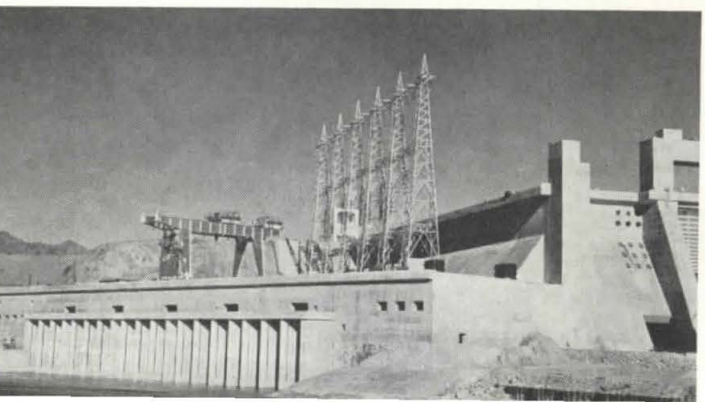
One of Reclamation's outstanding and best known achievements was construction of Hoover Dam, principal structure of the Boulder Canyon Project, completed in 1936. The highest dam in the world, it established a pattern for development of massive concrete structures not only for future work of the Bureau of Reclamation but, in the Bureau's view, for virtually every other construction agency engaged in similar operations. A concrete-arch gravity dam, it is 726 feet high above foundation, 1244 feet long at the crest, and has a volume of about 3,245,000 cubic yards. The power plant has an ultimate capacity of 1,332,300 kilowatts. In addition to two station-service units of 2400 kilowatts each, the ultimate power installation will consist of 15 generators rated at 82,500 kilowatts, one generator of 40,000 kilowatts and one at 50 kilowatts.

In the Hoover Dam Power Plant, the Bureau feels, its design tenets for powerhouse superstructures are well displayed—simple in mass, pleasing in proportion, functional in design and devoid of superficial decoration—so that it achieves character and scale consistent with the massive dam which dominates the group.

In Bureau construction to date, an investment of nearly $2,000,000,000 has been made, and the increased scope of Bureau work is indicated by the fact that the last six years accounts for more than half this total. From time to time, the Bureau is asked to assist other agencies in the development of water-control works. Bureau of Reclamation engineers, for example, prepared the initial engineering designs for the TVA's Norris and Wheeler Dams, although subsequent dams constructed by TVA were wholly designed by its own staff. While much remains to be done in the development of western water resources, the Bureau is already the world's greatest power-producing agency and operator of water works, having the largest reservoir capacity in the world.




Left—Davis Dam Power Plant, a semi-outdoor type, reinforced concrete structure. Davis Dam itself is an earth-fill structure spanning the Colorado River.

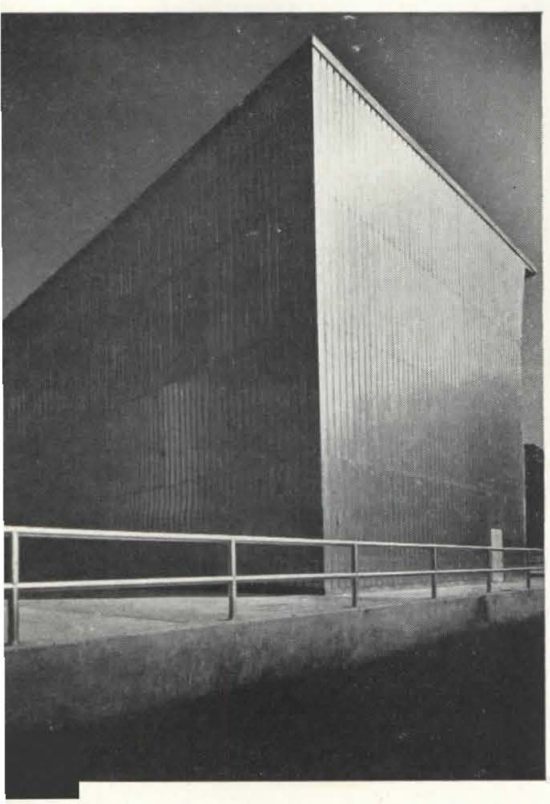


# TVA Buildings

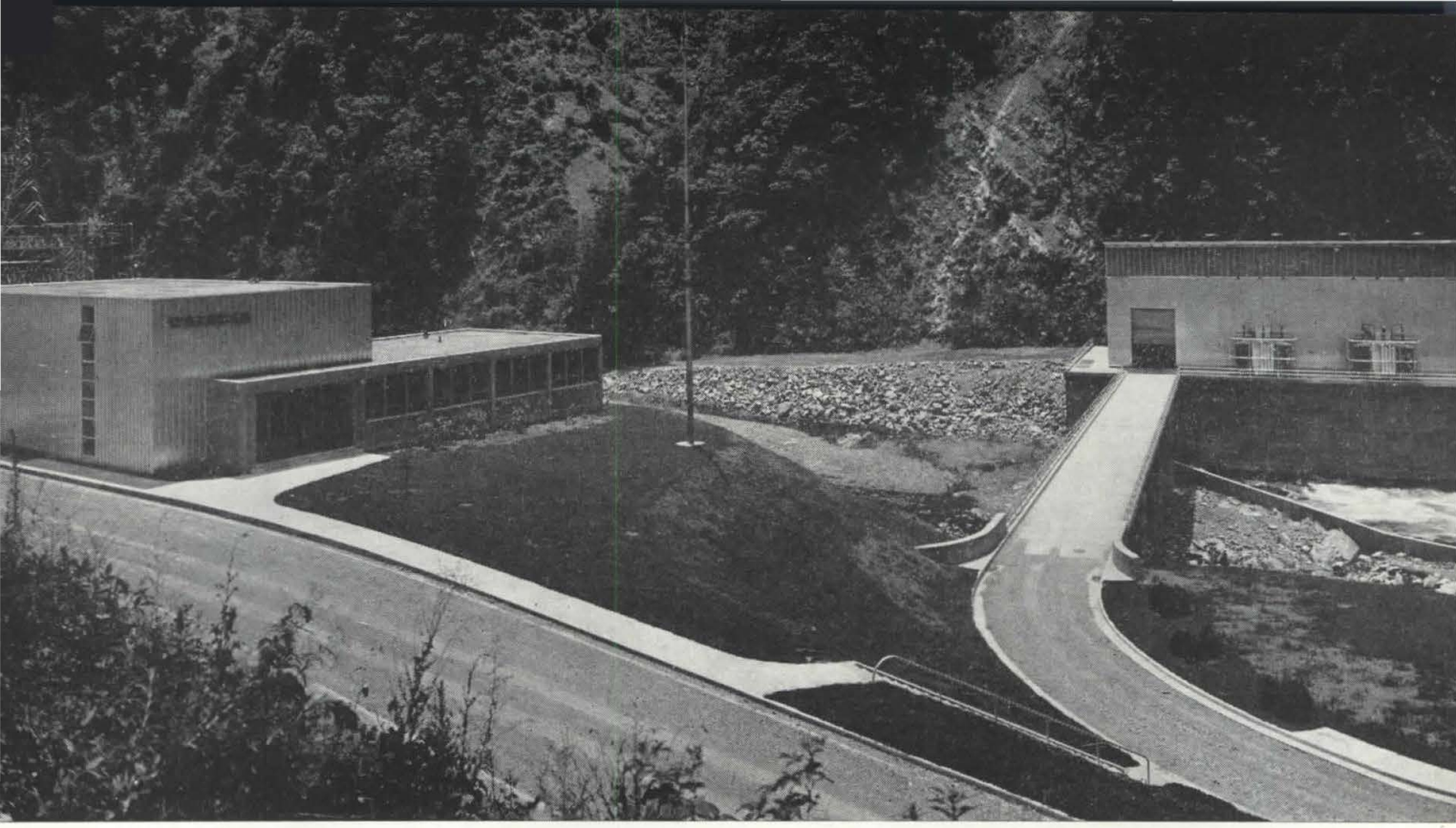
The Tennessee Valley Authority has provided an outstanding example of a co-ordinated program of water-resource development. Begun in 1933, primarily for flood control and soil improvement, TVA has become a major power producer. It is one of the principal factors in the regional development of the Tennessee-Alabama-Mississippi area, with its influence extending into Georgia, North Carolina, Virginia, and Kentucky. Many of its dams and power houses have been published and widely admired (Watts Bar in January 1945 **P/A**; Fontana in December 1947 **P/A**). At present a huge building program is underway, with two new dams recently completed and 14 power plants—five steam and nine hydro-electric—under construction or proposed.

There are many lessons to be learned from TVA's history, which will undoubtedly be used by policy planners as well as engineers for subsequent basinwide water programs. In the field of power production, TVA's experience has made it very clear that once new sources of power are offered, the need mushrooms. Industrial production and the building of new plants are not the only reasons for this phenomenon, of course (electrification of homes in the area is one source of further demand; the Atomic Energy Commission's demands are another), but the spread of industry through this part of the South is the most obvious physical result of the TVA program, and a primary reason for the present expansion.

Architecturally, TVA has long been regarded as the model for this sort of co-ordinated architectural-engineering concept. In its dams and power houses a new sort of monumentality has been achieved, and its heavy smoothness and almost overpowering directness has been understood and accepted by many thousands of visitors and sightseers. Now, in its more recent smaller structures, the same tradition of frank, unadorned use of a basic material is being carried out. The materials are sometimes different: aluminum siding, at Watauga, replaces the concrete and stone of earlier buildings.



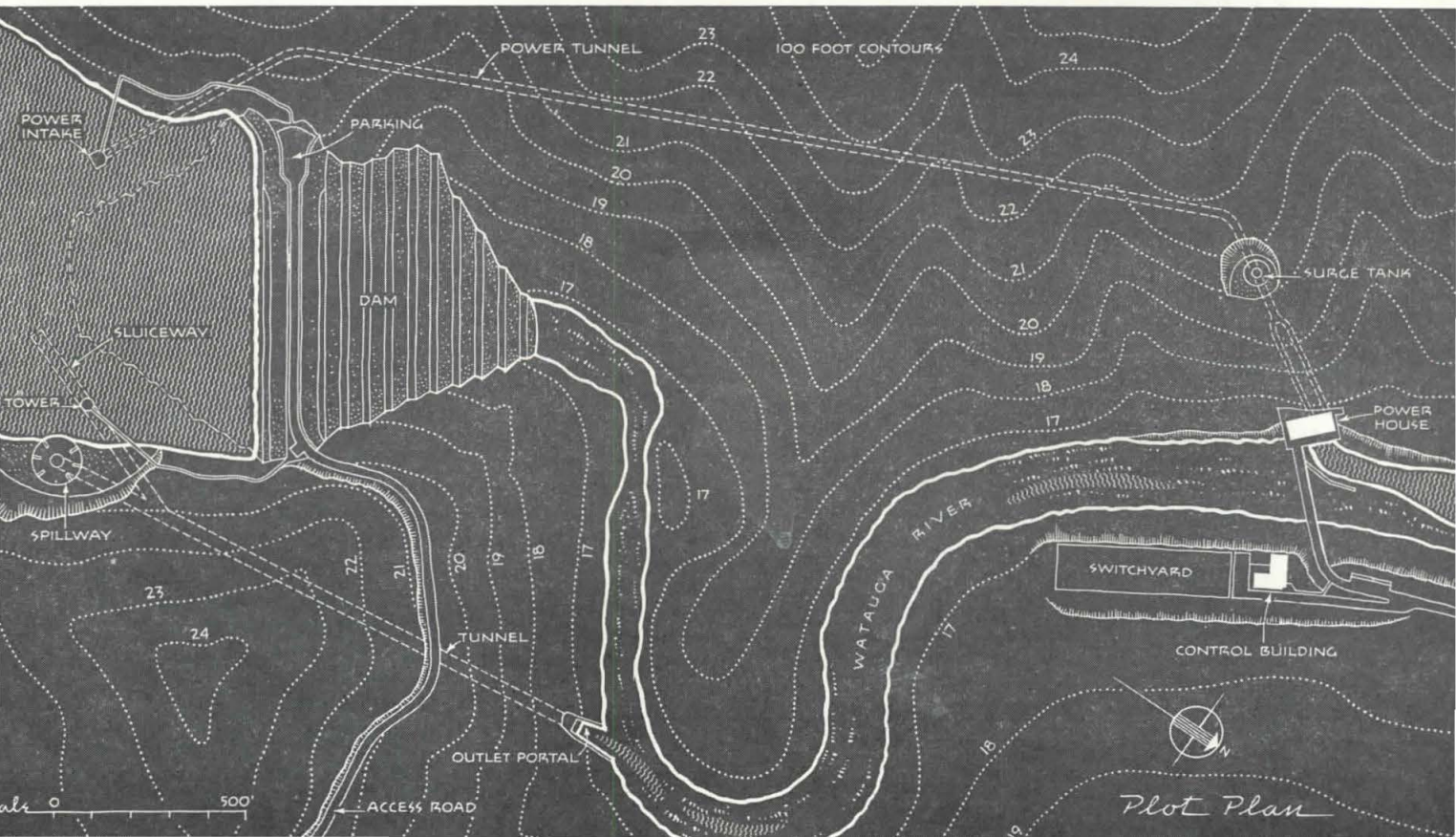
Harry B. Tour, present Head Architect, has been in a position of architectural responsibility almost from TVA's inception. Roland A. Wank was the original Head Architect, and remained Chief Consulting Architect when he went back to private practice. Wank was followed by Mario Bianculli, and later Rudolph Mock took the top architectural design job for a time. Now Tour is in charge of the architectural department. Work usually is credited anonymously, as it should be in a collaborative project, to "the architects and engineers of TVA." It is interesting to note that the design of the Chemical Engineering Building, shown on pages 67-73, was the first TVA architectural job done by an outside firm.



## Watauga Powerhouse and Control Building: Watauga River, Tennessee

Designed and constructed by the Tennessee Valley Authority, the Watauga powerhouse, control building and earth-fill dam (some 3500 feet upstream) provide for both production of power and water storage to assist flood control. Located in extremely rugged terrain in a relatively unsettled part of the Tennessee hills, the powerhouse receives water from the artificial lake by means of a large tunnel that pierces the intervening hills. To reduce cost of transportation of materials as well as to simplify on-site construction problems, all exterior walls of the powerhouse and the major portion of the control building are surfaced with insulated aluminum siding.

*Photos: TVA*



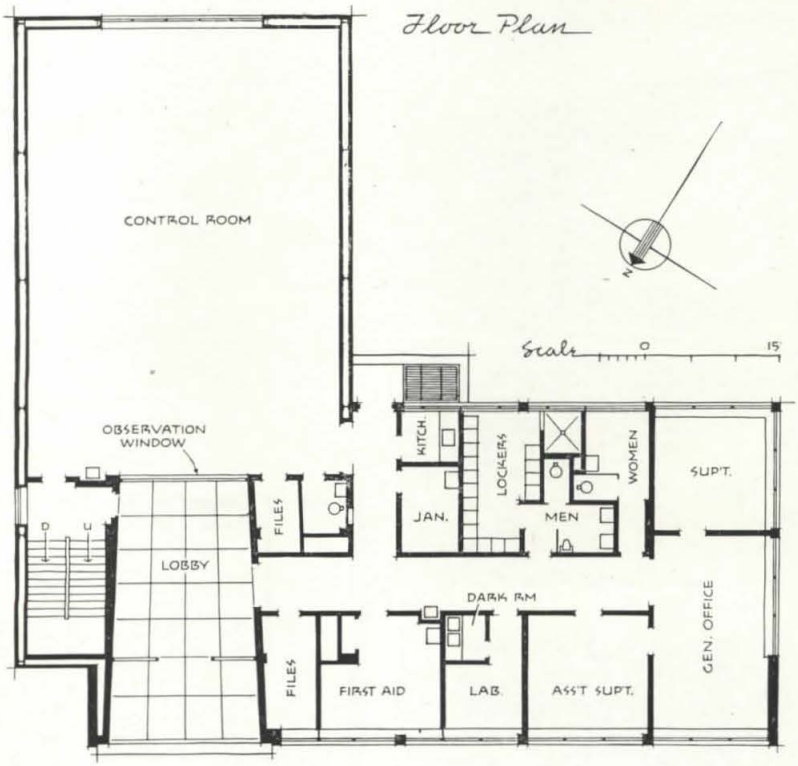

This small powerhouse and the control building were designed and constructed by TVA in conjunction with an upstream rock-and-earth-fill dam *(site plan, preceding page)* to assist flood control and provide new sources of power. The powerhouse is a remotely controlled facility and does not require permanent attendants. The control building houses control equipment not only for this plant but for two others as well—one about a mile downstream; the other 14 miles away on another river.

Because of the rugged nature of the terrain and limited areas of level land, the control building and powerhouse are located on opposite sides of the river bed; and, due to the remote location of the plant and lack of full-time personnel, considerable study went into design and choice of materials that would require minimum attention and upkeep. At the same time, since the area is scenically magnificent and a visitor-lure, special care was given to the esthetic aspects of the design, and a visitors' observation window is provided in the lobby wall of the control room.

For high wall areas or (as in the case of the powerhouse) where construction space was at a premium, insulated aluminum-siding panels are employed for wall surfacing. For example, this metal siding proved both an economical and satisfactory choice for exterior walls of the tall control room, windowless except for a slot-like vision strip overlooking the switchyard. But in the low office wing, where large window areas were required, a conventional concrete frame with brick panel walls seemed the more logical solution.

Air conditioning is provided for office areas and in the control room from two systems of fans, cooling coils, electric heaters, electric humidifiers and controls. Other areas are heated by wall-mounted electric heaters.

The exterior lettering, WATAUGA, is cherry red, in contrast to the aluminum siding.


Floor Plan
CONTROL ROOM
Scale 0 15
OBSERVATION WINDOW
LOBBY
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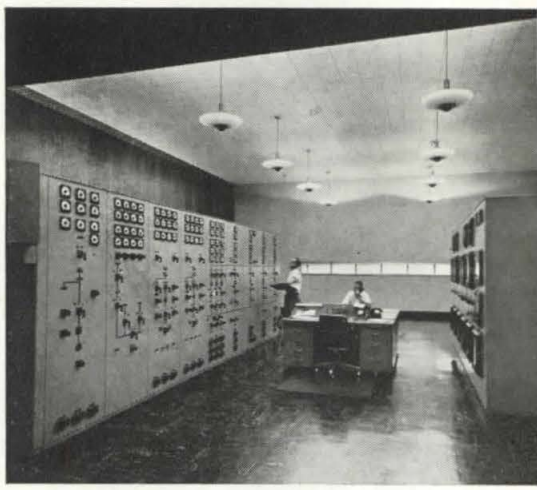
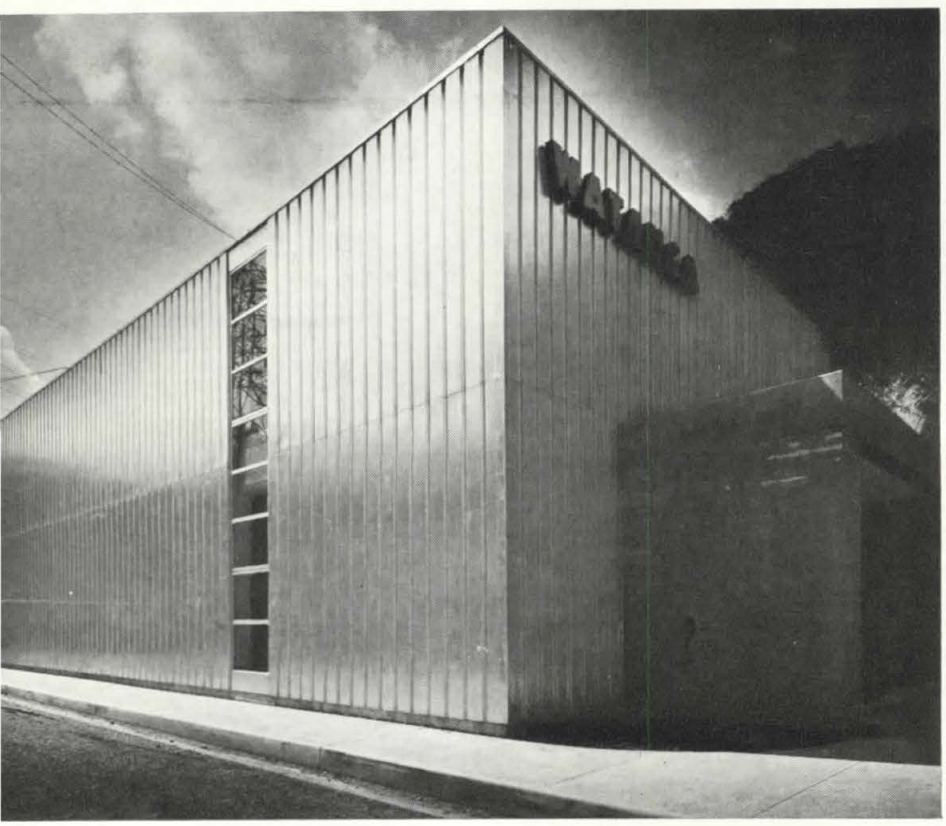
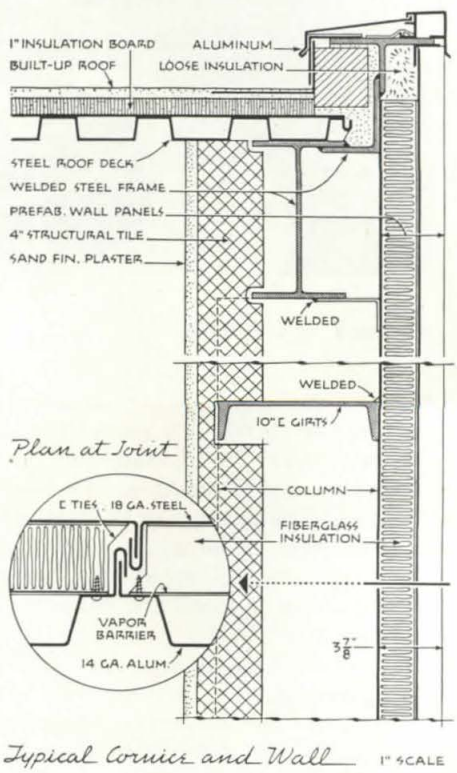
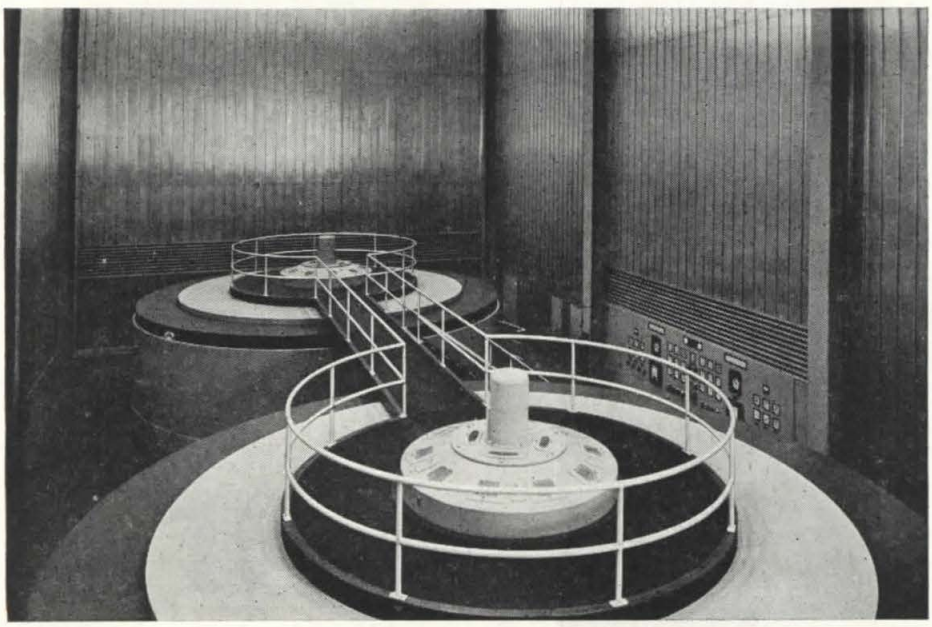
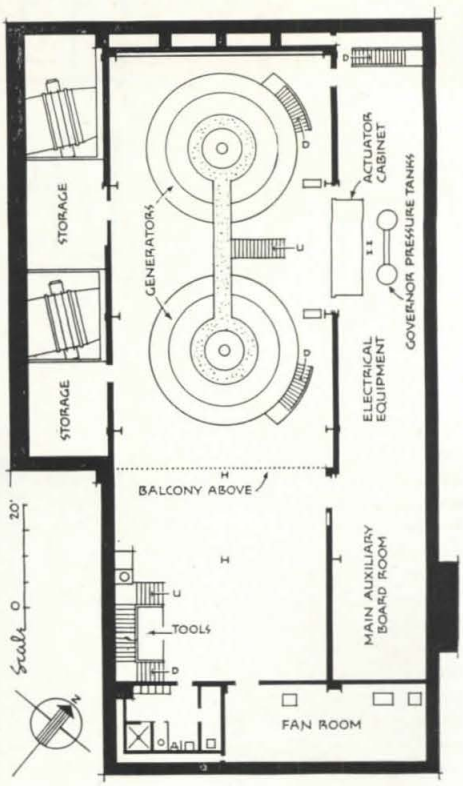





1" INSULATION BOARD
BUILT-UP ROOF
ALUMINUM
LOOSE INSULATION
STEEL ROOF DECK
WELDED STEEL FRAME
PREFAB. WALL PANELS
4" STRUCTURAL TILE
SAND FIN. PLASTER
WELDED
WELDED
10" I BEAMS
Plan at Joint
COLUMN
I TIES, 18 GA. STEEL
FIBERGLASS INSULATION
VAPOR BARRIER
14 GA. ALUM.
3 7/8"
Typical Cornice and Wall
1" SCALE



Floor Plan (INTERMEDIATE LEVEL)




**WATAUGA POWERHOUSE**

Physical requirements for the powerhouse were the housing of two 25,000 kw generating units, with sufficient overhead space for handling and servicing. To avoid too "boxy" a design solution, the roof of the building is projected well in front of the wall line, and an outsloping window strip made up of 12-foot sheets of corrugated wire glass at the top of the wall provides an esthetic element as well as needed daylight, with minimum heat exposure.

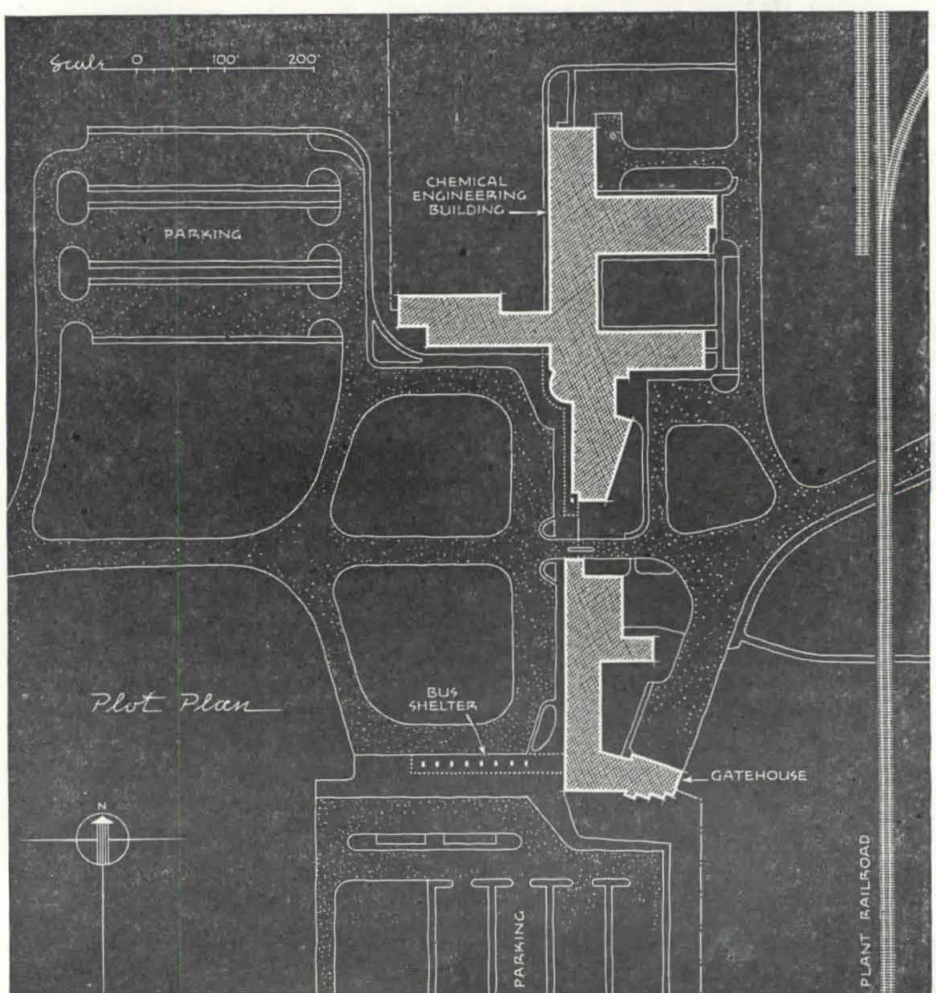
Structural steel is used for the superstructure; a concrete substructure encases the turbines, scroll cases, and draft tubes. On the interior, aluminum facing sheets, in addition to the steel back-up of the exterior insulated panels, were used to cover the steel cross-bracing and girts.

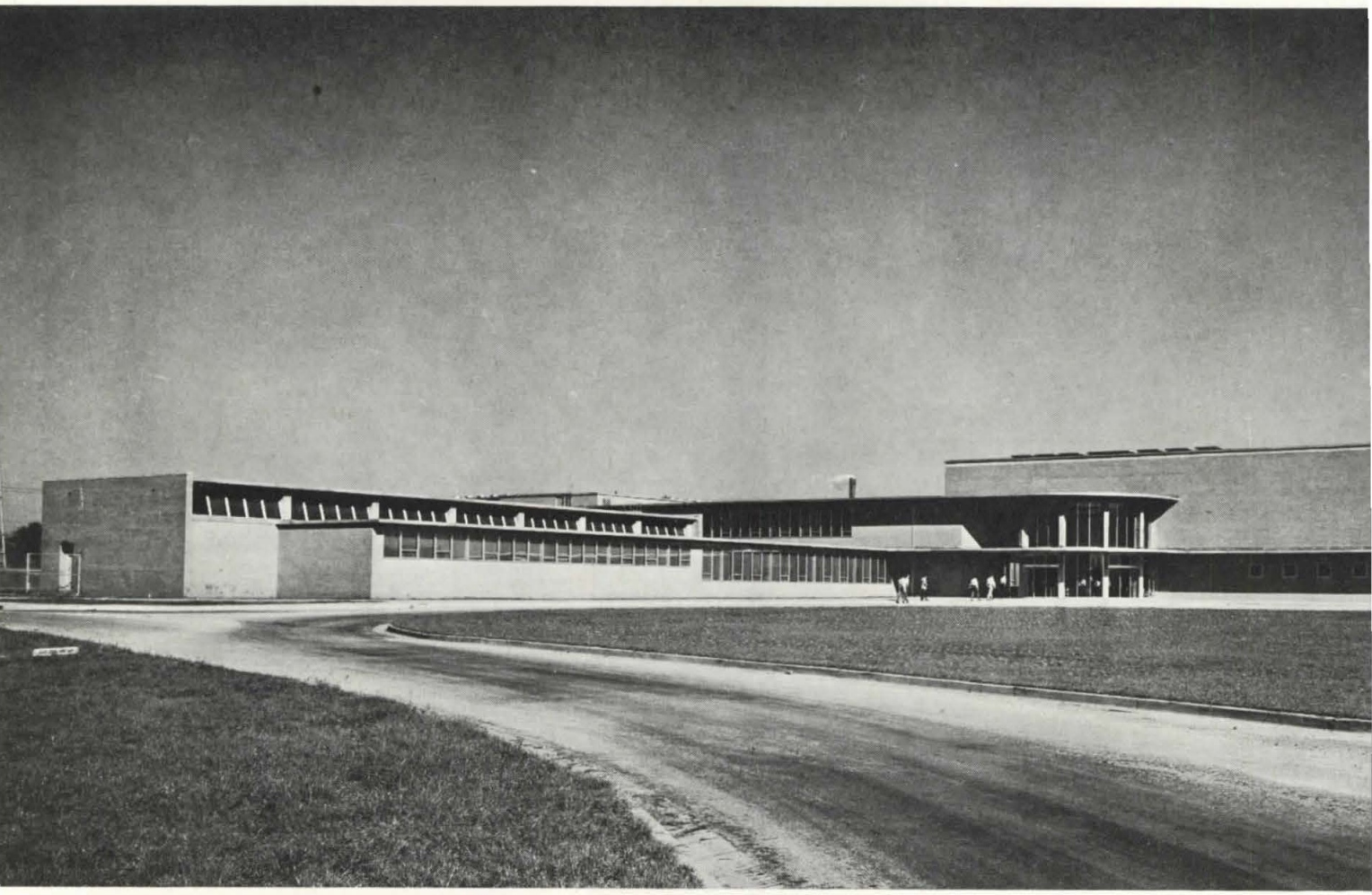
The generator housings are painted Nile blue, with dark gray trim; a large overhead crane is gray, with yellow lifting-beam and hooks. The actuator cabinets and doors are Nile blue, and the exposed steel wall columns are light gray. The ceiling is white, and the flooring is red quarry tile.

The powerhouse is ventilated and partially heated, but no air conditioning was needed, as this is a remotely controlled plant. The main generator room and erection bay are ventilated by five motor-driven roof ventilators, each manually controlled.

# Chemical Engineering Building: Wilson Reservation, Alabama

Located on the TVA Reservation near Wilson Dam, this highly specialized structure houses administrative and engineering offices and analytical and research laboratores for TVA's Division of Chemical Engineering. It also serves as reception center for visitors to the Chemical Plant, formerly known as Nitrate Plant No. 2, which it adjoins. Normally concerned chiefly with the technology of fertilizer manufacture to conserve the nation's soils and research into natural resources of the Tennessee Valley region, it is currently carrying out important research programs for national defense, including improvement of munitions, as well as nitrogen and phosphorous compounds and by-products. *Photos: TVA*

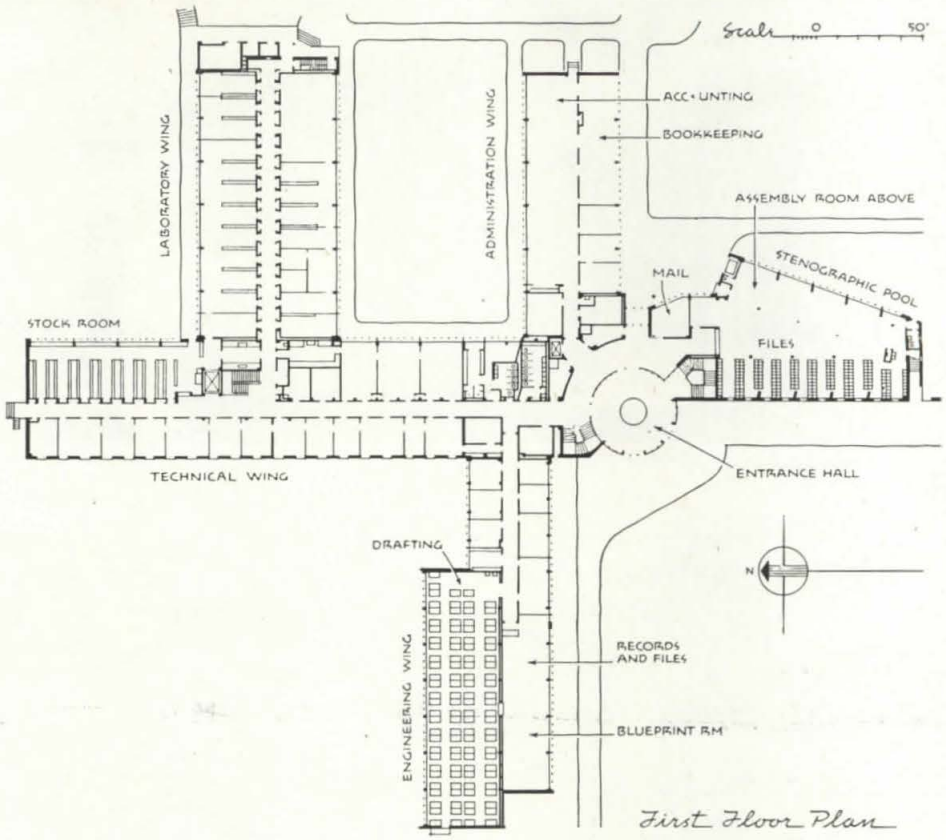




The building was designed in 1944 by Alfred Fellheimer & Steward Wagner, Architects and Engineers of New York, N. Y. When construction began, in 1947, it was necessary for TVA to make some changes in the design and layout to meet new requirements of the Division of Chemical Engineering and to utilize the limited materials and equipment available shortly after the war. The building was constructed by TVA.

Principal design features were established by Roland A. Wank, formerly Head Architect of TVA and now associated with Fellheimer & Wagner. TVA design and construction were under C. E. Blee, Chief Engineer, and Charles H. Young, Director of the Division of Chemical Engineering.

Basically, the building consists of a two-story-and-basement central structure approximately 417 feet long running north and south, with two 2-story wings toward the east, and a basementless one-story engineering wing to the west. Thus, any of the departments may be readily expanded by additions as later need may arise. On the second floor, the four main departments have additional facilities, with a technical library on the second floor of the technical wing. The shape of the first-floor stenographic pool-file room is dictated by the shape of a 274-seat assembly auditorium above it. In the basement are mechanical rooms, storage space, a blueprinting department and (under the circular entrance hall) a visitors' lounge.

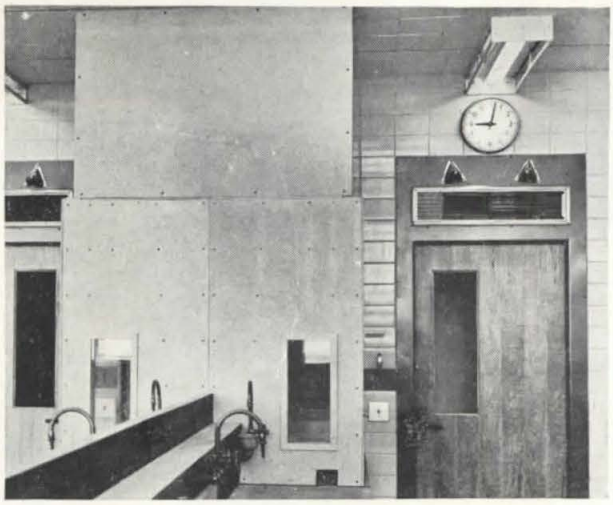



Top—general view from southwest, with *(left)* one-story engineering wing (clerestory lights the drafting room).

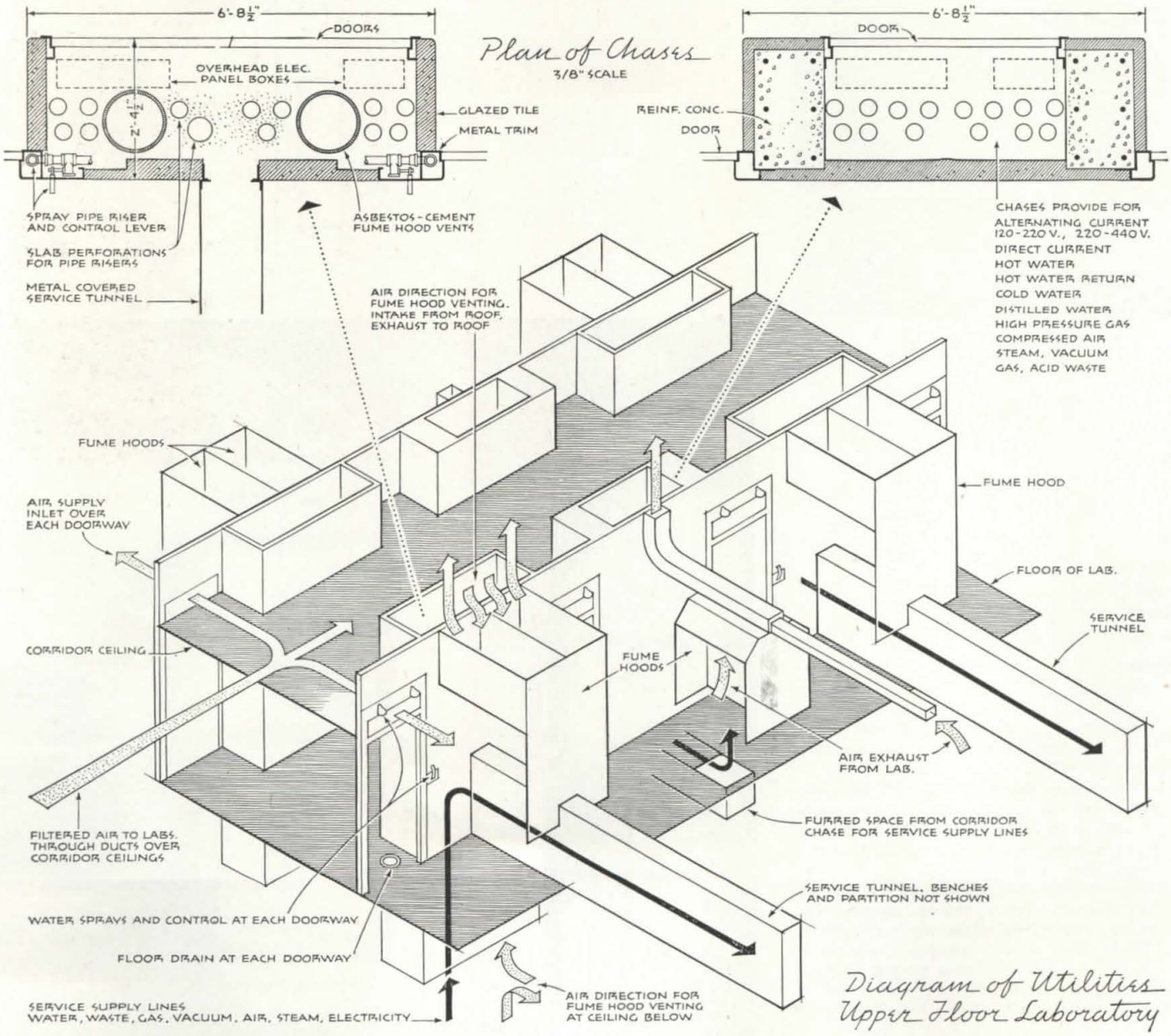
Acrosspage—the plant side of the gatehouse *(left)* with time clock aisles in open structure at left; small adjoining structure is the guardhouse controlling entrance to entire plant. Bus shelter *(right)* leading back to gatehouse; Chemical Engineering Building at left of photo. The gatehouse structure also contains employment offices and health offices.

Right—the circular entrance hall, with glimpse of engineering wing through the two-story window wall. Stair-rail panels are of transparent plastic.

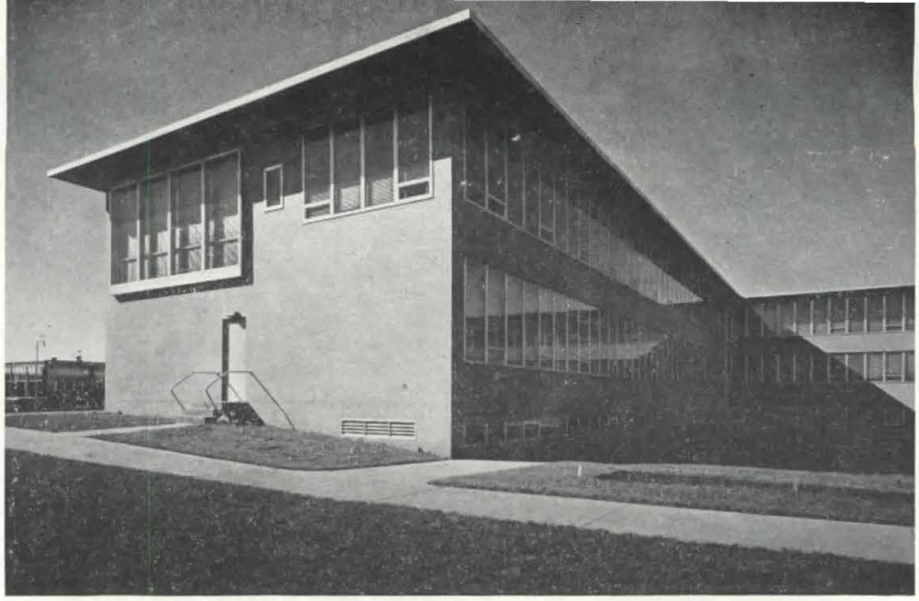
TYPICAL CHASE WALL FROM LABORATORY SIDE



WALL WITH FUME HOOD ADDED




**CHEMICAL ENGINEERING BUILDING, Wilson Dam, Ala. TVA and FELLHEIMER & WAGNER, ARCHITECTS & ENGINEERS**



**Above—the east end of the administration wing; large projecting window of the Director's office overlooks the Chemical Plant area.**

**Below—typical laboratory space, equipped for maximum flexibility in relocation and rearrangement of equipment. Asphalt-tile floors; glazed-tile walls and acoustical ceilings. Aluminum ceiling channels simplify installation and relocation of movable aluminum partitions.**

## CHEMICAL ENGINEERING BUILDING

Many extremely specialized types of laboratories occupy much of the first-floor space of the laboratory wing; in addition, there is a series of analytical labs. Research laboratories occupy the entire second floor of the lab wing and a portion of the second floor of the technical wing.

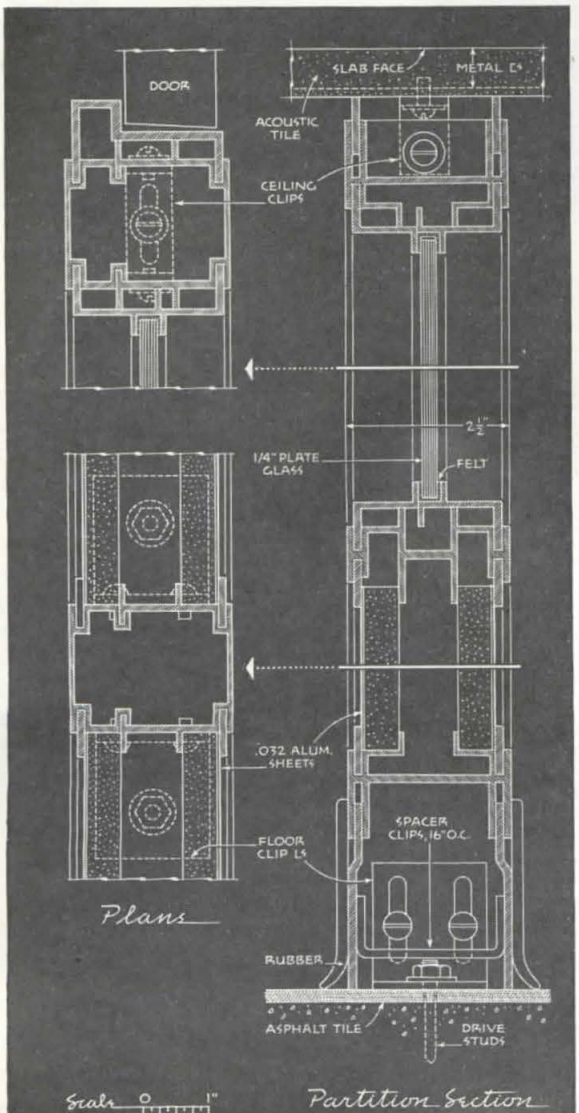
The typical laboratory space *(lower photo above)* is equipped with asphalt-tile floors; acoustical-tile ceilings (about 11 feet high), and fluorescent lighting. Walls on the corridor side are of glazed tile, while exterior walls have concrete spandrel beams up to the window-stool height (4′-6″ above the floor). Aluminum window frames are glazed with double insulating glazing, and all windows have Venetian blinds. Laboratory areas are all air conditioned, with the air being electrostatically cleaned before conditioning.

Each door from the corridor serves a unit laboratory space about 10′ x 26′ in area. Corridor ceilings are 7′-8″ above the floor to allow for air ducts above. Conditioned air enters the lab spaces through grilles over each door, and emergency showers are operated by a quick-opening valve handle on inside of each door.

The typical lab-bench group consists of a central service tunnel, with standard laboratory furniture units on each side. Service tunnels 10″ wide by 4′-0″ high provide an enclosure for housing the various electrical and pipe utility services. Each furniture unit has its own soapstone top, which comprises the main working space. Units are of metal construction, finished in light gray enamel. The system of distribution is so arranged that any number of unit laboratories can be consolidated into large spaces or separated from each other without structural alterations; benches, with or without hoods or sinks can be added, taken away, or grouped in an almost unlimited number of combinations. The SELECTED DETAILS *(acrosspage and page 73)* give additional data on the lab planning.

Structural frame of the building is reinforced concrete, to minimize use of steel, which was short in supply. Concrete floor slabs are generally 12″ thick, while some first-floor concrete slabs are of the pan type. Except for pan-type roofs over the drafting room and assembly room, roof slabs are generally 8″ reinforced concrete. Interior wall surfaces are largely of ceramic-glazed structural tile. The exterior building surface is gray, smooth-faced brick, to harmonize with the aluminum window frames and roof fascia. Roofing is 5-ply built-up over cork insulation board.

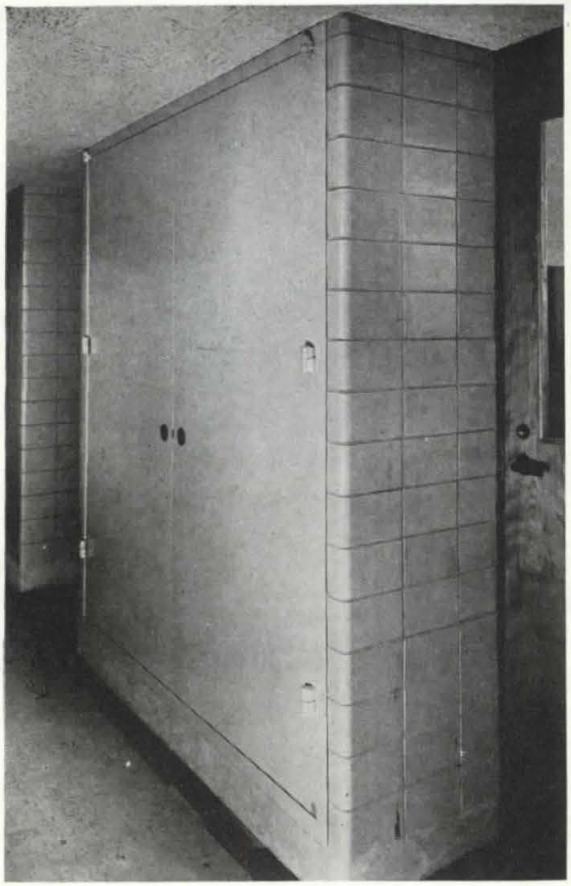
## CHEMICAL ENGINEERING BUILDING




Top—the 34′ x 117′ drafting room in the engineering wing. The sloping north window wall, combined with in-sloping clerestory band on south, and angular ceiling help equalize light distribution. Walls are glazed ceramic tile; ceilings, acoustical tile, and flooring, asphalt tile. Small photo *(right)* is of the assembly auditorium. Walls of natural walnut slope outward at top, in contrast to in-sloping edges of exposed concrete frame.

