

# ARCHITECTURAL RECORD

SEPTEMBER 1965 • TWO DOLLARS PER COPY

BUILDING TYPES STUDY: HOSPITALS

URBAN RENEWAL IN SAN FRANCISCO

ARCHITECTS' OWN HOUSES

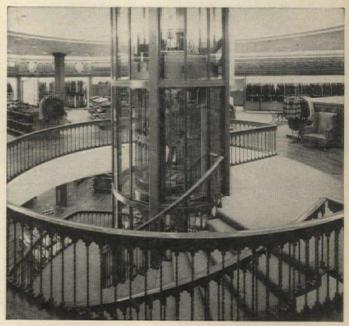
**FULL CONTENTS ON PAGES 4 & 5** 







# DOVER DOES EXCITING THINGS WITH ELEVATORS



Hughes-Hatcher-Suffrin, Birmingham, Michigan. Architects: Louis G. Redstone Architect, Inc., Detroit; Copeland Novak & Israel, New York. Dover Oildraulic Elevator installed by Dover Elevator Co., Detroit.

adds flair to exclusive suburban clothing store





Cover:

Earl R. Flansburgh Residence, Lincoln, Massachusetts. Architect: Earl R. Flansburgh. Louis Reens, Photographer

Advertising Index 382

Architects and Buildings

ARCHITECTURAL RECORD, September 1965, Vol. 138, No. 3. Published monthly except May, when semi-monthly, by McGraw-Hill Publications, a division of McGraw-Hill, Inc. This issue is published in national and separate editions. Additional pages of separate edition numbered or allowed for as follows: Western Section (including Western Architect and Engineer), 32-1 through 32-28.

EXECUTIVE EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: McGraw-Hill Building, 330 West 42nd Street, New York 36, N. Y. Western Editorial Office: John Hancock Building, 255 California Street, San Francisco 11, Calif.: second-class postage paid at New York, N. Y. and at additional mailing offices.

Subscription rate for individuals in the field served \$5.50 per year in U. S., U. S. Possessions and Canada; single copies \$2.00. Further details on page 6. Postmaster: Please send form 3579 to Fulfilment Manager, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, N. J.

#### Architectural Engineering

WELDED APARTMENT FRAMING CUTS COSTS 223

Engineer Horatio Allison shows how welding permitted use of lightweight steel members in apartment buildings from four to 10 stories

WHAT BELONGS IN ACOUSTICAL SPECIFICATIONS 227

In Part 1 of this article covering mechanical equipment, author Ranger Farrell discusses the use of descriptive and performance specifications and standards

BUILDING COMPONENTS:

THE USE OF TURNTABLES IN BUILDINGS 235

PRODUCT REPORTS 237

OFFICE LITERATURE 238

READER SERVICE INQUIRY CARD 339

# ARCHITECTURAL

#### 

#### Authors and Articles

#### The Record Reports

BEHIND THE RECORD 9

Is Great Architecture Worth What It Costs? By Emerson Goble

PERSPECTIVES 10

THE RECORD REPORTS 35

BUILDINGS IN THE NEWS 40

CURRENT TRENDS IN CONSTRUCTION 44

A monthly feature prepared for the RECORD by George A. Christie Jr., Chief Economist, F. W. Dodge Company

BUILDING CONSTRUCTION COSTS 46

A monthly feature prepared for the RECORD by William H. Edgerton, Editor, Dow Building Cost Calculator, an F. W. Dodge Company service

REQUIRED READING 68

CALENDAR AND OFFICE NOTES 142

#### Features

FURNITURE SELECTION AND SPECIFICATION 93 Third in a series on interior design

HOW ONE OFFICE HANDLES PROBLEMS IN SPECIFYING NEW MATERIALS 104

The Architect in Practice

NO EASY ROAD TO THE MORE HANDSOME CITY 151 An evaluation of the urban renewal program as it has operated in the hospitable atmosphere of San Francisco

SMALL BUILDINGS BY SKIDMORE, OWINGS & MERRILL 167

These six small buildings show the same attention to design discipline that marks the firm's big buildings

ARCHITECT'S OWN HOUSES 177

A group of eleven noteworthy new residences that architects have designed and built for their own use

INTEGRATED SITE PLANNING AND DESIGN FOR A SMALL COLLEGE 189
Vincent Kling, architect

# RECORD

CONTENTS

September 1965

#### Building Types Study 350: Hospitals

CURRENT TRENDS IN HOSPITAL ARCHITECTURE 197 By August Hoenack, Chief, Architectural and Engineering Branch, Division of Hospital and Medical Facilities, Public Health Service, Department of Health, Education and Welfare

ELEMENTS OF PROGRESSIVE PATIENT CARE 200 Faculty and students at Clemson University School of Architecture make a searching review and an adroit solution for a real site

AN ADAPTABLE BUILDING SYSTEM FOR PROGRESSIVE PATIENT CARE 202 Texas A&M investigates patient care modules and service systems for total flexibility of building layout

FIRST PHASE OF A MEDICAL CENTER 205 Holy Family Hospital, Atlanta. Architects: Aeck Associates, Inc.

A MODIFIED FINGER PLAN WITH CENTRAL SUPPLY 208 Brownsville General Hospital, Brownsville, Pennsylvania. Architects: Edward H. Noakes & Associates

PROGRESSIVE CARE ON A GRAND SCALE 211 St. John's Mercy Hospital, St. Louis. Architect: Bernard McMahon

EXPANSIBILITY AT LOW COST 214 Memorial Hospital of Garland, Texas. Architects: Broad & Nelson

ADVANCED TECHNOLOGY IN A COUNTY HOSPITAL 216 Harbor General Hospital, Torrance, California. Architects: Welton Becket, Adrian Wilson, Paul R. Williams, Francis J. Heusel

ALL SYSTEMS GROW AT BOTSFORD 218 Botsford General Hospital, Farmington, Michigan. Architects: Smith, Hinchman and Grylls

NEW APPROACH TO THE DOUBLE-SINGLE ROOM 220 Woodland Memorial Hospital, Woodland, California.

Architects: Rex Whitaker Allen and Associates

#### Staff of Architectural Record

Editor EMERSON GOBLE, A.I.A.

Executive Editor WALTER F. WAGNER, JR.

> Managing Editor JEANNE M. DAVERN

Senior Editors ROBERT E. FISCHER JAMES S. HORNBECK, A.I.A. MILDRED F. SCHMERTZ HERBERT L. SMITH, JR., A.I.A. ELISABETH KENDALL THOMPSON, A.I.A.

> Associate Editors WILLIAM B. FOXHALL JONATHAN BARNETT

Assistant Editors SIDNEY A. ABBOTT MARY E. ARENDAS SUSAN BRAYBROOKE JOHN SAMUEL MARGOLIES

Design EUGENE H. HAWLEY, Director ALEX H. STILLANO, Associate SIGMAN-WARD, Drafting

Editorial Consultants EDWARD LARRABEE BARNES, A.I.A. WALTER GROPIUS, F.A.I.A. ROBERT F. HASTINGS, F.A.I.A. PAUL RUDOLPH, A.I.A.

Industry Consultants GEORGE A. CHRISTIE, JR., Economics CLYDE SHUTE, Statistical CLIFFORD G. DUNNELLS, JR., Field Research DANIEL J. HOWE, JR., Public Relations ERNEST MICKEL, Washington MYRON L. MATTHEWS and WILLIAM H. EDGERTON, Building Costs

McGraw-Hill World News JOHN WILHELM, Director DOMESTIC NEWS BUREAUS - Atlanta, Chicago, Cleveland, Dallas, Detroit, Los Angeles, San Francisco, Seattle, Washington, D. C. INTERNATIONAL NEWS BUREAUS-Bonn, Brussels, London, Mexico City, Milan, Moscow, Paris, Rio de Janeiro, Tokyo

> Publisher EUGENE E. WEYENETH

Assistant to the Publisher BLAKE HUGHES

> Circulation Manager HENRY G. HARDWICK

Advertising Sales Manager JAMES E. BODDORF

### Coming in the Record

#### INNOVATIVE DESIGN ON THE CAMPUS

With a record \$3.7 billion calculated to be spent this year for educational buildings, and dominantly for colleges, some might question the quality of this burgeoning quantity. In fact, some of the most serious design thinking is also being expended on the many types of facilities required by today's academic institutions, and it is perhaps here that some of the most interesting new buildings are to be found. Next month's Building Types Study on College Buildings documents this development with a series of innovative new structures, including the work of Minoru Yamasaki and Associates, Mies Van Der Rohe, and Campbell, Aldrich and Nulty among many others.

#### STARTING A SUCCESSFUL PRACTICE: GENE LEEDY

The second article in a series about young architects who do buildings of notable quality features the work of Gene Leedy of Winter Haven, Florida. Leedy's use of large-scale structure and free-standing screen walls permits him to enclose large spaces at unusually low cost. He explains his unconventional proposals to clients by means of unusually accurate model photographs, which he takes himself.

ARCHITECTURAL RECORD (combined with AMERICAN ARCHITECT and ARCHITECTURE), title @ reg. in U. S. Patent Office, @ copyright 1965 by McGraw-Hill, Inc. All rights reserved including the right to reproduce the contents of this publication either in whole or in part. Quotations on bulk reprints of articles available on request. Indexed in Reader's Guide to Periodical Literature, Art Index, Applied Science & Technology Index, Engineering Index, and the Architectural Index. Architectural Record is a McGraw-Hill/Dodge publication, published monthly, except May, when semimonthly by McGraw-Hill Publications, a Division of McGraw-Hill, Inc., 330 West 42nd Street, New York, New York, 10036. James H. McGraw (1860-1948), Founder.

OFFICERS OF McGRAW-HILL PUBLICATIONS: Shelton Fisher, president; vice presidents: Robert F. Marshall, operations; Robert F. Boger, administration; John R. Callaham, editorial; Ervin E. De-Graff, circulation; Donald C. McGraw, Jr., advertising sales; Angelo R. Venezian, marketing.

CORPORATION OFFICERS: Donald C. McGraw, president; L. Keith Goodrich, Hugh J. Kelly, and Robert E. Slaughter, executive vice presidents; John L. McGraw, treasurer; John J. Cooke, vice president and secretary.

Every effort will be made to return material submitted for possible publication (if accompanied by stamped, addressed envelope), but the editors and the corporation will not be responsible for loss or

SUBSCRIPTIONS: Available only by paid subscription. Publisher reserves the right to refuse non-qualified subscriptions. Subscriptions solicited only from architects and engineers. Position, firm conqualified subscriptions. Subscriptions solicited only from architects and engineers. Position, firm connection, and type of firm must be indicated on subscription orders forwarded to Fulfillment Manager, Architectural Record, P.O. Box 430, Hightstown, New Jersey 08520. Subscription prices: U. S., Possessions and Canada; \$5.50 per year; other Western Hemisphere countries, to those who by title are architects and engineers, \$12.00 per year. Single copy price, \$2.20. Beyond Western Hemisphere, to those who by title are architects and engineers, \$12.00 per year for 12 monthly issues not including Mid-May issue. Subscriptions from all others outside U. S., U. S. Possessions and Canada for 12 monthly issues, not including Mid-May issue. \$24 per year. including Mid-May issue, \$24 per year.

SUBSCRIBERS: Address change of address notice, correspondence regarding subscription service or subscription orders to Fulfillment Manager, ARCHITECTURAL RECORD, P.O. Box 430, Hightstown, New Jersey 08520. Change of address notices should be sent promptly; provide old as well as new address; include zip code or postal zone number if any. If possible, attach address label from recent issue. Please allow one month for change of address to become effective.

UNCONDITIONAL GUARANTEE: The publisher, upon written request, agrees to refund the part of the subscription price applying to the remaining unfilled portion of the subscription if service is

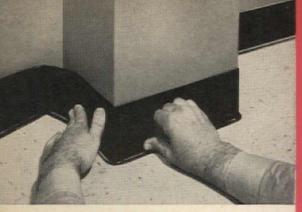
OTHER McGRAW-HILL SERVICES TO THE BUILDING AND CONSTRUCTION INDUSTRY: Arizona Construction News-Chicago Construction News-College and University Business-Construc-Arizona Construction News—Chicago Construction News—College and University Business—Construction Methods and Equipment—The Daily Journal (Denver)—Daily Pacific Builder (San Francisco)—Dodge Construction Statistics—Dodge Mailing Service—Dodge Reports—Dow Building Cost Calculator—Engineering News-Record—Home Planners' Digest—Hospital Purchasing File—House & Home—The Modern Hospital—The Nation's Schools—Real Estate Record & Builders Guide—Sweet's Catalog

POSTMASTER: Please send Form 3579 to Fulfillment Manager, Architectural Record, P.O. Box 430, Hightstown, New Jersey 08520.









1. Forming corners right on the job with KenCove eliminates unsightly corner seams.

# **KENCOVE**

FULL-THICKNESS

VINYL WALL BASE



2. ½" thickness of KenCove Vinyl Wall Base hides wall irregularities ... for a better-looking job.



3. No accidental kicking off of corners, because base and corners are one piece. KenCove Vinyl Wall Base colors: 10. Heights: 2½", 4", 6". Length: 48".

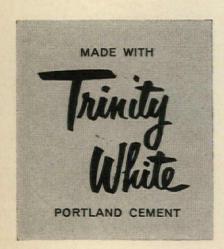
# KENTILE FLOORS

KenCove® Vinyl Wall Base adds quality to any resilient floor. KenCove's accurate cut and uniform shading assure ends that meet together perfectly, quickly. No unsightly seams at corners either, because corners are easily formed right on the job . . . are part of the base itself, not separate pieces. No shrinkage problem. And ½" thickness hides wall irregularities. Samples? Call your Kentile® Representative.

CREDITS: ARCHITECT: LASHMIT-BROWN-POLLOCK, AIA, Winston-Salem, North Carolina, GENERAL CONTRACTOR: REA CONSTRUCTION COMPANY, Charlotte, North Carolina, TERRAZZO CONTRACTOR: CAROLINA MARBLE & TILE CO., Winston-Salem, North Carolina, PHOTOGRAPH COURTESY OF MARBLE PRODUCTS COMPANY, Atlanta, Georgia



## TERRAZZO ... 12:17... sometime in 1975



This picture of the terrazzo floors of the new Forsyth General Hospital in Winston-Salem was taken last Spring, just before they started admitting patients. In ten years, even twenty or more years, the floors will look the same . . . or better. There will have been tremendous traffic over them, but terrazzo can not only take it . . . it actually *improves with age*. Continuous traffic combined with simple basic maintenance have a mellowing effect that heightens terrazzo's basic natural beauty.

As is so frequently the case with fine terrazzo floors, the contractor chose Trinity White Portland Cement for the job.



#### GENERAL PORTLAND CEMENT COMPANY

Offices: Chicago, Illinois • Chattanooga, Tennessee • Dallas, Texas • Fort Worth, Texas • Houston, Texas • Fredonia, Kansas Fort Wayne, Indiana • Jackson, Michigan • Kansas City • Tampa, Florida • Miami, Florida • Los Angeles, California

For more data, circle 38 on Inquiry Card

# Is Great Architecture Worth what it Costs?

Perhaps having written that question I should hastily add that great architecture need not cost anything extra. But you know it frequently does. Architecture is a matter of concept and form and talent, not necessarily having any relation to expenditures. True. But Great Architecture—like it or not (purposely ambiguous)—frequently does cost money, sometimes lots of money.

Is it worth it?

I should like to tell three stories bearing on the question. I am about 98 per cent sure that all three deal with the same building, but allowing two per cent for doubt I shall keep the names to myself.

One day a friend said to me, "What do you think of that building Famous Architect (he gave his name) did on Long Island?"

"Famous Architect," I said, trying to identify the man with something on Long Island, "oh, you must mean that industrial building for . . ."

"I mean that abortion he did for So-and-So."

"Abortion!" I said, with an extra dose of decibels and indignation, "well, I don't need to ask your opinion, but mine would be that that company will be quite happy with that plant."

"I don't agree," said the friendly voice, "it obviously cost them a pot of money, and I don't see why they should be happy with it." End of first story.

Second story: Had lunch with a builder who happens to be an architect in charge of a package dealer firm. He was taking the interesting position that a firm like his, working with small architects, will keep them in business, not chase them out. The small architect can control the design, can create like crazy, and the big builder firm behind him can keep him out of trouble with costs, schedules and so on.

"But," he said, "I must tell you of one experience we had with costs, when the architect didn't need help. Famous Architect came to us to arrange a collaboration like that. Eventually he showed us his first plan, and I had to say, reluctantly, 'Now, FA, you have all the manufacturing area in the center, surrounded by various amenity facilities. You can never expand the manufacturing operation.' I expected a fuss, but FA simply took a long look at his plan, then tore it up. He came back later with a new scheme. I said, 'FA, that looks great, but I'll now have to say that you're in budget trouble. Instead of two and a half million, that's likely to cost three and a half.' 'Well," said FA, 'I knew it would cost more, but not a million more. But let me handle it, will you?"

"In three days he was back, to say that we had the go-ahead on the scheme, at three and a half million. The company had taken the position that they had said from the beginning they wanted a notable building by a famous architect, and if it cost an extra million they should dig down and pay for it." End, second tale.

Third: The same architect-builder asked me on another occasion if I could suggest some means of studying employe reactions to architecture of industrial buildings. Seems he had built a plant on Long Island, in collaboration with a famous architect, for a company formerly housed in the Bronx. The company had carefully considered the move, feeling sure that they would lose guite a few employes because of the transportation problem. The Bronx building was convenient, if dismal, and who would want to drive the Long Island expressways during rush hours?

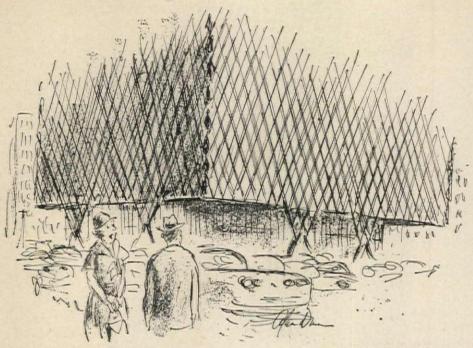
But the move had been made without the loss of a single worker. The company was so pleased, and puzzled, that they wondered if there weren't a lesson that should be investigated and documented.

End, third story.

It would seem apparent that not all industrial companies set out to achieve a notable building by a bigname architect, and that not all are convinced that an extra little million is indicated.

I have not done the employe relations study, but perhaps this page can serve as some documentation that one company did decide for Great Architecture, and is happy about it.

-Emerson Goble



-Drawn for the RECORD by Alan Dunn

"When are they going to remove the scaffolding?"

## Humanism Abrogated Count Off, Please!

You may remember that when Eero Saarinen did that handsome laboratory for IBM at Kitchawan, N.Y., there was some criticism about the lack of human considerations. He used the curving glass walls for corridor space; the offices had no outside light or views. It was said that the researchers, in their cells, pasted pastoral scenes on the walls, in silent comment on their confinement. Other architects joined the laboratory workers in singing The Prisoner's Song.

I have one recent comment to add. My wife asked a friend she saw in the shopping center to stop in some afternoon for a cup of something. Turned out the friend was now a secretary at the Kitchawan building, and she had to remark that she didn't leave work until 5:12. Five-twelve! my wife said, what hours do you work? From 8:30 to 5:12, with 42 minutes out for lunch.

Rounds things out nicely, if you just change the slogan from Think to Count.

# We Made a Sale for Somebody

We'll withhold his name so that too many architects don't contact him, but we were pleased by a recent letter from a practicing physician, who thanks McGraw-Hill for making available to him a copy of RECORD HOUSES for 1965. His letter in part:

"As you can see, I am neither an architect nor am I working in a related field which would make me eligible to subscribe, so I am doubly grateful for this kindness. . . . It may interest you to know that you have made a disciple—I am now thoroughly committed to the idea of building an architect-designed house."

Thank you, doctor, but somebody might have told you that you could simply buy this particular issue in the book store. That's one purpose of this special issue—to expose the general public to the ideas of architects.

#### Architecture Is Alive Humanism Makes It So

In due course we shall give you the full text of a recent talk by Ben Thompson, dean of the Graduate School of Design, Harvard, and partner in TAC, dealing with architectural education. But I can't resist one quote, out of context, in advance:

"Architecture, of all possible things on earth, has by nature such a wonderful potential for aliveness. It deals with positive things: actual buildings, and in that actual sense, it is concerned with the vital needs and issues of our time. Architects are no

longer the prettifiers and decorators of a limited, polite society, but the builders of the total society at its very core. That is why the shift of emphasis is away from the isolated inanimate design-away from the monumental cultural centers occupied by mythical man to the very animated, real buildings of unpredictable, living, breathing man. This new total focus has sometimes been called the Humanistic Approach. But let us not confuse this title with scholasticism. Sir Geoffrey Scott, or even the liberal classicism of the last century -it must have an entirely new, alive meaning for us. The challenge today is that architects must do something more with humanism except pay endless homage to it. If we have rediscovered man as the central focus of our design, we must find a live way of projecting live man into our live plans."

#### Some New Humanism: Highway Air Rights

The California architectural profession's first research grant was made recently by California Council, A.I.A., to probe the complexities of future use of air rights over and under this state's highway system.

The grant of \$1,500 was made by the profession's state organization to Shlomo Angel, advanced student in U.C.'s Department of Architecture. Angel's task is to delineate the scope and complexities of the many problems involved in the development of air space over and under California highways.

Council President Donald E. Neptune, of Pasadena, pointed out that the growing interest of the public, developers, civic groups, city and county governments, and the architectural profession in the future use of air space over and under the highway system has been accelerated by Circular Letter No. 65-11, issued this year by the State Division of Highways, which states that "it now appears to be in the best interests of the state to encourage the construction of building improvements in space over and under the state highways."

Sorry, but I can't help being reminded of a new song written by three architects in Cy Silling's office, entitled: "The Interchange is Coming through the Outhouse."



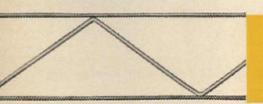


INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO)

THESE THREE important code approvals assure you of extra confidence when you use Dur-O-waL brand truss-design reinforcement for multiple applications in masonry wall construction. Write for your free copy of the new Installation Details Brochure. Dur-O-waL, P. O. Box 150, Cedar Rapids, Iowa.

# Reinforce masonry walls and your confidence.

# SPECIFY DUR-O-WAL.

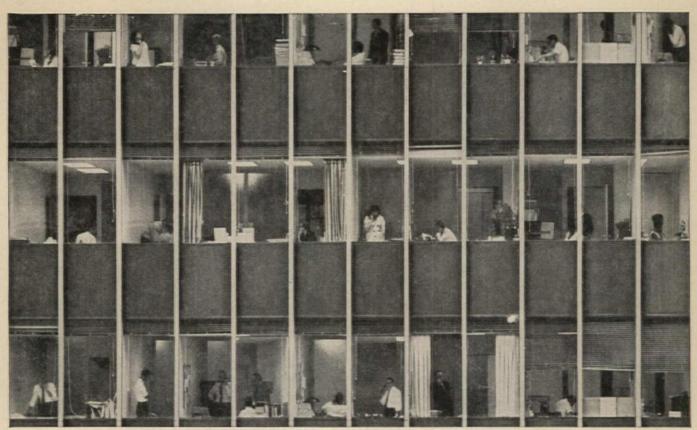


#### DUR-O-WAL

THE ORIGINAL MASONRY WALL REINFORCEMENT WITH THE TRUSS DESIGN

DUR-O-WAL MANUFACTURING PLANTS - Cedar Rapids, Iowa, P. O. Box 150 - Syracuse, N. Y., P. O. Box 628

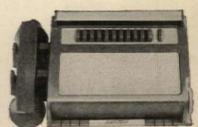
- Baltimore, Md., 4500 E. Lombard St. Birmingham, Ala., P.O. Box 5446 Aurora, III., 625 Crane St. Pueblo, Colo., 29th and Court St. Toledo, Ohio, 1678 Norwood Ave.
- . Mesa, Ariz., 213 So. Alma School Rd. . Seattle, Wash., 3310 Wallingford Ave. . Minneapolis, Minn., 2653 37th Ave. So. . Hamilton, Ont., Canada, 789 Woodward Ave.



# Are you 500 people? Or 5?

# Executone intercom can cut your monthly phone costs.

And pay for itself in the bargain. Because an Executone company-wide intercom (500-station or 5) reduces costly callbacks. Breaks switchboard bottlenecks. Takes inside calls off your phones. Frees lines for incoming-outgoing customer calls. Tie in our pocket-page or a sound system and you get those important calls even when you're not at your desk. You're in touch with anybody and everybody in your company—and vice versa—instantly. Provable savings on your monthly phone bill will pay for your Executone system . . . giving you the benefits of two channels of communication for less than the cost of one! Whatever your business. You can depend on it.



For a portfolio of literature showing how Executone intercom can cut your phone costs, write Executone, Inc., Dept. G-3. Austell Place, Long Island City, N. Y. 11101



#### FRESH NEW BEAUTY FROM BESTWALL

Looking for the ultimate in colorful, carefree walls? ETERNAWALL paneling offers you a choice of 144 colors and patterns. Washable vinyl surfaces maintain their color and design. But this is only half the story. Beneath the handsome textured surface is a fireproof gypsum

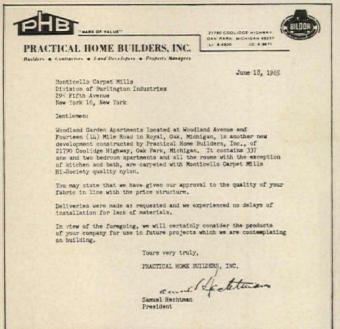
core, reinforced with miles of glass fibers to add strength and durability. For modern walls that need no painting, papering or pampering, turn your imagination loose with the Decorator Line of ETERNAWALL. Write Bestwall Division for further information and technical data.



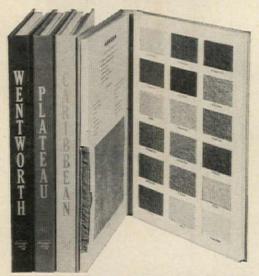
GEORGIA-PACIFIC / BESTWALL



# **How about this?**



## and this...



Find out why people are specifying Monticello Carpet Mills' new line of contract carpets. We'll be glad to send you your free Monticello sample libraries and specifications.

| MONTICELLO CARPET N<br>295 Fifth Ave., N.Y. 100  | Control of the contro | ct Carpet Dep't. |
|--|--|------------------|
| ☐ Send free complete ☐ Have Monticello Cal ☐ Send name of local ☐ Have local franchise | rpet Mills' salesman ca<br>franchised dealer.  |                  |
| Name   |  | Position         |
| AddressCity  | State  | Zone             |

#### MONTICELLO @ARPET MILLS

A Division of Burlington Industries



For more data, circle 42 on Inquiry Card

#### FTAT. TOILET ENCLOSURES FIRST IN FEATURES/PERFORMANCE/DELIVERY

- · Quality of product and design backed by 40 years of manufacturing experience and experimentation.
- · Years ahead engineering results in greater durability, lower maintenance costs and easier installation.
- . Only FIAT offers you the advantage of 5 factories strategically located to save on shipping and expedite delivery.



See Sweet's 22b or write for Literature





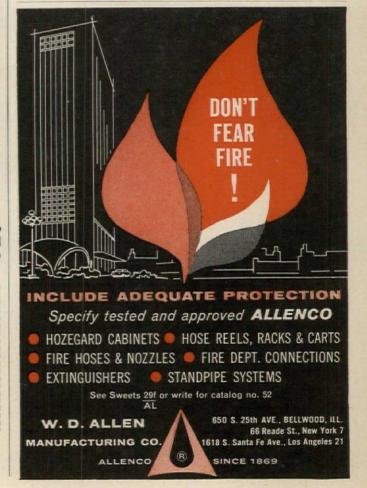






FIAT METAL MANUFACTURING CO., INC. Michael Court, Plainview, Long Island, N.Y.

For more data, circle 43 on Inquiry Card



For more data, circle 44 on Inquiry Card



... and we're not referring to the dance-craze known as the "twist".

We wanted to prove the super-strength and extra-rigidity built into every one of our new Full-Flush Steel Doors, so we asked our comely young lady to give it a unique test of durability. She weighs 280 pounds . . . and puts only slight and temporary deflection in the door, secured horizontally at three corners for this unique twist-test. When she stepped off, the door returned to its original plane . . . with no permanent twisting or warping! Projection welding and controlled manufacturing techniques make the difference. We counted 280 projection welds in the internal construction of this new full-flush door . . . and that's a weld for each pound of weight applied in this dramatic test!

No unsightly seams to mar the beauty of full-flush face panels. Door edges available filled or unfilled. Twenty-nine designs . . . plus "A", "B" and "C" UL-labeled Fire Doors.

Hardware Flexibility? Just name it. All doors are universally handed, and can be prepared for hardware supplied by most major manufacturers, including exit and panic hardware.

Here's how you can test new Amweld Full-Flush Steel Doors for economy and availability: Call your local Amweld distributor (he's listed in your Yellow Pages, under 'Doors-Metal'). He can make immediate delivery of many designs and sizes from his local stock . . . at very competitive prices. Or write us for your copy of the new brochure, AMWELD FULL-FLUSH STEEL DOORS, for full details of this amazing new door.



For more data, circle 45 on Inquiry Card

# 5 OUTSTANDING DAP SEALANTS... AND WHERE PROFESSIONALS USE THEM

# DAP BUTYL-FLEX® BUTYL RUBBER CAULK

APPLICATIONS: Curtain wall construction and general caulking applications calling for a superior seal.

# 2 DAP FLEXISEAL® POLYSULPHIDE POLYMER COMPOUND

APPLICATIONS: Wherever critical conditions of expansion and contraction exist: expansion joints, curtain walls, swimming pools, porcelainized metal panels, tilt-up panels, skylights, channel or stop-glazed sash and similar installations.

# B DAP '1012'® GLAZING COMPOUND

APPLICATIONS: Interior and exterior face glazing of metal sash.

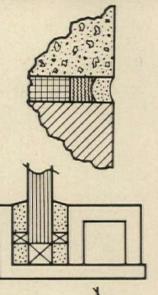
# DAP '1231' FLEXIGLAZE®

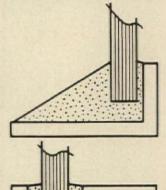
APPLICATIONS: Channel, bead or stop glazing. Bedding glass in primed wood or metal sash. Setting insulated glass window units or panels.

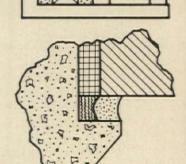
# 5 DAP ARCHITECTURAL GRADE CAULK

APPLICATION: General caulking.

DAP makes a complete range of specialized caulking, glazing and sealing products for the construction industry. For knowledgeable assistance in selecting the right sealant for your next project, write us about the DAP Technical Service Program.









CHARACTERISTICS: Outlasts, outperforms conventional caulks 5-to-1. Butyl rubber base assures permanent flexibility. Butyl-Flex gives airtight, watertight seals between similar and dissimilar materials. Sticks tight to aluminum, concrete, glass, steel, marble and other construction materials. Won't sag or slump over wide temperature range. Non-bleeding, non-toxic, non-corrosive. Available in cartridges and bulk containers.

CHARACTERISTICS: A 2-part liquid polysulphide polymer compound for trouble-free service in the toughest caulking, glazing and sealing jobs. Balanced Modulus means adhesion always exceeds cohesion . . . assures airtight, watertight seals under severest conditions of expansion, contraction, temperature and exposure. Smooth, buttery consistency makes mixing and application easy throughout a wide temperature range. Compounded in one, premium-grade quality only. Meets and exceeds Federal Specification TT-S-227b.

CHARACTERISTICS: Aluminum gray color matches color of aluminum sash. Easily applied. Excellent handling and knifing. Sets quickly without cracking, sagging. Stays flexible. Adheres to all metals. Takes paint. Meets and exceeds Interim Federal Specification TT-G-00410c for a non-hardening glazing compound resistant to damaging effects of heat, cold, vibration and moisture. Available in cans and bulk containers.

CHARACTERISTICS: Specially formulated from 100% solids—the finest synthetics and inerts—to eliminate shrinkage, cracking, discoloration. An outstanding mastic compound with excellent adhesion, cohesion, and flexibility. Adheres to primed wood, metal, glass, porcelain—most any kind of construction material. Forms a tough permanent seal that won't harden, bleed or stain.

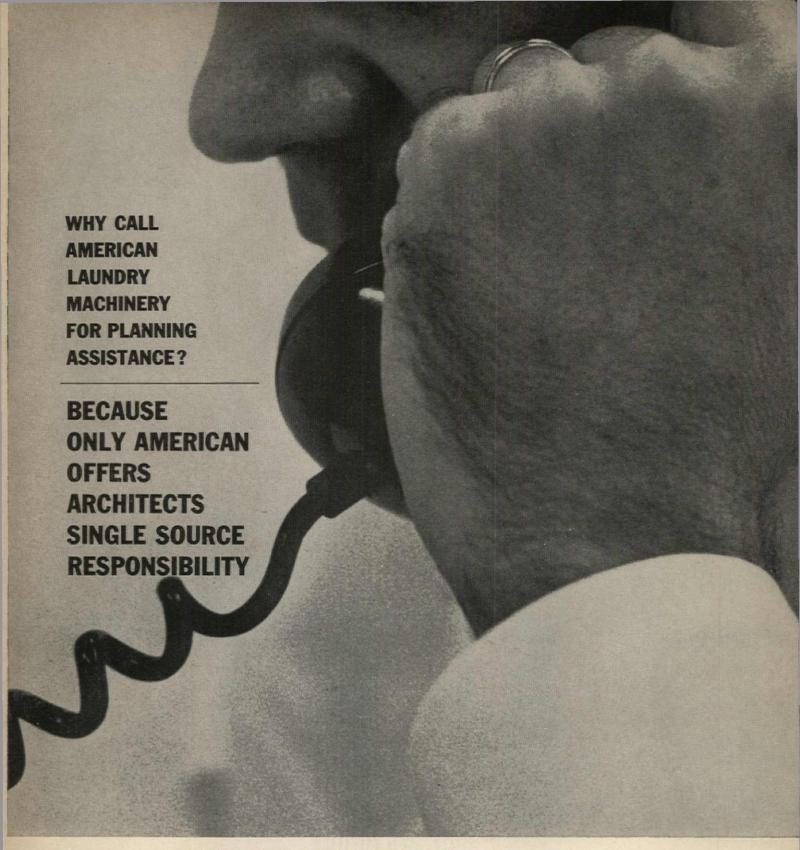
CHARACTERISTICS: Forms a tough skin for dependable airtight, watertight seals. Meets and exceeds Federal Specification TT-C-598b, Grade 1, for oil-based caulks. Stays flexible throughout extremes of weather and temperature conditions. Compounded for easy gunning. Colors: white, brilliant white, gray, aluminum gray—special colors available on special order. Packaging: cartridges and bulk containers.

DAP INC., GENERAL OFFICES: DAYTON, OHIO 45431 SUBSIDIARY OF Plough. Inc.



his is Amtico's new solid vinyl flooring, Beacon Hill. If you want something that looks more authentic, see a bricklayer.





One source for laundry department survey engineering, floor plan layouts and detailed specifications.

One source for laundry equipment of every type and size. With the long life of American equipment this can be extremely important five or ten years after a job is completed.

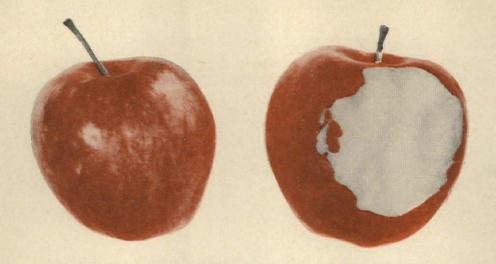
**One source** for factory supervision of all equipment installation, including wiring, piping, steamfitting, etc.

**One source** for continuous repair parts service and field engineering service for the life of the equipment, anywhere in the country.

Architects we have worked with find this sort of laundry planning assistance invaluable. (A list of these firms is available upon request.) Why not call American today? Our offices and representatives are listed conveniently in the Yellow Pages.



#### People may buy apples on looks alone . . .



# BUT IT TAKES PERSONAL AND ACTIVE INTEREST TO DETERMINE THE TASTE AND QUALITY!

#### PERSONAL INTEREST/INVESTIGATION

are also necessary in evaluating Classroom Unit Ventilators. You can't leave vital equipment decisions to others and still do right by the client. Our product realistically contributes to your own image of professional competence and good judgement by its beauty of design, true economy of operation and in the attention given to details that mean something to the user. But such engineering progress can benefit only those individuals who are willing to investigate product differences. By insisting on separate prices from the heating contractor the seriousminded architect is able to evaluate and choose wisely. What do you do?

#### Basic Data For Decision-Makers

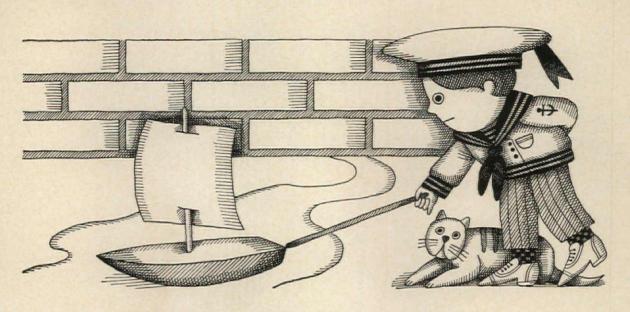
Schemenauer Unit Ventilators are for steam, hot water, electric heating and chilled water cooling. Twelve architectural colors plus a wood grain finish. Matching accessories of various lengths and heights offer utmost design freedom. Numerous engineering exclusives provide for peak long-term economy, trouble-free performance and ease of installation. Nationwide sales and service. Field help.

# SCHEMENAUER

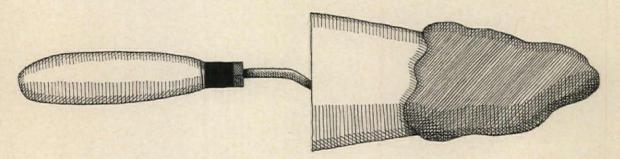
"Designer-manufacturer of a complete line of heating-cooling-air handling apparatus for institutional, industrial and commercial applications."



the heart of the school classroom



# Dam those joints

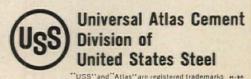


# with waterproofed mortar

## Atlas Masonry Cement makes good workmanship easier.

Mortar joints are a logical line of attack for water. Sometimes they allow moisture to pass into or through the wall...causing damage. The fault may lie in materials, workmanship, or both. Atlas Masonry Cement helps minimize this problem. During manufacture, it is interground with a special water-repellent additive that helps produce a strong, watertight mortar joint. Masons know that water-proofed Atlas Masonry Cement assures mortar uniformity—in workability, color, strength and yield, batch after batch. Everything, except sand and water, is delivered

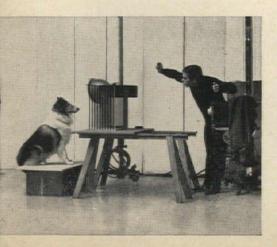
in one bag. Proportioning errors are minimized. It exceeds rigid ASTM and Federal Specifications. Good masonry workmanship comes easier with this product of Universal Atlas Cement, 100 Park Avenue, New York, N.Y. 10017.



\* Now available in WHITE



# You're looking at a collie named Caesar through 10 pieces of PPG Float Glass.



It's as though nothing is between the collie and the camera lens. This clarity is the reason why PPG Float—the new glass from Pittsburgh Plate Glass Company—is attracting the interest of automakers, mirror manufacturers and architects.

It's called PPG Float Glass because of the way it's made. Liquid glass is floated on a lake of molten metal, resulting in a new approach to perfection in glass.

PPG Float is available now. Specify it wherever the last word in clarity is called for. Contact your PPG Architectural Representative or write: Pittsburgh Plate Glass Company, One Gateway Center, Pittsburgh, Pa. 15222.

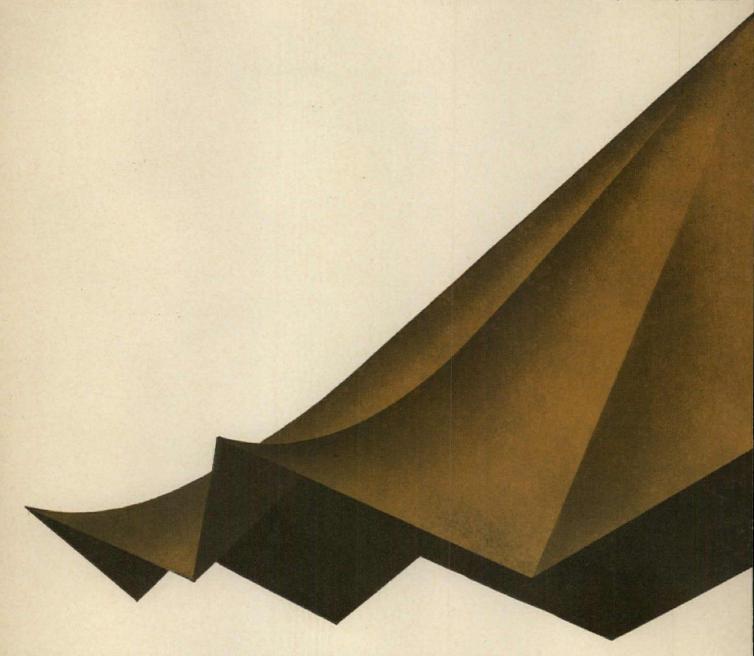
Left: This is how the photograph at top was taken through 10 pieces of PPG Float Glass.

Pittsburgh Plate Glass Company, Pittsburgh, Pa.

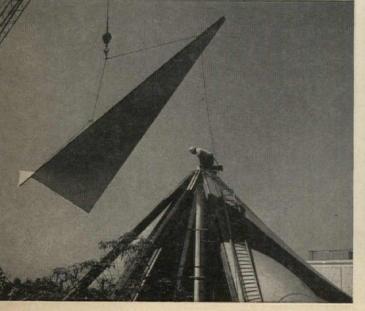


PPG makes the glass that makes the difference

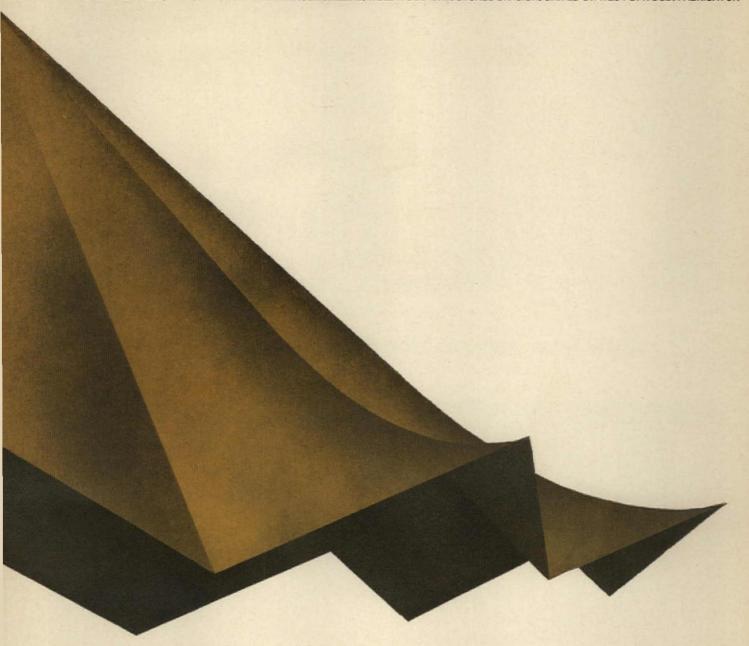
For more data, circle 21 on Inquiry Card

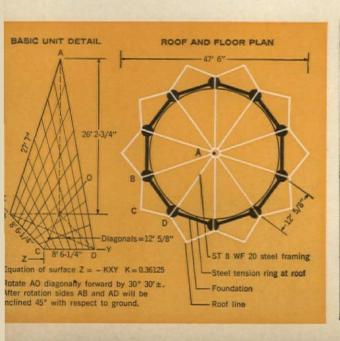


## the most exciting ideas take shape in plywood

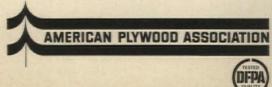




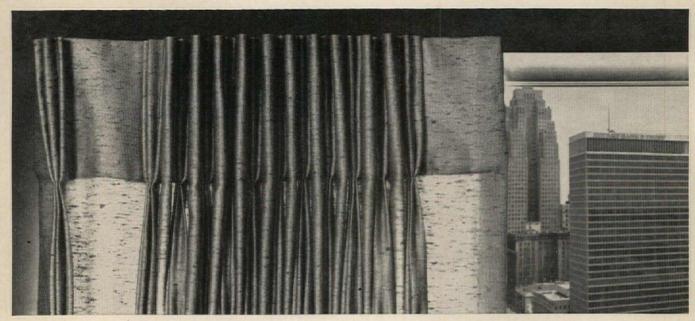




The sculptured curves of this pavilion look as though they could have been shaped only with a plastic material. Instead they were achieved with flat panels of plywood. ■ Each roof unit is a hyperbolic paraboloid, laminated from four layers of 1/4" plywood and bolted to steel "T" sections rising to 28' at the center. Despite the complex curvatures, in-place roof cost was only \$3/sq. ft., one-fifth that of aluminum and well below steel or concrete. ■ For information on plywood building systems write (USA only) American Plywood Association, Tacoma, Washington 98401

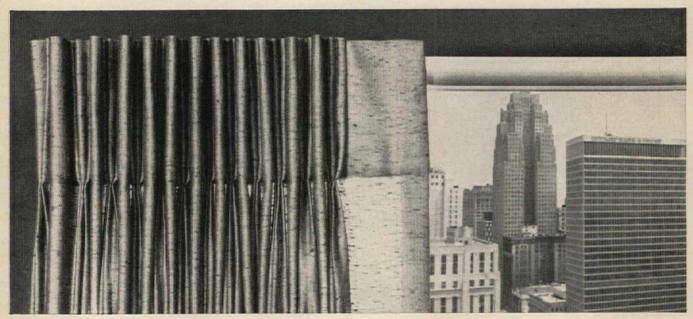






Draperies pack back this far on conventional rods.

#### Know what happens when you specify Architrac?



Draperies pack back clear to the end on Architrac

#### The windows get wider.

That's because Architrac® drapery hardware packs draperies back clear to the ends of the track. On conventional rods, carriers can only go back to the end pulleys. But Architrac's dual channel design puts carriers and cord in separate channels. Carriers can go past the pulley, packing draperies into minimum space. Neatly.

You can specify anodized aluminum Architrac for every job. For every window decoration and light control problem. For recessed, flush, flanged or bracket mounting. For cord or

cordless operation. It's the extruded aluminum track that goes beautifully with aluminum windows and sliding glass doors. Works beautifully, too. Thanks to ball bearing carriers that assure smooth, trouble-free operation.

See Sweet's 18F for details. Or write the Kirsch Company, Dept. S-965, Sturgis, Michigan 49091.

You have something to gain. Our complete Architrac catalog. And more window area.



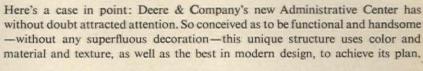
# Once in a rare while, a building stirs up a lot of excitement.



Deere & Company Administrative Center, Moline, Ill.; Architect: Eero Saarinen & Associates, Hamden, Conn.; Painting Contractor: Irvin H. Whitehouse & Sons Co., Louisville, Ky.; Man from Devoe: K. W. Sanderson, Moline, Ill.

Devoe certainly likes

being involved then.



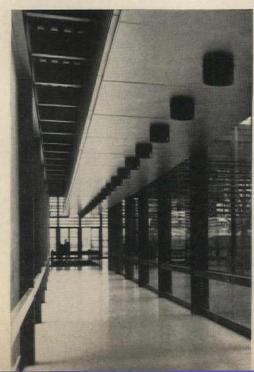
DEVOE's involvement? We were called upon to match, in a number of finishes, the colors selected. And we did it, getting just what the architect wanted.

Sometimes matching color, even the most extraordinary, is all we're asked to do—but responsible corporations like Deere are reassured knowing that we'll meet the demands . . . and do the job well. Of course, the *Man from Devoe*—our local representative—can help designers in many ways, ranging from assistance with color to assistance with the most complicated and technical aspects of paint. Why not write or phone the nearest Devoe office to reach him for your next job.

#### DEVOE Louisville, Kentucky A subsidiary of Celanese®

Atlanta • Boston • Charlotte, N.C. • Chicago • Cincinnati • Cleveland • Cos Cob, Conn. Dallas • Denver • Detroit • Honolulu • Houston • Los Angeles • Louisville • Moonachie, N.J. New Orleans • New York • Philadelphia • Pittsburgh • Portland, Ore. • Richmond • Sacramento St. Louis • Salt Lake City • Offices and warehouses in all principal cities, coast to coast.

For more data, circle 25 on Inquiry Card



# RōWay assures appeal and adaptability

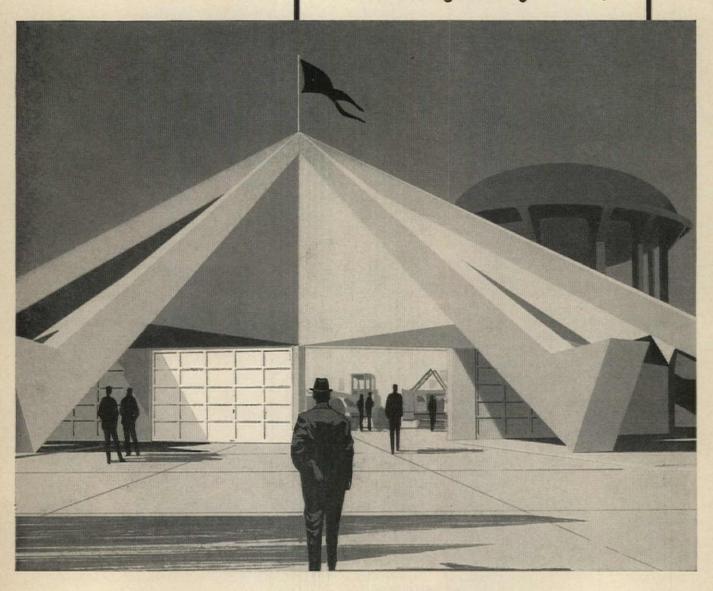
RōWay Overhead Doors contribute appeal and adaptability to any plan you create. Unusual building designs pose no problem for RōWay doors. They fit in, blend with and adapt to your ideas with no restrictions, contrasts or distractions.

Consider appeal . . . and you must consider the appealing features of RōWay construction that has earned universal acceptance for over 35 years . . . appeal that spells quality workmanship and materials in all RōWay doors, shipped from the factory to the customer.

Consider adaptability . . . and you must consider the wide selection of door design that allows a building to take on character and form without detracting from the use of the building.

All things considered, RōWay Overhead Doors belong in every plan you create. Consider calling your RōWay distributor now. He has all the facts and figures on the complete RōWay Line, including wood, steel, aluminum and fiberglass doors—and electric operators.

there's a RoWay for every Doorway!



INDUSTRIAL | COMMERCIAL | RESIDENTIAL



#### ROWE MANUFACTURING COMPANY





Galesburg, Illinois Dept. AR95



Ceilings unite! If you know what's best for you, you'll demand HOLIDAY II! Come out of the shadows with its injection-molded acrylic, frameless wrap-around Controlens. Surround yourself with upward light. No matter what type you are—solid or suspended—you'll become attached to HOLIDAY II. Installs fast, straight and snug! So don't just hang there. Tell the specifier. He'll see the light!

®Holophane Co., Inc.



# Select Russwin Unilocs for durability



#### ... get beauty as your bonus!

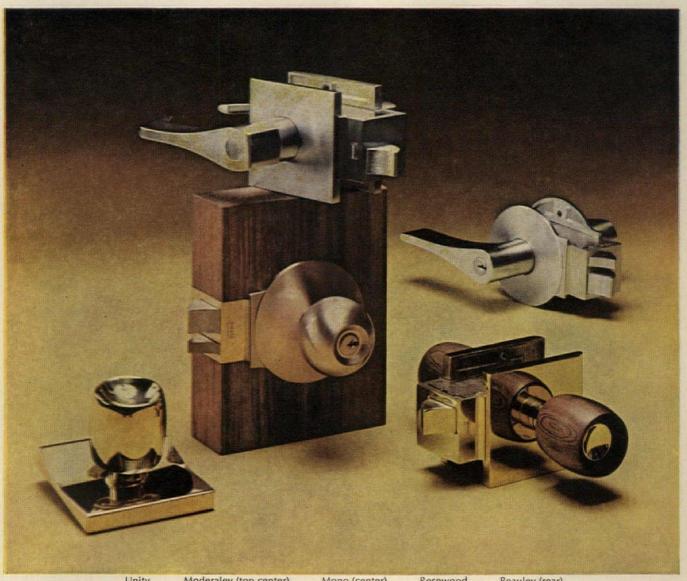
Russwin Uniloc\* Locksets offer a graceful solution to durability problems.

These husky locksets are designed to take the toughest treatment in high-traffic zones - in offices, in stores, in schools, and in hospitals.

Uniloc's one-piece extruded brass frame holds precision parts in smooth working alignment for millions of openings and closings. And installation is simple. One notch and factory assembled locks are installed as they come out of the box!

Your bonus: design beauty. Doorware designs that help you dramatize . . . accent . . . enrich. Designs that complement your doors, your interiors, your overall concept-for the life of your building.

Have your Russwin supplier show you today's Uniloc Lockset designs or write direct to Russwin, Division of Emhart Corporation, New Britain, Connecticut.



Unity

Moderalev (top center)

Mono (center)

Rosewood

Beauley (rear)



In Canada-Russwin Lock Division, Belleville, Ontario



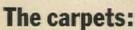
Florida's magnificent Pompano Park Harness Raceway, Pompano Beach

The place:



Homer A. Shrewsbury, Jr., Institutional Consultants & Designers, Miami Springs, Florida

The man:





Bigelows.

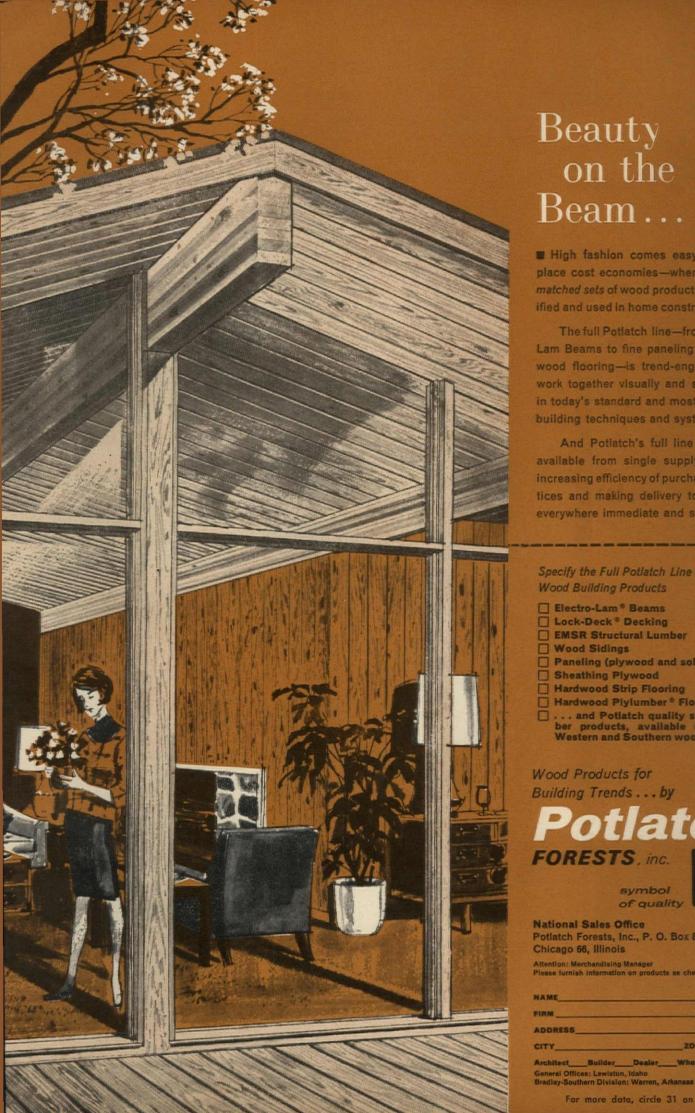
Bigelow's Illusion melds perfectly with the breathtaking interior Mr. Shrewsbury has designed for this magnificent harness raceway. Bigelows not only cover the floor, but selected wall space as well.

Why do people like Homer Shrewsbury specify Bigelow? Because they know that for every hotel, motel or commercial building, Bigelow has or can custom-create the perfect carpet. We've done it since 1825. Our carpet counselors will give you all the help you need in solving any kind of carpet

problem—at no charge. Simply call your nearest Bigelow sales office. Or for a colorful free brochure on commercial carpets, write Dept. A, 140 Madison Avenue, New York, N.Y. 10016. Find out for yourself why

people who know buy Bigelow

Bigelow sales offices are located in Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Detroit, Los Angeles, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Seattle.



## Beauty on the Beam...

High fashion comes easy-with inplace cost economies-when versatile, matched sets of wood products are specified and used in home construction.

The full Potlatch line-from Electro-Lam Beams to fine paneling and hardwood flooring-is trend-engineered to work together visually and structurally in today's standard and most advanced building techniques and systems.

And Potlatch's full line is usually available from single supply sources, increasing efficiency of purchasing practices and making delivery to job sites everywhere immediate and sure.

Specify the Full Potlatch Line of Wood Building Products

- ☐ Electro-Lam® Beams
- ☐ EMSR Structural Lumber
- Paneling (plywood and solid)
- Hardwood Strip Flooring
- Hardwood Plylumber \* Flooring
- ... and Potlatch quality standard lumber products, available kiln-dried in Western and Southern wood species . . .

Building Trends ... by

#### Potlatch FORESTS inc.

of quality

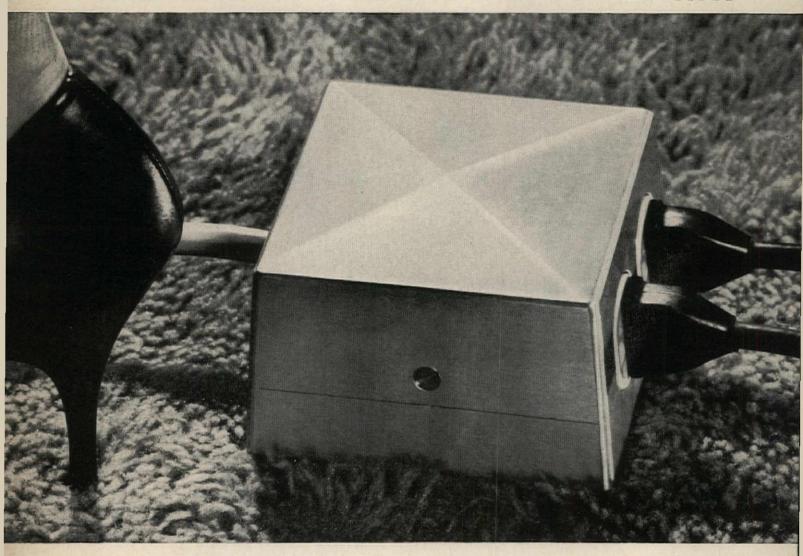


Potlatch Forests, Inc., P. O. Box 8850

Attention: Merchandising Manager
Please furnish information on products as checked above to:

For more data, circle 31 on Inquiry Card

#### NEW DUAL-SERVICE INSERT AND FLOOR FITTING FOR CEL-WAY



## Telephone and power outlets in one fixture!



NEW ECONOMY FOR THIN FLOOR SLABS! Cel-Way System provides full in-floor electrification . . . and saves concrete in steel joist floor construction.

Why one fixture is better than two. Granco's new Cel-Way In-Floor Electrification System puts electrical and telephone outlets in one compact floor fitting. Result: you've just eliminated 50% of the floor fixtures. Imagine a finished floor like the one above, with these new, single, lowprofile, satin-finish fittings. All the double-fixture, dust-traps are gone. Floors are now attractive, uncluttered, easy to wax and clean.

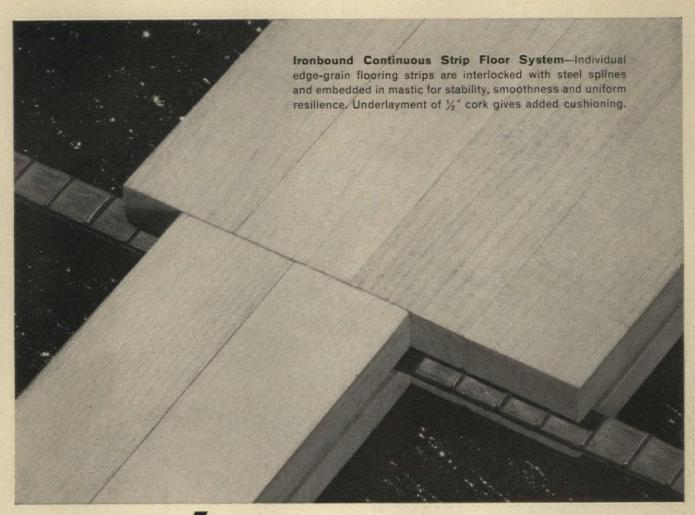
But that's just the beginning. With Cel-Way, your installation costs are substantially reduced too. Compact, dual-service insert easily accommodates 100-pair cable; is roomy enough to house two amphenol jacks. The die-cast, contoured fitting and insert also make it easy to pull thick cables through cells to fitting. Marker screws pinpoint insert location for future use.

These are just a few of the reasons why you'll find Cel-Way practical for your next in-floor electrification system. Write today for more information on the exclusive features and benefits of this promising new floor system. Granco Steel Products Company, 6506 N. Broadway, St. Louis, Missouri GRANCO

# GRANCO IMAGINATION IN STEEL FOR THE NEEDS OF TODAY'S ARCHITECTURE

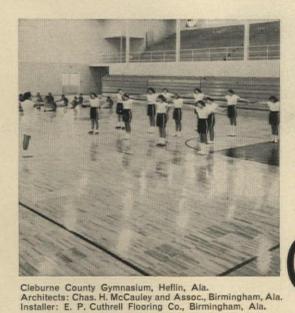


For more data, circle 32 on Inquiry Card



# Robbins ronbound Northern Maple Floor guarantees resilience, stability, low-cost upkeep

by Robbins.



ROBBINS FLOORING COMPANY Dept. AR-965 White Lake, Wisconsin 54491 MAIL Send complete information

Advise name of authorized installer in this area

In gymnasiums, auditoriums and many other areas, the Robbins IRONBOUND floor system gives maximum satisfaction. Installation of MFMA Northern Hard Maple edge-grain flooring by this superior method (see photo above) is made and guaranteed by experienced, franchised applicators, and backed

From coast to coast, Robbins IRONBOUND Floors give trouble-free service and low-cost upkeep in schools, colleges and other institutions with exacting floor requirements. For detailed data on floor systems and name of nearest authorized Robbins installer, write: Robbins Flooring Company, Dept. AR-965, White Lake, Wisc. 54491. See our catalog in Sweets.

Address

ooring company

Subsidiary of E. L. Bruce Co., Memphis, Tenn.

For more data, circle 62 on Inquiry Card

For more data, circle 63 on Inquiry Card >





#### Federal Buildings Spur Philadelphia Controversy

The unveiling of a rendering (above) of a 10-story Federal Office Building, a 20-story United States Courthouse and a three-story linking portion by the General Services Administration on August 12, has brought to light a considerable controversy about the design between the GSA and various Philadelphia agencies and officials. The building complex, adjacent to the Independence Hall area, was designed jointly by the firms of Carroll, Grisdale & Van Alen; Stewart, Noble, Class & Partners; and Bellante & Clauss.

The 20-story Courthouse has caused most of the controversy. The building will contain 16 courtrooms from the seventh through 13th floors. On the 14th and 15th stories are the two largest courtrooms, projective outward, one of which will be used as a ceremonial courtroom by the Appeals and District Courts and the other as a courtroom for the Chief District Judge. The building will be faced with dark red Colonial brick.

The 10-story office building will have curtain walls of warm red granite spandrels and glare-reducing windows. Similar construction is proposed for the three-story connector along Independence Mall.

According to G. Holmes Perkins, chairman of the City Planning Commission "the main issue is whether this building is trying to bring too much attention to itself at the expense of Independence Hall. This tower speaks with too loud a voice." Mr. Perkins went on to say that the controversy is based on three main points: (1) the location of the tower which was changed and set back 150-200 feet from Independence Mall after a series of meetings between city officials, GSA and the designing architects; (2) the choice of the combination of aluminum, red granite and antique brick as materials for the complex. Many feel that light rather than dark materials should be used so as not to compete with the brick Independence Hall structure; and (3) most controversial of all, the shape of the tower as a result of the functionally efficient placement of the larger courtrooms on the 14th and 15th floors. According to Mr. Perkins, this results in a "tower with a lot of bumps."

John O'Shea, development coordinator for the City of Philadelphia, confirmed that Mayor James H. J. Tate had written a letter to Lawson B. Knott, Administrator of the GSA, asking him to appoint a panel of architects to review the entire project. Mr. Knott had stated earlier that if a controversy arose, such a panel would be named. As we go to press, the GSA has not decided if a review panel will be named.

J. Roy Carroll, Jr. of the firm of Carroll, Grisdale and Van Alen says that "the main issue is whether architects should develop designs with their own expression, or whether the City Planning Commission should do the designing. It is very popular to design simple sheathed buildings," said Mr. Carroll, but the architects did not choose to do so.

Mr. Carroll pointed out that it was the architects' main job to satisfy GSA requirements. He said that the architects had met with various city officials, including representatives of the City Planning Commission, the Philadelphia Art Commission, the Philadelphia Redevelop-Authority and the Philadelphia Development Corporation, even though these meetings were not required. As a result of these meetings, said Mr. Carroll, the tower setback was agreed upon.

Mr. Carroll contends that the dark red Colonial brick facing for the tower is appropriate and will complement rather than compete with Independence Hall. He stated that the extensions for the larger courtrooms were "planned and are meaningful and appropriate, resulting in a highly efficient and functional design."

#### Ketchum Outlines Current Objectives of A.I.A.

Morris Ketchum, Jr. president of the American Institute of Architects, said last month that he will propose to this month's fall meeting of the A.I.A. Board of Directors the establishment of an Institute "Task Force on Environmental Architecture" to implement its "War on Community Ugliness." In a speech delivered on August 19 to the 14th annual conference of the Northwest Region of the A.I.A.

"First, a vigorous campaign to enlarge our total membership; second, the formation of more schools of architecture whose curriculum will integrate architecture with all the endesign vironmental disciplines; third, the firm establishment of improved liaison procedures with all the other environmental design professions, with the building industry and with government; fourth, exploration of affiliation with other specialized architectural organizations concerned with education, registration, specification writing, special building types and the interrelationship of architecture and the building arts; fifth, to make our regional conventions, which have a total audience twice that of our national conventions, into an even more vital asset to our profession and to the public; and, sixth, to fight and win the war on community ugliness."

### Dodge Surveys Architects On New Microfilm Service

Information to be used in designing a new service, microfilm reproduction of architectural drawings and specifications, is sought by F. W. Dodge Company, a division of McGraw-Hill, Inc., in a questionnaire survey soon to be sent to architects.

F. W. Dodge, which hopes to launch its service in 1966, seeks to develop it in the closest consultation with architects and others in the construction industry as to the characteristics essential for maximum value to the industry.

The new service is expected to make a major contribution to efficiency of bidding practices, augmenting the present Plan Room facilities operated by Dodge and others. All architects are invited to offer comments or suggestions.



New England Survey Service, Inc.

#### Boston Holds Competition For Copley Square

A one-stage competition for the design of Copley Square in Boston has been announced by Mayor John F. Collins. The site is adjacent to H. H. Richardson's Trinity Church and McKim, Mead and White's Boston Public Library. The competition is jointly sponsored by the City of Boston, the Boston Redevelopment Authority, the Back Bay Council and the Back Bay Planning and Development Corporation.

Awards of \$5,000, \$2,000 and \$1,-000 will be offered to the three top schemes in March, 1966. Preliminary announcement and registration forms can be obtained from Charles G. Hilgenhurst, A.I.A., Professional Adviser, Copley Square Competition, Boston Redevelopment Authority, City Hall Annex, 10th Floor, Boston 8, Massachusetts. Deadline for registration is October 15. Professional members of the jury will include: Pietro Belluschi, Jose Luis Sert, Hugh A. Stubbins, Daniel U. Kiley, Wilhelm von Moltke, and Sidney Shurcliff. The lay members, include: Asa Knowles, Roger Damon, Bryan Smith and Russell Beatty.

#### Le Corbusier Receives Boston Award

Le Corbusier, with Sert, Jackson and Gourley, associated architects, has been awarded the Harleston Parker Gold Medal of the City of Boston for the Carpenter Center for the Visual Arts at Harvard University. The Parker Medal is presented for "the most beautiful piece of architecture within the limits of the Metropolitan

# FHA Commissioner Outlines Program for Good Design

Philip N. Brownstein, commissioner of the Federal Housing Administration, has outlined a 10-point program to encourage good design in FHA projects. "We must adopt a positive approach," said Mr. Brownstein in Commissioner Letter No. 34 to insuring office directors. "We must view with open minds the possibilities of the new and different. We must be willing to exercise great imagination, to visualize the future, to try the untried, to encourage and inspire rather than to warn and suppress and to take risks where they appear justified in the light of the goals we are aiming for."

Following is a summary of the 10point program:

1. "We must encourage sponsors to employ the professional assistance required to produce sound design and a better environment," and included in this sound design should be the disciplines of "architecture, planning, economics, transportation, land-scape architecture; the related arts of painting, sculpture and decoration, and the behavioral fields of psychology and sociology."

2. Sponsors must provide for underground electrical and telephone distribution systems unless they can prove that this is economically unfeasible.

3. "Valuators and architectural examiners should view each property with a critical awareness of design," and this evaluation must take into account "the environment beyond property lines and translated in terms of value."

4. "In multi-family housing, sponsors can be shown by dramatic means the effect improved design can have on rents, expenses, net income and value."

Since Le Corbusier was unable to come to this country to receive the award, Mayor John F. Collins of Boston designated the president of the Boston Society of Architects, Philip W. Bourne, to make the award to Le Corbusier at his atelier in Paris. At right, Charles E. Bohlen, Ambassador of the United States

to France, congratulates Le Corbus-

ier as Mr. Bourne looks on.

Parks District of the Boston area".

5. "We must recognize the qualities and values well-designed older properties often possess"—thus employ imaginative rehabilitation.

6. FHA personnel should adopt the positive attitude discussed here when meeting with organized groups in exercise of their official functions.
7. "To effectively implement the program outlined here, there should be at least one (and preferably more than one) professionally qualified architect in every insuring office."

8. "Recognizing the need for training our staffs in design and esthetic judgment, the central office is preparing a training program directed toward educating FHA people, the industry, and ultimately the consumer to recognize the elements of good design."

9. Further progress should be encouraged in environmental design and "such total design should provide for all of the needs of the daily life of the residents."

10. "In proposals involving new or unfamiliar design, or where a genuine difference of opinion exists between a sponsor and the field office," the central office should be consulted for advice and guidance.

#### President Signs Housing Act of 1965

On August 10, President Lyndon Johnson signed into law the Housing and Urban Development Act of 1965, saying that "this legislation represents the single most important breakthrough in the last 40 years." For an analysis of some of the implications for construction activity of the new act, see the article on page 44, "Housing Bill Regarded as Spur to Apartment Building," by George A. Christie, Jr., chief economist of the F. W. Dodge Company.





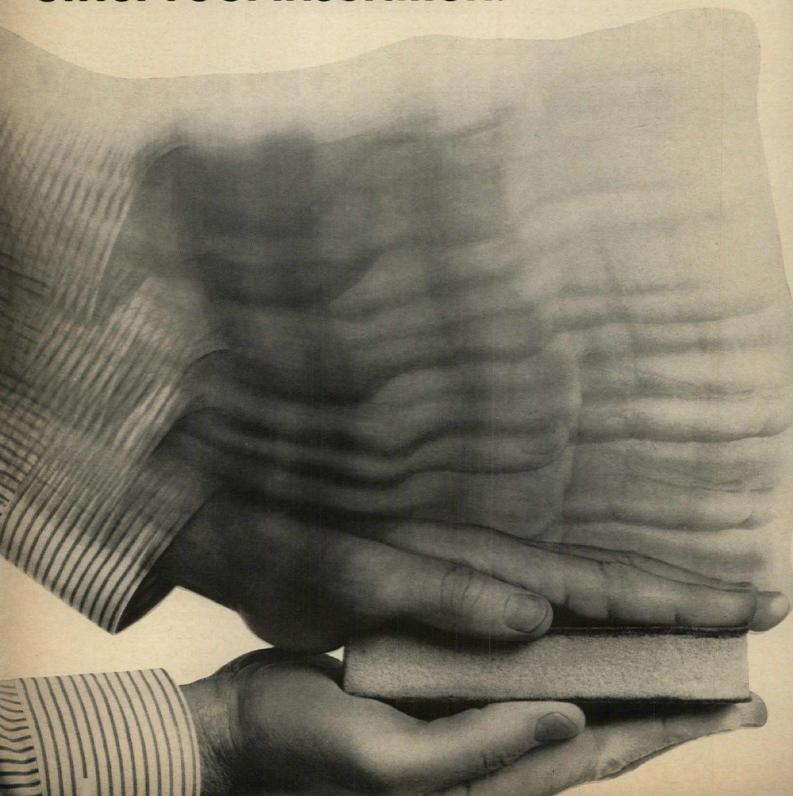
There is virtually no limit to the design effects possible with Armstrong Luminaire Ceiling Systems. Here, in a modern office design, is the newest member of the Luminaire series. Called the C-60 System, it offers yet another design, another module size, and a number of significant, new features.

For complete information on the allnew C-60 Luminaire Ceiling System, including full application-engineering data and guide specifications, write: Armstrong Cork Company, Building Products Division, 4209 Rock Street, Lancaster, Pennsylvania.



hink thin with Barrett Urethane.

Twice as thin because it's twice as efficient as any other roof insulation.



Compare Barrett Urethane to any other roof insulation. You'll find others have to be at least twice as thick to equal Barrett Urethane in insulation efficiency. Trim, thin Urethane has a C factor of 0.15. That makes it ideal insulation for buildings with modern heating and air conditioning systems.

and air onditioning systems.

Here's the thickness needed in various materials to obtain this same low C factor:

| Urethane       | 1.0" |
|----------------|------|
| Glass fiber    | 1.8" |
| Polystyrene    | 2.0" |
| Fiberboard     | 2.4" |
| Cellular glass | 2.7" |

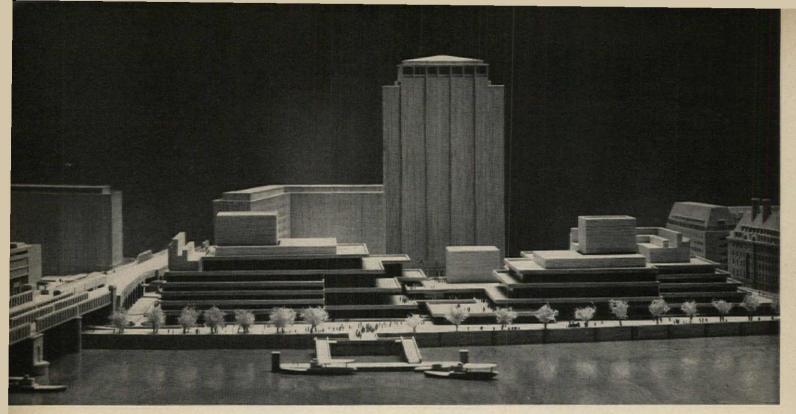
Easy-to-handle Barrett Urethane saves on application costs, too. Compare what a roofer would handle on a 500square job: only 43,500 lbs. of Urethane against 210,000 lbs. of fiberboard insulation. At an average handling cost of \$5 per ton, this is a saving of over \$400 or nearly \$1 per square. Barrett Urethane comes in large, thin, lightweight panels. You get a tough walk-on, work-



on surface that won't bend, buckle or melt when mopped on with hot pitch or asphalt. There's only one way to get all the advantages of Barrett Urethane. Specify it by name. Merely to call for "1 inch of insulation" is inadequate with today's wide variations in insulating efficiency. For a detailed booklet, write to Barrett Division, Allied Chemical Corporation, Dept. ARC-9, 40 Rector Street, New York, N.Y. 10006.

BARRETT'





At left is the Opera House and at right is the National Theater. The small rectangular building, center, is the proscenium theater. The tall building is Shell Center, London's second highest office building.

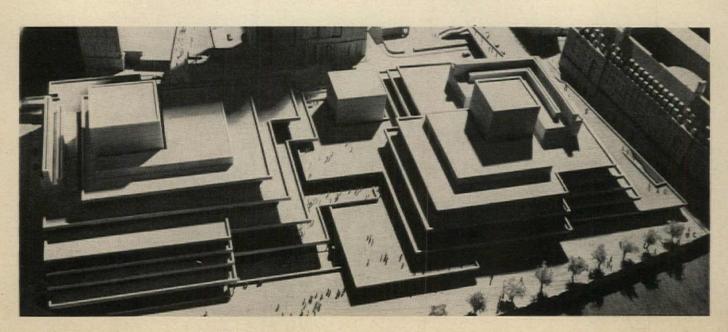
#### Britain Gets a National Theater and Opera House

A National Theater and Opera House, as well as a small experimental theater, have been designed by Denys Lasdun for a site adjacent to the Royal Festival Hall on the South Bank of the Thames in London. The over-all concept for the buildings is to create a year-round riverside recreational area for public use as well as a national center for theater and opera. The valley between the two large structures can accommodate open air spectacles with the overhanging terraces on the theater and opera serving as viewing points. The project is expected to cost \$26.6 million; if it receives government approval by this fall, it is hoped it could be completed by 1973.

Although the exact shape of the stage in the main auditorium of the National Theater has not yet been deter-

mined, it will be of the open rather than the traditional proscenium type. The audience of 1,000 will be seated in fan arrangement on two steep tiers encircling the stage through 90 degrees. The architect hopes that through this design the most intense relationship between audiences and actor will be achieved while exploiting the three-dimensional quality of the action itself. A smaller proscenium theater, seating 750, will be provided.

The design of the Opera House will maintain the traditional relationship between singer, orchestra, conductor and audience. The stage layout will consist of main stage, rear stage, and two side stages. The exact form of the auditorium, which will have a capacity of approximately 1,650 people, is still being studied.





### San Francisco Will Get Tallest Building in West

The world headquarters for the Bank of America in San Francisco, will be a 52-story, 750-foot-tall, granite-faced tower containing a total of 1,900,000 square feet of floor area. Architects for the \$85 million structure are Wurster, Bernardi and Emmons, with Pietro Belluschi and Emery Roth & Sons as consultants. A plaza measuring 215 feet by 140 feet will be provided, as will underground parking for 500 cars. Bay windows of bronze-tinted glass are used on all sides of the structure, and a series of irregular setbacks of the upper floors give the building definition and variety, according to the architects.

#### New Buildings in Atlanta

Two new buildings are planned for Peachtree Center in Atlanta, Georgia both designed by Edwards & Portman, architects. The Regency Hotel (top right) will have 800 guest rooms arranged around a vast courtyard which runs the height of the 23-story building. The courtyard will be covered by skylights and plastic dome, and possibly in the future by a revolving restaurant. Guest rooms are reached by cantilevered balconies around the courtyard. Mechanical engineer is Britt Alderman and general contractor is the J. A. Jones Construction Company. The 25-story \$10 million Gas Tower (bottom right) will have natural gas turbines as its exclusive energy source. Construction will be of steel frame and exterior walls will be of precast, exposed aggregate mosaic panels.

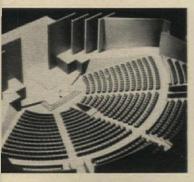


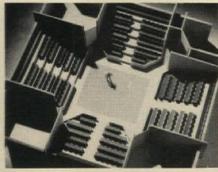
Clyde May, Photography, Inc.





#### New Alley Theater is designed for Houston





The Alley Theater complex in Houston, designed by Ulrich Franzen & Associates with Mackie and Kamrath as associate architects, will house two completely separate theaters which share common backstage facilities. The building, which will be six stories high at its tallest points, and which will contain 80,000 square feet, was made possible by contributions from the Ford Foundation, Houston Endowment, Inc. and the citizens of Houston. The multispace stage, far left, will have a seating capacity of 800. It is basically a corner stage with the seats arranged in a 90-degree arc. The traditional arena stage, left, will seat 300.

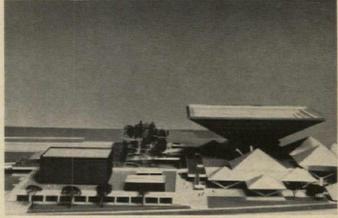


#### Pavilion Designs Begin to Shape Montreal Exhibition

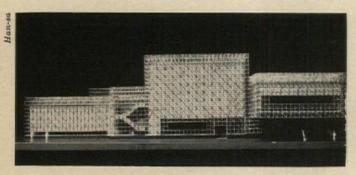
Architectural virtuosity and variety characterize the first designs for pavilions at Expo '67, the Universal and International Exhibition to be held in Montreal, Canada from April 28 to October 27, 1967. The theme of the exhibition is "Man and His World."

At the present time a total of 98 exhibits is planned in a lesser number of pavilions, since some of the exhibitors are sharing pavilions. The exhibitors are divided into the following categories: 54 countries; 27 Canadian industries; individual state participation (U.S.A.), one; 10 Canadian provinces; one municipal participation; three international governmental organizations; and two noncommercial organizations.

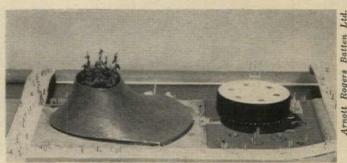
Two Expo '67 pavilions have previously been shown in the RECORD: the Broadcast Center for the Canadian Broadcasting Corporation-engineer and general contractor, Austin Company, Ltd. in collaboration with C.B.C.'s engineering staff and Meadowcroft and MacKay, associate architects (May, page 332); and the United States Pavilion-R. Buckminster Fuller, pavilion architect, associated with Shoji Sadao and Geometrics, Inc. (August, page 41).



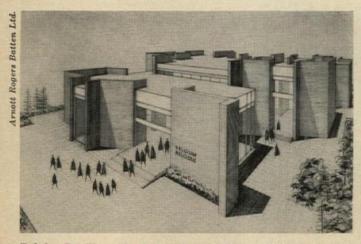
Canadian Pavilion: A huge inverted pyramid, 100 feet high, is the design highlight of Canada's \$21 million pavilion. Inside the pyramid will be the theme exhibition on the four slanting walls. Another feature will be a 550-seat theater which will become the permanent home of the Theater School of Canada. Architects are Ashworth, Robbie, Vaughan & Williams, Schoeler and Barkham, Z. Matthew Stankiewicz.



Netherlands Pavilion: The Netherlands Pavilion will feature a tubular three-dimensional space frame structural system. It will be built on a 37,937-square-foot lot at a cost of \$3.5 million. The exhibit will be entirely devoted to the Expo '67 theme. Architects are W. Eijkelenboom & A. Middelhoek with George F. Eber as Canadian associate. Landscape architect is Emil G. Vandemeulen of Sasaki, Strong and Associates.



Western Provinces: Two buildings, the main one of natural materials and having a conical roof covering 12,000 square feet and the other of modern materials, will comprise the Western Province pavilion. The two buildings, which will cost \$900,000, will symbolize the natural resources and man's achievements in Western Canada. Architects and engineers are Beatson Stevens Associates and Haddin, Davis & Brown Company, Ltd.



Belgian Pavilion: The \$1.2 million pavilion of Belgium, having Belgian brick walls and solar windows on the exterior, will occupy about 60 per cent of a 38,000 square-foot site. Included will be exhibits of Belgian art and a 125-seat restaurant. The total cost of participation will be over \$3 million. Architect is Rene Stapels and the Canadian associate is George F. Eber.



German Pavilion: The German Pavilion will feature a giant steel mesh canopy supported by trussed masts from which a skin of heavy translucent fabric will be suspended, covering a series of terraced exhibits. Weather permitting, the interior of the \$10 million pavilion will be kept open from all sides. Architects are Professors Frei Otto and Rolf Gutbrod. Canadian associates are O. Tarnowski and George F. Eber.

Arnott Rogers Batten Ltd

# Buildings in the News

Arnott Rogers Batten Ltd.



Habitat '67: Habitat '67 is a \$10.5 million 12-story structure which will contain 158 separate dwelling units, and will be made mainly of 354 precast concrete units fabricated on site. Architect is Moshe Safdie and contractor is Anglin-Norcross Corporation, Ltd.

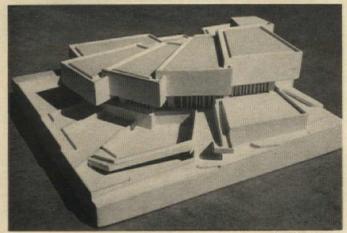


French Pavilion: The 140-foot-high French Pavilion will have a steel framework covered with glass and aluminum. The \$4 million structure will have exhibits on seven levels above a water cascade and garden. Architect is J. Faugeron and André Blouin is Canadian associate.



African Complex: The African Complex will define each participating country by changes in levels between the brick and plywood structures and the wind scoops over each exhibit. Chief architect is E. Fiset and project architect is Ian J. Morton. Consultant is John Andrews.