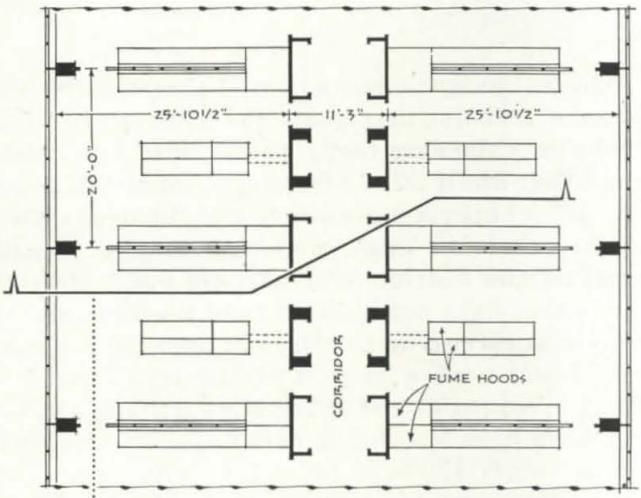
Above and left—details of specially designed movable aluminum partitioning. Continuous aluminum ceiling channels provide for top fastening, while expansion-type anchors are used on floor and wall surfaces. At each window mullion on exterior walls are convenience and phone outlets, so that wires may be extended into partitions to serve desk locations at any point.

Acrosspage—SELECTED DETAILS of typical laboratory.

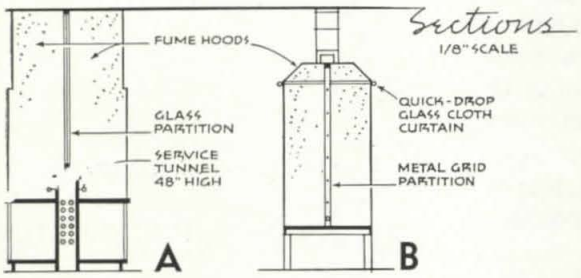


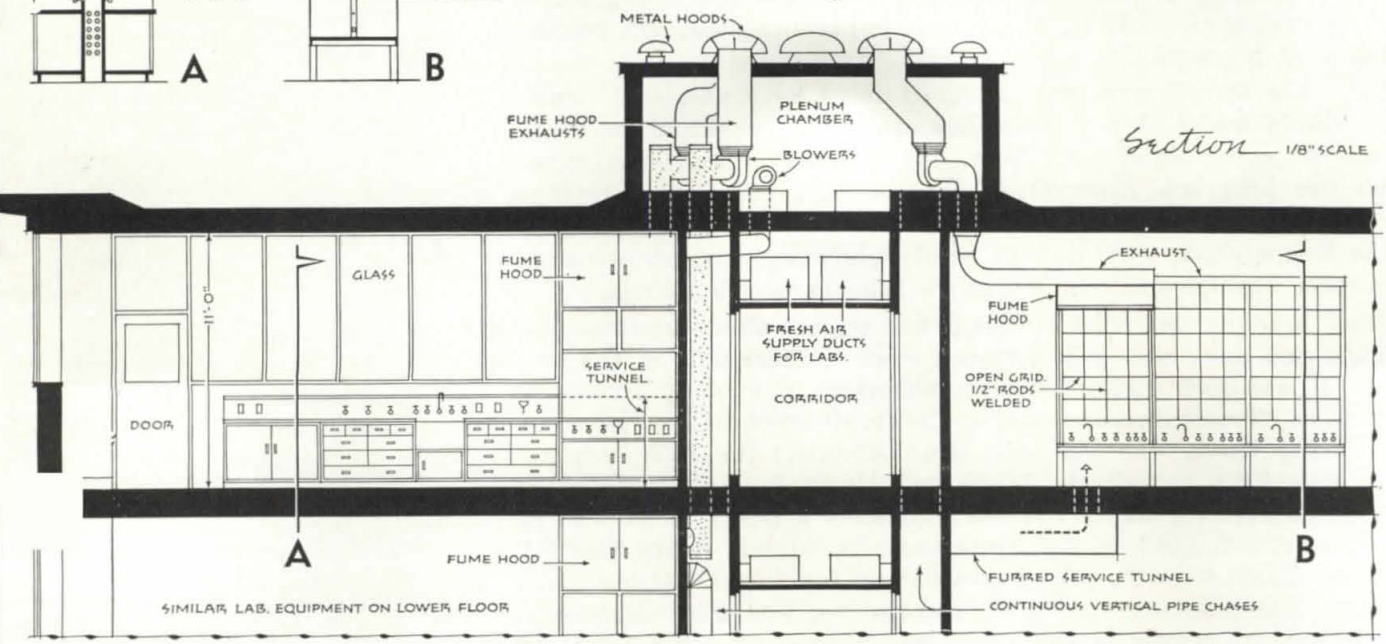
TYPICAL CHASE FROM CORRIDOR SIDE

CHASE WITH DOORS REMOVED

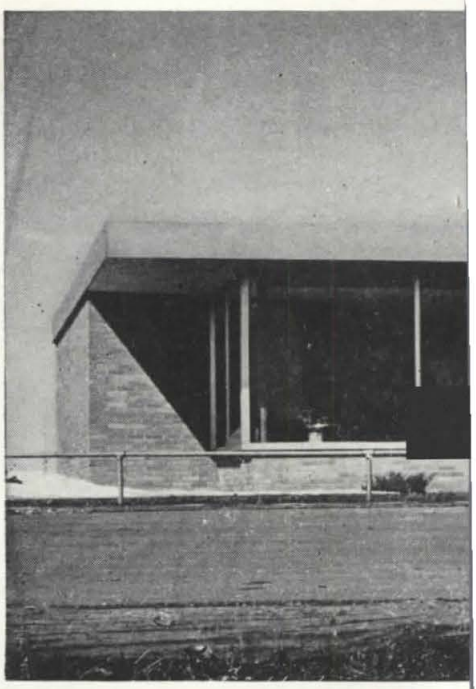



Plan at Laboratory Wing




**CHEMICAL ENGINEERING BUILDING, Wilson Dam, Ala.** **TVA and FELLHEIMER & WAGNER, ARCHITECTS & ENGINEERS**

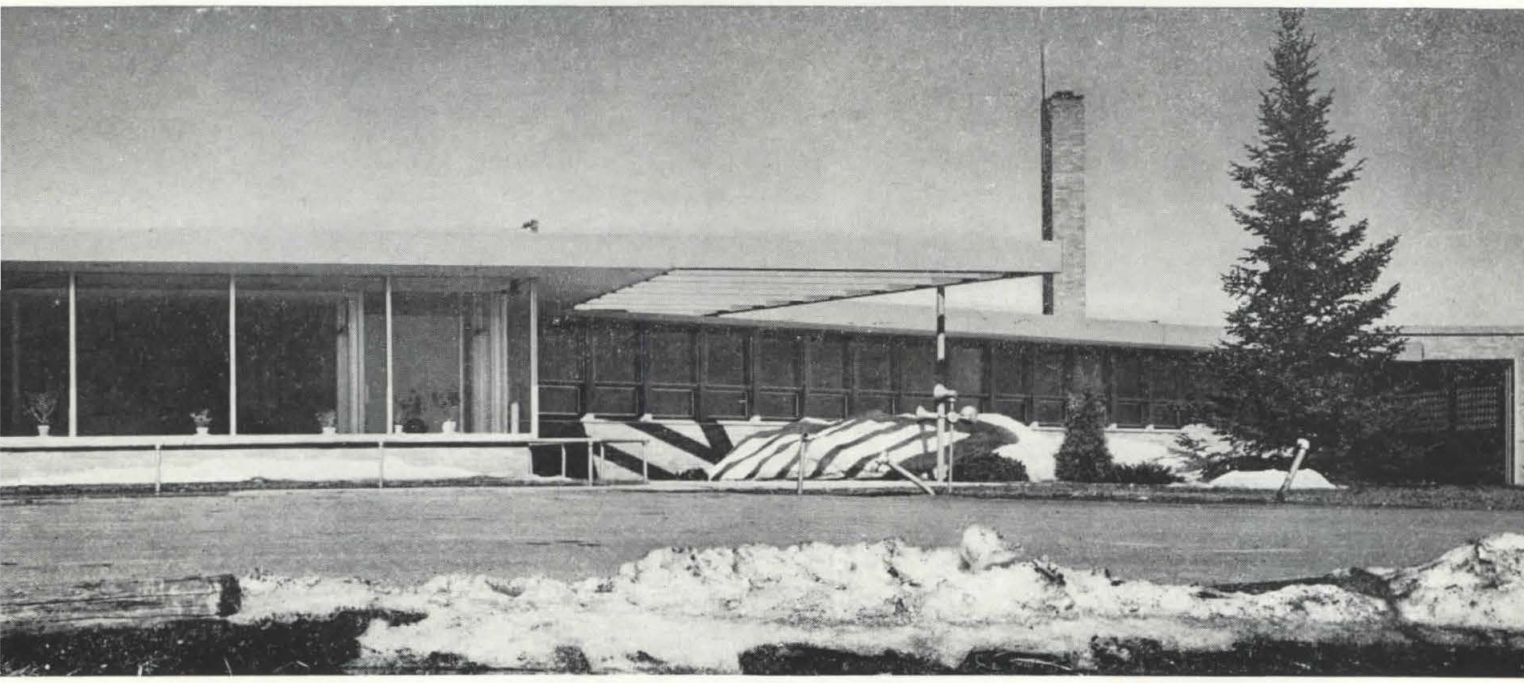


# REA Buildings

As industry decentralizes, as small plants move into hitherto remote areas, the manufacturer faces the same problem the farmer does—difficulty of extending costly power lines into sparsely populated regions. The Rural Electrification Administration has for 16 years provided an important answer to this dilemma: low-term, low-interest loans are made to local sponsoring groups (usually co-operatives); generating and distribution plants are built; power lines are extended to spots that have not hitherto been reached; and the entire business operation is carried on by the local association from an office building designed and built with part of the loan funds. Up to the present writing, 1,076 power and distribution projects (including 986 co-operatives) have been financed in this way, and in addition to the millions of farm homes (80% of the sales) which now have the benefits of electrification, and the thousands of schools and hospitals and commercial establishments in rural areas which can now use electric light and power, many thousands of manufacturing and processing plants are able to operate efficiently in formerly impractical locations, because of the REA program.

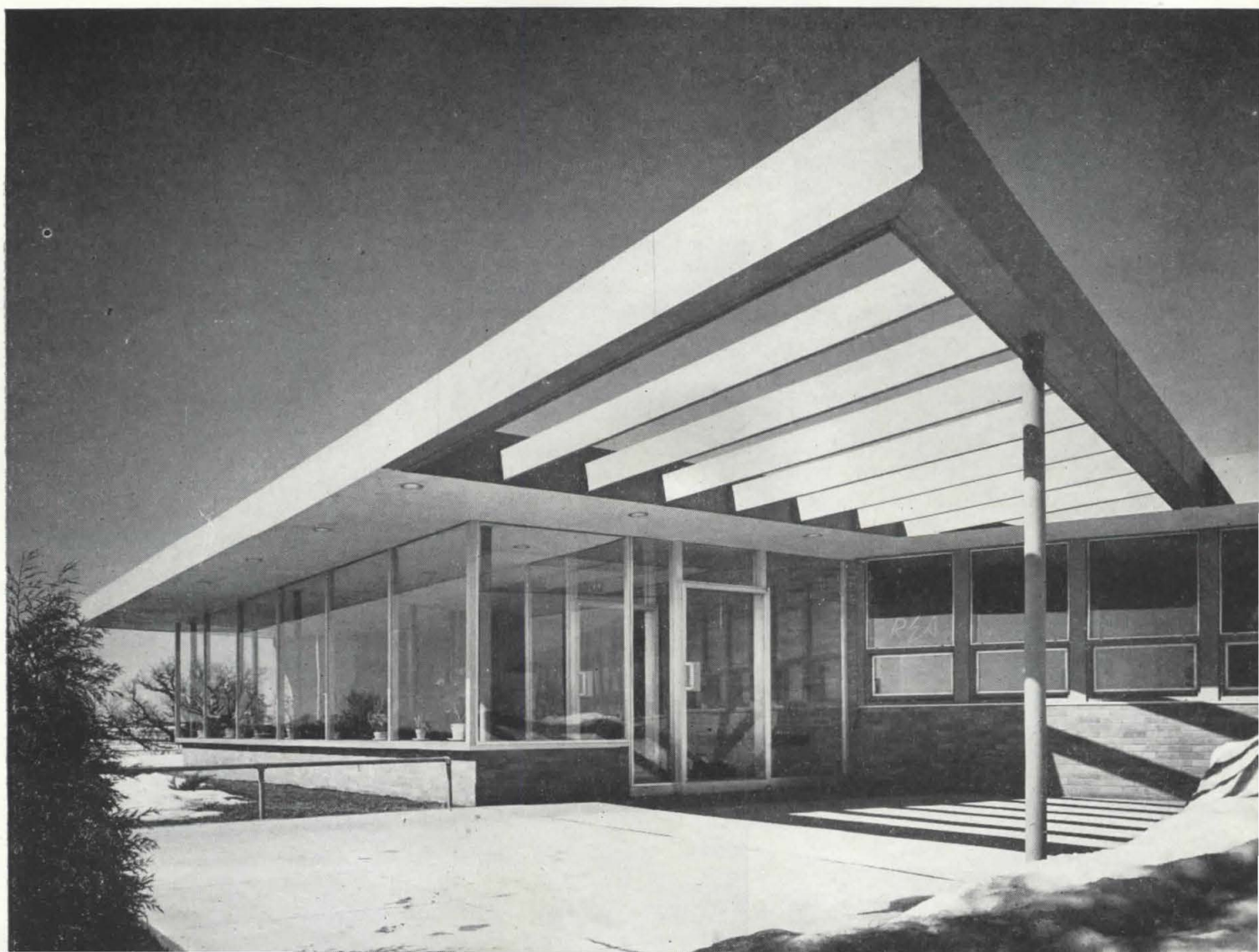
There are various structures designed under REA auspices. Generating plants are as important as they are in any aspect of the architecture of power—and some very fine ones have been constructed under this program. However, to document the fact that more than the basic production facilities result from power distribution (many of the co-operatives even become rural community centers) we show here three examples of administrative headquarters buildings.

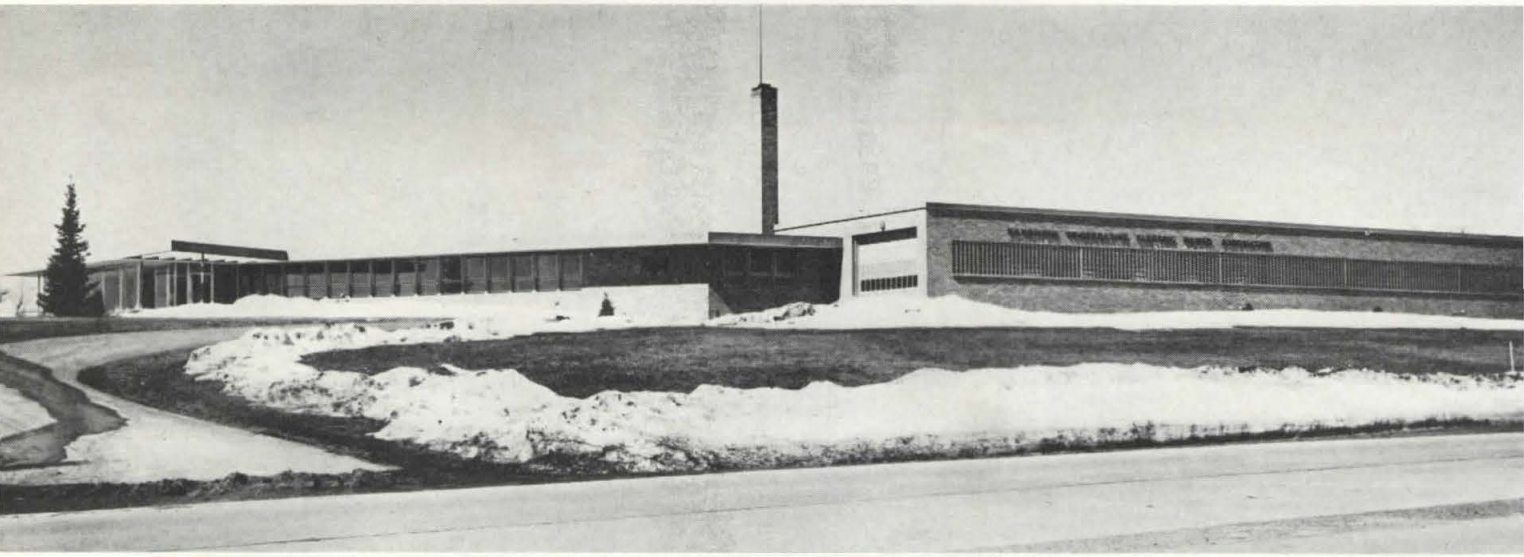
These headquarters office buildings are an interesting architectural problem and have been well designed since the inception of the program. It was soon discovered that conversion of existing structures was not as efficient or economical as the construction of new quarters, and Roland Wank, who was then Head Architect for TVA, was appointed as REA consultant. Wank and Mario Bianculli designed a number of the first structures, but ultimately a policy of giving the design commission to local architects was adopted, and Henry Shotwell followed Wank, with the job of establishing functional standards and advising and assisting the local co-operatives and their architects. Harry Mabbitt is now in charge of architecture for REA, as Head of Buildings and Structures Section. The architect designing one of these buildings signs a contract with the local association, on a form provided by REA. He receives literature from the Federal agency explaining the basic design problem, but determines the specific program with the local co-operative officials. How this process works out in practice is documented on the following pages.



## Power Co-operative: Wilmar, Minnesota

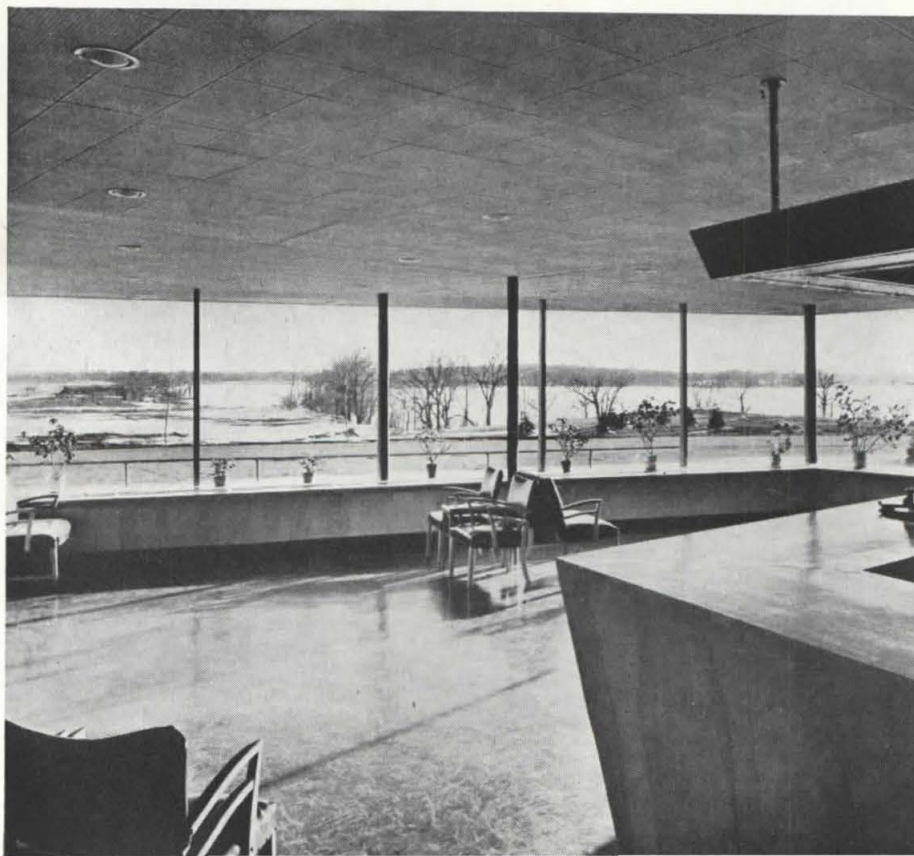
**Thorshov & Cerny, Inc., Architects**
**Ralph D. Thomas and Associates, Inc., Engineers**





The building is angled along the site contours. In the general view *(above)* administrative and business offices are in wing at left; garage-warehouse at right. In addition to trucks for digging holes, setting poles, and general maintenance, the garage may house anything from a car for the use of a meter reader to a "snowmobile" for getting around in blizzards.

*Warren Reynolds, Photography, Inc.*

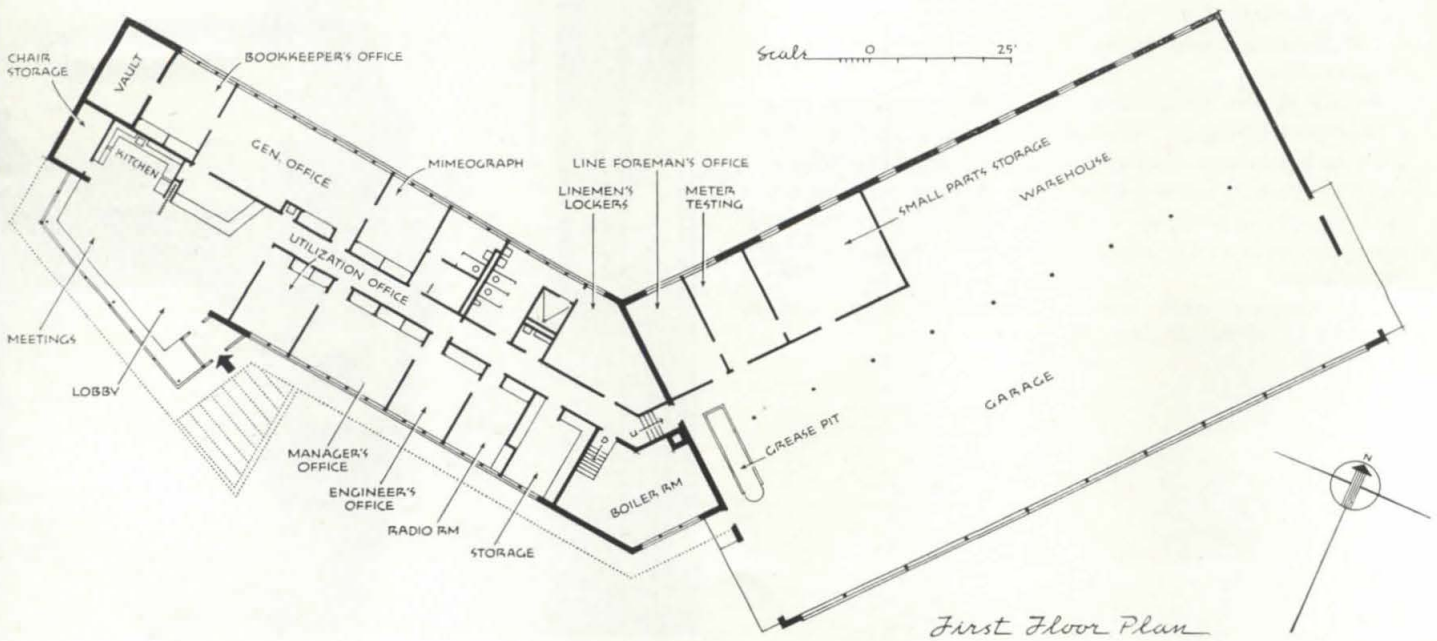


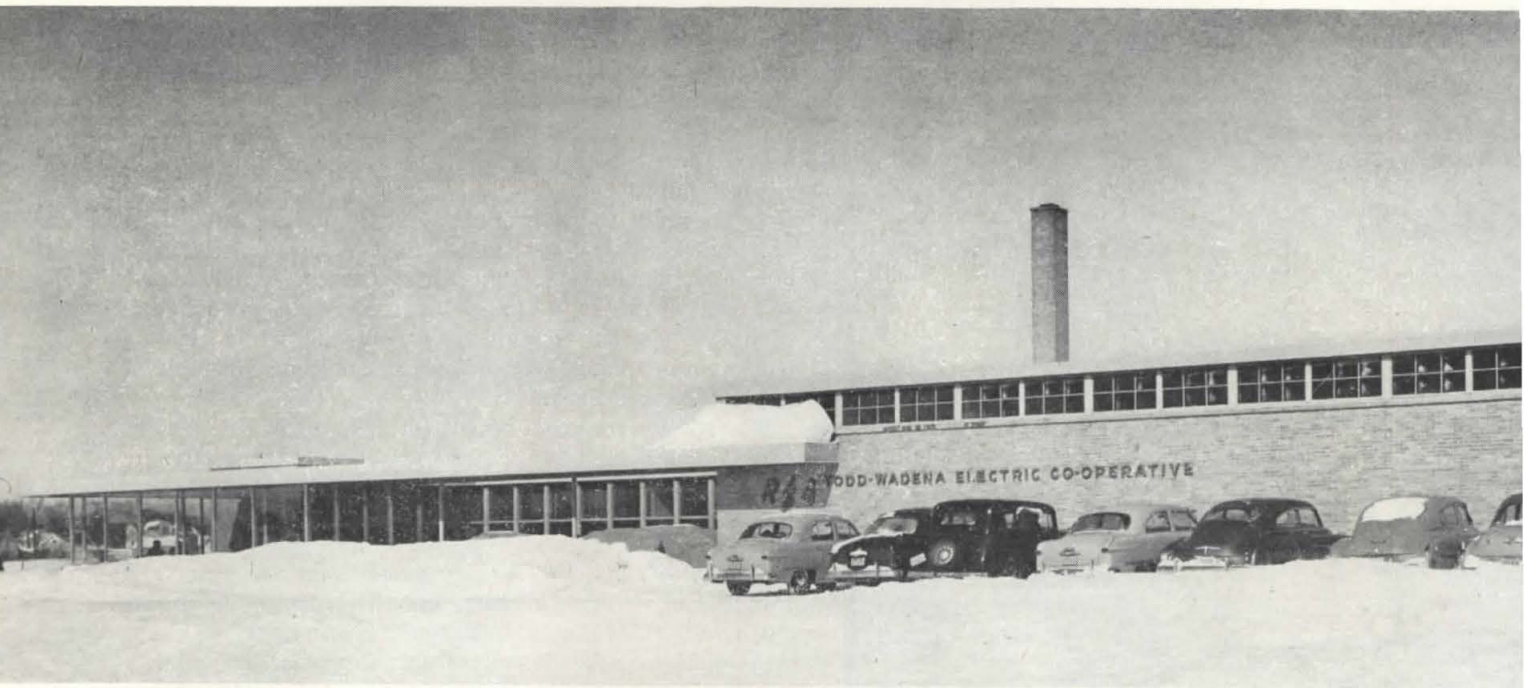
**KANDIYOHI**

The design problem involved in planning an REA office building, garage, and warehouse—of which the three Minnesota projects shown in this section are good examples—is always fundamentally the same. Variations depend on size of area to be served, whether or not adjunct public facilities are required, type of site, etc. But, basically there are two functional areas needed: (1) an administrative and business-office portion where bills are issued, the public pays its bills, and utilities and equipment connected with REA activity are displayed; and (2) the garage-warehouse which houses trucks and supplies needed for construction and maintenance of power lines.

The specific program for a particular project is a joint effort worked out between the local co-operative and its architects—with approval mandatory from the Federal Agency, since the latter loans money for the construction and has a vital interest in its spending. However, as the architect tells us, the Agency's decisions are "just and fair and in no sense dictatorial." This is further borne out by a booklet that REA issues for co-operative groups contemplating a headquarters building. Under the heading "Architectural Style," the Agency states: "The headquarters building should reflect dignity and simplicity. The design and layout should conform to good architectural and construction practices. The use of materials locally available is recommended, so that the building will be identified with the community in which it is located. Wherever possible, local architects should be retained to work out the design . . . In general, the building should be modern, clean-cut and semi-institutional in design, and devoid of unnecessary expensive ornamentation." Few progressive architects could find serious fault with these premises.

The Kandiyohi Co-operative Electric Power Association building at Willmar, Minnesota, shown on these two pages, is located on a large site fronting a major highway, outside the limits of the town proper. The building is heated by a low-pressure steam system, employing fin-tube radiation.





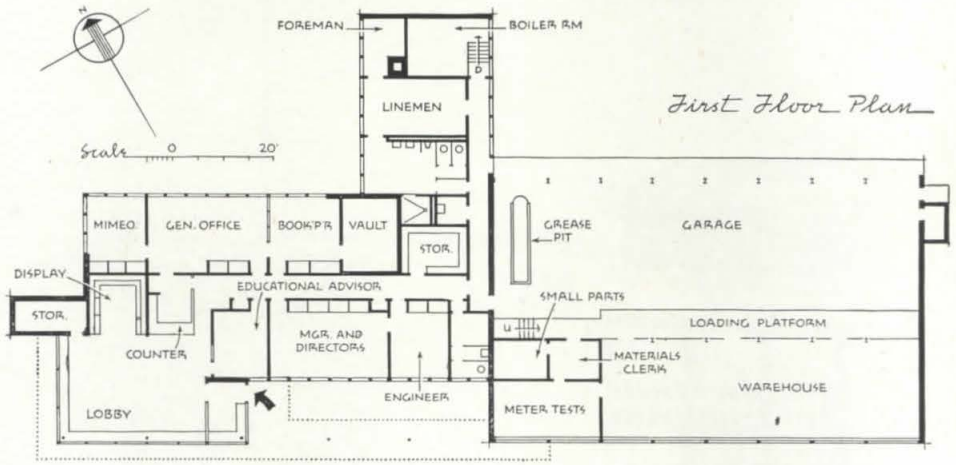

## Power Co-operative: Wadena, Minnesota

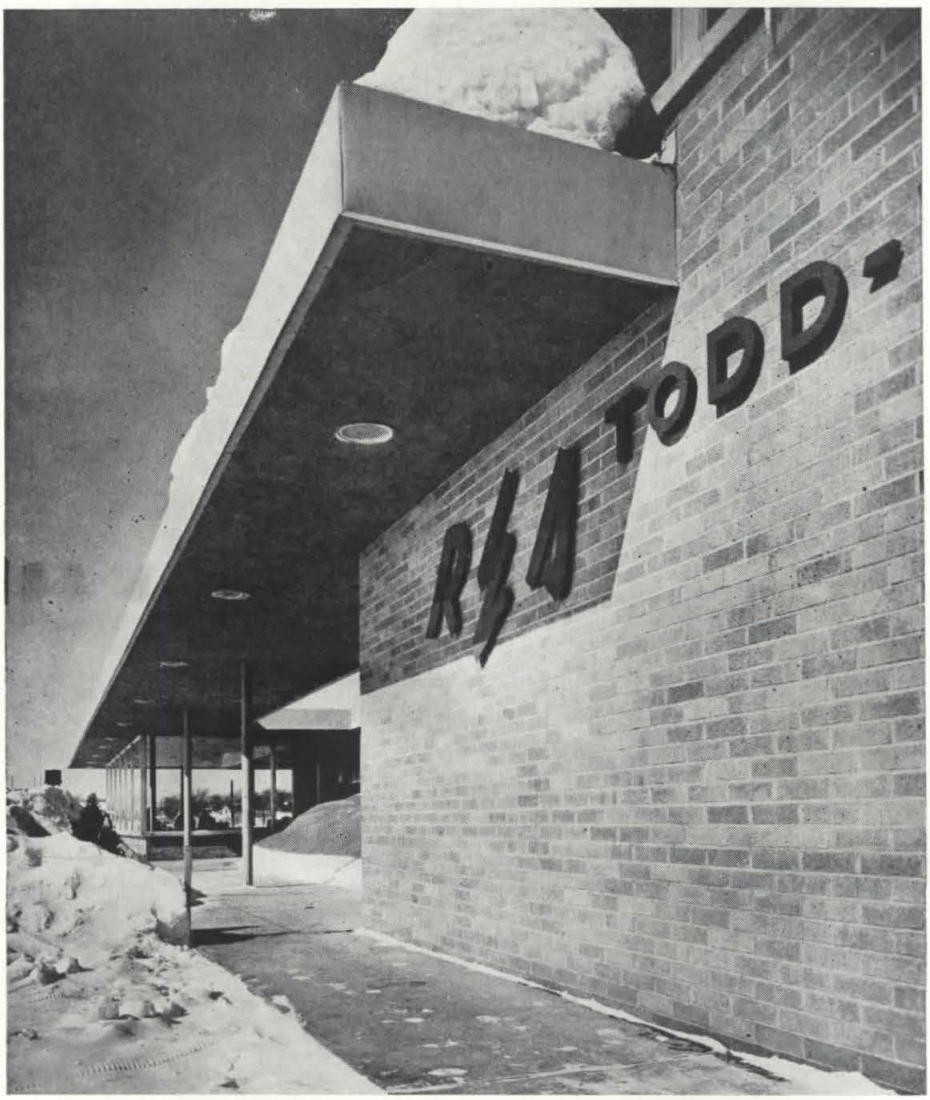
**Thorshov & Cerny, Inc., Architects**
**Ralph D. Thomas and Associates, Inc., Engineers**

Like the project shown on the preceding spread, the building for the Todd-Wadena Electric Co-operative in Wadena, Minnesota, occupies a large open site on the edge of town. Like both other co-operatives illustrated here, it is built with a light, structural steel frame, with walls of brick and tile, concrete floors, and built-up roofing over steel roof decking. The architects report that the light-steel system was adopted as a result of an extensive analysis made by their office of six or seven building methods; and that it has proven to be not only economical and fast to erect, but that it also provides a sound and safe structure.

All three buildings have acoustical treatment in public and office spaces. Natural lighting is adequate for all but the darkest days, and artificial lighting is fluorescent in office areas and incandescent in warehouse-garage spaces.

In all of the building plans, it will be noted that a rather lavish display lobby is an element of the layout. This is because co-operatives stress public relations and wish to have their activities—not to mention the available electric appliances—on prominent display for passers-by as well as for those who come into the buildings. These areas also provide controlled access to the offices and employees' work areas. The big windows are of double-insulating glazing.


FOREMAN
BOILER RM
LINEMEN
First Floor Plan
Scale 0 20'
MIMEO.
GEN. OFFICE
BOOK'P'R
VAULT
STOR.
GREASE PIT
GARAGE
DISPLAY
STOR.
EDUCATIONAL ADVISOR
COUNTER
MGR. AND DIRECTORS
SMALL PARTS
LOADING PLATFORM
MATERIALS CLERK
WAREHOUSE
ENGINEER
METER TESTS
LOBBY


R/A TODD


## Power Co-operative: Glencoe, Minnesota

**Thorshov & Cerny, Inc., Architects**

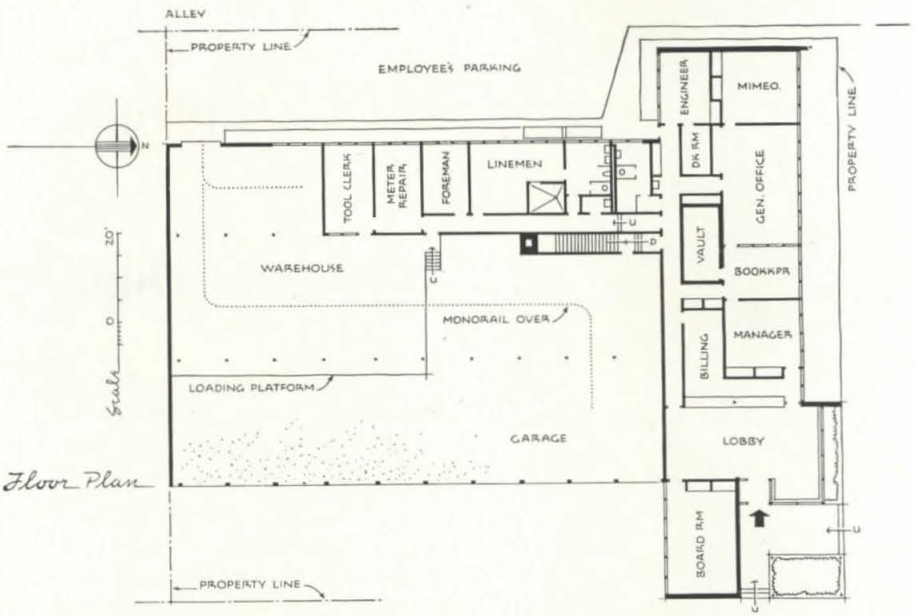
**Ralph D. Thomas and Associates, Inc., Engineers**

The McLeod Co-operative Power Association building in Glencoe, Minnesota, is the only one of the three co-operatives in this group that is located in the center of a town, several blocks from a major highway. Here, land usage assumed considerable importance, a factor that is reflected in a more compact plan solution. While off-street parking is provided for employees' cars and REA vehicles, parking for others had to be relegated to the street.

As with the preceding buildings, a large storage area is provided—split between small parts and general storage. Under the heading of small parts come such things as tools, some items of clothing, and small pieces of equipment, which are stored in bins. General storage includes bulkier things—rolls of wire, cross arms, transformers, etc. Spaces for the various items are not specifically allocated. Rather, the general space is used as *desired,* or as the particular needs shift.

Brick of a light tan tone is used for exterior walls, and trim is painted in a contrasting color. The manager's office, board room, and public spaces are painted in bright colors; working spaces generally have light, clear colors, with a bright area of color on rear walls. This approach to color treatment applies to all three of the buildings shown.

To date, Thorshov & Cerny, Inc., have completed fifteen co-operative office buildings in the State of Minnesota. "Each co-operative has a different problem," they comment, "due to its size and method of operation; so definite rules as to shape, size, etc., are impossible. In certain instances, we have even included facilities for community use where none existed locally." In working with both the local co-operatives and the Federal Agency, they tell us they have encountered "great open-mindedness"—which has meant relative design freedom.


ALLEY
PROPERTY LINE
EMPLOYEES PARKING
ENGINEER
MIMEO.
DR. RM
GEN. OFFICE
PROPERTY LINE
TOOL CLERK
METER REPAIR
FOREMAN
LINEMEN
VAULT
BOOKKPR
WAREHOUSE
MONORAIL OVER
BILLING
MANAGER
LOADING PLATFORM
GARAGE
LOBBY
BOARD RM
PROPERTY LINE
Scale
Floor Plan


McLEOD CO-OPERATIVE
POWER ASSOCIATION

# industrial buildings

In a larger sense, the industrial building itself is just the first step in the architecture of power and industry; next comes the housing, the related commercial activity, the institutional facilities that workers and their families need—and, in all too few instances, the over-all community planning. But the power that has been generated by a dam or a steam plant and distributed by some form of utility enterprise reaches its ultimate *industrial* goal in the factory building.

There are no rules about the design of industrial plants, and it is very difficult even to point to "trends." Some of the largest production centers that have ever been built are under construction at the present time; and yet a good argument can be made for the small plant, with an industrial process broken down into component parts and accomplished in several places. Planning for flexibility of use seems to be important, because industrial processes and even needed products change with the times—and yet requirements vary greatly with the item being manufactured or processed. There is good reason for wide bays in the plant layout, since ever-larger parts are being prefabricated in almost all industries—and yet the shortage of metals makes reasonable the use of precast members, whose span-stretch is relatively limited, and the use of reinforced concrete.

It is the job of the industrial architect and engineer to find ways to meet all these apparently conflicting requirements. For example, the architects in this field of practice are agreed that a plant must be designed around the manufacturing flow line, with structural bays accommodated to the shape that results; the flexibility necessary to accommodate changes in process or product will then have to be taken care of by additions to the building where they are needed in the future. Ways must be found to reduce steel tonnage while keeping wide spans (the cantilevered steel construction method discussed on page 98, for instance) or to reduce the cost of reinforced concrete construction (as by the Youtz-Slick method reported on page 100). And above all, much intelligent thought must be given to the whole *program* and the translation of the program, in this field as in any other. The industrial plant must now have adequate, well-planned facilities for employee use and provision for employee circulation; and pleasant, well-designed administrative offices as well as efficiently controlled environment in the processing area. It is a full architectural problem.

Not so many years ago, only a few firms were seriously engaged in industrial architecture. Now the decentralization of industry has brought the factory-design problem to many other, smaller practitioners. Especially in the regions where new power sources are being developed, the architectural opportunity for industrial design will grow. It is a big, constantly expanding field, with much need for and opportunity for design advance.

# Lever Brothers Company: Los Angeles, California

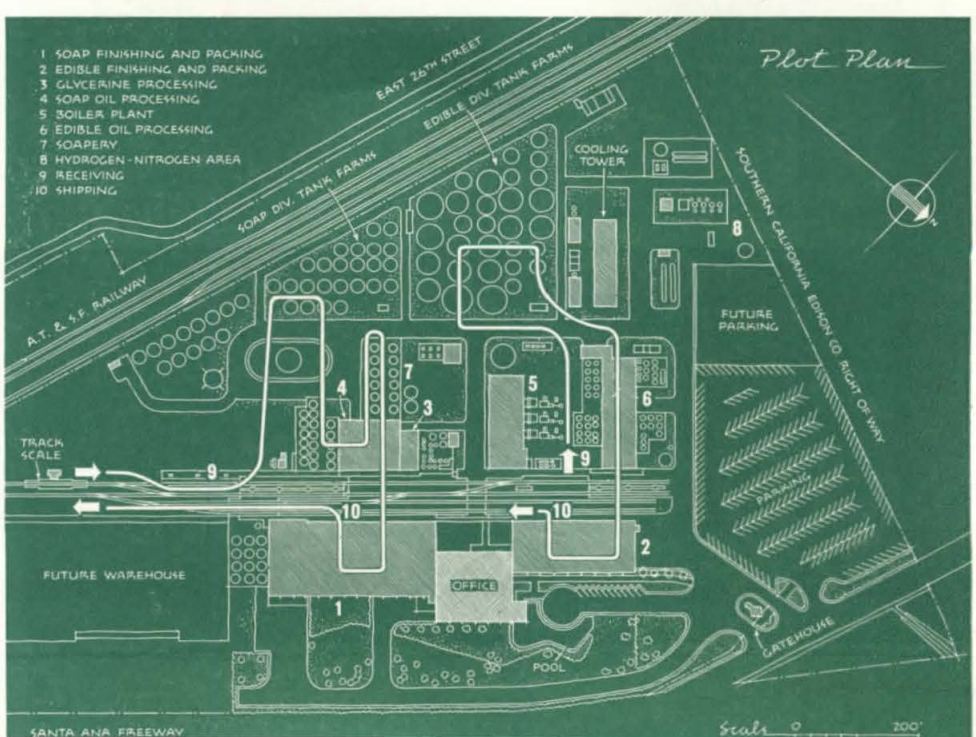
**BECHTEL CORPORATION**
**Designer and Builder**

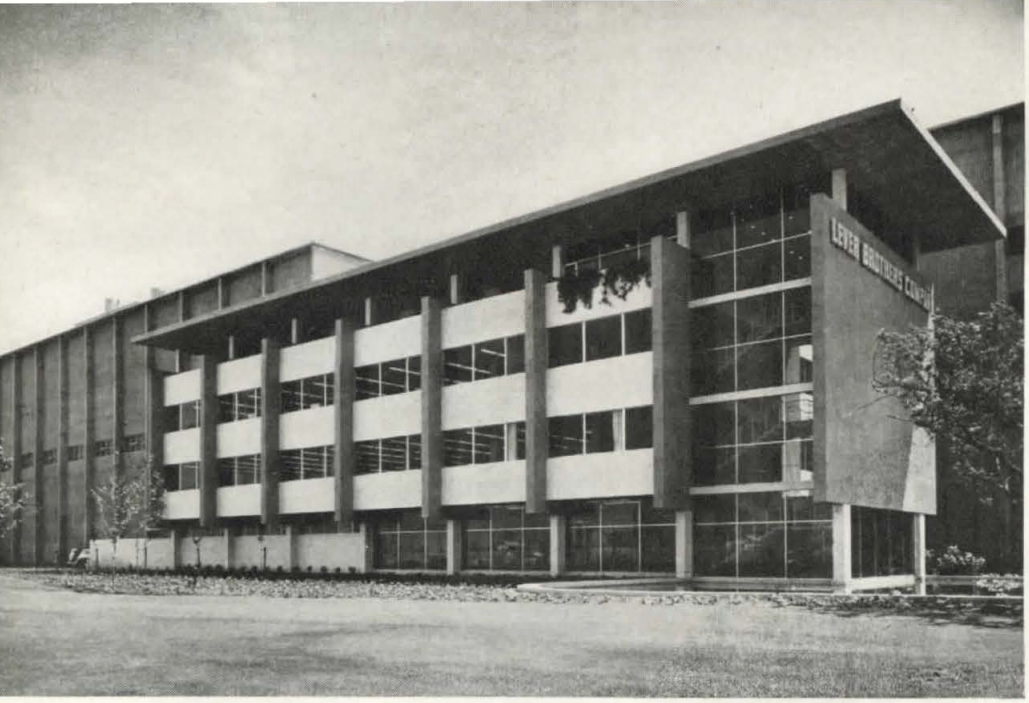
**WELTON BECKET & ASSOCIATES**
**Consulting Architects**

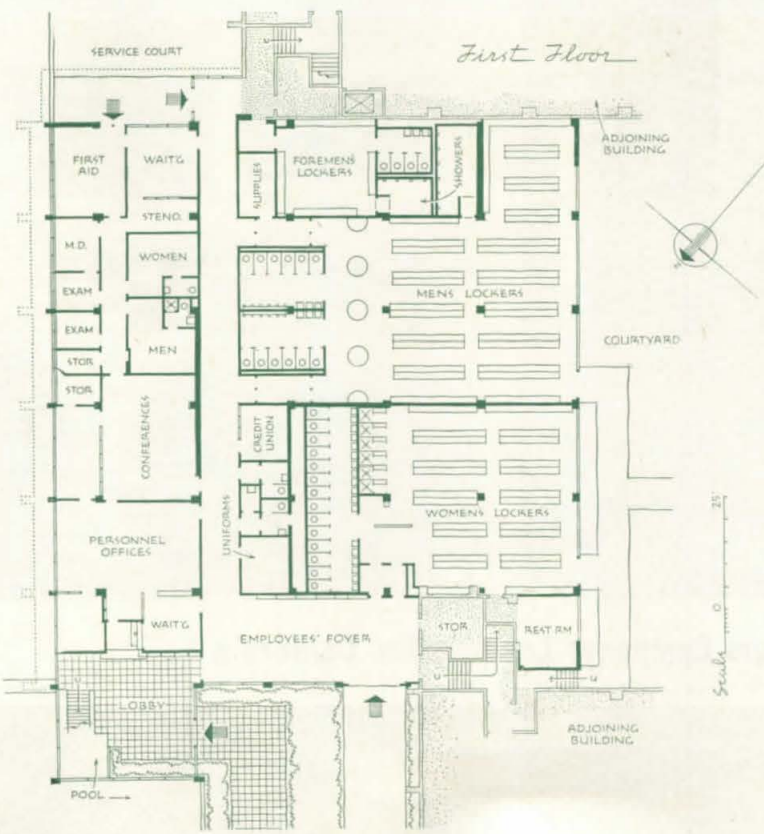
**PAUL E. JEFFERS**
**Structural Consultant**

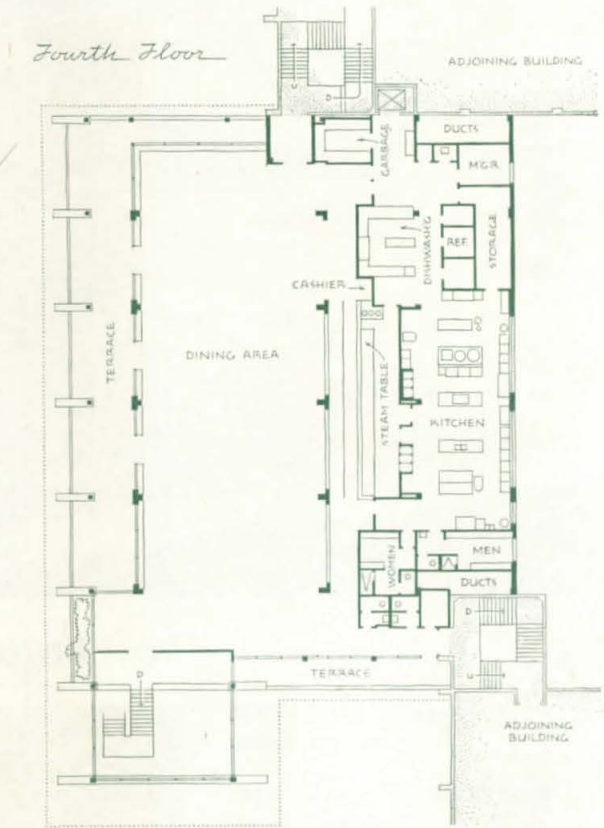
**FREDERICK J. CONVERSE**
**Foundation Consultant**

**FRED BARLOW, JR.**
**Landscape Architect**





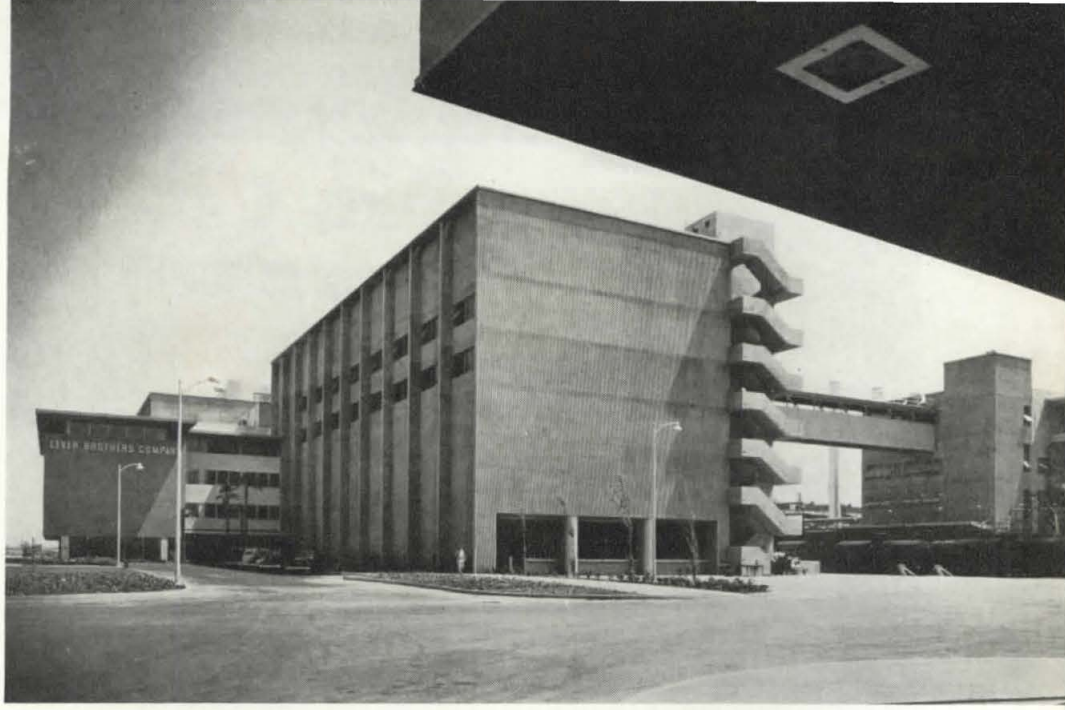




**INDUSTRIAL BUILDINGS**

**LEVER BROTHERS COMPANY: LOS ANGELES, CALIFORNIA**

The program called for the design of an integrated, soap and edible-oil manufacturing plant that, eventually, would handle the processing, finishing, and shipping of the full line of about a dozen Lever Brothers products, for distribution in 11 western states. Rather than follow the pattern of any existing installation, the owners specifically requested that the designers incorporate advances in layout of processing equipment, use of building materials, and methods of construction, to provide the best possible manufacturing facility. Full advantage was to be taken of the mild Southern California climate, and special care was required in the selection and treatment of surfaces to withstand the corrosive nature of the raw materials involved in the various processes.

The site is a triangular, 30-acre strip in the central manufacturing district, about eight miles from downtown Los Angeles. Adjoining it are the main line of the Santa Fe Railroad and the Santa Ana Freeway. Power and fuel come from electric transmission lines and gas pipelines adjacent to the site. Because of the prominence of the location, the appearance of the plant with the intangibles of its use as an advertising symbol, assumed considerable importance in the design.