#### Winner Chosen in California

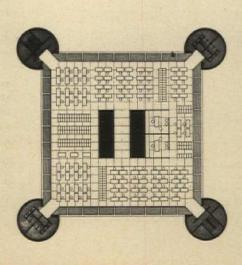


Dennis Galloway

The design team of Mario J. Ciampi, architect, F.A.I.A., Paul W. Reiter, associate architect, with Richard L. Jorasch and Ronald E. Wagner, design associates, was chosen from 366 entries in a competition for the design of the projected University Arts Center at the Berkeley campus of the University of California. The 90,000-square-foot, \$4 million structure will have an art museum containing seven galleries, a theater workshop, conference rooms and studios for music and art. According to the architects, the center "was conceived as a vital and expanding system of radial terraces and visually inter-connected spaces superimposed in two levels to achieve a synthesis of architecture and sculptural order in an urban area adjoining the campus. . . ." Professional members of the jury were Gardner A. Dailey, Ralph Rapson, and chairman Lawrence B. Anderson.

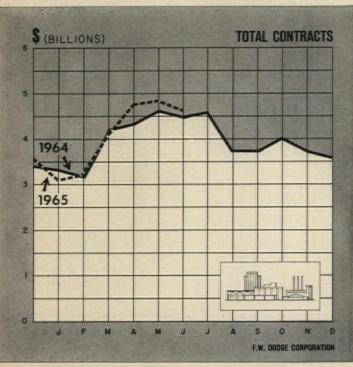
#### Tallest Building in New Haven

The new Knights of Columbus International Headquarters building in New Haven, designed by Kevin Roche of Eero Saarinen & Associates, will be entirely supported by the four cylindrical towers which form the corners. These towers will be made of concrete which will be continuously poured into slowly rising forms until the finished height is reached. The 26-story, 360-foot-high, \$8 million structure will have 21 stories of clear span office space above the lower portion, which will contain a lobby and two mezzanines described as suitable for banking or brokerage use. Steel girders will be slung between the towers to support floors. The four concrete towers will be faced with dark brick and will contain stairs, toilets and mechanical shafts. Construction is expected to start in the spring of 1966.

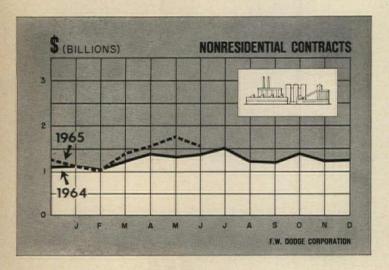


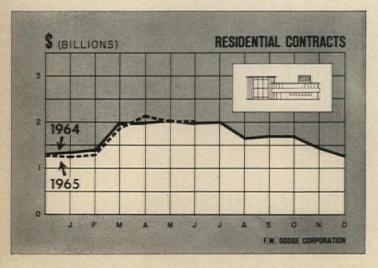


c Ezra Stoller Associates



Total contracts include residential, nonresidential and non-building contracts





# NEW HOUSING ACT REGARDED AS SPUR TO APARTMENT BUILDING

The Housing and Urban Redevelopment Act of 1965, which President Johnson signed into law a few weeks ago, is the biggest package of housing legislation to come along since the basic 1949 Housing Act. That was the one which first spelled out the nation's housing goals and standards, and it has been followed by a steady stream of housing programs—some major, some minor—ever since.

This year's new maze of subsidies, grants, loans and insurance is expected to weigh in at something in excess of \$8 billion (most of it spread over the next four years). It's impossible, at this point, to translate the Act's provisions directly into construction spending, but there's no doubt that they'll be giving the better-than-\$25 billion-a-year housing industry a welcome shot in the arm.

Two factors should be of special interest to architects: (1) by far the greatest impact of the 1965 Housing Act will be on apartment building; and (2) unlike some previous housing programs, this one is more apt to stimulate private building rather than add more public housing. That's because its main provision (also its most controversial one) is the new rent subsidy plan. With this new wrinkle, instead of directly subsidizing the construction of low-cost rental housing, government will underwrite most of the cost of living in newly-built, housing projects. These apartments are to be sponsored by private, nonprofit groups like churches, co-ops, labor unions and limited-dividend corporations such as builders might form; they'll be occupied by low-income and otherwise hard-pressed families who qualify for the rent subsidies.

The program's sponsors optimistically estimate that it will stimulate construction of as many as 375,000 new rental units over the next four years. That would amount to almost 20 per cent of the current annual half million new apartment units being built.

Another key feature of the Act (and another feature which invites a more active role for architects) is the one which will provide Federal grants and loans for the rehabilitation of existing housing as an alternative to the iron-ball-and-bulldozer approach with which urban renewal is often associated.

Other provisions of the new law offer mild stimulus to singlefamily housing and to certain types of nonresidential construction as well. These are:

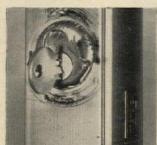
- · Lower down-payments on FHA mortgages
- Seven-year loans to builders to finance land purchases for development (all that survived out of the "new towns" plan)
- Federal grants to communities to expand and improve sewer and water facilities
- Matching grants for urban beautification, parks and playgrounds
- Extension of existing programs for urban renewal, and for college housing

There's little question that the 1965 Housing Act, by focusing on rental housing in urban areas, is putting its emphasis where some stimulation is needed. Last year, when total construction value advanced by four per cent, activity in the nation's top metropolitan areas (together worth a quarter of the U. S. total volume) declined by four per cent; while single-family housing was holding even, apartment building slipped three per cent. These trends may soon be reversed.

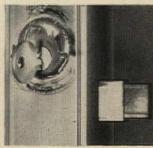
George A. Christie, Chief Economist F. W. Dodge Company A Division of McGraw-Hill, Inc.



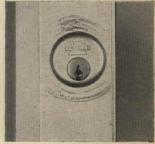
The burglar arrived sometime after midnight, tried the usual tools, but succeeded only in tearing and twisting the Amarlock cylinder "scalp." He gave up, left without getting in, and this is what the store manager found: The calling card of a frustrated burglar!



After break-in attempt, lock still worked like new, opened for business as usual.



Amarlock long-throw bolt shows deeper penetration length. Chrome-plated steel sleeve is armored reinforcement.



New cylinder was installed in one minute flat, and the Amarlock stands guard—strong and reliable as the day it was new! Installed and serviced by Binswanger Glass Co., Charlotte, N.C., R. B. Williams, Manager.

In the Case of the Unyielding Amarlock

Specify Amarlite for maximum security... and an AMARLOCK stands guard at the door. It's built to take it! Built to stand up to rough treatment, even BURGLAR TOOLS... because the standard Amarlock cylinder is NOT screwed in; rather, it's inserted through a countersunk hole, then secured by a steel clip!

There's no extra cost for AMARLOCK protection. It's standard equipment on AMARLITE doors! Another standard protection feature—SECURITY CLIPS . . . easily installed . . . permit removal of glass stops from *inside* only.

Next job, specify AMARLITE aluminum entrances...superior in finish and design! For complete details...write for our catalog and specifications...or, look into Sweet's!

# AMARLITE

DIVISION OF ANACONDA ALUMINUM COMPANY MAIN OFFICE . P. O. BOX 1719 . ATLANTA 1, GEORGIA



# **Building Construction Costs**

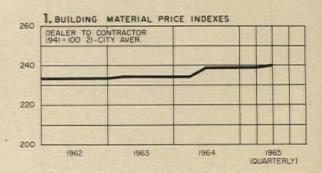
By William H. Edgerton Manager-Editor, Dow Building Cost Calculator, an F. W. Dodge service

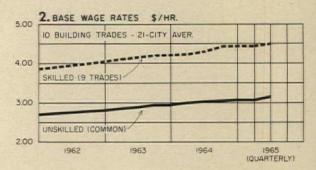
The information presented here permits quick approximations of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). The tables and charts can be used independently, or in combination as a system of complementary cost indicators. Information is included on past and present costs, and future cost can be projected by analysis of cost trends.

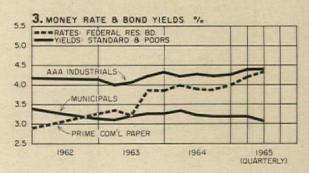
A. CURRENT BUILDING COST INDEXES—AUGUST 1965

1941 Averages for each city = 100.0

| Metropolitan Area           | Cost<br>Differential |       | Dow Index<br>Nonresidential | Yes   | nt Change<br>ar Ago<br>& Nonres. |
|-----------------------------|----------------------|-------|-----------------------------|-------|----------------------------------|
| U. S. AVERAGE—<br>21 Cities | 8.5                  | 265.5 | 285.9                       | +1.19 | 278.1                            |
| Atlanta                     | 7.2                  | 304.2 | 322.6                       | +1.46 | 313.9                            |
| Baltimore                   | 7.9                  | 209.1 | 286.6                       | +0.28 | 280.7                            |
| Birmingham                  | 7.5                  | 249.6 | 268.4                       | +1.33 | 261.2                            |
| Boston                      | 8.5                  | 242.6 | 256.7                       | +1.60 | 249.2                            |
| Chicago                     | 8.9                  | 297.1 | 312.5                       | +0.62 | 306.0                            |
| Cincinnati                  | 8.8                  | 258.2 | 274.4                       | +0.81 | 268.4                            |
| Cleveland                   | 9.2                  | 271.2 | 288.3                       | +1.50 | 279.8                            |
| Dallas                      | 7.7                  | 252.5 | 260.8                       | +0.50 | 256.9                            |
| Denver                      | 8.3                  | 274.9 | 292.3                       | +0.94 | 286.1                            |
| Detroit                     | 8.9                  | 269.9 | 283.4                       | +1.41 | 276.1                            |
| Kansas City                 | 8.3                  | 242.0 | 256.1                       | +1.32 | 249.3                            |
| Los Angeles                 | 8.3                  | 271.2 | 296.8                       | +0.86 | 287.6                            |
| Miami                       | 8.4                  | 266.2 | 279.5                       | +0.87 | 273.5                            |
| Minneapolis                 | 8.8                  | 270.0 | 287.1                       | +1.90 | 278.4                            |
| New Orleans                 | 7.8                  | 242.6 | 257.0                       | +1.31 | 250.2                            |
| New York                    | 10.0                 | 280.4 | 301.6                       | +2.11 | 288.4                            |
| Philadelphia                | 8.7                  | 266.8 | 280.1                       | +0.83 | 274.5                            |
| Pittsburgh                  | 9.1                  | 252.8 | 268.7                       | +0.53 | 264.1                            |
| St. Louis                   | 9.1                  | 264.5 | 280.3                       | +2.33 | 270.1                            |
| San Francisco               | 8.5                  | 343.6 | 376.0                       | +1.32 | 362.7                            |
| Seattle                     | 8.4                  | 245.1 | 273.9                       | +1.25 | 263.4                            |







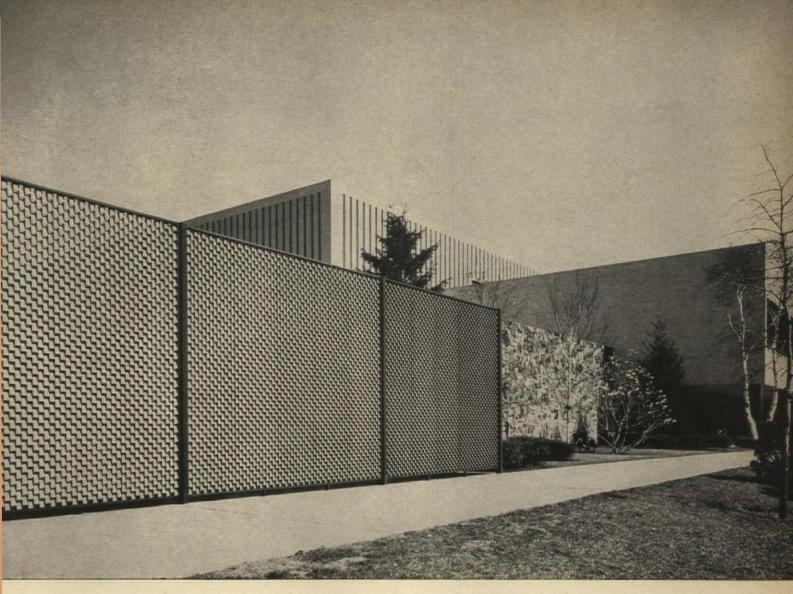
B. HISTORICAL BUILDING COST INDEXES-AVERAGE OF ALL BUILDING TYPES, 21 CITIES

1941 average for each city = 100

|                   |       |       |                |       |       |       |       | 1964 (Quarterly) |       |       | 1965 (Quarterly) |  |       |     |     |
|-------------------|-------|-------|----------------|-------|-------|-------|-------|------------------|-------|-------|------------------|--|-------|-----|-----|
| Metropolitan Area | 1952  | 1958  | 1959           | 1960  | 1961  | 1962  | 1963  | 1st              | 2nd   | 3rd   | 4th              | 1st  | 2nd   | 3rd | 4th |
| U.S. AVERAGE      |       |       |                |       |       |       |       | 1000             |       |       |                  |  |       |     |     |
| 21 Cities         | 213.5 | 248.9 | 255.0          | 259.2 | 264.6 | 266.8 | 273.4 | 274.7            | 276.8 | 278.6 | 279.3            | 279.5  | 281.0 |     |     |
| Atlanta           | 223.5 | 277.7 | 283.3          | 289.0 | 294.7 | 298.2 | 305.7 | 310.0            | 312.3 | 813.4 | 313.7            | 313.9  | 317.9 |     |     |
| Baltimore         | 213.3 | 251.9 | 264.5          | 272.6 | 269.9 | 271.8 | 275.5 | 277.2            | 279.8 | 280.5 | 280.6            | 280.5  | 281.0 |     |     |
| Birmingham        | 208.1 | 233.2 | 233.2          | 240.2 | 249.9 | 250.0 | 256.3 | 258.0            | 259.9 | 260.1 | 260.9            | 261.2  | 264.1 |     |     |
| Boston            | 199.0 | 230.5 | 230.5          | 282.8 | 237.5 | 239.8 | 244.1 | 246.1            | 247.9 | 251.3 | 252.1            | 251.7  | 252.6 |     |     |
| Chicago           | 231.2 | 273.2 | 278.6          | 284.2 | 289.9 | 292.0 | 301.0 | 302.2            | 304.5 | 305.1 | 306.6            | 306.5  | 307.3 |     |     |
| Cincinnati        | 207.7 | 250.0 | 250.0          | 255.0 | 257.6 | 258.8 | 263.9 | 265.1            | 267.1 | 268.9 | 269.5            | 269.4  | 270.2 |     |     |
| Cleveland         | 220.7 | 257.9 | 260.5          | 263.1 | 265.7 | 268.5 | 275.8 | 276.3            | 278.4 | 282.0 | 283.0            | 282.3  | 283.4 |     |     |
| Dallas            | 221.9 | 230.5 | 287.5          | 239.9 | 244.7 | 246.9 | 253.0 | 253.7            | 255.6 | 255.6 | 256.4            | 256.9  | 257.9 |     |     |
| Denver            | 211.8 | 252.8 | 257.9          | 257.9 | 270.9 | 274.9 | 282.5 | 282.6            | 284.7 | 287.3 | 287.3            | 287.3  | 288.2 |     |     |
| Detroit           | 197.8 | 239.9 | 249.4          | 259.5 | 264.7 | 265.9 | 272.2 | 272.7            | 274.7 | 277.7 | 277.7            | 277.7  | 279.3 |     |     |
| Kansas City       | 213.3 | 235.0 | 239.6          | 237.1 | 237.1 | 240.1 | 247.8 | 246.2            | 248.0 | 249.6 | 250.5            | 251.2  | 252.0 |     |     |
| Los Angeles       | 210.3 | 253.4 | 263.5          | 263.6 | 274.3 | 276.3 | 282.5 | 284.0            | 286.1 | 286.1 | 288.2            | 288.9  | 289.7 |     |     |
| Miami             | 199.4 | 239.3 | 249.0          | 256.5 | 259.1 | 260.8 | 269.3 | 270.1            | 272.1 | 273.1 | 274.4            | 274.4  | 275.4 |     |     |
| Minneapolis       | 213.5 | 249.9 | 254.9          | 260.0 | 267.9 | 269.0 | 275.3 | 275.0            | 277.1 | 281.6 | 282.4            | 283.4  | 283.6 |     |     |
| New Orleans       | 207.1 | 235.1 | 237.5          | 242.8 | 244.7 | 245.1 | 248.3 | 247.1            | 248.9 | 249.3 | 249.9            | 250.5  | 253.1 |     |     |
| New York          | 207.4 | 247.6 | 260.2          | 265.4 | 270.8 | 276.0 | 282.3 | 284.8            | 286.9 | 289.7 | 289.4            | 290.2  | 294.0 |     |     |
| Philadelphia      | 228.3 | 257.6 | 262.8          | 262.8 | 265.4 | 265.2 | 271.2 | 271.1            | 278.1 | 274.5 | 275.2            | 275.5  | 276.4 |     |     |
|                   | 204.0 | 286.4 | 241.1          | 243.5 | 250.9 | 251.8 | 258.2 | 260.8            | 262.7 | 262.9 |                  | ACCURATION AND ADDRESS OF THE PARTY OF THE P |       |     |     |
| Pittsburgh        |       | 239.7 | 246.9          | 251.9 | 256.9 | 255.4 | 268.4 |                  |       |       | 263.8            | 264.0  | 264.9 |     |     |
| St. Louis         | 213.1 |       | 1000 1000 1000 |       |       |       |       | 266.8            | 268.8 | 271.4 | 272.1            | 272.9  | 276.1 |     |     |
| San Francisco     | 266.4 | 308.6 | 321.1          | 827.5 | 337.4 | 343.3 | 352.4 | 358.2            | 360.9 | 364.1 | 365.4            | 366.6  | 366.9 |     |     |
| Seattle           | 191.8 | 225.8 | 232.7          | 237.4 | 247.0 | 252.5 | 260.6 | 260.1            | 262.0 | 265.7 | 266.6            | 265.1  | 266.3 |     |     |

HOW TO USE TABLES AND CHARTS: Building costs may be directly compared to costs in the 1941 base year in tables A and B: an index of 256.3 for a given city for a certain period means that costs in that city for that period are 2.563 times 1941 costs, an increase of 156.3% over 1941 costs. TABLE A. Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in first city are 25% higher than costs in second. Also, costs in second city are 30% of those in first (8.0 ÷ 10.0 = 80%) or 20% lower in the second city the second city

TABLE B. Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other: if index for a city for one period (200.0) divided by index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than those of the other. Also, second period costs are 75% of those of the other date (150.0 ÷ 200.0 = 75%) or 25% lower in the second period. CHART 1. Building materials indexes reflect prices paid by builders for quantity purchases delivered at construction sites. CHART 2. The \$1.20 per hour gap between skilled and unskilled labor has remained fairly constant. CHART 3. Barometric business indicators that reflect variations in the state of the money market



Architect: Abbott. Merkt & Co., New York City

# BORDEN ARCHITECTURAL DECOR PANELS: DECA-GRID

Shown above: Custom-designed Borden Deca-Grid panels with tilted spacers, used to separate and screen the service area at Saks in Garden City, Long Island.

With the Deca-Grid style, specifications for spacings and spacer bar positions may be varied almost indefinitely. Another variation available for Deca-Grid is known as the Slant-Tab variation—here the spacers are mounted at angles of  $30^{\circ}$ ,  $45^{\circ}$ ,  $60^{\circ}$  or  $90^{\circ}$  and the spacers (called Slant-Tabs) may be altered in length, depending

on angle of mounting selected.

All the Borden Decor Panel styles, including Deca-Grid Deca-Gril, Deca-Ring and Decor-Plank, are highly versatile in design specification and in application such as for facades, dividers, grilles, fencing, refacing of existing buildings, etc. Fabricated in standard or custom designs in sturdy, lightweight aluminum, Borden Architectural Decor Panels provide a handsome, flexible, maintenance-free building component.

Write for latest full-color catalog on Borden Architectural Decor Panels.

another fine product line of

# BORDEN METAL PRODUCTS CO.

MAIN OFFICE: 822 GREEN LANE, ELIZABETH, NEW JERSEY • Elizabeth 2-6410
PLANTS AT: LEEDS, ALABAMA; UNION, NEW JERSEY; CONROE, TEXAS

When in New York City, see our exhibit at Architects Samples, 101 Park Avenue

For more data, circle 66 on Inquiry Card

# **New Architectural College...**





# **Lehigh Cements Used**

Concrete was chosen for this new school complex to provide a combination of interest, durability and economy. Cast-in-place structural members, floors, roof and paving were made with concrete using regular Lehigh Cement. The lightweight concrete wall panels were precast at the job-site. Lehigh Early Strength Cement was used in the panels to permit early reuse of forms and faster handling of units. And all masonry units were laid up with Lehigh Mortar Cement; aiding the contractor in producing clean, weathertight mortar joints. Lehigh Portland Cement Company, Allentown, Pa.

The University of Florida College of Architecture and Fine Arts is a complex which consists of an Art Gallery, Architectural Building and Administration Building. Lightweight precast panels form the walls of the structure in the lower photo. Floors and roofs are also made of lightweight concrete.

University of Florida, Gainesville, Fla.

Architects:

Kemp, Bunch and Jackson in association with Forrest M. Kelly, Jr., Architect to the Board of Control.

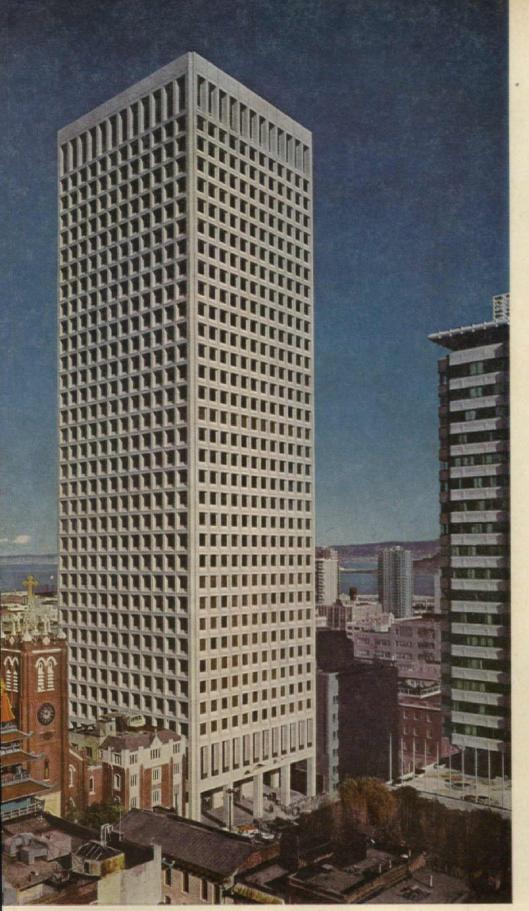
General Contractor:

Tassinari Construction Company, Gainesville, Fla.

Ready Mix Concrete:

Edwards Building Supplies, Inc., Gainesville, Fla.





# One good Mo-Sai job deserves another

Mo-Sai windowall units provide a distinctive sculptured facade on the Hartford Building, now San Francisco's tallest. To the right and across the street, the award-winning International Building makes use of Mo-Sai's versatility with glistening white Mo-Sai curtain walls. On the Hartford Building, large 7' x 7' windows are recessed in the 10' x 12' 4" x 2' Mo-Sai panels. Neoprene "zipper" gaskets hold the glass directly into the Mo-Sai windowall units that were cast within 1/8" tolerances under quality controlled conditions at the franchised Mo-Sai plant.

Architects: Skidmore, Owings, and Merrill



MO-SAI INSTITUTE, INC. 110 Social Hall Ave. / Salt Lake City, Utah

BADGER CONCRETE CO.
Oshkosh, Wisconsin
BEER PRECAST CONCRETE, LTD.
Toronto, Ontario, Canada
BUEHNER & COMPANY, INC.
Mesa, Arizona
CAMBRIDGE CEMENT STONE CO.
Aliston, Massachusetts

Aliston, Massachusetts
ECONOMY CAST STONE CO.
Richmond, Virginia
FORMIGLI SALES CO.
Philadelphia, Pennsylvania

Philadelphia, Pennsylvania GEORGE RACKLE & SONS CO. Cleveland, Ohio GOODSTONE MANUFACTURING CO., INC. Rochester, New York
GRASSI AMERICAN CORP.
South San Francisco, California

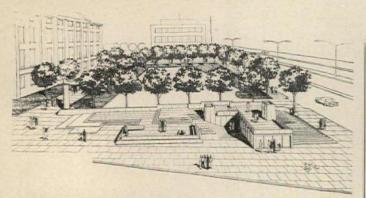
South San Francisco, California
HAMILTON CONCRETE PRODUCTS CO.
Chattanooga, Tennessee
HARTER CONCRETE PRODUCTS, INC.
Oklahoma City. Oklahoma

JACKSON STONE CO., INC. Jackson, Mississippi OLYMPIAN STONE CO., INC. Swan Island, Portland, Oregon Seattle, Washington

PLASTICRETE CORP. Hamden, Connecticut SOUTHERN CAST STONE, INC.
Knoxville, Tennessee
SUPERCRETE, LTD.
St. Boniface, Manitoba, Canada
TEXAS INDUSTRIES, INC.
Arlington, Texas
THE RACKLE COMPANY OF TEXAS
Houston, Texas
WAILES PRECAST CONCRETE CORP.
Los Angeles, California
WILSON CONCRETE CO.
South Omaha, Nebraska
Red Oak, Iowa

Mº-Sai.

PRECAST, PRESTRESSED CONCRETE WITH EXPOSED AGGREGATE

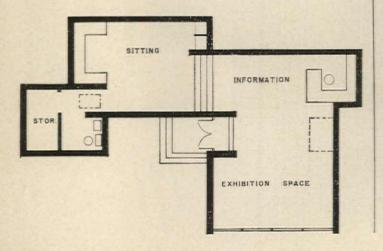


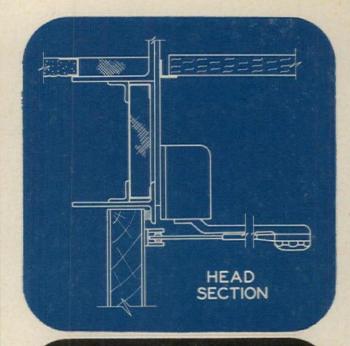
# Winners Announced in Brooklyn Competition

Hanford Yang, and Alexander A. Gartner, associated architects, were judged the winners in a competition sponsored by the Brooklyn, New York, chapter of the American Institute of Architects for a \$70,000 "town square" to contain a 1,000-square-foot structure for an information center and exhibit area, and recreational space in the remaining area. The site, a severely limited one (approximately 160 feet long and 35 feet deep), adjacent to historic Borough Hall in Brooklyn, was such a difficult problem that the jury awarded only a first and second prize from among the 34 entries. Second prize was won by Russo & Sonder, architects.

The jury consisted of Max Abramovitz, F.A.I.A., chairman; Harmon Goldstone, member of the City Planning Commission of New York City; Samuel Ratensky, director of planning for the Housing and Redevelopment Board of New York City; I. Donald Weston, president of the Brooklyn Chapter; Frederic Woodbridge, F.A.I.A.; architect Basil Yurchenco; and Douglas Haskell, former editor of Architectural Forum.

According to the jury "the strength of the first prize solution rests in its varied and fresh articulation of low, yet strong, planes, low masses on the base plane of the 'square' itself, dominated by Borough Hall. By a bold inversion of focus to the horizontal, it establishes the scale and the sense of importance of the human figure, and in turn by its powerful, almost brutal, variegated shapes it makes the Plaza take its proper place in the cityscape. Finally, the important Borough Hall facade in its simple, classical purity is not compromised by any new structures."





# **Application Details**

for Series 4020 SMOOTHEE® door closer installation shown on opposite page (see drawing above)

To keep the closer inside the building without using a bracket the LCN 4020 series Smoothee" is just the thing. Mounted on header above stop face of door, it performs like the 4010 series, has adjustable spring power (can be increased 50%) and adjustable hydraulic back-check. Hold-open available at 90°—140°, also fusible link arm, Underwriters listed.

Door may open 180° with regular arm (max. frame  $4\frac{1}{2}$ "; max. butt 5" wide) or 140° with hold-open arm.

Closer has LCN highly stable liquid, avoiding seasonal changes; is suitable for exterior or interior doors.

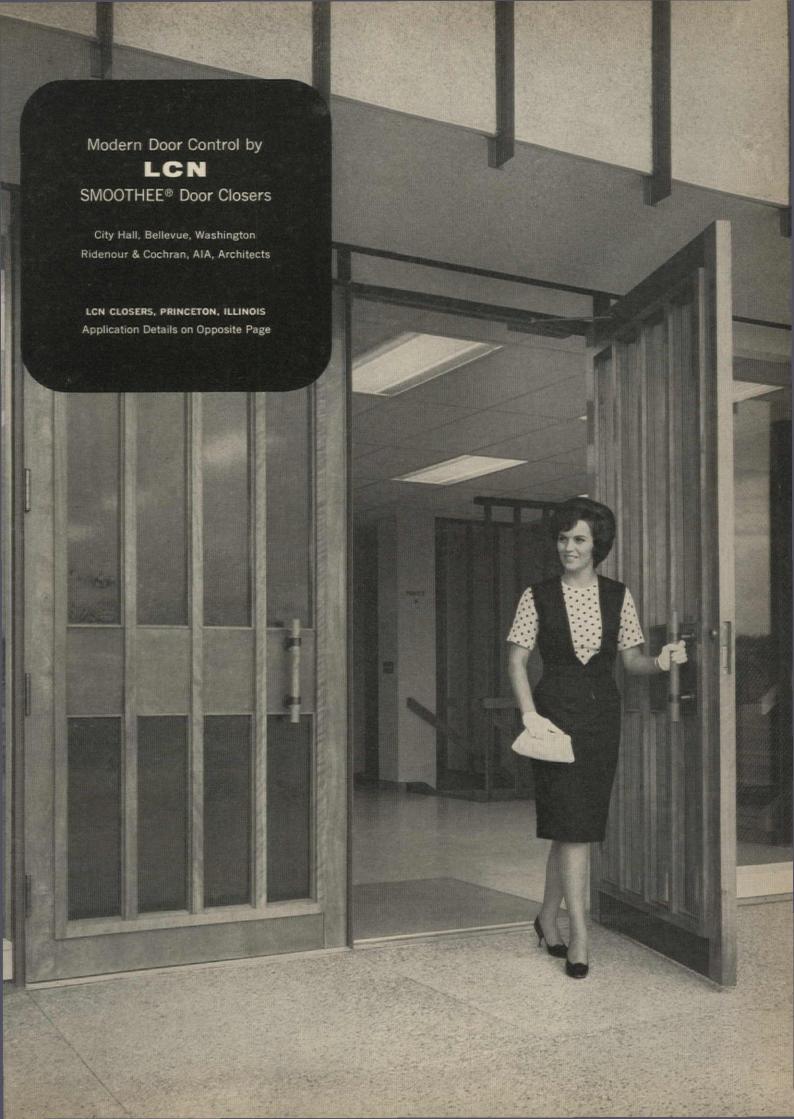
Comprehensive brochure on request—no obligation or see Sweet's '65, Section 19e/Lc

LCN

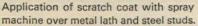
LCN CLOSERS, PRINCETON, ILLINOIS

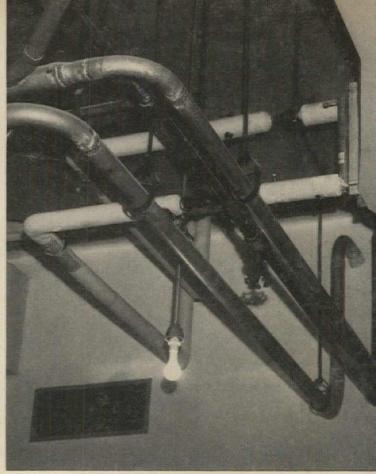
A Division of Schlage Lock Company

Canada: LCN Closers of Canada, Ltd., P. O. Box 100, Port Credit, Ontario









Plasterers had to work around the piping and ductwork necessary for conveying film chemicals.

Technicolor Laboratory,
Universal City, Calif.
MCA Inc., Owners
Skidmore, Owings &
Merrill, Architects &
Engineers, San Francisco
Dinwiddie Construction
Company,
General Contractors
Los Angeles, California

A. D. Hoppe Company, Plastering Contractor, Glendale, California

R. D. Reeder Company, Lathing Contractor, Van Nuys, California



Exposed hardwall plaster exterior will receive aluminum channel and black glass facade.

They "gunned" the walls at Universal City. The need for speed and versatility made Gold Bond Machine Spray Plaster the perfect choice for the Technicolor building. This modern film processing laboratory, with its maze of pipes and ducts, received beautifully finished interior walls...the easy, up-to-date, spray machine way. Gold Bond Machine Spray Plaster was the base coat, followed with a brown coat and finished with Gold Bond Keene's Cement. Thinking about better plastering systems? Think new with Gold Bond. Call our representative, or write to National Gypsum Company Dept. AR-95, Buffalo, N. Y. 14225.



Some of the many fine products that come from 40 years of thinking new

NGC NATIONAL GYPSUM COMPANY

# You're looking at Houston through a new glass from PPG that shuts out 70% of the sun's heat and has a "U" value of .35



Photograph taken through a sample of SOLARBAN TWINDOW simulating typical building location. Camera: 4 x 5 Linhof, 1/10 second at f/22 with Ektachrome daylight.

| 1.1<br>1.1<br>1.1<br>1.1<br>1.1<br>1.1<br>1.1<br>1.1<br>1.1<br>1.1 | 200<br>150<br>150<br>150<br>140<br>110<br>110<br>205 | 88<br>42<br>51<br>73<br>47<br>24<br>27<br>35               |
|--|--|--|
| 1.1  | 150<br>150<br>150<br>140<br>110<br>110<br>110        | 42<br>51<br>73<br>47<br>24<br>27<br>35                     |
| 1.1  | 150<br>150<br>150<br>140<br>110<br>110<br>110        | 42<br>51<br>73<br>47<br>24<br>27<br>35                     |
| 1.1  | 150<br>150<br>140<br>110<br>110<br>110<br>205        | 51<br>73<br>47<br>24<br>27<br>35                           |
| 1.1  | 140<br>110<br>110<br>110<br>110                      | 47<br>24<br>27<br>35                                       |
| 1.1  | 110<br>110<br>110<br>205                             | 24<br>27<br>35   |
| 1.1  | 110<br>110   | 27<br>35   |
| 1.1  | 205  | 35   |
| 11   | 205  |  |
| 11   |  | 00   |
| 1.1  |  | 00   |
| 1.1  |  |  |
|  | 170  | 31   |
| 1.1  | 195  | 61   |
| 1.1  | 190  | 56   |
| 1.1  | 150  | 14   |
| 1.1  | 185  | 52   |
| ulating, H   | eat and Glare i                                      | Reducing)  |
| .60  | 170  | 78   |
| .35  | 65   | 20   |
| 60   | 90   | 22   |
| .60  |  | 25   |
| , 60   | 90   | 32   |
|  | 115  | 36   |
|  | 115  | 45   |
| .60  | 115  | 65   |
|  | .60<br>.35<br>.60<br>.60<br>.60<br>.60               | .35 65<br>.60 90<br>.60 90<br>.60 90<br>.60 115<br>.60 115 |

product for

It's called PPG Solarban™ Twindow®—the latest and most effective Glass Conditioning product. It transmits only one third as much heat as regular 1/4" plate glass, cutting heat loss or heat gain 66%. And it transmits only about 20% of the sun's visible rays, greatly reducing glare.

What gives PPG Solarban Twindow these remarkable properties? Actually, it's two panes of glass enclosing a dry air space. On the air space side of the indoor pane, an exclusive coating reflects 46% of the sun's total energy.

SOLARBAN TWINDOW is the ideal environmental glass in any climate or location. It provides the ultimate in indoor comfort. And the savings in heating and air conditioning costs may more than make up the difference in price.

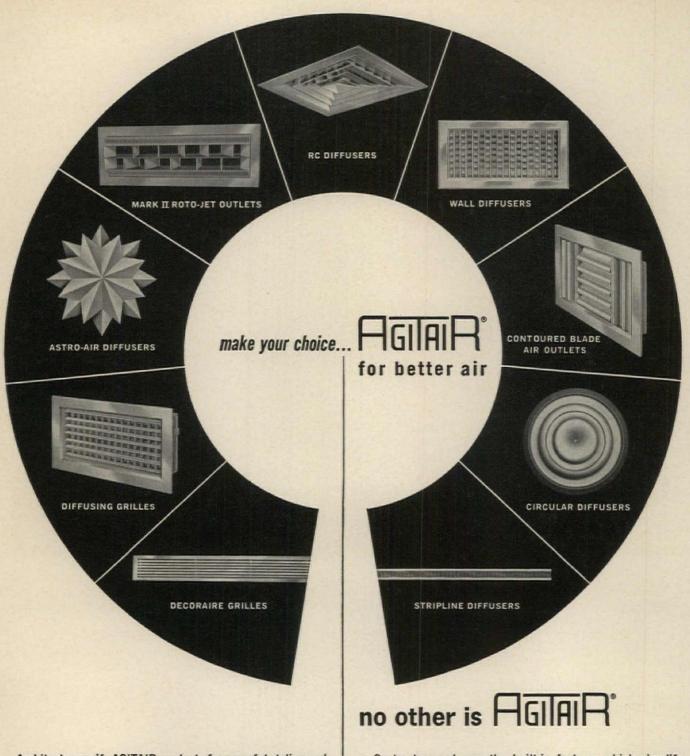
PPG makes environmental glasses to control the sun's heat and glare on any orientation, of any building, in any environment. For details on these modern glass products, contact your nearest PPG another Architectural Representative, consult Sweet's Catalog or write: Pittsburgh Plate Glass Company, One Gateway Center, Pittsburgh, Pennsylvania 15222.

Glass Conditioning from PPG

Pittsburgh Plate Glass Company, Pittsburgh, Pa.



PPG makes the glass that makes the difference



Architects specify AGITAIR products for graceful styling and refined finish to blend perfectly with the particular decor. But beyond the pleasing appearance of each AGITAIR product are the built-in functional features that assure proper handling of conditioned air noiselessly and draftlessly.

Engineers depend on the AGITAIR individual product catalogs with authoritative performance data for selecting and sizing units to meet particular air handling problems.

Contractors welcome the built-in features which simplify installation and assure continuous, trouble-free performance.

And finally, those who actually enjoy climate comfort because of AGITAIR, in offices, plants, hotels, schools, or other environment, the "ultimate users", relish the advantages they enjoy, even though they may not be aware that it's better because of AGITAIR, proven by millions of units in hundreds of thousands of installations. Write for catalogs on any product shown.

25 Years of Pioneering Air Distribution



AIR DEVICES INC., 185 Madison Avenue, New York 16, New York
BETTER PRODUCTS FOR...AIR DISTRIBUTION • AIR CLEANING • EXHAUST

For more data, circle 5 on Inquiry Card



# Declare roof design independence

(with J-M Last-O-Roof)

Roofs like this would be complicated for traditional roofing materials. But Johns-Manville Last-O-Roof\* makes tough roofing jobs easy! This single-membrane plastic elastomer roofing gives you absolute freedom to design your roofs to the needs of your buildings.

Dead-level decks, steep and vertical slopes, step-downs, curves and double curves . . . Last-O-Roof covers every contour. This complete system of compatible components—
\*Trademark

membranes, cements, flashings, finishes—weighs 3 times less than most smooth roofs, 10 times less than gravel. It adjusts better to structural stresses, provides monolithic protection. It's fire-resistant, heat-reflective, weather-proof in any climate. Finished in aluminum, white or pastel shades (like the rose metallic roof shown here), Last-O-Roof can add dramatic beauty to your structures.

It's easy to apply, too, any time of

year. All Last-O-Roof materials arrive at the job ready to use without on-site preparation. They go on cold, either by hand or high-speed mechanical equipment. There's less chance of error, no chance of fires and burns from hot materials.

Design with the one roofing system that's equal to your imagination—J-M Last-O-Roof. For details, write to Johns-Manville, Box 111, New York, N. Y. 10016.
Cable address: Johnmanvil.

Johns-Manville

A monthly roundup of reports on new books of special interest to architects and engineers

## Buildings to House Radioactivity

THE ARCHITECT IN THE NUCLEAR AGE. By James F. Munce, A.R.I.B.A. Hayden Publishing Company, Inc. 850 Third Ave., New York, N.Y. 10022. 241 pp., illus. \$22.50.

Housing radioactivity poses problems to the architect, many of which are outside the normal realm of the profession.

James F. Munce, A.R.I.B.A., has been concerned with projects involving the use of atomic energy. He has assimilated his research to assist the architect in the problems encountered when asked to design a hospital, factory or laboratory, a section of which houses an atomic plant or equipment or highly radioactive material . . . and possibly a nuclear power station.

The physics of nuclear fission and the nature of reactions are initially discussed. A survey of nuclear energy in the U.S., Great Britain and the Communist countries follows. Radioactivity in laboratories and medicine, and the irradiation of food are dealt with. Health hazards, safety precautions and protection are covered and lead into a chapter on structural materials and methods-choice of site; planning and programing; foundations; biological shields; ancillary buildings; ventilation; erection problems; cooling water; and radioactive waste disposal.

The book may not be useful to everyone, but it is, to be sure, a worth-while one. Thus far in nuclear building the architect has not been in a position to develop an exciting theme. Nuclear reaction and the handling of radioactive materials are a new departure for the architect, and it is his aspiration to achieve a result both functionally and architecturally satisfying.

# A Capital Tour

A GUIDE TO THE ARCHITECTUURE OF WASHINGTON, D.C. Edited by Hugh Newall Jacobsen, A.I.A., introduction by Francis Donald Lethbridge, A.I.A. Frederick A. Praeger, 111 Fourth Ave., New York, N.Y. 10003. 210 pp., illus., Clothbound, \$5.95; Paperbound, \$2.95.

This excellent guidebook, published for the Washington Metropolitan Chapter of the American Institute of Architects with the aid of a generous grant from the United States Steel Corporation, will be familiar to many who attended the A.I.A. Convention in June.

After a brief introduction on the history of the plans for the city of Washington, the book proceeds with 20 well-planned walking tours of Washington's most significant architecture, old and new. The book has been designed so that there is a map for each of the tours as well as a pho-

This Month's Books

REVIEWS

Hugh Newall Jacobsen, A Guide to the Architecture of Washington, D.C. . . . 68

Milo S. Ketchum, Handbook of Standard Structural Details for Buildings . . . 73

James F. Munce, The Architect in the Nuclear Age . . . 68

McGraw-Hill Book Company, McGraw-Hill Color Slide Program of Art Enjoyment . . . 68

Andrea Palladio, The Four Books of Architecture . . . 68

Books Received . . . 73

tograph and background material for each of the buildings to be seen.

It will be a very useful book for all visitors interested in the history and development of architecture in the Nation's Capital. And, appropriately for an A.I.A.-sponsored publication, it may well be graphically the hand-somest guidebook ever published.

# Art Enjoyment at Home

McGraw-Hill Color slide Program of Art Enjoyment. McGraw-Hill Book Company, 330 W. 42nd St., New York, N.Y. 10036. \$7.95 per album.

The initial album in this home art program is devoted to the master-pieces of Impressionist Painting. The album, designed to fit a library shelf, contains 24 color slides and a book consisting of an essay on the art of the period with individual commentaries on each slide.

Great art of all periods and countries will be made available and the program can be maintained on a subscription basis.

# **New Editions**

THE FOUR BOOKS ON ARCHITECTURE.
By Andrea Palladio. Introduction by
Adolf K. Placzek. Dover Publications,
Inc., 180 Varick St., New York, N.Y.
continued on page 73



# The new movable partition system that's beautiful—durable and versatile

Modern Partitions' new Movable Partition Systems are made with Videne Paneling by Goodyear, featuring the remarkable surface that looks and feels like real wood veneer, yet fights abrasion, stains and fade. Even crayon wipes off with a damp cloth. Videne will not chip, crack, peel, or yellow with age. The Modern System incorporates many unique engineering features to speed installation and permit quick space alterations. Extra large built-in raceways permit the use of standard wiring materials and reduce wiring costs.

The new M3 Sound Core construction offers excellent acoustical qualities for better

sound control. Riverbank Laboratories rate the system as Sound Transmission Class 43, Modern offers virtually unlimited design possibilities with Videne paneling: 16 realistic woodgrain patterns, 34 architecturally oriented solid colors and 6 abstract designs. What about cost? Modern Partitions, made with Videne Paneling, are actually priced below other top-quality partition systems. For more information on Modern Partitions, write Modern Partitions, Inc., Holland, Michigan 49423—Representatives nationwide. For information on Videne Paneling, write The Goodyear Tire & Rubber Company, Videne Division, Akron, Ohio 44316.

For more data, circle 7 on Inquiry Card



MODERN

PARTITIONS, INC.

HOLLAND, MICHIGAN 49423

with surfaces of

GOOD, YEAR

# In Houston ...

# UNI-PRESSURE \* SELECTED FOR HOUSTON HOUSE APARTMENTS

# A Tankless . . . Constant Pressure . . . Constant Speed Water Booster System

Provides one of HOUSTON'S most modern apartment buildings with water at constant pressure at constant speed at all fluctuating demands.

Uni-Pressure systems are now providing over 400 buildings of all types with the following advantages:

CONSTANT SPEED—No complex speed changing devices

CONSTANT PRESSURE-No "hunting" of control resulting in serious pressure variations

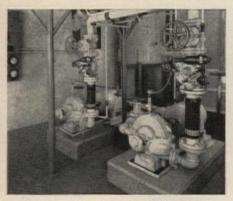
LOWER COST-Normally lower in cost than speed changing systems

LESS SPACE NEEDED—Requires space only for standard pump and motor

STANDARD SIMPLE CONTROL-No complex electrical, mechanical speed changing devices

NO TANK REQUIRED-Eliminates cluttered machinery room

NO SLIPPAGE-Speed changing drives have slippage factoras much as 15%



Typical installation photo of a Uni-Pressure System illustrates the compactness of a type II System. This equipment is designed to provide a maximum of 150 GPM and a system pressure of 83 psi.

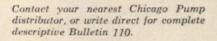
Owner: The Lumbermens Company, Austin, Texas

Architects: Charles M. Goodman, Associates, Washington, D. C. and Irving R. Klein & Associates, Houston, Texas

Mechanical & Electrical Engineers: Bovay

Structural Engineers: Heinzman & Clifton, Washington, D. C.

@1965 CP-FMC Patents Pending



HYDRODYNAMICS DIVISION

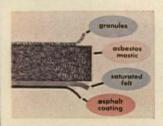
CHICAGO PUMP

622 Diversey Parkway . Chicago, Ill. 60614



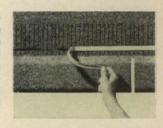
# Is a Fire-Chex® roof as good as it looks?





You be the judge. First, note the unique Fire-Chex composition—a result of unmatched roofing experience that has produced superior felts, saturants and coatings—and the famous Fire-Chex Mastic that contains more asbestos than any asbestoscement shingle of equal weight.

To protect against winds, Fire-Chex Shingles offer exclusive Sta-Seal® Tabs that bond one shingle course to the next on light pressure contact. And on Fire-Chex '325 Shingles the efficiency of this seal has been proved in test winds of hurricane force.





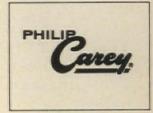
Also, Fire-Chex Shingles were the first to earn the Underwriters' Laboratories' Class "A" Fire-Safety Rating. The photo at the left shows an unharmed wood deck after a Class "A" fire brand test on a Fire-Chex roof at 2000°F. You just can't buy better protection against fire.

Exceptional durability—proved in 15 years of field use and millions of squares applied—enables Philip Carey to offer a 25-Year Bond on Fire-Chex Shingles. This is why Fire-Chex is a logical specification for any structure deserving quality components throughout.





A Fire-Chex roof is as good as it looks. And its good looks are just as much engineered as its quality. The extra thickness and the plain or 2-tone color blending of Fire-Chex Shingles will produce a roof of distinctive beauty on any structure. And, incidentally, Fire-Chex offers the widest choice of colors available in Class "A" shingles. For more information, write Dept. AR-965, The Philip Carey Mfg. Company, Cincinnati, Ohio 45215.



# LOOK TO THE LEADER ... M. Quay FOR THE NEWEST, MOST-COMPACT PACKAGED WATER COOLER The most-compact Packaged Water Chillers ever offered, the new Model PWA Seasonpaks are completely factory assembled on a single base and are piped, wired, evacuated, charged and performance tested before shipment. Compact design uses less space, handles easier, fits through standard doorways. Field installation time is reduced with only a simple hookup of water piping and electrical power required. Compressors and control cabinet are up front for easy accessibility and ease of maintenance. On multiple compressor units, each refrigerant circuit operates independently. Unique Control Center has external visual indicator lights to tell at a glance the phase of operation and to help pinpoint any trouble areas. Dual compressor units are sequence started to keep inrush power low. On reduced system loads, compressors are cycled off and the remaining compressor operates efficiently at full-load capacity. Coolers and condenser are shell and tube type and are ASME code constructed, tested and stamped and are field repairable. No "throw-away" components are used FREE TECHNICAL & MODEL PWA SEASONPAK MODEL PAA SEASONPAK

MODEL PWA SEASONPAK MODEL PAA SEASONPAK Model PWA Seasonpaks are accessible hermetic compressor, packaged water chillers, water cooled or remote air cooled, available in capacity ranges from 7½ through 40 nominal tons. Model PAA Seasonpaks are packaged air cooled chillers for outdoors installation with capacities from 16 through 44 nominal tons. McQuay also offers a complete line of Seasonpak open compressor packaged water chillers, single and dual compressors, from 7½ to 200 nominal tons.



Meguay INC. 1600 Broadway N.E. Minneapolis, Minnesota 55413



AIR CONDITIONING . HEATING . VENTILATING . REFRIGERATION

MANUFACTURING PLANTS AT FARIBAULT, MINNESOTA . GRENADA, MISSISSIPPI . VISALIA, CALIFORNIA

# Required Reading

continued from page 68

10014. 110 pp., illus. \$10.00.

The theoretical I Quattro Libri dell' architecttura was first published in Venice in 1570. The first English translation was not made available until 1715 by Giacomo Leoni, a Venetian architect. However, the translation regarded for its fidelity is the Isaac Ware translation, which came out in 1738 and was printed only once. The present edition is an unaltered, inexpensive reprint of the 1738 edition by Isaac Ware. It was done at the suggestion of Adolf K. Placzek of Avery Library, Columbia University, who has written a special introduction. The 212 plates are all of original size.

HANDBOOK OF STANDARD STRUCTURAL DETAILS FOR BUILDINGS. By Milo S. Ketchum. Prentice-Hall Civil Engineering and Engineering Mechanics Series, Prentice-Hall, Inc. Englewood Cliffs, N.J. 07632. 120 pp., illus. \$10.35.

Practicing architects and engineers, as well as students, have probably found this familiar work a useful guide to graphical expression of their ideas. The sixth printing, retaining a previous format, is now available.

# Books Received

ON WEAVING. By Anni Albers. Wesleyan University Press, Box 360, Middletown, Conn. 204 pp., illus. \$15.00.

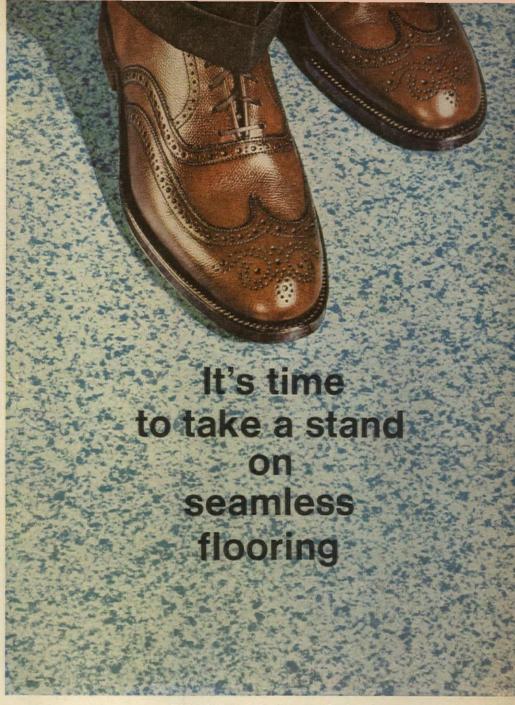
1965 BOOK OF ASTM STANDARDS; PART 16: STRUCTURAL SANDWICH CONSTRUCTIONS; WOOD; ADHESIVES. American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103. 778 pp., illus. \$14.00.

THE VALLEY OF THE GOD-ALMIGHTY JONES. By Maginel Wright Barney. Appleton-Century, Affliate of Meredith Press, 60 E. 42nd St., New York, N.Y. 10017. 156 pp., illus. \$4.95.

THREADS OF HISTORY. By Louisa Bellinger, Charles H. Rutledge, Jean Mailey and Edith A. Standen. Whitney Library of Design, 18 E. 50th St., New York, N.Y. 10022. 53 pp., illus, \$5.50.

HANDBOOK OF FOAMED PLASTICS. Edited by Rene J. Bender. Lake Publishing Corp., Box 270, E. Park Ave., Libertyville, Ill. 60048. 339 pp., illus. \$14.50.

continued on page 76



# TORGINOL DURESQUE

Take a stand on SEAMLESS RESILIENT DURESQUE and you'll discover a durable, mar-proof flooring that reduces maintenance costs and health hazards yet provides a touch of unmatched elegance in flooring. This three dimensional flooring will not collect dirt, moisture, or germs; resists heel and furniture indentations, and is soft, quiet, and easy to walk on.

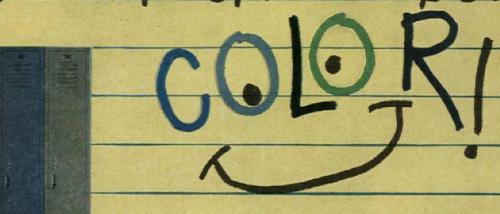
Specify SEAMLESS DURESQUE flooring and you'll take a stand on a proven flooring product, competitive in cost, available in a wide range of contemporary patterns and colors; for commercial, industrial, and residential buildings.

For further information on "Torginol Registered Seamless Floors," consult your Torginol dealer (check the Yellow Pages), over 1000 factory trained licensed dealers or write: Customer Relations Department, Torginol of America, Inc., 6115 Maywood Avenue, Huntington Park, California.

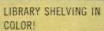
TORGINOL PRODUCTS | A GENERATION OF WORLD WIDE ACCEPTANCE



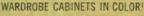
# HERE'S A BRIGHT IDEA ABOUT SCHOOL EQUIPMENT







Republic Bracket Type Library
Shelving will help you keep
things neat, clean, and colorful. Shelves adjust easily in
one inch increments to accommodate books of any
height. There's an easy-tooperate leveling screw at the
bottom of each post, too—
another Republic idea.



Single or double door styles in single purpose apparel and stationery styles or combination models. Neat, trim, modern styling in modern colors, to complement any decor.

ADJUSTABLE STORAGE
SHELVING IN COLOR!
There's really no reason
shelves have to be dull.
Republic Clip Shelving comes
in your choice of color, and
includes a very special feature — fingertip adjustment
of shelf height. No tools

needed.

Color can play a big part in boosting student and teacher morale. Think what color can do—because that's something Republic can do—put spirit-lifting, eye-brightening color in what used to be the dullest objects in everyday school life. You name it. Whether it's lockers, shelving, or cabinets—whatever corner you feel needs brightening—we'll supply the equipment in your choice or your customer's choice of the colors that school pros have been asking for, for years. Your choice of 45 colors in lockers alone!

Finishes are highest quality baked enamel, applied over five successive rust inhibiting coatings. Tough, to *last*—and styling and construction that's going to stay up-to-the-minute in appearance for years.

Want to know more about this colorful subject? Write—and be sure to ask for the new Republic Locker color sample bulletin—shows true color samples of all the 45 colors you can get in Republic Spectrum 45 Lockers.





| This does sound like a bright idea | ! Send literatur | re on:                |
|------------------------------------|------------------|-----------------------|
| ☐ Republic Spectrum 45 Lockers     |                  | ☐ Wardrobe Cabinets   |
| ☐ Clip Shelving                    | ☐ Bracket        | Type Library Shelving |
| Name                               | Title            |                       |
| School or Company                  |                  |                       |
| Address                            |                  |                       |
| City                               | State            | Zip                   |



# TIGHT SCHEDULE ON CIRCULAR STADIUM MET WITH SYMONS FORMS



The necessity for completing the new, 51,500 seat Atlanta Municipal Stadium in less than one year dictated the use of Symons Steel-Ply Gang Forms for column, outer bearing wall and buttress forming, according to the contractor, Thompson Street Company, Charlotte, North Carolina.

The circular structure, with a radius

The circular structure, with a radius of 375 feet 3 inches from the center of the playing field to the outer walls, has a ring of 80 reinforced concrete columns, each 3 feet by 3 feet and up to 25 feet in height, cast integrally with an exterior bearing wall 12 inches thick.

Inside the perimeter columns, 80 rows of 8 columns each vary downward in height as they approach the playing field. Dimensions vary from 3 feet x 3 feet at the outer row to 16 inches by 16 inches nearest the playing field. Rows of columns are tied together by concrete beams, cast with the columns, in depths to 3 feet.

Ganged forms 24' wide and 25' high

Ganged forms 24' wide and 25' high were made up to form the outer bearing wall bridging between the columns. Sides of column panels were made up of standard 2' wide panels, plus 10" fillers and steel corner pieces.

Symons Forms can be rented, purchased, or rented with purchase option.



MORE SAVINGS WITH SYMONS

# Required Reading

continued from page 73

THE METROPOLIS: ITS PEOPLE, POLITICS AND ECONOMIC LIFE. By John C. Bollens and Henry J. Schmandt. Harper & Row, Publishers, 49 E. 33rd St., New York, N.Y. 10016. 643 pp., illus. \$8.95.

1965 CANADIAN TRADE INDEX. Published by The Canadian Manufacturers' Association, 67 Yonge St., Toronto 1, Canada. 1335 pp. \$24.00.

THE RESURGENT NEIGHBORHOOD. By James V. Cunningham. Fides Publishers, Inc., Notre Dame, Indiana. 224 pp. Clothbound, \$3.95; Paperbound, \$1.95.

MIDDLE SCHOOLS. Educational Facilities Laboratories, 477 Madison Ave., New York, N.Y. 10022. 56 pp., illus. No charge.

SCHOOLS WITHOUT WALLS. Educational Facilities Laboratories, 477 Madison Ave., New York, N.Y. 10032. 56 pp., illus. No charge.

NUMERICAL ANALYSIS OF BEAM AND COLUMN STRUCTURES. By William G. Godden. Prentice-Hall International Series in Theoretical and Applied Mechanics, Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632. 309 pp., illus. \$13.25.

BUILDINGS FOR INDUSTRY, Volumes I and II. Hayden Publishing Company, Inc., 850 Third Ave., New York, N.Y. 10022. Volume I, 410 pp., illus. \$22.50. Volume II, 355 pp., illus. \$22.50.

ARCHITECTURE, DRAFTING AND DESIGN. By Donald E. Hepler and Paul I. Wallach. Mc-Graw-Hill Book Co., 330 W. 42nd St., New York, N.Y. 10036, 472 pp., illus. \$8.50.

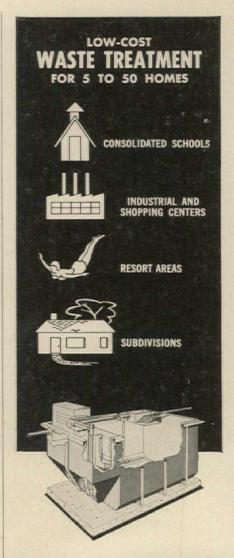
YESTERDAY IS TOMORROW. By Malvina Hoffman. Crown Publishers, Inc., 419 Park Ave. South, New York, N.Y. 10016. 387 pp., illus. \$7.50.

DRAWING THE HUMAN HEAD. By Burne Hogarth. Watson-Guptill Publications, Inc., 1564 Broadway, New York, N.Y. 10036, 156 pp., illus. \$8.95.

THE FRENCH IN THE MISSISSIPPI VALLEY. By John Francis McDermott. University of Illinois Press, Urbana, Ill. 61803. 247 pp., illus. \$6.75.

LEGAL ASPECTS OF PLANNED UNIT RESIDENTIAL DEVELOPMENT. Urban Land Institute, Technical Bulletin 52. Urban Land Institute, 1200 18th St., N.W., Washington, D.C. 20036. 96 pp. \$6.00.

TEN BOOKS ON ARCHITECTURE. By Marcus Vitruvius. Dover Publications, Inc., 180 Varick St., New York, N.Y. 10014. 331 pp., illus. Paperbound, \$2.00.



# TEX-A-ROBIC EXTENDED AERATION PLANTS

- "Spiral Action" provides continuous suspension of raw wastes for Aerobic Digestion
- · Easily installed and operated

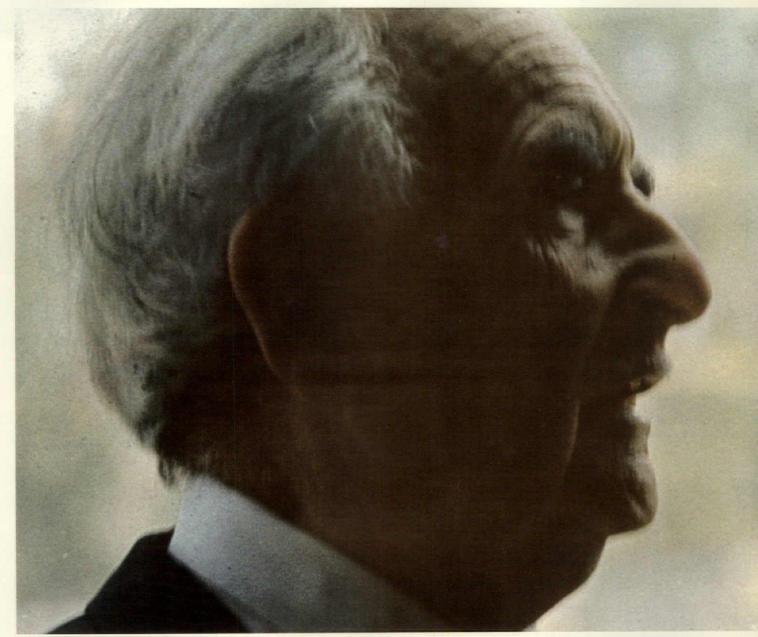
Write for Extended Aeration Bulletin TXAR-EA-64. For plants of larger capacity ask for Contact Stabilization Bulletin TXAR-CS-64.



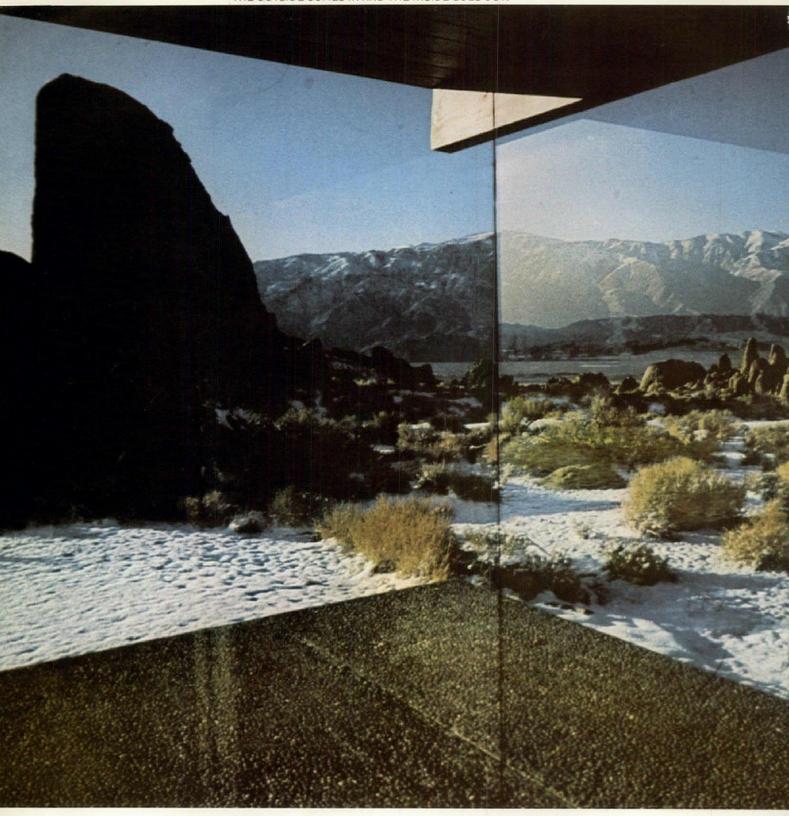
TEX-VIT MANUFACTURING DIVISION
P. O. BOX 340
MINERAL WELLS, TEXAS

Manufactured and distributed in Canada by Canadian Locomotive Company Limited, 36 Park Lawn Road, Toronto 18, Ontario. Phone CL 5-0175.

For more data, circle 120 on Inquiry Card



# RICHARD WONDERFUL STARRY NIGHT—IF YOU LOOSE A FIRRY NOT EVEN NOTICE THAT THE MOON IS OUT."





"WHEN I USE LARGE GLASS TO BRING THE OUTSIDE IN, THE REVERBERATION MIGHT BE COLOSSAL.THEREFORE, I NEED SOME BALANCE AND I NEED CARPETING."



like to hurry that time along. Not only because our business is carpet fibers, but also because we think architect, client, and structure will be better off.

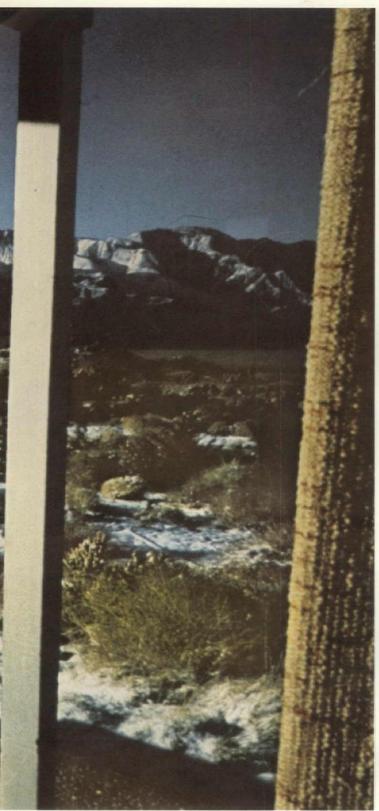
We talked to Richard Neutra about carpeting in relationship to his basic philosophy of architecture well-based biologically. Now 73, Neutra is a vital, imaginative, demanding, gentle man. And, we are glad to say, he felt like talking. (He says it helps him think.)

He began by saying that the womb is man's first home and his most important mould. But right after that comes the home of his childhood, shaping him in many ways as a man.

Neutra said the best an architect can do for a client is to respect his mind-and-body. He made dashes in the air to describe how mind-and-body should be written. They are one to Mr. Neutra. So are house-and-site. And all make up the whole-"Nature within us, or around us, which is the same thing. Our skin is only a permeable membrane."

The serenity which is always Neutra's goal comes from wedding a house to outer nature and from respect for man's own inner nature.

And even when the serenity is inherent in the house, it can be lost by obtrusive, unfunctional fixtures and foreground furnishings if an architect does not involve himself with these, too. "On a wonderful starry night-if you loose a firework, you may not even notice that the moon is out."



THE OYLER HOUSE, LONE PINE, CALIFORNIA



"There is a problem today," he said, "that inventiveness could run away with us. But 'nature comes back, even if you drive her out with pitchfork'—a practical Roman proverb."

Neutra said he considered carpeting a fundamental background material based on "biological values of the prehuman scene from which we stem and in which we remain anchored, if we do not want to wither."

"Man first walked over meadows in an equatorial country at the end of the Pleistocene Age," he said. "Carpets are similar to the natural resiliency that gave shape and tactility to our foot soles."

He went on. "When walking on a carpet, the whole human being is extremely integrated. All kinds of things are happening in the middle brain and endocrine system. This is measurable, not just speculation. Serenity has something to do with *sole* pleasure and an even warmth, and carpet is a wonderful insulator against losing heat through your feet."

Then he said that carpeting gives the impression of reaching right through the sliding glass panels of modern houses and becoming part of the garden outside. "Yet when I use glass to bring in the outside, the reverberative quality is colossal. Therefore, I need an antidote, and I need carpeting."

"The amount of resiliency in a carpet has something to do with our lifelong relationship to the gravitational pull of the earth. You are balancing on merely a few square inches and you're transmitting your whole weight, you see, onto the floor. Naturally resiliency is the thing."

Here Neutra had some things to say about New York cocktain parties where everyone stands, glass in hand, often on hard floors. "If the floors were carpeted, guests could sit or lounge or the floor and have as enjoyable a time as the Zulus do at their cocktail-party equivalent when they lie on the grassy ground. Those people have a good time."

This seemed Neutra's final word on carpets and their place ir biological architecture.

But we have more to say. About carpets and acoustics; the wear and resiliency of carpets; carpets in schools, offices, churches restaurants, hospitals; area carpets—and many other things you may want to know. Won't you write us? Carpets for Architects Chemstrand, 350 Fifth Avenue, New York, N.Y. 10001.







"SERENITY IS ALWAYS THE GOAL."

# FURNITURE SELECTION AND SPECIFICATION

The role and task of the architect in selecting and specifying furniture are underscored in an interview about college dormitories and a review of furniture quality check-points

The importance as well as the complications of the architect's role in interior design are especially emphasized in college dormitory commissions. Here, the function of the building and its architectural presence on campus are subtly united in a single design goal. It is this unity of purpose as dwelling place and implementation of a cultural milieu that imparts to the dormitory an inevitable continuity of building and interior design. And it is the architect's unique capacity to impart that continuity, within the limits of a stringent budget and against the onslaughts of strong opinion typical of the professional but non-architectural client, that makes of the college dormitory commission a natural prelude to whole-building architecture.

Hence, in their commissions for college dormitories, architects are increasingly involved in interior design. A key factor in this trend is control of furniture specification. In the following interview, architects Paul Brust and William F. Bernbrock express their views on the architect's role in selecting dormitory furniture.

#### Why the Architect?

Brust: In designing a dormitory, our primary condern is in developing a comfortable and functional living and studying environment. Furniture is one of the most important factors in that environment, and selection and placement should be retained within the architect's professional concern for the total environment.

Too often, dormitory interiors, exteriors and landscaping are each separate commissions with different points of professional approach. The usual result is at best a discontinuity of vocabulary from outside to inside.

When this happens, it is not really the fault of the university administrator. His field is education or business and he may not appreciate the value of integrated design. The architect must explain why it is important for the university to make comprehensive use of architectural services. He must point out that furniture selection and placement often mean space and cost savings for the university.

Bernbrock: The architect is responsible for coordinating the knowledge and efforts of university officials, contractors and manufacturers' representatives. Therefore he is in the best position to take into account, for instance, space limitations, color schemes, materials, trim and placement.

#### Important Factors in Furniture Selection

Bernbrock: First durability, then good design for a pleasant atmosphere. If furniture meets those requirements, it is usually economical in the long run. Brust: Function is also important. Wherever possible, pieces should serve a double purpose; for example, a wall lamp that swings from over the desk to over the bed. Another important factor is adaptability. Flexibility of furniture height, width and depth allows more freedom in designing a room, while colors, textures and patterns should reflect masculinity or femininity as the case may be.

While the problem of age is not a major one, it can be important in some instances. At De Sales Seminary, officials wanted different layouts for three distinct age groups. Our designs included six-man wards for high school students, two-man rooms for students of college age and private quarters for the professors. Each of these designs required different furniture patterns.

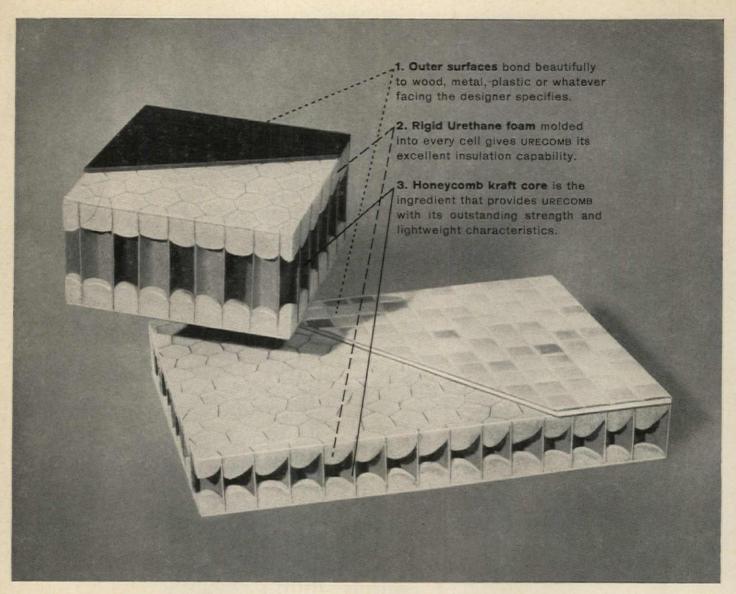
#### Work with Clients and Suppliers

Brust: We work very closely with both suppliers and university officials before we design the dormitory. In this way, our presentations to the university include, for instance, cost figures for the building, furniture, landscaping, equipment, anticipated maintenance, etc.

Bernbrock: We've found that it is extremely important to have university officials satisfied with the furniture to be used in students' rooms. For that reason, we like to get their approval on general or, if possible, specific choices during early design.

At Loras College we were able to show the owners exactly what the rooms were going to look like by building a mock-up of the room prior to construction.

continued on page 96



# Meet URECOMB—the product of a happy marriage.

There has never been anything like it. Now, in one panel core, you have the insulation of Urethane foam plus the strength of kraft Honeycomb. Truly the perfect marriage.

This unique combination is called URECOMB—the ideal core material for floors, walls, ceilings, doors and partitions. In fact, URECOMB is made to order for any situation that calls for strong, lightweight and efficiently insulated panels.

Outstanding insulation. URECOMB core has excellent heat resistance and an exceptional coefficient of thermal conductivity. The two-pound density of the rigid Urethane foam in URECOMB has a "K" factor of 0.12—which makes it about twice as effective as the next best insulator. This can allow reductions in panel thicknesses of up to 50%.

Is URECOMB economical? With trapped air between the two Urethane

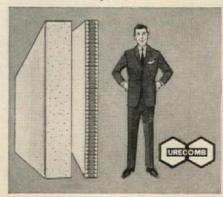
layers, it is not always necessary to fill the cells completely with foam to obtain the required amount of insulation. This is a real cost-saver.

It's strong and lightweight. The URECOMB core in a typical wall panel (2" thick) could have a compressive strength of up to 100 lbs. per square inch. Yet it may weigh less than a half pound per square foot!

Flame resistance. The Urethane used in URECOMB is self-extinguishing—an extremely desirable characteristic in most applications. In sandwich panel constructions, non-fire retarding foams have been found suitable, since facings will obstruct surface flame spread and prevent air from entering and feeding the flame in the core.

Easy to install. URECOMB insulated panels handle easily, go up fast, save on shipping costs, and are extremely rigid. No wonder URECOMB is called

the most efficient structural sandwich core ever developed.



Compare panel thicknesses! Insulation is the same — but URECOMB's unique combination of strength, light weight and insulating efficiency can reduce panel thicknesses (and weight) by as much as 50%! For information write Dept. AR 20.



Union Bag-Camp Paper Corporation - 233 Broadway N.Y. 7, N.Y.

For more data, circle 12 on Inquiry Card

# BRADLEY GROUP SHOWERS

We put 2, 3, 4, 5, even 6 showerheads together on one fixture! Result: Bradleys serve more students comfortably in less space than ordinary showers. This revolutionary new concept gives you unusual layout flexibility in dormitories, gyms, field houses, employee shower rooms - wherever you want to handle large groups economically.

But there's more. Bradley Group Showers serve up to 6 students with only one set of plumbing connections. So they reduce installation costs as much as 80%.

They save water and water heating costs, keep maintenance time to a minimum. And there are four other basic styles to choose from, including multi-stall units with private dressing rooms.

Planning a shower room? It will pay you to get together with Bradley!

For details, see your Bradley representative. And write for latest literature. Bradley Washfountain Co., Bradley 9107 Fountain Drive, Menomonee Falls, Wis. 53055.



Why did we put our heads together?

# TO SAVE MONEY!



continued from page 93

The college, in turn, used the mock-up to help solicit funds for the new dormitory.

#### Important Recent Developments

Bernbrock: Recent improvements in built-in furniture allow greater freedom of design—especially in dormitories in which the majority of pieces must be built-in in order to qualify for government financing. One example is the sofa bed that can be moved, on fixed tracks, away from the wall for sleeping and to facilitate cleaning.

Other improvements include the development of durable and easy-to-clean materials such as vinylclad metal and plastic laminates. Vinyl-clad furniture combines the visual advantages of wood and the structural advantages of steel. Many of these improvements have occurred in the last five years.

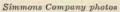
Brust: Since most of the housing administrators I know would prefer cast iron furniture if they could get away with it, I feel that the development of more durable materials is the important recent advance.

New solid plastic laminates, more durable metal finishes and better baked enamel surfaces are especially useful for dormitory furniture. New materials for bedspreads, drapes and furniture covers now resist fading and staining and can be cleaned easily.

#### What Pieces Specified

Brust: We specify wardrobes, chests, desks, sofa beds, occasional chairs, lamps and bookshelves. Since most college students use typewriters, we try to specify one piece that can serve as a typewriter stand. Whenever possible, we use furniture from a single manufacturer in order to assure coordinated colors, designs and fabrics in identical areas.

Bernbrock: In dormitories financed with government funds I specify all of the built-in pieces such as wardrobes, chests, desks, and beds and help the owners decide on free-standing pieces.





Furnished private study (left) adjoins each professor's bedroom at DeSales Preparatory Seminary, Milwaukee. Archi-

#### Built-in or Free-standing

Bernbrock: I prefer built-in furniture. It saves space, saves money because covered areas don't have to be painted or finished, eliminates damage caused by student rearrangements and is easier to finance. In specifying built-in units, we have found prefabricated, or manufactured furniture, to be far superior to millwork construction.

Prefabricated units can be installed more quickly and easily than millwork, eliminating construction delays. Because of precision construction of prefabricated units, we work closely with contractors before construction begins. We point out the necessity of accurately meeting specifications and of planning in advance for furring strips, electrical outlets, etc.

Brust: In the majority of cases we prefer freestanding furniture because there is a greater selection of pieces and because students should be given the opportunity to rearrange rooms to suit their varied tastes.

However, when a wardrobe serves another function—partitioning rooms or concealing permanent fixtures such as wash basins—I prefer a built-in combination unit.

#### Manufacturers' Information

Brust: We get about 75 per cent of the information we need through catalogs, specification sheets and manufacturers' representatives. Also helpful are the samples of materials, colors, weaves and furniture covers manufacturers submit.

However, we feel it necessary to have access to testing information that accurately indicates how well and how long furniture will last. Sometimes this is difficult to obtain, yet it is the only way we can evaluate actual cost factors for our clients.

For instance, before we specify furniture we run quality studies for pieces in varying price ranges. We compare initial cost, depreciation, cost of maintenance and strength of materials.



tects Brust and Brust. Designs for college students' rooms at Desales (right) included both wood and steel-frame furniture.

Past studies generally show that quality furniture lasts for about 12 years. The cost-breakeven period, when compared to cheaper units, may run anywhere from 6 to 12 years. An exact figure is hard to pin down because of university accounting policies regarding labor, storage and nuisance costs.

#### The Next 25 Years

Bernbrock: There is no question that the quality and design of dormitory furniture will continue to improve. If nothing else, competition will see to that.

People are demanding better living conditions and students are no exception. The added space of the suite, where students sleep in one room and study in another, is going to become more popular in the years to come—especially with newer schools that have planned adequate space for future expansion. While the newer schools are decentralizing residence facilities, older and land-restricted schools will have to accept the space-saving advantages of high rise dormitories.

As a final note, I might add that schools may be forced out of the dormitory business by higher construction costs, taxes and teachers' salaries. If feasible ways can be found to maintain control of the students, universities may let private developers handle dormitory construction and operation.

Brust: Dormitory furniture design has evolved through the years from primitive to fundamental to

present day utilitarian. I feel that the next step will be toward baroque, or picturesque, furniture.

In a few years I think we'll find such gingerbread as ornamental instead of recessed dresser handles, more decorative bed stands, chairs and desks, and specialized miscellaneous pieces for typewriters and filing drawers.

Future trends in dormitories are being dictated, to a great extent, by the lack of space. Universities will probably continue to resort to high rise units. While the two-bed room will remain the basic design for student rooms, architects will have less space to work with due to rising construction costs.

#### The Architect's Role

Brust: Although the situation is better now than in the past, many universities still do not recognize the importance of the architect's role in furniture selection. The usual stumbling blocks are university purchasing departments and furniture distributors who offer free decorating services.

In order to overcome these obstacles, the architect must convince university officials that furniture selection is an integral part of the architect's job in designing a dormitory room.

Bernbrock: Yes. I think that the universities are at last beginning to realize that it is almost impossible for an architect to design a dormitory room unless he can plan the furniture in advance.

#### QUALITY CHECK-POINTS FOR FURNITURE SPECIFICATION

Because a great deal of furniture of all types is designed and specified today by architects, it is important that they be versed in the many design and manufacturing technicalities necessary for knowledgeable specification.

Although the architect has a natural feeling for fine furniture, which ensures more often than not the best esthetic selection, this is not enough. As ar-

#### Wood Furniture

- 1. Top Surfaces....
- a. Top surface should be free of knicks, depressions, enlarged pore lines, color blemishes, sap streaks, knots, glue lines between veneer sections, cross sanding, conspicuous fills and blending, mineral streaks and porous areas. Edging should be uniformly radiused, with completely closed miters.
- b. The finish should be smooth to touch,
   including undersides, exposed surface and drawer interiors.
- c. A boiled linseed oil finish is preferred because of easy maintenance, although this type of finish does require occasional re-oiling. The oil-finished surface should be of uniform color and sheen (solid woods tend to be slightly darker than veneers). Preferred finish is with penetrating sealer and at least

three coats of oil, with rubbing after each coat.

d. For the best *lacquer finishes*, the following steps are required to ensure against frequent and costly repairs for scratching and staining:

Walnut finish—Start with walnut colored filler (let dry overnight). Then apply sealer; sand with 60 sandpaper. Then two coats of lacquer, each scuffed with 60 sandpaper. Final lacquer coat to be rubbed with wet-dry 400 sandpaper. Then final rubbing with fine steel wool, with a benzine and oil compound.

Heat and liquor-resistant finish preferred is a proprietary mixture of linseed oil and varnish. First, a coat of penetrating sealer; rub with 4-0 sandpaper or 4-0 emery cloth. This should have three coats of the finish-

categories, their obligation to the client transcends visual appeal and must also deal with the quality, performance and economics involved. With that in mind, Jacob Epstein, furniture designer and president of the Cumberland Furniture Corporation, offers the following analysis of the many furniture quality check-points every architect should know.

chitects today increasingly specify furniture in all

ing mixture, each one rubbed.

Polyester base lacquer—three coats applied with wet or moist rubbing, with 4-0 sandpaper on each coat.

Plastic base lacquer—the same process would apply here as with the polyester base finish.

- e. Where heavy desk-top traffic is anticipated, good plastic laminate tops are excellent for easy maintenance.
- f. The undersides of tops should be free of knots, tears and gouges; smooth to touch; if white wood, stained to match top side; oiled or lacquer sealed.
- 2. Drawers and Fittings
- a. Give each drawer an "ear test." All drawers should open and close quietly and smoothly, with stops to prevent drawer from coming out of the desk.

  continued on page 100



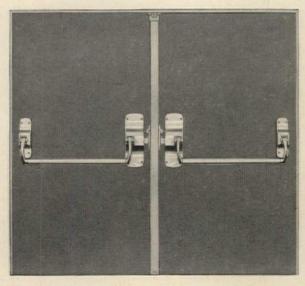
## First rim type Fire Exit Hardware!

It's new . . . and it's news! Another engineering break-through by Von Duprin: our *exclusive* 88 Rim Fire Exit Hardware . . . UL listed for A, B, C, D, and E labeled single doors up to 3' 6" wide and 7' 2" high, and for double doors up to 7' wide and 7' 2" high. Now, for the first time, you can recommend UL listed double-door Fire Exit Hardware with a removable mullion that eliminates the overlapping astragal and the coordinator.

Write today for catalog bulletin 652, giving complete details on our new 88 Rim Fire Exit Hardware . . . or contact your Von Duprin representative!



VON DUPRIN DIVISION • VONNEGUT HARDWARE CO., INC. • 402
WEST MARYLAND ST. • INDIANAPOLIS, INDIANA 48225 ■ IN CANADA:
VON DUPRIN LTD. • 903 SIMARD STREET • CHAMBLY, QUEBEC



Removable mullion eliminates need for overlapping astragal and coordinator!

For more data, circle 14 on Inquiry Card





## Click-boing and there's your wall. New! Royalmetal Partitionette 6000

the coupon below.

One Park Avenue

Partitionette 6000 is an incredibly versatile new system of free-standing, movable partitioning. The key to it all is Royalmetal's unique new universal aluminum post design. It features concealed springloaded studs-you can attach panels left, right or straight ahead simply by snapping them into place. The whole job goes faster and easier.

Partitionette 6000 is handsome, too. There are four variations, in four price ranges: Painted steel (in 27 colors, no less!). Vinyl board, with teak, walnut, cherry or rosewood finish. Vinyl-clad steel, in teak or walnut finish. Royaloid, in nine patterns. All available in 40", 54", 68" or 86" heights.

Partitionette 6000 is styled to coordinate with

New York, N. Y. 10016 Gentlemen: Please send me your full-color brochure on Partitionette 6000.