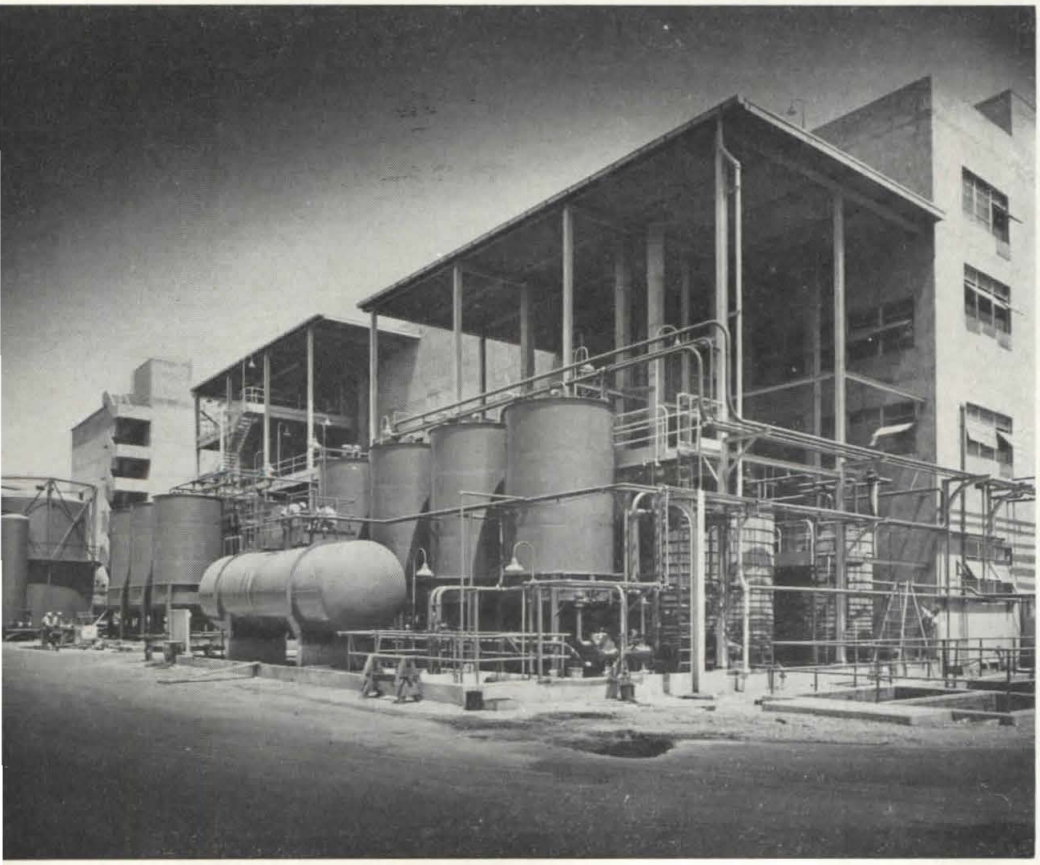
On the second floor of the office building are general offices and the engineering department; the third floor contains laboratories and adjunct facilities for both main divisions. The forward units, including the office building, are of concrete frame, with flat-slab construction used wherever feasible. Above the fourth-floor level, steel framing is employed by embedding stubs of steel columns into the heavy concrete columns, eliminating base plates. The vertical ribbing on exterior concrete walls of the finishing buildings results from special plywood forms to which wood strips, 6 inches on centers, were attached. Projecting fins and "floating" end panels of the office building are surfaced with reddish-brown cement tile; spandrel areas are cream color. *Photos: Julius Shulman*

Basically, the solution consists of a central office-laboratory building, flanked by buildings for the two main divisions—a five-story soap-finishing unit on the east, and a six-story edible-products-finishing building on the west. Directly in back of these finishing units (across the rail spurs that serve the plant) are four-story refining and processing units, joined to their respective finishing buildings at the fourth-floor level by 87-foot bridges, large enough to handle power-truck traffic as well as to carry the processing piping systems and providing passage for both materials and personnel. Between the two processing buildings, in back of the office-lab building, is the boiler and refrigeration plant; service units, hydrogen plant, and two tank farms are toward the rear of the plot.

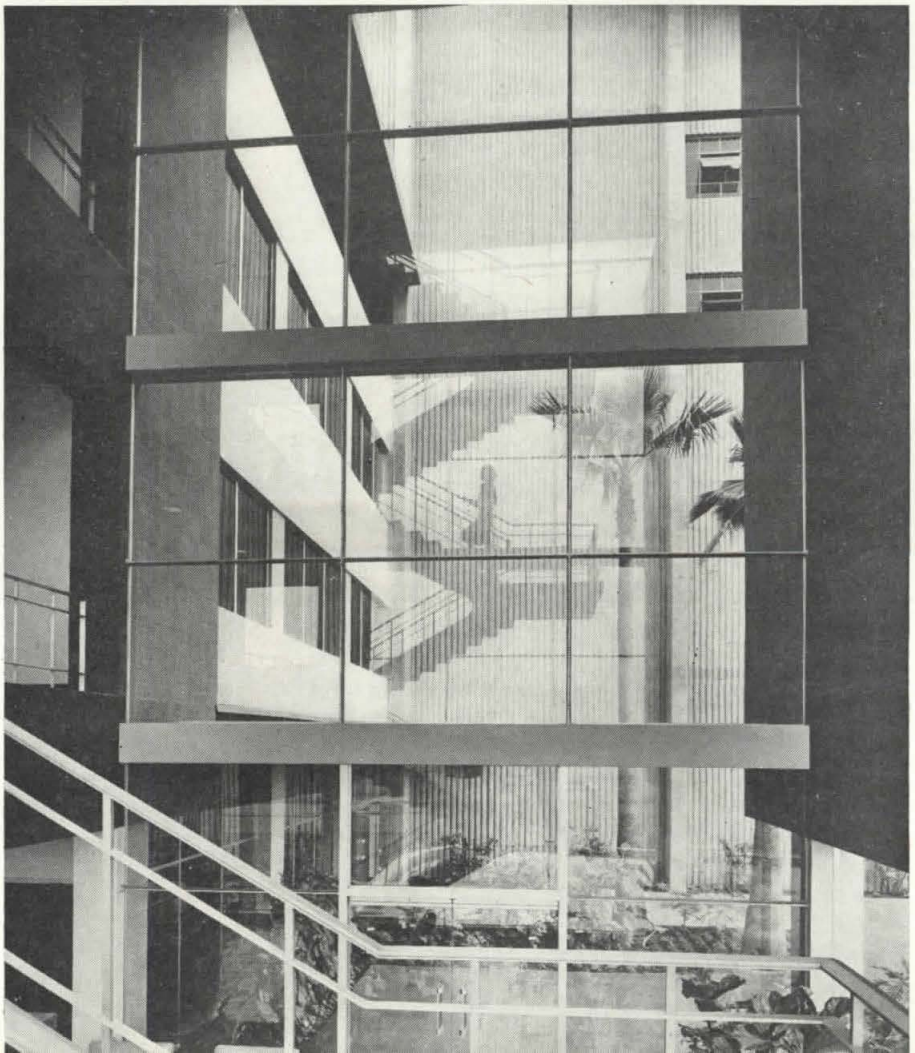
All employee facilities—lockers, showers, and washrooms—are in the administrative block; and employees as well as executives use the impressive entrance lobby. On the top floor of this building is an employees' air-conditioned cafeteria, with window walls on three sides and an outdoor dining terrace. Because of the mild climate, many manufacturing elements (tanks, piping system, etc.) are either located wholly out of doors or sheltered by simple roofs.

**LEVER BROTHERS COMPANY: LOS ANGELES, CALIFORNIA**

The processing and refining buildings are steel framed, due to the deleterious action on concrete of the raw materials processed. All steel is painted with corrosion-resistant coating; and in some areas, the concrete is painted with rubber base paints, to resist action of caustics and fatty acids. All buildings also are designed to resist seismic forces. Outdoor placement of tanks, piping systems, etc., was made possible by the mild climate.



The dramatic "jacknife" stairway in the main lobby is an indeterminate structure, and empirical methods had to be used in its analysis. After completion, tests were made by placing live loads on each stair, double the calculated live loads. The stairway resisted 200 lbs. per sq. ft. with deflections less than anticipated. Color treatment throughout the interior employs a narrow range of colors—warm greens, greys and ivory, plus the reddish brown of the cement-tile walls.

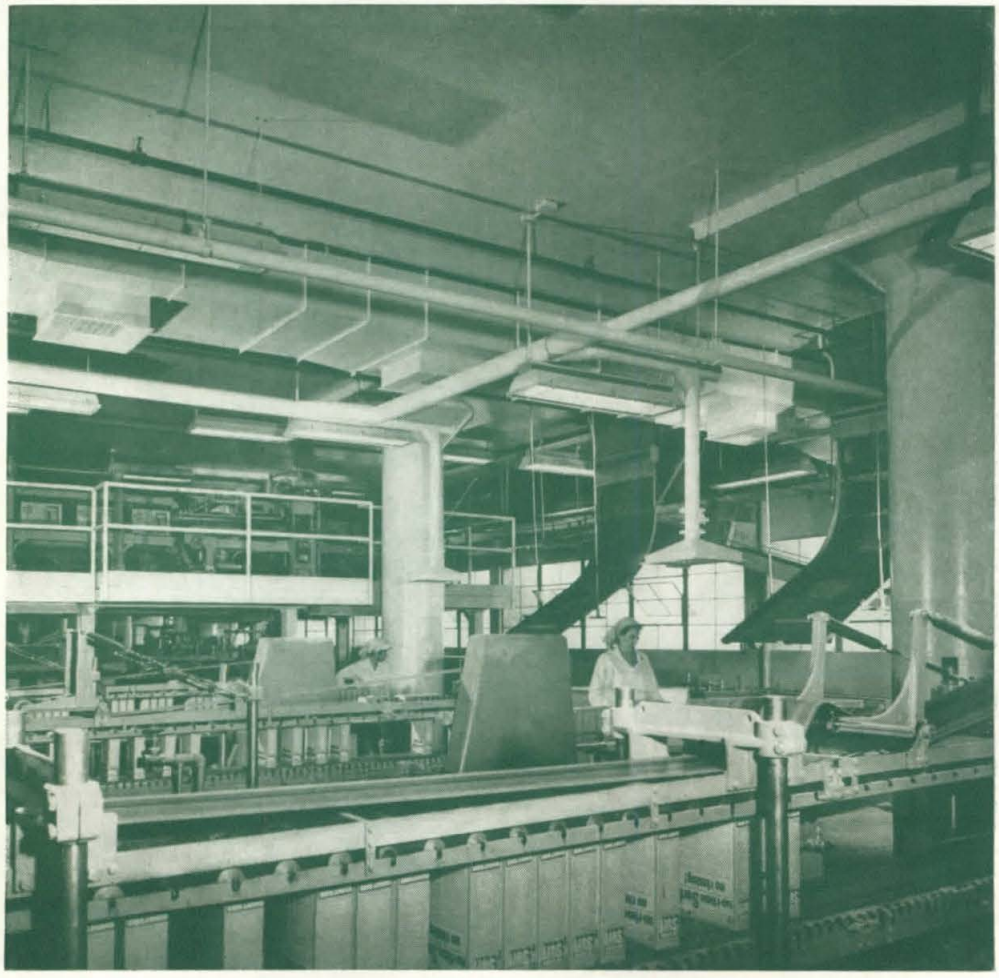


Where necessary, either tile or impervious acid-resistant brick was used for flooring. In most operating areas, however—and the soap-processing room shown above is typical—the absorption process, using a ¾" select-aggregate topping, was used to produce a hard, wear-resistant surface for flooring. This type of finish has the advantage that when worn or damaged, it can be chipped out and replaced.

The processing buildings (except for two air-conditioned floors in the edible-products processing plant) are simply heated and ventilated. The office building is wholly air conditioned by a water system in which chilled water is circulated from the refrigeration plant for cooling. Electrical strip-heaters are placed in ducts for re-heat. Heating is accomplished by circulating hot water. The system is zone controlled. Where acoustical

Right—quality control laboratory on the third floor of the office building. When in full operation, this lab will be staffed by a chief chemist and 21 assistants who will test raw materials as they arrive, and all products through their entire production cycle.

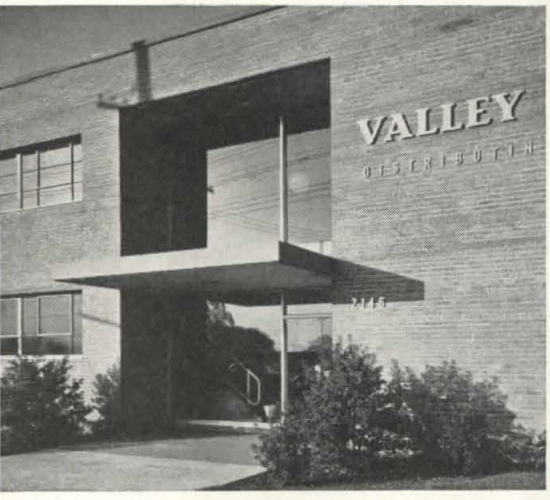
Below—one of the soap-product packing areas in the soap-finishing building—air conditioned; acoustical ceilings; fluorescent lighting.



treatment is employed (in the office building and other areas where large groups of persons work), the system consists of ceilings of perforated metal pans, backed with a pad of ¾ in. glass-fiber wool.

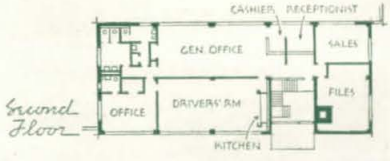
Artificial lighting is used throughout the $25,000,000 plant; incandescent lighting in the process areas and fluorescent units in the office building and finishing and packing areas.

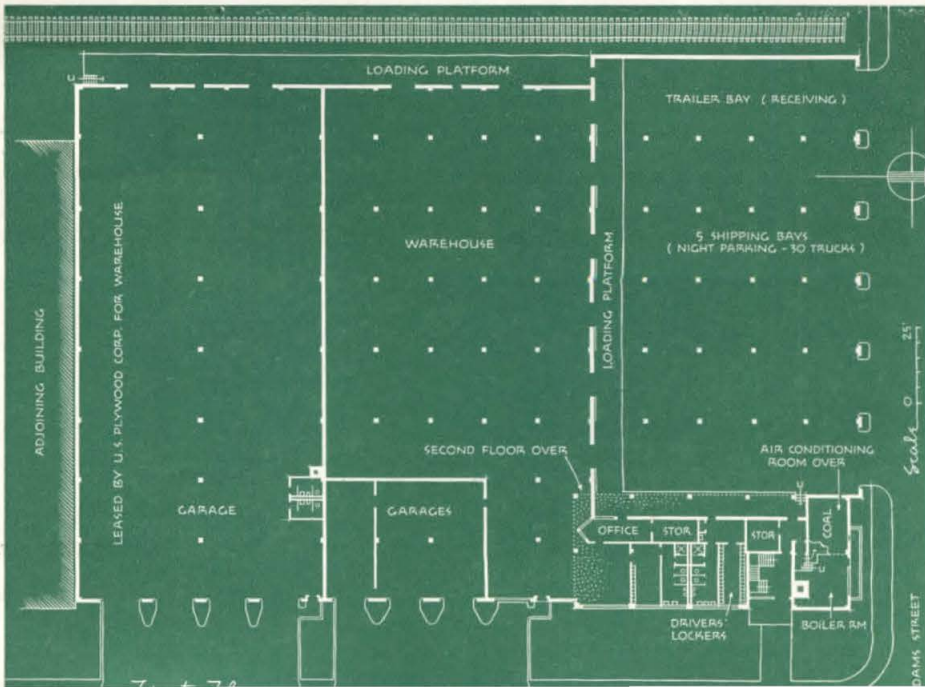
**LEVER BROTHERS COMPANY: LOS ANGELES, CALIFORNIA**


## Valley Forge Distributing Company: Washington, D. C.

**Berla & Abel, Architects**

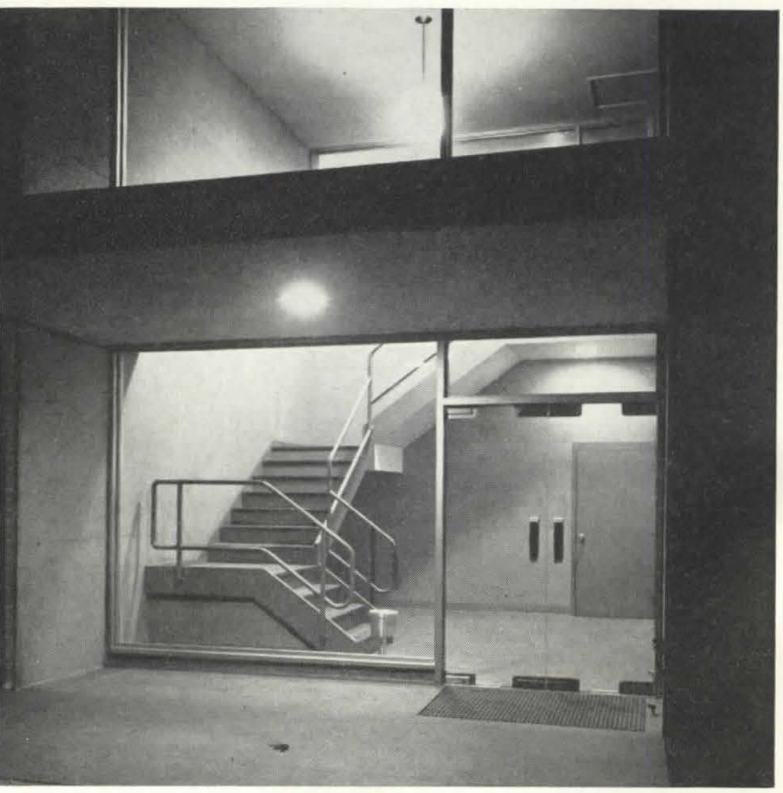


This warehouse was built for the largest beer distributor in the Washington area. In addition to sufficient storage space, requirements included: garage space for the company's delivery trucks (adjacent to the warehouse loading platform); extra warehouse space planned for future expansion but for initial rental; a loading platform to serve the rail siding at the rear; a repair garage; company offices; and facilities for employees. Cases to be temporarily stored arrive both by rail and by truck. To serve the latter, a special trailer bay was required. The corner site is on the west side of a traffic street and extends back to the rail siding, with a slight slope from front to back.

The building is simply organized, with warehouse areas occupying the entire rear portion. The loading bay, with room enough to garage 30 trucks, and a delivery trailer bay occur across the north end of the area; the present beer-storage space is in the center, and the space reserved for later expansion (at present leased to the United States Plywood Corporation) extends across the entire south end of the building. A three-truck maintenance and washing garage occurs near the center of the east side of the building. At the prominent northeast corner is a two-story element—with main entrance, locker rooms, warehouse control office, and service rooms on the first floor. On the second floor are a file room, and a drivers' room, where truck drivers make out their accounts and schedules, and which, with its strip kitchen across one end, doubles as an employees' lunch room.

The architects say there was no unusual structural problem. A steel-frame, steel-joist floor system, and masonry walls were adopted as being the most economical structure that would also provide the required fire resistance. The entire second floor is air conditioned, while the warehouse areas have unit heaters operated from a steam main. Structural design was handled by Beall and LeMay; mechanical work and air conditioning by Wilberding Company, Inc.



Walls are of face brick, with cinder-block backup; floors are concrete on the ground and concrete on steel joists (second floor); roofing is poured gypsum on glass-fiberboard. Except in the office and lobby areas (where terrazzo flooring is used), floors are plain concrete, with hardener treatment. The walls of the lobby *(left)* are surfaced with precast cement panels.
*Photos: Robert C. Lautman*

## Pabco Products, Inc., Raritan Township, New Jersey

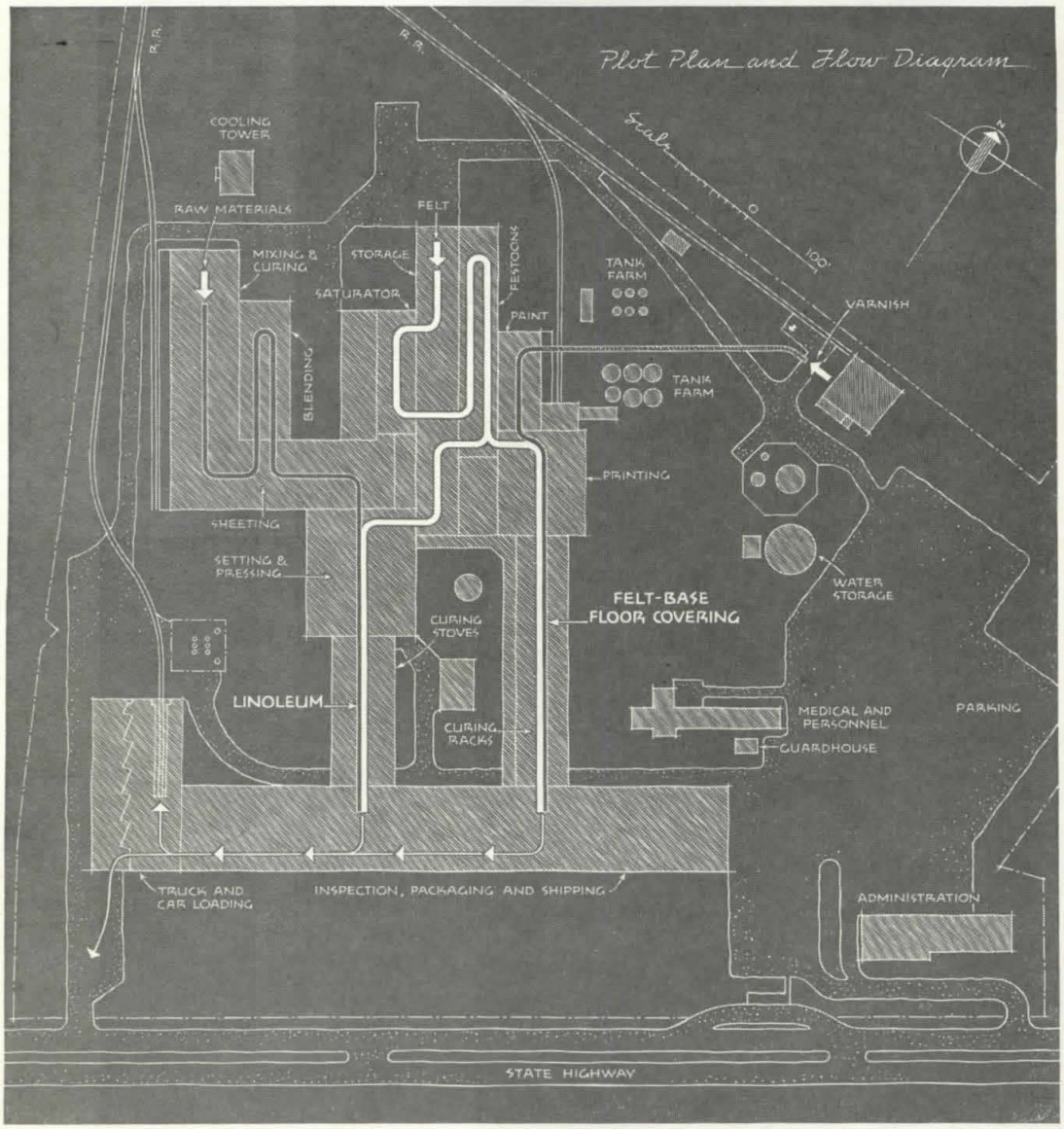
**Del E. Webb Construction Company, Designers and Builders**
**Headman, Ferguson & Carollo, Consulting Engineers**

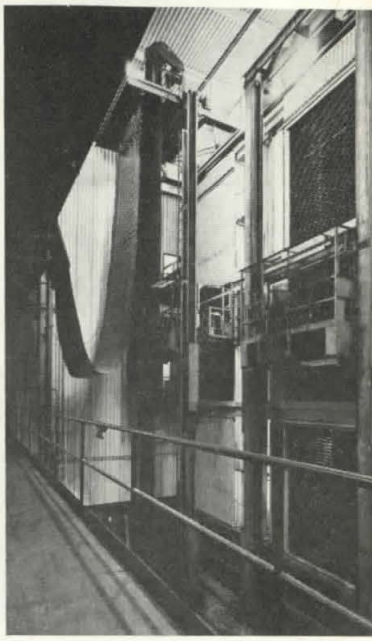
East Coast manufacturing plant for this long-established (1884) San Francisco concern, the third largest manufacturer of linoleums and felt-based floor coverings, this factory was designed to make products identical with those of the California plant, but under wholly different climatic conditions.

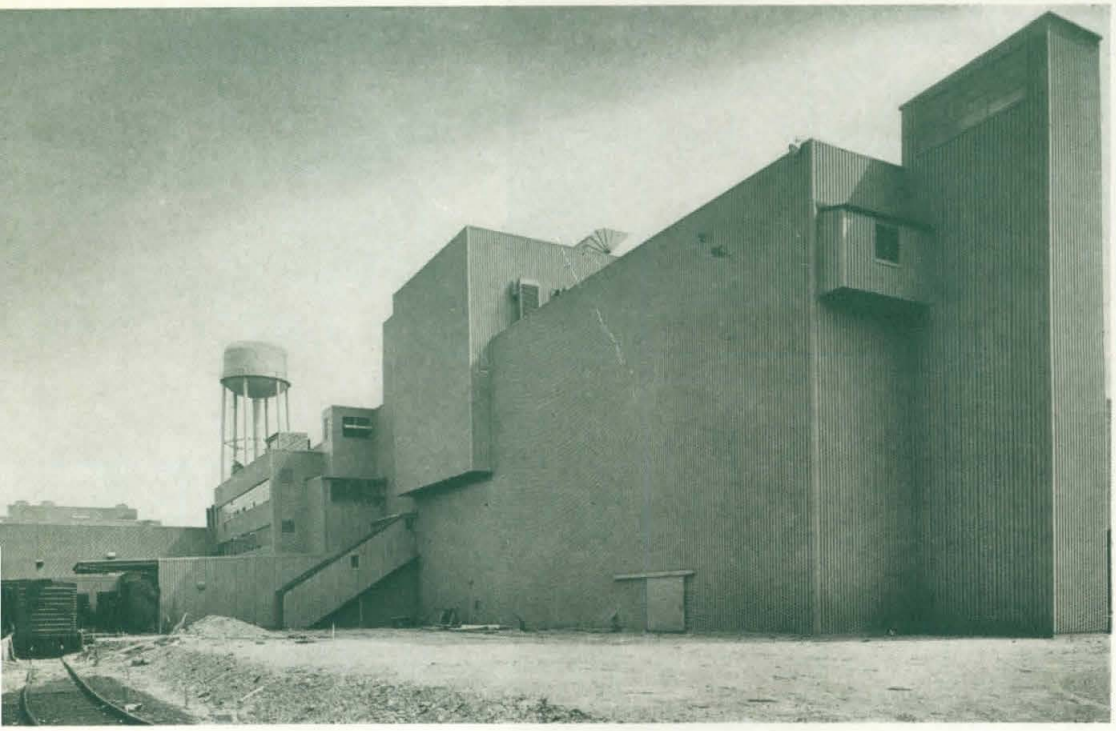
Built on a 30-acre site, bordering U. S. Highway No. 1, about 30 miles southwest of New York, it is served by a railroad siding and is admirably located for speedy trucking to the concentrated population of the New York-Philadelphia area. The design wish was to provide maximum manufacturing efficiency, with direct receiving and shipping in a plant of functional design that would be economical to construct.

Basically, the plan consists of parallel production-line buildings—one for linoleums; the other for paints and felt-based, printed floor coverings. Both processes are served by a central felt-processing complex. Finished products end in the two-block-long building fronting on the highway, where inspection, wrapping, and storage take place. At the western end of this huge unit are a rail spur and truck dock for loading and shipping.

The structure consists of a steel frame with walls of insulated metal panels; metal roof decking is surfaced with tar and gravel on rigid, glass-fiber insulation. Lighting is fluorescent in offices; in manufacturing areas, a combination of mercury-vapor and high-bay incandescent units is used. The processes require maintenance of uniform temperatures, with plenty of circulating air. To accomplish this, heating units are arranged so that they can be turned off and fans used for ventilation. Steam pressures used for comfort heating are identical to those required for process heating, thus making possible the use of a single system and of smaller mains.



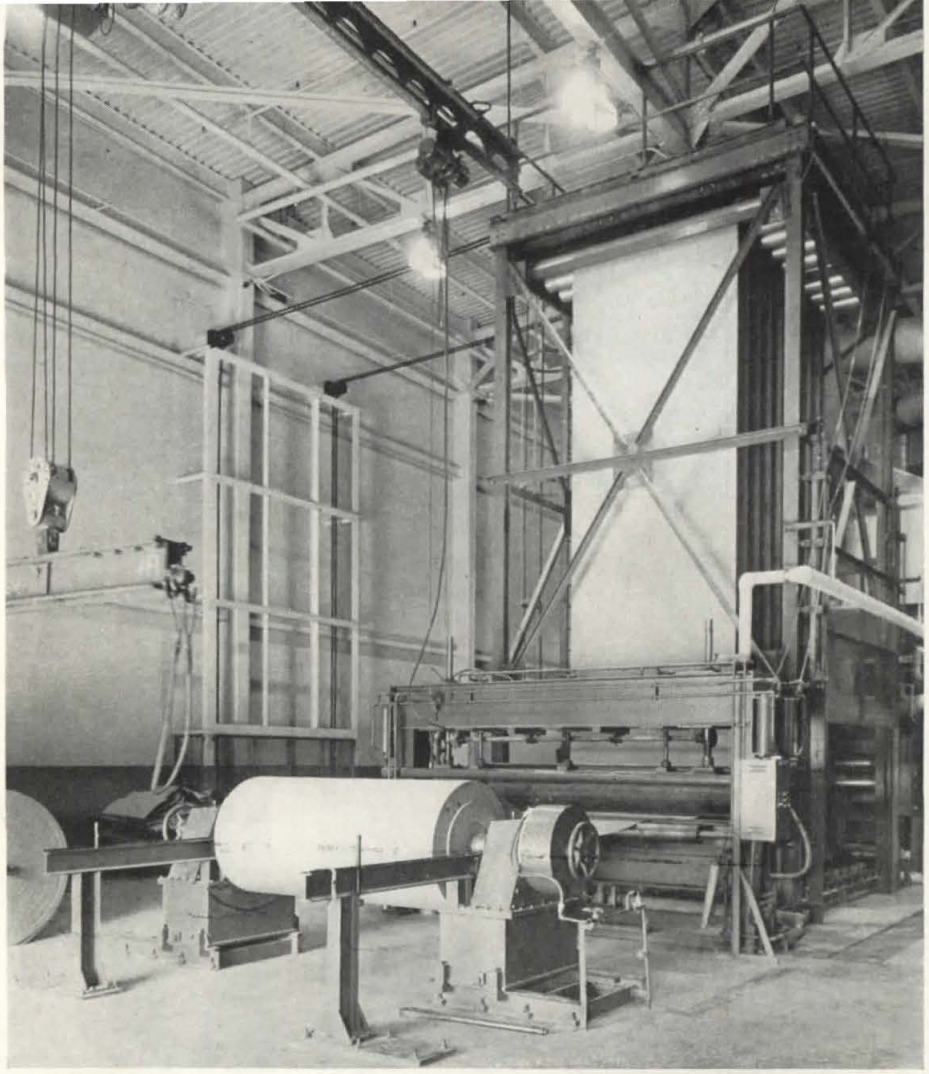


Acrosspage—the vast, gray-green met wall surface of the inspection-warehou unit is put to work as a company bil board.

Left—view looking southeast along th felt-based floor-covering manufacturin area; paint building in foreground; re of warehouse unit in background.

Above—in the manufacture of painte felt-based floor coverings, one productio step involves these lofty handling m chines that move long strips of the unc product from curing racks *(right)* to th inspection, cutting and packaging stage

*Photos: Tom Leona*



Processed felt is used in the manufacture of both linoleums and printed floor coverings. Shown here are a felt-saturating machine (*top*) used in the manufacture of the backing for the two main Pabco Products; and the inspection-cutting-packaging area (*below*) of the linoleum end of the warehouse building.

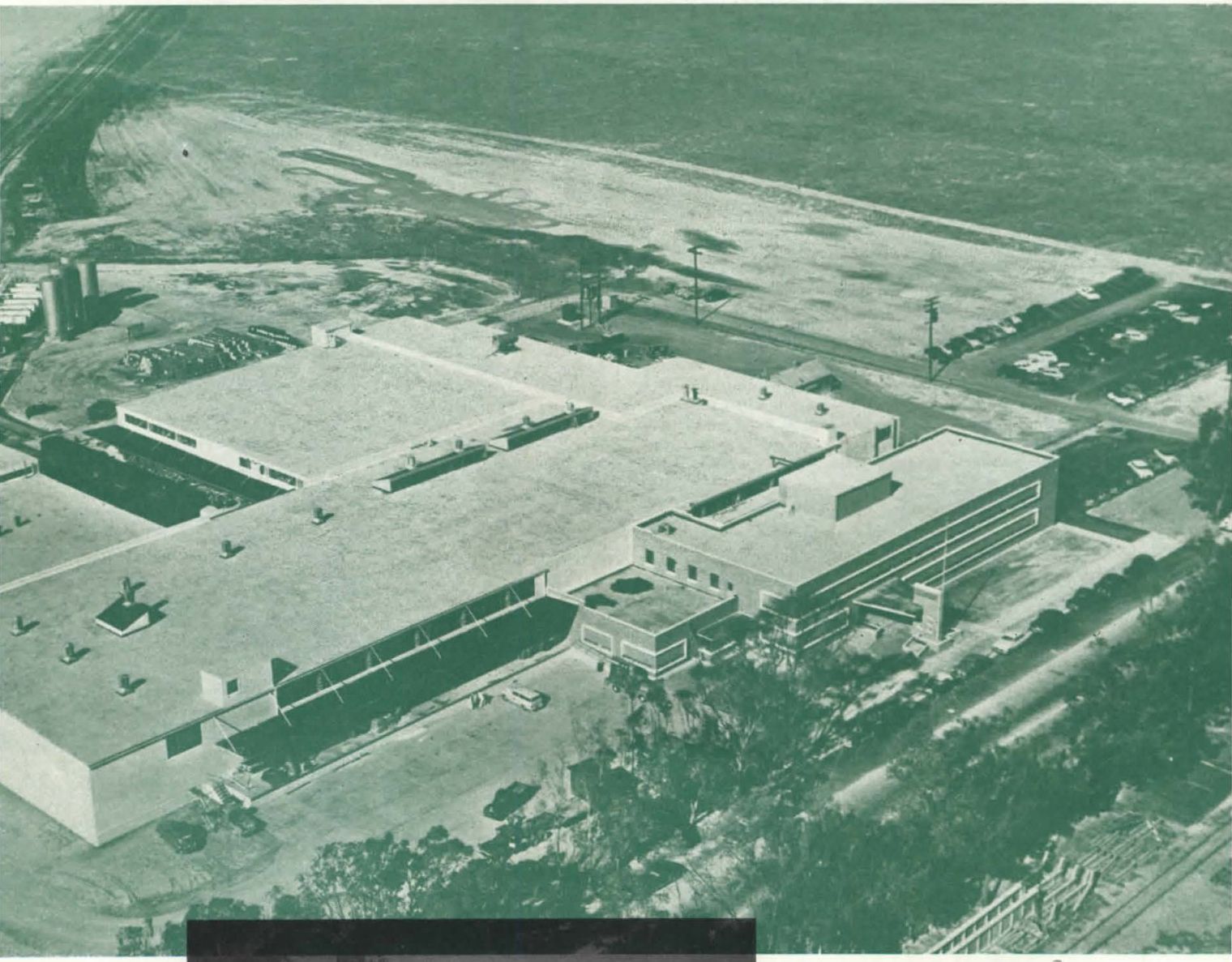
**PABCO PRODUCTS, INC.**
**RARITAN TOWNSHIP, NEW JERSEY**

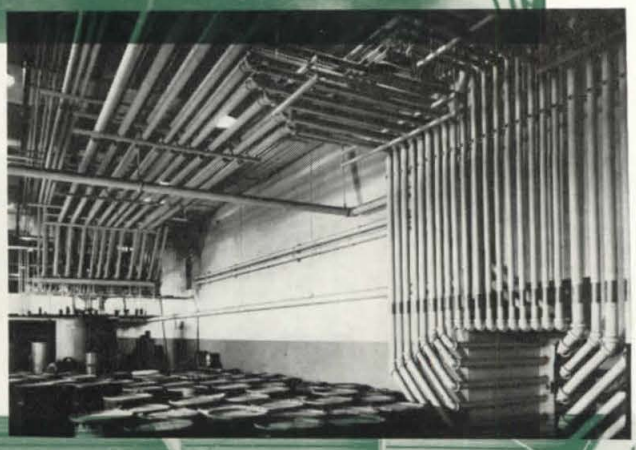
# Pittsburgh Plate Glass Company: Torrance, California

**Albert C. Martin & Associates, Architects and Engineers**
**MacMen Inc., General Contractor**

In the design of this efficient $1,250,000 plant for the manufacture of Pittsburgh's full line of house paints, varnishes, resins, and industrial and automotive finishes; the initial organization, schematic drawings, and development of the layout of process piping and power distribution were handled by Percy E. Knudsen, Pittsburgh's paint-plant architect, under the direction of Thomas G. Griffin, Supervisor of Manufacturing Facilities.

*Photos: Julius Shulman*





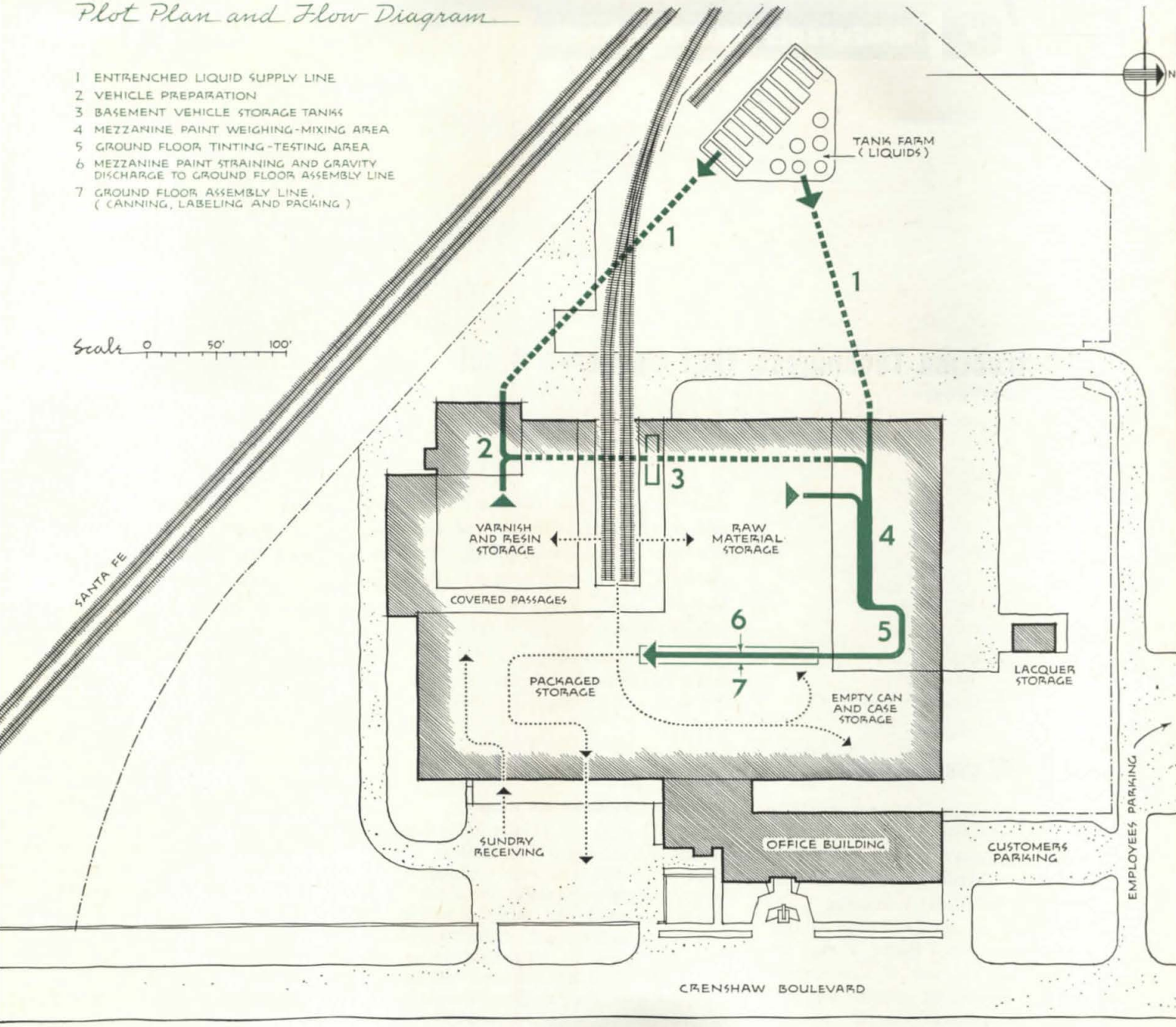
Above—the north-lighted paint laboratory.

Right—conference room *(top)*, on second floor of administration building, with alcove kitchen that may be closed off by a folding partition. Fenestration consists of prismatic directional glass block, combined with clear-glass vision and ventilation strip. Thinning and tinting room *(center)* where final processing and lab testing take place before paint is lifted to mezzanine level where, after straining, it flows back down to the can-filling operation. Storage room *(bottom)* for packaged products, adjoining the truck-shipping dock.

**PITTSBURGH PLATE GLASS COMPANY: TORRANCE, CALIFORNIA**

Located on a 15-acre site, convenient to material procurement and a residential area, this new plant adjoins the Santa Fe Railroad and is served by a spur leading into the property. A simplified statement of the process is that liquids arrive in tank cars, are stored in a tank farm near the rear of the site, and are pumped to the manufacturing area where they are combined with thinners, pigments, etc., to produce paint products. A large storage area is provided for the finished product, which is delivered to stores by truck. Secondary storage is included for wallpapers and sundries, also distributed by Pittsburgh. In addition, there is a two-story administrative building that includes employee locker rooms and lunchroom, as well as the executive offices, business offices, and general clerical space.

The traditional approach to the plan of a factory of this nature is a multi-story structure that exploits the principle of gravity flow. Here, although there are mezzanines and small second-floor areas, the plant is, in the main, a one-story, earthquake-resistant structure. Liquids from the tank farm are pumped by an electronic remote-control system to a second-story level, where they are weighed and proceed into production. Ball and pebble mills (rotating drums which grind raw pigments to the desired fineness by abrasion against tumbling steel balls or stone pebbles) are suspended on the structural steel frames under the second-floor decking and discharge their loads by gravity into portable tanks on the floor below, where the mix is tinted and lab tested. Hence, it is lifted up to another mezzanine area where the paint is strained and flows down to the main-floor level again for canning, labeling, and storage.




## MATERIALS AND METHODS

### CONSTRUCTION

**Foundation:** reinforced concrete spread and continuous footings. **Frame:** reinforced concrete and structural steel framing—Union Steel Company. **Walls:** plant structure: reinforced concrete and sprayed concrete; office structure: reinforced concrete and brick, Norman brick facing. **Floors:** reinforced concrete slab on grade, concrete-pan joist and slab; steel decking. **Roof:** concrete slab and steel decking—Detroit Steel Products Company and H. H. Robertson Company. **Waterproofing and dampproofing:** dampproofing paint on exterior basement walls and interior walls of planting boxes—Super Concrete Emulsions, Ltd. **Insulation:** acoustical: perforated fiberboard tile—Armstrong Cork Company; thermal: cellular-glass panels over steel decking—Pittsburgh Corning Corporation. **Floor surfacing:** asphalt tile—Tile-Tex Division, Flintkote Company; ceramic tile—Olean Tile Company; terrazzo, carpeting. **Ceiling:** acoustical tile and plaster in office and exposed construction in plant. **Wall surfacing:** exterior: face brick, painted concrete, sprayed concrete; paint over plaster surfaces and exposed construction—Pittsburgh Plate Glass Company; ceramic tile—Pacific Tile Company and Gladding, McBean & Company. **Roof surfacing:** built-up asphalt and gravel over cellular-glass insulation, composition roofing on canopy slabs—Pioneer Division, Flintkote Company. **Roof drainage:** office roof drains—Josam Manufacturing Company; galvanized-iron scuppers, gutters, and downspouts spilling on grade. **Partitions:** interior: expanded metal—Union Steel Company; concrete block; steel stud, metal lath, and plaster—Inland Steel Products Company; wood studs and gypsum lath—United States Gypsum Company; structural glass toilet partitions—Pittsburgh Plate Glass Company; enamel-finished metal stalls—A. J. Bayer Company. **Windows:** steel sash—Soule Steel Company; glass—Pittsburgh Plate Glass Company. **Doors:** hollow core, flush wood veneer—General Veneer Manufacturing Company; hollow metal, kalamein, tin clad—California Fireproof Door Company; steel rolling doors—Lawrence Steel Company; metal-clad motorized elevator doors—Peelle Company; tempered-glass entrance doors—Pittsburgh Plate Glass Company; accordion-like folding doors—New Castle Products. **Hardware:** locksets, door closers—P. & F. Corbin Division, American Hardware Corporation; hinges—The

**(Continued on page 156)**

# Construction Techniques That Conserve Steel

By RONALD ALLWORK*

*New construction methods generally evolve at a slow pace. They are often retarded because both designers and contractors are reluctant to try new techniques, when old tried-and-true methods insure a satisfactory, if not outstanding job. With critical shortages in steel affecting all building operations, it is evident that construction techniques which save material must be adopted, if war-production schedules are to be maintained. The three methods described in this report have been developed with this objective in view.* R.A.

## cantilevered steel construction

A framing system for one-story structures based on the use of cantilevered steel members effects substantial savings in steel requirements. An analysis of several industrial buildings designed by Lockwood Greene Engineers, Inc., New York, has shown that the use of this method cuts the weight of steel by approximately 20 percent. A. M. Kinney, Inc., Consulting Engineers and Associated Architects, Cincinnati, have reported that in their design for the White Laboratories building, Kenilworth, New Jersey, the weight of structural steel amounted to only six pounds per square foot *(Figure 1)*.

Job records of at least a dozen industrial projects constructed by this method show that the system offers:

(1) Economy in materials and costs.
(2) Less deflection in steel members.
(3) Lower height of building resulting from use of smaller beams and girders.
(4) Ease of erection.

*Architect, New York City.*

### engineering principles are simple

The method is essentially a framing technique in which the girders and beams are designed with a cantilever equal to approximately one-sixth of the span in order to obtain a balance in the positive and negative moments *(Figure 2)*. This balance permits the use of lighter steel sections and reduces the weight materially. There are no complex engineering problems to solve. Beam spacing is dictated by the type of decking to be used; bay sizes are developed to meet building use requirements. As in conventional framing, heavy concentrated loads present a problem in the design of individual supporting members, hence the system is best suited for use with uniform loading. When large, concentrated, or moving loads must be taken into account, cantilevered framing does not offer exceptional advantages.

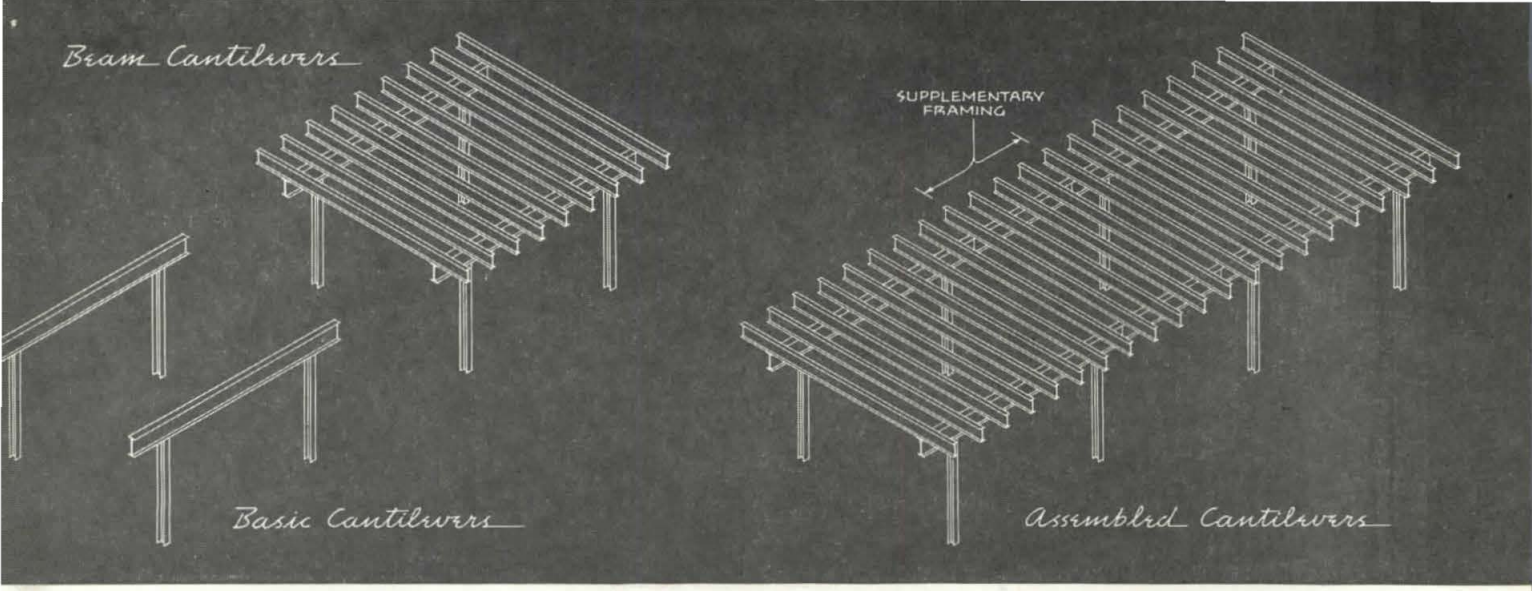
The framing design may be described as a series of bay units, each consisting of four columns supporting two girders cantilevered on each end. These girders in turn support a series of beams, also designed with a cantilevered projection on each end. Since the cantilevered girders and beams project only one-sixth of the span, the remaining two-thirds of the span must be connected by supplementary framing. It is obvious that the girder connection at the column head is relatively simple when compared with conventional framing methods, and that the resulting speed of erection makes an important contribution to savings in construction costs.

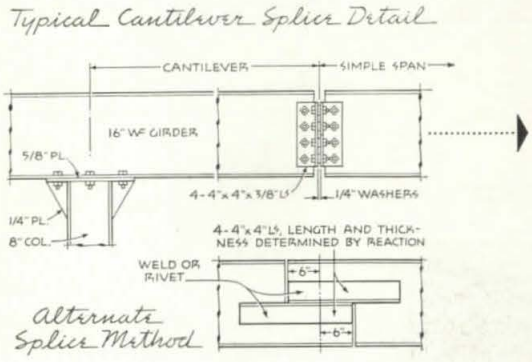
In the erection procedure, it is possible for the contractor to use a tractor crane and work progressively down the line of bays without encountering the delays occasioned by the extensive bolting operations required for conventional framing methods.