ROYALMETAL CORPORATION

Royalmetal's new 6000 Series office furniture, but it's

a natural for any office. For complete details, see

Partitionette 6000 at your Royalmetal dealer, or mail

AR-95

Name. Address\_

#### continued from page 97

- b. Test the locks. Most commercial locks are good quality, although the pin tumbler type is preferred. Lock should have snug fit, no gaps.
- c. Drawer and door surfaces in a single unit (unless specified as matching) should be cut from the same panel to "read" continuously in the horizontal plane, and show reasonably good centering. Grain and color characteristics should match sides and tops.
- d. With one drawer about two-thirds open, the drawers above and below should open fully without contact.
- e. Dividers are largely items of convenience, depending on their end use. Box drawers should have dividers and at least one pencil tray. File drawers should provide legal and letter-size filing (unless specified otherwise), and slides should have enough bearing load for end use. File drawers require a full extension slide, which permits the drawer to open to its full length. f. Any desk with one drawer or more should have levelers, to correct for uneven floors and various weight loads in the pedestals. When using either metal or wood slides, an uneven floor will cause the desk to twist slightly and drawer fronts to rub (especially true in sliding door cabinets).

#### 3. Pedestals and Cabinets

- a. Exterior surfaces and edging should conform to the standards for top surfaces
- b. Graining on pieces cut from panels should be reasonably centered (unless specified as center-balanced) and concentration of dark areas at corners and edges should be avoided.
- c. Matches between pedestals and panels on desk (and all pieces of the same order) should show similar color and grain characteristics, unless specified as matching.
- d. Grain on cabinet tops, panel sizes permitting, should be approximately centered, and sides run continuously, with concentration of dark areas at edges and corners avoided. Where size is too great to permit continuous running of sides and top, the discontinuous side should be matched at the corner, and show grain and color characteristics similar to the top.
- e. Mitered cabinet backs should show good visual balance (when one piece); should have good match and balance (if splined); have grain and color characteristics similar to rest of case.
- f. Drop-in backs must be sound and sealed. If white wood, should be stained to match case.
- g. Lock-mitered joints should be sharp, with no radius or "flatting" on edge.
  h. Bottoms of pedestals and cabinets should be clean, free of glue, sound and sealed.

- 4. Case Interiors
- a. Pedestals and cabinets with drawers should be sealed, free of excess glue, finishing stains and wood chips. Spacer slats should be sealed.
- b. Finished interiors of cabinets should conform reasonably to grain, color and finish characteristics and standards for tops and exterior surfaces.
- c. Drawer interiors and partitions should be sanded, free of color or sap streaks, uniform in color, thoroughly sealed and smooth to touch.

#### 5. General Construction Features

- a. Domestic veneers (1/28 to 1/36 inch thick) are generally superior to European veneers (1/40 inch).
- b. Lumber core is generally superior to plywood core, since it will not "cup" or warp as readily. The best lumber cores are laminated both sides to cross-grain bracing sheets and then to veneer finish in 5-ply construction; best plywood cores are 7-ply construction. Preferred lumber core woods are luan (Philippine mahogany), basswood and virola. Also acceptable and lower in cost is a core of compressed and bonded wood chips laminated both sides with veneer.
- c. Edges should be solid wood, for easier maintenance, since a knock will dent but not chip them.
- d. For drawers, any good hardwood (mahogany, walnut, kiln-dried oak) is preferred.

#### Metal Furniture

The three most popular metals used in furniture today are aluminum, chrome-plated steel and stainless steel. Of these three, stainless steel requires the least maintenance and provides the longest wear.

- 1. Aluminum, generally in furniture legs and frames, is lightweight for easy handling. However, it is subject to stains from detergents and the atmosphere. The polish of the mirror finish is often hazy, and is usually coated with a clear lacquer for protection.
- 2. Chrome-plated steel must be given great care in plating if it is to perform properly. The small inside corners are difficult to plate, and this is often the point where the chrome begins to separate from the steel when exposed to detergents (and salt moisture as well).

  3. Since the quality of stainless steel varies according to its several grades, it is important to be aware of these categories:
- a. For best performance, stainless steel should be highly corrosion-resistant, strong, and retain its finish. On all three counts, the 304 series is preferred. This is the same series used extensively for outdoor sculpture, testifying to its malleability and lasting performance.
- b. The 302 series is also suited to furniture manufacturing.

- c. Both the 200 and 400 series are less corrosion resistant, do not retain their polish as well, and are not recommended for a "hard wear" function.
- d. The preferred welding method is "inert arc" (also known as "heli-arc") which requires no oxidation. This results in sound, smooth joints; leaves the metal cleaner; and will not discolor the steel.

#### Upholstered Furniture

Although some elements of the construction of upholstered pieces can be readily seen or touched, perhaps the most important elements are inside.

- 1. Visible qualities
- a. Be certain that the chairs or sofas are properly suited to their end use. If used with a desk or table, the size relationship is an important factor. Be certain that chair arms will fit under the desk or table; and that the seat height is properly related in size.
- b. Welting—a long welt is preferred to a seam. Bias welting does not wrinkle.
- 2. Inside qualities
- a. Frame construction—the primary frame materials used today are wood, molded plywood and glass fiber. About a wood frame, ask if it is solid wood; if the joints are doweled and properly glued; if the corner blocks are fitted.
- b. Padding—all wood edges should be properly padded, for greater comfort and longer fabric wear. Outside arms and back should be given sufficient under-support so that if something is pushed against them, they will not dent or stretch fabric or leather.
- coilsprings c. Springs-when used, there should be proper jute webbing; proper tying; heavy burlap covering under the platform; springs covered with rubberized hair and cotton so that they do not come through, and the platform covered with high-count muslin. When using sinuous springs, depending upon the size of the seat, they should be 21/4 to 3 inches apart and tied together with helical springs or heavy rubberbands to provide maximum resistance and prevent bottoming out. Clips should be tempered, wax-coated, rust-resistant, and squeak-proof.
- d. In a solid seat, foam rubber provides the best resilience.
- e. It is vital to know that since most upholstered furniture must eventually be re-covered, proper care and quality in its inner construction assures that the expense involved will be minor when compared to the much higher cost of re-upholstery. For that simple reason, quality must be the keynote in the materials used . . . high-count, muslin undercover, heavy burlap, top grade cotton, foam rubber, clips, springs and rubber webbing. There is no doubt that these materials, when used properly, will increase the life of furniture.



### Profitable selling starts with effective lighting... Leading stores install PAL® luminaires

Retailers recommend Incandescent Luminaires for efficient color-true lighting . . . By actual store performance PAL luminaires have proved to be the finest of all incandescent systems . . .

Three different, interchangeable Controlens®—concave, dropped trim and plane—give designers the widest freedom to create their own distinctive designs . . . No limit to ceiling patterns with PAL—installed as individual units, in pairs, or 4 square.

<u>Holophane's unique prismatic control</u> assures maximum distribution of useful light to critical areas . . . PAL units fit into any type of modern ceiling. No deterioration; no warpage; no light leakage.

Positive Automatic Latching works simply for quick, low cost servicing and relamping . . . PAL luminaires are economical to install and maintain.

Holophane Company, Inc. Lighting Authorities Since 1866 1120 Avenue of Americas, New York, N.Y. 10036

#### Holophane PAL\* luminaires

Optical Train . . . Prismatic Glass Reflector coordinates precisely with the Controlens (any one of three contours), insuring total luminosity and complete absence of glare . Discover how PAL shows your wares to best advantage—increases your sales . . . Write today.

\*Positive Automatic Latching







For more data, circle 16 on Inquiry Card



Glenbrook North High School, Northbrook, Illinois Architect: The Perkins & Will Partnership, Chicago, Ill.

The beauty of marble,
the durability of concrete

### TERRAZZO keys the decorating theme for a modern high school

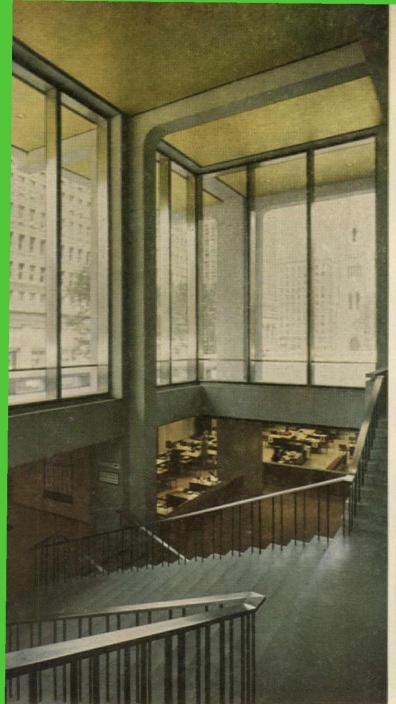
In the Glenbrook North High School, terrazzo achieves effective design harmony by recombining in the floor, the colors, patterns and materials used elsewhere in the building. With its almost unlimited array of colors and patterns, terrazzo can be used to apply this basic decorating principle to structures of every type and design.

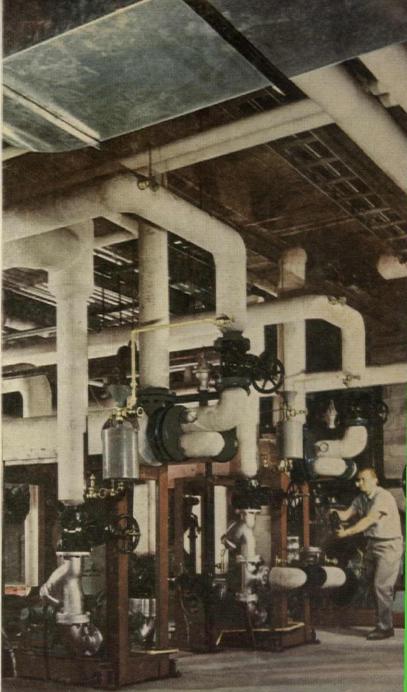
More and more, architects are returning to age-old terrazzo in modern dress, not only for its esthetic advantages, but for its remarkable practicality. Low-maintenance terrazzo is easy to keep clean, and is unsurpassed for areas subject to excessive wear. You find it in schools, terminals, public buildings, hospitals, wherever floors must stand up to heavy traffic.

Further demonstrating its versatility, terrazzo is finding extended use out of doors—for decorative plazas, terraces and sidewalks. Everywhere, today, terrazzo goes so well with modern design.

#### PORTLAND CEMENT ASSOCIATION

An organization to improve and extend the uses of concrete, made possible by the financial support of most competing cement manufacturers in the United States and Canada





## How to keep your building earning beautifully

For the sake of future occupancy, put the enduring beauty of stainless steel to work where people can see it . . . in your building exterior, entranceway, lobby, and elevators.

For the same reason, put the reliability of steel tubular products and ductwork where people can feel it . . . in your building's vital heating, air conditioning, plumbing, and electrical systems . . . and in sidewalk snow melting.

Republic Stainless Steel grows more beautiful with the passing of time. Its soft, lustrous surface resists staining and tarnishing. Stainless is easily washed. It gives you outstanding protection against scratches, denting, or other accidental damage.

Galvanized steel ductwork and pipe provide high strength, low coefficient of expansion, easy installation, and are firesafe. These features add greatly to the dependability and maintainability of mechanical systems.

In electrical conduit, steel again gives you maximum life and at lower cost-as with Republic's lightweight ELECTRUNITE E.M.T. Buried in concrete or exposed, this light-walled conduit has proved its reliability in tens of thousands of installations. Cost savings are such that you can buy and install the next larger size ELECTRUNITE® in place of rigid steel conduit at no extra cost.

There are many more cost-cutting ideas in steel waiting to give you a better return on your building investment. For information, write Republic Steel Corporation, Dept. AR-1327, 1441 Republic Bldg., Cleveland, Ohio 44101. You Can Take the Pulse of Progress at

Strong, Modern, Dependable



### HOW ONE OFFICE HANDLES PROBLEMS IN SPECIFYING NEW MATERIALS

A full-time staff in the spec-writing department at Giffels & Rossetti, Inc., seeks to assure specified performance of new materials under actual conditions in the field

One of the problems confronting architects today is the incomplete performance history of new materials. Especially for new adhesives, coatings and sealants, data in manufacturers' literature frequently are non-specific as to chemical or physical characteristics that might limit applications. This by no means reflects any duplicity on the part of the manufacturers. It is the inevitable result of advancing technology. Architects are called upon to specify demanding performance of materials which manufacturers in good faith produce. But the effects of time and weather are predictable only in broad terms and through long testing in the field. And the effects of unfamiliar application techniques and unknown tolerances of workmanship are a perpetual hazard in a changing world.

At Giffels & Rossetti, Inc., Detroit, there is a fulltime staff of several people who concern themselves entirely with this matter of materials performance in the field. Their work is adjunct to the specification writing department headed by M. J. Horsch. Mr. Horsch speaks with the graphic simplicity of the true expert about the properties of matter and the chemistry of molecules and describes himself not as a chemist or physicist but as "a pedagogue." The latter talent is called upon extensively in his relationships with various manufacturers and testing laboratories with which he must deal in the course of his work. He is assisted in that work by Walter C. Vincent who is versed in the properties of polymers and James N. Priest who is an expert on the properties of concrete under various conditions of mixture and structural demand.

(While concrete can scarcely be described as a new material, Mr. Horsch points out, it is necessary to know what it can and cannot do under various field conditions and to control its properties accordingly. The exposure of certain of the more colorful aggregates to chemically active atmospheric pollutants such as sulphur dioxide, for example, may be a preamble to failure or discoloration. Precast panels may warp under certain conditions that can be controlled either structurally or chemically. Mr. Priest concerns himself with such problems.)

A general evaluation of the architectural qualities of materials and techniques for achieving effects desired by designers (such as intensifying whiteness or achieving a particular shade of color in mortar) is performed by two architects in Mr. Horsch's department. They are C. R. McGruder and A. E. Schoerger. Personnel of the department includes additional specification writers and a librarian who is professionally trained to maintain G & R's extensive technical library.

The evaluation services performed by this staff are called for at three stages in the progress of a job through the G & R office. First, when a question arises during the preliminary design phase regarding the appropriateness of a given material for a specific application, an initial evaluation may be required covering its properties of expansion, weathering, strength, or whatever other properties are germane. Second, when the designers are given assurance that materials can be used their properties must then be specifically defined in writing so as to be sure that no error or deviation will occur as a result of the open specification which is the policy of this office. Third, and again deriving from the open specification, a contractor may propose substitution of an equal product. Mr. Horsch's department must then evaluate the proposed equal.

At Giffels & Rossetti, Inc., materials are evaluated in three ways. The preferred method of gaining assurance of product performance is through a written guarantee by the manufacturer. Most companies, however, do not provide such guarantees, particularly with respect to new materials.

A second mode of evaluation is to ask the manufacturer for a complete and certified statement of the physical properties of the material. The company is usually asked to submit a report from an independent testing laboratory showing the performance of a sample of the material taken from shelf stock.

If the manufacturer is not able to afford a full-scale, independent testing program (and many developers of good new materials are smaller companies without large promotion or sales appropriations), a third evaluation technique is applied. Mr. Horsch says: "We try to do some of our own testing, not in a highly sophisticated or exhaustive sense, but in an empirical way. We may, for example, expose samples of materials to the industrial-urban atmosphere that exists on the roof of the office we are in right now. Such tests are initiated by Gino Rossetti, chief architectural designer, for fact-finding information preparatory to application in design."

An example of this kind of test is a concrete panel about 18 inches square made up with exposed quartz aggregate and set on the roof of this downtown Detroit office building. The problem in such an urban environment is to keep the quartz aggregate and cement matrix white by some kind of coating that will prevent soiling by atmospheric pollutants. It has been found that silicone coatings, while effectively shedding the water-borne soilants, tend to show a disturbing affinity for greasy soilants.

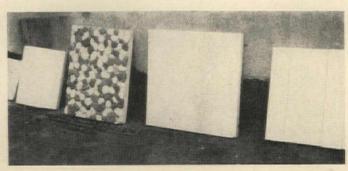
It was thought that a good acrylic dispersion coating might prevent attachment of either kind of "dirt." Half the concrete panel was coated with such an acrylic, and in a few months time it was found that the coated half was accumulating dirt faster than the other half.

Acrylic manufacturers were asked whether there was anything about the material itself that made it attract dirt. The manufacturers were quite definite in their assurances that acrylics have no such inherent property.

Mr. Horsch then investigated the possibility that the emulsifier might be the guilty component. It was found that the particular emulsifier used on the block did, in fact, have an affinity for the greasier dirts. The task then was to inquire among producers of some 300 different emulsifiers in a search for one that does not have that affinity.

Mr. Horsch points out that manufacturers are more than willing to receive inquiries from architects stating the properties required in materials which they are seeking to specify. An example of such architect-manufacturer interchange occurred during a major construction job on an airport building designed by the Giffels & Rossetti firm. It was urgent to proceed with the adhesive application of rigid glass fibre insulation on sheet metal ductwork during very cold weather. The conventional rubberbased adhesive became so cold during storage on the job that vapor pressure of its solvent was too low to permit proper evaporation. Since the solvent could not evaporate properly, the adhesive could not hold the insulation on the ductwork.

The manufacturer was asked to supply the same rubber-based adhesive with a dual solvent; one solvent to be highly volatile, the other somewhat less volatile. The solvents, of course, had to be compatible



Samples exposed to weather on roof

with each other and with the rubber base. The idea was that the new combination could be applied on a surface at 30 degrees and the volatile solvent would readily evaporate at that temperature leaving the surface sticky enough to hold the insulation but with enough duration of semi-fluidity to allow time for application of the insulating material. The manufacturer readily solved this problem and a new dual-solvent adhesive was on the job within 24 hours.

#### Long Range View

This problem of materials manufacture and selection, Mr. Horsch points out, is not one that can be handled indefinitely on an individual job basis nor even by the full-time efforts of such a staff as he now supervises. Furthermore, he asserts, it is unfair to the profession, to manufacturers and to prospective clients to expect or permit this kind of materials evaluation to become the special province of large offices such as Giffels & Rossetti. The problem itself is rapidly becoming too large even for a greatly expanded architectural staff to handle, and the smaller office would be unjustly penalized if this kind of evaluation were to become an essential part of all but the most conventional design practice.

There are now more than 60,000 products available to designers, and that number will be doubled in five years or less, Mr. Horsch believes. Designers simply will not be able to confine their specifications to materials that are well known and long tested. They will have to build with unfamiliar materials in some cases, and no designer can be expected to memorize or even keep a conventional catalogue file on all the properties and trade names of all these things.

"It seems to me," says Mr. Horsch, "that the first approach to a solution to this problem would be to think of what materials are expected to do. It will then be necessary to translate these performance requirements into physical and chemical properties on a cause and effect basis. One could then look for generic groups of materials in which a substance having the required properties is most likely to fall. It should then be possible to go to manufacturers who supply materials in those groups with a requirement for certified assurance of performance.

"I believe there is no other way to protect industry, architects and clients against the inevitable penalties of selection on a trial-and-error basis. Smaller offices must already find a tremendous lack of assurance in specifying certain kinds of new materials—which nevertheless must be applied in accordance with today's building technology. There are already consulting services developing in this area, and such firms will undoubtedly increase in number and scope. But the operation of such a consulting service will itself require industry-wide categorization of materials along the performance lines I have described."

# "We chose G-E Zoneline cooling and heating because it gives individual room control."

A. B. Simms, developer of the 120-unit Atlanta Towers, Atlanta, Georgia, explains: "Because of the exposure of rooms, a person may want heat in one room and cool air in another room of the same apartment. General Electric's Zoneline, with integral electric heat, gives tenants roomby-room flexibility."

Here's another example of Zoneline's flexibility: "If one unit goes out, the whole system doesn't go out. And with G.E. we can shut off the units in unoccupied apartments—a big money saver."

Speaking of money saving, Mr. Simms has more to say: "Because there's no ducting or piping with Zoneline, installation costs were much lower than with central-plant systems. Upkeep's bound to be

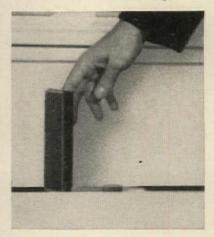
lower, too. We don't have to spend good money to tear down walls and repair and replaster if a unit goes out of commission."

Is it just a lot of hot air about Zoneline distributors being especially cooperative?

A. B. Simms doesn't think so. "You couldn't ask for a better working relationship than the one we've had with Atlanta's General Electric distributor, the W.D. Alexander Co."

How happy is Mr. Simms with Zoneline? This happy: he's installing General Electric Air Conditioning in his new apartment houses in Tampa and Jacksonville, Florida, and Macon, Georgia.

If Zoneline sounds good to you, write: Air Conditioning Dept., General Electric, Appliance Park, Louisville, Ky.

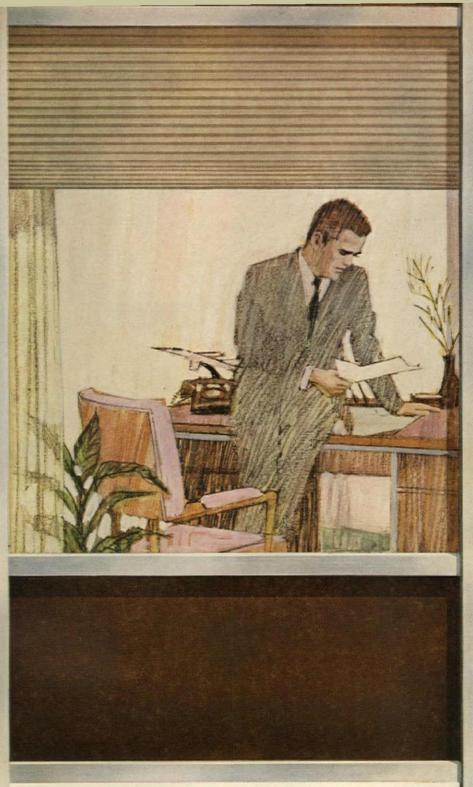


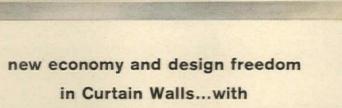
Zoneline's flexible controls let tenants enjoy heat in one room and cooling in another of the same apartment.

A. B. Simms, developer of the 120-unit Atlanta Towers, in front of the striking 22-story apartment house.



For more data, circle 35 on Inquiry Card





Reynolds Aluminum Multi-Framing System

This system combines the beauty and durability of aluminum, with new economy and design flexibility. Multi-purpose extrusions reduce the number needed. All are solid shapes, permitting easy inspection.

Components are stocked by distributor-fabricators who also install, at minimum field cost, according to the architect's design.

Mullion depth, in this system, can vary from four to eight inches.

One continuous mullion can enclose a variety of glass, panels and window thickness.

Details are available in a portfolio which also shows the system's application to Store Fronts, Re-Facing and Partitions. 57 sheets of drawings.

For your set—and for name of distributor—write to Dept. AR-9, Reynolds Metals Company, Richmond, Va. 23218.





Single continuous mullion can enclose panels and windows of different thickness.



Snap-in Inserts can add shadows or color accents to the mullion face.



Watch "THE RED SKELTON HOUR", Tuesdays, CBS-TV

#### On the Calendar

September

8-15 Sixth International Conference on Soil Mechanics and Foundation Engineering, National Research Council—Montreal

9-11 Annual American Institute of Architects State Convention, New Jersey Society of Architects—Essex and Sussex Hotel, Spring Lake, N.J. 14-17 44th Annual Meeting and Chapter Presidents' Conference, Producers' Council—Brown Hotel, Louisville, Ky.

15-17 Third Annual Conference on Urban Planning Information Systems and Programs, co-sponsored by Northwestern University and the American Society of Planning Officials—Windermere Hotel, Chicago

#### October

1-3 Annual Conference, New England Region, American Institute of Architects—Colony Motor Hotel,

Providence, R.I.

3-8 47th National Recreation Congress, sponsored by the National Recreation Association and the American Recreation Society with the cooperation of the Minnesota Park Board and the Minnesota Parks and Recreation Administration—Minneapolis

6-10 Annual Conference, California Region, American Institute of Architects—Yosemite National Park, Calif.

13-15 Ninth Semi-annual Board of Directors Meeting, Consulting Engineers Council—Wort Hotel, Jackson Hole, Wyo.

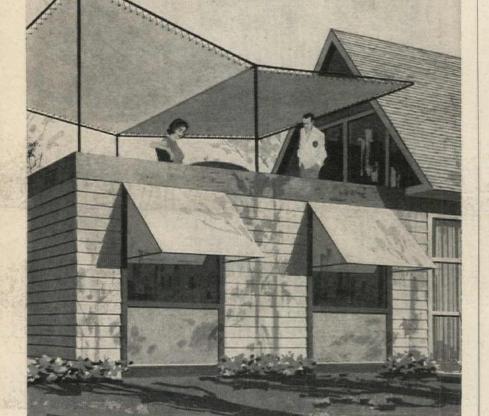
14-16 Annual Conference, Ohio Region, American Institute of Architects—Atwood Lake Lodge, New Philadelphia, Ohio

18-22 American Society of Civil Engineers Annual Meeting and Environmental Engineering Conference—Hotel Continental and Hotel Muehlebach, Kansas City, Mo.

21-23 Annual Convention, Western Mountain Region, American Institute of Architects—Mountain Shadows Resort, Scottsdale, Ariz.

21-23 Annual Conference, Pennsylvania Region, American Institute of Architects—Hershey, Pa.

28-29 American Society of Civil Engineers Urban Planning and Development Division Specialty Conference—Americana Hotel, San Juan, Puerto Rico



An inexpensive way to add a room, upstairs or down. Just install a Sunbrella fabric roof . . . 22% cooler underneath than with others, wonderful air porosity. And none of our 25 gay colors can fade. Will not be affected by rot or mildew. Crack and scuff resistant, too. (Woven of 100% Acrilan\* acrylic fiber—that's why it's a miracle fabric.) Matching awnings are smart, too. Marvelous for new homes. Sensational for perking up remodeling jobs. And think what a non-glare, beautiful exterior fabric like this can add to a hotel, motel, shopping center or office building. Shouldn't you investigate? Write for information and design idea booklet.





## Add wings

that are guaranteed 5 years with Sunbrella®

For more data, circle 129 on Inquiry Card

#### Office Notes

Offices Opened

Jim Haberlan has opened an office for the practice of architecture, 726 Stuart Building, Lincoln, Neb.

New Firms, Firm Changes

Stuart Baesel has joined the Charlotte, N.C., architectural firm of
J. N. Pease Associates, as a senior
associate.

Charles David Belinky, A.I.A., and Frederic A. Schick, A.I.A., have formed a partnership for the general practice of architecture to be known as Belinky and Schick—Architects—A.I.A. at 5518 Oxon Hill Rd., Oxon Hill, Md.

John T. Black has joined, as a general partner, the Chicago architectural firm to be known as Dubin, Dubin and Black.

Ian C. Brown has been named an continued on page 138

For more data, circle 36 on Inquiry Card >



## Roof-mounted Garrett Gas turbines supply all the cooling, heating and electricity for Florida apartments.

The new 200-unit David-William apartment/ hotel is elegant Florida living at its best. What gives the Coral Gables building special distinction is the energy system. All of the electricity, cooling, and heating needs are supplied on-site by Gas.

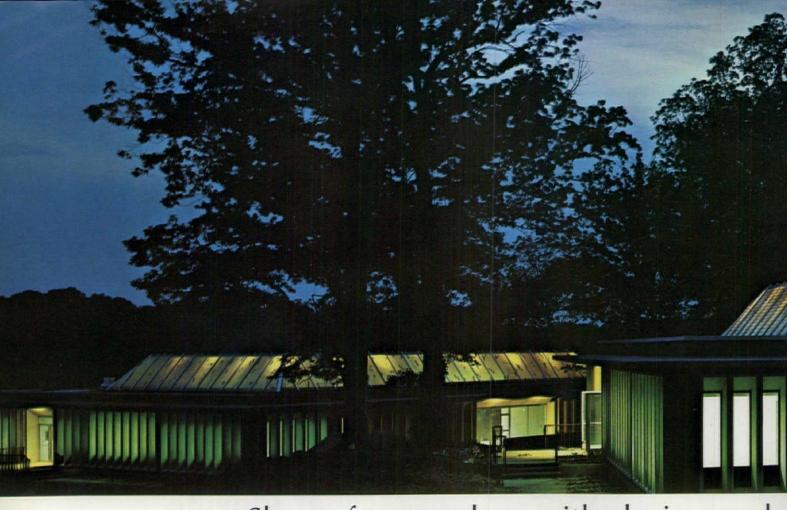
Two Garrett-AiResearch Gas turbines are the energy source. They drive generator sets to provide electric power. And turbine exhaust heat is recovered and put to work energizing cooling equipment and supply-

ing heat and hot water needs.

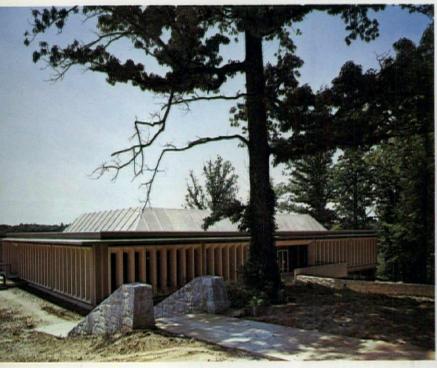
What about economy? That's the big reason for a Garrett and Gas total energy system. The building costs less to operate than with purchased power. Learn more about the total capabilities of Garrett and Gas. Call your local Gas Company Sales Engineer. Or write: Garrett-AiResearch Manufacturing Div., 180 North Aviation Blvd., El Segundo, Cal.

AMERICAN GAS ASSOCIATION, INC.

For total energy...
Gas makes the big difference



# Skyroofs are aglow with design and through Glidden Panelux® translucent

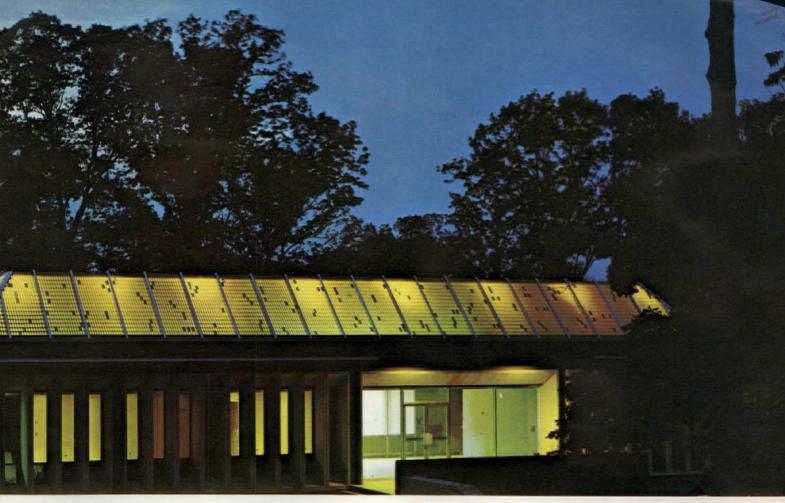


TOP—Aglow with design, color units create random patterns in Panelux glass fiber reinforced plastic faces. Combinations are practically unlimited.

ABOVE—Strong on insulation, Panelux helps maintain even temperatures in buildings. Panel faces with gel coating resist weathering and shattering, Architects: A. Thomas Bradbury & Associates, Wilfred J. Gregson & Associates, R. Schoenberner, project designer.

RIGHT—Flooded with natural light, interiors are cheerful, inviting. Panelux panels reduce glare, transmit daylight, are low in brightness.





## interiors flooded with natural light sandwich panels in new Georgia research center

Daylight enlivens cottages in the Georgia Mental Health Institute nearing completion in Atlanta. And daylight is part of the design, with Glidden Panelux translucent sandwich panels for skylighting.

Panels with dramatic color accents transmit natural daylight to each of nine cottages. These cottages, connected with an administration building by underground tunnels, are used for research as well as treatment of mental patients.

Panelux offers a combination of structural strength, insulation value, weather and shatter resistance that cannot be equaled by other panel materials. Whether your plans involve skyroofs, skylights, curtain walls

or wall panels, Glidden invites you to consider Panelux.



#### ARCHITECTURAL PRODUCTS DIVISION

The Glidden Company • 1065 Glidden Street NW P. O. Box 19923 • Atlanta, Georgia 30325

#### SOLAR LIGHT TRANSMISSION

MATERIAL SOLAR TRANSMISSION 1. PANELUX, Type I 11/2" thick 43.6% 2. PANELUX, Type I 234" thick 37.5% 3. PANELUX, Type II 11/2" thick 58.5% 85.0% 4. Single Strength Glass 5. Double Strength Glass 87.7% 6. Plate Glass, 1/4" thick

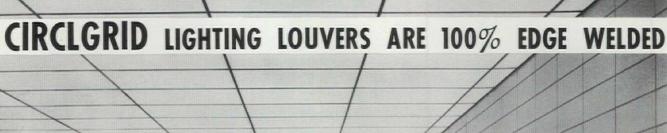
88.0%

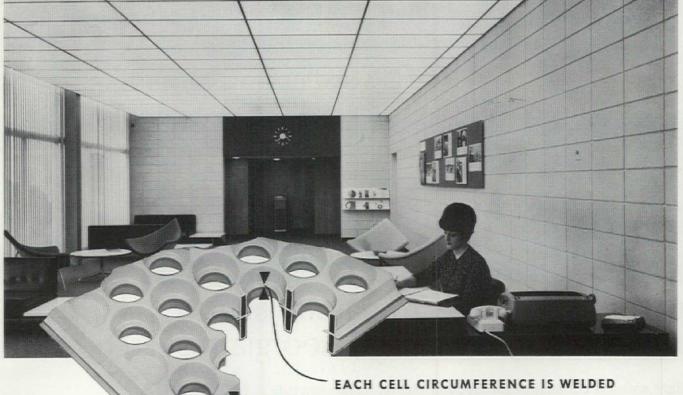
One of the primary advantages of PANELUX panels is its transmission of diffused daylight without glare. Tests show the human eye squints when light transmission is above 45 percent.

#### INSULATION "U" VALUE

MATERIAL "U" VALUE 1. PANELUX Types I and II 0.425 2. Glass Block 0.560 3. Thermopane 1/4" Air Space 0.610 4. Thermopane 1/2" Air Space 0.550 5. Thermopane 1" Air Space 0.530

"U" value is the overall coefficient of heat transfer. Heat energy is reported as Btu/hr/sq ft for each degree Fahrenheit. PANELUX panels possess the best insulation factor of any conventional light transmitting material.





ALL PERIMETER EDGES ARE WELDED

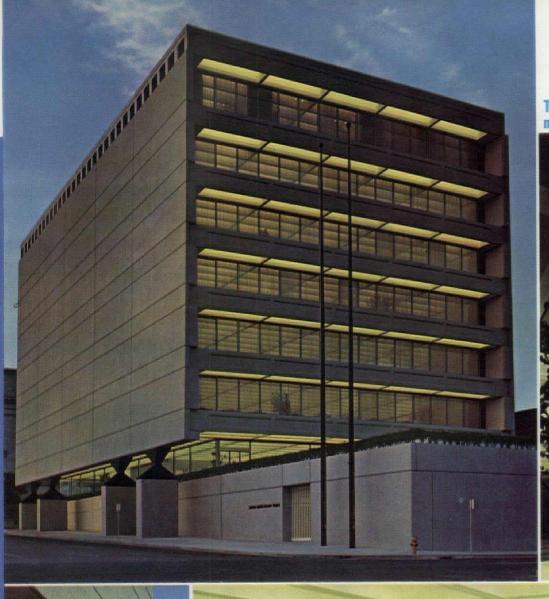
## Only one other vinyl LIGHTING louver has this patented feature—and WILSON makes it.

It is **SQUARGRID**—not only are all perimeter edges electronically welded, so are those of each individual round cell and square cell. This Wilson precision process seals all vinyl contact surfaces, makes for great rigidity and strength and prevents water from leaking into louver interiors. Only Circlgrid and Squargrid vinyl louvers have this feature.

With the introduction of Circlgrid Louvers in 1959, we knew we had the answer to high level comfort illumination. We have constantly improved our louver processing and have added Squargrid to please more users. Choose either Circlgrid or Squargrid or both if you want to enjoy every practical advantage possible in luminous ceilings—rigidity—light weight—40% open areas for approved use under sprinklers—easy handling for cleaning—a UL Flame Spread rating of only 20—guaranteed color stable—choice of sizes, colors and transparencies.

And now—improved production has lowered our costs and your costs. Let us make recommendations for your next luminous ceiling application. Write for catalog 60-5, Phone (814) 838-1981 Wilson Research Corporation, 2001 Peninsula Drive, Erie, Pennsylvania.





The best ideas are more exciting in CONCRETE







American Republic Insurance Co., National Headquarters Building, Des Moines, Iowa, Architect. Skidmore, Owings & Merrill, New York. Structural Engineer: Peul Weidlinger, New York. General Contractor: Arthur H. Neumann & Brothers, Inc., Des Moines, Iowa

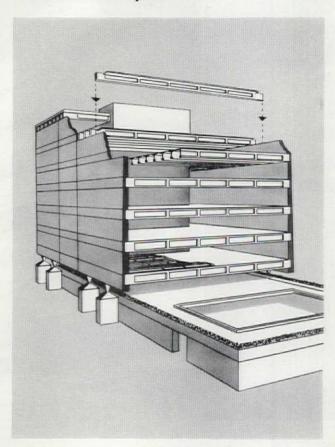
## **Dramatic simplicity in concrete...**

with cast walls and prestressed spans. Poised on four paired pedestals astride an independent ground floor, the American Republic Insurance Company's new headquarters attests the versatility of concrete. Long span girders of precast, prestressed concrete are fitted into cast-in-place walls with the pleasing precision of rabbet-joint cabinetry. 90-foot clear floor spans, interrupted only by a service core, produce office space of maximum efficiency. 

For added interior spaciousness, girders were left exposed to form impressive coffered ceilings that accommodate lighting and air-conditioning functions, as well as acoustic and structural elements. Walls, inside and out, present heightened visual interest, achieved by use of crushed granite aggregate exposed by sand-blasting for a rough-hewn texture. ■ Exciting designs in buildings of all types demonstrate concrete's dual talents as a structural and esthetic material.

33 West Grand Ave., Chicago, Illinois 60610

#### Basic design of new American Republic headquarters is unique "package" of two concrete components



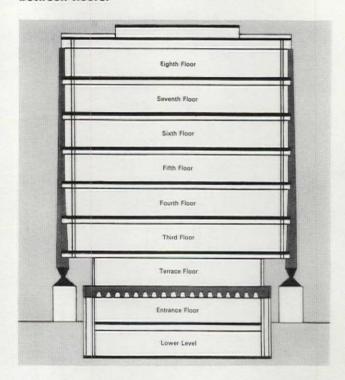
The arresting simplicity of the American Republic Insurance Company building is readily evident in the exploded view. This building is essentially a "two-part" structure, an architectural innovation which "packages" two components: girders and walls. The walls (1 ft. 6 in. thick at top, 4 ft. at bottom) act as a huge bearing envelope for seven levels of precast, prestressed concrete floor girders. There are no interior columns. The elimination resulted in an exceptionally efficient layout: each floor contains about 13,000 sq. ft. of clear area (54 sq. ft. per worker). Total interior area is 100,000 sq. ft. (650 employee capacity).

The entire weight of the building above the terrace level is supported on a central concrete core and eight steel hinges on concrete piers. Each hinge and pier supports 2,500 tons. This ingenious engineering solution provides elegance and a look of lightness for the structure.

## Precast, prestressed concrete girders provide long spans, support cavity walls

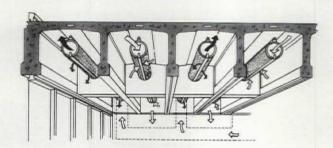
The precast, prestressed girders shown in the cross section are 99 ft. 4 in. long. Each "T" shaped girder weighs approximately 36 tons and rests in pockets cast into the bearing walls. The bearing is on neoprene pads centered on the wall. At a varying distance from the interior face of the bearing walls, the girders support a concrete block cavity wall which runs in a single

vertical plane from the second to the eighth floor. Slots in the floor behind the cavity wall allow for mechanical and electrical utilities to flow uninterrupted between floors.



The clear interior room space on either side of the core is 66 ft. by 90 ft. Lateral forces, wind loads for example, are transferred to the building's central core through diaphragms cast in place between girders. A concrete slab cast atop the girders and diaphragms provides a composite floor system which ties walls, girders and floor to the core or "vertical backbone."

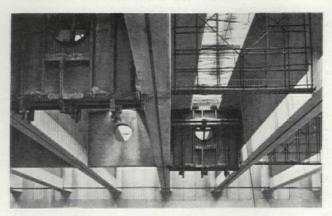
#### Mechanical/electrical systems designed as integral part of structure



To develop an integrated design that would provide the finest possible working environment, mechanical engineers Syska & Hennessy built a full-scale mockup of the ceiling system. Ducts are fed vertically from the cavity wall which acts as a plenum; ducts then branch out into 6-ft. bays transversely across the building. A continuous perforated diffuser runs along the bottom of each 16-in. diameter duct. Each bay alternately contains supply and return ducts. Glass fiber duct liners act also as acoustical units because the aluminum duct is continuously perforated. The fluorescent lighting "rides" on top of the ducts.

#### Cast-in-place concrete diaphragms are key to integrated design

This construction scene shows a typical floor installation with girder diaphragms in various stages of completion. When cast in place, the diaphragms form continuous cross-members which transfer floor loads from girder to girder. Diaphragms also support the integrated system for heating, lighting and air conditioning, which is supplied to each floor from inside the walls. Notice that the diaphragm reinforcing steel extends up into the floor slab, which will be cast over and between the flanges of the girders.



#### Clean, sweeping look of service system indicates new trend in esthetic design

The completed view of integrated structural, heating, air conditioning and lighting system shows a striking departure from the usual practice of moving air through ceiling registers or wall outlets. The graceful, modern look of the continuous diffuser coffered by the clean lines of the concrete girders is not only an innovation in meshing mechanical and electrical equipment with architectural and structural requirements, but a dramatic step forward in esthetics.

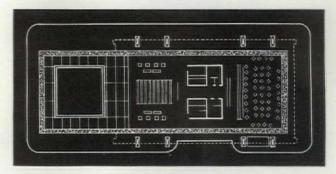
At the far end of the photo can be seen one of the eight steel support hinges.



## 8-story structure supported on eight perimeter piers

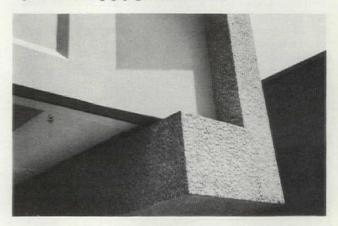
As seen in the plan, the eight piers which support the structure anatomy of the 8-story giant are located out-

side the ground floor perimeter. By so doing, the architect dramatized the connection between superstructure and foundation. Thus the structure in effect straddles a "free standing terrace floor," which ac-



counts for its open-air effect. The ground floor height is 14 ft. 8 in.; succeeding floor story heights vary from 13 ft. 6 in. to 16 ft. (approx.). The service core shown is a continuous, reinforced concrete shaft, carrying stairways and part of the mechanical equipment, and serving as a "shear wall" to resist lateral loads. The core also houses four elevators.