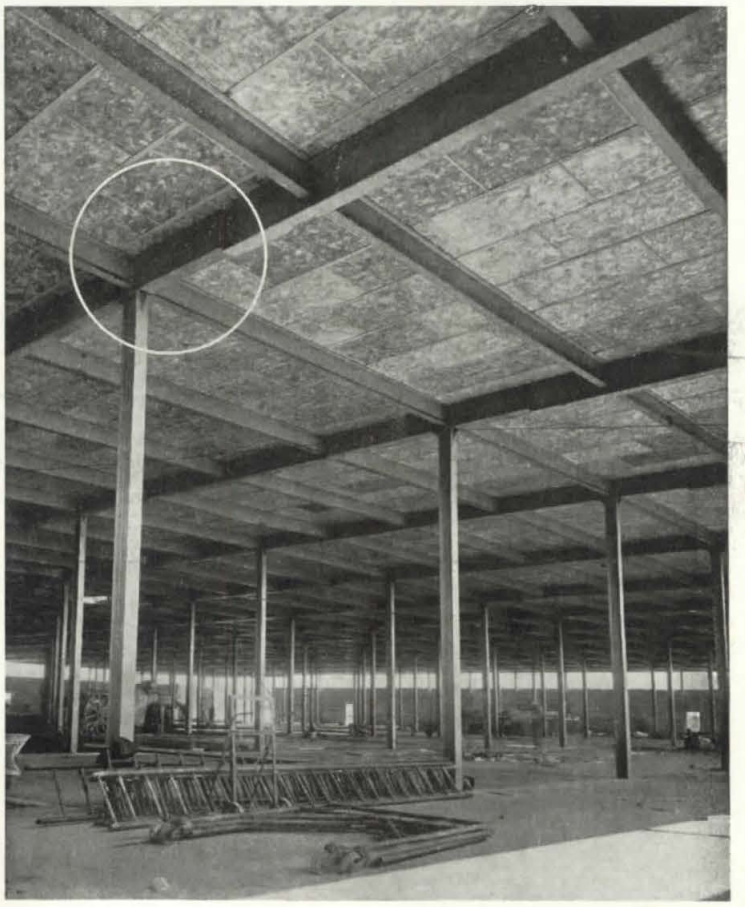
An important consideration which favors the use of this system is its adaptability to the use of stock and module sized materials. Common steel shapes are employed in the framing and may be either bolted or welded. The beam system can be designed for any one of the many types of precast roof slabs as well as steel or wood decking.

### the larger the span, the greater the cost

From the standpoint of architectural



design, the intended use of the building usually governs the determination of bay sizes. In any type of construction, costs rise as the bay dimensions are increased. With this system, bay dimensions must be developed not only in terms of building use and construction costs, but careful consideration must be given to the maximum length of steel that can be shipped and handled efficiently.

In general, a 20- to 30-foot span for beams appears to be most economical, while column spacing for girders is best at 40 to 45 feet. To effect a real economy, the building should be designed several bay units in width.

Construction procedure requires that two bays of cantilever members must be erected before the short member between can be set in place. While this constitutes the principal deviation from conventional framing, it presents no problem to the contractor and is generally speedier and cheaper.

This method is particularly adapted to use in one-story buildings and all of the known examples have been confined to this height.

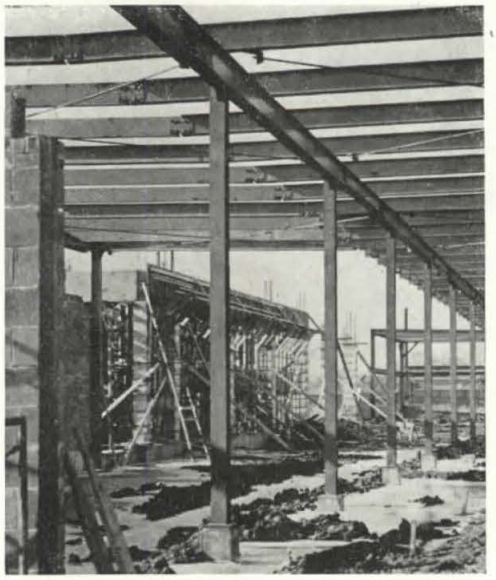


**Figure 1—progress photo of White Laboratories plant shows *(encircled above)* typical cantilever and connection at interior column line of an exterior bay. Cantilever and connection for typical bay (20' x 30') are detailed in structural drawings *(left)*. Only the girders are cantilevered in this structure. Underside of glass-fiber form boards between purlins were left exposed, to provide an acoustical ceiling. *Photo: courtesy Owens-Corning Fiberglas Corp.***

**Figure 2—both girders and beams are cantilevered for maximum economy in this building for the Egyptian Lacquer Company.**
***Photo: courtesy A. M. Kinney, Inc.***

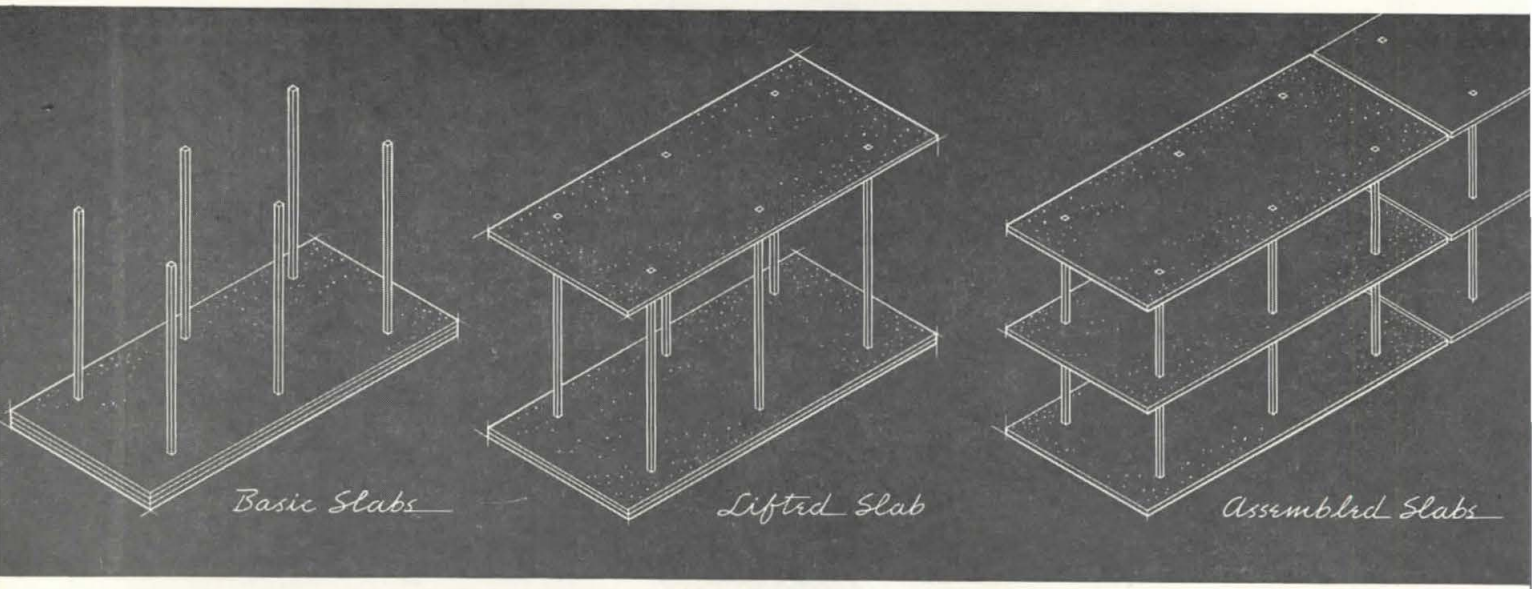



Figure 1—isometric drawings of the principal steps in the erection of a two-story structure by the lift-slab system of construction.

## the lift-slab building method

The Youtz-Slick lift-slab system is an ingenious construction method designed to cut building costs and save scarce materials. Developed by the Southwest Research Institute, this system has been thoroughly tested by actual construction and found to be well suited for industrial projects. Some 15 buildings of various occupancies, ranging in size from 2000 to 40,000 square feet in area have been completed; at least five more, totaling 450,000 square feet, are reported to be now under construction.

The success of the lift-slab method is largely due to its simplicity and to the obvious fact that it is more economical to construct a concrete slab on the ground than in the air. In the operation of this system, *(Figure 1)* the foundations and grade slab are constructed in the conventional manner, with columns (usually of steel) erected in place.

A separating medium, such as paper, is then laid over the finished grade slab. Steel collars are slipped over each column and after reinforcement for the second floor slab is placed *(Figures 2 and 3)* the concrete is poured. Only an edge form is required. The steel collars at each column become an integral part of the slab. When the second floor slab has set to strength, paper is again laid and the third floor or roof slab is constructed on top of the second floor slab in the same fashion.

As soon as the slabs have been cured, special hydraulic lifting equipment is installed on the top of each column. The slabs are lifted to their permanent positions and welded to the columns.

### special lifting equipment is necessary

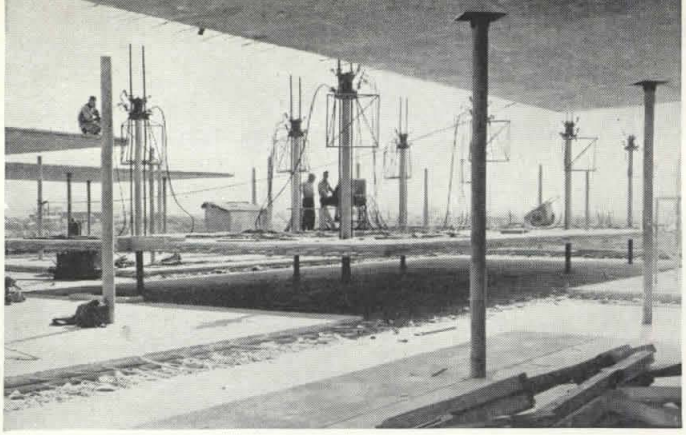
The equipment developed by the Southwest Research Institute is made available to builders through licensees; charges are based on the area of slab raised. The lifting jacks are designed for an individual load of 78,000 pounds. Mounted on the tops of the columns, they raise the slab by means of tension rods attached to steel collars that have been embedded in the slab. The lifting action of the hydraulic jacks is regulated at a central control panel *(Figures 4 and 5)* to maintain a simultaneous lifting rate at all points. Control is obtained to within one-sixteenth of an inch at a lifting rate of about four feet per hour. In most cases, the equipment is capable of lifing two, or possibly more, floor slabs at one time.

### engineering considerations

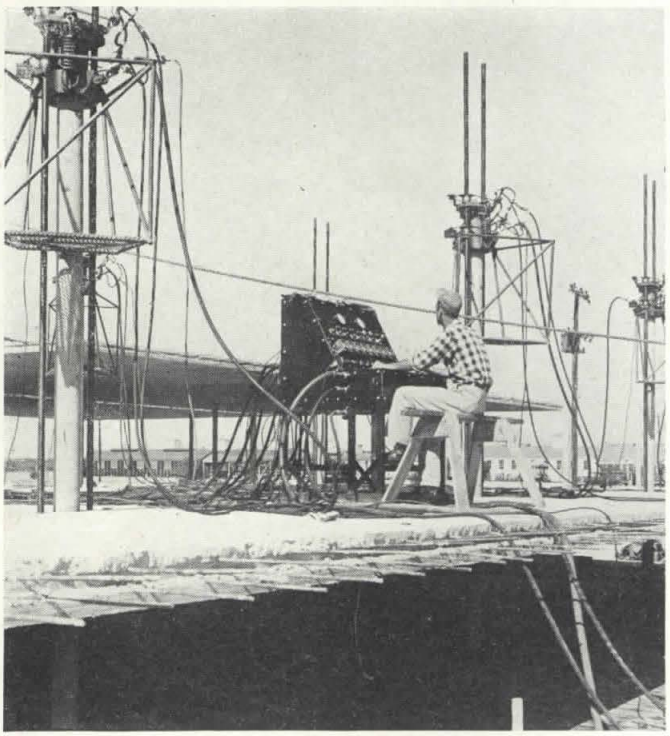
The design for the steel collar is based on the assumption that the collar will become a shear connector and that the plate of the collar will act as a part of the column head. An investigation of the section modulus at several points in the collar is therefore desirable and must be based upon the moment produced by the loaded area affecting that particular portion of the collar.

The design of the column must take into consideration the conditions that are to be met when (1) the column is fixed under static load conditions and (2) the column is used as a lifting support and acts in free cantilevers. Because the slenderness ratio for this investigation is double that of the fixed position, the cantilever condition is critical.

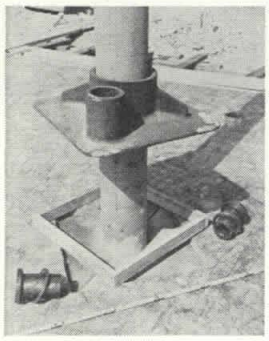
From the standpoint of architectural design, the column spacing is of utmost importance. Wherever possible, it is desirable to space columns to make use of the free cantilever on all slab edges. Panel bays offer the best conditions for lifting operations.

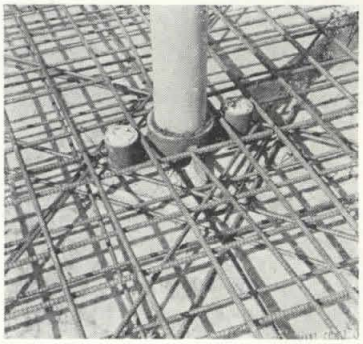


Figures 4 and 5—control console *(below)* enables operator to maintain a simultaneous lifting rate for all jacks. 18′ square bays *(left)* have a 7′-perimeter cantilever which is maximum for a 6″ slab.
*Photos: Altmann Factory: courtesy of James Stewart & Co., Contrators*



Figures 2 and 3—in this textile factory, glass-fiber acoustical tiles were used *(below, left)* to separate grade and roof slabs. After steel collar was dropped into position, reinforcement placed, and tension rod sleeves protected *(below, right)*, the roof slab was poured.





The present design of the lifting equipment limits the size of the columns to a maximum 10-inch round or 8-inch square. Various sizes and types of pipe columns have been used; square columns have been fabricated from steel angles welded together to form a box. The use of concrete columns is feasible. The most economical column spacing is from 18 to 24 feet. Slab areas up to 12 columns can be lifted at one time; areas including 8 and 12 columns have been proven most economical.

Where isolated footings are designed for a column, the column is considered as a cantilever retaining wall and the toe pressure and overturning moment are calculated. When the column is to be used for partial support in wind bracing, the wind load also is considered.

The method followed in designing the slab is the same as that employed for any conventional flat slab poured in place. As pointed out, a cantilever at the edge of the slab (approximately equal to one-third of the adjacent span) is considered a desirable aid in balancing the moments at the column; however, columns may be located at the perimeter if necessary. Under cantilever conditions, the flat-slab panel design divides the plate into column strips and middle strips; the reinforcing steel is laid out with a proportional amount of calculated steel to each strip. In order to obtain the required amount of reinforcing, each panel is designed as a continuous frame by the mechanical means of moment distribution.

### economic considerations

Actual experience of contractors who have undertaken to employ the Youtz-Slick method has shown that substantial savings can be realized. Economies gained through speed of erection, the virtual elimination of formwork, and the use of labor on the ground rather than in the air are the factors responsible for the low costs. Ford & Rogers, San Antonio architects of a textile factory for the Bernhard Altmann Texas Corporation, in which this method was used *(all photos this page)*, report that selection was based purely on economic considerations. They state that the contractor's proven costs (not estimated) showed that the tying of reinforcing steel on the ground resulted in a 50-percent saving; that concrete finishing at ground level also saved 50 percent. A 6-inch lift slab with 1-inch insulation and a 20-year tar-and-gravel roof plus ¾-inch acoustical tile on the ceiling cost 98 cents per square foot in place; the conventional steel-bar joists with 2½-inch poured gypsum deck, 1-inch insulation, and 20-year built-up roof were figured at $1.53.

Acoustical tile may be used in lieu of paper as a separating medium. After the tile is placed on the grade slab, the reinforcing is placed and the concrete is poured. When the slab is lifted, the acoustical tile adheres to the slab, thus serving three uses—separator, insulator, and noise reducer. (Glass fiber tiles were specified by Ford & Rogers for the Altmann textile factory.) Electrical conduits and outlets, slots for pipe hangers, and other equipment may be set in place on the ground before the slab is poured. An estimated 30 percent in costs is saved by installing the electrical work in this manner. A 10 percent saving in plumbing and heating can also be realized when sleeves, stocks, and other openings are provided for in the slab pouring.

Indirect savings accrue when column interference is eliminated in the erection of exterior curtain walls, and through the elimination of all load-bearing partitions. The smooth ceiling of the flat slab makes the installation of ductwork and piping easier, simplifies the finishing, and generally eliminates the need for false ceilings.

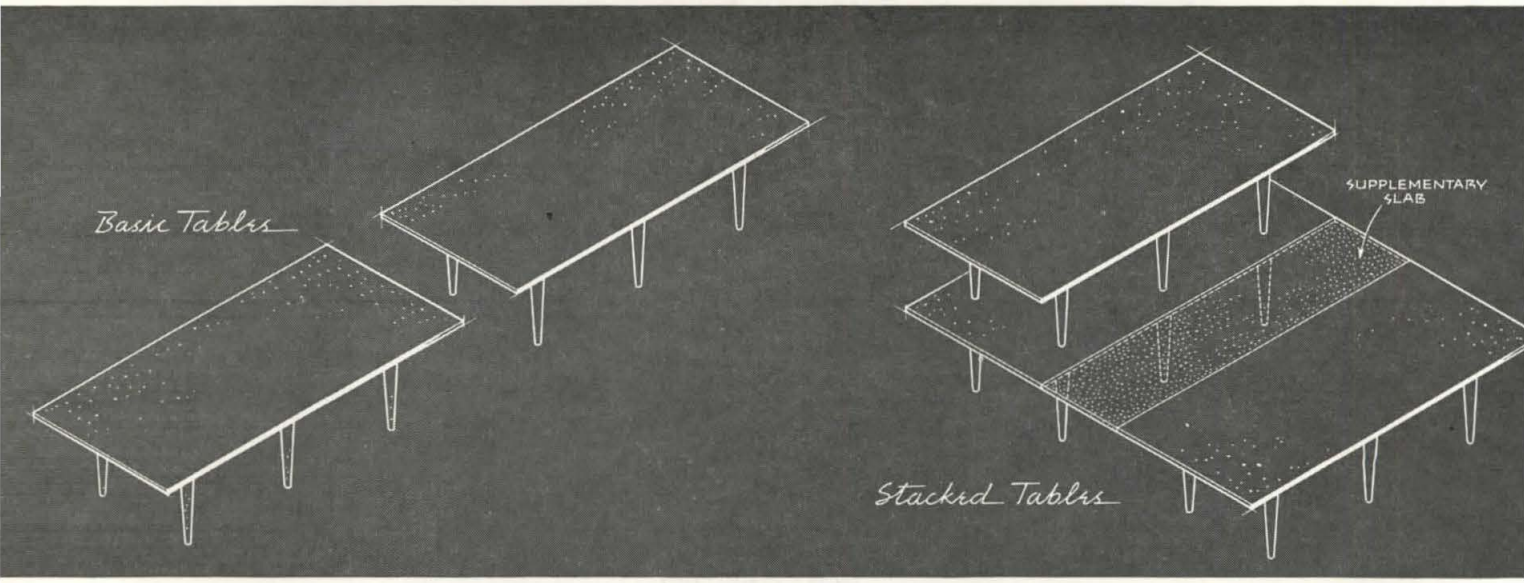



Figure 1—sketches show basic relationship of unit buildings (tables). This construction system which produces flexible, low-cost buildings can be applied to any type of structure.

## unit building system of reinforced concrete construction

The unit building system of reinforced concrete construction is ideally suited to industrial buildings where repetitive elements are generally desired. Utilizing a cantilevered, reinforced - concrete - plate slab supported on "hinged" reinforced columns, this system offers excellent economies in construction costs. A parking garage in New Orleans was recently completed at a total cost of $2.00 per square foot; this figure indicates the savings that can be realized when the method is used for industrial building. Laurence G. Farrant, Miami consulting engineer who developed this construction method, reports that this system was selected for the parking garage because of its low cost and the smooth unobstructed ceilings that it provided. (Farrant was associated with New Orleans Architects and Engineers, Diboll-Kessells.)

In simple terms, the unit building system might be likened to a series of tables *(Figure 1)* whose tops extend well beyond the legs on all sides. These tables, identical in size, form the unit bays of the building; additional tables, stacked on top, form the succeeding stories. In practice, space is left between the cantilevered floor slabs of each unit to provide a logical and efficient location for stairwells, elevator shafts, and other vertical access.

### design and construction

In the design of the unit building, the use of a cantilevered floor slab results in a slab of considerably less average depth than that required for a continuous monolithic structure. In the New Orleans garage *(Figure 2)*, the average thickness for the cantilevered slab was 7½ inches as against a 12½-inch thickness that would have been required for a slab designed on a continuous monolithic basis. In spite of this reduction in slab thickness, a saving of approximately 30 percent in reinforcing steel was realized because loading conditions could be determined accurately and the bars cut off where they were no longer required.

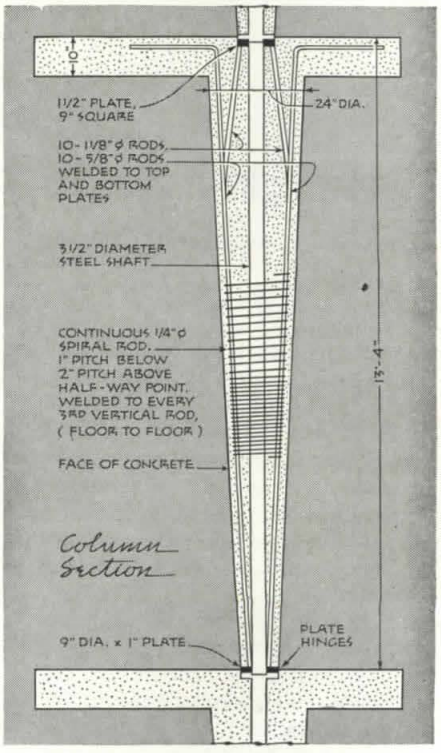
The fact that unit buildings are repeated, saves considerable time in cutting and placing of reinforcing steel, since the pattern is identical for units. The unit system also makes it possible to erect forms and pour concrete on a scheduled basis, to permit a maximum re-use of standard forms. Construction progresses on a unit basis because each bay is an independent element, hence continuous pouring operations are not necessary.

Tapered columns, not a requirement for this system, can be used to advantage to minimize the size of the supports at the building use level, yet provide the bulk necessary at the critical portions of the columns to take care of the greater moment developed by the cantilever.

The "hinge" or socket at the bottom of the typical column eliminates a transmittal of the bending moment to the column and the unit building below. In the New Orleans garage, each column contains a cold-rolled steel shaft which rests in a socket formed in the top of the column below. Although not an essential element of this system, the steel shafts were provided to carry future loads; two additional floors of normal commercial occupancy will be constructed above the present garage. The reinforcing bars of the column *(Figure 3)* are welded to this shaft and the axial load is transferred from the column to the shaft


**Figure 2—one corner of the three-story New Orleans parking garage *(left)* which was constructed at a cost of $400 per car exclusive of property values.**

**Figure 3—section through typical tapered column *(below)*. The hinge at the base allows the transmittal of bending moment from one unit building to another.**



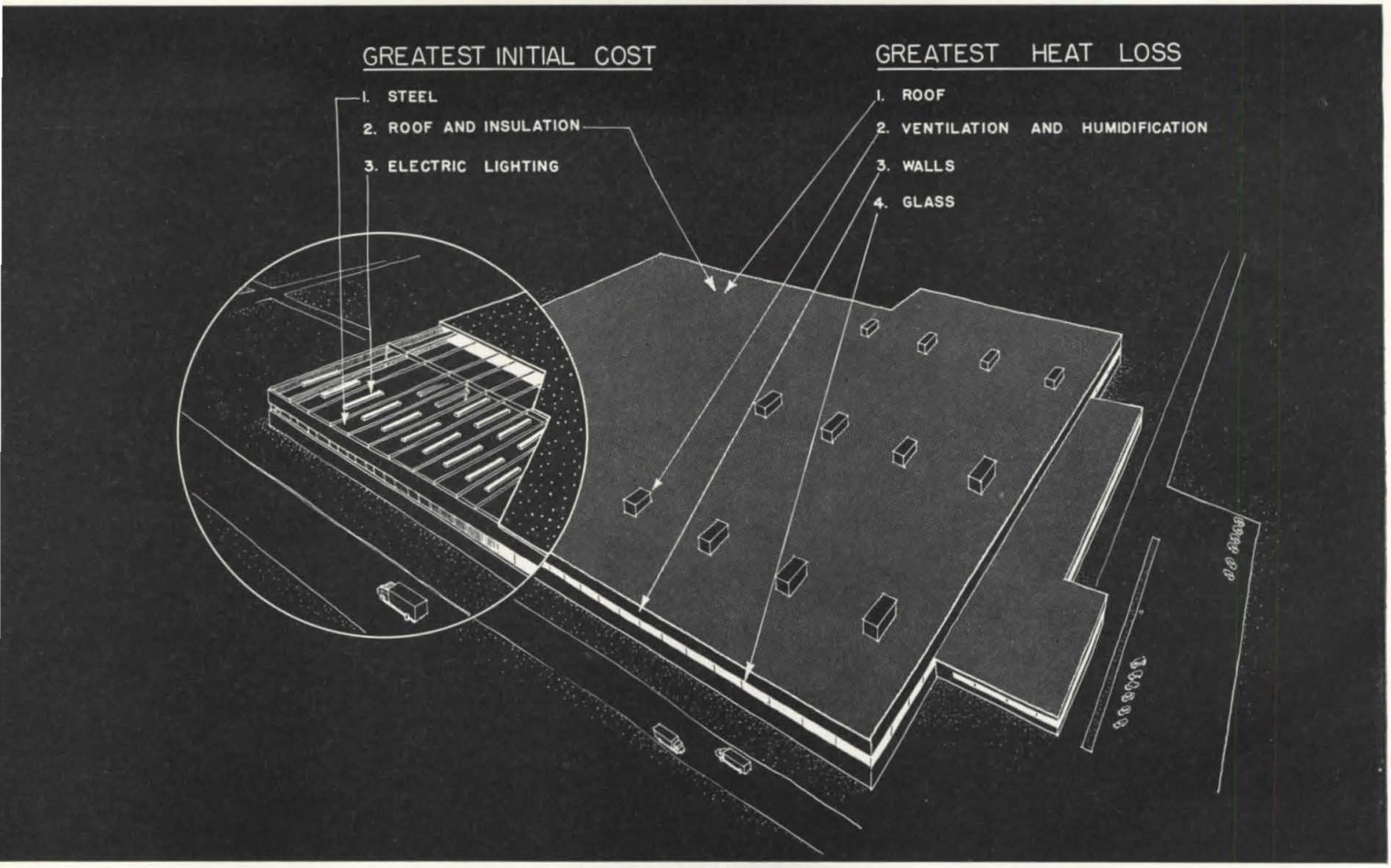

and from the shaft to the column by virtue of this design. The relative stiffness of the column and its integral connection with the slab at the head result in the efficiency of the hinge action in the socket at the base. Pea gravel was used to assure placement and compaction of concrete in the column reinforcement; such a workability had to be produced together with a strength of 5000 psi. This combination of requirements was achieved at a minimum cost for both materials and finishing by the following mix design for one cubic yard of concrete: portland cement, 6.92 sacks; sand, 1169 pounds; gravel, 1848 pounds dry; cement dispersing agent, 3.46 pounds; entrained air, 4.30 percent; total amount of water, 37 gallons. When forms were removed, paint was applied to the columns without the additional cost of finishing. Entrainment of air, with no loss in strength, provided a resistance to weathering necessary for an open structure of this type.

The independence of each unit building assures a freedom of movement through natural expansion joints occurring at the juncture between units. This independence also minimizes the effects of differential movement due to foundation settlement, bombing, or similar causes. Analysis of the unit design is generally complex and many assumption must be made.

From the standpoint of architectural planning, ideal unit dimensions depend on use requirements, floor loads, and the limitations resulting from developing identical unit buildings. In the New Orleans building, columns were spaced alternately on 16- and 32-foot centers to obtain economy in slab thickness and to meet, at the same time, the space requirements of the building.

### advantages

The unit building system of construction offers a number of advantages in buildings designed for industrial purposes that are not readily obtained through conventional methods. Low building costs and the minimum use of critical materials makes the use of this system particularly attractive in light of present-day conditions. The elimination of any need for load-bearing walls gives a desirable flexibility to planning arrangements and future partition changes.




# Lightweight Industrial Roofs

By WILLIAM J. McGUINNESS*

### the trend in roofs

So many industrial processes have flourished in one-story structures of large area *(typified by those shown in Figure 1)*, that the use of this kind of building has become widespread. In many of them, monitors have been eliminated or minimized and dependence for lighting has been put upon the constancy and control of artificial sources. Economy of heating has dictated the reduction of large glass areas and the strip-type window has been frequently substituted. Where air-conditioning is essential or desired, the struggle for a reduction of solar heat gain in summer has given further impetus to a decrease in the use of glass. The roof has become the largest single area and as such deserves special study.

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### cost, maintenance, and operation

A partial cost breakdown *(Figure 1)* shows that structural steel and roof construction are often the two largest individual items in the cost of a factory. Since the cost of steel is directly dependent upon the weight it supports, the roof may be said to govern the cost of the two most expensive items. While the approximate cost of various structural roof materials in place can be compared *(Table I)*, the final cost effect of any particular material will depend upon the amount of steel necessary to support its weight and the need for further insulation, acoustical treatment, a hung ceiling to provide fire resistance, or other related items. An individual study is required for each project and no general rules can be laid down; it is believed, however, that the tables shown will indicate the kind of data needed for such a study.

Beyond the original construction cost, the additional cost of maintenance, painting, and fuel to offset varying heat losses, comprises a problem which is not simple. Operating economy may often justify the purchase of a more expensive roof.

### span, weight, and bay size

Although the seven methods of providing effective roofs for industrial buildings illustrated *(Figure 2)* are representative of the most typical solutions available, many other structural insulating units may be used equally well. Span and dead load depend upon the live or snow load which ranges from 20 to (in extreme cases) 90 psf; statements made here relate to an average live load of 40 psf. There is no fixed rule governing span lengths; however, 3, 7, and 20 feet may be considered common possibilities for calcium-silicate tiles,

**TABLE I: COST**

Approximate cost per square foot for structural roof in place; roof membrane, insulation, beams, and hung ceiling not included in figure.

| | | |
|---|---|---|
| A | Steel roof deck | $0.30 |
| B | Lightweight concrete on metal lath | 0.38 |
| C | Lightweight concrete channel tile | 0.42 |
| D | Poured gypsum on insulation board | 0.43 |
| E | Lightweight concrete plank | 0.45 |
| F | Calcium-silicate tile | 0.55 |
| G | Reinforced concrete | 0.58 |

**Figure 1—the following cost analysis of a recently built industrial building (of the type shown acrosspage) itemizes the different trades in order of their relative cost:**

| | |
|---|---|
| 1. Steel | $309,000 |
| 2. Roof and insulation | 224,000 |
| 3. Electric lighting | 181,000 |
| 4. 24 other trades | 1,286,000 |
| Total | $2,000,000 |

**The hourly heat loss for a well insulated building of the same type was computed to be:**

| | |
|---|---|
| 1. Roof | 5,600,000 Btu/hr. |
| 2. Ventilation and humidification | 1,795,000 |
| 3. Walls | 1,080,000 |
| 4. Glass | 515,000 |
| Total | 8,990,000 Btu/hr. |

**TABLE II: WEIGHT AND SPAN**

| | | Weight in pounds per square foot; roof membrane, insulation, beams, and hung ceiling not included. | Approximate span in feet under average live load. |
|---|---|---|---|
| A | Steel roof deck | 3 | 7 |
| F | Calcium-silicate tile | 6 | 3 (with sub-purlins, 7) |
| D | Poured gypsum on insulation board | 10 | 3 (with sub-purlins, 7) |
| C | Lightweight concrete channel tile | 12 | 6'-8" |
| E | Lightweight concrete plank | 13 | 7 |
| B | Lightweight concrete on metal lath | 15 | 2'-6" (with sub-purlins, 7+) |
| G | Reinforced concrete | 50 | 7 to 10 |

masonry planks or channels, and steel decking respectively. Types B, D, and F *(Figure 2)* span 2'-6" and 3' as units, and with the use of sub-purlins are effective for seven foot assemblies. This dimension relates them to the other four slab-types which are also in the seven-foot range. Such a span suggests two purlins for a 21-foot square bay. A deep, cellular steel roof panel is good for 20 feet *(Figure 4)*; prestressed concrete units will also span a 20-foot bay with ease. Both methods provide simple and attractive ceilings, although they are somewhat more expensive. Returning to seven feet as an optimum length for a slab unit, the dead weights listed *(Table II)* will be constant for the slab, provided it is supported at seven-foot intervals. As long as the seven-foot purlin spacing is held, the column spacing may be 20 feet, 50 feet, or even more, with the use of trusses. Wider spacings, of course, increase the weight of structural steel.

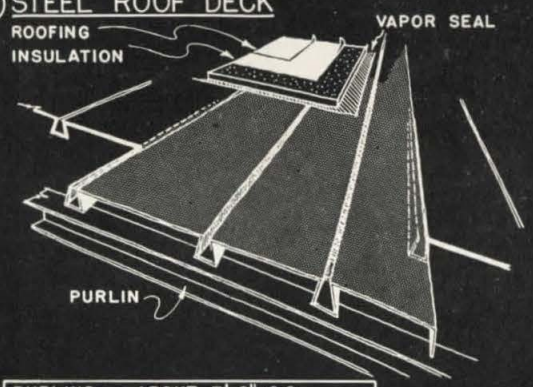
The lightness of steel deck is a significant design consideration *(Table II)*. Next in weight efficiency are calcium-silicate tiles. Masonry planks and thin-poured masonry (with sub-purlins) are somewhat heavier and weigh about 12 pounds per square foot. Shown for comparison, but less frequently used, is the four-inch reinforced-concrete slab. When it is realized that its weight is about 15 times that of steel deck and four times that of masonry plank, the reason for its infrequent use is apparent.

### field assembly

An informative picture of the site-fabrication of poured gypsum on glass-fiber form-board is shown *(Figure 3)*. Cross tees supplement the rail-type sub-purlins to support the form-boards on all four edges. Note that the workmen do not stand on the units. Reinforcement and poured gypsum, when set, carry the weight of live load to the sub-purlins. The board, after its job of supporting the dead load of the fluid gypsum is done, remains as a ceiling finish with acoustical benefits. Plank, channel, and deck materials are light enough to be carried to position by workmen, without the need for mechanical transportation along the roof. They have the additional advantage of being dry construction and can be placed without the winter weather protection needed for poured-in-place masonry. Fastening is accomplished by welds or clips.

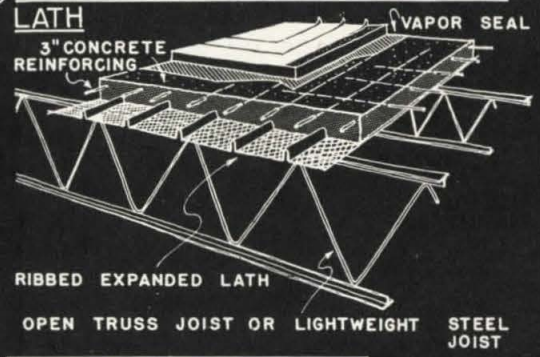
Metal-edged gypsum and lightweight concrete planks are often used in 10-foot lengths to span two to four feet. They are end- as well as edge-matched with tongues and grooves and need not terminate on a purlin. They are readily adaptable and easily cut. In some cases, plank or channel material is specified to coordinate standard plank length and purlin spacing for fast installation on large areas. Here the slabs bear for two inches on each half of a four-inch purlin flange. With the exception of reinforced concrete, the slab types discussed have no need whatever for temporary formwork. The two poured types, B and D *(Figure 2)* make use respectively of metal lath to receive the relatively dry mix of the lightweight concrete and insulating board to receive the gypsum. In both cases

## (A) STEEL ROOF DECK



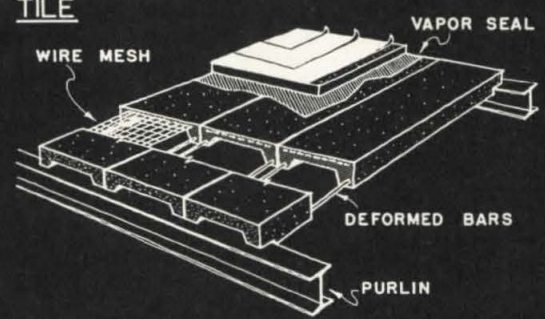

PURLINS = ABOUT 7'-0" O.C.
STEEL DECK = 18" X 1½" X VARIABLE

## (B) LIGHTWEIGHT CONCRETE ON METAL LATH



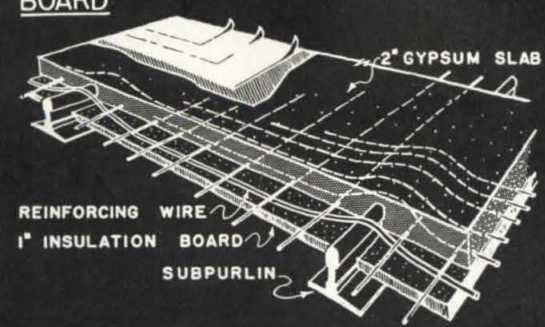

OPEN TRUSS JOIST } = 2'-6" O.C.
LIGHTWEIGHT " }

## (C) LIGHTWEIGHT CONCRETE CHANNEL TILE



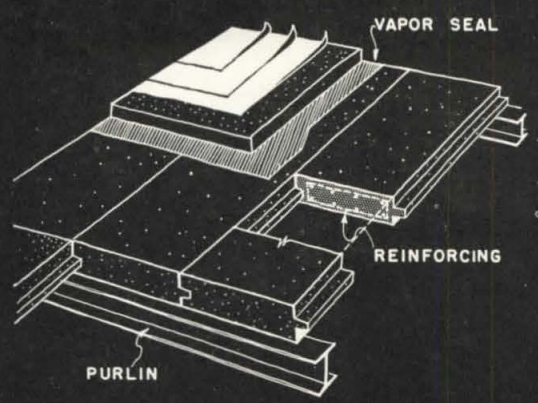

PURLINS = ABOUT 6'-8" OR 8'-0" O.C.
CHANNEL TILES = 24" X 2¾" X 6'-8"
24" X 3½" X 8'-0"

## (D) POURED GYPSUM ON INSULATION BOARD



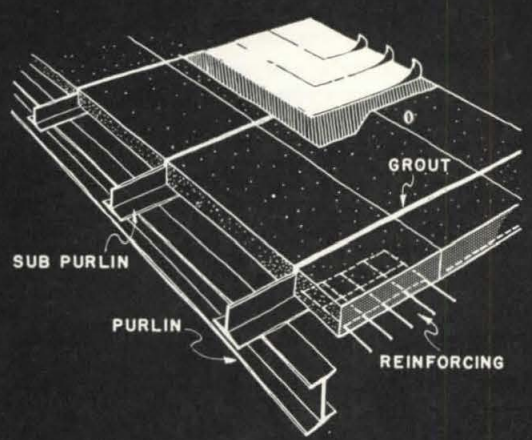

MAIN PURLINS = ABOUT 7'-0" O.C.
SUB PURLINS = " 2'-6" O.C.

## (E) LIGHTWEIGHT CONCRETE PLANK



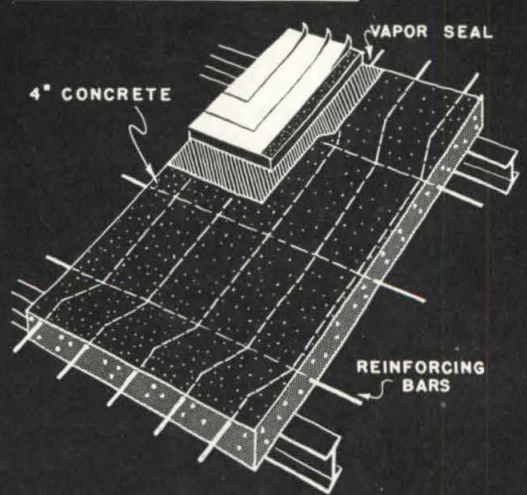

PURLINS = 7'-0" O.C.
CONCRETE PLANKS = 16" X 2" X 7'-0"

## (F) CALCIUM SILICATE TILES




PURLINS = ABOUT 7'-0" O.C.
SUB PURLINS = 36" O.C.
TILES = 18" X 2⅝" X 36"

## (G) REINFORCED CONCRETE




PURLINS = ABOUT 7'-0" O.C.

Figure 2

the form material remains in place, the lath for its structural value and the form board as a ceiling finish.

### heat transmission and condensation

Under heating-design conditions of adequate inside temperature and average low outside temperature, heat flow and the fuel bill depend upon the U-factor of the roof. This measure of heat loss must be kept as low as possible, consistent with reasonable control of installation cost. A glance at Figure 1 shows that heat loss in a well-insulated roof is three times as much as the next smaller item, that of warming the ventilation air. The losses through the relatively small areas of wall and glass are almost negligible by comparison. Steel deck with no insulation will transmit five times as much heat as gypsum poured on rigid insulation board *(Table III)*. Rigid insulation one inch in thickness has a strong equalizing effect on all roofs and reduces the comparison factor from five to two. The addition of another inch further reduces the heat losses and cuts the comparison factor to 1.6.

Good insulation also assures comfort conditions in summer and greatly reduces the heat-gain load that would otherwise tax an air-conditioning system. When winter operation includes humidification Table IV may be used to establish the U-factor needed to prevent condensation on the underside of the roof surface. Uninsulated masonry-plank or steel deck roofs with U-factors ranging from .70 to .90 Btu/hr/sq. ft./deg. F will cause condensation at the very low figures of 20 to 35 percent relative humidity; these percentages will almost always be exceeded in the normal operation of winter air conditioning. Condensation in the rigid insulation must always be prevented by a vapor seal above the structural slab.

**Figure 3—glass-fiber form boards in the roof of the White Laboratories plant (above) not only support poured gypsum but also provide thermal and acoustic insulation.**
***Photo: courtesy Owens-Corning Fiberglas Corp.***

**Figure 4—deep, steel, building panels will span 20 feet (*right*); their relatively light weight conserves structural steel by allowing lighter supporting members.**
***Photo: courtesy Detroit Steel Products Co.***

### fire resistance

There is seldom any objection to the use of exposed steel in the roofs of

**TABLE III: HEAT LOSS TRANSMISSION**

U-factor, Btu/hour/square foot/1° F difference in temperature, indoors and outdoors; roof membrane included, but not ceiling.

| | | No additional insulation | 1" rigid insulation | 2" rigid insulation |
|---|---|---|---|---|
| D | Poured gypsum on insulation board.... | 0.19 | 0.12 | 0.09 |
| F | Calcium-silicate tile ..... | 0.19 | 0.13 | 0.10 |
| E | Lightweight concrete plank ..... | 0.54 | 0.20 | 0.13 |
| C | Lightweight concrete channel tile ..... | 0.66 | 0.22 | 0.13 |
| B | Lightweight concrete on metal lath .... | 0.69 | 0.22 | 0.13 |
| G | Reinforced concrete ..... | 0.72 | 0.23 | 0.13 |
| A | Steel roof deck ..... | 0.95 | 0.25 | 0.14 |
| | Comparison factor, greatest loss/least loss. | 0.95/0.19=5 | 0.25/0.12=2.1 | 0.14/0.09=1.6 |

**TABLE IV: CONDENSATION**

Relative humidity at which condensation will start for various U-factors (see Table 3) at the fixed conditions of 70° F indoors, 0° F outdoors.

| U-factor | Relative humidity % |
|---|---|
| 0.10 | 87 |
| 0.20 | 77 |
| 0.30 | 64 |
| 0.40 | 56 |
| 0.50 | 47 |
| 0.60 | 40 |
| 0.70 | 35 |
| 0.80 | 30 |
| 0.90 | 20 |

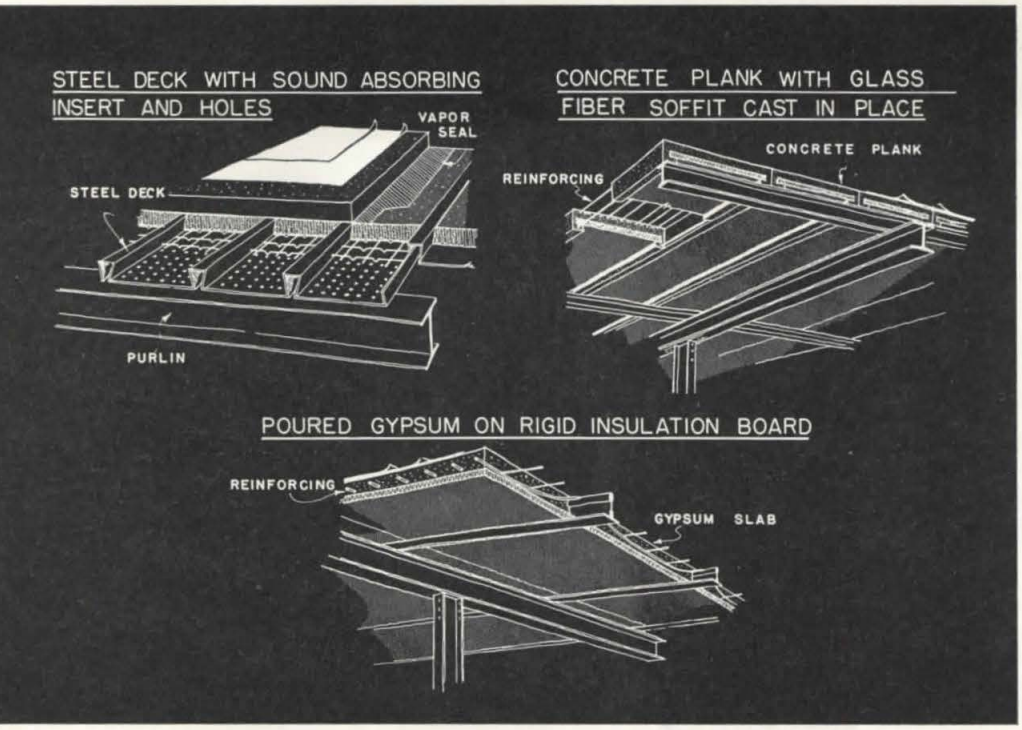



**Figure 5—three roof construction methods (*left*) that reduce sound level by 75%.**
***All drawings: Raniero Corbelletti***

**TABLE V: FIRE RESISTANCE**

Fire retarding needed to assure a "1-hour +" fire rating.

| | | |
|---|---|---|
| A | Steel roof deck | Entire ceiling |
| B | Lightweight concrete on metal lath | Entire ceiling |
| F | Calcium-silicate tile | Sub-purlins and beams |
| D | Poured gypsum on insulation board | Sub-purlins and beams |
| C | Lightweight concrete channel tile | Beams |
| E | Lightweight concrete plank | Beams |
| G | Reinforced concrete | Beams |

one-story industrial buildings, as most codes do not require the fire-retarding of steel members in this situation. Where especially hazardous occupancy suggests a construction having one or several hours fire resistance, attention must be given to the fire-resisting qualities of the several roof materials; a complete fire-resisting hung-ceiling will solve the problem. In the cases of steel deck and lightweight concrete on metal lath such a ceiling would be necessary. All of the other materials have inherent fire-resisting qualities and it would only be necessary to *fire-retard* the purlins or to select precast concrete beams to support the roof slabs.

#### acoustic properties

If a reduction in the sound intensity level is desired, three possible solutions are suggested *(Figure 5)*. Each is equally effective, cutting down the sound level by 75 percent. Steel decking may be inverted without loss of strength, and insulating elements set on shallow wire chairs in the gaps thus created. Holes in the deck permit sound to enter the acoustic space and be absorbed. Concrete plank can be precast with a glass-fiber soffit element to form a sound-absorbing ceiling. This plank is set and fastened in the conventional manner. Another construction method incorporates rigid insulation board as a form for poured gypsum. Sometimes gypsum board is used for forming. This a more economical construction than using glass-fiber form-board, but it is less efficient in both acoustic and thermal performance. Needless to say, construction having sound-reduction qualities will also have a desirable, low U-factor of heat transmission. Soft surfaces are not the easiest to maintain, consequently steel decking may prove to be most saisfactory from the point of view of maintenance; it is the easiest to paint without diminishing its acoustic effectiveness. None of these as shown have any fire-resistive value, if steel purlins and sub-purlins are used. The combination of acoustic and fire-resistive values calls for the addition of precast concrete beams or a hung ceiling of established fire rating with an applied acoustic material below.

#### general utility

Each system has values that prove its usefulness in a particular application. For lightness, steel deck undoubtedly excels. Resistance to heat flow without further insulation is high with either calcium-silicate tiles or poured gypsum on insulating board. All others will need insulation above the slab. Concrete plank presents the flattest, most unbroken surface and need not be painted, thus minimizing maintenance. It also presents the largest fire-resistive surface.

# Precipitator Eliminates Incinerator Flue Smoke

In a recent talk before the New York Chapter, A.I.A., William G. Christy, Director of the New York City Smoke Control Bureau, revealed that "more than 75 percent of today's smoke is due to carelessness in the design, fabrication, installation, operation, and maintenance of fuel and refuse burning equipment." Christy also explained that "an additional cause of excessive smoke is that many operators do not know how to fire properly or how to maintain their equipment."

It has been estimated that the average city family is responsible for more than one gallon of soot, fly-ash, and trash per day, emanating from incinerator flues. For New Yorkers, this means that over a million gallons of unwarranted dirt from burning refuse alone litters their roof tops, streets, apartment floors, etc., daily—unless some method of smoke abatement is observed.

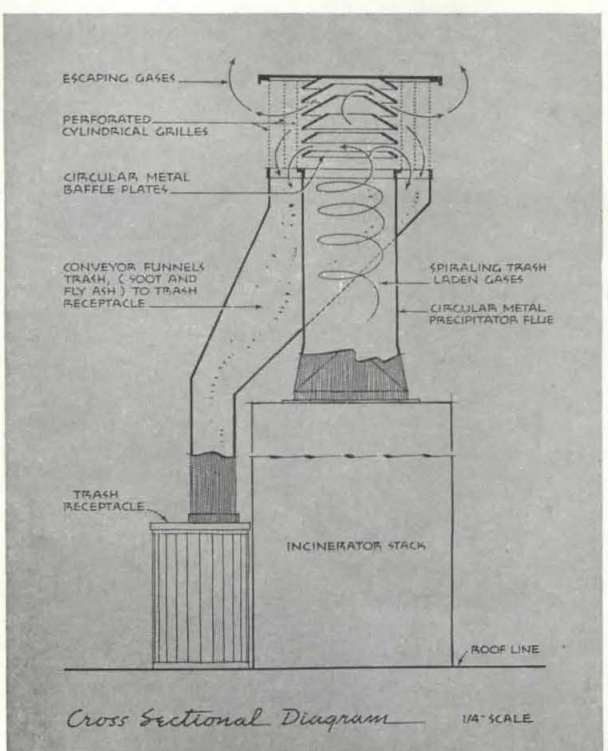
An effective, relatively inexpensive device (containing no machinery, motors, or other moving parts), has now been developed which removes practically all soot, fly-ash, and trash from an incinerator flue (see illustrations). Known as a precipitator, this patented device operates in the following manner: after leaving the incinerator flue, the characteristic spiraling movement of the trash-laden gases is accelerated by the circular throat of the precipitator. Centrifugal pressure forces the gases against baffle plates anchored above. The safety and efficiency of operation is increased by these plates as they prevent downdraft and backflash, by deflecting the winds. These baffles, truncated cones graduated in size and spacing, also direct the expanding gases downward so that they can escape through perforated grilles. At the same time, solids are collected and funneled through a conveyor to a conveniently located trash receptacle.

The efficiency of this device is not dependent upon weather conditions. Any snow or sleet that collects on the precipitator is quickly melted when the furnace is fired; similarly, dampness caused by rains is readily dried out. Remoteness of this equipment from the furnace grates allows a cooling of the trash-laden gases which greatly assists precipitation of the solids.

Installation can be accomplished without interruption of the furnace and in almost all instances without alteration of the existing structure. No maintenance is required.

Convincing demonstrations have won the approval of most spectators and the device is said to have been presented to the New York City Board of Standards and Appeals for approval. When full approval is obtained, fabrication will be started by the Siegel Spark Arrester Corporation, 15 Cooper Square, New York 3, N. Y. Although the precipitator can be made of copper or aluminum to advantage, the first ones to be marketed will probably be made of galvanized sheet iron, because of current shortages.