#### Rough-hewn texture achieved by sandblasting gap-graded concrete

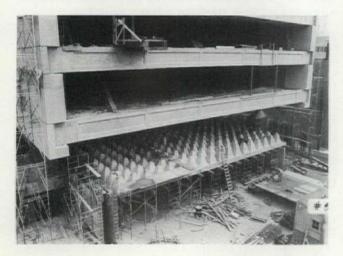


The clear, sharply defined texture of exterior and interior surfaces of the cast-in-place walls is the result of a special technique using a "gap-graded" concrete mix with aggregate exposed by sandblasting. The concrete mix contains a large percentage of coarse aggregates and a small percentage of fines (sufficient for workability) with no aggregates in the intermediate size ranges—thus "gap-graded."

Striking results are achieved when surfaces contain a maximum amount of exposed aggregate of predominately large size. The exposed aggregate surfaces for this structure were obtained with the following concrete mix:

| Portland cement, Type I                    | 564 lb per cu yd        |
|--|-------------------------|
| Masonry sand, minus #8 screen              |                         |
| Crushed granite, ¾ to 1½ in                | 1777 lb per cu yd       |
| Crushed granite, 3/8 to 3/4 in             |                         |
| Water                                      | 225 lb per cu yd        |
| Water/cement ratio                         |                         |
| Sand, percent of total aggregate by volume | 30                      |
| AEAas required to obtain approximatel      | y 5 percent air content |
| Slump                                      | approximately 1/2 in.   |
| Matrix percentage                          | 50                      |

#### Prestressed concrete waffle slab serves double-duty in free-standing terrace floor

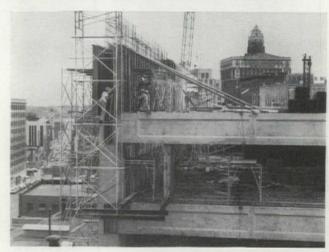


The view above shows how the terrace and entrance lobby of the American Republic headquarters are sandwiched between the colossal piers supporting the main structure. The terrace floor is a 4-foot-deep concrete waffle slab supported separately on adjoining walls. The long span slab (approx. 80 ft.) is posttensioned between wall supports and was formed with fiberglass molds. The concrete for this waffle slab was placed by means of a horizontal conveyor belt. Each "concrete cone" contains a lighting unit for the impressive exposed concrete ceiling below and so provides the dual function of an efficient "lighting grid" and a long span structural waffle slab.

#### Design simplicity and reusable forms make the job go faster

Illustrated here is the forming process for the castin-place concrete bearing walls. The reusable forms were made of steel specially designed for the job. 
These walls and all other exposed concrete, including the service core and the 12-in.-thick walls of the lower structure, consist of the gap-graded granite aggregate concrete in which the aggregate was exposed by sandblasting.

Two giant cranes, one on each side of the building, virtually "walked in tandem" along the structure to install the girders. This rapid construction technique was possible due to the simple make-up of the building—two basic components, walls and girders.



## Back-to-back tractors maneuver girders through city traffic

All prestressed girders were cast at a plant 210 miles from the site. The 99-ft. 4-in., 36-ton units were transported to Des Moines by loading them in pairs on two 60-ft. railroad flat-cars. To keep the building construc-

tion on schedule, 12 railroad cars were leased for the duration of the job. In the railroad yard at Des Moines, the girders were transferred to a pair of truck-tractors aligned back to back for easy maneuverability through the city streets. Delivery timing was critical as there was no room for storage at the job site and girders were placed into the structure as they arrived.



New helpful publication on concrete methods and practices available to you without charge
Write for your free copy of Structural Data Sheets

1962-1965. Specifications and construction methods covering a number of basic uses for concrete. (U.S. and Canada only.)

PORTLAND CEMENT ASSOCIATION 33 West Grand Ave., Chicago, III. 60610

An organization to improve and extend the uses of concrete, made possible by the financial support of most competing cement manufacturers in the United States and Canada

## MODERNFOLD

the long

division line



## SOUNDMASTER

Powerfully built leader of the Modernfold line. Blocks sound with twin steel walls, sheathed in thick, tough "Cord Mesh" vinyl. So effectively controls noise that the Soundmaster 480 has earned a Sound Transmission Class of 40 at Geiger & Hamme Laboratories. (Test data available on request.) Four models. All may be electrically or manually operated. Welded double-truss hinges. Patented jamb-lock wall attachment and air release system. Single widths to 60' 0"; heights to 27' 0". Complete installation versatility for school classrooms and auditoriums, churches, offices, hospitals and restaurants.



For information on Modernfold's new, comprehensive Product Line Manual, write Dept. APM-65.

For complete specifications, see Sweet's File 22d/Ne or consult your nearby Modernfold distributor.



New Castle Products, Inc., New Castle, Indiana

Designer Paul McCobb added an exciting new style to our functional equipment.

Paul McCobb, one of America's leading contemporary designers, says there is every reason to believe that heating and cooling

equipment can be beautiful as well as

functional. He proved it.

Mr. McCobb architecturally styled and coordinated the design of each of the Nesbitt products shown here... Sill-Line radiation, Syncretizer unit ventilator (free standing or with storage cabinets), as well as the Roommate

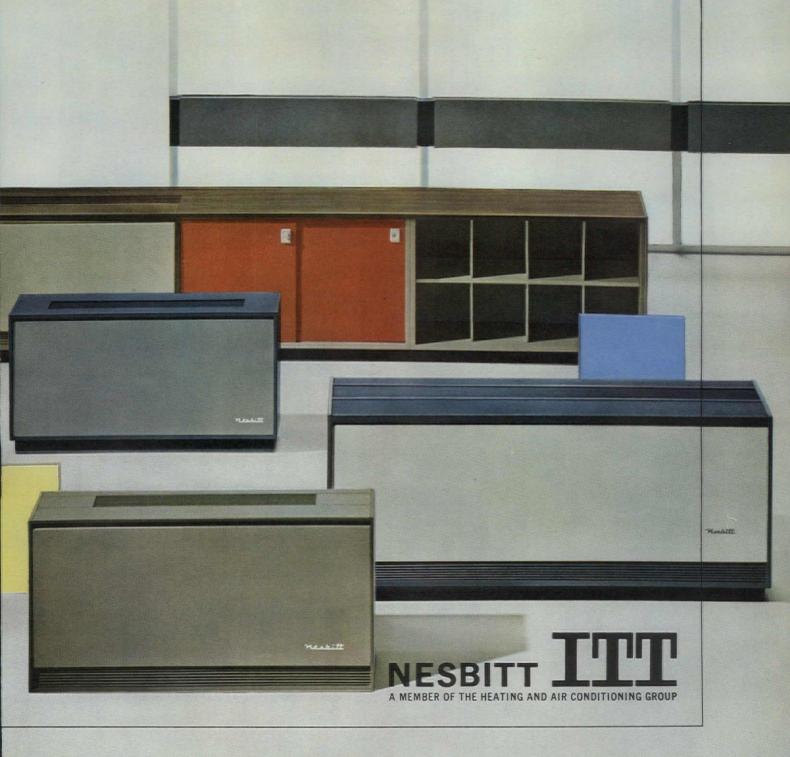
kg and Roommate III cabinet air conditionrs. The result: a contemporary look, a disnctive style that works right along with your esigns.

distinct part of the room. Now with new clors, textures and patterns an integral part of the total design, the units blend with the com, with the building, with each other. This gives architects complete freedom. You are organize and complement various ar-

rangements of Nesbitt classroom ensembles, select the units that unify all your design elements.

More Nesbitt unit systems are installed in schools and institutions than all other systems combined. That's reason enough to write for the facts on the exciting new style in Nesbitt heating and cooling equipment.

ITT NESBITT, a division of International Telephone and Telegraph Corporation, Philadelphia, Pennsylvania 19136.



### Planning an on-the-go office building? Specify a

# Recordlift

**VERTICAL MAIL CONVEYOR BY** 



Phoenix Mutual Life Insurance Co., Hartford, Conn. Architect: Harrison & Abramovitz, Contractor: George A. Fuller Co.

The ultra-modern office buildings seen here differ greatly in architectural style—yet they do have one thing in common to give them remarkable func-

Standard

Conveyor

It's a STANDARD CONVEYOR Recordlift Vertical Mail Conveyor System, schematically illustrated at the left.

By providing fast, selective distribution of inter-floor mail and supplies, a *Recordlift* cuts operating costs by saving 100's of mailboy and messenger man-hours daily. Operation is

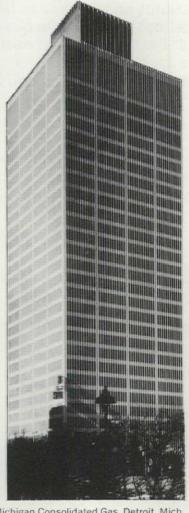
completely automatic . . . all you do is load the container, set the address and *Recordlift* delivers. *Automatically*.

tional efficiency.

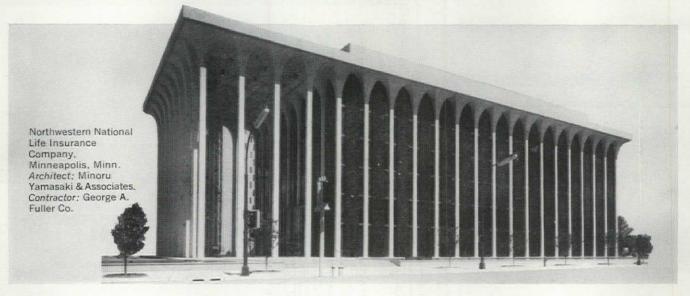
It's the *proven* way to solve office building distribution problems! Ideal for hospital use, too!

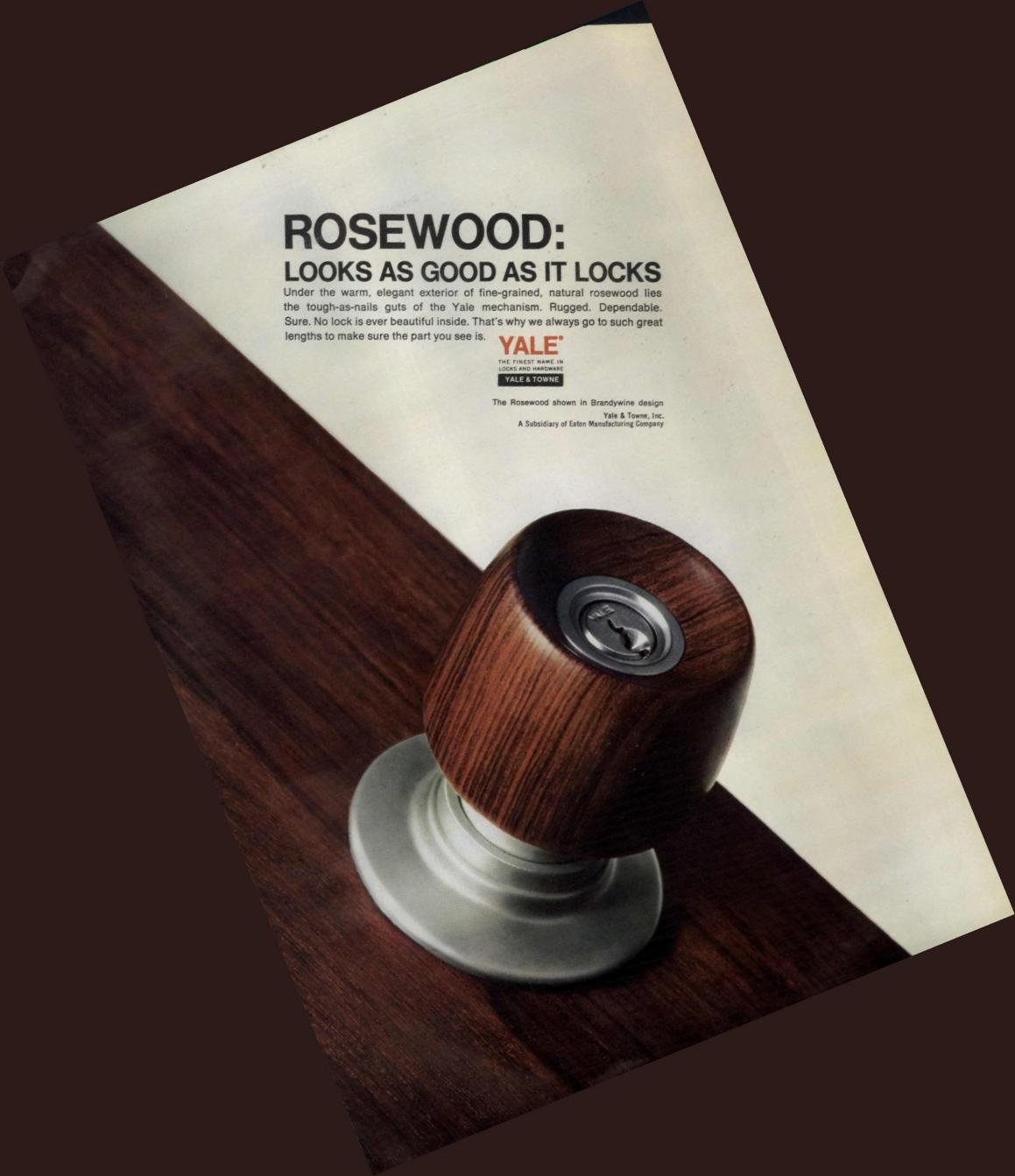
Get details. Write for new illustrated Recordlift Bulletin 153. Describes operation, shows various addressing systems, gives dimensional requirements. Standard Conveyor Company, 312-J Second St., North St. Paul, Minn. 55109.

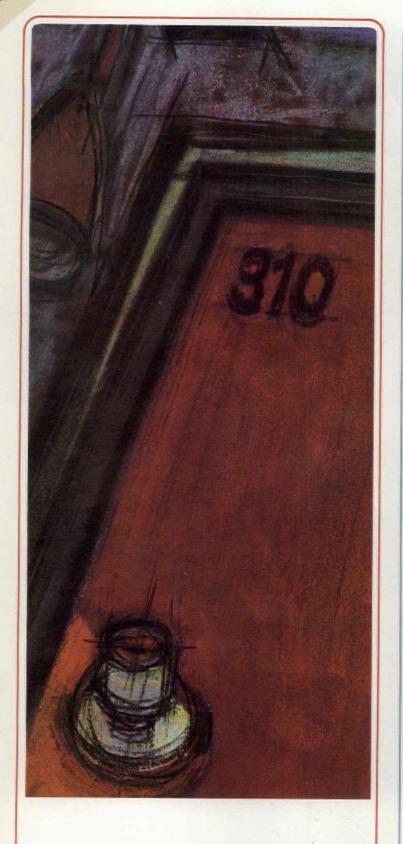


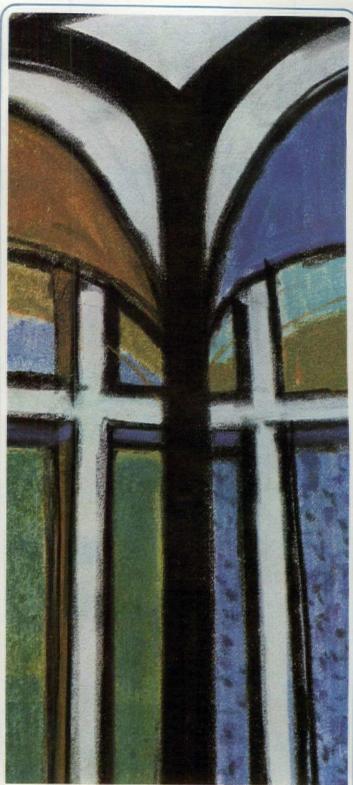


Michigan Consolidated Gas, Detroit, Mich. Architect: Minoru Yamasaki — Smith, Hinchman & Grylls. Contractor: Bryant & Detwiler Co.











#### IDEAS IN STEEL FOR ARCHITECTS

Three new design opportunities are now available to architects because of recent engineering advancements utilizing the strength of steel:

**NEW FLUSH-SEAMLESS DOORS** The industry's



first completely flush, seamless standard doors to feature an exclusive fusion welding process; retain the traditional strength of Fenestra's inner-grid construction at a cost well below custom doors.

NEW GRID WALL SYSTEMS Patented Fenmark



is a new, stronger thin-sightline wall system, guaranteed watertight. Can be economically clad in stainless steel, bronze or weathering steel; infill panels of new Davidson porcelain earth-tone colors or Quarry-tex aggregates.

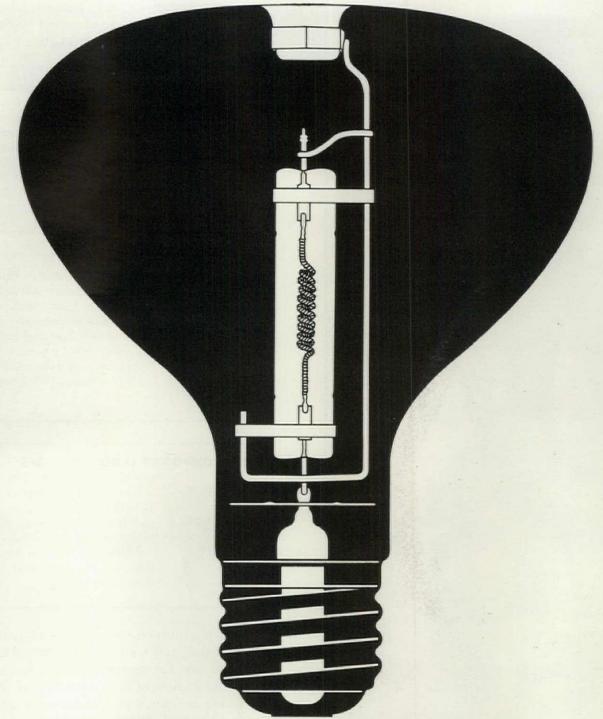
**NEW COMPOSITE FLOOR SYSTEMS** Highest



strength-to-weight floor system available. Key-bond action of Holorib permits long spans. Completely compatible with A.I.S.C. composite beam design. New weld-through process for quick field-welding of shear studs through deck.

Fenestra provides one source, one responsibility for floor, roof and wall systems, including erection, and for fire-resistant steel doors. Send today for Fenestra's new series of Reports describing buildings that make unusual use of systems in steel. Write Fenestra, Inc., 221 N. LaSalle Street, Chicago, Illinois 60601.

FENESTRA



## New From General Electric Quartzline\* Spots & Floods

General Electric's newest family of lamps gives you the convenience of spots and floods but with the brighter light and longer life of the Quartzline lamp! Here is a completely new family of fourteen lamps. PAR&R Quartzline lamps—exclusively from G. E. These new lamps take all the advantages of Quartzline—higher light output and longer life, plus near-perfect maintenance—and combine them with the familiar PAR&R lamps, popular for their excellent beam control, low cost of fixtures and greater convenience of use, to bring you a great new line of lamps. The PAR&R Quartzline lamps offer



Progress Is Our Most Important Product

GENERAL 🍪 ELECTRIC

A BUT DIGHT PRISH PARTINION AT THE NEW YORK WORLD'S KAIR

tremendous performance gains, too. Compared to ordinary spots and floods, they provide more light per watt initially, and have longer rated life—twice as long, in most cases, with only half the replacement labor cost. The result is an exclusive line of fourteen compact spot and flood lamps ranging from 250 to 1500 watts. And, these new lamps will work in hundreds of existing fixtures. Find out how you can use these PAR & R Quartzline lamps in your business. See your General Electric Large Lamp Agent or write General Electric Co., Large Lamp Dept. C-536, Nela Park, Cleveland, Ohio 44112.

Registered Trademark of General Electric



Huge 59" x 189" Therm-O-Proof insulating glass units in Grosse Pointe Shores, Mich. "Record House." Architects: Meathe, Kessler & Associates, Grosse Pointe, Michigan

## This is Therm-O-Proof insulating glass "design flexibility."

What does Therm-O-Proof "design flexibility" mean to you?

To architects Meathe, Kessler & Associates it meant freedom to incorporate the beauty of lakeside surroundings into their design by the use of immense insulating glass areas, without sacrificing winter or summer comfort.

But unusual size is not all. THERM-O-PROOF insulating glass comes in over 200 other combinations and configurations: pink, bronze, grey, figured,

cathedral, tempered, triangles, parallelograms, circles, and now even curved insulating glass units.

When glass becomes a part of your project, consider the "design flexibility" of THERM-O-PROOF insulating glass for your freedom of design.

Each THERM-O-PROOF unit is supported by a 10 year warranty.

> See our Catalog 7a Th In Sweet's Architectural File

For more data, circle 88 on Inquiry Card

Made more ways to fit more ideas.



Thermoproof Glass Company Detroit, Michigan 48210 Subsidiary of Shatterproof Glass Corporation World's Largest Independent Manufacturer of Automotive Replacement Glass.



## NOW - today's only complete line of high

No longer are you limited in your selection of equipment combining lighting and air handling!

Titus' new wide selection, including the new line of Titus Air Diffusers for regressed slot troffers, now makes it possible for you to specify an air diffusion unit (in conjunction with a wide range of makes, types and sizes of light troffers) — that exactly meets your specifications.

Think what this means! Now even problems like critical space requirements, heat removal, complex air distribution requirements — CAN BE SOLVED AS SIMPLY AS SPECIFYING TITUS.

Titus was the original manufacturer of air distribu-

tion units for universal use with many different makes of light troffers. Consequently, Titus has had the wide experience of working very closely with many light troffer manufacturers, has performed many troffer heat removal tests, UL tests — and has assisted troffer manufacturers in developing their heat removal units. This background of valuable experience, plus today's largest line of extremely efficient Air Diffusing Units for troffers, is the best reason in the world for YOU to specify TITUS!

Remember — air distribution is Titus' business — Titus' only business. When you select Titus you're SURE of the most soundly-engineered air distribution money can buy!

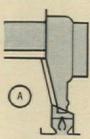
by IIIUS

MEMBER / AIR DIFFUSION COUNCIL

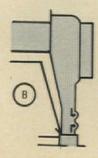


## efficiency air diffusers for troffers!

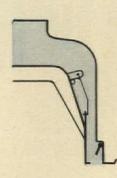
NEW TITUS LTS SERIES DIFFUSERS FOR REGRESSED SLOT TROFFERS. Special compact, low-profile design — plus side feed — make these the perfect diffusers for use in tight plenum spaces. Provide superior Titus air distribution, greatest efficiency. Smaller surface area assures minimum heat exchange between diffuser and plenum, diffuser and troffer (no insulation required!) AVAILABLE 2 BASIC MODELS in saddle-type with side feed, single units with side feed, and alternate saddle-type with top feed.



MODEL LTS (drawing "A" at left) has special Titus-designed linear air controllers that are built into the troffer (by troffer manufacturer) and used in conjunction with Titus Air Diffuser that snaps onto troffer. Provides full 180° adjustable air pattern, plus volume control. Complete height, with side-feed unit, only 6%".



MODEL LTS (drawing "B" at left) features Titus Air Diffusion Unit with built-in linear air controllers and volume controller. Provides 90° adjustable air pattern. Unit simply snaps onto troffer. Complete height, with side feed, generally under 7 inches.



TITUS LT SERIES DIFFUSERS FOR SURFACE SLOT TROFFERS. The most widely accepted units in the industry! For use with many makes, types, sizes of troffers. (Contact Titus for names of qualified light troffer manufacturers).

Simply snap onto troffer. Air pattern controller provides full 90° adjustable air pattern. Dampers give complete air volume control. Both adjustable from face of diffuser — before, during or after diffuser installation.

Saddle type with top or side feed, and single unit side feed models.

#### **NEW CATALOG -- MAIL COUPON**

| TITUS MANUFACTURING CORPORATION • WATERLOO, IOWA  Send new Catalogs on Titus complete line of Air Diffusers for light troffers.  Have Titus representative call. |
|--|
| NAME   |
| COMPANY  |
| ADDRESS  |
| CITY STATE   |

For more data, circle 89 on Inquiry Card

137

#### Office Notes

continued from page 108 associate of Morris Ketchum, Jr. and Associates, New York City.

Eggers and Higgins, Architects, have appointed E. Allen Dennison an associate in the New York City

William N. Dye, Jr. has become a partner in the Savannah, Ga. firm to be known as McGinty, Stanley and Dye, A.I.A., Architects.

Martin Getz has been named an associate of the New York City office of John Graham and Company, Architects, Planners and Engineers. John Boogaerts, Jr. has also joined the New York City office and R. Allen Norris the Seattle office.

J. Jay Hill-Craig G. Andrews, Architects are the successors to the practice of J. Jay Hill, A.I.A., Architect in Albuquerque, N.M.

Faulkner, Kingsbury and Stenhouse, Architects has announced

that Slocum Kingsbury, F.A.I.A., has retired from active practice but will serve as a consultant. Frederick Lear Fryer, A.I.A., and Avery Coonley Faulkner, A.I.A., have been admitted as partners in the Washington, D.C. firm to be known as Faulkner, Stenhouse, Fryer and Faulk-

George S. Lewis, A.I.A., and T. Merrill Prentice, Jr., A.I.A., have formed the partnership of Lewis and Prentice, Architects, 80 W. 40th St., New York City 10018.

Dan Morganelli, A.I.A., Werner Heumann and Carroll Rudd announce formation of the firm Morganelli, Heumann and Rudd for the practice of architecture, planning and interior design, 8584 Melrose Ave., Los Angeles 90069.

Joseph R. Pniewski has been promoted to chief architect, Burns and Roe, Inc., New York City consulting engineers.

The Glen Head, N.Y. architectural office of Alfred Shaknis, A.I.A., announces that Peter Schuyler Van Bloem has joined the firm. now named The Office of Alfred Shaknis-Peter S. Van Bloem.

H. Carl Walker, M.S.E., P.E., has formed the engineering firm of Carl Walker & Associates, Inc., Kalamazoo, Mich.

The St. Louis architectural firm of Schwarz & Van Hoefen has named Heinz E. Zobel an associate member.

Checker the wardrobe system

designed specifically to meet the needs of the modern checking facility.

The finest check room equipment availabledesigned and manufactured by Vogel-Peterson to assure quick efficient checking service as well as attractive design and maintenance free construction. This most complete line has components for every checking need, and combined with Vogel-Peterson's one check system make it possible to check one item or several easily, quickly and safely.

For complete information and specifications on Checker equipment write for catalog CK-52.

Requirement studies, layouts, load factors etc. supplied upon request.

**VOGEL-PETERSON CO** 

"The Coat Rack People" **ELMHURST** • ILLINOIS

New Addresses \_ Edward J. Aisner, Architect, 38 Newbury St., Boston 02116.

Pietro Belluschi, Architect, 1 Fairfield St., Boston 02116.

Berla & Abel, Architects, Thomas House, 1330 Massachusetts Ave., N.W., Washington, D.C.

Marcel Breuer and Associates, Architects, 635 Madison Ave., New York City 10022.

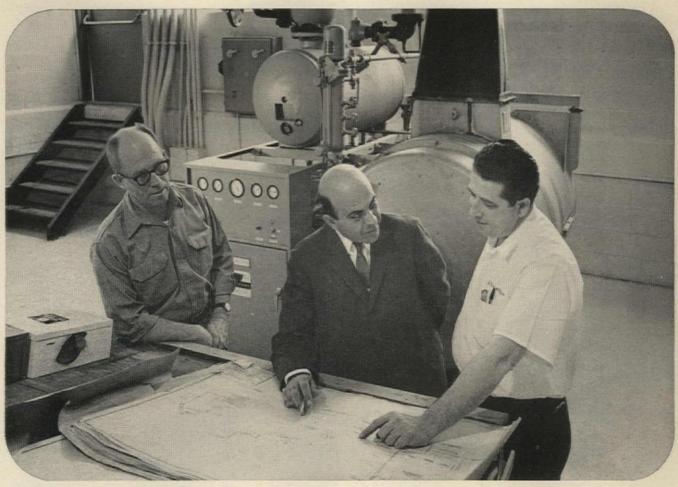
Eckbo, Dean, Austin and Williams, Landscape Architects, 1414 Fair Oaks Ave., South Pasadena, Calif.

Jess Stimpson Epps, Jr., Architect, Office Suite 510, Oak Cliff Bank Tower, 400 S. Zangs Blvd., Dallas 75208.

Graef-Anhalt-Schloemer, Consulting Engineers, 4840 W. Fond du Lac Ave., Milwaukee 53216.

Albert A. Hoover and Associates, continued on page 142

### Why does it cost Anderson Memorial Hospital less to own and operate a Va-Power boiler?



W. L. Anderson, Administrator, Anderson Memorial Hospital, discusses the substantial savings in space resulting from the installation of a 100 hp Va-Power Circulatic boiler, with Joseph S. Catalfio, Superintendent of Buildings & Grounds (right), and Lawrence McCollister, Assistant Engineer (left).

### Because, right from the start, they saved \$3,000 on installation costs...that's why!

By installing a Va-Power 100 hp Circulatic boiler, the modern, 100-bed Anderson Memorial Hospital at Mt. Clemens, Michigan, reduced their remodeling costs by \$3,000. The compact Va-Power boiler kept boiler room square footage requirements to a minimum. And, for future expansion, there is still room for an additional Va-Power Circulatic boiler and another air conditioning unit in this minimum size boiler room.

For two years, this Va-Power Circulatic boiler has been performing efficiently, around the clock, seven days a week . . . in the winter, for heating-in the summer, for operating an absorption-type air conditioning system .. with minimum maintenance and without the need for an experienced engineer.

Anderson Hospital's management is pleased with the

"hardly any maintenance is required" and "no trained engineers are needed" features of the Va-Power Circulatic.

If your particular boiler requirements are for full time power, or, for standby or peaking service, Va-Power Circulatic boilers provide savings on space and from fast starts. In addition, you will realize the same reliability of operation that Anderson Memorial Hospital experiences along with their savings on the initial installation.

Whether your hospital boiler requirements are for new construction, remodeling or standby, you can benefit by getting the full details on the Anderson Memorial Hospital installation of the Va-Power Circulatic boiler. Write today.

### Industrial Division APOR Vapor Corporation



6440 West Howard Street, Chicago, Illinois 60648

Va-Power compact water tube steam boilers—18 to 300 hp . . . 5 to 1500 psi—Modulatic and Circulatic— Va-Power Hi-R-Temp Liquid Phase Heaters from 3 million to 12 million BTU input.

For more data, circle 91 on Inquiry Card



Safety Switches for Normal and Hazardous Locations



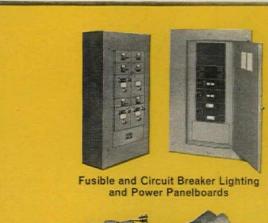
Industrial Circuit Breakers for Normal and Hazardous Locations



Circuit Breaker and Fusible

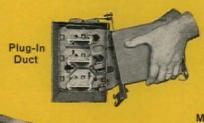


## SQUARE D MANUFACTURES A



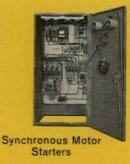














### ON DUTY WHEREVER ELECTRICITY IS









Special-Purpose Control



Resistors



Magnetic Brakes



I-Line

Busways









Control Relays

Timing Relays

## omplete LINE OF EQUIPMENT



### ISTRIBUTED & CONTROLLED







Crane and Mill Control

Adjustable Speed Drives

**EXECUTIVE OFFICES • PARK RIDGE, ILLINOIS** 

ADJUSTABLE SPEED DRIVES **BUSWAYS & WIREWAYS** CIRCUIT BREAKERS CONTROL CENTERS CRANE & HOIST CONTROL DISTRIBUTION SWITCHBOARDS ELECTRIC TRUCK CONTROL HIGH VOLTAGE CONTROL LAUNDRY CONTROL LIFTING MAGNETS LIGHTING AND POWER PANELBOARDS LIMIT AND FOOT SWITCHES MACHINE TOOL CONTROL MAGNETIC BRAKES METERING EQUIPMENT MOTOR STARTERS PRESS CONTROL PRESSURE, FLOAT, & VACUUM SWITCHES **PUSHBUTTONS RELAYS AND CONTACTORS** RESISTORS SAFETY SWITCHES SERVICE ENTRANCE EQUIPMENT STAGE DIMMERBOARDS STATIC LOGIC CONTROL STEEL MILL CONTROL SWITCHGEAR & UNIT SUBSTATIONS SYNCHRONOUS MOTOR CONTROL TERMINAL BLOCKS TEXTILE MACHINE CONTROL TIMERS

UNDERFLOOR DUCT VOLTAGE TESTERS WELDER CONTROL

# MEET A GLAMOROUS CONCRETE GARAGE FLOOR...

Rodgers Pontiac Garage, Dayton, Ohio Richard O'Rourke, Architect B. G. Danis Co., General Contractor 10,000 Square Feet



made more glamorous with

# hydroment

DENSIFIES and COLORS CONCRETE

In 10 popular

- Tile Red
- Tan
- Terra Cotta
- French Gray
   Erin Green
- Brown
- Sand Beige
- Blue Gray
- Black
- White and Natural

MENT to make this new garage floor come alive with color but they made certain the color would stay sparkling by protecting it with UPCO's POLYCLEAR. (This is the easy to use liquid curing and sealing compound that helps concrete shrug off oil, grease, dirt.) HYDROMENT is applied by the dust coat method when the concrete slabs are poured. It's odorless, waterproof and non-toxic. When you color-up school, hospital, church, motel, shopping center floors with HYDROMENT, you provide hardness, density and corrosion resistance, too. Write for color card and brochure today.

They not only specified and installed colorful HYDRO-

Pioneers in Industrial Research Since 1881

#### THE UPCO COMPANY

4805 Lexington Ave., Cleveland 3, Ohio

in the West . . . HYDROMENT, INC., 829 N. Coffman Drive, Montebello, Calif.

For more data, circle 93 on Inquiry Card

#### Office Notes

continued from page 138
Architects, 701 Welch Rd., Palo
Alto, Calif. 94304.

Francis Keally, Architect, 227 E. 44th St., New York City 10017.

Vincent G. Kling and Associates, Architects, U.G.I. Building, Broad and Arch Sts., Philadelphia.

Frank Laulainen & Associates, A.I.A., Architects and Planning Consultants, 50 University Ave., Los Gatos, Calif.

James W. Rouse and Company, Incorporated and Community Research & Development, Inc., corporate offices, Village of Cross Keys, Baltimore, Md.

Daniel Schwartzman Architect and Associates, 90 Park Ave., New York City 10016.

Smislova and Carcaterra, Consulting Engineers, Washington Science Center, 6010 Executive Blvd., Rockville, Md. 20852.

R. Stewart Smith, M.R.A.I.C., A.R.I.B.A., 152 Cedar St. S., Timmins, Ontario.

Francis P. Smith & Henry H. Smith, Architects, Suite 621, 615 Peachtree St., N.E., Atlanta 30308.

Smith, Smith, Haines, Lundberg & Waehler, Architects, 2 Park Ave., New York City 10016.

Stornorov and Haws, Architects and Planners, 2207 Chestnut St., Philadelphia 19103.

Leonard S. Wegman Co., 101 Park Ave., New York City 10017.

William Wilde, Architect, A.I.A., Phoenix Title Building, 177 N. Church Ave., Tucson, Ariz. 85701.

Addenda

The credit for two photographs was incorrectly given in the news article "Eight Churches Receive Design Awards," June, pages 12 and 13. Credit for the photograph of St. Joseph Catholic Church, Colfax, Illinois, should have been given to Richard Koch, and the photograph of Hope Lutheran Church, Miami, should have been given to Ezra Stoller Associates, Inc.

Credits for the North Carolina Mutual Life Insurance Company Building (June, page 218) should have included Seelye Stevenson Value & Knecht as structural, mechanical and electrical engineers. Architect is Welton Becket and Associates.

See Our Catalog in Sweets 9 / Up





In the realm of concealed door control, Rixson overhead closers reign unchallenged. They are imitated, not equaled.



FRANKLIN PARK, ILLINOIS

REXDALE, ONTARIO, CANADA

#### Muchow, Ream & Larson Win Denver Competition

The Denver team of Muchow, Ream & Larson have been named the winner of a competition for the design of the Denver Convention Center, a \$5.2 million project on which construction is expected to start in the summer of 1966. Other firms that submitted final designs for the center were Rogers, Nagel, Langhart, McGuire and Has-





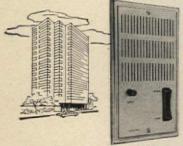
Everyone in the family will enjoy the comfort, convenience, and peace of mind this system provides. From any room in the house you can ...

Listen-in on baby, children, or sick room.

Answer outside doors without opening door to strangers. Talk to anyone-upstairs and downstairs, inside and out.

Enjoy radio in every room with the simple flick-of-a-switch. Distinctively styled. Beautifully finished in richly blended gold, polished and satin silver tones. Easily installed in any home. Built-in and surface-mounted models available.

TALK-A-PHONE . . . "Has Everything. Does Everything." The accepted standard of quality and dependability in Intercommunication for over a third-of-a-century.



Intercom For Apartment House. Provides instant and direct 2-way conversation between any Apartment and Vestibules-in buildings of any size, Greater performance with these exclusive Talk-A-Phone features: • Ample volume with-out "boom" • Automatic privacy • Individual volume selection for each apartment • Built-in Buzzer.



Intercom For Office and Industry. Saves thousands of man-hours, sim-plifies office routine. Distinctively styled, ruggedly built to withstand continuous day and night use. From 2-station systems to elaborate installations, you can do it better and more economically with Talk-A-Phone. Pays for itself many times over.

Send for Free Catalogs... Dept. AR-9 TALK-A-PHONE CO., 5013 N. Kedzie Ave., Chicago, Illinois 60625

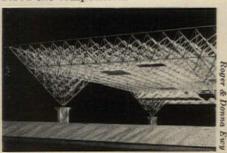
tings of Denver; James M. Hunter & Associates, Boulder, Colorado, and James Sudler & Associates, Denver.

Serving on the jury were architects Hugh Stubbins of Cambridge, Massachusetts; James Souder, Van Nuys, California; John Merrill of Colorado Springs, Colorado; and Ted Moore, of Denver.

The winning scheme, which will have 320,000 square feet of floor space on three levels, features a movable overhead ceiling system to permit variety in display areas for exhibitors. Pyramid canopies containing lighting nest in the structural grid. They can be raised or lowered, singly or in groups, to provide ceiling areas of varying height to fit material exhibited and atmosphere desired.

"In the space frame structure employed," according to the architects, "all members are of one length and are joined by universal connections. Members can be manufactured early, assembled into large panels at the site and crane lifted for rapid assembly in any weather, resulting in a building ready for use months before more usual structural methods. Steel is kept to a minimum of 25 feet above the nearest unshielded floor surface to eliminate the need for fireproof-

Partner in charge of design was James T. Ream. Structural engineers were Ketchum, Konkel, Ryan and Fleming. The building will be owned by the city of Denver, which sponsored the competition.



For more data, circle 95 on Inquiry Card >



# Lees has just made the first nylon carpet without nylon's two old curses.

#### The ! ok! dirt and the ! ok! static.

Lees didn't use a new kind of witchcraft.

Just a new kind of nylon. Antron\*

It's why our new Design III carpet doesn't pick up the cursed dirt as fast or show it as much as regular nylon.

So you don't get a carpet that looks like a dirty shame, after a day on the floor.

You don't get as much static to swear at either. Ever.

Design III gives you less than any nylon carpet before, because it's the first with a permanent anti-stat. Not just a chemical coating, but an actual part of the fiber. It won't wear out or walk off.

In fact, Design III won't act like any other nylon carpet ever has before. Except.

Except for the way it wears.

Lees wouldn't change that for anything.

If anything, we improved on it.

We gave Design III an extra tough double jute backing. And 63 inspections to make sure there were no skips and misweaves. No weak spots that could fall apart in a year. Nothing that could turn into a curse later on.

Not a '' O \*!! thing.

If you'd like to learn some new words to use about nylon, write Commercial Carpet Department, James Lees & Sons, Bridgeport, Pennsylvania.

\*\*ANTRON® NYLON BY DUPONT

@JAMES LEES & SONS CO., BRIDGEPORT, PA., A DIV. OF BURLINGTON INDUSTRIES



### SERVICE

Over one hundred Rust-Oleum Factory Engineers work closely with architects all over the country. But, they don't stop there. They follow the job down the line. They work with the fabricator, the contractor, the painter. They see that the right Rust-Oleum system is used and that it is applied correctly. The Rust-Oleum man who was working with you on coating specifications yesterday may well be working with a painter

on the job-site the next day. The Rust-Oleum man knows his business. He follows through at all levels. We call this DEPTH SERVICE . . . a service that very few companies are qualified to render.

Rust-Oleum is available in many specialized systems and in many attractive colors. It beautifies as it protects tanks, structural steel, towers, bridges, steel sash, machinery, equipment, etc., throughout industry and municipality. Your nearby Rust-Oleum distributor maintains complete stocks for immediate delivery.



Write for brand new Rust-Oleum Specifications Guide. Request Form No. 6408 at no cost or



There is only one Rust-Oleum. Distinctive as your own fingerprint.



Proved throughout industry for over 40 years.

2466 Oakton St., Evanston, Illinois and in Haarlem, Holland RUST-OLEUM CORPORATION

For more data, circle 125 on Inquiry Card

#### N.C.A.R.B. Holds Annual Meeting

The election of officers and the passing of a government internship resolution highlighted the convention of the National Council of Architectural Registration Boards, held in Washington on June 11 and 12 at the Sheraton-Park Hotel preceding the A.I.A. convention.

The internship resolution which was passed "will allow 100 per cent credit, for a maximum of three years, for employment by government agencies when such employment is, in fact, diversified and comparable to employment in the office of a registered architect practicing as a principal and is under the direct personal supervision of a licensed architect" in the internship process.

New officers of the N.C.A.R.B. include C. J. Paderewski, San Diego, president; Earl L. Mathes, New Orleans, first vice president; John Erwin Ramsay, Salisbury, North Carolina, second vice president; George F. Schatz, Cincinnati, treasurer; Howard T. Blanchard, Garden City, Kansas, secretary; and G. Stacey Bennett, Olympia, Washington, Harry E. Rodman, Troy, New York, and Charles P. Graves, Lexington, Kentucky, directors. The past president is Ralph O. Mott of Fort Smith. Arkansas.

#### A.C.S.A. Names **New Officers**

Walter Sanders of the University of Michigan was elected president of the Association of Collegiate Schools of Architecture, for 1965-67, succeeding Henry Kamphoefner of North Carolina State University at the convention of the A.C.S.A., held in Washington at the Sheraton-Park Hotel from June 11-13.

Other new officers include Thomas Howarth, University of Toronto, vice president; and John Lawrence, Tulane University, secretary. Henry Jandl of Princeton University continues as treasurer.

New Directors of the A.C.S.A. include D. Kenneth Sargent, Syracuse University and Henry Kamphoefner. Continuing as directors are William W. Caudill of Rice University, and Marcus Whiffen of Arizona State University.



Another Major Installation by Krueger

### THE WILLIAM PENN MEMORIAL MUSEUM

## 72,000 Sq. Ft. Lumenated Ceiling by KRUEGER-THERMOTANK

In the coming years, thousands of persons will visit this museum to view the artifacts depicting the history of the great State of Pennsylvania.