**The efficiency of this device (above) is not dependent upon weather conditions. Cross section (right) illustrates method of assembly and principle of operation.**



# p/a products

## translucent, shatterproof panels made of polyester resins

Skylights constructed of Resolite, translucent structural panels, improve the quality of interior lighting by the efficient diffusion of daylight. These shatterproof sheets, which are composed of polyester resins and reinforced with Fiberglas mat, are molded in all standard roofing sheet corrugation sizes, in addition to a flat surface finish. Corrugated sheet buildings require no special skylight framing where Resolite is installed, the sheets nesting with metal or asbestos-cement sheets.

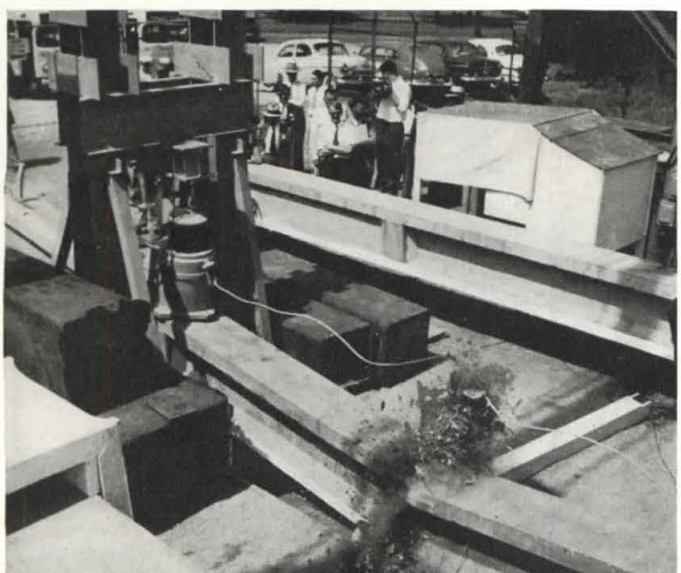
The material, which is inert to weather conditions of heat, cold, and moisture, is also practicable for partitioning of offices, corridors, and shower stalls; a selection of six stable colors lends it to still other uses in marquee, porch, and patio covering, lighting panels, bar facing and similar decorative applications. Resolite Corp., Zelienople, Pa.

## septic tank meets all requirements of new commercial standard


All requirements of the new Commercial Standards CS 177-51 for Metal Septic Tanks are complied with in the Sani-Equip Company's #1050 Master Septic tank, which incorporates the latest design elements developed by contemporary sanitary engineering. Constructed of 14-gage steel, with electrically welded seams, the new tank is coated with a special bituminous emulsion on the inside surface, in addition to the hot-dipped mineral asphalt coating applied both inside and out; the manufacturer reports that the added inner coating should add years of trouble-free service to the life of the tank. An access opening at the top of the unit facilitates inspection and permits pumping out without costly digging. Intake and outlet openings are located at both ends, each correctly baffled to reduce any possibility of clogging. Proportions of the tank—length twice the width, with a four-foot liquid depth holding a 500-gallon capacity—are considered most satisfactory for the thorough settling out and digestion of solids. Sani-Equip Corp., Inc., E. Brighton & Glen Aves., Syracuse 5, N. Y.

## The Austin Company tests 40′ prestressed concrete beam

Indicative of the interest that is developing in prestressed concrete, one hundred and fifty engineers witnessed one of the recent tests conducted by the Austin Company, at its Bliss Mill Division, showing the collapse of a 40-foot prestressed concrete beam under nearly four times its design load of 30,000 lbs.



The break came after a load in excess of 117,000 lbs. was applied at two points by hydraulic jacks; a deflection of more than 4″ was then noted. The beam showed a deflection of 2-7/16″ under 99,000 lbs.; however, it recovered all but ½″ when this load was removed. With the load off, hair-cracks which had formed after a pressure of 70,000 lbs., completely disappeared. The design used by Austin engineers in the beam was developed by Freyssinet Co., Inc., of New York, American affiliate of the French firm which has been a leader of prestressed concrete techniques.

Despite its valuable characteristics—it requires only 20 to 25% as much steel as comparable steel and reinforced concrete buildings, has elasticity, and eliminates cracks—the use of prestressed concrete has been almost entirely limited to tanks, a few bridges, a few miles of highway pavement, and small structural elements. The Austin Company's tests are among the first serious attempts in this country to explore its potentialities in the commercial and industrial fields.

## air and temperature control

**Gas Conversion Burner:** single-port, up-shot type designed for furnace or boiler installation to meet all domestic heating requirements. Will burn natural, mixed, manufactured, and LP gases; operates quietly, with input rating ranging from 60,000 to 300,000 Btu per hour. Extra burner orifices supplied for changing to vary gas input. Borg-Warner Corp., Ingersoll Products Div., 760 E. Vine St., Kalamazoo, Mich.

**Weathermakers:** central system "zoning" air conditioners, providing independent conditioning in separate areas of building through single unit. Damper control for separate zones is provided through double outlet arrangement, with one outlet supplying cool, dehumidified air and the other supplying warm air. Five sizes, with conditioning capacities of from 12 to 58 tons, servicing from 5 to 14 zones, according to size of system. Carrier Corp., 300 Geddes St., Syracuse, N. Y.

**Interchangeable Oil or Gas-Fired Winter Air Conditioning Furnaces:** designed for changing from one fuel to another, when necessary; oil-fired unit incorporates flange-mounted, atomizing, gun-type burner, *while gas-fired unit is* equipped with single port, fountain type gas burner. Large centrifugal-type blowers with adjustable motor pulleys allowing for continuous air circulation are standard equipment. Capacities range from 80,000 to 125,000 Btu. J. L. Gillen Co., 12202 Wormer Ave., Detroit 28, Mich.

**Glomaster:** portable, infrared, electric heater, 12" wide, 19" high, features safety switch, which turns off instantly if heater is overturned. Heat element will not burn out, is unaffected by splashed water; asbestos, insulated wiring used throughout. Case made of alloy steel, finished inside and out so that there are no surfaces to rust. Rated at 1000w. Glo-Ray Heater Co., Pomona, Calif.

**Climatrol High-Boy Gas and Oil Winter Air Conditioners:** four new models, including two counterflow units, rated at 110,000 Btu, developed especially for low-cost housing. Welded-steel heat exchanger with square, wrap-around radiator, is easily cleaned through front clean-out patches. Large blowers permit slower blower speeds and quiet operation. Units are completely convertible from oil to gas, or reverse. L. J. Mueller Furnace Co., 2005 W. Oklahoma Ave., Milwaukee, Wis.


**Exide Lightguard: emergency lighting unit, about size of portable typewriter, will illuminate 4000 sq. ft. of floor area, in case of light failure. Adjustable lamp will furnish light continuously, in any direction desired, up to six hours. When unit is not in use, its battery is kept fully charged from regular electric circuit, to which it is always plugged. When normal power is restored, relay automatically turns off floodlight and switches on charging unit. Electric Storage Battery Co., 42 S. 15 St., Philadelphia 2, Pa.**

## construction

**Flextite:** new stabilizing ingredient added to Flextite (liquid chemical to be mixed with cement or cement and sand) provides mortar with faster action in sealing off severe, fast-flowing leaks and water seepage in concrete walls. Will set in matter of minutes, even against hydrostatic pressure. Material also recommended for plaster-coating walls, above or below ground; for pointing up spalled areas; and for converting wet, damp basements into dry, useful space. Flexrock Co., 3609 Filbert St., Philadelphia, Pa.

**Chan-L-Cros Metal Cross Bridging:** structural braces offer new method of bridging wood joists that provides greater floor strength and cuts building costs. Product is made of ¾", 16-gage strip steel, with patented flanges to give it extra rigidity and strength for superior load carrying. Easily and permanently applied by nailing brace ends to top and bottom edges of joists; braces are flexible enough to fasten off-center joists as securely as those precisely placed. In three standard sizes for use with 8", 10", and 12" joists. Junior-Pro Products Co., 3206 Morganford Rd., St. Louis 16, Mo.

**Drive-Lok System:** extremely lightweight, prefab form used for installation of suspended-type ceiling utilizing insulation and acoustical-panel materials. Consists of only two types of parts: metal T-bars and metal clips for all assembly work. T-bars are hung on suspension wires from ceiling structure so as to form grid work; and tied together at intersections with clips, to form continuous tie from wall to wall in both directions. Patented locking method requires no carrying channels, special tools, or nuts and bolts. Lok-Products Co., 4877 San Fernando Rd., W., Los Angeles 39, Calif.

**Plastic Armored Metal Tubing:** addition of square, triangular, oval, and streamlined shapes to standard line of round tubing, in large variety of sizes, colors, and finishes. Many industrial applications, such as in crowd-control rails, instrument lines, electrical conduit, furniture, etc. Tubing will not chip, peel, or flake, is corrosion resistant, free from static electric shock and can be given any desired dielectric properties. Samuel Moore & Co., Mantua, Ohio.

**Quonset Long-Span:** prefab structure, framed with cold-formed strip-steel members, available in wide range of widths and lengths, suitable for most industrial and commercial requirements. Interior columns are 40' apart along building's depth and 35'-6" apart across its width, providing clear-span space for manufacturing and warehousing; ample height for equipment such as boilers, furnaces, or dry kilns. Side walls are straight, may be ordered with standard doors or equipped in the field with overhead or other special doors, as desired. Stran-Steel Div., Great Lakes Steel Corp., Ecorse, Mich.

## doors and windows

**Storm-Screen Combination:** addition of storm-screen combination forms complete unit of company's pressure-seal window. Full length screen is reinforced by narrow, aluminum, center bar; two storm panels fit into screen from inside and are held in place by thumb-operated fasteners. Andersen Corp., Bayport, Minn.

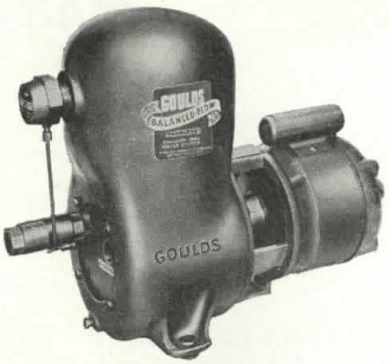
**Steel Casing:** casing designed for door and window trim, features spring clip that expands as wall board is inserted and then clamps it tight, assuring rigidity and flush fit after casing is nailed to framing. Easy to cut, forms perfect miter corners, making for faster installation. Drywall Trim, Inc., 545 Fifth Ave., New York 17, N. Y.

## electrical equipment, lighting

**Packaged Powerstat Dimmers:** redesigned assemblies of 2000w series now available in packages of 3, 4, 5, and 6-unit dimmers, each operated by vertical hand levers with graduated drums; also levers can be interlocked for master control from one lever. Each dimmer has its own on-off switch and circuit-breaker, card holder for circuit identification, and pilot light. Units said to offer greatest flexibility for innumerable light dimming applications. Superior Electric Co., Bristol, Conn.

## finishers and protectors

**H2-O-NO:** clear silicone-based liquid water repellent for exterior masonry surfaces, said to keep water out of masonry effectively for periods up to five years; does not plug up pores or prevent transpiration of air. Chem Industrial Co., 1114 Hippodrome Bldg., Cleveland 14, Ohio.




**Close-Cupld Balanced-Flow Jet Pump: complete, self-contained, shallow-well water system for domestic use, operates without tank. Self-adjusting capacity device provides fresh running water in quantity desired, no matter how many outlets are in use at same time. Permanent alignment, quiet operation, and freedom from wear are assured. All cast-iron parts touched by water are treated to resist rust. Pump can be installed almost anywhere, since it measures only 20" x 11½" x 15" over-all. Goulds Pumps, Inc., Seneca Falls, N.Y.**

## sanitation, water supply, drainage

**Gas-Fired Incinerator:** automatic, heavy-duty unit designed to handle disposal of wet or dry garbage and refuse in stores, institutions, clinics, small apartment houses, and multiple dwellings. High input of 40,000 Btu provides fast, complete combustion; thermocouple shut-off control serves as protection against gas and flame failure. Capacity of 4 bushels. Bowser, Inc., Cairo, Ill.

**Special Water Closet Fittings:** designed to prevent losses of clothing and clogged drainage lines frequently occurring in mental institutions and in prisons, where inmates flush clothing and other materials into drainage lines. Four-inch cleanout affords quick and easy access to drainage line at point where such access is needed without removing fixture or disassembling any part of drainage line in order to clear obstruction. Fittings may be used to mount wall-type closets of any manufacture. J. A. Zurn Mfg. Co., Erie, Pa.

## specialized equipment

**De Luxe Refrigerators:** two new additions to appliance line include porcelain-finished model (DO-90P) with capacity of 9 cu. ft., storage room for 46 lb. of frozen food in full-width freezer chest; other model (SO-92) contains 9.2 cu. ft. storage space, with freezer holding up to 29 lb. of frozen food. Both units feature acid-resisting porcelain interiors, rust-proof shelves, and are provided with meter-miser refrigerating units. General Motors Corp., Frigidaire Div., 300 Taylor, Dayton 1, Ohio.

**Projection Screen:** permits movie and slide projection in lighted rooms; blinds and windows may be left open and normal ventilation retained in rooms where darkening equipment is difficult or too expensive to install. Unit has unbreakable, wide-angle projection surface, is equipped with doors which protect surface and permit safe storing. Viewing surface measures 40" x 40"; total weight is less than 22 lb. Chain at top of screen makes it possible to tilt screen so that entire audience enjoys perfect viewing angle. Radiant Mfg. Corp., 2627 W. Roosevelt Rd., Chicago 8, Ill.

**Leva-Dock:** adjustable loading dock ramp, for use with power trucks, utilizing retractable supporting arms and laterally adjustable throw-over bridge for greater utility and faster operation. New construction makes it possible to load directly into or unload without using steel plates, bridge ramps or other equipment. Platform automatically keeps level with bed of truck, as truck springs are relieved or compressed during loading or unloading. Ramp will take loads up to 10,000 lbs., is operated by electric power unit which will handle as many as nine ramps, each independently controlled by simplified system. Rotary Lift Co., Box 2177-A, Memphis 2, Tenn.

# MANUFACTURERS' LITERATURE

★ *Editor's Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

### air and temperature control

**1-130. Airtherm Convectors,** AIA 30-C-4 (702A), 16-p. illus. catalog featuring line of convectors for schools, institutions, apartments, homes, offices, and public buildings. Types, roughing-in dimensions, piping-connection diagrams, steam and forced-circulation hot-water capacity tables, typical specifications. Airtherm Mfg. Co., 700 S. Spring Ave., St. Louis 10, Mo.

**1-131. Air Distribution for TV Studios (F-4712),** 4-p. illus. pamphlet. Wide variety of quiet, draftless air-distribution equipment and accessories shown in actual installation photos. Types, descriptions. Barber-Colman Co., Rockford, Ill.

**1-132. Frigidaire Electric Dehumidifier** (322), 4-p. illus. bulletin giving advantages of compact dehumidifier, 18¼" high, 20½" deep, 11¾" wide, which reduces and controls humidity in any enclosed area up to 8000 cu. ft. (equal to 20' x 50' room with 8' ceiling). Operating principle, specifications. Burrell Corp., 2223 Fifth Ave., Pittsburgh 19, Pa.

**1-133. Marlo Remote Room Air Conditioners** (1149), 4-p. bulletin on line of remote room air conditioners designed for cooling, heating, ventilating, and filtering in multi-room installations. Performance data, capacity tables, specifications. Marlo Coil Co., 6135 Manchester Rd., St. Louis 10, Mo.

★ **1-134. Centravac** (DS-399), 44-p. illus. bulletin reporting full capacity and design data for selection of hermetic, centrifugal refrigeration units with capacities ranging from 45 to 200 tons. Mechanical specifications, roughing-in dimensions, outline of operating cycle and lubrication, purge and control systems. Trane Co., La Crosse, Wis.

**1-135. Practical Pointers on Air Conditioning** (1059), 16-p. booklet. General discussion of conditioned air, with chart illustrating temperatures and relative humidities applicable to industrial air conditioning; types of standard units for specific application in built-up air conditioning systems. U. S. Air Conditioning Corp., Como Ave. S.E. & 33 St., Minneapolis, Minn.

**1-136. Heating the Home** (G3.1), 12-p. revised circular containing non-technical information on various central heating systems and their requirements for maximum efficiency. Installation diagrams shown of each system; illustrations and descriptions of room heating units—radiators, convectors, baseboard panels. Small Homes Council, Mumford House, University of Illinois, Urbana, Ill. (10¢ per copy; pay directly to Small Homes Council.)

**1-137. Package Unit Vault Conditioners** (6570), 4-p. folder. Description of refrigerating and dehumidifying units for use with individual fumigating and ventilating systems in fur storage vaults; special model incorporates fumigation and ventilation as well as automatic cooling and dehumidifying, all in one unit. Advantages, cut-away illustration; also, fur cleaning and storage equipment briefly described and illustrated. Reliable Machine Works, Inc., 230-240 Eagle St., Brooklyn 22, N. Y.

### construction

**3-113. Lumnite, Overnight Concrete** (PP), 20-p. booklet on calcium aluminate cement used for making structural concrete with full service strength in less than 24 hours, even in freezing weather. Methods for making concrete, proportions of mix, curing; summary of suggestions for using Lumnite cement, typical industrial uses of corrosion-resistant concrete, made of Lumnite and specially selected aggregate. Universal Atlas Cement Co., Lumnite Div., 100 Park Ave., New York, N. Y.

**3-114. Figured Glass by Mississippi,** 20-p. booklet demonstrating use of glass, in wide variety of patterns and surface textures, for practical modernization of offices, banks, stores, restaurants, and institutions. Contains nearly 100 photos illustrating partitions and decorative applications of material in business and industrial areas. Mississippi Glass Co., 88 Angelica St., St. Louis 7, Mo.

**3-115. Gypsum Lath and Plaster Partition,** AIA 20-B-21 (994), 10-p. booklet describing 2" solid gypsum partition; is secured to floor, ceiling, and vertical intersections by means of metal attachments, requiring no studs; adaptable to any type of building for non-load-bearing partitions not exceeding 12' in height. Specification data, elevation and detail drawings, installation photos, advantages. National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y.

**3-116. Robinson Vitrified Clay Pipe** (R-751-6), 4-p. bulletin. Illustrations and details of clay products, including various forms of pipe for different requirements, flue lining, chimney tops and bases, meter boxes, wall coping, and septic tanks with burned-in baffles. Sizes, dimensions, weights. Robinson Clay Product Co., 65 W. State St., Akron 9, Ohio.

**3-117. Porcelain-Enamel,** 18-p. booklet describing uses and advantages of porcelain enamel. Photos show products and applications of material. Porcelain Enamel Institute, Inc., 1010 Vermont Ave., N.W., Washington 5, D. C.

**3-118. Brick and Tile Construction,** AIA 3-L (Vol. 2, No. 7), 4-p. folder. Technical notes on mortars for unit masonry. Types of mortar, recommended uses, properties, proportion methods, materials used as ingredients, properties, sampling and testing, costs of tests. Structural Clay Products Institute, 1520 18 St., N.W., Washington, D. C.

### doors and windows

**4-125. Hollow Metal Doors, Jambs and Trim** (1951), 12-p. catalog. Hollow-metal door designs, standard construction details, dimensional drawings, types of louvers, underwriters' data, saddle and weathering conditions, specifications. Aetna Steel Products Corp., 730 Fifth Ave., New York 19, N. Y.

**4-126. Fenestra Adds Maintenance-Free Durability,** AIA 16E (TE-10), 12-p. brochure describing step-by-step procedure of hot-dip galvanizing of steel windows for maximum durability. Advantages, specification. Detroit Steel Products Co., 3209 Griffin St., Detroit 11, Mich.

**4-127. Aluminum Windows,** 4-p. folder on horizontal sliding aluminum windows, incorporating new design features, including provisions for locking in closed and 1", 2", and 3" open positions. Construction details, sizes and types, installation details, engineering data. Peterson Window Corp., 1371 E. Eight Mile Rd., Ferndale 20, Mich.

### electrical equipment, lighting

**5-88. Pres-SURE Connectors** (750), 4-p. folder describing line of Underwriters' approved, solderless connectors for splicing and terminating of electrical wires. Detailed descriptive data, installation instructions, ordering information. Buchanan Electrical Products Corp., Hillside, N. J.

**5-89. Higher Output at Lower Cost** (A287), folder describing new 3000w electric plant, powered by air-cooled Diesel engine; push-switch control for electrical cranking, manual compression

release, and electrically heated glow-plug for cold weather starting are provided. Design features. D. W. Onan & Sons, Inc., 2500 University Ave., S.E., Minneapolis, Minn.

**5-90. Dependable Controls** (4). Catalog containing group of technical bulletins describing and illustrating standard automatic and semi-automatic engine controls and control panels. Types, operation, general instructions for mounting and hooking up, service and adjustment, mounting dimensions. Synchro-Start Products, Inc., 1046 W. Fullerton Ave., Chicago 14, Ill.

### finishers and protectors

**6-44. Sanitation Hand-Book,** 48-p. catalog on products for cleaning, finishing, and maintenance of commercial and industrial floors; other products such as deodorants, disinfectants, insecticides, soaps, etc., for use in public areas. Descriptions, advantages, table of contents. Huntington Laboratories, Inc., Huntington, Ind.

**6-45. Pressure Treated Wood,** 4-p. folder outlining properties of lumber treated with fire-retarding, decay and termite resisting preservative. Types of treatment, advantages, suggested specifications. Protexol Corp., 16 E. 43 St., New York 17, N. Y.

### insulation, (thermal, acoustic)

**9-58. Insulation Products** (SR-502), 4-p. brochure. Descriptions and uses of structural and decorative insulation board, and insulating wool made of Fiberglas. Product data. Flintkote Co., 30 Rockefeller Plaza, New York 20, N. Y.

**9-59. Perforated Asbestos and Zerocel Wool,** AIA 39-B (915), 4-p. illus. pamphlet demonstrating acoustical system constisting of perforated-asbestos panels combined with sound-absorbing wool pads, for mounting on wood or metal suspension system; designed to meet unusual conditions for which other acoustical materials are not suited. Description, sizes, thicknesses, sound absorption data, specifications. National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y.

**9-60. Coralux** (651220), 4-p. illus. bulletin on lightweight acoustical plaster made of perlite aggregate; additional data on finish coat aggregate. Mixing and application directions, sound-absorption test table, advantages. F. E. Schundler & Co., Inc., 504 Railroad St., Joliet, Ill.

### sanitation, water supply, drainage

**19-185. Catalog 60** (248), 12-p. featuring instantaneous water heaters and other fluid heating units for industries and institutions. Typical installations, sizing data, steam consumption tables, diagrams, construction data. General Fittings Co., Dept. 41, 118 Georgia Ave., Providence 5, R. I.

Catalog and price list on boiler water feeders, low water fuel cut-offs, safety relief valves and other safety devices for steam and hot-water boilers. Illustrations, dimension details. McDonnell & Miller, Inc., 3500 N. Spaulding Ave., Chicago 18, Ill.

**19-186. McDonnell Products** (SC-1)
**19-187. Condensed Catalog and Price List** (C-44A)

### surfacing materials

Two specifications, developed by the Asphalt Tile Institute: one, for grease resistant asphalt tile, the other, for vinyl plastic asbestos floor tile. Method of test included in each specification. Asphalt Tile Institute, 101 Park Ave., New York 17, N. Y.:

**19-188. Grease Resistant Asphalt Tile Specification.**

**19-189. Vinyl Tile Specification.**

**19-190. Vinyl Cork Tile,** 8-p. brochure illustrating resilient floor tile with vinyl top and cork base, for buildings of all types where long wear and ease of maintenance are required. Color chart, test results, design data, installation specifications, care and maintenance. Dodge Cork Co., Lancaster, Pa.

**19-191. Color Story,** 8-p. folder on decorative panelboard with plastic surface that resists staining, abrasion, moisture, and fading; available in standard sheet sizes in scored "tile" patterns, unscored, and horizontally scored, with choice of 16 colors. Color samples, sizes, installation data. East Coast Tileboard Corp., 41 Wyckoff Ave., Brooklyn 27, N. Y.

**19-192. Versatile Open Steel Flooring,** AIA 14-P-21, 16-p. booklet. Illustrations showing many various installations of steel grating in welded, riveted, and pressure-locked grating forms. Types and features, specifications, table of safe loads. Open Steel Flooring Institute, Inc., 2311 1st National Bank Bldg., Pittsburgh 22, Pa.

Folder demonstrating use of Philippine mahogany in residential and commercial interiors, and in furniture industry. Types, colors, textures. Other folder outlines methods of staining, filling, sealing, glazing, and finishing mahogany. Philippine Mahogany Assn., Inc., 111 W. 7 St., Los Angeles 14, Calif.:

**19-193. Philippine Mahogany for American Industry,** AIA 19E.

**19-194. The Finishing of Philippine Mahogany,** AIA 19E.

**19-195. Plastic Mix,** AIA 23Q, 4-p. illus. brochure on plastic underlayment and floor leveler providing even, resilient surface for laying linoleum, ceramic or metal tile, and other decorative flooring materials. Uses, advantages, application directions. Pioneer Latex and Chemical Co., Lincoln Blvd., Middlesex, N. J.

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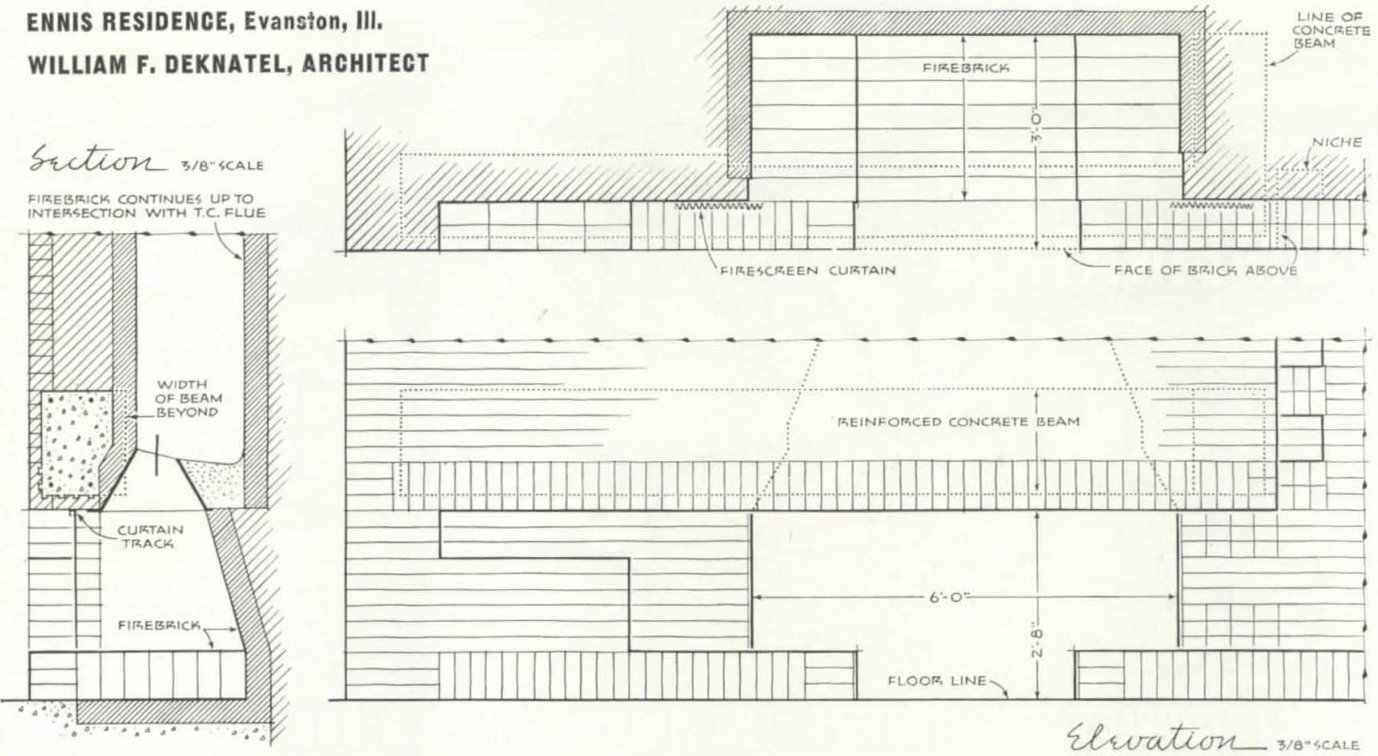
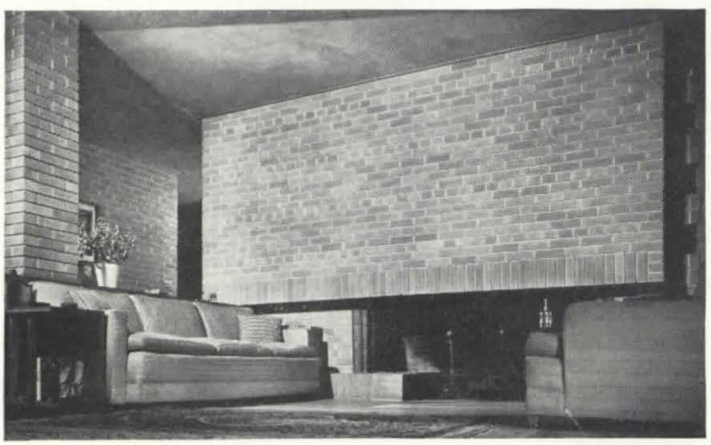
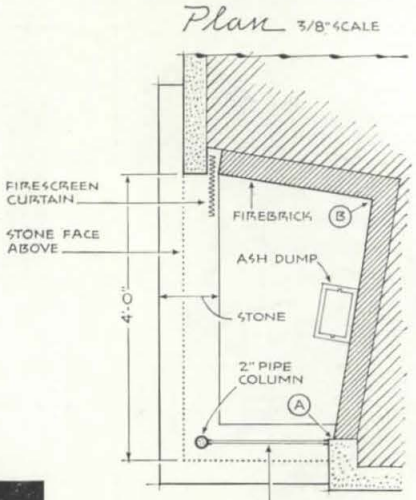
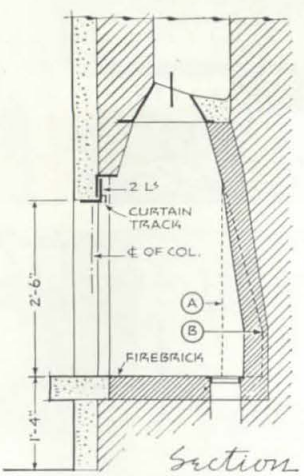


HEDRICH - BLESSING STUDIO

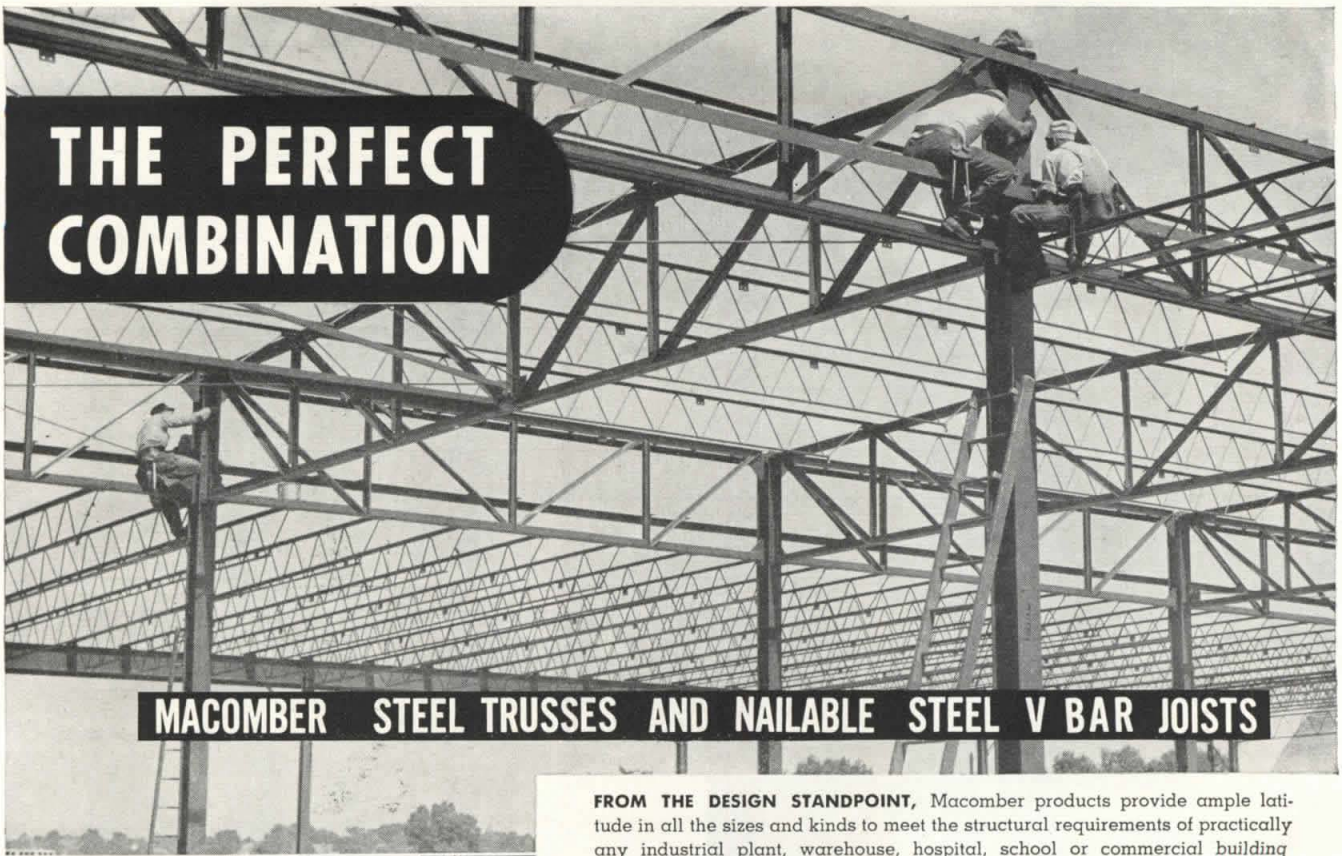



RICHARD GARRISON




**DAVIES RESIDENCE, Seattle, Wash.** **BAIN, OVERTURF & TURNER, ARCHITECTS**

# THE PERFECT COMBINATION

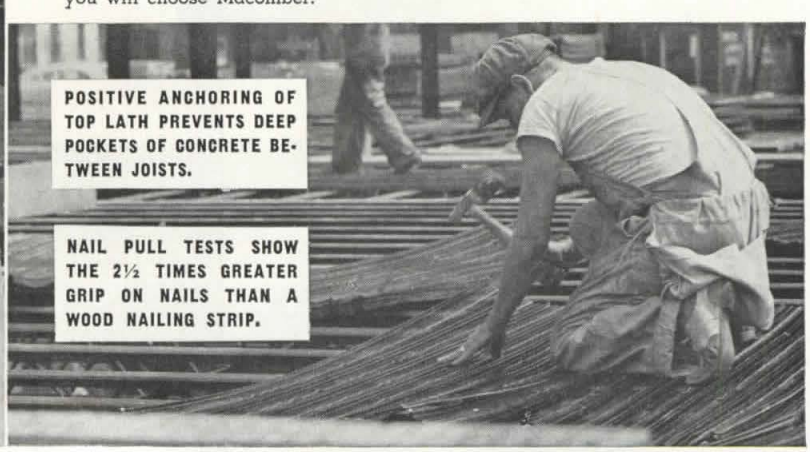


## MACOMBER STEEL TRUSSES AND NAILABLE STEEL V BAR JOISTS

**FROM THE DESIGN STANDPOINT,** Macomber products provide ample latitude in all the sizes and kinds to meet the structural requirements of practically any industrial plant, warehouse, hospital, school or commercial building Designers can find structural members of lengths and loading capacities in the Macomber catalogs that require no special engineering to get them into production schedules.

**FROM THE CONTRACTOR'S STANDPOINT,** he and his men have known and used Macomber products for a quarter century. If there is a choice, he will move his equipment and crews to a location where everything on the job conforms to the regular pattern used by construction men. With these products he knows he can set the steel and get on to the next job with a minimum of time, men and equipment.

**FROM THE OWNER'S STANDPOINT,** there is no better method of keeping costs down than an investment in a building erected from standard products, designed to save labor and materials. Add up these three fundamentals and you will choose Macomber.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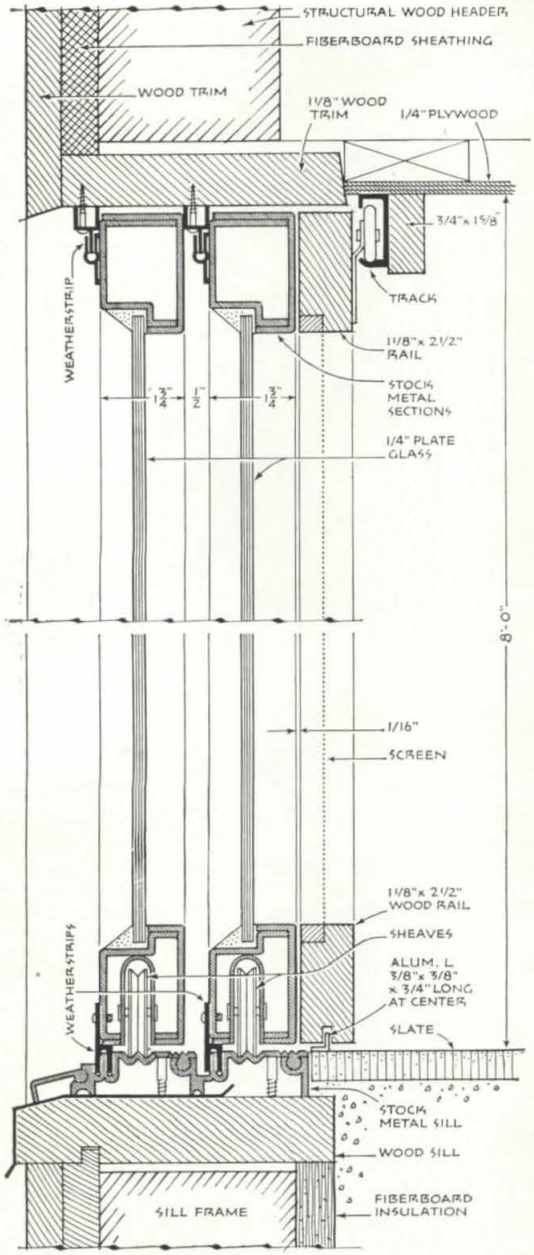
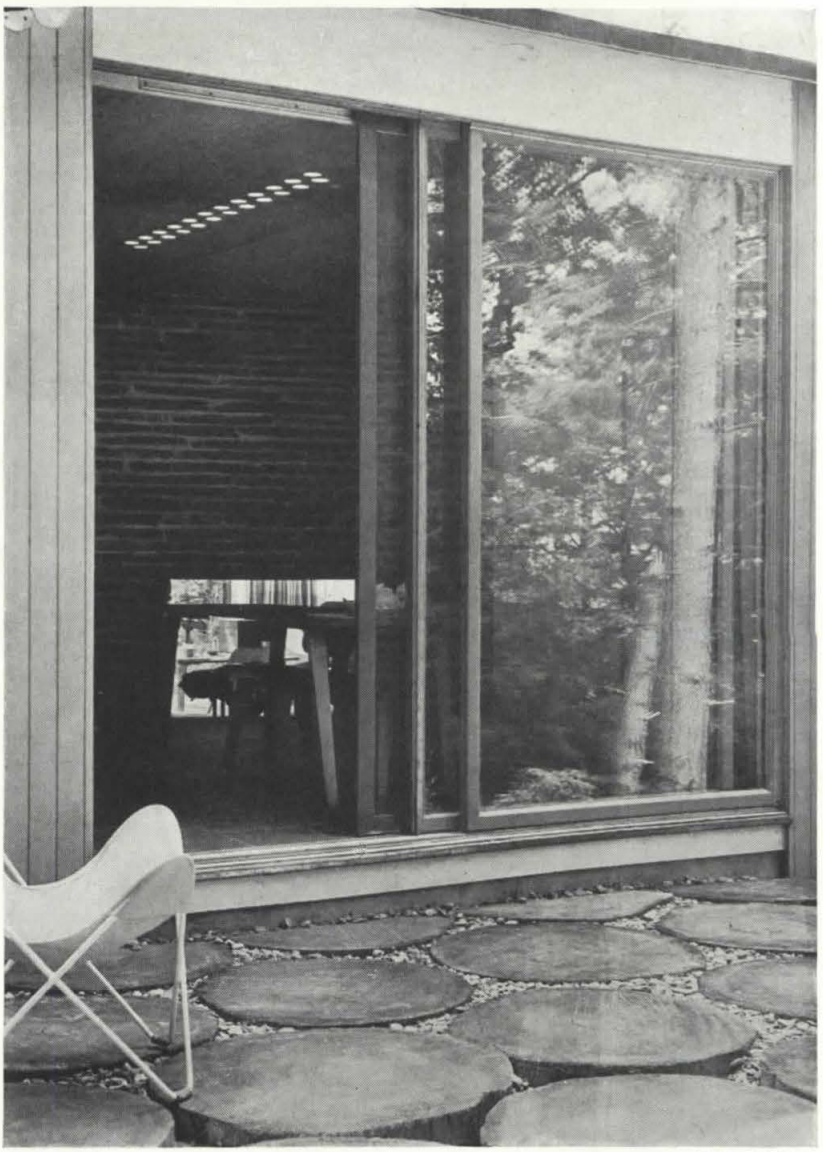
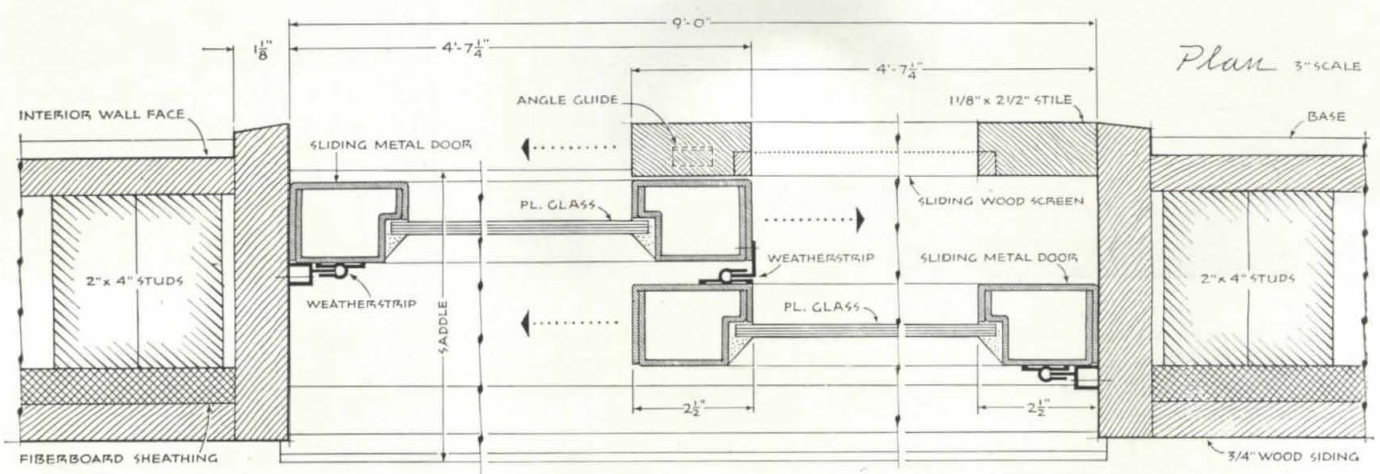
**V BAR JOISTS • LONGSPANS • BOWSTRING TRUSSES • STEEL DECK**




Section 3" SCALE



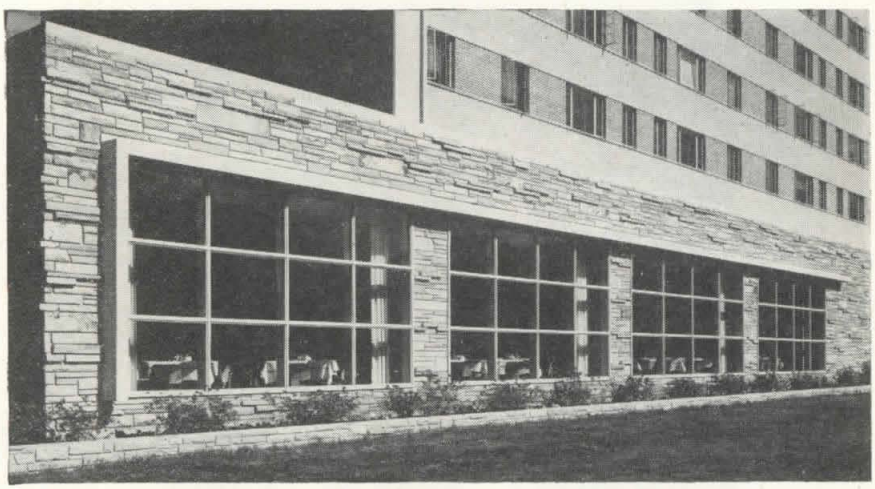
BULL & EWING



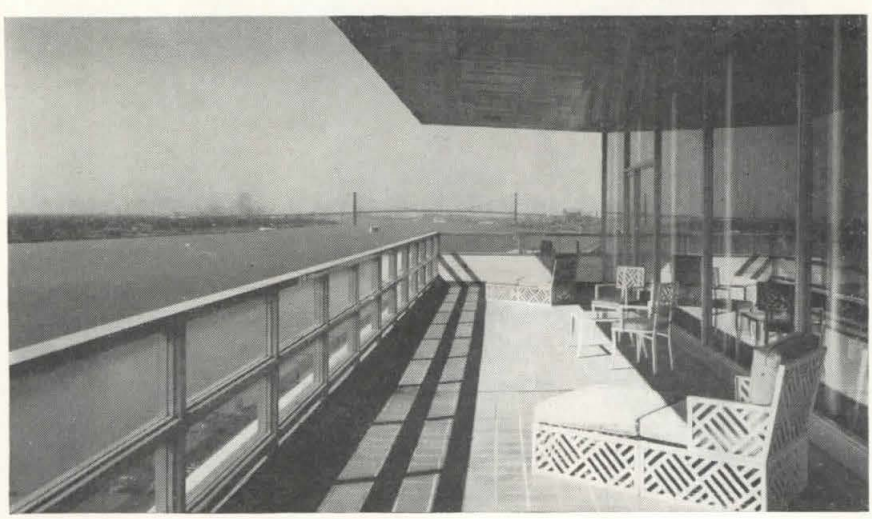

**ARCHITECT'S RESIDENCE, Hanover, N.H.**

**E. H. & M. K. HUNTER, ARCHITECTS**

# Examples of the adaptability of Pittsburgh Glass in commercial buildings



HERE'S A DETAIL of the Clemson House, Clemson, South Carolina. It shows the exterior view of the dining room wall in which Pittsburgh Polished Plate Glass has been adapted to create an interesting design effect. Pennvernon Window Glass—nationally recognized as "window glass at its best"—was extensively used for glazing. And Pittsburgh Mirrors were installed as an important feature of the interior decorative scheme. Architects: Lyles, Bissett, Carlisle & Wolff, Columbia, South Carolina.



AT THE NEW Veterans Memorial Building, Detroit, Michigan, Pittsburgh Polished Plate Glass, Herculite Doors, Pittco De Luxe Metal and Pittsburgh Mirrors combine in highlighting the architectural and decorative appeal of this impressive structure. Illustrated here is a detail of the sun deck, indicating how truly adaptable Pittsburgh Plate Glass is. Architects: Harley, Ellington & Day, Inc., Detroit, Michigan.

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



IN ALL TYPES of commercial, as well as industrial and public buildings, Pittsburgh Glass has proved its versatility and practicality. This apartment house in Cambridge, Mass., for example, utilizes to maximum effect such Pittsburgh Products as Twindow Insulating Units (on the south wing penthouse), Pittsburgh Doorways, Heavy Plate Glass in the lobby, ½" Herculite Glass stair rail (see inset), Pennvernon Window Glass, Pittco De Luxe Metal. Architects-Engineers for Eastgate Design Group: William Brown, Carl Koch, Robert W. Kennedy, Vernon De Mars and Ralph Eapsen, Boston, Mass.

*Design it better with* Pittsburgh Glass

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# When the floor is of fi[redacted]su

1. Even with customers filing in and out constantly, thi
Nairn Linoleum in the display room of a power an

## insist on the 4-square features of

What a tough set of requirements a floor for public use and heavy traffic must meet! That's why Nairn Inlaid Linoleum is the perfect choice . . . so quiet, so resilient, so long-wearing! Nairn Linoleum keeps its sparkling beauty through years of toughest wear . . . is quick and easy to clean. Day by day and over the years Nairn spells true economy. That's why satisfied users specify Nairn Linoleum again and again!

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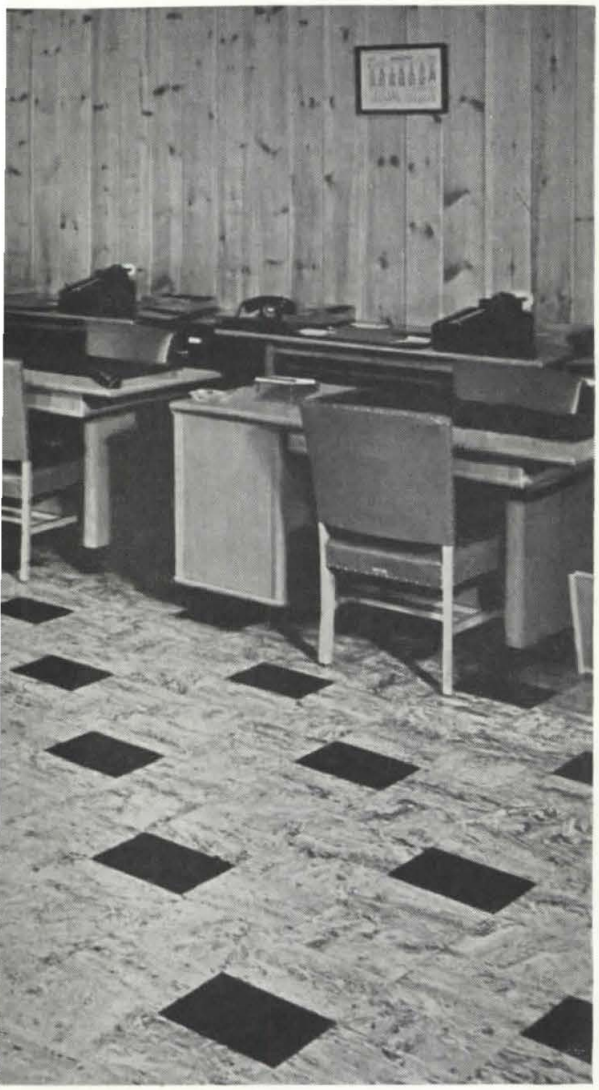
**NAIRN LINOLEUM**

Trade-mark ®

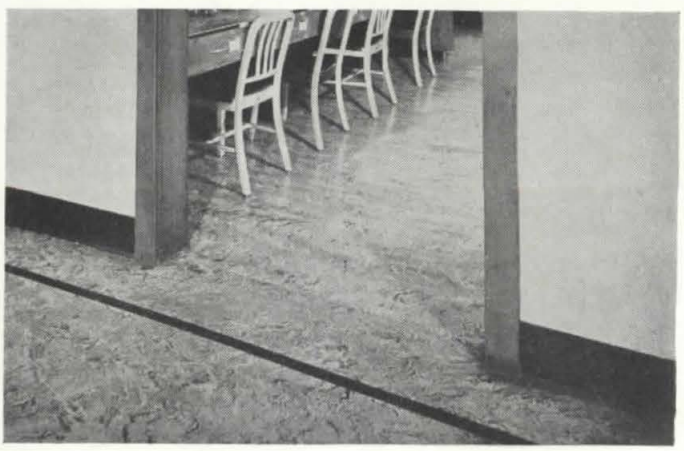
# importance in a room...



ight company is easy to keep spotlessly clean—and
's truly resilient for quiet and for ease underfoot.

**2.** In a doctor's office where an attractive floor is a "must," Nairn Linoleum is the answer. It's rich-looking, easy to keep spotless... and years of service make it inexpensive to own!

**3.** Look closely at the Nairn Linoleum in this modern high school . . . its beauty and true resilience endure even after years of the heaviest traffic.



**4.** In this hospital record room — as in every room and corridor — Nairn Linoleum provides sanitary, crevice-free floors that won't collect dust and germs.

## Nairn Linoleum!

NAIRN
SATISFACTION GUARANTEED OR YOUR MONEY BACK

**1. Long Life**

**2. Enduring Beauty**

**3. Easy Maintenance**

**4. True Resilience**

**or FLOORS**
**nd WALLS**

# available in a special wall-hung model...

## providing still wider latitude in rest room planning

Installed with other modern plumbing fixtures—like the Buena lavatories shown here—the Sanistand fixture helps create a rest room that is truly restful, sanitary, easy to keep clean. Whether it's a wall-hung or a pedestal model, the Sanistand urinal is easy and comfortable to use. The properly shaped, ample-sized bowl has an easily-straddled extended lip, and an inward sloping rim is an additional precaution for complete sanitation. Though designed as a urinal, the Sanistand fixture can be used as a regular water closet if necessary . . . the siphon vortex water action assures thorough, quiet flushing. Fits into standard-size toilet compartments.

Available in gleaming white or a variety of colors, the Sanistand fixture can be installed for pedal or manual flushing.

SINCE its introduction about a year ago, the Sanistand fixture—a urinal specially designed for women—has fairly revolutionized rest room planning. It has been acclaimed as the most important contribution to rest room sanitation since the water closet.

Now, in keeping with the current trend of installing off-the-floor fixtures wherever possible, American-Standard has added a wall-hung model of the Sanistand urinal to its line of plumbing fixtures. This version further increases the usefulness of the fixture, simplifies cleaning . . . affords greater flexibility in architectural planning.

In both models the Sanistand fixture offers the same convenience and cleanliness for women that the standing urinal does for men. Users need not sit on or touch the fixture in any way. And since it is deliberately shaped to prevent misuse and clogging, the Sanistand fixture makes for cleaner, more pleasing rest rooms.

Wherever it has been installed, the acceptance of the Sanistand fixture has been prompt and enthusiastic. Thousands of users have endorsed the fixture. Maintenance men attest to its help in greatly reducing cleaning chores. Owners and managers of public places say that Sanistand fixtures help reduce overcrowding in rush periods.

If you are planning a commercial, industrial or institutional building . . . especially any building used widely by the public . . . be sure to include Sanistand fixtures in your specifications. They will add greatly to the popularity of the building. **American Radiator & Standard Sanitary Corporation,** P. O. Box 1226, Pittsburgh 30, Pa.

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Flexstone Built-Up Roofs won't dry out from the sun . . . need no periodic coating. They're *smooth-surfaced,* too—permit thorough drainage, make any damage easy to locate and repair. They are engineered to each job . . . applied only by *J-M Approved Roofers.* J-M Asbestos felts are perforated to make application easier, give a smoother job, conform better to roof decks.

For your added protection, the Johns-Manville Asbestile* System of Flashing insures proper treatment of all critical areas. Asbestile is a heavy-bodied plastic cement designed for use with asbestos flashing felts to give thorough watertightness. As it sets, Asbestile becomes hard and forms an integral part of the wall itself.

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ASBESTOS CORRUGATED TRANSITE* • ACOUSTICAL CEILINGS

DECORATIVE FLOORS • MOVABLE WALLS • ETC.

## BOOKS RECEIVED

**Steel Serves the Nation.** Douglas A. Fisher. U.S. Steel Corp., 71 Broadway, New York 6, N.Y., 1951. 227 pp., illus.

**Water Treatment for Industrial and Other Uses.** Eskel Nordell. Reinhold Publishing Corp., 330 W. 42 St., New York 18, N.Y., 1951. 526 pp., illus. $10

**The Fabric of Modern Buildings.** E. G. Warland. Pitman & Sons, Ltd., London, 1951. The British Book Centre, New York, N.Y. 166 pp., illus. $5

**Country Buildings.** How to Appreciate Them and How to Sketch Them. William R. Finch. Pitman & Sons, Ltd., London, 1951. The British Book Centre, New York, N.Y. 132 pp., illus. $6.75

**A History of Religious Architecture.** Ernest Short. W. W. Norton & Co., Inc., New York, 1951. 306 pp., illus. $6

**"Operation Bootstrap" in Puerto Rico.** Report of Progress, 1951. Stuart Chase. Prepared for the NPA Business Committee on National Policy. Planning Pamphlets No. 75, Sept. 1951. National Planning Association, 800 21st St., N.W., Washington, D.C. 72 pp. $1

**Rebuilding Neighborhoods for Better Living.** Annual Report of the Division of Housing, State of New York, March 1951. Herman T. Stichman, Commissioner. 145 pp., illus.

## BOOKS

### ARCHITECTURAL FINANCE

**Urban Real Estate Markets: Characteristics and Financing,** *Ernest M. Fisher, National Bureau of Economic Research, 1819 Broadway, New York, New York, 1951, 180 pp. $3.00*

While architects have been designing specific buildings for particular clients, mainly in cities, the social scientists have been studying the whole scene in which our work finds its place. A careful reading of this small book gives a broad view of this scene from a viewpoint which most of us have been inclined to avoid.

"Buyer's Market" and "Seller's Market" are familiar concepts—while these types of situation maintain—but what about the period between when the awkward transition is taking place from one phase to the other? And what about the inevitable increase in construction costs as the building cycle reaches its peak—the time when a manufacturing process should be most economical? And what are the effects of the different kinds of fractional markets (for different kinds of space or buildings for sale or lease) on each other and on our clients' finances? The author answers these and many other questions by building up a detailed analytical picture of the whole changing complex of rights in land and improvements, provision of services, decisions by many individuals, age-old laws, all of which constitute urban real estate.

It is not a simple picture, for it concerns continuing processes: some closely interlocking as in the markets for home ownership and for rental of homes; some fairly isolated as acquisition of rural land for later urban development. The only simple picture of urban real estate would be the static one which we were expected to assume in programs for student design projéts—with all conditions fixed. Too frequently we still design for a specific set of fixed requirements which start to change before our building has half a chance to prove itself.

(Continued on page 126)

p/a REVIEWS

(Continued from page 125)

Our cities are full of buildings which have outlasted their intended use. It is these existing buildings—the "standing stock"—which dominate the real estate scene and its finances and greatly affect the production of further buildings.

We could well afford to base more of our thinking on this whole urban scene as well as on just our own and our fellow architects' works. The view offered here "from across the way" is based on a long and thoughtful experience in land economics. It illuminates and clarifies a complex situation with which we are all vitally concerned.

JOHN RANNELLS



### DEVELOPMENT ACT

**Land Planning Law in a Free Society.** *Charles M. Haar. Harvard University Press, Cambridge, Mass., 1951. 210 pp., illus. $4*

Charles M. Haar, a young lawyer with a genuine interest in housing, has produced a study of the British Town and Country Planning Act of 1947 which is exhaustive and will be of little interest to the architect who takes his housing as a "job." For the serious student of progress in planning and the democratic ways of obtaining means of effectuating planning; for those who are concerned with the trend towards "socialism" as it is evidenced in national control of land for the benefit of the public as a whole, it is invaluable.

The Act is not only the culmination of many years of legal evolution in planning control, but embodies most of the recommendations of three famous documents, the Barlow, Scott and Uthwatt reports. The problems of law and administration are extremely complicated, and the economic involvements are equally complex. It is interesting that the Act, broadly, had the full support not only of the Laborites but of the Conservatives as well, and that the type thinking which produced it is apparently fully accepted as an essential to the future development of Britain.

It is too early to know what the results of the Act will be. Haar devotes a good many pages to "Tentative Conclusions" which are not truly conclusions but penetrating speculations. To this reviewer the implications are that the grass is ever greener elsewhere, but that on close examination, such as that afforded by Haar's keen vision, there are moletracks and crab-grass, nettles, thistles, and cowdung a-plenty in any pasture over which human cattle graze.

The volume is excellently printed and well indexed, but there is a collection of rather meaningless illustrations bound in the front which are unpaged and uncorrelated to the text.

HENRY S. CHURCHILL

### FUTURE LONDON

**The City of London. A Record of Destruction and Survival.** *C. H. Holden and W. G. Holford. Architectural Press, London, Sept. 1951. American Distributor: British Book Centre Inc., 122 E. 55 St., New York 22, N.Y. 341 pp., illus. $5.50*

Town planners, facing the problem of bettering conditions in the City of London (318 blocks, about one square mile, comprising the commercial heart of Greater London), had at their disposal the results of a survey, made after the war, which listed every building in the City and compared the floor space just before the war to that still existing after the war. It was found that nearly one-third of this space had been lost, due to bomb or other damage. Should

(Continued on page 128)

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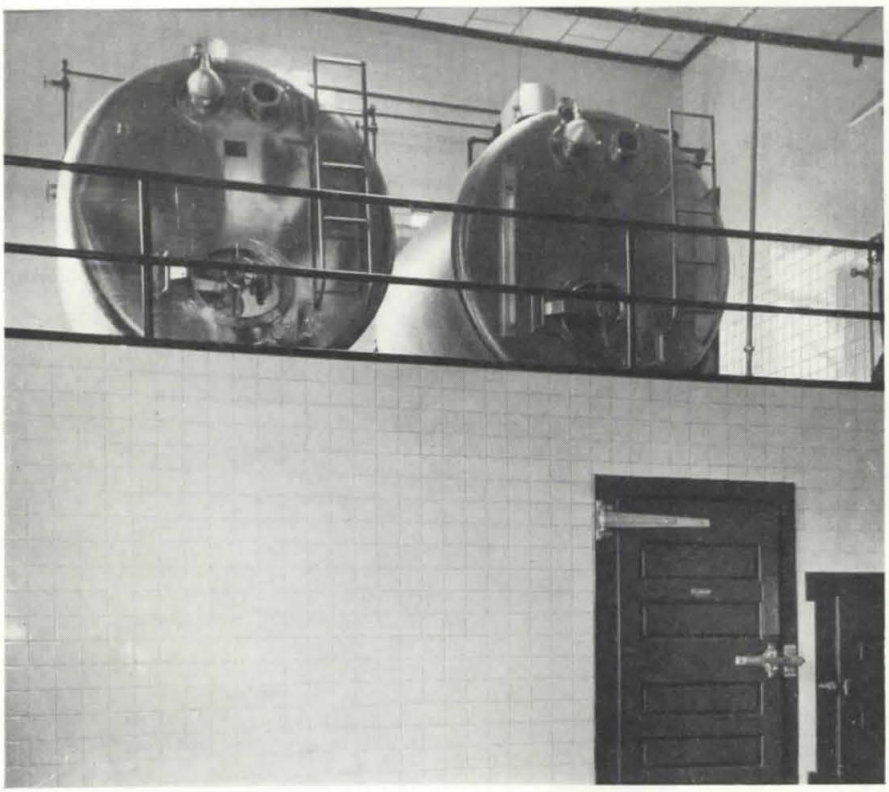
## now yours in real clay Suntile

### WHAT THESE COLORS MEAN TO INDUSTRIAL PRODUCTION



Production has increased both in quantity and in quality!

This is the usual report you'd get if you visited an industrial plant where functionally correct colors have been selected for walls and floors.

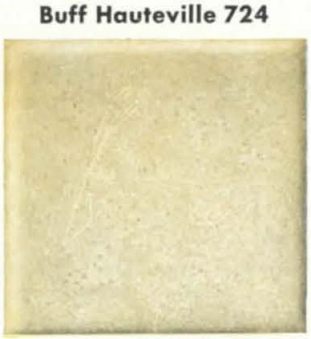
Color fitted to the function of industrial interiors helps reduce accidents, aids lighting and saves eyestrain, increases employee morale and efficiency, decreases absenteeism. In short, the *right* color can be a valuable aid to any production process.

Now, with Suntile, you have colors that have been scientifically developed to aid the design and purpose of building interiors...of manufacturing and processing plants, of schools, hospitals, and other institutions, of offices and commercial buildings.

You get more than functionally correct colors with real clay Suntile, however. You also get low maintenance and upkeep, permanence, resistance to fire, economy and ease of cleaning.

Our new color booklet, "Suntile Functional Color Recommendations," describes the Suntile functional color line, tells you how to use color to greatest advantage. See your local Authorized Suntile Dealer, or write our Dept. PA-11 for a copy. **The Cambridge Tile Mfg. Co., P.O. Box 71, Cincinnati 15, Ohio.**

**Buff Hauteville 724**



Suntile

## BUFF HAUTEVILLE 724

***A practical color of widespread use***

Buff always has been a favorite ceramic tile color. Suntile now has added an attractive subdued mottle and extremely hard surface which give Buff added advantages. Buff Hauteville is one of the best colors where light may be on the dim side or where bright, clean environment is needed. It probably should not be used where critical seeing tasks are performed. However, in large wall areas, corridors, stairwells, locker rooms, boiler rooms, lavatories and gymnasiums and in manufacturing areas of foundries, machine shops, food and chemical plants, Buff Hauteville is ideal. The mottled finish resists soiling and does not require "mirror-clean" maintenance. This is but one of the new Suntile line of functional colors developed by Faber Birren, outstanding color authority, and The Cambridge Tile Mfg. Co.

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## p/a REVIEWS

(Continued from page 126)

this be replaced, exceeded, or replaced only to a limited degree?

The control decided upon for new building, the "standard plot ratio," is explained in detail in the consultants' report as submitted to the Corporation in 1947 (which is given in full in the back of the book), together with their solution for other problems of town planning: traffic, height and lighting of new buildings, preservation of buildings of historic and architectural interest, etc.

This report is the fifth part of the book. Part I gives a general description of the plan; Part II, the historical background of the City's growth and development; Part III deals with war-damaged areas; and Part IV, pedestrian ways.

It is beautifully bound and illustrated, with many handsome photographs and drawings of London, past and present, including the first known picture of London, made in A.D. 296; hitherto unpublished photographs of the 1940-45 bomb damage; and sketches of the proposed "future City." Fold-out plans show present City areas and suggested improvements, and a chronological table of events in the City's history is appended.

To quote from Part IV, in which the sketches of the future appear, (they) . . . "have tried to suggest that in most areas of the City new building will be mingled with the old, and the slight feeling of diffidence which any new building may feel in first appearing in so historic a place may soon be forgotten in a general recognition that new structures provide much better for the needs of those who work in the City than most of those that existed in 1939." S. M.

### HEALTHFUL HOUSING

**Construction and Equipment of the Home.** *Public Administration Service, Publications Div., 1313 E. 60 St., Chicago, Ill. 1951. 77 pp. $2.50.*

The objective of this third and final report issued by the Committee on the Hygiene of Housing of the American Health Association, has been to outline standards for home construction and equipment that should be met in American housing of the future, if we are to have health of body, mind, and soul. Seven of its chapters deal, respectively, with the factors involved in the construction and environment of the dwell-

(Continued on page 130)

*Metropolitan Life Insurance Company's*

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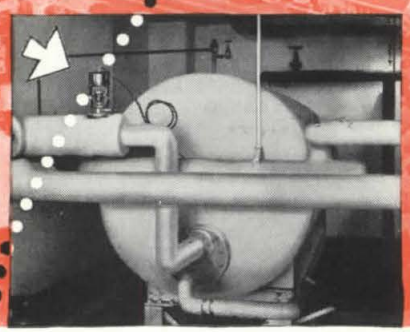

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(a65)

(Continued from page 128)

ing; the basic requirements of heating and ventilation, illumination, and noise control; provisions for proper sanitation; household equipment believed essential for good housekeeping; and the problems of safety in the home where, we are reminded, "the total number of injuries due to accidents was estimated to be over 4,500,000." Each specific problem is analyzed by an authority in his field for the benefit of the architect, the builder, and for the home owner himself.

That the present system of controls of construction by 2200 local building codes in the United States is a "devastating" drawback to this country, is emphatically stressed in the concluding, eighth chapter of the report. The codes are not only diverse and contrary but many of their requirements still in force date back almost a century. The majority of them still specify the exclusive use of one particular, tried-and-true material or method, thus excluding the use of newer materials or methods equally or more satisfactory. Examples of outmoded codes are given, with as many examples of new materials and methods of proven performance which are as yet unacceptable. The diversity of our building codes, and their emphasis on antiquated procedures, retard large-scale introduction of new materials and methods and the economy of construction itself.

The report also points out that many refinements now considered luxury items in the home could become standard equipment once the home-building industry is freed from the numerous unnecessarily harsh and restrictive requirements. The Committee claims that the only solution to this problem lies "in the replacement of 'specification' codes by codes which set forth definite and reasonable standards of performance . . . Such a 'performance' code obviously requires competent technical administrative interpretation which can only be provided for large population areas. Such codes, to operate successfully, require that standards and test procedures to measure performance be supplied as well, and a system of certification which can be accepted as competent, unbiased, and objective. Substitution of performance codes governing states or large cities for specification codes governing thousands of small communities, will open the way to great progress in our efforts to obtain healthful homes at reasonable cost." E. T.



## NOTICES

### Appointments

Recently appointed to the staff of the Department of Architecture at Pratt Institute are the following:

JOHN JOHANSEN to teach Design Analysis.

SIDNEY KATZ, ROBERT HAYS ROSENBERG, and RANIERO CORBELLETTI to teach Design.

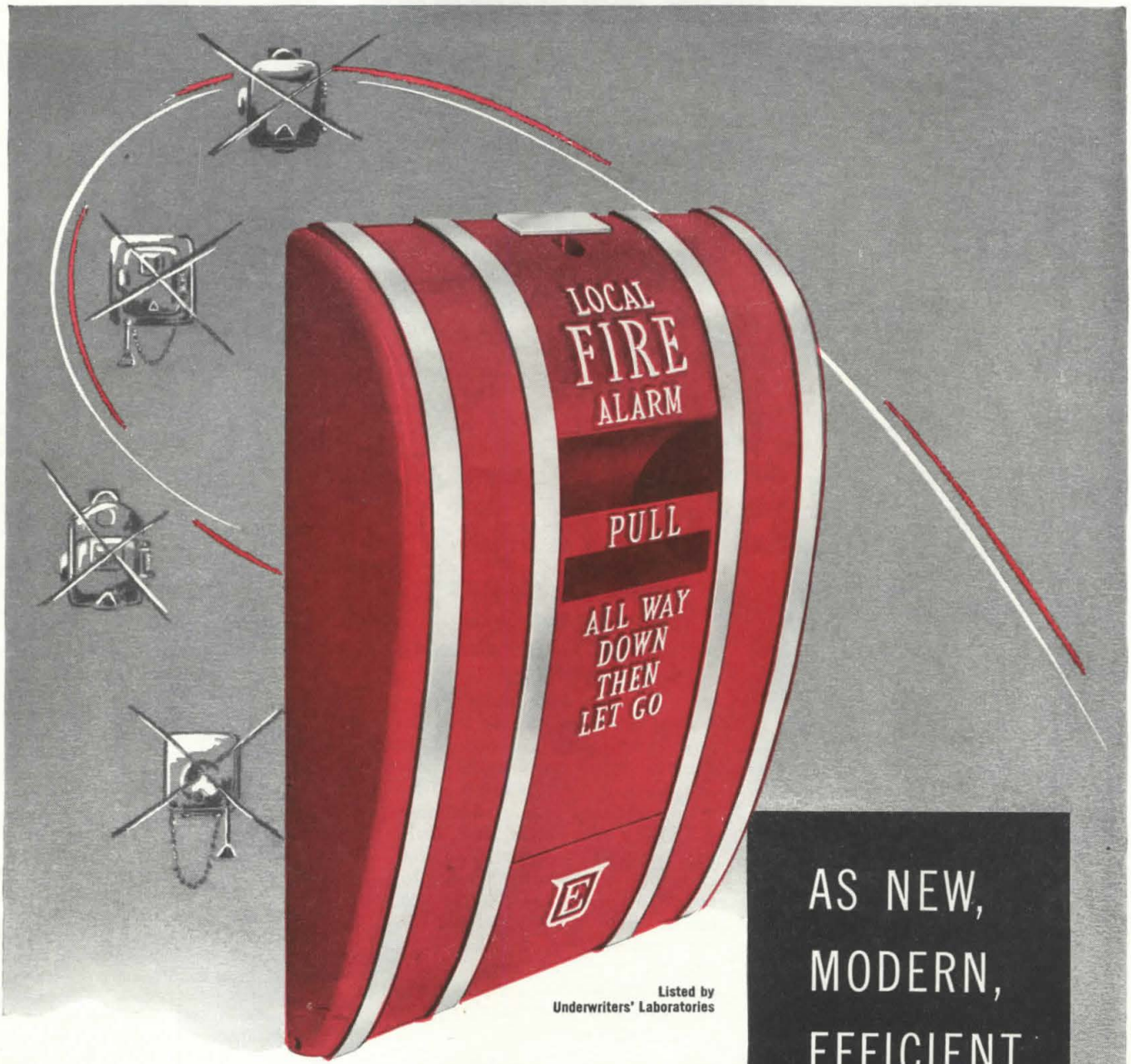
MRS. SIBYL MOHOLY-NAGY to teach History of Architecture.

DOUGLAS HASKELL to be a visiting lecturer in Theory.

●

The Department of Architecture, University of Illinois, Urbana, announces the appointment of AMBROSE M. RICHARDSON as Professor of Architecture. Richardson is a graduate of Illinois Institute of Technology and was formerly associated with the Chicago office of SKIDMORE, OWINGS & MERRILL.

The department also announces the appointment of JOHN G. REPLINGER as Instructor in Design.

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# out of school

By CARL FEISS

*"The process of arranging a pattern for communities must be continuous and constantly adapted to changing conditions. This, in our conception, entails the creation of a synthesis rather than the making of a design." . . .*
From the *Report of the Committee on Qualifications of Planners*, London, 1950; *Sir George Schuster*, Chairman.

QUESTION: Would American planning problems be solved by this approach? C.F.



The recent establishment of two new planning departments in conjunction with schools of architecture further emphasizes an important educational trend in the United States which, to date, has lacked the attention it deserves. These two newest planning infants to be added to the nursery are additions to the older architectural families of the Georgia Institute of Technology at Atlanta and of the University of Pennsylvania at Philadelphia. Two well known planners are the responsible heads: Howard Menhinick in association with Dean Bush-Brown; and Robert Mitchell with Dean Holmes Perkins (respectively).

I believe that I am correct in stating that the oldest city planning school is Harvard's, stemming from a once powerful landscape architecture tradition. The late 19th Century interest in planning was directed primarily to landscaping and civic adornment, as an outgrowth of the Olmstead, Charles Mulford Robinson, and early Burnham influences. Most early town planners, and I use the word "early" to mean those of the early 20th Century, were brought up in the Harvard School of Landscape Design; and many of today's planners studied under the expert and wise guidance of the late John Nolen, Sr., and Mr. and Mrs. Henry Hubbard (Theodora Fiske Kimball), who for many years taught expanded landscape architecture and the first rudiments of physical planning as we know it today.

This is not the article to discuss what is happening to landscape architecture as a skill and profession. That we will do later, but in order to understand what is happening in the development of a closer approach to a comprehensive training in the direction of comprehensive architecture today we had better pause a moment with the past. The *Schuster Report*, quoted at the head of this article and forming some of its body as well, can be better prepared for interpretation into our language and practice, if we start from common ground.

•

City Planning in the United States of today grew out of a long tradition of pioneer and colonial and (again) pioneer planning for new settlements. The distinguished list of early town plans, from those of Williamsburg, Edenton, Savannah, New Orleans, Ipswich, Washington, to Marietta, to Salt Lake City, form a part of the American tradition every bit as important, (though of much less popular interest), as the

(Continued on page 134)

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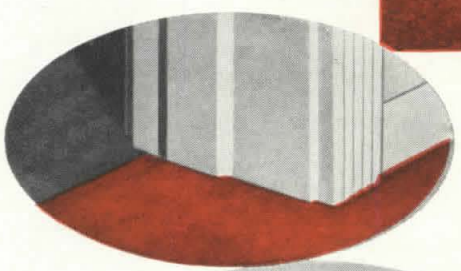

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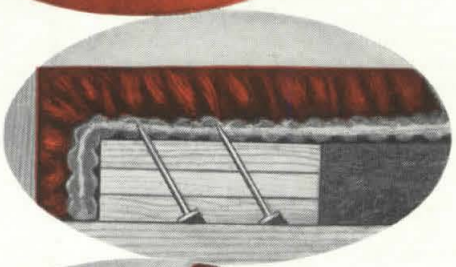

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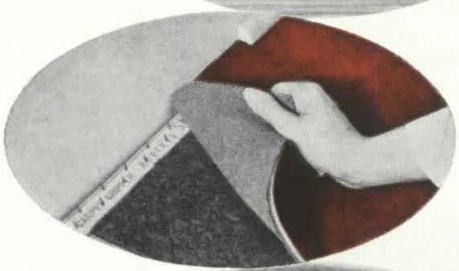

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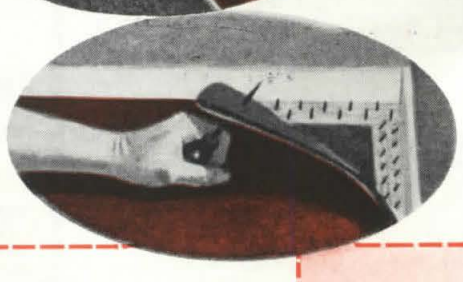

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# out of school

(Continued from page 132)

architecture of Salem, Mass., or the rash of machined "colonial" doorways which desecrated our past and prostitute our present. Almost simultaneously with the ending of the direct sequence of the New England Green tradition in Utah in the mid-19th Century, a new sequence was born out of New York's Central Park and the work of Olmstead and Vaux. It is difficult for us today to believe that at one time parks and civic centers were considered as the basic elements of a city plan. Pioneer and colonial planners knew better than that. However, for a period approximating 75 years this was the pervading opinion and it is natural that such a concept would color the work of the schools.

With the turn of the century came civic reform led by a famous crew of "muck rakers"—Lincoln Steffens, Jacob Riis, and even Theodore Roosevelt. Tenement house fires, epidemics, and the paternalistic emotions of the reformers themselves, were responsible for the first fire codes, building and tenement house laws, and by 1916, zoning. The architectural schools, wallowing in an orgy of French provincialism, ignored what was happening at home and, indifferent to the interest of the landscapers, remained pretty much in their little mental *loges*. The work of Frederick Ackerman and Electus Litchfield in World War 1 emergency housing passed unnoticed in the schools, as did Clarence Stein's and Henry Wright's revolutionary experiments in site planning at Sunnyside and Radburn, in the middle 20's.

Architects, then as now, were remarkably indifferent to the architectural consequences of lawyers' activities and left zoning and the first administrative development of building codes and city planning procedures to the legal profession. Fortunately, the competent legal brains of the late Alfred Bettman, of E. M. Bassett, and of Frank B. Williams, among others, delved into both the architectural and legal technicalities of the initial work to be done. Our primary restraints on building today come from the excellent work done by the lawyers of building and planning who fought for reform in a field not their own; largely, I am guessing, because so few architects and no architectural educators cared.

●

When the Scotsman, Thomas Adams, was employed as consultant to prepare the Russell Sage Foundation's* gigantic first study for the regional planning of New York in 1928, he was chosen from Great Britain not only because of his reputation and proven experience there,

(Continued on page 136)

**New York Regional Plan Series, 10 vols., Thomas Adams (1929).*

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# out of school

(Continued from page 134)

but because there had been no follow-up in this country of the Burnham type plan of Chicago made in 1908.** I have often wondered why anything as imaginative as the Burnham plan, saving a few superficialities, fell on such sterile ground. Only a few cities, Cincinnati among them, went beyond the Civic Center concept for the 25 years succeeding the Chicago Plan.

While planning education at Harvard and at the University of Illinois, under Karl Lohman, grew out of the landscape traditions separate from the architectural, no vital change seems to have taken place in the whole concept of planning education until the early 30's. Graduate planning training at Harvard, under William Wheaton, is now independent of the Landscape School. A Degree of Master in City Planning is given in the Department of City and Regional Planning in the Graduate School of Design, of which Prof. Joseph Hudnut is Dean. There is a 12-man Council of the Department of Regional Planning which cuts across the campus, with representatives from a wide variety of other graduate schools. Planning training at the University of Illinois, begun in 1914 by Charles Mulford Robinson, is still under the auspices of the Department of Landscape Architecture. A graduate program was started in 1947 and is now in the process of reorganization, under the direction of Professor Karl Lohman.

Reason for this is that planning practice itself was slow to make a change. Planning commissions, largely voluntary and advisory in power, either were living in dream worlds of their own or piddling around wiith inconsequential items. Zoning boards, growing up independently of architectural and planning understanding, were making fundamental decisions on building design and location, from 1918 on. I like to think that it was the dramatic scale of Thomas Adam's Regional Planning studies for New York, and the comprehensive coverage, from land use for the region to neighborhood architectural studies, combining for almost the first time nearly all the major elements of physical planning, that turned the tide. Certainly from that time on—approximately 1930—planning talk broadened in scope and planning technicians began to assume responsibilities heretofore neglected. The errors and omissions in the original Regional Plan studies, such as determinations on population densities and on urban redevelopment, were

(Continued on page 138)

**Plan of Chicago, Daniel H. Burnham and Edward H. Bennett (1909).*

# out of school

(Continued from page 136)

only errors and omissions due to this particular stage of a technology in the making. The temper of the times, the national self-appraisal due to the Depression, led directly into the taking of an inventory of the Nation's assets and liabilities, and Herbert Hoover's National Resources Committee became for 10 years the effective National Resources Planning Board. Modern American planning concepts were born at this time.

By 1935, at M.I.T., Frederick J. Adams, son of Thomas Adams, was well launched on a broader planning training than had yet developed in an architectural school in this country. Courses of undergraduate and graduate studies were set up in a department affiliated with the School of Architecture. Professor Adams is still in charge of the Planning and Housing Division at M.I.T., which ranks among the top training programs in planning. The Planning and Housing Division of the School of Architecture at Columbia University, founded by the late Henry Wright in 1937—and with which I was affiliated from 1937 to 1942—flourished for several years under the late Sir Raymond Unwin, wise dean of English planners in his day, and remains an effective training unit under the direction of Prof. J. M. Miller. At Cornell, the planning department in the School of Architecture was established shortly after the one at Columbia. Started under the direction of Thomas Mackessey it still continues closely integrated with the architectural curriculum, with Mackessey now Dean of both architecture and planning. At the University of Michigan, planning education, under John M. Hyde, well known for his planning work with the late-lamented National Resources Planning Board, is also directly associated with the School of Architecture, and planning students work closely with the students of architecture on joint problems.

However, not all planning schools in the United States are affiliates of or associated with schools of architecture. At the University of North Carolina in Chapel Hill, planning training is under the direction of Prof. John A. Parker, and is called the Department of City and Regional Planning; an independent department in the Graduate School. At Berkeley at the University of California, the Graduate School of City and Regional Planning under Prof. T. J. Kent, Jr., remains separate from, though cooperating with, Dean Wurster's School of Architecture. At the University of Oklahoma there is no separate department of planning, but planning training under Leonard Logan, Director of the Institute of Community Develop-

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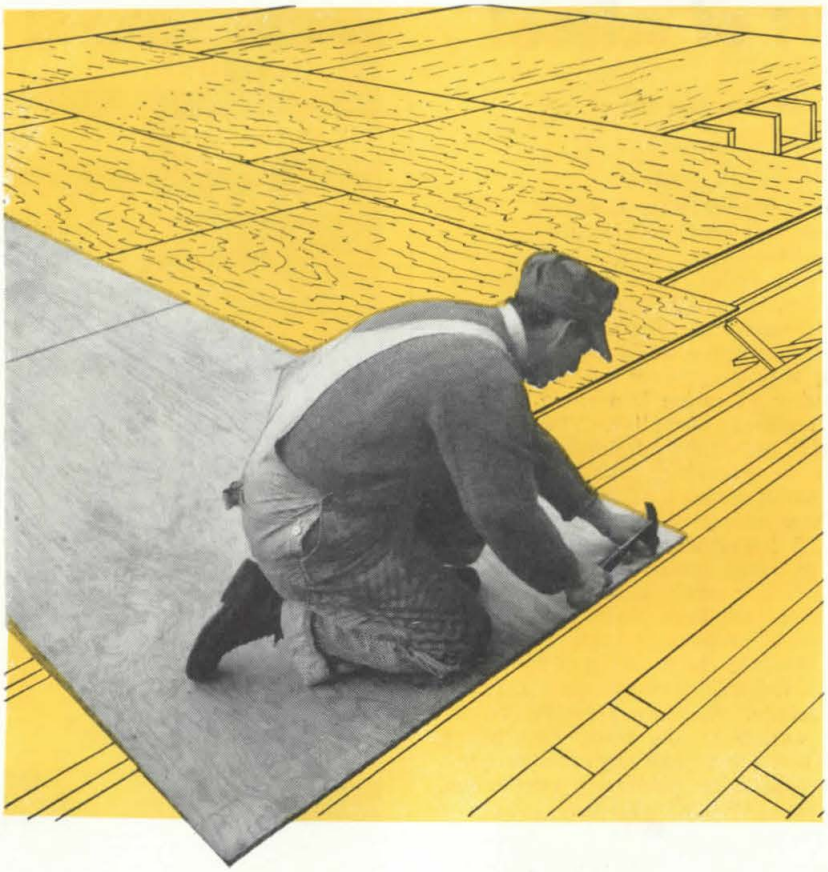

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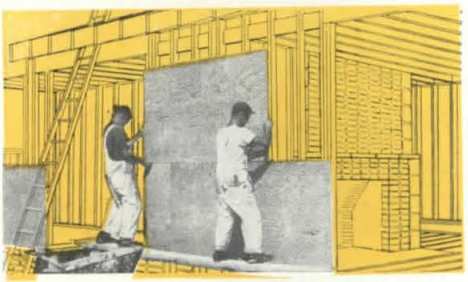

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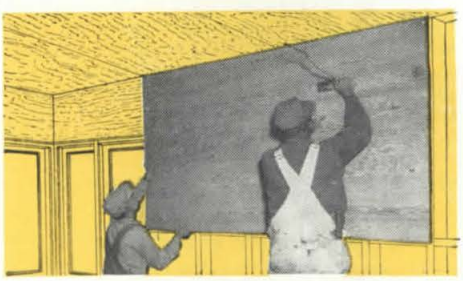

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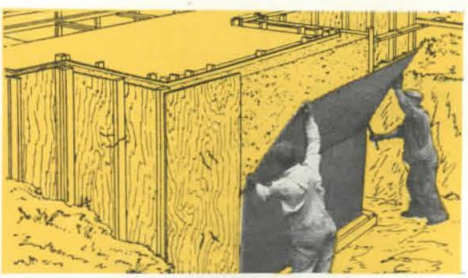

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# out of school

(Continued from page 138)

ment, is offered in the Graduate College. There is a campus-wide Coordinating Committee of nine, on which appear representatives of both the Schools of Architecture and Engineering.

There are other planning programs in other universities and colleges not listed here, now in process of development. Planning education is a rapidly changing training discipline. The growing army of university administrators interested in planning training and the increasing number of practioners and teachers interested in planning training are all trying desperately to find the proper combinations of relationships which will provide a satisfactory resting place for such training programs. The main problem is that, while planning involves the training of specialists in the technology, these specialists are generalists. Planning training by the very nature of the beast cuts across more disciplines than any other program in a college or university curriculum.

●

At the time this article is being written (September), Prof. Frederick Adams is proposing a survey of planning practice and education, similar to the nearly completed Survey of Architectural Practice and Education, with which readers of this column are familiar. It would be conducted under the auspices of the American Institute of Planners, the American Society of Planning Officials, and the Alfred Bettman Foundation. I sincerely hope that this badly needed study gets under way soon. It undoubtedly will be called the "American Schuster Report," which is unimportant. What *is* important is to find out the reasons why such a study is necessary and to get an understanding, or at least some knowledge of the Schuster report, which is the first investigation to be made of modern planning practices and education.

The Report of the Committee on Qualifications of Planners*, appointed jointly by the Minister of Town and Country Planning and the Secretary of State for Scotland, under the Chairmanship of Sir George Schuster, was completed in 1950. Its terms of reference are, "To take account of the present and prospective scope of Town and Country Planning and to consider and report what qualifications are necessary or desirable for persons engaged in it and to make any recommendations affecting persons which appear to the Committee to be relevant."

After a brief history of British town and country planning and a far differ-

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(Continued on page 142)

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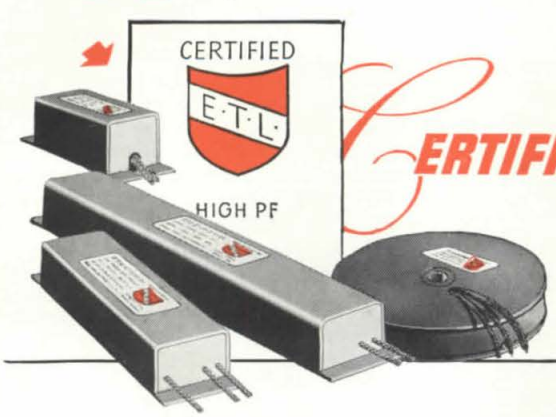


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# out of school

(Continued from page 140)

ent history it is than ours—the report launches into the scope and definition of planning activity. It is right here that we must pause because of some of the fundamental differences between the two countries, their governments, their geography, their social systems, and for physical planning, their methods of land tenure and disposal. Proceeding from the recognition that "land in Britain is severely limited in relation to the demands made on it," which is not yet true here, except in our *megalomesses* (or big cities), the report states that there is now a statutory recognition of the need for effective controls of land use based on a national policy; and that there is already an acceptance of the need to regulate, in the national interest, land use and development for social, economic and strategic objectives. If this is true, we are certainly living in different worlds, because no such claims can be made here. There is here no national policy on land use, other than in Article V. of our Constitution. And we are certainly not yet articulate on social, economic, and strategic objectives for land uses (if we have such objectives!). We obviously have a need for a land use policy, just as we need a water policy and other resources policies: but our time is not ripe and we still have much to do to find our way, in our own peculiar fashion.

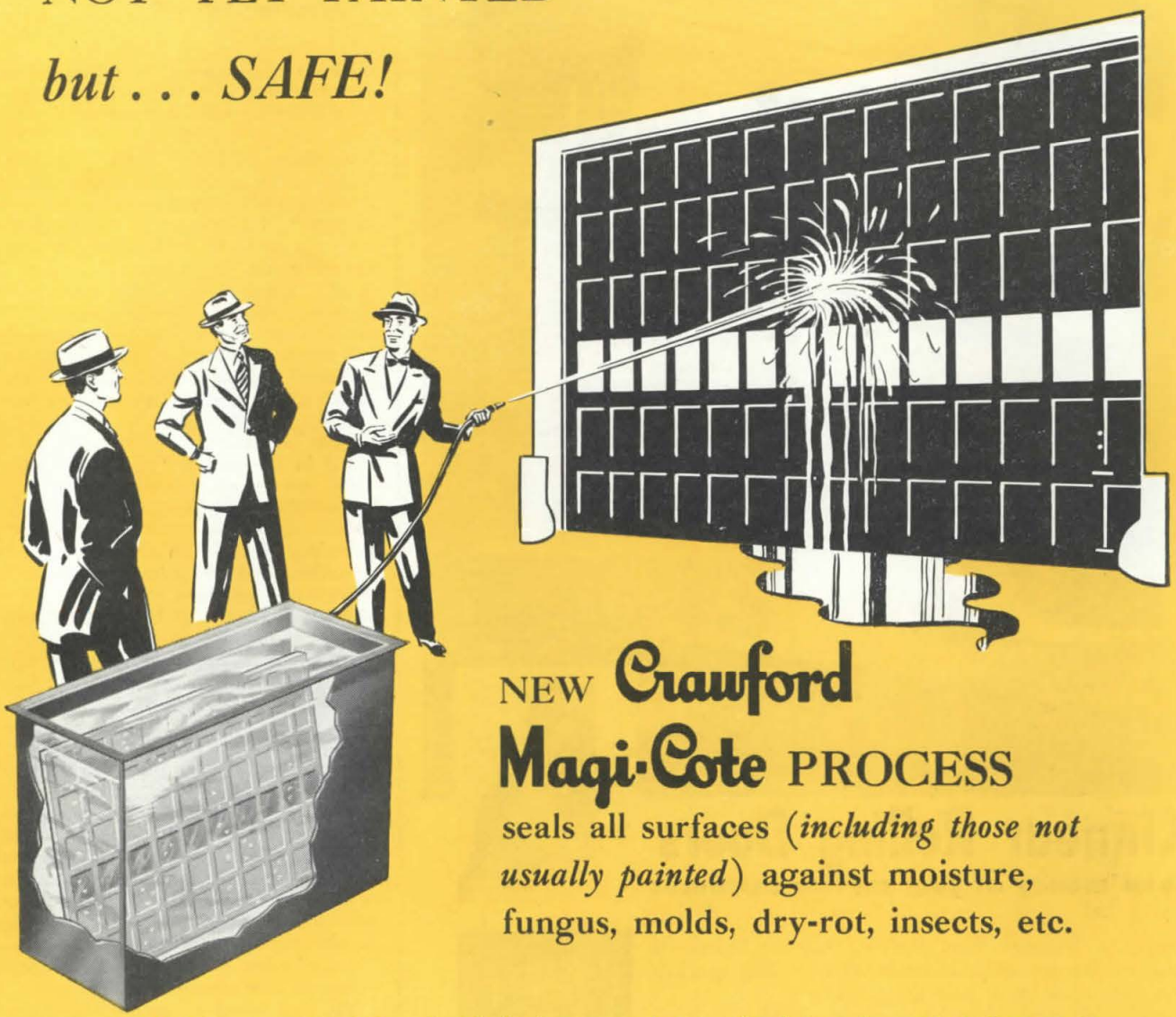
Recognizing, as we must, different fields from which to take off, do we make a landing together? I agree with the Schuster report in its analysis of the planning process and the breakdown of the process into three stages: *The Survey, Formulating the Plan,* and, *Implementation.* We all agree that planning is a continuous process. We also must agree that town and country planning is a complex process requiring a great variety of specialist skills—including along with lawyer, sociologist and specializing engineers, the architect I also agree that "integration" and "synthesis" of functions and skills are necessary in order to create sound planning (How I hate *those* two words!). But, to make a bad pun, I cannot agree to a synthetic plan. According to the Schuster report, the planner should be a synthesizer, not a designer. While admitting semantic and translation problems inherent in converting British meaning to American, I think the following statement in the report is clear to both of us:

"We fully recognize the importance of 'design'; but we regard this as secondary to the 'synthesis' of the social and economic objectives to be achieved. There are in fact two sides to the function of planning, first settling the objectives it is hoped to create and,

(Continued on page 144)

# NOT YET PAINTED

## *but . . . SAFE!*



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# out of school

(Continued from page 142)

secondly, working out the physical design together with the technical means by which they can be secured."

●

Now where we really get into semantic trouble here, and for me a fundamental disagreement, is in the use of the word "design." The report is confused and uses the word in at least three ways. Claiming the technique of design is purely ancillary to the essence of planning, which is the determination of the correct uses of land for economic and social purposes, it goes on to say, " 'design' implies a fixed pattern." That is utter nonsense and throws the basic premise of the report *into* the waste basket. Another use of the word is found in the phrase "physical design," which we agree requires the skills of the architect, engineer, and other specialist skills in town and country planning. This is an acceptable interpretation because, admittedly and by implication, we have in the concept of physical design the breadth of scope and flexibility required in and part of comprehensive architecture. The third use of the word "design" colors much of the report: the slightly deprecatory interpretation that "design" is limited to the creation of something "aesthetically pleasing." Therefore, the Schuster committee, confused by its own trouble with its own definitions, retreats to another fuzzy word, "synthesis", in order to avoid getting "involved in mere verbal dialectics." Alas, it was a sad choice! For though we recognize the need for synthesis in planning, the end result must be in physical terms—physical terms which grow from social, economic, and physical necessity.

The end result cannot be "synthesis," which has no meaning in reality. The end result is in terms of design which must include man uses, land uses, space uses, uses of material and uses of time, to effectuate predetermined social and economic objectives. These last objectives set the program for which the physical planner must make the design.

I am sorry to have taken so much of your time in discussing words, but they are important in educational determinations. In the long run, I cannot see planning education disassociated from the design disciplines any more than I can visualize the design disciplines limited to their former narrow channels and *devoid of* the broad concepts of planning. Therefore I am pleased that two new centers of planning education, as mentioned at the beginning of this essay, are being established in close association with schools of architecture.

●

We cannot finish this subject here this month. There are many other important educational considerations in the Schuster report which I will take up with

(Continued on page 146)

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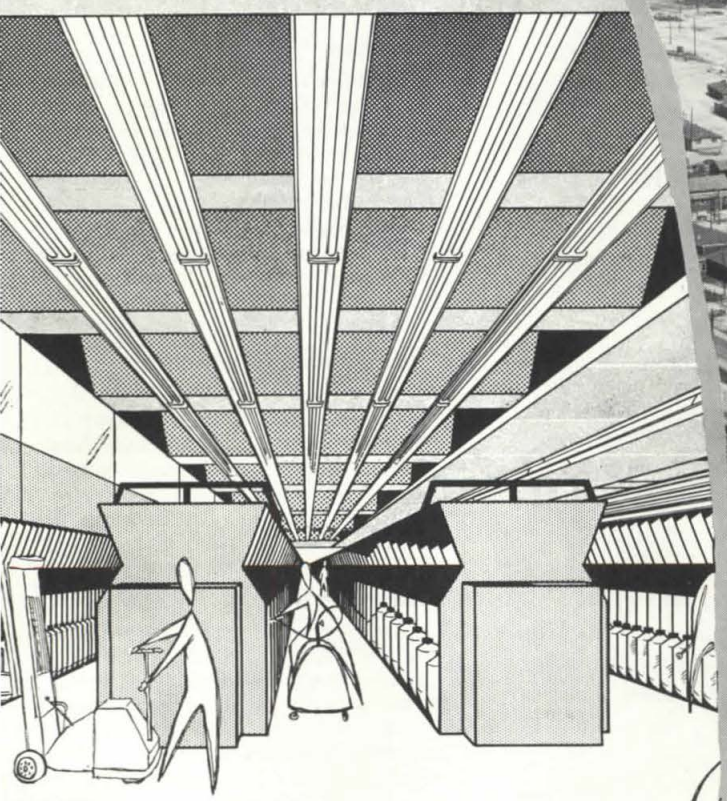
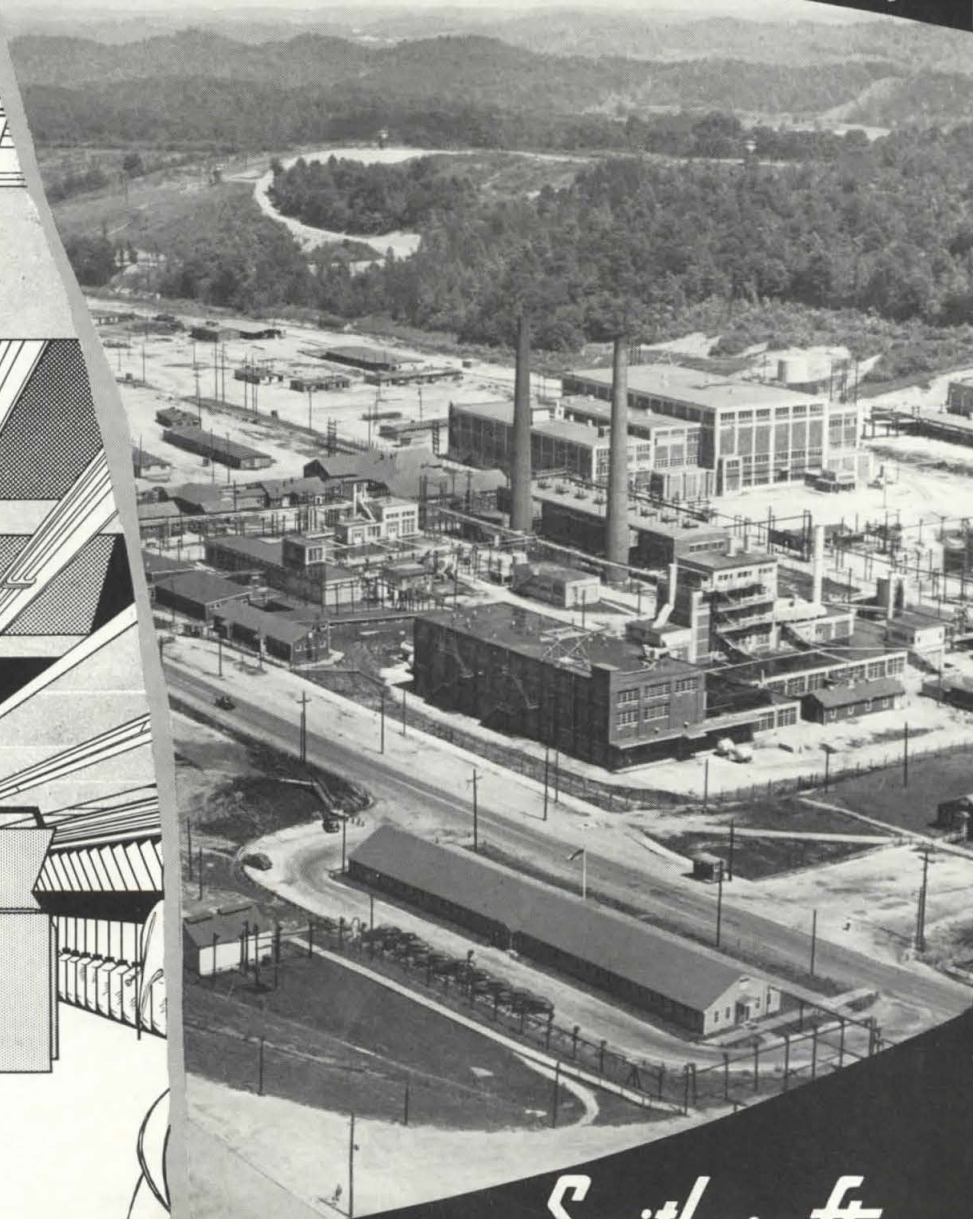


Oak Ridge Atomic Energy Project...



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# out of school

(Continued from page 144)

you later. They include graduate and undergraduate training, classification of students, the importance of a National Planning Institute and others.

The entire subject is a growing center of discussion. The cards are being put on the table these days. Overcrowded cities, limitless slums, expanding suburbs, traffic congestion, floods, smog, national defense, material shortages and so on, ad infinitum—all matters of national and local interest—impinge on the field of architecture and planning. Our training programs must expand to encompass them, for we are all going to be called on to solve the problems which they create—to solve them in an orderly and socially beneficial way—to solve them in such a way as to maintain not only our own standards and the best parts of our way of life, but to create a more satisfactory world in which to live, to work, and to plan.

---

## NOTICES

### Art Center

New York's first center in the creative arts for amateurs young and old has been opened in the new annex of the Museum of Modern Art. The two studios and two workshops on the second and third floors of the People's Art Center were specially designed by VICTOR D'AMICO for children and adult amateurs interested in working in the arts.

### Time and Motion Study Clinic

DR. LILLIAN GILBRETH, of *Cheaper by the Dozen* fame, will be a featured participator in the 15th Annual, Time and Motion Study Clinic sponsored by the Industrial Management Society on October 31 through November 2 at the Sheraton Hotel, Chicago.