They'll need the best lighting possible — that's why Lumenated Ceilings were installed. When you want the best, get it; specify Krueger-Thermotank.



72,000 sq. ft. of radial Egg Crate ceiling affords the proper integration of light and good air distribution.



Tee system designed to conform with circular building shape and coordinated with structural steel and ductwork to provide flexibility for partition layout.

Owner: The General State Authority, Harrisburg, Pennsylvania / Architect-Engineers: Lawrie & Green, Harrisburg General Contractor: John McShain, Inc. / Electrical Contractor: Riggs Distler & Company, Inc.

Krueger-Thermotank engineers stand ready to solve your individual design problems in Lighting and Air Distribution.



P.O. Box 5155 • Tucson, Arizona

IHERMOTANK INCORPORATED

11191 Lappin Avenue - Detroit, Michigan

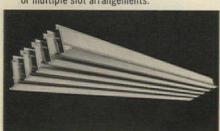


If you haven't received your copy of our Lumenated Ceiling Catalog it's yours just for asking. Also available are catalogs on Air Distribution and High Velocity equipment.

#### "Manufacturers of completely integrated ceilings and the nation's largest manufacturer of Air Distribution equipment."

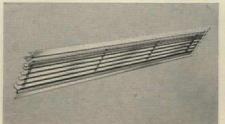
#### SERIES 1900 ALL PATTERN AIR TRAK® Patent Pending

A Krueger exclusive in linear distribution. Combines the beauty of extruded aluminum with complete air pattern flexibility. Single or multiple slot arrangements.



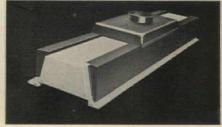
#### KRUEGER "DESIGN-LINE" 1700 SERIES

Provides efficient air distribution without disregarding architectural beauty in a linear concept. Units can be used for either supply or return depending upon your needs.



#### AIR DIFFUSERS FOR LIGHT TROFFERS

Fluorescent Light fixtures are combined with supply and return air units. Supply units have adjustable air pattern control valves. Both side and top entry diffusers are available. Adaptable to most light troffers.



For more data, circle 96 on Inquiry Card



## because of exclusive vinyl weather-wrapped glazing

## WOOD THERMAL INSULATED WINDOWS

#### A Perfect Perimeter...

if you haven't seen one before, look closely at the portrayal on the facing page. What you see is the way around a problem: the way to create a perfect, permanent seal between insulating glass and the sash members surrounding it. The advantages are overwhelming and deserve all the good publicity we can give them.

#### No leaks or around-glass-infiltration . . .

the vinyl gasket keeps a tight grip on both glass and wood. A/ways.

#### Painting pains are eliminated . . .

no need for costly and tedious paint-lapping of glass and subsequent cleaning. The vinyl's invulnerable. No need to paint it.

#### Putty repairs are ended . . .

Caradco's vinyl gasket is *permanent* glazing. Nothing to crack or crumble away to make patching or re-glazing and re-painting necessary.

#### Appearance . . .

a perfect uniform margin between wood and glass.

#### Shock resistant . . .

because of its perpetual flexibility and resiliency, Caradco's vinyl glazed sash can absorb small shocks harmlessly that might crack glass in common sash (or at the very least damage glazing compound and seal).

## CARADCO DUBUQUE, IOWA

#### Manufacturers of Creative Building Products

Contact your CARADCO distributor for a tracing detail file. All CARADCO Windows are readily available throughout the United States and Canada









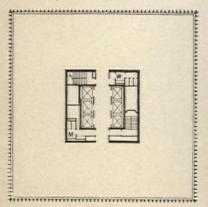
Caradco Weatherwrapped glazing is available on all these Caradco Window Units when ½" insulating class is specified.



IBM Building, Seattle Wash.; Site Development: UNIVERSITY PROPERTIES, INC., Seattle; Architects: NARAMORE, BAIN, BRADY & JOHANSON, Seattle, and MINORU YAMASAKI and ASSOCIATES, Detroit; Structural Engineers: WORTHINGTON, SKILLING, HELLE & JACKSON, Seattle; General Contractor: HOWARD S. WRIGHT CONSTRUCTION CO., Seattle; Precast Concrete: OLYMPIAN STONE COMPANY, Seattle; Ready-Mixed Concrete: SEATTLE READY-MIX CONCRETE, and PIONEER SAND & GRAVEL COMPANY, Seattle

TYPICAL FLOOR plan illustrates central service core with reinforced concrete walls. Floors extend to outside walls, with no interior columns needed. Waffle-slab floors are supported on integral concrete beams, precast at the site.

A STRIKING NEW LANDMARK by day (above) or night (below), the new IBM Office Building in Seattle makes effective use of fire-safe, locally-manufactured, modern concrete.





## IBM's computerized concrete skyscraper

A CPM-Incor® Story

The \$8½-million, 19-story IBM Building in Seattle was literally born in an IBM computer. The contractor used the computer to plan his work sequence under the Critical Path Method, and to obtain cost control information. Result: the building was completed a month ahead of the target date, and at minimum cost.

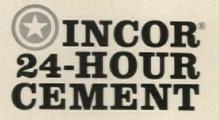
Equally unique was architect Minoru Yamasaki's structural design. The 113-ft-square building relies on a central reinforced concrete service core as a supporting element. Waffle-type concrete slab floors extend from the core to the outer walls, eliminating columns in the office areas. Pipe columns in the outer walls are concealed by concrete fins.

Lightweight-aggregate concrete, made with "Incor" high early strength portland cement was used for floor topping. This decreased the weight and shortened the critical path time. Regular Lone Star portland cement was used for all other cast-in-place concrete.

The nearly 2000 precast, prestressed decorative fins were also made with "Incor" cement for rapid turnover of forms. These exterior fins were surfaced with white cement and marble chip aggregate.

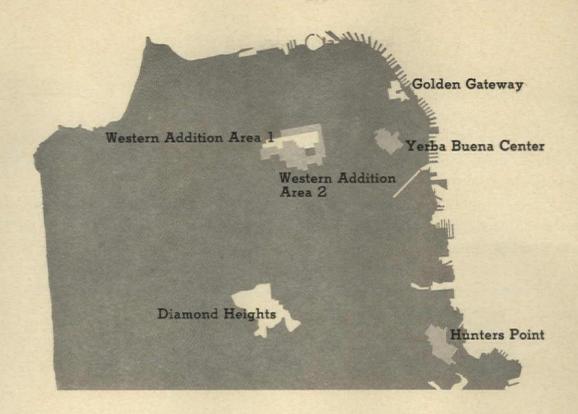
"Incor," America's first high early strength portland cement, helps make the most of today's CPM and precasting techniques.

Lone Star Cement Corporation 100 Park Avenue, New York, N. Y. 10017



EXTERIOR WALL has nearly 2000 prestressed concrete fins, each two stories tall.





San Francisco Report:

## NO EASY ROAD TO THE MORE HANDSOME CITY

By Elisabeth Kendall Thompson

Five years ago San Francisco was enchanted with urban renewal. The excitement of change was in the air, and the change was to be all for the good. San Francisco was to become the "More Handsome City," in the words of its Redevelopment Agency. The Golden Gateway, cynosure of all eyes as the subject of a glamorously conducted architectural competition, cast a spell which, for a brief period at least, veiled the basic problems of redevelopment.

The Golden Gateway excited the city with a plan of action that gave redevelopment a new image. San Francisco had been hearing about redevelopment for many years—especially since the Board of Supervisors designated the Western Addition a blighted area in 1948—but it had seen nothing in the way of accomplishment. The Redevelopment Agency had been a controversial body for at least a decade, and the job of executive director for its program had become a tenuous and unsteady position. While the Western Addition project droned along through the '50's, a group of downtown business men were developing an idea: Why not replace the crowded, unsanitary old produce district (which had already been declared blighted in 1955) with a new office and residential center? The location near the financial district offered a tantalizing potential. This group—the Blythe-Zellerbach Committee—raised \$50,000 to finance a study of the area and to prepare a plan for its redevelopment. When the Redevelopment Agency named M. Justin Herman its new executive director in 1959, a new era for redevelopment and for San Francisco began. A year later the gold-plated architectural competition for the Golden Gateway (November 1960, pages 12-13) focused public attention on this project and on redevelopment in general.

"The controversy over the second Western Addition project poses two basic issues which, even now, are not fully recognized by the city's policy makers or by their opponents. San Francisco needs more than a coordinator before the forcible displacement of 15,000 disadvantaged people can be justified, despite the admirable plans of the Redevelopment Agency, which may well be the best in the country.

"The first issue is an obvious but neglected axiom: ambitious redevelopment programs require comprehensive housing programs. This means two things. First, an over-all analysis of present and future housing needs, not just an *ad hoc* effort to cope with immediate relocation problems. Second, a broad-gauged imaginative housing agency to administer the whole range of tools, including city-wide rehabilitation, inducements for needed commercial and nonprofit housing enterprise, and a positive strategy to combat discrimination."

CATHERINE BAUER WURSTER, in a letter to the San Francisco Chronicle, April 23, 1964.

Some of the glamour of 1960 still remains, five years later. And much has been done toward making the city a physically more handsome place. The first phase of the Golden Gateway is finished (see pages 156-159) and the second is under way. Some Western Addition projects (pages 154, 155) are completed—like St. Francis Square, the city's showplace of moderate-priced multi-racial housing; the Carillon, a moderate-priced high-rise condominium; the Laguna Eichler and the garden apartments, higher priced; or under way-like the two high-rise apartment projects for senior citizens, sponsored by two religious denominations; and another apartment complex with rents in the upper brackets. In Diamond Heights (pages 160, 161), which made history in a court test of the California Community Development Act since it involved a proposal to "redevelop" undeveloped land, several hundred families have moved into custom-built single-family houses, developer-built single-family houses, town houses, and condominium apartment units. A neighborhood shopping center and office building has been completed, and over 400 moderate-rent garden apartments are being built.

But there are problems. These three major projects show what can

be done on cleared land under the kind of Federal-city-private enterprise cooperation that redevelopment represents. Complete clearing of the land has raised questions in San Francisco not unlike those currently being asked in other cities across the country. In San Francisco, however, conditions are not entirely the same as in other cities. Bad as were conditions in some sections of San Francisco, these areas were not like the slums of eastern cities, as Burton Rockwell, president of the Northern California chapter, A.I.A., pointed out on his return last year from a tour of midwest and eastern cities.

"The mistake in San Francisco," he said, "has been to ignore the fact that our problem here is less than in some other cities, and the treatment does not have to be so traumatic."

#### Economics and Sociology

For San Francisco, as for other cities, the problems which urban renewal has raised have been more economic and sociological than architectural. It is possible to criticize the detail of architectural design solutions in San Francisco redevelopment projects, but the individual concepts under which they have been

developed are sound and, in several instances, brilliant.

Giving priority to design and effecting a climate for it, the Redevelopment Agency and its dynamic executive director have consistently sought imaginative and ingenious means of achieving the goal of a "more handsome city." If some of the Agency's efforts have been less successful than others, it must be remembered that the whole process of redevelopment is itself so recent that proven principles cannot cover all the conditions that are encountered, and thus trial-and-error must, in many instances, substitute for them.

To the problems of economics (real estate taxes, building cost escalation, high land costs and time lag) and sociology (relocation housing at low rents for minority races) which are a concern in many cities, San Francisco, faced with the same problems, adds its own twists. Real estate taxes, for instance, are not only high but so "politically involved," as one developer says, that few will discuss them and no one will permit himself to be quoted on the subject. The real culprit seems to be the inconsistency with which assessments are made, which penalizes new or rehabilitated properties: a matter likely to be an issue in the next campaign.

"Cities have learned by experience that the social and physical problems of neighborhoods must be dealt with simultaneously; that the participation of the people affected by renewal must be welcomed in the programing and planning of renewal actions; that the solutions of relocation problems of households, business firms and industries require public assistance; that proposed neighborhood actions must take into consideration the residents' attitudes and receptivity to such actions; and that poverty, unemployment, inadequate job skills and education, as well as housing, must be considered directly or indirectly when urban renewal strategies are being developed."

SAN FRANCISCO COMMUNITY RENEWAL PROGRAM, final report by Arthur D. Little, Inc.

In San Francisco, redevelopers are also subject to another kind of tax, which the Redevelopment Agency euphemistically describes as a "carrying charge," for continuing the developer's option on the land until he takes title to it. This charge, levied by the Agency (and turned over to the city), is in lieu of the real estate tax a developer would pay if the land were his by title. It provides the city (and the Agency) with a means of recouping some of the costs of preparing the land, and it is anything but popular with developers. Some, in fact, have been badly hurt by it, and their projects as well; and this in turn has hurt the public reaction to the Agency and the whole redevelopment program. "Front money," as developers call initial capital, is hard enough to come by, they say, and to have it eaten up in "carrying charges" can delay construction and may even break the developer. The Agency, on the other hand, views the "carrying charge" not only as a reasonable charge for continuing a developer's option but also as a stimulus to him to get the land under development.

High Costs and High Rents

The other economic factors which de-

mand special consideration in San Francisco are building costs complicated by code requirements for seismic and fire safety-San Francisco does not forget its 1906 earthquake and fire-and the high cost of land generally, due to the limited amount of it available in a city bounded on three sides by water. These two factors work together to deleterious effect: the developer pays high prices for land, and he builds high buildings to get maximum return on his investment, but the high buildings are also expensive. In the end, the renter or the buyer must pay high prices, too.

This vicious circle is at the core of the sociological problems with which San Francisco must contend. For high rentals and sales prices of redevelopment projects mean that people displaced by a project cannot afford to come back to the area and live in the new buildings, and housing within their means has to be found for them. In itself, this is no new redevelopment problem. But in San Francisco this problem, already aggravated by the public's reaction to lands lying fallow for years after the eviction of residents and the demolition of their homes, was intensified by the passage last November of Proposition 14, which repealed many

of the provisions of California's fair housing laws. On the heels of this election, Federal funds for redevelopment in California were suspended. Shortly afterward, the suspension was relaxed somewhat, but only to permit continuance of work in progress and to allow study of projects which would not involve housing. Thus even the hope of early obtaining more moderate-rent housing (needed, but not in the degree that low-rent housing is needed) has been cut off pending the outcome of a court test of Proposition 14, expected to take place this fall.

The controversy which low-rental housing and relocation inject into the redevelopment picture is centered in the two areas marked for redevelopment in the Western Addition, a section of the city west of City Hall. The once-fine old houses in this area began their decline when the earthquake and fire caused an influx of refugees into the undamaged Western Addition. Housing shortages in World Wars I and II repeated the doubling-up process to the point that, in 1948, the San Francisco Board of Supervisors declared a portion of the area "blighted," thus making it eligible for redevelopment under the state's Community Redevelopment Act of 1945. The redevelopment area was broken into two parts, known as Area 1 and Area 2. Part of Area 1 has been developed and more of it is now under way. But Area 2 has been directly affected by the suspension of Federal funds.

All cities involved in redevelopment suffer from the time lag between clearing of the land and start of construction, and San Francisco is no exception. To the public eye this has been most noticeable in the Western Addition's Area 1, where lands cleared as long ago as 1959 still lie undeveloped. Although the former residents all eventually found places in which to live, their uprooting made an apparently indelible impact on the public, despite the success of St. Francis Square. For when the plan for Area 2 was publicly presented a year ago, the question of lowrent housing for the displaced residents was primary in the statements made by individuals and organizations during the 12 hours of hearings held by the Agency.

The Agency's plan for Area 2 proposed a number of new structures (1,400 units of moderate-rent housing, 800 of these for senior citizens, 200 of them "scattered public housing," as well as some 1,000 additional units of housing). But instead of wholesale clearing of the 73 blocks in the area, the Agency proposed rehabilitating over one quarter of the area's structures—a distinct change in procedure since the time of Area I's planning, and a definite response to the public outcry against methods used in Area 1 as well as to new concepts expressed at the Federal level. Not only does the Agency propose "extensive conservation" of numbers of existing older structures, but it has incorporated a program of preserving, where possible, buildings listed for it by a subcommittee of the San Francisco Conservation Committee. Thus it hopes to assure that the earlier standards and character of the area can be retained or revived-a move appreciated by some groups but admittedly no answer to the fundamental problem. Even with these bows toward public sentiment, the reaction to the Area 2 plan was all but explosive. Nevertheless, the Agency officially accepted the plan, but until the outcome of Proposition 14's court test is known, no further action can be taken. Nor can anything presently be done, for the same reason, on Hunter's Point, the city's last remain-

#### The Western Addition, Area 1



ST. FRANCIS SQUARE, oasis in a deteriorating neighborhood, looks out on

surrounding buildings similar to those that it replaced.



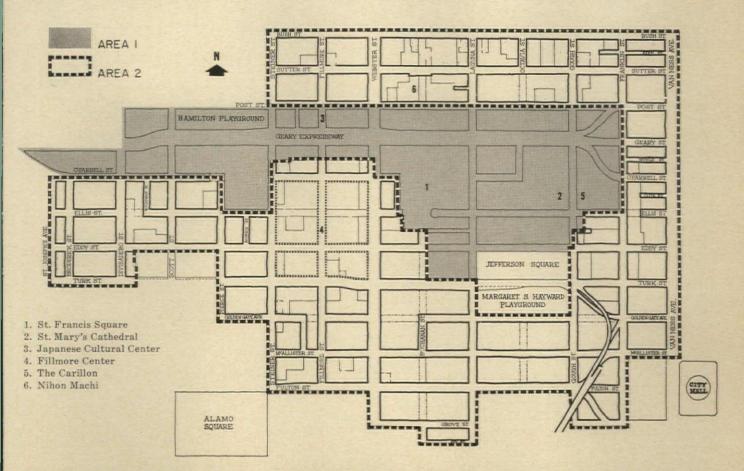
THE CARILLON: Condominium apartments. Donald Powers Smith, architect.



ST. FRANCIS SQUARE: City's first moderate-priced and multi-racial co-op

housing project successfully creates new environment in series of courts. Mar-

quis & Stoller, architects. Lawrence Halprin, landscape architect.



THE WESTERN ADDITION: Area 1 (gray area on plan above) was completely razed. Plans for Area 2, as yet untouched awaiting outcome of court

test on Proposition 14, propose no wholesale land clearance, suggest rehabilitation of one-fourth of its buildings. Although some of Area 1's sites were developed without undue time lapse, some projects are just now getting under way. Site for Japanese Cultural Center (page 163) is still bare. ing war-housing project, scheduled for demolition by 1970.

#### Needed: A Housing Program

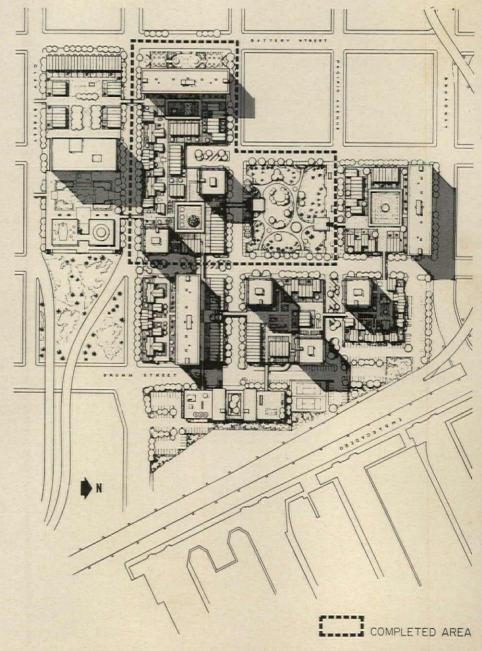
The housing-and-rehousing problem, however, is not one which San Francisco alone can answer. As the late Catherine Bauer Wurster pointed out in an eloquent letter to the San Francisco Chronicle, at the time of the Area 2 presentation in April, 1964: "It is an obvious but neglected axiom that ambitious redevelopment programs require comprehensive housing programs. The increasingly critical problems of old cities cannot be solved without a larger supply of low-priced open housing in outlying areas. It is the rising limitations of the suburban housing market (in prices even more than in discrimination per se) which force ever larger proportions of low-income and minority families to live in San Francisco, Oakland and Berkeley. This is why the shortage of older homes in San Francisco steadily worsens."

The problem is, as she points out, a metropolitan one, and the "broad determination of housing needs should obviously be part of any metropolitan planning operation, if only to insure adequate access to outlying job opportunities by those who need them most." But a city cannot turn over its responsibilities to an area, and she recommended for the city "a broad-gauged, imaginative" housing agency:

"What is needed, and not only in San Francisco, is an agency with a flexible kit of tools, including the present power of the Housing Authority but primarily designed to stimulate suitable forms of private enterprise, in rehabilitation as well as in new construction. Sooner or later, Federal subsidies will be similarly broadened: it is only the vested interest of the feeble old housing authorities that has kept this from happening thus far."

What she proposed were, she admitted, "innovations, a new kind of housing agency and a new kind of housing initiative in suburbia. There are few real precedents anywhere for these, and these innovations will require much analysis, public debate and, ultimately, legislative action. But the issues are nation-wide and of basic importance."

#### The Golden Gateway



THE GOLDEN GATEWAY: Main entrance to largest building is through sunny landscaped plaza across from U.S. Customs House. Town houses overhang street along perimeter of plaza on top of

parking garage. Wurster, Bernardi & Emmons and DeMars and Reay won competition for design; Anshen & Allen associates. Sasaki, Walker & Associates, landscape architects.







That some kinds of change may be effected in San Francisco's housing setup seems increasingly likely, for since Mrs. Wurster raised the guestion so strongly and clearly 18 months ago, others have joined the chorus. The Board of Supervisors, in a move in a good though somewhat oversimplified direction, appointed one of its Housing Commissioners to be a member of the Redevelopment Agency as well, so that there is a potentially effective cross fertilization of the two boards. It is even considered possible that in time the two agencies may be governed by commissions made up of the same people.

But for the present the city has no housing policy, as SPUR (San Francisco Planning and Urban Renewal Association) has pointed out more than once through its president, Mortimer Fleishhacker, and executive secretary, John Hirten. A SPUR committee has been working for the past two years on recommendations for a city housing policy which the organization will present to the city along with its demand for formulation of such a policy. Since SPUR is the city's official citizens' advisory committee on urban renewal, what it has to say is respectfully heard.

The new Federal rent subsidy may make some changes in the situation, although until clarification of Proposition 14 this will have little meaning in the context of the San Francisco program. And the recent appointment as coordinator of planning, housing and development for the city of T. J. Kent, head of the department of city planning at the University of California in Berkeley and former planning director for the city, may also effect necessary changes. A third development of significance which may contribute to an amelioration of the problem of housing for low-income families, is the completion of the Community Renewal Program commissioned by the city two years ago from Arthur D. Little, Inc., and received in April of this year. It is too soon to tell what the effect may be, especially since it is so comprehensive as to require considerable study, and since so few copies have been distributed that there has, as yet, been no community-wide reaction. But its potential effect is to be reckoned with, particularly if the city makes use of the exceptional tool which is included in the report: a mathematical "model" of housing

#### The Golden Gateway





photos Sturtevant



THE GOLDEN GATEWAY: Redevelopment made over the city's picturesque but dirty produce district and produced a city within a city, reflecting traditions of San Francisco—arched openings (top, opposite page), color, steps down to

street recalling hilly byways, mix of high and low buildings, block-sized park (above)—but making its own traditions in particular quality of its plaza-level living. Open spaces—small entrance courts for town houses (bottom, opposite

page), at ends of malls (below, left), and at stairs to street, and large courts at each end of the plaza (below, right)—are handled with great variety; town houses, designed by three firms of architects, differ, yet relate harmoniously.





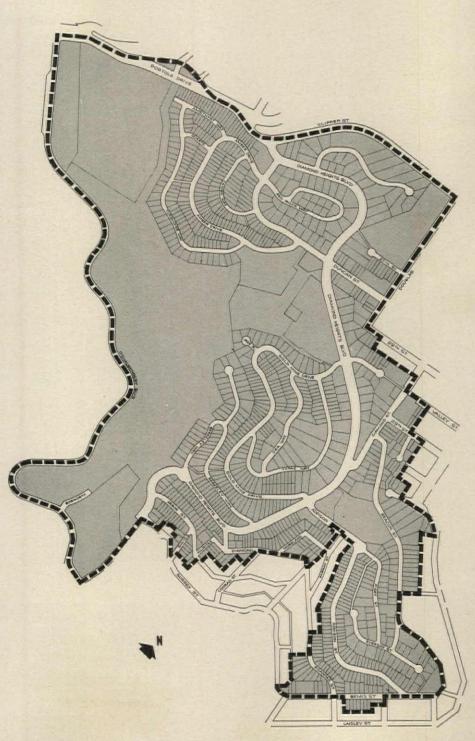
for use on a computer so that the city may preview the result of proposals (rent subsidies, for instance; or a new freeway) on the city or on a specific program.

#### A Bold Innovation

Housing and relocation, though basic reasons for trouble in redevelopment implementation, are not the only sources of its problems. Diamond Heights' undeveloped land involved no relocating of families. It was a redeveloper's dream: no land to clear; sites which, though extraordinarily steep in some places, offered opportunities for imaginative design and provided extensive outlooks on one of the world's most famous views. The property adjoins a city park; it has immediate access to a throughway leading directly to mid- and downtown San Francisco. To exploit all these amenities and to further its goal of a more handsome city, the Redevelopment Agency staged a national architectural competition (see ARCHITECTURAL RECORD, January 1962, pages 108-9) for the design of multi-family housing on 22-acre Red Rock Hill, most prominent of the three hills that make up Diamond Heights. Four designs were selected as winners; the land was sold at auction and the successful bidder was required to engage the architects of the selected design to execute the project. It was a bold device and if some of the problems which later developed could have been foreseen and safeguards against them built into the method, it could have worked out exceptionally well. Among the many lessons learned, one of the major ones was that while land auctions may bring high prices they still do not necessarily guarantee a successful outcome to a project. In this instance, the price bid for the land was unusually high-\$4.5 million. The Agency has not used the auction method since; its policy now is not to use it to dispose of major properties.

Only 28 of the 286 low-rise Red Rock Hill units—condominium town house apartments for sale at "moderate" prices beginning at \$29,000—had been completed when financial difficulties caught up with the developers and work had to be stopped, not only on the residential units, but also on the shopping center and med-

#### Diamond Heights



DIAMOND HEIGHTS: The impressive start of apartment development (top, opposite page) on Red Rock Hill slowed to a halt last summer, then picked up in July when General Electric took over from original developers. Land here and at neighborhood center (bottom, opposite

page) was sold at auction, bringing high land prices which contributed to problems. Diamond Heights also has developers' houses (center, opposite page) and custom-designed single-family houses; moderate-priced apartments are now under construction.



RED ROCK HILL: Apartments and town house condominium apartments. Cohen and Levorsen, architects. (above)

DIAMOND HILL: Town houses. Hayes and Smith, architects. (right)

DIAMOND HILL: Shopping center and medical offices. Jack Allen Charney, architect. (below)







ical office building for which they had also been the successful bidders. A tangle of charges ensued. In the end, the first developers completed the commercial facilities and sold their interests in the residential project to General Electric, which already had a 10 per cent interest in it. General Electric resumed work on the unfinished units in mid-July and has announced that it will add other units "as market demands dictate," and that the original architects will continue on the job.

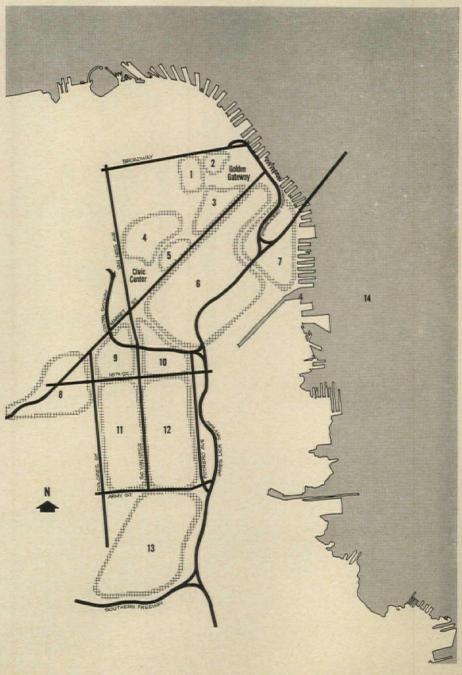
But Diamond Heights has other problems, too. When plans were announced in 1963 for 471 units of moderate-priced housing, to rent from \$100 to \$159 per month (roughly the same range as at St. Francis Square), some of the new residents at Diamond Heights and residents of the adjoining older areas protested loudly. They did not want "moderate-priced neighbors." In the end, however, the Board of Supervisors approved the plan and many of these units are now under construction.

#### New Dimensions

The Golden Gateway, too, has had problems, but although they seem large to those closest to it, they have not greatly affected the redevelopment program. Construction of the Gateway's first-phase buildings was beset with delays—a high water level and foundation difficulties (solved by using high-capacity friction caissons, an unusual application) were among the problems. The office block, now under construction, also was delayed by many things, among them such questions as the air rights over the small buildings on the plaza, the number of parking stalls in the garage, and determination of whether the office building rises from the ground or the plaza.

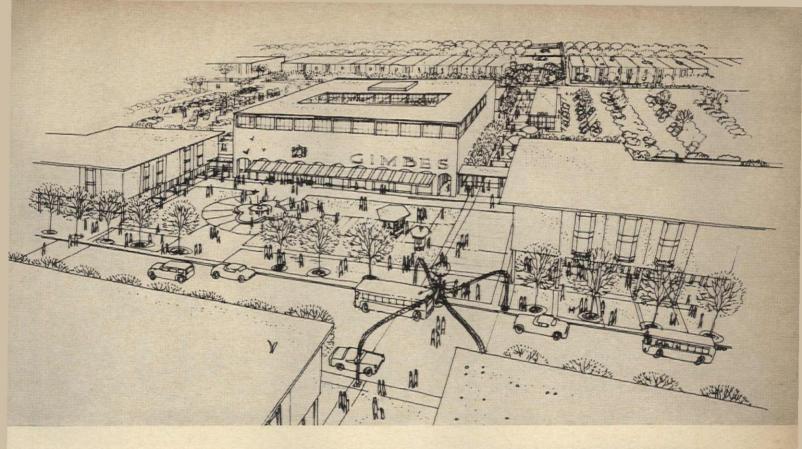
Nevertheless, the Golden Gateway is a shining achievement—by the Redevelopment Agency, the developers, Golden Gateway Center, the architects, Wurster, Bernardi & Emmons and DeMars and Reay, Anshen & Allen, associated architects. If there are critics who carp at design detail and bemcan the loss of the produce market, an increasing number of San Franciscans see in the Golden Gateway a new and distinctive solution to the old problem of urban living: a solution that separates

#### The Future



- 1. Chinatown
- 2. Jackson Square
- 3. Downtown
- 4. Midtown
- 5. Tenderloin
- 6. South of Market (including Yerba Buena)
- 7. Rincon Hill

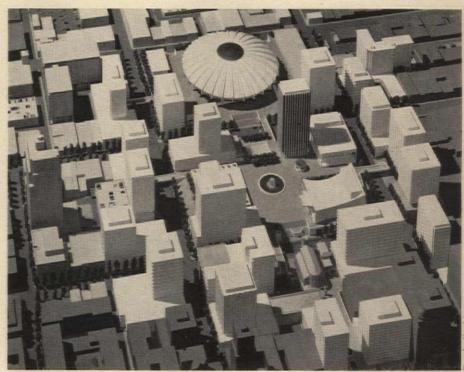
- 8. Upper Market-Eureka Valley
- 9. Armory Area
- 10. Central Industrial
- 11. Inner Mission
- 12. East Mission
- 13. Bernal Hill
- 14. San Francisco Bay

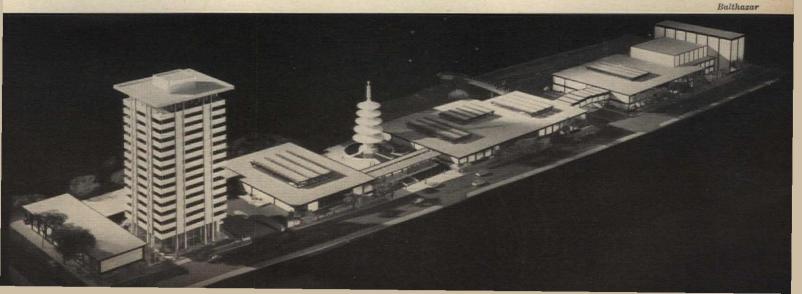


FILLMORE CENTER: A neighborhood redevelopment project in Western Addition's Area 2. Reid, Rockwell, Banwell and Tarics, Burton L. Rockwell, partner in charge, architects. (above)

YERBA BUENA CENTER: Proposed by Redevelopment Agency for blighted area south of Market Street, this project would be a new entertainment center for city, with theater, museum, sports arena and parking garage. (right)

JAPANESE CULTURAL CENTER: One of first suggested developments for Western Addition, Area 1, may be the last to get under way. Minoru Yamasaki and Associates and Van Bourg/Nakamura, associated architects. (below)





people and their vehicles but recognizes that vehicles are an inescapable part of modern life; that finds a way to make a kind of micro-city within a city, with its own kind of architectural surprise and its own subtle variation within an environment of strength and unity; that neither uses nor needs coy tricks to achieve a relationship with the rest of the city. When the project is complete some years from now, Golden Gateway will let people live on a plateau above the traffic-ways of the city, let them take the "high road" to walk to work over bridges which connect the blocks with each other, and will restore some of the amenities most city dwellers have not known for a long time.

It isn't perfect, of course. Sociologists would argue that Golden Gateway is not a family-oriented project, and it is not. It will do little to attract families with children which the CRP says San Francisco must do. It is for working people, and specifically for working people in the area. Also, rents are high. But people are living there, and while most of the residents work in the downtown area, a good 20 per cent are retired people. The rectangular building (the Richard Henry Dana) is over half full; the north tower (Buckelew House) is about half full; and the south tower (Macondray House) is slightly less than half full -it was the latest to open.

#### Private Capital, Too

After five years of very active redevelopment, San Francisco can take stock of its progress toward becoming a more handsome city, and of the program by which it is progressing. Despite problems and criticisms, some valid, some invalid, the accomplishments are notable: badly blighted areas have been eliminated and what has replaced them has been not only a vast improvement but good in its own way. While areas of deterioration still remain around these oases of new construction, there are signs of renewed vitality in them which are heartening. Private enterprise, spurred by the publicly initiated project, is finding unusual and imaginative ways to make its investment without public aid. Particularly in rehabilitation, private enterprise is leading the way. Jackson Square was an earlier example of

#### Ghirardelli Square







Roger Sturtevant photos



GHIRARDELLI SQUARE: An act of civic conscience to preserve a city land-mark—the 70-year-old chocolate factory of a pioneer industry—by a group of businessmen headed by William M. Roth, now a special representative in the Department of Commerce. The square com-

prises various kinds of shops and restaurants grouped around a multi-level open plaza (the site is an uphill slope). Some facilities are in new structures, but the handsome old brick-and-stone factory buildings are the basis for the whole development. Across the street is the newly

developed State Maritime Park. The gay, easy-going atmosphere attracts townsfolk as well as tourists and makes the point that architectural delight and profit can be partners. Wurster, Bernardi and Emmons, architects; Lawrence Halprin & Associates, landscape architects.



this. But now the older, still-sound buildings around the Golden Gateway are the targets for rehabilitation. One Jackson Place has been simply refurbished on the exterior, but with shops, a bank, a restaurant, an interior court and a passageway through to the next street, it is a lively part of the area.

Ghirardelli Square, somewhat out of the redevelopment areas but near the waterfront and a remodeled park with a cable car turnaround, has, in less than a year of existence, established itself as an example of adding new-to-old and coming up with a real landmark. What was once an old chocolate factory has become a lighthearted rendezvous for dining (with a superb view of the Golden Gate) and for specialty shopping. Its central mall is a sunning place or place to stroll, more like a Mexican plaza than an American commercial place. It has sparked another project nearby-The Cannery-with similar facilities but a very different background. For the Cannery will retain only the walls of the original building; everything else will be new. Near the Cannery, the residential development to be known as North Point is under way-not low cost housing, but pleasant urban living.

#### More to Come

Rapid transit, which the people of three Bay Area counties voted for three years ago, will have a marked effect on certain sections of the city, and the Redevelopment Agency is studying places where it might replace blight with pleasant new facilities of various kinds. Especially along Market Street, changes will be made. The Corridor Study now in process is intended to suggest neighborhood enterprise which can bring life back to decaying areas by the initiative of their own residents.

The fear of many when redevelopment is mentioned is that it will destroy some of the special flavor which a city has. The new emphases on rehabilitation and neighborhood renewal, and the probability that the large scale clearance of land need not happen again in San Francisco, should reassure those who have been most critical of redevelopment. What has been said in criticism has had its effect. San Francisco's "five-year plan" is moving into a new phase.

#### Privately Developed Projects





NORTH POINT: A privately developed apartment complex in the

northern waterfront area. Wurster, Bernardi and Emmons, architects.



ONE JACKSON PLACE: An old brick building near Golden Gateway

renewed for restaurant/shop complex. Lloyd Flood, architect.

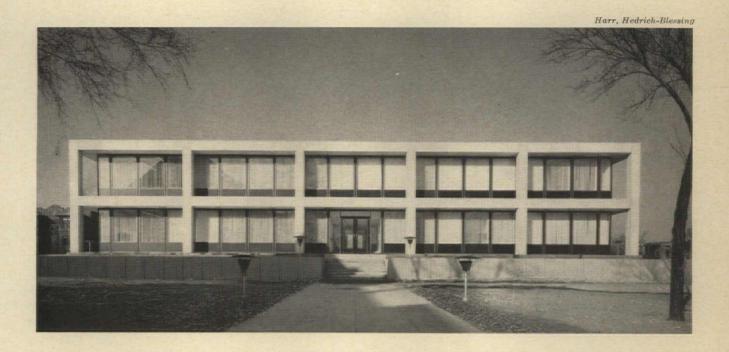


THE CANNERY: Restaurant specialty shop complex in a rebuilt fruit

cannery, retaining only old exterior walls. Joseph Esherick, architect.

## SMALL BUILDINGS BY SOM

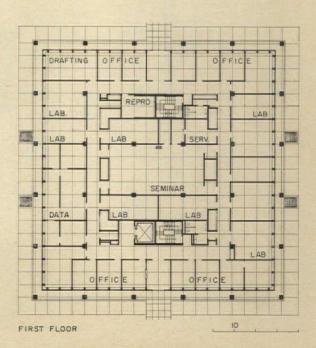
For most of these six small buildings, the Chicago office of Skidmore, Owings & Merrill developed thoughtful design solutions with the disciplined, geometric shapes that mark the firm's big buildings. But where something very different was called for, it was done...

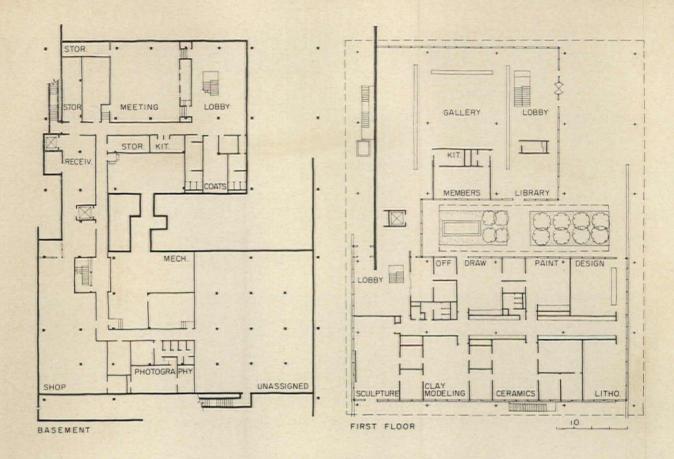


#### FOR A LABORATORY: PRECISION, FLEXIBILITY

By placing some of the laboratories that do not need natural light (indeed, sometimes need to be light-proof) in the core, the architect was able to develop the plan for this building as a square. This shape is emphasized by the precise pattern of the limestone-clad concrete frame, which was given strong expression both by its size (it is designed for an addition of two stories) and by setting the window wall back several feet. Since the window wall is not set back a full (five-foot, 10-inch) module, narrow window panels are formed at each corner which create a pleasant ending to the wall. All partitions except for shear walls at the stairwells are concrete block for easy modification of room size.

Laboratory for Astrophysics and Space Research, Enrico Fermi Institute for Nuclear Studies, University of Chicago, Chicago. Architects and engineers: Skidmore, Owings & Merrill—Walter A. Netsch, Jr., design partner, William E. Dunlap, administrative partner; contractor: Power Construction Co.





#### FOR AN ART CENTER: FREE-FLOWING SPACE

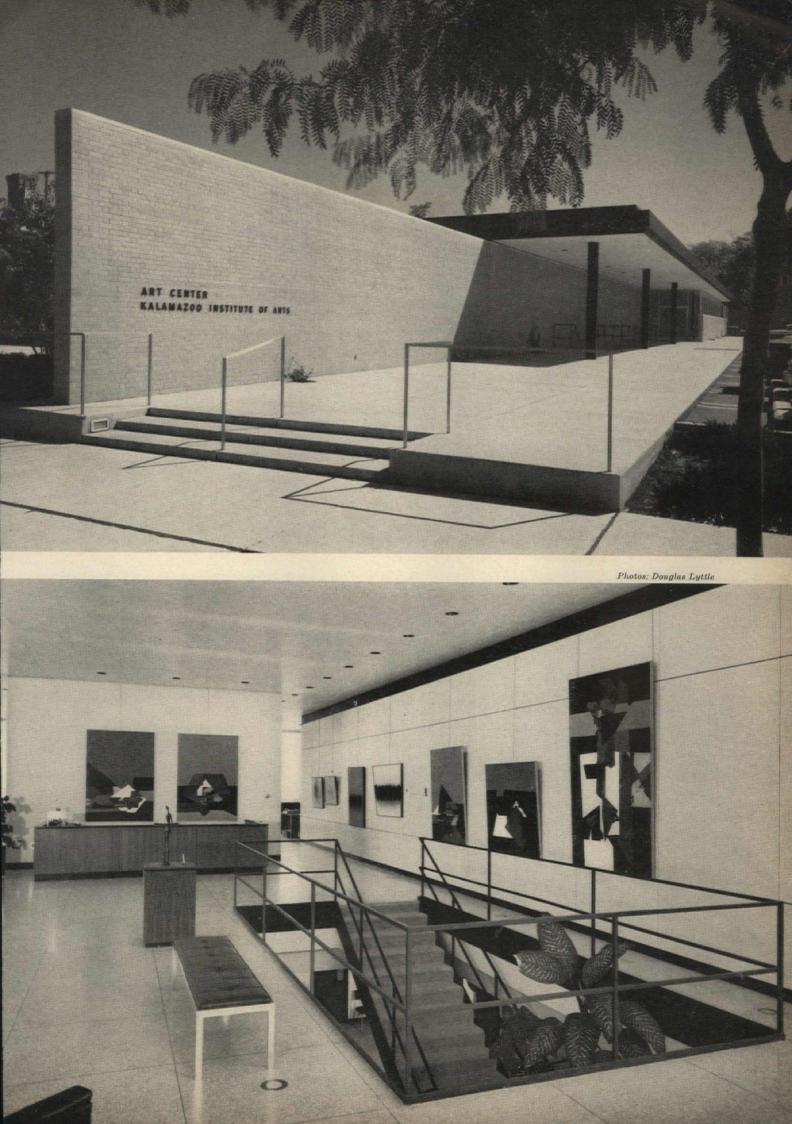


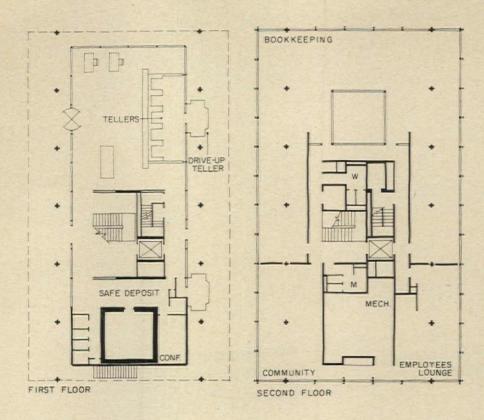
This gallery and teaching center, located within blocks of the central business district, was intended "to give recognition to the fine arts as a vital force for all members of the community" and the design, therefore, was intended "to create a stimulating sense of environment, devoid of stuffiness and self-consciousness . . . an atmosphere in which people can feel welcome to wander for a few leisurely moments or work and study for a full evening." Thus, though the structural system—with columns on 39-foot centers supporting a conventional and rectangular roof system—is handled with regularity and discipline, the freestanding masonry walls and glass areas are placed to create the sense of free-flowing space the architect desired.