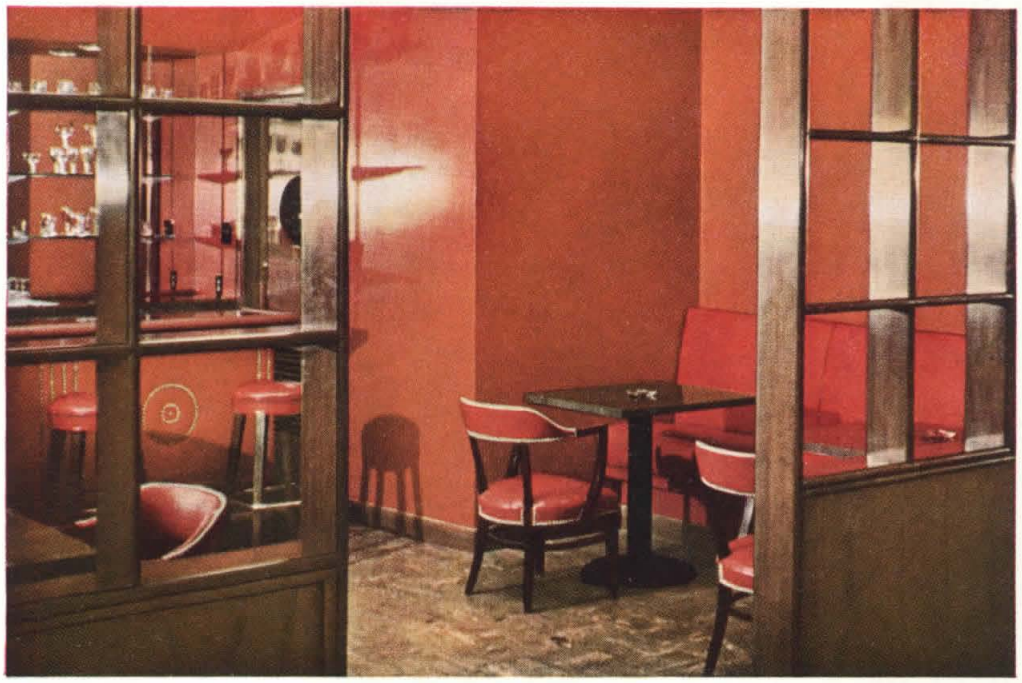
### Resignation

RALPH PRIESTLY has resigned his position of Dean of Engineering at California State Polytechnic College, San Luis Obispo, Calif., to become an associate with the architectural firm of KIRBY & MULVIN in San Francisco.

### Teachers Needed

THE HEBREW INSTITUTE OF TECHNOLOGY, Haifa, urgently needs more teachers in order to keep pace with its rapid

(Continued on page 149



*Above: Special Tomato Red Kalistron covers walls and upholstered furniture in Bar of Engineers Club, Dallas, Texas. Arch.: Everett Welch.*

# *Why this wall and furniture beauty*
# STAYS BEAUTIFUL . . . *practically forever*

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And Kalistron doesn't chip, peel or crack; it is waterproof; can be quickly cleaned with a damp cloth. It is easily installed on either flat or curved surfaces. With all these points of superiority, no wonder it won the latest Modern Plastics Award for furniture and interior decorating material.

Coupon will bring you, free, sample of Kalistron plus top-quality nail-file; see if you can mar Kalistron even with this file.

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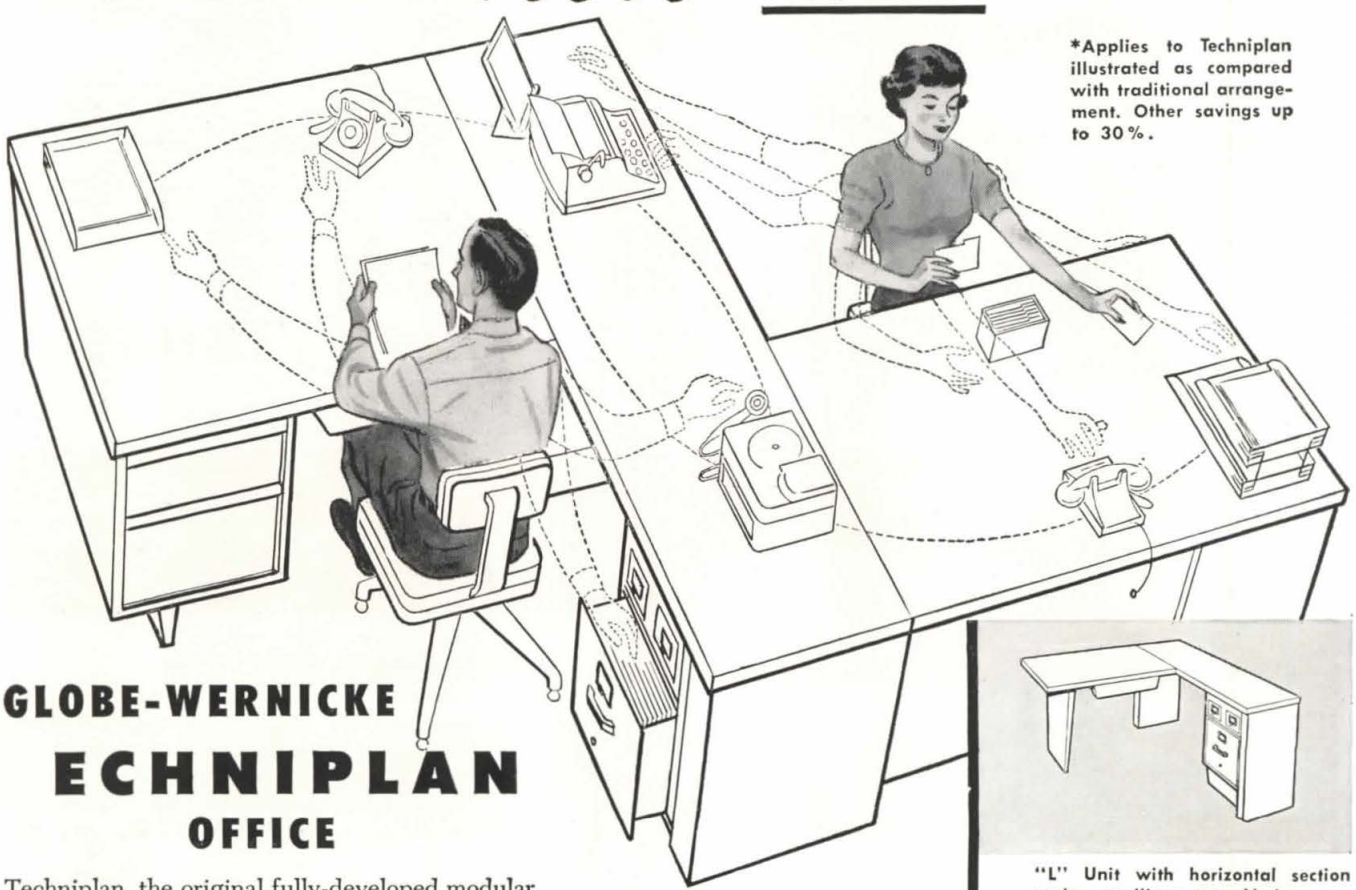
# TECHNIPLAN OFFICE

## NEW HIGH EFFICIENCY IN 18%* LESS FLOOR SPACE

*Applies to Techniplan illustrated as compared with traditional arrangement. Other savings up to 30%.



## GLOBE-WERNICKE TECHNIPLAN OFFICE

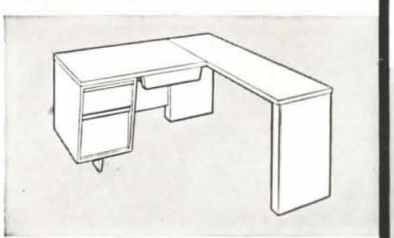
Techniplan, the original fully-developed modular system of office equipment, accomplishes two highly desirable results:

1. Reduces floor space by 18%* per worker without reducing work surface areas.
2. Provides for greater ease and speed in worker output.

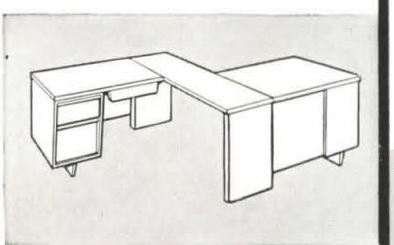
**TECHNIPLAN** uses interlocking, interchangeable units, offering hundreds of variations in arrangement—space utilization. Any desired combination of work facilities. Wasted out-of-reach areas are avoided.

**TECHNIPLAN** equipment is simple and tasteful in design for distinguished appearance. It can be installed a few units at a time, or the complete office. Rearrangement of the equipment is always easily and quickly made, to suit changing needs.

Get Techniplan information from your Globe-Wernicke dealer—listed in your classified phone directory under "Office Equipment-Furniture"—today!

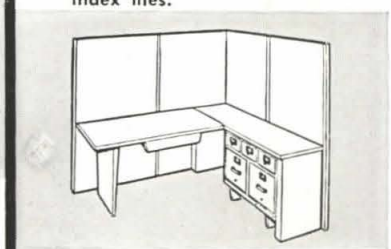


Basic "L" unit—desk with pedestal and center drawer—auxiliary top with end supports.



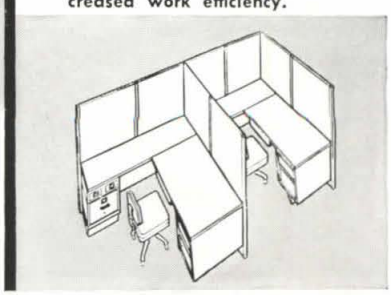


"L" Unit with horizontal section under auxiliary top. Various arrangements possible for letter files, map and drawing files and card index files.



Partitions for privacy—noise barriers—in full (66") or medium (48") height—in all-wood or combination wood and glass.

← Work station for two persons by the addition of desk unit gives economy of space and increased work efficiency.



Two Techniplan bays give semi-private work stations for two persons. Ideal for executive offices. Full height, all-wood partitions.


*Engineering Specialists in Office Equipment, Systems, and Visible Records*

*Cincinnati 12, Ohio*

p/a

## NOTICES

(Continued from page 146)

expansion. Staff openings are available in the electrical, mechanical, chemical, production and civil engineering departments; and the newly established Faculty of Science. Those interested are requested to submit applications before the end of this year to the Secretary for Academic Staff of the Institute.

### Radio Forum

THE CITIZENS' HOUSING AND PLANNING COUNCIL OF NEW YORK, INC., will sponsor a forum on the third Wednesday of every month at 10 p.m. over Station WEVD.

### Competition Winners

Winners of the annual Builders' Competition for the 1950 Best Homes for Family Living, awarded by *Parents'* Magazine have been announced by GEORGE J. HECHT, president and publisher of the magazine.

JERE STRIZEK, Sacramento, Calif., builder won the National Merit Award with a home designed by JOHN W. DAVIS, Designer, Sacramento. Various regional awards were made also, based on geographical location and price classification.

The Jury of Award was headed by RICHARD BENNETT, Architect, partner in LOEBL, SCHLOSSMAN & BENNETT; and included LEONARD HAEGER, Architect, Building Expeditor for the National Association of Home Builders, acting for W. P. ATKINSON, President of the NAHB; WILLIAM H. SCHEICK, Architect, Exec. Director, Building Research Advisory Board, National Research Council; and MRS. MAXINE LIVINGSTON, Family Home Editor, *Parent's* Magazine.

### Award

The Industrial Designers' Institute has established an annual award program, open to every designer in the industrial design field. No more than three designers and/or groups of designers will be selected as recipients of a medal for a noteworthy approach to design and function, combined with a practical use of materials, for a product that is mass produced and nationally distributed.

The first National I.D.I. Design awards were presented to GEORGE CUSHING & THOMAS G. NEVALL for their design of the "Tricolator"; CHARLES EAMES, for his design of the "Sax" Plastic Chair for Herman Miller Furniture Co.; and CARL OTTO for his design of an electric shaver for Schick, Inc.

# it's the law

By BERNARD TOMSON

*In October 1951* P/A, *we discussed cases decided since the United States Supreme Court decision in* United States v. Moorman. *In that opinion, the United States Supreme Court considered the "disputes clauses" usually found in Federal Government construction contracts. These clauses read as follows:*

*"If the contractor considers any work demanded of him to be outside the requirements of the contract or if he considers any action or ruling of the contracting officer or of the inspectors to be unfair, the contractor shall without undue delay, upon such demand, action, or ruling, submit his protest thereto in writing to the contracting officer, stating clearly and in detail the basis of his objections. The contracting officer shall thereupon promptly investigate the complaint and furnish the contractor his decision, in writing, thereon. If the contractor is not satisfied with the decision of the contracting officer, he may, within thirty days, appeal in writing to the Secretary of War, whose decision or that of his duly authorized representative shall be final and binding upon the parties to the contract. . ."* Paragraph 2-16 of the specifications.

*"Disputes.—Except as otherwise specifically provided in this contract, all disputes concerning questions of fact arising under this contract shall be decided by the contracting officer subject to written appeal by the contractor within 30 days to the head of the department concerned or his duly authorized representative, whose decision shall be final and conclusive upon the parties thereto. In the meantime the contractor shall diligently proceed with the work as directed."* Article 15 of the contract.

*The court held that the effect of the clauses was to make the decision of the government contracting officer final on questions of law, as well as questions of fact. This left the Court of Claims apparently without jurisdiction to determine any legal issues arising under these contracts and all decisions were left in the hands of the government contracting officer with no appeal to the courts.*

●

In some jurisdictions, the courts have applied the *Moorman* rule strictly to similar situations presented to them:

In *United States* v. *Foster Transfer Co.*, a contract had been entered into between the Government and Foster, whereby the company was to furnish to the government such drayage, packing, and crating of supplies, as would be required by the Procurement Division of the United States Treasury Department. The contract contained the provision, "that the Government reserves the right to cancel the contract at any time for what may be deemed good and sufficient cause." The contract further provided that, "disputes—except as otherwise specifically provided for in this contract, all disputes concerning questions of fact arising under this contract shall be decided by the contracting officer subject to written appeal by the contractor within thirty (30) days to the Secretary of the Treasury or his duly authorized representative, whose decision shall be final and conclusive upon the parties hereto."

The Government subsequently cancelled the contract on the grounds that performance by Foster had been unsatisfactory. The Secretary of the Treasury affirmed the contracting officer's

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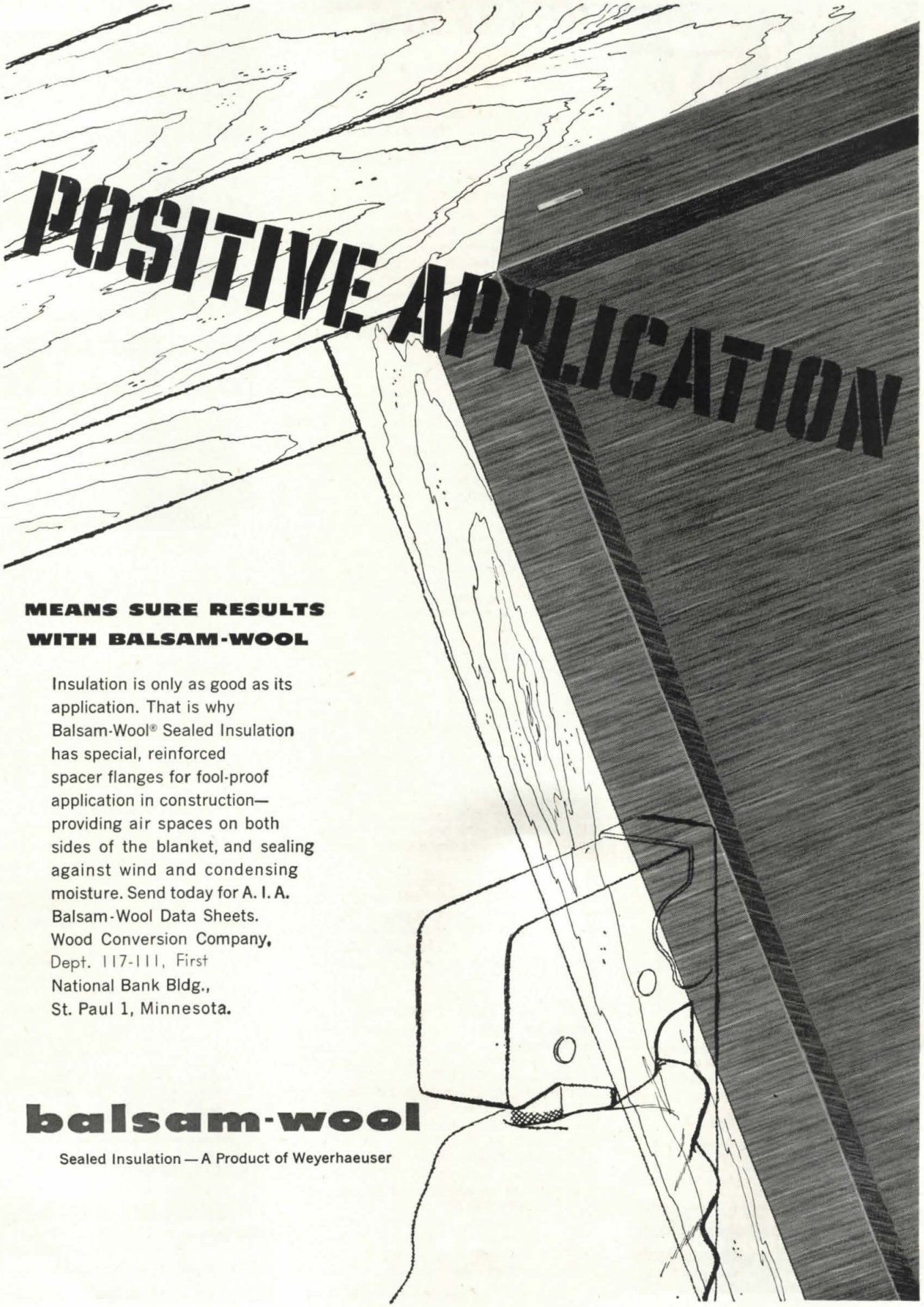


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# it's the law

(Continued from page 150)

cancellation of the contract. It was claimed by Foster that such action was arbitrary and that by reason of such cancellation the company had sustained financial loss. The United States Government contended that under the provisions of the contract the court was without jurisdiction to review the decisions of the Government contracting officer. This contention was upheld by the court which based its opinion squarely on the *Moorman* decision, saying:

"We should state that in our opinion the first issue framed by the pleadings, and one to which much of the testimony was directed, viz, whether the Treasury Department had good and sufficient cause to cancel the contract, could not be properly brought before the court. In *United States* v. *Moorman*, 338 U.S. 457, 460-461, 70 S. Ct. 288, 290, the Supreme Court, *** emphasized the duty of trial courts to recognize the rights of the parties to make and rely on such mutual agreements as those included in Articles 3 and 21 of the contract in the instant case, and pointed out that a determination of all questions arising under the contract by the person designated therein to make such determination shall be 'conclusive, unless impeached on the ground of fraud, or such gross mistake as necessarily implied bad faith.'

"In the instant case the Treasury Department had the right 'to cancel the contract at any time for what may be deemed to be just and sufficient cause.' Article 21. Decision of a controversy arising under the contract, including whether or not it was cancelled for good and sufficient reason was expressly confided to the Secretary of the Treasury. Article 3. The Secretary determined that the cancellation was effected for just and sufficient cause and gave as a reason unsatisfactory performance by Foster. The complaint did not allege fraud or gross mistake in effecting the cancellation."

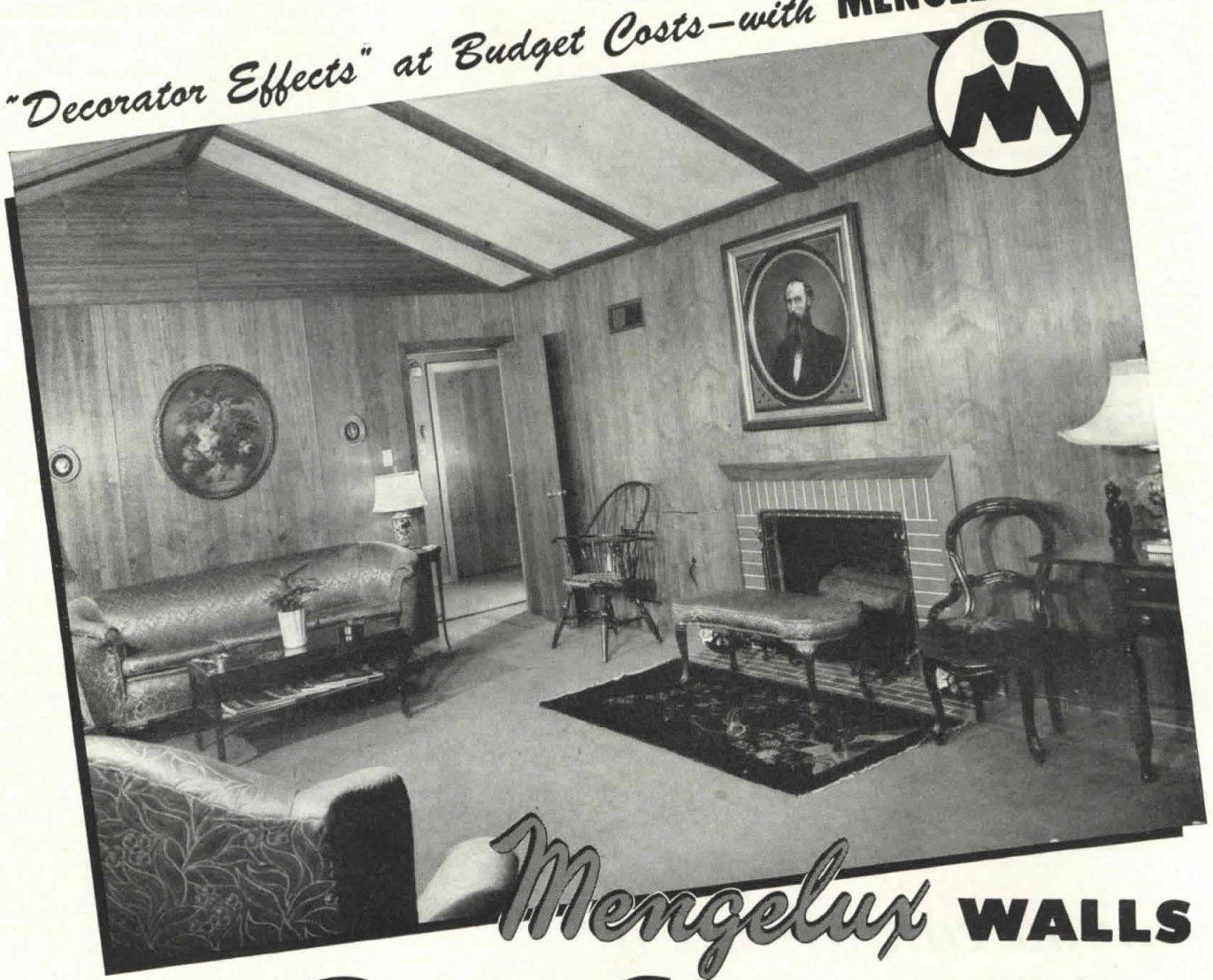
The effect of this decision, in the absence of "fraud" and "bad faith" is to allow the Government to cancel its contract, without fear of subsequent legal proceedings, since it alone has power to decide "all disputes arising under this contract".

●

In *Lindsey, et al* v. *United States*, the contractor commenced suit to recover damages against the Government for breach of contract claiming loss due to the Government's failure to perform its part of a building contract. The contract contained the usual "disputes clause." The Government contracting officer admitted that he had failed to consider prefabrication costs in the computations; but the court held that in the absence of a showing as to what the amount of the prefabrication cost was, it could not hold that such error indicated a mistake so as to warrant an inference of fraud. The court stated that under the terms of the contract final decision was left

(Continued on page 154)

*"Decorator Effects" at Budget Costs—with* **MENGEL PLYWOOD**



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If you haven't checked the beauty, convenience, and low cost of Mengelux fancy-face plywood, you're missing one of today's best building-material bets!

Mengelux is *hardwood* plywood with fancy faces of Mahogany, Walnut, Oak or Birch. It's available in large 48″ by 96″ panels and in other standard stock sizes. It is quality-built and precision-cut to perfect dimensions.

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# it's the law

(Continued from page 152)

entirely in the hands of the department head, stating:

"The Supreme Court has stated the law governing decisions by such a contracting officer on questions of fact that such decisions 'shall be final and conclusive, and that, in the absence of fraud or of mistake so gross as to necessarily imply bad faith, such decision will not be subjected to the revisory power of the courts.'"

●

Not all cases decided in accordance with the *Moorman* decision have proven detrimental to those contracting with the United States Government. An interesting sidelight into what may result if the *Moorman* decision is strictly adhered to may be seen in the case of *James Graham Manufacturing Co.* v. *United States.* In that case the contractor entered into a cost-plus fixed fee contract with the United States Navy Department, which contained the usual "disputes clause." As work was performed under the contract, the contractor periodically submitted invoices containing statements of the costs incurred. Pursuant to the terms of the contract, the Bureau of Supplies and Accounts of the Navy examined the invoices and determined that the cost items set forth were reimbursable. Among the items approved were those for charitable donations, membership dues in certain organizations, legal and auditing fees, subscriptions to periodicals, employees' dinners, traveling expenses, courtesy gifts to railroad and postal employees, the employees' pensions, and certain overhead expenses—totalling over $13,000. The designated Navy distributing officer reimbursed the contractor for these costs.

The Comptroller-General of the United States noted an exception to the account of the disbursing officer on the ground that the cost items set forth should not be reimbursable to the plaintiff under the contract. Upon further audit of the cost statement the Bureau of Supplies and Accounts concurred in the opinion of the Comptroller-General, as to items totalling over $5000; but as to costs of over $7000 for certain charitable donations, certain of the membership dues, and the legal and auditing fees, the Bureau reaffirmed its previous determination that they were properly reimbursable to the plaintiff. The Comptroller-General again excepted to the account and the Bureau's decision. In a suit to recover the sum determined by the Bureau, the court held that the Comptroller-General was without authority under the contract to question the determination of the Bureau and stated:

"Upon the undisputed record, no disagreement exists between plaintiff contractor and the Navy Department with whom plaintiff contracted. Nor is any material or genuine factual issue raised on the motion. Rule 56, F.R.C.P. 28 U.S.C.A. Since the Navy Department concedes the correctness of plaintiff's claim, there is no reason for plaintiff to exhaust the contractual administrative settlement procedure, by appealing to the Secretary of the Navy, as a prerequisite to court action.

"Another officer of the United States government, the Comptroller-General, who has general control of the government's purse strings, has refused to sanction payment of the account which the Navy Department has approved. The question tendered by the motion is: Has he power to determine that payment shall not be made?

"The powers of the Comptroller-General are extensive and broad. But he does not, absent fraud or overreaching, have authority to determine the propriety of contract payments when the contracts themselves vest the final power of determination in the contracting executive department.

"True, the contracts in suit do not expressly state that the Navy Bureau of

(Continued on page 156)

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**—one for closets, partitions, storage walls and compartments**

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A closet or storage space may be one of the standard sizes—or extend the width of the room. Two or more doors enclose it entirely. Instead of exposing only part of the interior, as with a swinging door, you have full access. *Nine standard opening sizes:* 32", 36", 40", 48", 56", 60", 72", 84", and 96". *Five standard heights:* 6'0", 6'6", 6'8", 6'10", and 7'0".

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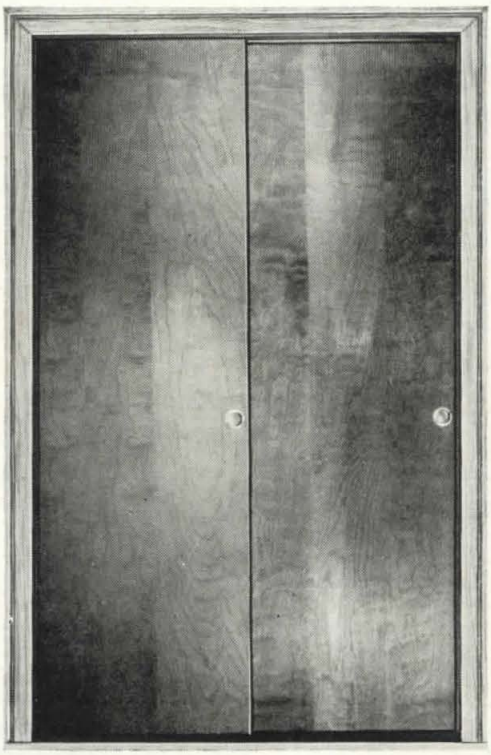
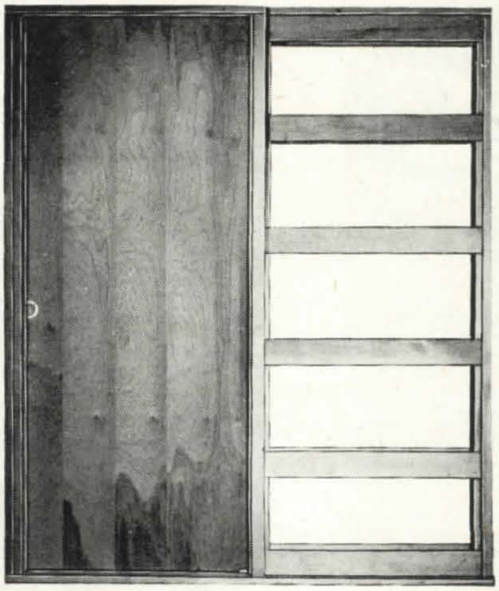
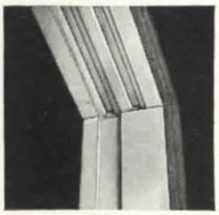




Revolving roller guides operate in head track; vulcanized rubber rollers run on finished floor.



Head tracks are accurately machined for perfect operation of revolving roller guides; side jamb is routed to receive the door.

Passageway door slides easily into wall pocket.

Simple floor guides, installed flush with finished floor, eliminate need for floor track.

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# it's the law

(Continued from page 154)

Supplies and Accounts' determination of the reimbursable costs, shall be conclusive. But the most likely intention to be deduced from what is said is, that the Bureau's decision should govern. And, at all events, there is no doubt but that the parties intended that the question of reimbursable costs should be settled within the Navy Department. For the Secretary of the Navy is vested by the contracts with the power to finally determine all disputes for which the contracts do not specifically provide any other mode of settlement.

"The Comptroller-General and this Court might perhaps question the policy of reimbursing cost-plus contractors for association dues and charitable contributions. But the contracts permit reimbursement for expenditures of this general character. And the Navy Department's decision that these particular dues and contributions are reimbursable is not arbitrary or unconscionable.

"Since the Navy Department has determined that plaintiff contractor is entitled to the payment sought, this Court must adjudge accordingly."

●

The conclusion that may be reached from the cases decided thus far is that the *Moorman* decision has and probably will have a decisive effect on dealings between the Federal government and architects, engineers, contractors, and persons similarly situated. Although in an occasional case it may be possible to squeeze a situation into the "fraud" or "bad faith" exception, in most situations the determination of the Federal government contracting officer will be final and conclusive.

The practical approach is to recognize the fact that although one contracting with the United States Government may have no alternative but to accept the "disputes clauses", such person should enter into the agreement with his eyes open. An even more practical solution is for organizations of architects, engineers and contractors to make determined efforts to avoid the situation decided in the *Moorman* case by having the "disputes clauses" stricken out of government contracts so that the Federal agencies will cease being judge and jury—as well as owner.

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(Continued from page 97)

Stanley Works; rolling door hardware—Lawrence Steel Co. **Paint:** exterior and interior—Pittsburgh Plate Glass Company.

### EQUIPMENT

**Kitchen:** stainless-steel sink—Zeigler-Harris & Company. **Intercommunication:** Pacific Telephone & Telegraph Company. **Elevators:** oil-hydraulic freight—Rotary Lift Company. **Lighting fixtures:** plant area: R. L. M. and explosion-proof fixtures—Crouse-Hinds Company; office area: ceiling-mounted fluorescent—Sunbeam Lighting Company; lobby area: recessed incandescent—Art Metal Company. **Electric distribution:** main switch board—Westinghouse Electric Corporation; flush, single-duct system, wiring, cable, conduit—National Electric Products Corporation; wiring devices—Arrow-Hart & Hegeman Electric Company; surface and flush type panelboards for lighting power—Westinghouse Electric Corporation and Square D Company. **Plumbing and sanitation:** vitreous-china lavatories, tubs, water closets—American Radiator & Standard Sanitary Corporation; plastic toilet seats—Sperzel Company; electric water heater—Vacuum Can Company; flush valves—Sloan Valve Company; foot-controlled, circular washfountain—Bradley Washfountain Company; overhead sprinkler system—Automatic Sprinkler Corporation of America; metal shower cabinets—Fiat Metal Manufacturing Company; *shower controls*—Josam Manufacturing Company; seamless, porcelain-on-steel medicine cabinets—Hall-Mack Company. **Heating:** office area: warm air; plant area: unit heaters—American Blower Corporation; gas-fired immersion steam boiler—Sellers Engineering Company; galvanized, black steel and copper piping; controls—American Blower Corporation; steam heating coils—Aerofin Corporation. **Air Conditioning:** built-up central unit; diffusers, grilles, electrical controls — Barber-Colman Company; supply and exhaust blowers—American Blower Company; glass fiber filters—Owens-Corning Fiberglas Corporation; gravity ventilators—G. C. Breidert Company.

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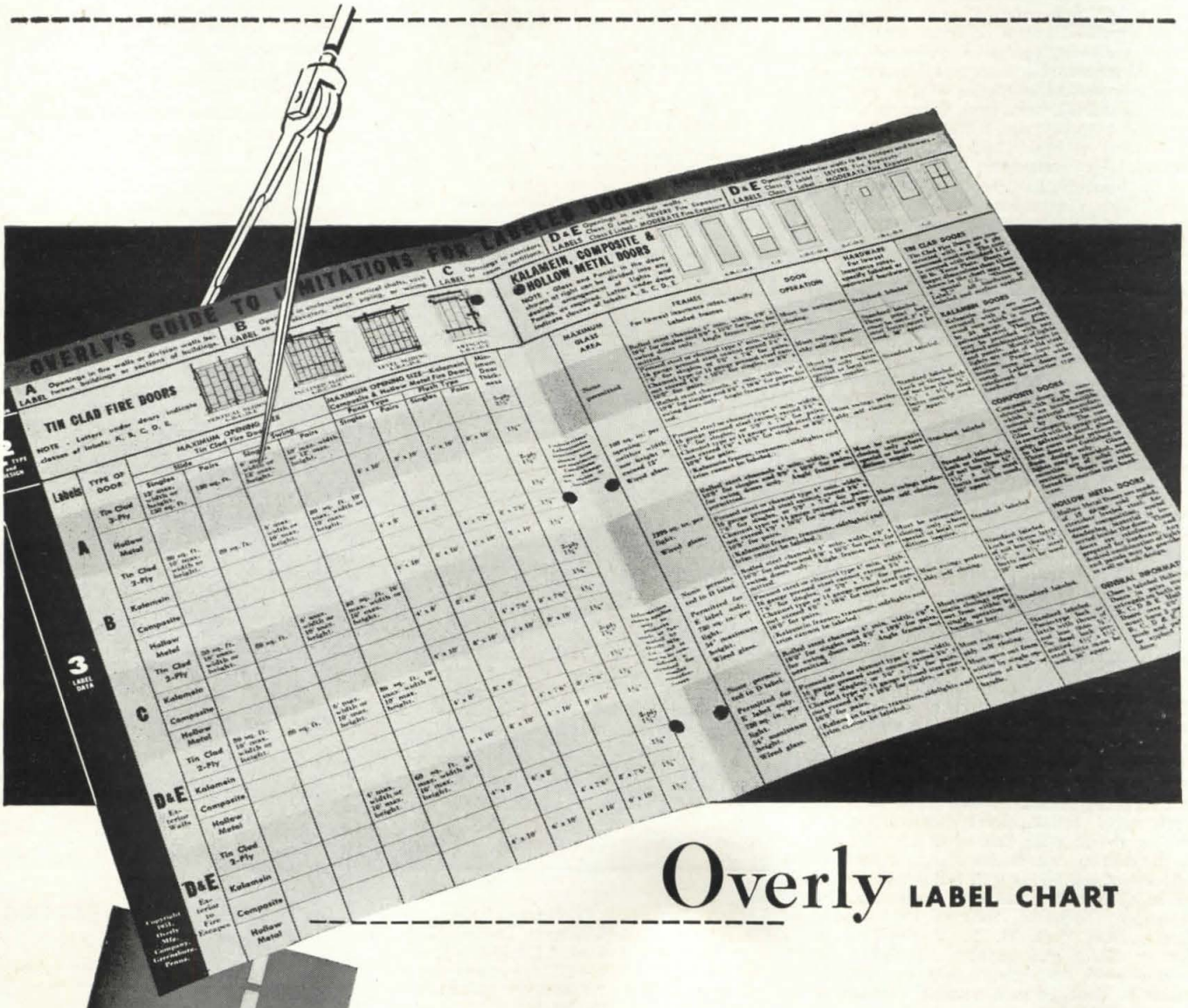


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### Advertising Rates

Standard charge for each unit is Five Dollars, with a maximum of 50 words. In counting words, your complete address (any address) counts as five words, a box number as three words. Two units may be purchased for ten dollars, with a maximum of 100 words. Check or money order should accompany advertisement and be mailed to Jobs and Men, c/o Progressive Architecture, 330 W. 42nd St., New York 18, N. Y. Insertions will be accepted not later than the 1st of the month preceding publication. Box number replies should be addressed as noted above with the box number placed in lower left hand corner of envelope.

## SITUATIONS WANTED

SPECIFICATION WRITER—expert, rapid, dependable. Extensive experience includes heavy industrial work, hospitals, schools. Also familiar with Army, Navy and Government requirements and procedure. Desire permanent connection with large organization, Chicago or vicinity, although location not vitally necessary. Detailed information furnished upon request. Box 400, PROGRESSIVE ARCHITECTURE.

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ARCHITECT-ARTIST AND DELINEATOR—of long experience, offers services for freelance architectural renderings and perspectives, bird's-eye views of real estate developments, city-planning projects, engineering structures, highways and bridges. Construction of "perspectives in lines," without rendering. Instruction in Perspective and Rendering. Theodore A. De Postels, A.I.A., 644 Riverside Drive, New York 31, N. Y. AUdubon 6-0160.

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ARCHITECTS-DESIGNERS—don't be burdened with the overhead of *draftsmen and space*. Let us do your preliminary sketches, details, working drawings, renderings and engineering on houses, institutional and commercial work. All work is done under the supervision of architects and engineers. Architectural Drafting Service, 35 So. Dearborn St., Chicago 3, Ill.

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MURIEL FEDER-ARCHITECTURAL & DESIGN PERSONNEL AGENCY—a personalized placement service for top-level architects, designers, engineers, draftsmen, estimators, and interior designers. Selective contacts arranged in a confidential and professional manner. Interviews by appointment. 724 Fifth Avenue, New York, Judson 6-5877.

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**Entrance Lobby**
**Hutchinson Public Library, Hutchinson, Kansas**
**English, Miller & Hockett, Architects and Engineers**

# ARMSTRONG'S LINOLEUM

ARMSTRONG CORK COMPANY • LANCASTER, PENNSYLVANIA


# 26 MILLION TONS of steel scrap "ain't hay"

IT took 57,000 tons of steel to build the Empire State Building in New York. That's about one-tenth of one percent of the tonnage of scrap required to produce the new steel demanded for America's defense and civilian needs this year.

Half of this scrap is produced by the steel mills themselves. The other half - approximately 26 million tons - must be supplied by the public. That tremendous tonnage is the equivalent of 461 Empire State Buildings - over 1400 carloads of scrap every day of the year.

Right now there is a scrap shortage. It threatens to interfere with steel production. So we appeal to you, as a user of steel and steel products, to do all you can personally to help collect scrap.

Somewhere in your place of business - and even at home - there are things that can be scrapped - worn-out or obsolete machines, pipe, boilers, tools, structural parts, etc., that you'll never use again in their present form. Turn them in through regular channels. Call the nearest dealer and start your scrap on its way to the steel mills - to help America reach its production goal of 105 million tons of new steel in 1951. It is this team-work that will help us win the victory again.

YOUR SCRAP IS NEEDED — YOUNGSTOWN

## The Youngstown Sheet and Tube Company

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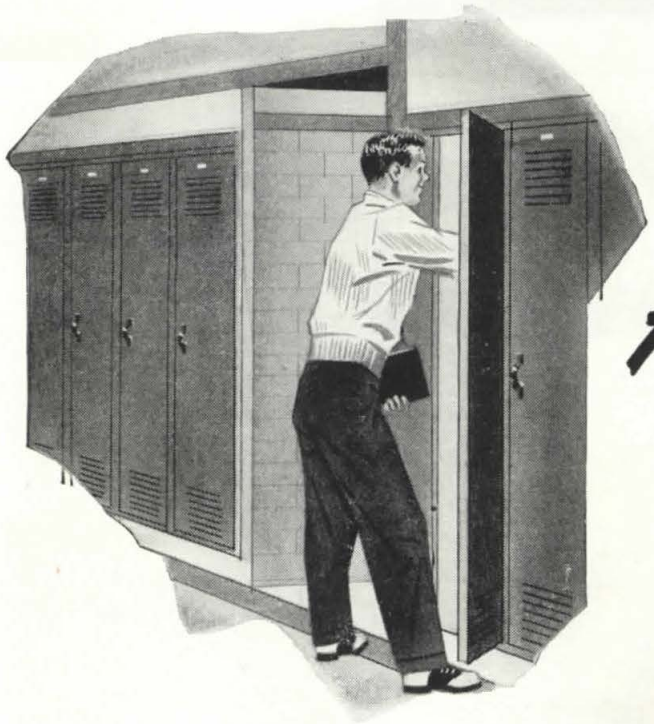
MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

The steel industry is using all its resources to produce more steel, but it needs your help and needs it now. Turn in your scrap, through your regular sources, at the earliest possible moment.



# Student Headquarters

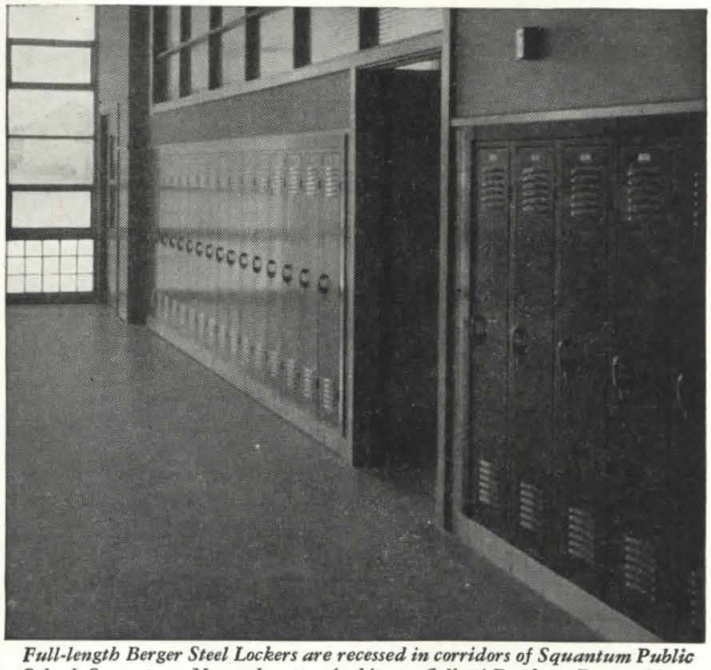
## FOR EVERY SCHOOL ACTIVITY

EVERYONE answers "present" when it's time for new locker assignments. As quickly as possible each term, students are anxious to establish their headquarters at convenient Berger Steel Corridor, Classroom and Gymnasium Lockers.

They know the help their individual Berger Lockers will give in the successful completion of the coming term. They know they safely and capably will store books, supplies, clothing, instruments, athletic equipment—all the wonderful things necessary for busy school life.

And, in relieving students of undue concern over the safety of personal possessions . . . in freeing them from the need for carrying all their equipment . . . the Berger Steel Lockers you specify give students more freedom to concentrate on studies and activities—help better fit them to assume their future responsibilities.

Plan to include plenty of steel storage equipment in your future school designs. To be sure that such equipment is completely functional, efficient, attractive and durable, see that it bears the famous Berger nameplate. Experienced Berger representatives will be happy to help you with any design, engineering or installation problem. See Sweet's File, or write:



*Full-length Berger Steel Lockers are recessed in corridors of Squantum Public School, Squantum, Massachusetts. Architects: Colletti Brothers, Boston, Mass.*

Berger REPUBLIC STEEL

**Manufacturing Division**

**REPUBLIC STEEL CORPORATION**

**1038 BELDEN AVE. CANTON 5, OHIO**

**A COMPLETE STEEL EQUIPMENT SERVICE FOR THE SCHOOLS OF AMERICA**

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**Lockers • Wardrobes • Storage Cabinets**
**Office Equipment and Furniture**
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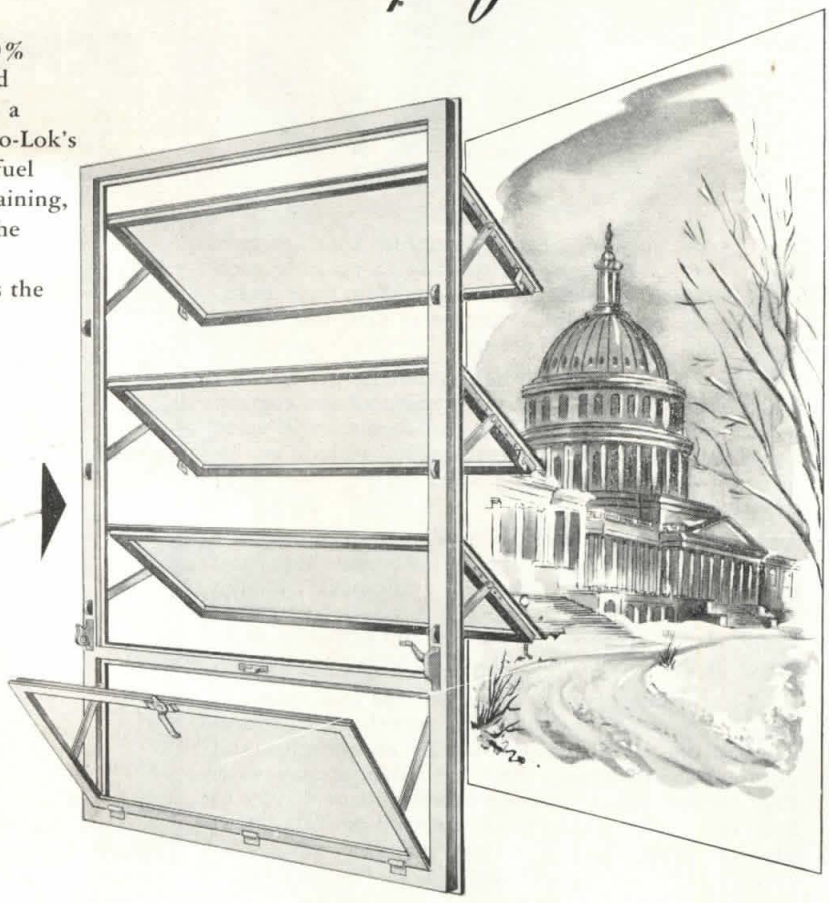
BERGER STEEL SCHOOL EQUIPMENT

# how an Architect WHIPPED THE WEATHER IN WASHINGTON through Auto-Lok PATENTED

*The perfect window*

As any resident of the District will tell you, our nation's Capitol is no 'all-weather' paradise. Accordingly, in designing modern B'Nai Israel Synagogue* there, astute Architects Brandt & Waronoff looked first to Auto-Lok aluminum windows for basic, efficient and economic weather control. For here is a window -- The Perfect Window -- which opens widest, providing 100% draft-free ventilation, yet when closed is sealed like a refrigerator to reduce air infiltration to a minimum heretofore believed impossible. Auto-Lok's unrivaled tight closure means *real* savings in fuel and cooling costs. Left open, even when it's raining, it affords plentiful ventilation, yet keeps out the water . . . Actually, Auto-Lok is regarded as *The Perfect Window* because it alone combines the best features of all window types.

*Architects: Brandt & Waronoff, Washington, D C.
Contractor: M Cladny Construction Co., Washington, D C.



- Tightest closing -- sealed like a refrigerator.
- Widest opening -- 100% ventilation.
- Ventilation -- even when it's raining.
- Finger-tip control -- as easy to open as to close.
- Automatic locking thwarts intruders -- vents cannot be worked loose or be jimmied.
- Draft-free ventilation -- air scooped in and upward.
- Delayed action opening -- 100% control of ventilation.
- Clean the outside from the inside.
- Removable inside screens and storm sash.
- Unobtrusive operator -- no interference with blinds, drapes, etc.
- Precision balanced hardware eliminates need for periodic adjustment; absolute minimum of maintenance.
- Skyscraper to cottage, Auto-Lok meets every requirement.

**Auto-Lok** PATENTED
**WINDOWS**
aluminum or wood
SEALED LIKE A REFRIGERATOR

**LUDMAN** Corporation
BOX 4541 • MIAMI, FLORIDA

*Tightest Closing Window Ever Made*

For further details on Auto-Lok -- The Perfect Window -- see SWEET'S and, by all means, write for the name of your distributor and a copy of the free booklet ***"What Is Important In A Window?"*** address Dept. **PA 11**

# HIGH RUST-RESISTANCE PLUS EASY WORKABILITY

## ... stretches sheet metal dollars

Yes, your client's sheet metal dollar buys more real, long-lasting value when you specify Toncan Iron.

Toncan is the *alloy iron* which consistently outlasts other ferrous sheet metals because it so stubbornly resists rust.

Made from highly-refined open hearth iron, it is remarkably free from rust-inviting impurities. It contains copper—twice as much as ordinary copper-bearing steels or irons—plus the exact amount of molybdenum necessary to make this double dose of copper most effective. Finally, its surface is protected with a zinc coating.

Toncan Iron is extremely ductile, and easy to work by all standard methods. What's more, fabrication does not affect its ability to fight rust. Toncan is rust-resistant through and through.

Economical to fabricate . . . long-lasting in service . . . Toncan Iron starts paying back its slightly higher initial cost almost immediately, and continues to stretch sheet metal dollars through the years.

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**GENERAL OFFICES • CLEVELAND 1, OHIO**
Export Department: Chrysler Building, New York 17, N.Y.

**for more than 40 years... HIGHEST RUST-RESISTANCE OF ALL FERROUS MATERIALS IN ITS PRICE CLASS**

TONCAN COPPER MO-LYB-DEN-UM IRON


### Here's the story

**COPPER-BEARING STEEL**

Open hearth steel + Copper = Ordinary copper-bearing sheets

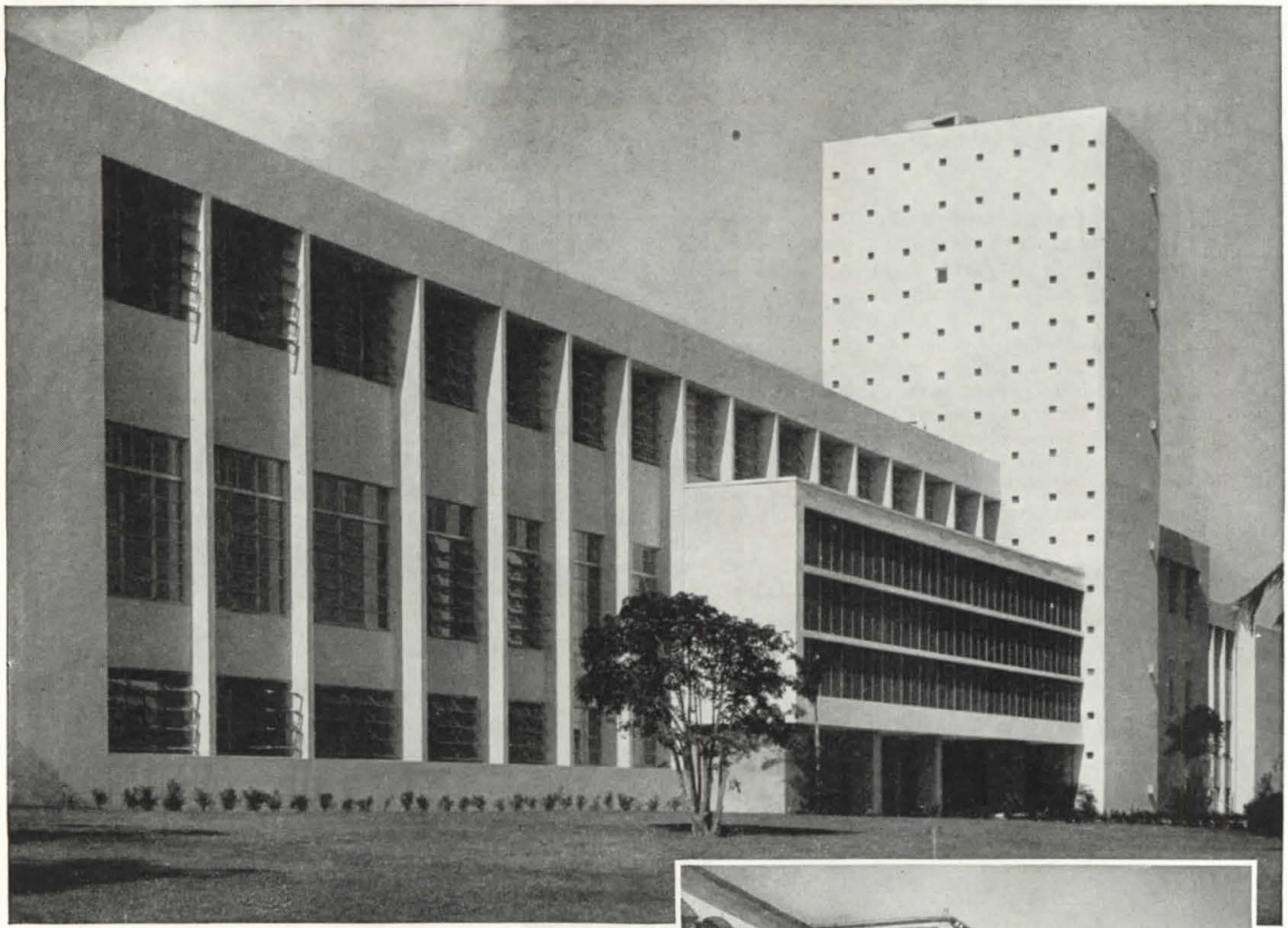
**TONCAN IRON**

Open hearth iron + Molybdenum in proper proportion + Twice as much copper = TONCAN IRON SHEETS, most rust-resistant ferrous sheets in their price class!

REPUBLIC STEEL

**Republic TONCAN® COPPER MOLYBDENUM IRON**

**— for ducts, gutters, conductor pipes, roofing, siding, tanks, ventilators, skylights, hoods and other sheet metal applications requiring rust-resistance — and for corrugated metal drainage products.**



*24 years of severe weathering demonstrate the durability of*

# CONCRETE CONSTRUCTION

The destructive hurricane of 1926 halted construction of the University of Miami's 8-million-dollar building program—including the Mediterranean style structure designed by Phineas Paist shown in the small photo at the right. For 24 years this reinforced concrete frame and floor skeleton stood exposed to rain, sun and hurricane winds.

In the spring of 1950 a subscription drive was launched to obtain funds to finish the building. Examination showed that the concrete frame was sound so the structure was redesigned by Architect Robert M. Little of Miami Beach, Fla., in keeping with the modern motif of present campus buildings.

The photo above shows the completed structure now known as the Merrick Building. The seven-story 100-ft. tower contains faculty offices and display rooms, the wings classrooms and lecture halls.

**Structural engineer for Merrick Building: A. H. Baxter, Coral Gables, Fla.; contractor: Gust K. Newberg Construction Co., Miami, Fla.**

●

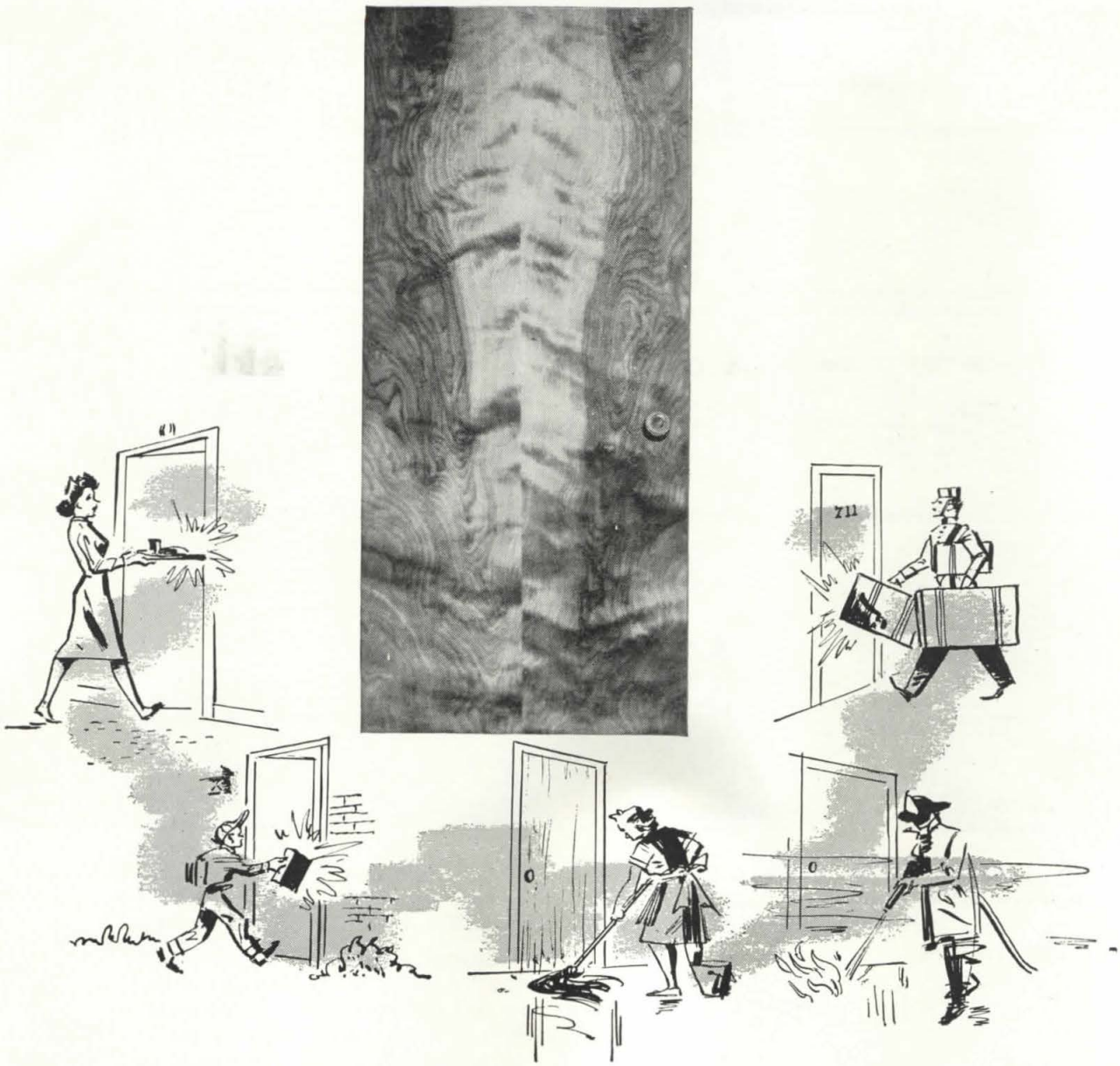
This is another graphic example of how reinforced concrete construction can "take it." Such construction has the strength and rigidity to resist all static and dynamic loads. It is durable, sturdy and firesafe.

Reinforced concrete construction is moderate in first cost, requires little or no maintenance, gives long years of service. Result: ***low annual cost.*** For more information send for free, illustrated literature. Distributed only in the United States and Canada.

**PORTLAND CEMENT ASSOCIATION**

**DEPT. A11-25, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS**

**A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work**



# Roddiscraft DOORS... face the facts of life

Doors lead a double life — they must be both decorative and durable. Roddiscraft Solid Core Flush Veneered Doors are constructed to resist abuse, water, fire — and wide variations in temperature and humidity. They are warmly beautiful, as only natural wood can be.

The engineering principles of plywood construction account for the great strength and durability of Roddiscraft doors. Standard thickness face veneers are bonded to 1/10" hardwood cross-bandings with fully waterproof phenolic resin glue . . . forming an assembly which when backed by the solid core, is very difficult to chip or split.

Standard thickness face veneers . . . 1/28" for most woods . . . stand up better to extremes of temperature and humidity. With the waterproof glue line so near the surface, shrinking and swelling of face veneers is practically eliminated . . . the formation of hairline cracks is prevented . . . permanent beauty is assured.

Where you need the best in beauty and durability, specify Roddiscraft Solid Core Flush Veneered Doors. See Sweet's Architectural File, Page $\frac{16C}{Ro}$ for complete specifications, including hollow core doors, X-ray doors and doors for added fire protection.

**Roddiscraft**

**RODDIS PLYWOOD CORPORATION**

Marshfield, Wisconsin

**NATIONWIDE Roddiscraft WAREHOUSE SERVICE**

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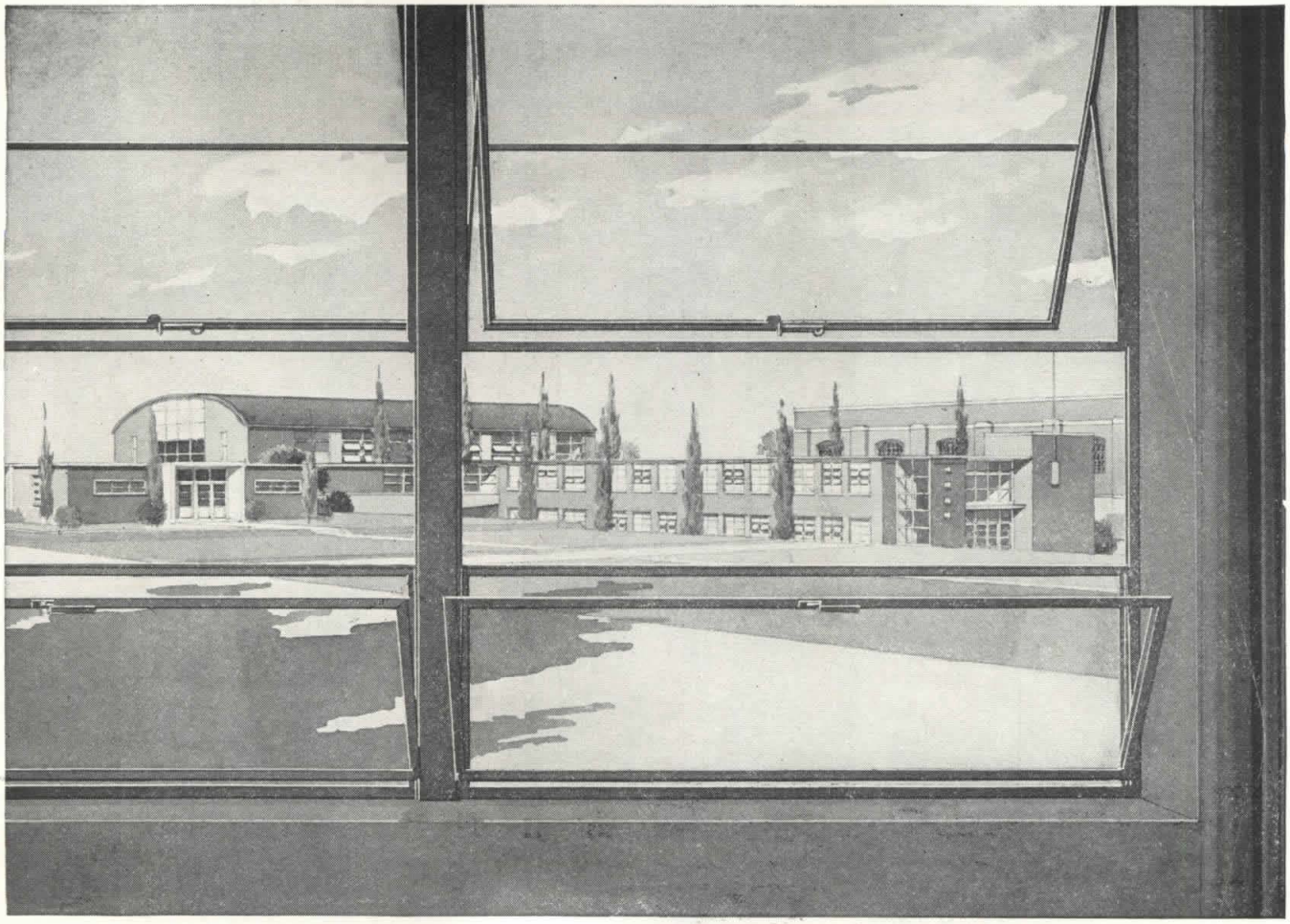


Junior High School for Girls, Macon, Georgia. Architects: MacEwen, Hall & Ferguson

Imagine yourself in one of these bright, airy classrooms. These Lupton Metal Windows are as different from those in outdated schools, as new educational concepts are from the old.

Lupton Metal Windows have slender frames and muntins that let in maximum daylight. Ventilation can be controlled in any weather with easy-to-operate hardware. Here are metal windows that will not rot, shrink, warp, swell or rattle—windows that will last year after year with a minimum of maintenance.

Whether you plan a school designed as modern as tomorrow—or traditional in style—you'll find Lupton Metal Windows that fit right into your architectural scheme. Write for our General Catalog—or see it in Sweet's.

MICHAEL FLYNN MANUFACTURING CO.
700 East Godfrey Avenue, Philadelphia 24, Penna.
*Member of the Metal Window Institute and Aluminum Window Manufacturers' Association*

# LUPTON METAL WINDOWS

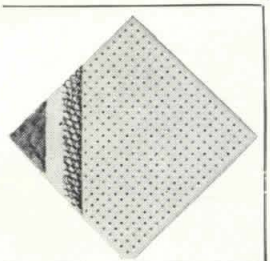
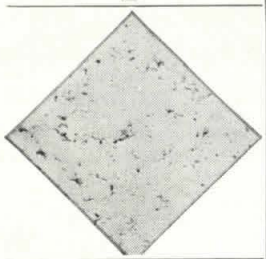
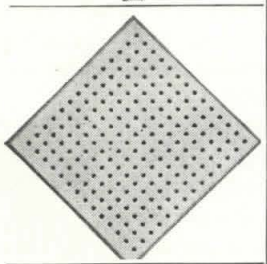
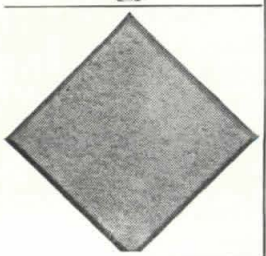
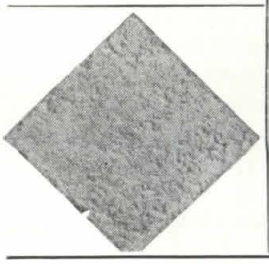
# Gold Bond's COMPLETE LINE OF ACOUSTICAL PRODUCTS

## MEETS EVERY SOUND CONDITIONING NEED . . . FITS EVERY BUDGET!

YOU'LL find the answer for *any* acoustical job in Gold Bond's complete line of acoustical products. Take a look at the chart below and you'll *see* the answer. Call your local Gold Bond Acoustical Applicator, listed in the phone directory under "Acoustical Contractors". He's a factory-trained and experienced engineer and at no obligation will be glad to work with you in selecting the right product to fit your budget. For additional information see our section in Sweet's, or write Division Z, Dept. PA/41.

**NATIONAL GYPSUM COMPANY, BUFFALO 2, NEW YORK**

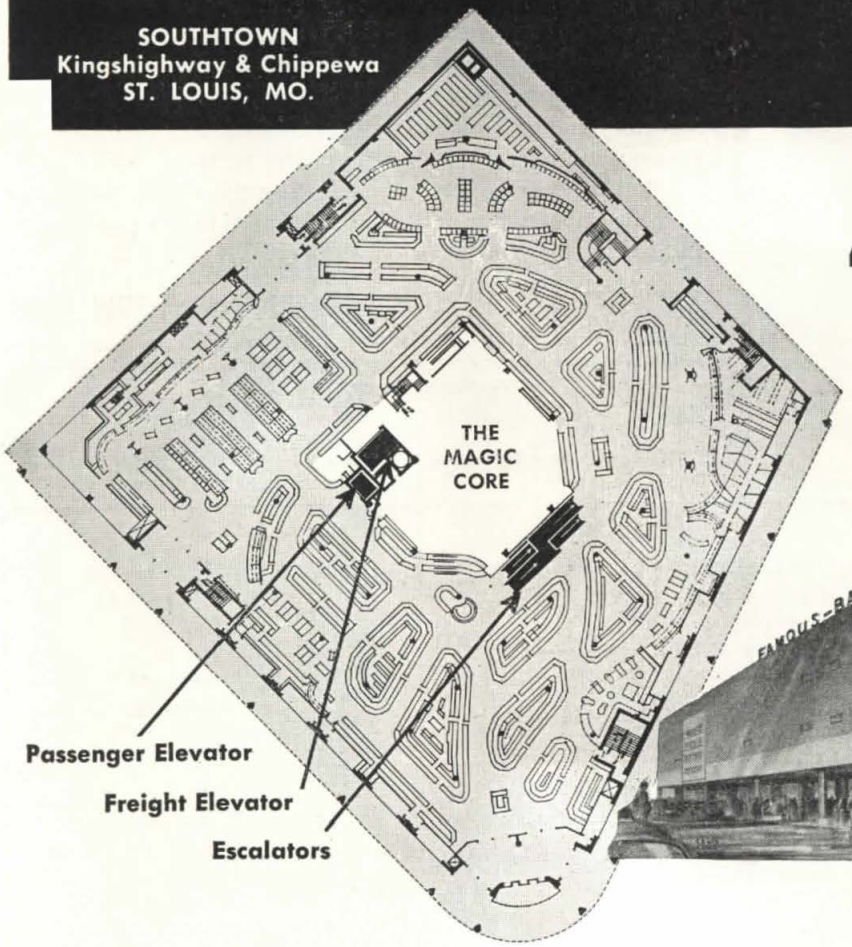
*Lath . . . plaster . . . lime . . . sheathing . . . wall paint . . . rock wool insulation . . . metal lath and sound control products . . . fireproof wallboards . . . decorative insulation boards.*

| | Noise Reduction Coeff. | Thickness | Sizes | Finish |
|---|---|---|---|---|
|  **ACOUSTIMETAL** Low maintenance cost. Can be washed or painted any number of times. Panels quickly removed for access to plumbing and wiring. Fireproof, permanent, salvageable. | .85 | 1¼" | 12" x 24" | Alkyd resin enamel finish. Baked on by infra-red light. Bonderizing of metal assures greater adhesion of paint. |
|  **TRAVACOUSTIC** Fireproof mineral tile. Closely resembles beautiful travertine stone. Fissures vary in size, depth, and arrangement. Permanent, sanitary, acoustically efficient. | .65<br>.70 | 11/16"<br>13/16" | 6" x 6"<br>6" x 12"<br>12" x 12"<br>12" x 24" | Non-glaring white finish applied at the factory gives high light-reflection. Repaintable with brush or spray gun. |
|  **ACOUSTIFIBRE** Perforated wood fibre tile. Round, clean holes drilled deep into porous core. Chemically-treated against mould and fungus. Sanitary, cleanable, repaintable. | .50<br>.65<br>.70 | ½"<br>⅝"<br>¾" | 12" x 12"<br>12" x 24" | Factory-applied shell-white finish on face and bevels results in high light-reflection. |
|  **ECONACOUSTIC** Low cost wood fibre tile. Distinctive brushed texture surface offers unusual natural beauty. Cleanable with vacuum cleaner. | .60 | ½" | 12" x 12"<br>12" x 24" | Prepainted white. May be spray-painted when other colors are desired. |
|  **THERMACOUSTIC** A mineral wool product which is sprayed to various thicknesses. Fireproof and rot-proof. Especially adaptable to irregular surfaces. | .80 at ½" thickness | As desired | Monolithic | Fissured texture can be repainted to harmonize with the decorative scheme without destroying its acoustical properties. |

# FAMOUS-BARR Includes 7 Otis Escalators

**SOUTHTOWN**
**Kingshighway & Chippewa**
**ST. LOUIS, MO.**

## in "MAGIC CORE" Merchandising Machine





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

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

All elevators, escalators, telephones and public rooms are efficiently compacted within the "magic" service core in the center of the building. Departments are arranged in "shallow" design, providing wider open entrance areas and easy traffic flow. Every floor gains 300 lineal feet of wall space for merchandise display and stock. Less walking for sales people should raise their sales volume and improve their peak hour service.

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

Otis

*free-flow*
**SCALATORS**
increase store-wide sales

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

Otis designs, manufactures, installs and maintains every type of vertical transportation equipment, including electric dumbwaiters—*and assumes responsibility for the entire installation.*

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

Weldwood Kaylo Partition Panels in a New York showroom, Radio City. Installation by John Hartell & Co.

*Beautiful ... Fire-resistant ... Maintenance-free*

# WELDWOOD PARTITION PANELS

## ... made with a Kaylo* Core

These beautiful wood-faced partition panels are also the most *versatile* ever developed. They are readily adaptable to the low-railing, 7-foot and full ceiling height types of partitions. Made for use in offices, hospitals, schools and other institutions.

Weldwood Kaylo Partition Panels utilize the Kaylo core—a revolutionary new inert and incombustible core material . . . the same material used in the universally accepted Weldwood Fire Door which bears the Underwriters' Laboratories Label. They are made in 2 types—with either non-treated or fireproofed wood edge banding.

Weldwood Kaylo Partition Panels can be obtained with flush, architecturally clean faces of beautiful ash, avodire, birch, elm, gum, Korina, mahogany, oak, prima vera and walnut.

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Send for complete information, specifications and sample.

*Reg. Trademark, Owens-Illinois Glass Co.

Weldwood Kaylo Partition Panels

## Description

**Face Veneers:** Standard thickness, thoroughly kiln-dried and laid with grain at right angles to the grain of the crossbands. Both faces are smoothly belt sanded. Available in complete variety of decorative hardwoods.

**Crossbands:** Thoroughly kiln-dried hardwood 1/16" thick extending full width of the panel.

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**Core:** Incombustible Kaylo material.

**Adhesive:** Waterproof Tego film phenolic resin glued by hot plate process.

**Sizes:** Available in all sizes up to and including 4' x 8' or 8' x 4'. Stock thickness: 1¾".

Weldwood®

## WELDWOOD Partition Panels

*Manufactured and distributed by*

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Branches in Principal Cities.

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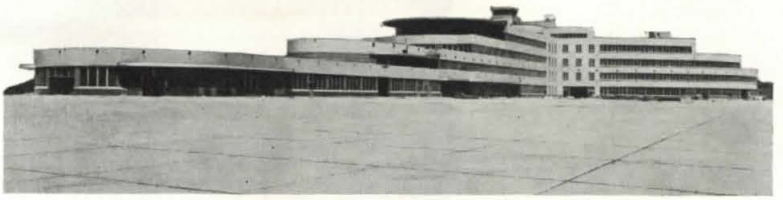
## CERAMIC GLAZED, COLOR ENGINEERED VITRITILE
*provides*
*lasting beauty*
*with permanent utility*




Two views showing use of Natco Ceramic Glazed Vitritile in Administration Building of the new Greater Pittsburgh Airport. View above shows long corridor lined with Natco Vitritile. View at left shows Vitritile laid in block bond construction in radial wall of main concourse.
Architect, Joseph Hoover, Pittsburgh, Consultants, Parsons, Brinkerhoff, Hall & MacDonald, New York City. General Contractor, Dick Construction Company, Pittsburgh, Pa.

In this three-block long Greater Pittsburgh Airport Administration Building, NATCO Ceramic Glazed Vitritile, 8W Series, 8" x 16" modular face size, was extensively used. These Vitritile interior walls in attractive buff tones, also in pleasing ivory and green mottles and solid green colors, are functionally desirable for good appearance and visibility and do much to add character and distinction to the building itself. These ceramic glazed interior walls will stand up under hard wear and abuse. Maintenance is practically eliminated except for occasional cleaning with ordinary soap and water.

Designed for either modular or conventional design, Natco Ceramic Glazed Vitritile with its complete line of shapes and co-ordinated fittings is completely adaptable to desirable and efficient layout design, with a minimum amount of cutting and fitting.

Write for additional information on NATCO Vitritile, also for literature describing other NATCO products making up the complete line of Natco Structural Clay Tile.

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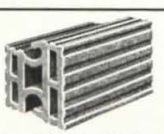
Chicago • Philadelphia • Boston • Toronto 1, Canada

**"The Quality Line Since 1889"**

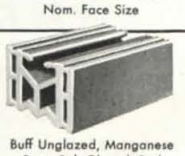

Raggle Blocks
Prevent Water Seepage
4" x 5½" x 12" Nom. Size


Speed-A-Backer Tile for
Backing Brick Faced Walls
12" long Varying Heights

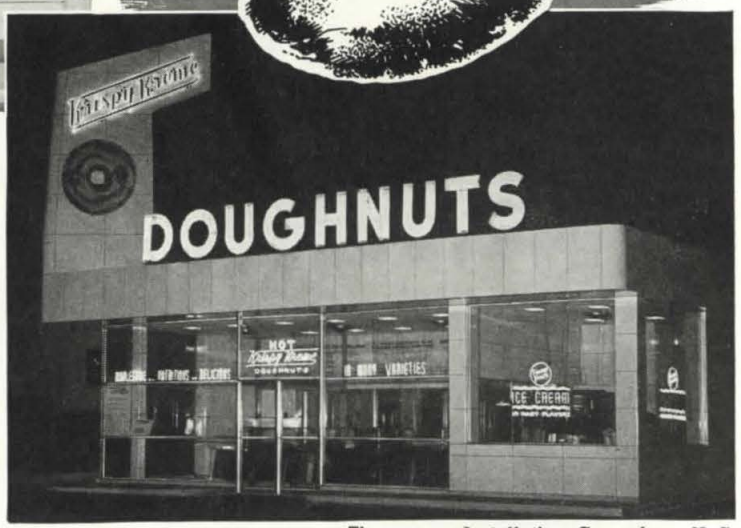

Ceramic, Clear
Glazed Vitritile 5½" x 12"
Nom. Face Size


Ceramic Glazed Vitritile
8" x 16" Nom. Face Size


Non-Loadbearing Tile, Scored
and Unscored, 12" x 12" Face
In Standard Wall Thicknesses


Buff Unglazed, Manganese
Spot, Salt Glazed, Red
Textured Dri-Speedwall Tile,
5½" x 12" Nom. Face Size


*Architect:* A. Hamilton Wilson, Washington, D.C.




Thermopane Installation, Greensboro, N. C.
*Architect:* Hall Crews, Winston-Salem.

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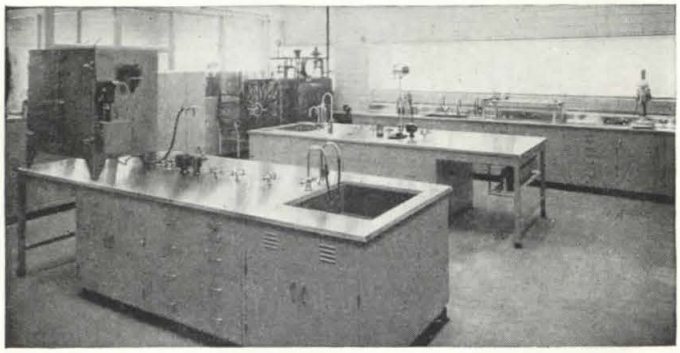

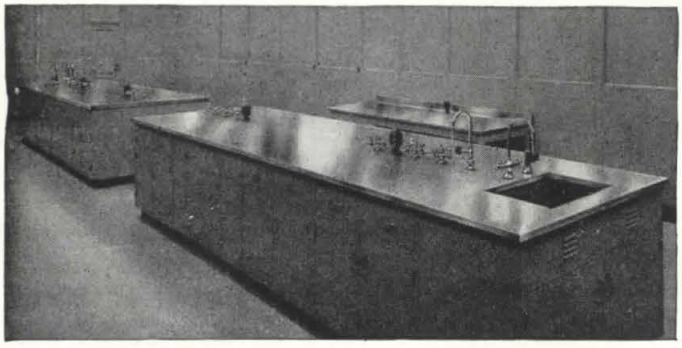

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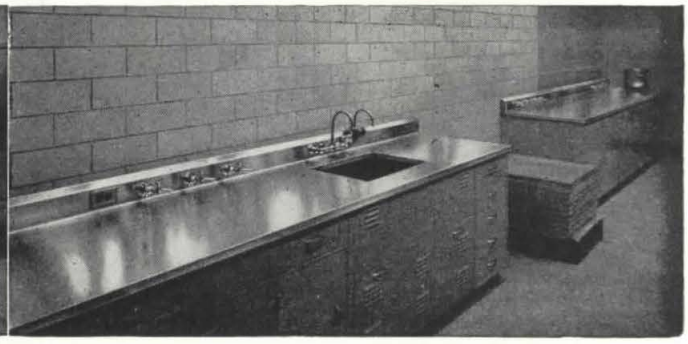

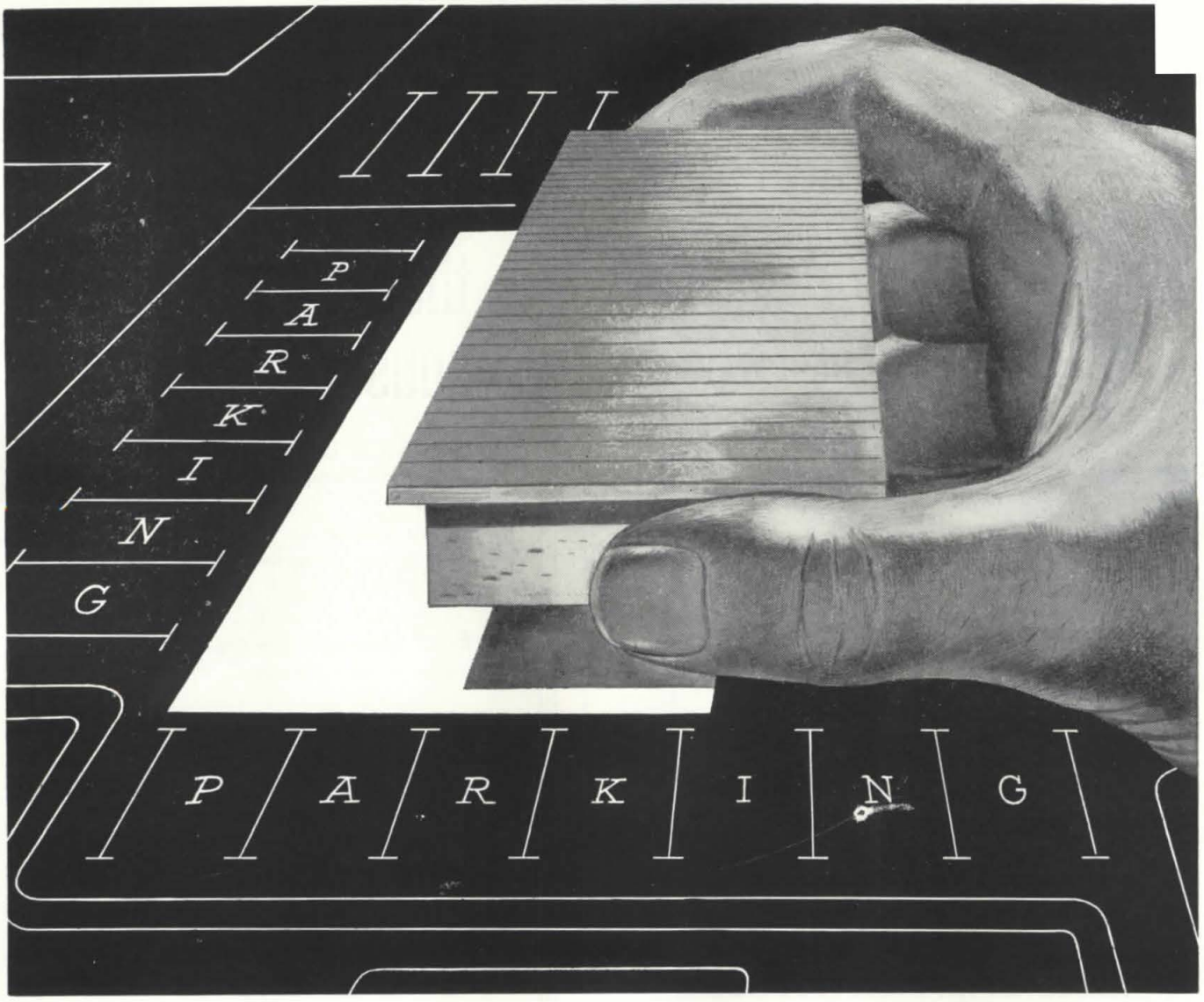


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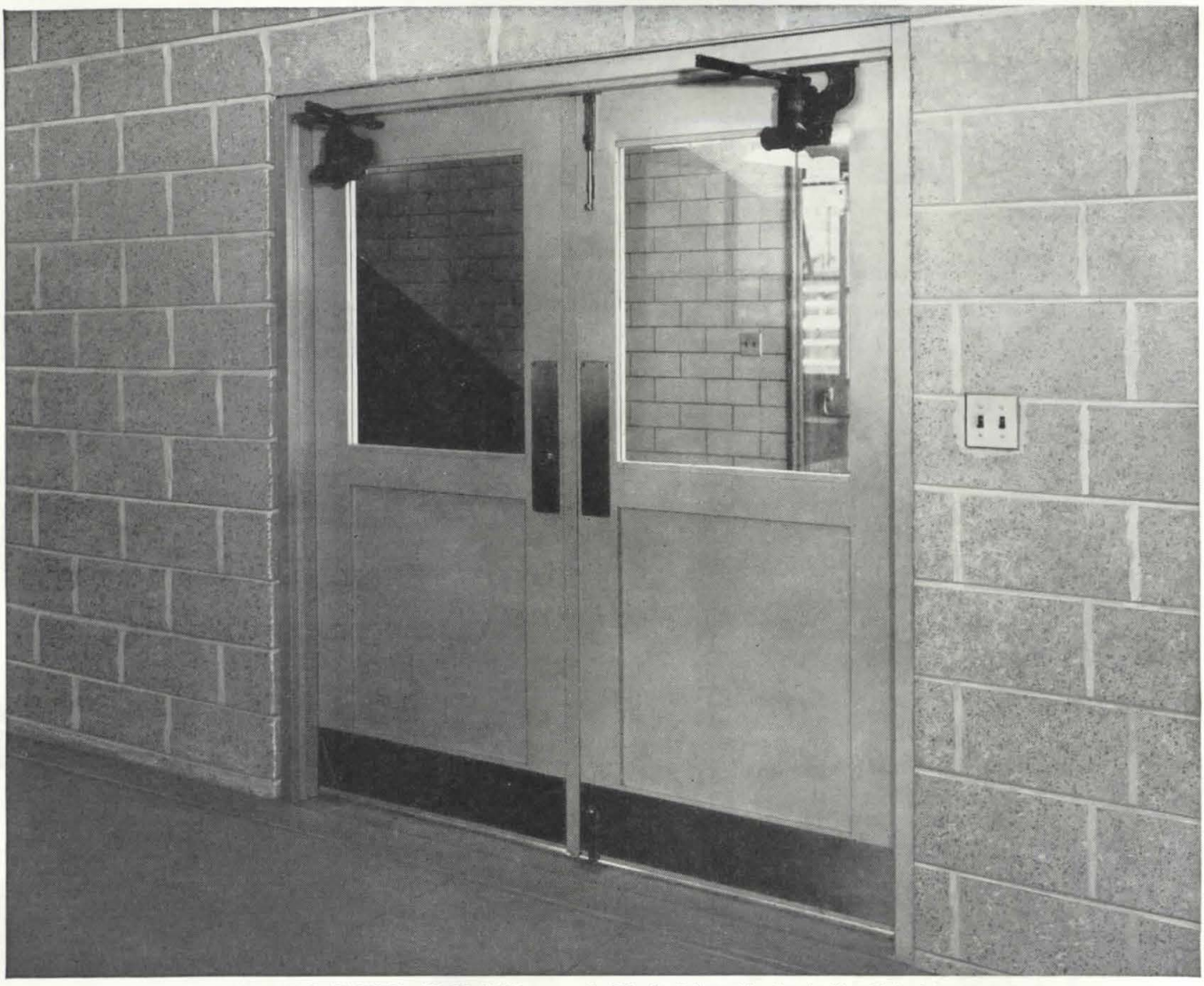

COMPLETE FENESTRA DOOR UNIT, one of 135, in Robert N. Mandeville High School, Flint, Mich. *Architect:* Bennett & Straight, Dearborn, Mich. *Contractor:* Karl B. Foster, Flint.

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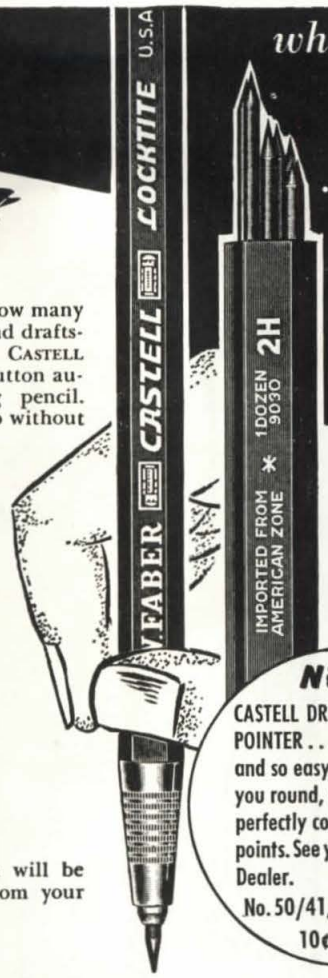


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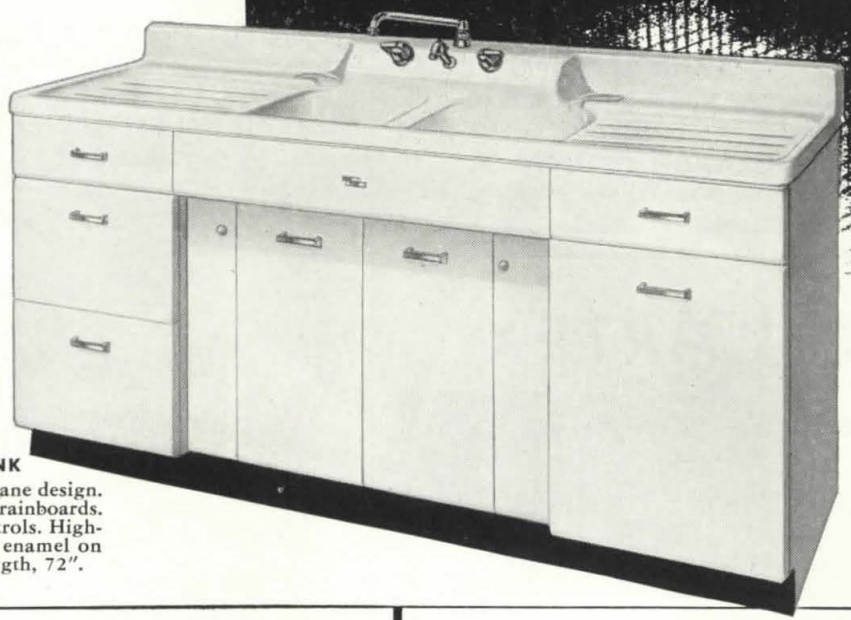

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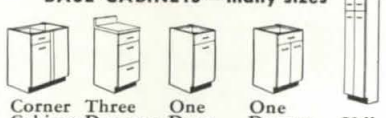

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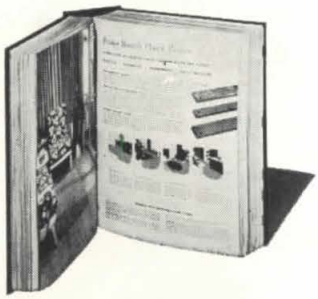

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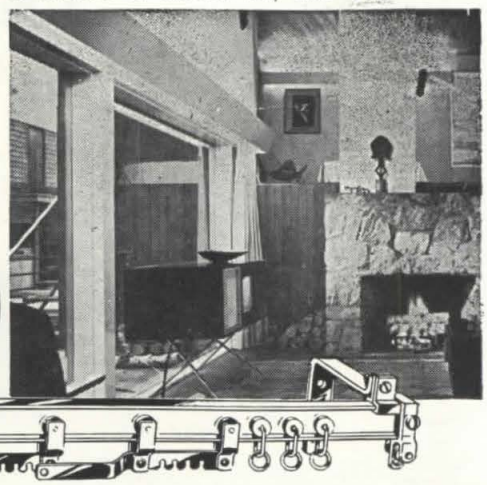

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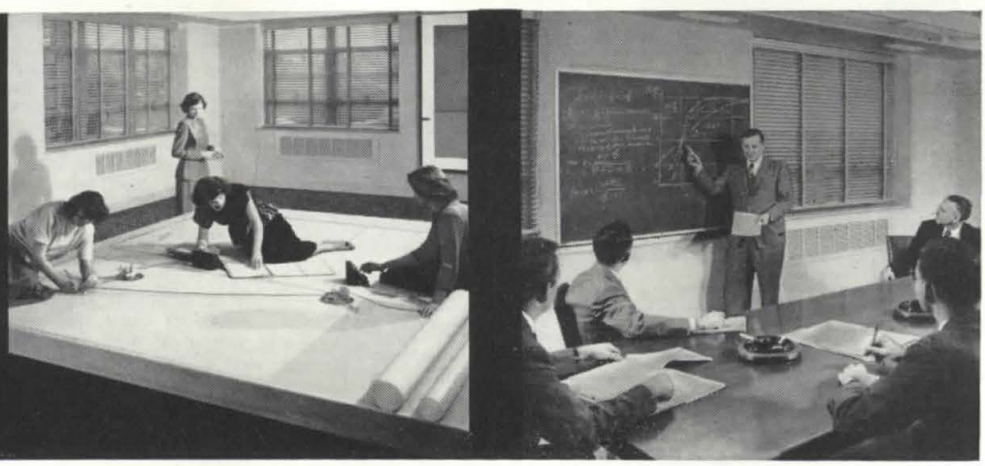

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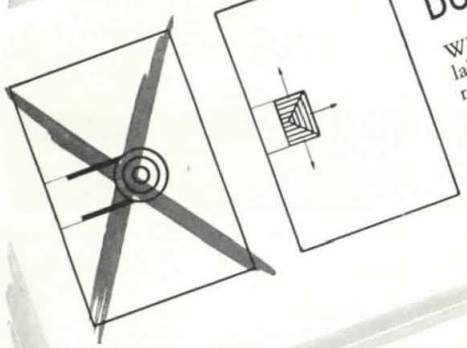

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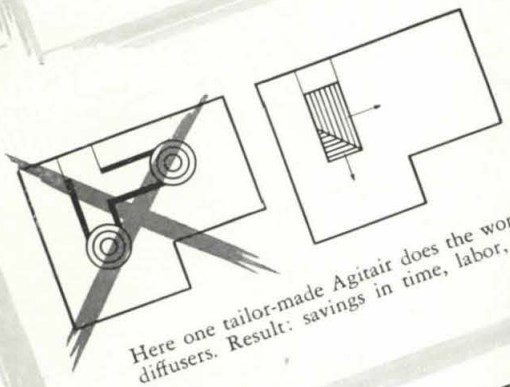

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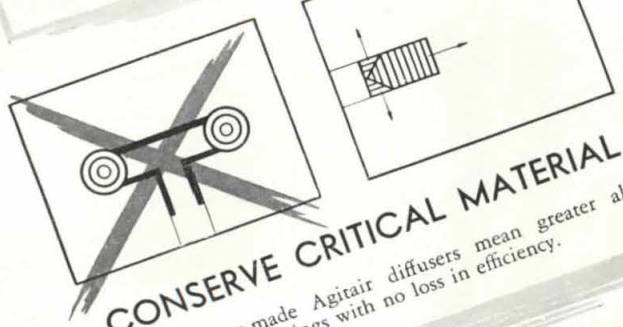

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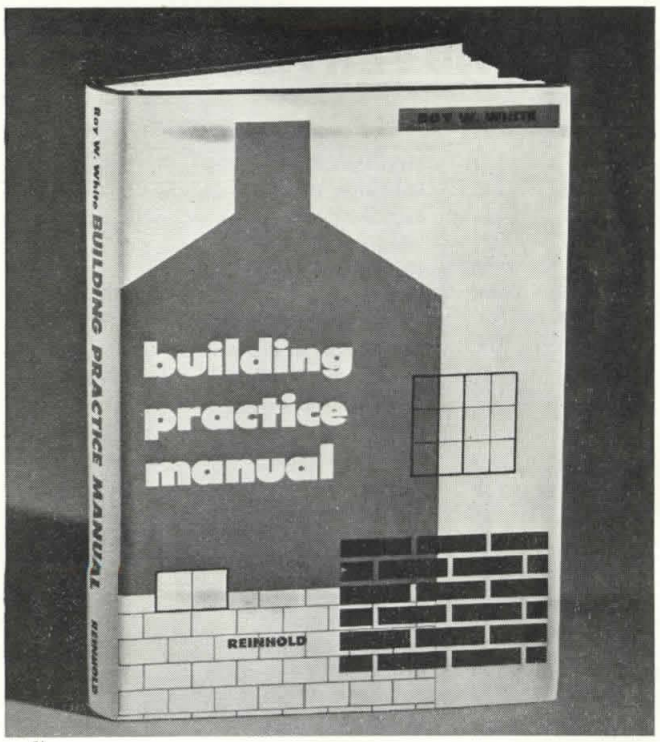


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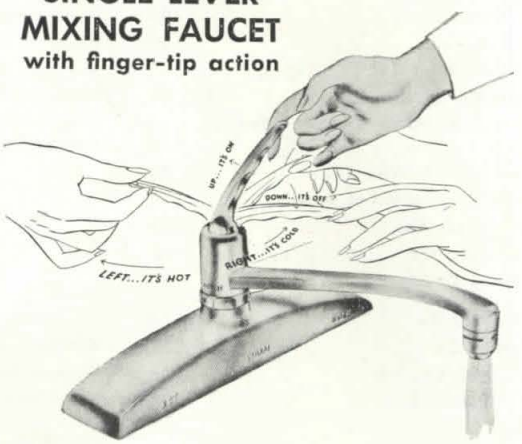


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# P.S.

**I'M SORRY** that a couple of bad typographical errors crept into my report on the Georgia registration problem last month. The reason (there is never an *excuse* for such things) is that I wrote the column in longhand on a plane and mailed it to the office—and my handwriting was just not readable! The only one that was serious, and that I want to correct, is that I meant to say, in pointing out that the examination required structural as well as "composition" solutions all in one day, that the candidates had to "then indicate the structural system, design a truss, design a column, show roof section, floor section, etc." The error was that *truss* came out *house*. Bad as it was, the examination wasn't *that* complex.

●

**IT SEEMS TO ME** that recently I have had more correspondence than usual about architectural publicity. That is, general publicity of the type that benefits all architects, and that can best be pursued by groups and A.I.A. Chapters. The notes that I have range from bitter frustration and complaints that "the newspapers won't give us any local publicity" to proud instances of success in getting architectural stories printed. There is just one secret to the success stories, and one simple bit of advice to give the unsuccessful: *you must give real news and real service to the press if you want effective publicity.*

It's very necessary to be good friends with the editors and the reporters on the home-town papers, but that isn't enough. You can't expect a *news*paper to pick up a release about a meeting just because the architects are good guys and a power in the community. Those editors and reporters have a responsibility to carry interesting *news* to their readers—and you have to give them some news, if you want to help them and you want them to help you.

There are several ways of doing this. One is a continuing program—providing a regular feature or column for the paper. The difficulty here is that keeping such a feature fresh and interesting and newsworthy is a big job, and requires devoted work on the part of an exceptionally able person. The great advantage, if it is done well, is that the architects themselves control, at least to some extent, the quality of the work shown in the paper — which, uncontrolled, is almost inevitably an indiscriminate hash of real estate and spec. builder handouts. Southern California has run such a column successfully, and Herb Millkey has shown me the start Atlanta Chapter is making in the same direction.

The other newspaper approach is the spot story—the feeding, at appropriate times, of real news about architecture and architects to the proper outlets. This also requires the services of an understanding, preferably trained person, who will know just what is news and what isn't, and just how, when, and to whom it should be presented.

The most effective job of this sort that I have ever seen done on a local level was accomplished by Patsy Swank, executive secretary of the Dallas, Texas, A.I.A. Chapter, of which her husband, Arch, is president. Patsy is an ex-newspaper gal and knows the ropes, but I have seen even more experienced people fail to get the coverage she reached when that Chapter held a local Awards Judgment recently. While the jury was in town, for three days (and before that and after it) she had stories in every edition of both papers, she got publicity on both TV stations, arranged special interviews, had newspaper photographers on the spot, and did a thoroughly imaginative and hard-working job.

That sort of thing *requires* imagination and hard work. And to come back to the original premise—the papers are perfectly right in contending that architecture is not news unless the architects do something newsworthy.

●

**THE NEWSWORTHY THING** that the Dallas Chapter did was to arrange (a) that the work submitted for the judgment be presented and the jury report discussed at an open public forum at the Museum of Fine Arts, after the jury was through with its deliberations, and (b) that the photographs, drawings, and models be exhibited at the Texas State Fair later in the month. So this was not an intra-professional Awards program, as so many of them are, but was designed to be brought to as large a public as possible, not only for viewing but for any critical discussion that might be raised. The turnout for the jury's panel discussion at the Museum was gratifyingly large, and the three winners—David Braden's house, Smith & Mills' Geophysical Building, and Wiltshire & Fisher's Brownsville Community Center, all were properly admired. The jury report was somewhat critical of some of the entries, and several architects got up from the floor and argued back—all in an atmosphere of good-natured discussion. This is a very healthy thing and I'm pleased to have had a chance to take part in it.

○

**I HAD NOT FULLY REALIZED** before this last trip the camaraderie that exists among the Texas architects. The peripatetic O'Neil Ford, of course, turned up everywhere—San Antonio, where it is rumored he lives, Corpus Christi, Dallas, etc., etc. But the others visit back and forth, too, and the usual petty jealousies and criticisms that one becomes so used to in most places, seem to be subordinated to a real interest and pride in one another's work. Anything can happen in Texas, of course, and I got used to such things as getting a call from Houston's Fred MacKie in San Antonio, and seeing Austin's Arthur Fehr and Charlie Granger in Dallas. Or finding Sam Zisman, whom I had thought to be in Washington, ready to act as guide all over the state, and even running into Ken Lind from Los Angeles, in the lobby of the St. Anthony.

●

**'NEIL FORD TELLS A STORY**—probably apochrypal—about the Texas oil man who had never been out of the state and who was so impressed with the worldliness and cosmopolitanism of the architect who had designed a couple of taxpayers for him that he asked him to step out of his professional role and act as social guide for a week in Chicago. The cost of the week ran into many thousands of dollars, because they wired for "the most expensive suite" at the Stevens, inquired as to who was "the most expensive" custom tailor for dinner clothes, gave a continuous round of lavish parties, ordered dinner at the Pump Room simply by discarding the menu and telling the waiter to bring whatever cost most. After three or four days of this, when they were ready for breakfast one morning the architect, 'Neil says, called room service and as usual asked for "the most expensive breakfast you have." The client finally gave up, raised his hand feebly in protest, and said, "Look, I'm tired of all this rich food. Just get me something very simple for breakfast—say about $25 worth of scrambled eggs."

Thomas H. Creighton