On the main level, the center is divided, by an open garden court, into separate sections for (at top in plan) the galleries, an art library, and members room; and (at bottom) educational and office areas. On the basement level are other teaching facilities, sales and rental gallery, and a meeting room.

The building is well-fitted to its residential surroundings both by its low, open shape and its warm brick walls.

Kalamazoo Art Center, Kalamazoo, Michigan. Architects and engineers: Skidmore, Owings & Merrill—Bruce J. Graham, design partner, William E. Dunlap, administrative partner; general contractor: Miller Davis Company





#### FOR A MOTOR BANK: A CRISP ELEGANCE



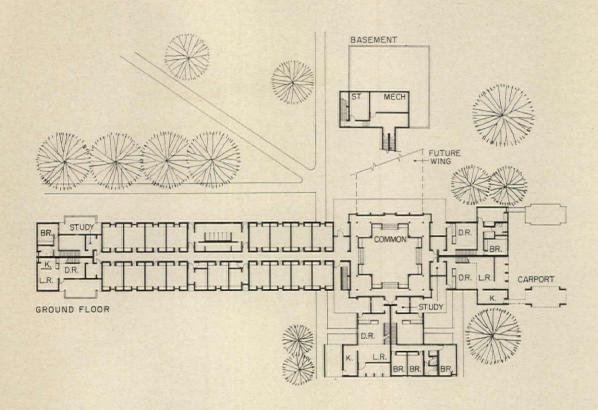


In this design, the highly disciplined sense or order and geometry that marks so many of SOM's buildings is expressed in carefully detailed steel columns, aluminum mullions, and big panels of glass and marble. The structure is a welded steel rigid frame, with 45-foot span and nine-foot cantilevers that shade the lower-level windows and provide a covered arcade for the entrances and two drive-up teller windows. Without in any way detracting from the discipline of the design, the architects used grey heat absorbing glass on the upper level; clear glass for most of the ground level, where good visual contact from the outdoors in is desirable; and created a solid wall at one end to give privacy to the safedeposit area and a conference room. Inside, a thoughtful circulation system is set up: aside from the two circulation paths for depositors who use the lobby or who drive up, there is a separate circulation for the safe-deposit area, a close "back-stairs" relationship between the tellers and the bookkeeping staff on the upper level, a close relationship of the employee lounge to the bulk of staff (which is located on the second floor), and a direct path from the parking area to a special room on the second floor set aside for community use.

Central Motor Bank, Central Missouri Trust Company, Jefferson City, Missouri. Architects and engineers: Skidmore, Owings & Merrill—Bruce J. Graham, design partner, Albert Lockett, administrative partner; general contractor: Schell Construction Company







#### FOR A DORMITORY: REFLECTION OF A SYSTEM



This dormitory at Lake Forest Academy, a college preparatory school in Illinois, is first and most obviously domestic in scale and materials—though the interior, wisely, is mainly tough-to-damage aggregate block. But perhaps the most thoughtful element of the design is the plan: The school uses the house-master system, so the plan uses a central commons room as a focal point for both the existing and a future (under construction) dormitory wing, and locates faculty apartments just off the commons room and at the corridor ends. The instructors' studies are located to serve both as an appropriate link between student and teacher, and as a buffer between student noise and family life.

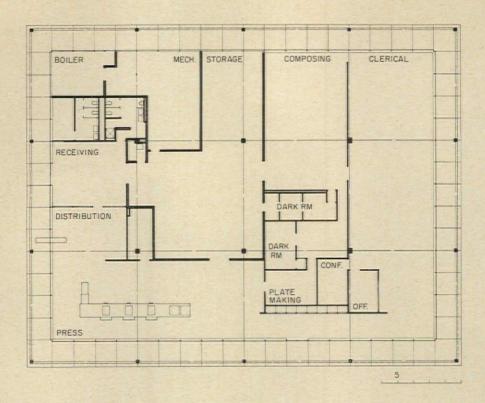
A sloped roof over the dining area in the apartments serves as a transition from the low line of the dormitory areas to the two-story apartment elements, and echoes the sloped roof of the commons room. The vertical window openings in the long line of the dormitory wings serve not only to shorten the building visually, but create a handsome wall that expresses each room within the building.

Lake Forest Academy Faculty Apartments, Dormitory, and Commons Room, Lake Forest, Illinois. Architects and engineers: Skidmore, Owings & Merrill—Ralph Youngren, design partner, William E. Dunlap, administrative partner; general contractor: Gerhardt Meyne Company

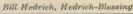


Photoss Baltazar Korab





#### FOR A NEWSPAPER PLANT: A GLASS SHOWCASE





Bill Hedrich, Hedrich-Blessing



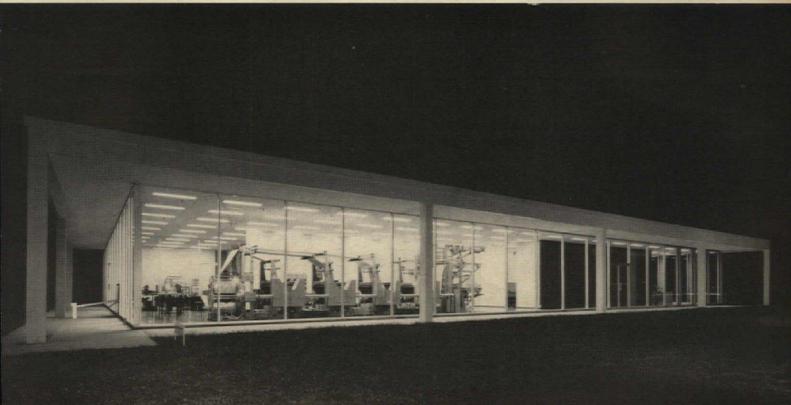
This building was designed for the owners of a new daily newspaper, who were anxious for a building that would make the public aware of their new business. For the site selected, on the busiest thoroughfare in town, the architects designed-"since there was nothing illogical about glass for this type of plant"—an 11.000-square-foot pavilion that shows off the firm's modern equipment and orderly office space day and night. To attract the eye of passersby, the offset press is painted yellow and the wall at the entry is bright red. In the same spirit, a uniform quality of finish-painted walls, vinyl floors, acoustical ceiling with flush lighting—is carried out through not just the office spaces, but all of the production areas except the storage room.

As in the laboratory on page 167, the structure of the building is simple and ordered, and strongly expressed by setting back the glass wall to create a big overhang (in this case, six feet). The structure is steel—a steel facing around the structural shapes (an insurance requirement) gives the columns and the fascia their thickness. The foundation is a reinforced concrete slab. The building is easily expandable in any direction, and the plan sets up a smooth flow of materials through the production area and effectively zones the office area from work areas.

The Daily Journal, Franklin, Indiana. Architects and engineers: Skidmore, Owings & Merrill-Myron Goldsmith, design partner, Fred W. Kraft, administrative partner; general contractor: Dunlap Construction Company



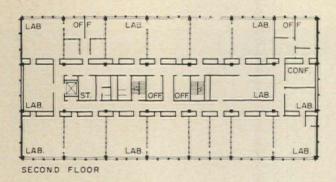
Bill Engdahl, Hedrich-Blessing

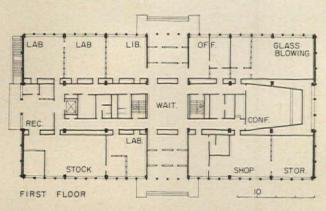




Baltazar Korab

#### FOR A LABORATORY: A PRECAST CONCRETE CURTAIN WALL





Searching for a simpler expression within the budget of the brick structure originally suggested, the architects developed this precast-concrete curtain wall system. Only two types of panels are used-nine-foot-wide solid panels for the end walls, and six-foot-wide panels "with holes for looking out and walking through." Both panels extend the full height of the building (40 feet) in one piece, and both have flanges that form the strong vertical pattern of the facade. To avoid adding another material or extra detail, and to emphasize the one-big-piece quality of the panels, the 1/4-inch plate glass windows are framed in with rubber gaskets and the flanges of the panels at the doorway are carried through. The slight radius at the corners of the window and door openings strengthened the four-inchthick panels during erection. The exposed aggregate surface was carefully color-matched (warm buff) to a nearby building. The columns and floors are conventional reinforced concrete.

Radiation Research Building, University of Notre Dame, South Bend, Indiana. Architects and engineers: Skidmore, Owings & Merrill—Bruce J. Graham, design partner, William E. Dunlap, administrative partner; general contractor: Sollitt Construction Company

## ARCHITECTS' OWN HOUSES

A portfolio of eleven noteworthy new residences that architects have designed and built for their own homes



H. P. Davis Rockwell Residence, Olympia Fields, Illinois. Architects: Brenner-Danforth-Rockwell; contractor: R. H. Roberts Construction Co.; structural engineers: Engineers Collaborative; mechanical engineer: Norman Migdal



Earl R. Flansburgh Residence, Lincoln, Massachusetts. Architect: Earl R. Flansburgh; contractor: Kurt Fuchs; structural engineers: Souza and True; heating engineers: Francis Associates



Thomas A. Bullock Residence, Houston, Texas. Architect: Thomas A. Bullock, Partner, Caudill Rowlett & Scott; contractor: R & S Construction Company



W. Byron Ireland Residence, Upper Arlington, Ohio. Architects: W. Byron Ireland & Associates; contractor: James McCarthy



Richard M. Bennett Residence, Dune Acres, Indiana. Architect: Richard M. Bennett; contractor: Frank Schmid; landscape architect: Franz Lipp



Bruce P. Arneill Residence, Guilford, Connecticut. Architect: Bruce P. Arneill; contractor: Erwin C. Griffiths; engineers: Milo S. Ketchum and Partners; landscape architect: Douglas MacLise; lighting consultant: Sylvan Shemitz



Robert Martin Engelbrecht Residence, Princeton, New Jersey. Architect: Robert Martin Engelbrecht; contractor: John Hobson



John W. Bissinger, Jr., Residence, Mill Valley, California. Architect: John W. Bissinger, Jr.; contractor: M. L. Bain of Alexis Tellis Associates; structural engineer: Cecil H. Wells, Jr.; interior designer: L. C. Interiors



Charles H. Richter Residence, Ruxton, Maryland. Architect: Charles H. Richter, Partner of Fisher, Nes, Campbell; engineer: Van R. P. Saxe



C. Randolph Wedding Residence, St. Petersburg, Florida. Architect: C. Randolph Wedding

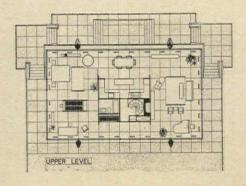


Charles Deaton Residence, Golden, Colorado. Architect: Charles Deaton; contractor: Delzell Construction Company









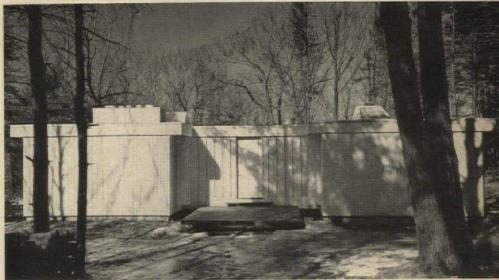


#### H. P. Davis Rockwell House

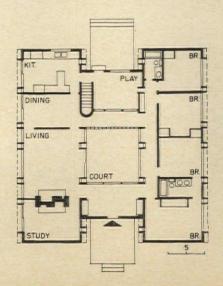
A forceful, sculpturesque concrete frame for this elegant house in Olympia Fields, Illinois, makes a noteable departure from the now classic glass pavilion. In spite of the massiveness of the structure, the light and open character of the main-floor pavilion is preserved by the use of tapered, faceted columns, and by the truncated pyramidal form of the podium set into the slope.

All exterior concrete is exposed aggregate, except for the roof edge-beam. And for unity, the same aggregate is used in terrazzo in the upper floor and as loose gravel in the forecourt north of the house. Wall paneling and cabinets are Burmese teak. A pool at the edge of the woods adjoins a garage and bathhouse.







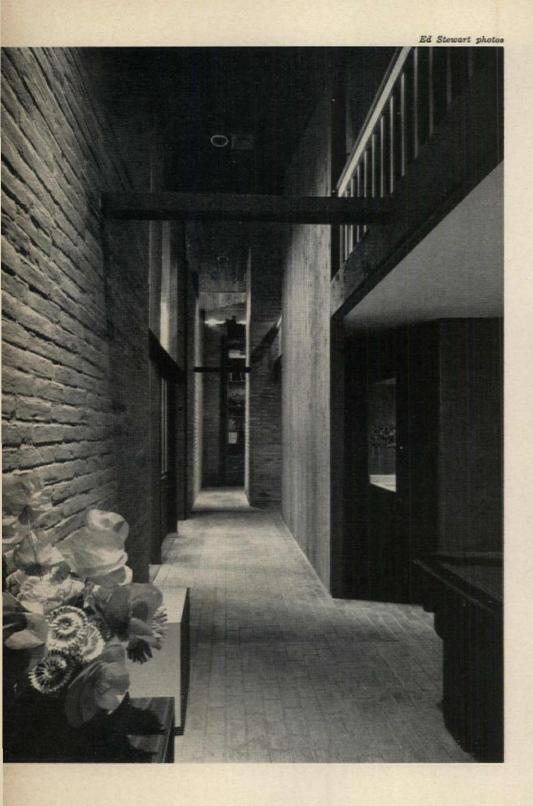




Earl R. Flansburgh House

Wood construction is used in a very sophisticated, economical way in this Massachusetts house-in-the-woods. Faced with the typical problem of accommodating both comfortable quarters for a family of four and adequate space for occasional entertaining, Flansburgh met a limited budget by the use of smallish but interconnecting rooms, lots of glass, skylights, and a system he describes as "fin and joist" construction.

Pairs of fins enclose operable ventilation panels, and are set between large areas of fixed glass. Each fin is structural, and prefabricated on-site of two sheets of waterproof plywood and a core of a two-by-eight and a two-by-four. The cost of the house was about \$38,000.











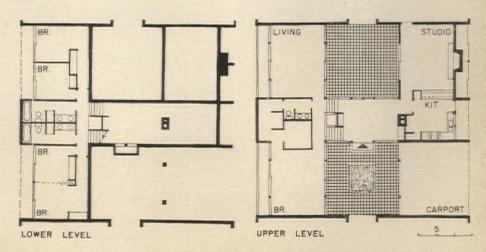
#### Thomas A. Bullock House

An "open plan" in the vertical as well as horizontal sense adds much to the spaciousness and interest of this very pleasant, quietly stated house in Houston.

All bedrooms are arranged. balcony fashion, on the second level, and set six feet inside each of the long brick-panel walls of the two-story "box". Felt curtains draw along the balcony line for bedroom privacy. Large glass panels, including a three-foothigh band topping all outside walls, take in views of the woods. Bullock, a partner of Caudill, Rowlett & Scott, comments that, "structurally, the large roof rests on a rough-cedar post and lintel system around the exterior and on the walls of the central mechanical core." Cost was \$35,000.









#### W. Byron Ireland House

An unusual, bi-nuclear organization of the plan was used here to provide a "daytime" and a "nighttime" house, connected by a glass entry set between two courts. Ireland notes that, "the 'daytime house' has the kitchen and studio, while the 'nighttime house' has children's bedrooms on the lower level with the master bedroom and living room upstairs. The ceilings in the upperlevel rooms conform to the shape of the wood shingled 'hoods'. The lower level is slab-on-grade, while the upper one is wood joist construction. Walls are load-bearing masonry supporting built-up rigid frames, with tie-rods forming the handrails of the balconies." Cost was \$38,000, or \$11.50 a square foot.

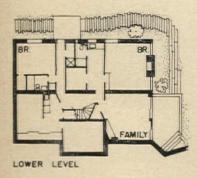


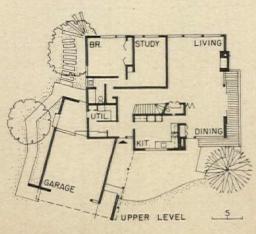
©Ezra Stoller photos









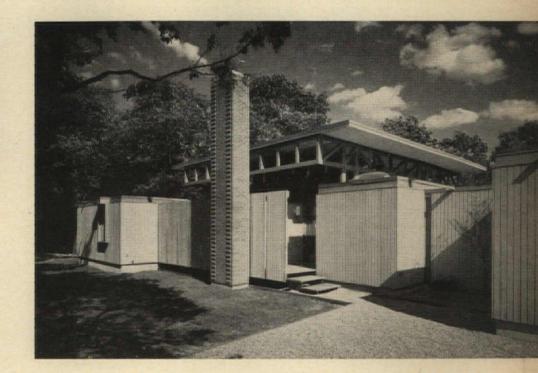


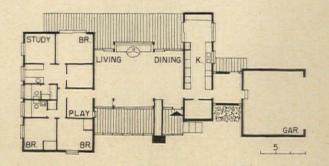


#### Richard M. Bennett House

"Our house posed two basic problems that were also opportunities: the sandy, side hill site and the variety of views," comments Richard Bennett, partner in the firm of Loebl, Schlossman & Bennett. "The house, nestling in the dunes and trees, can never be seen in its entirety, so it was possible to design without aiming at 'something to look at' and to concentrate on something 'easy' to live in, cozy and contractible in winter, and with extra bedrooms for expanded summer living. Brick floors and many walls of wood have resulted in a house that wears well. The different views-differently framed-supply a variety of experiences that keep one aware of the unique phenomena of the Indiana dunes."





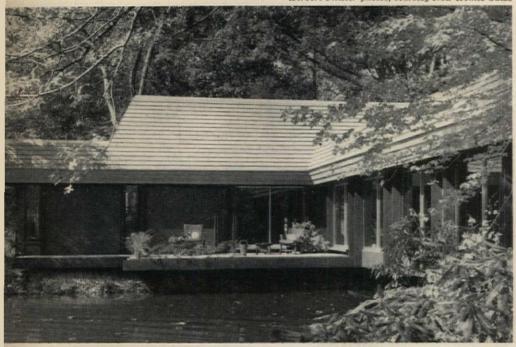




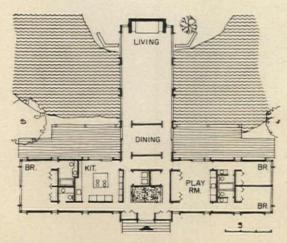
#### Bruce Porter Arneill House

Wide, open spaces and intimate, closed ones are neatly organized in this informal Connecticut house. Arneill describes the concept, expressly designed for expansion, as "a community cluster of functional units that can grow with the family's needs, wrapped around and defining a central space and covered deck . . . a pavilion open on all sides to nature." The open-structured, wooden roof of this pavilion dominates the design, which is assiduously pared of excess trim and ornamentation. The openness of the living areas is given protection from the sun by the calculatedly wide overhangs, and from the street by walls enclosing courts and mechanical room. The cost was \$35,000.

Herbert Phister photos, courtesy New Homes Guide







Ernest Silva photo, courtesy New Homes Guide



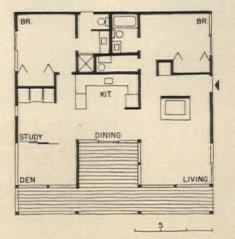
#### Robert Martin Engelbrecht House

Dubbed by architect Engelbrecht as his "upside down marsh house", this residence forms an interesting study on the use of a by-passed, marshy lot, on providing enlarged attic space for future expansion, and on the strict use of stock sizes in materials and standard equipment. Engelbrecht says that, "the concept uses a low marshy piece of ground considered undesirable for house location-however, by excavating the low lands to a lower level and using this earth for fill, an interesting fresh water pond was created, as well as an interesting plan orientation with part of the house projecting over the water. By slightly lowering the ceiling and slightly raising the roof, a 'living loft' has been created for good expansion space."

Glenn Mitchell photos







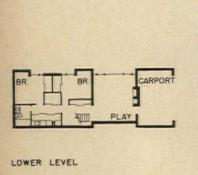


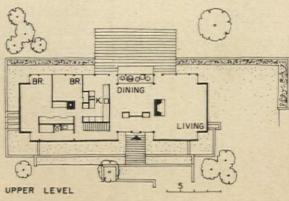
John W. Bissinger, Jr., House

Low cost (\$14,000 for the house itself) is a particularly remarkable feature of this attractive little butterfly-roofed house. Bissinger states that his program "called for a small, informal and economical home for entertaining; one which would open outwards in all directions for free circulation: a shelter with a minimum of structure to complement rather than conflict with the natural beauty of the wooded California site . . . the plan is simple and open. Active rooms are not clearly defined, but rather are spaces flowing from one to the other in an informal manner. Seismic loads are taken out through the bath and utility room walls-which are solid up to the laminated roof forming the diaphram-shear wall relationship."









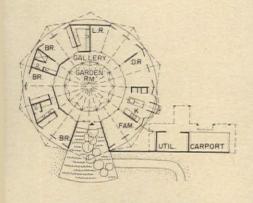


#### Charles Richter House

Skillful adaptation to a steep site, and assurance of privacy from street and neighbors are two prime qualities of this extremely trim house. Richter states that he "felt the site demanded a solution not in conflict with the natural setting. A simple, uncomplicated structure of glass and redwood, with black trim, rests on two longitudinal built-up beams which act as plates for the concrete block foundation. The house is cantilevered on all sides and appears to float in the woods. It is surrounded by white marble chips contained by railroad ties, which act as retaining walls. Inside, walls are either white-painted battens or drywall, or natural concrete block."



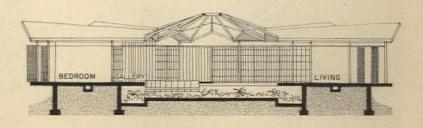


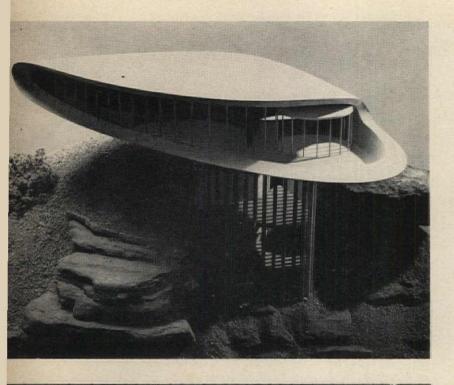


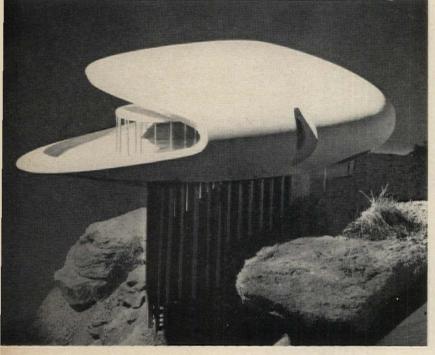
#### C. Randolph Wedding House

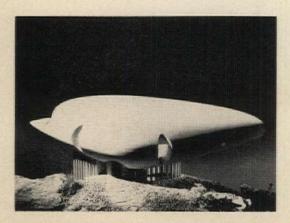
A festive, tropical air is combined with an unexpected inward-looking plan in this Florida house. Wedding comments that, "our problem of site restriction and small lots led us to build our living units around the core garden room to obtain privacy and spaciousness. The gray glass skylight spanning the core area creates a light and pleasant interior -space suitable for our daily use and enjoyment in many diverse ways. Light sliding screens serve to divide the raised circulation gallery from the various surrounding spaces. Around the perimeter of the house, translucent outswinging doors allow the entire house to be opened up, but allow complete privacy when closed." Cost was \$30,000.











#### Charles Deaton House

"Habitable sculpture" is architect Deaton's description of his house now under construction on Genesee Mountain, twenty-five miles west of Denver. "The idea was to create a work of sculpture you could live in. I felt, first of all, the shape should be strong and simple enough to stand on its own in any gallery as a work of art. Then with its being enlarged to the scale of a dwelling, it could be subdivided into living quarters. Of course, I knew when I started the sculpture that it would end up as a house."

The "sculpture" is doubleshell, sprayed-on concrete supported by a welded steel frame. It has the usual facilities of a three bedroom house, plus extra work spaces in the "pedestal".

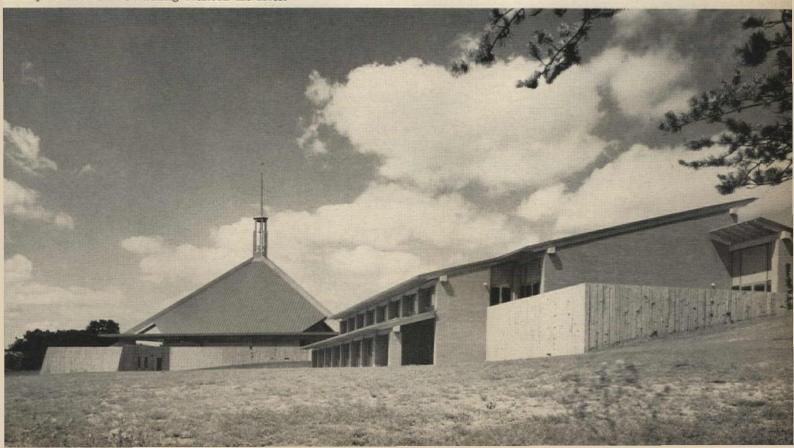


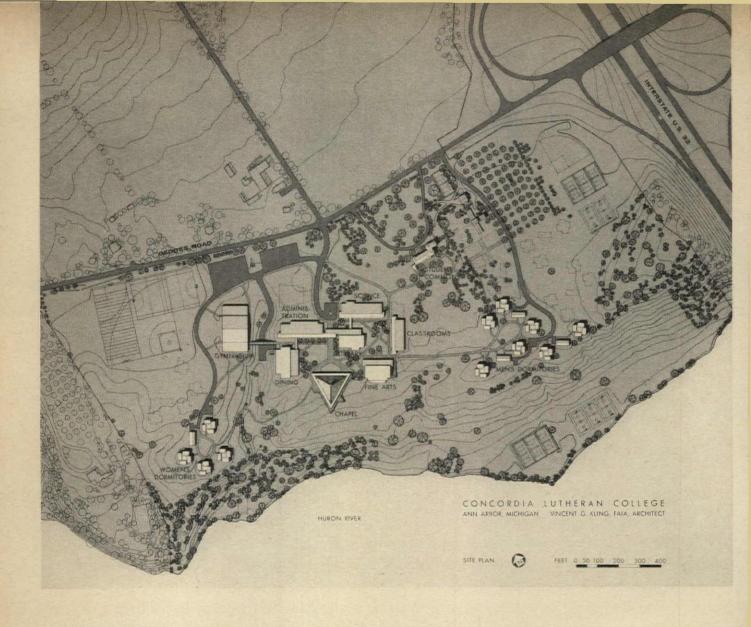
The campus chapel dominates the complex.

# INTEGRATED SITE PLANNING AND DESIGN FOR A SMALL COLLEGE

The population explosion will continue to force existing institutions to expand their teaching facilities at new locations, and more and more campuses will have to be built all at once, from scratch. If the proposed campus is not too large, and if the buildings are scheduled for completion at approximately the same time, a single competent architectural firm can handle the master planning and design all structures in one cohesive style. The new Concordia Lutheran Junior College is such a campus and architect Vincent G. Kling has made good use of his opportunity to give cogent and articulate form to its buildings and the campus spaces which they create.

Chapel and fine arts building overlook the river.





Concordia initially will provide the first two years of preparation for 450 students and eventually will expand to accommodate more than 1,200 students. In developing a program for the college, the Board for Higher Education of the Lutheran Church specified that the school's organization and design foster academic and spiritual development, that it provide an effective environment for small group living, and that it ease the transition to college life for students, most of whom will come primarily from a home-and-day-school way of life. Particular emphasis was desired for the chapel and the library. The campus utilizes 90 acres of a 210-acre church-owned tract of rolling and partially wooded farmland on the northeastern edge of Ann Arbor and fronting on the Huron River. The land rises steeply from the river's edge to a relatively level bluff divided by two shallow ravines and stretches a half-mile along the water. The principal campus buildings have been

located along this bluff so views across the river and beyond, over the countryside, can be fully enjoyed.

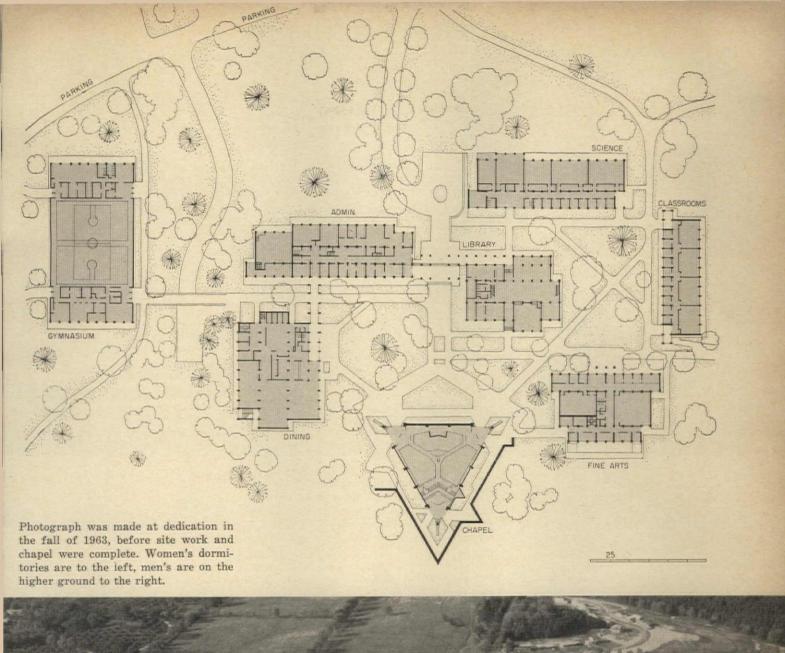
To create a community-like environment in which the religious, academic and social requirements of the Synod's program could take place effectively, the college has been organized as a campus of 23 relatively small, informally grouped buildings which, except for the chapel, are low, one- and two-story rectangular structures of residential scale and character. The campus functions have been divided into three sections separated by the natural contours of the site, creating a separate academic area and two distinct residential areas, one for men to the east and one for women to the west.

The seven academic buildings are grouped in the center of the campus about a courtyard. The roads and parking areas have been located to keep the campus as vehicle-free as possible, and students are able to walk to and from virtually every

building in the college without crossing a roadway.

The chapel, a unique, triangular structure which is the tallest element of the campus, and the library are emphasized in the academic area organization by their prominent positions on the site.

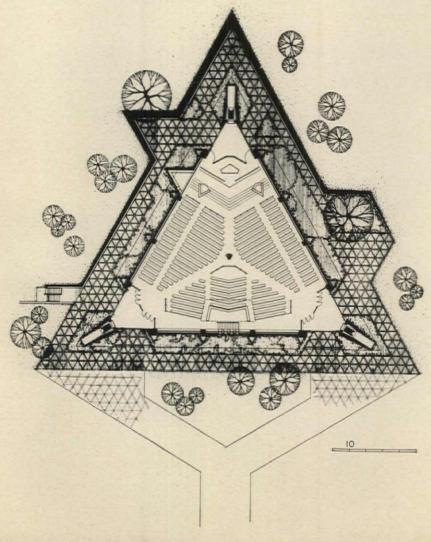
The college's 11 residential units flank the academic area-four women's dormitories to the west and seven men's dormitories to the east. The two-story residences each house 32 students in suites organized around a central skylighted "learning exchange" lounge designed to encourage informal gatherings and exchange of ideas. The residential character of the campus is further enhanced by detailing and materials of the buildings. All roofs are pitched and have large overhanging eaves which protect interior spaces from the direct rays of the sun. A warm, salmon-color brick is used for bearing walls and is accented by the offwhite, natural-concrete, precast

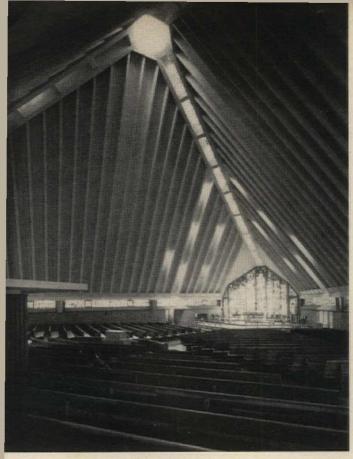




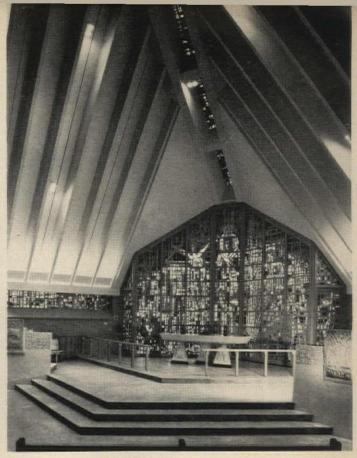


The chapel perches on a terrace which is at the same grade as the campus court-yard shown in the photograph at the bottom of the opposite page. The jutting concrete prow accommodates the slope. The fine arts building is to the right.



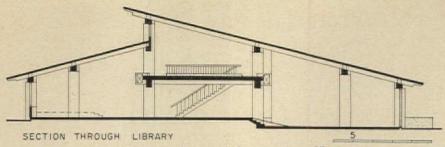


The interior seats 800 students and faculty. The roof deck is constructed of precast prestressed double tees exposed on the interior. The walls are of salmoncolored brick and the floors are concrete.

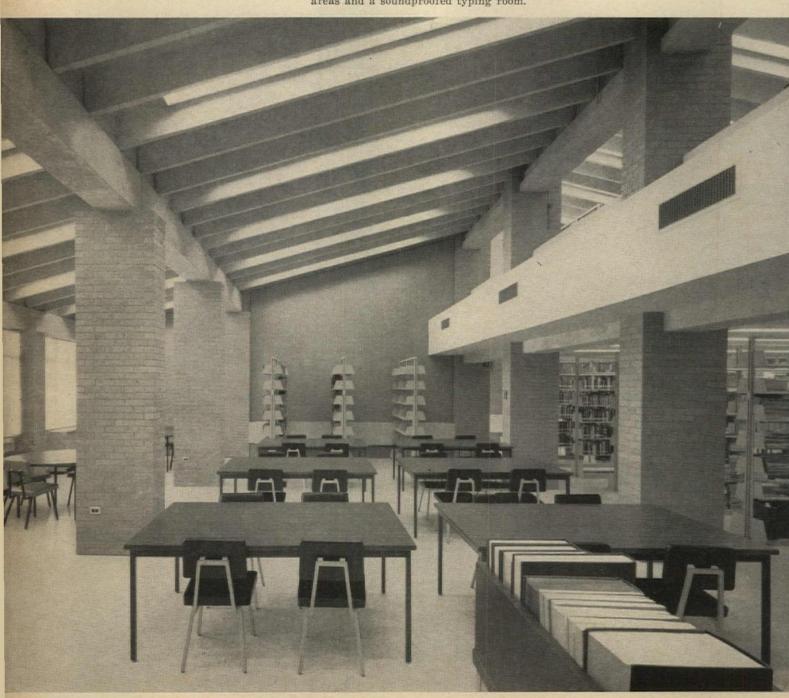


The three roof planes of the Chapel are defined by bands of ornamental glass which separate the paired main girders at the ridges and also by a continuous peripheral clerestory above the walls.





Wide-span design of the two-story, 35,000 volume library permits the interior spaces of the main floor to be easily subdivided for a variety of uses. The ground floor contains a main reading room; a reserve and music room; group study rooms; audio-visual room; stack areas; study carrels; work and office areas for library personnel. A mezzanine level overlooking the main reading room will contain additional stack and carrel areas and a soundproofed typing room.



beams, lintels and eaves. The roof deck of virtually every building is composed of wide-span precast and prestressed double tee units which are exposed inside to provide strongly ribbed, light-reflecting ceilings. Side walls have large casement windows above the sill and porcelain enamel steel panels below the sill.

The development master plan for the campus provides for future expansion to double the initial 450- student capacity by addition of up to 10 more dormitory units, two new classroom buildings (several others will be enlarged), and a 1,000-seat auditorium.

A triangular promontory jutting out over the Huron River at almost the geographic center of the campus was chosen as the chapel site and, in turn, it suggested the unusual form of the structure. The triangular form, ancient symbol of the Trinity, not only provides a very functional setting for worship in which all pews focus on the altar, but also gives the chapel a purposeful uniqueness that sets it apart from the other campus buildings.

The base of the triangular plan serves as the unifying axis tying the principal elements of the campus together and the apex, containing the altar, points symbolically outward toward the world ahead of the students it serves. Standing on a paved and landscaped triangular terrace the chapel rises up from the scale of its surroundings to a height of 62 feet. It is topped by a belfry designed to contain a bronze bell and stentors for a 25-bell electronic carillon. A spire and a cross add another 45 feet, making the chapel the tallest structure and a focal point of the campus, visible from all approaches.

The interior is a single space and contains seating for 800 students and faculty. The altar is placed before a portal wall of ornamental glass. In keeping with Lutheran tradition, the choir is to the rear of the congregation, where it is grouped around and in front of a free-standing organ loft.

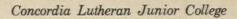
The structure of the chapel consists of a double girder system of poured-in-place concrete supported on piers at the corners and restrained by a post-tensioned collar which forms the lower roof. Precast double tee units, exposed on the interior, form the main roof deck.

Total cost of buildings and site development was \$6.51 million.



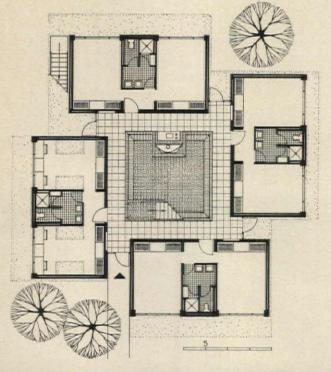
The basic structural vocabulary of all the campus buildings consists of pitched roofs, overhanging eaves and clerestories. The roof structure is clearly expressed without and within. Bearing walls and columns are of salmon-colored brick. For all buildings the column module was kept as consistent as possible within the plan requirements.





To create an optimum environment for small group living, the residential units are designed to group the student rooms in four two-story wings enclosing the central, skylighted, "learning exchange" lounge. There will be 16 students on each floor with four students occupying a two-room suite and bath on each side. Second floor rooms open onto an interior balcony corridor overlooking the "learning exchange." Each four-person suite contains a private bath and built-in storage unit. The 27-foot-square "learning exchange" will be illuminated during the day by natural light entering an eight foot by eight foot skylight and will be furnished with living room-scale sofas and chairs grouped about an openhearth fireplace. Provisions are included for a self-service kitchenette in each lounge. Adjacent to every cluster of two or three dormitories is a low, one-story faculty counselor's residence with a twobedroom apartment for the counselor, a student meditation room, storage and self-service laundry facilities.







OWNER: Concordia Lutheran Junior College LOCATION: Ann Arbor, Michigan ARCHITECT: Vincent G. Kling, F.A.I.A. Project Manager: David G. Margolf Team Designer: Joseph Marzella STRUCTURAL ENGINEERS: Severud-Elstad-Krueger Associates MECHANICAL AND ELECTRICAL ENGINEERS: Pennell & Wiltberger, Inc. FOOD OPERATIONS CONSULTANT: Arthur William Dana GENERAL CONTRACTOR: Huber, Hunt & Nichols, Inc.

(R)

# HOSPITALS

"Almost all new hospital buildings are experimental." So says August Hoenack in the article which follows. Science, technology, the long-term effects of Medicare and new assessments of the role of general hospitals in mental health and community programs, all impinge on the changing concepts of hospital architecture.

This does not mean that all completed work is obsolete.

Flexibility, expansibility and technological change are not new problems for architects. But the accelerating pace of change and the multiplying elements of hospital programs warrant a new look at the architectural implications of truly progressive patient care and total flexibility. Two university studies reported here hopefully implement such a review. And a portfolio of current work supports the optimistic view that obsolescence has not yet overwhelmed the architecture of hospitals.

### CURRENT TRENDS IN HOSPITAL ARCHITECTURE

New materials, new therapies, new planning concepts, new standards of environment control, increasing use of mechanized transport and a search for total flexibility

By August Hoenack

Chief, Architectural and Engineering Branch, Division of Hospital and Medical Facilities, Public Health Service, Department of Health, Education and Welfare

Major concerns to architects, in their efforts to improve the functional use of hospitals and to maintain a high standard of design, are new developments in the hospital field and the array of new building materials, which are constantly appearing out of our dynamic and competitive building technology.

While the architect is accustomed to coping with new materials and has the technical competence to evaluate their implications from a functional and structural standpoint, in hospital design he is also faced with new medical concepts, equipment innovations and devices that are not so directly in line with his primary professional technology. He is not always able to evaluate their significance and their implications to the design of his buildings; yet they may be included in the building program. In this situation, he must rely on the best advice of his hospital clients or other authorities who may have made studies and recommendations regarding these areas.

We are actually finding that many new ideas are

being designed into hospitals on an experimental basis, although this is not always the intention. In fact, we must recognize that, because of the rapidly changing requirements of the health field and a rather general feeling among hospital people that hospital design can be improved through their own efforts, almost all new hospital buildings are experimental. Some of the new devices and concepts include: the trend toward all single rooms, isolation rooms, hyperbaric facilities and the emphasis on asepsis which has influenced the design of surgical suites and air-conditioning and ventilation systems.

To what extent will some of the current trends affect the architecture? One can only assume that they will; significant developments have always affected the architecture of hospitals. Probably one of the more significant architectural developments in hospital planning started some 10 years ago when hospitals recognized that air conditioning was here to stay. At the same time it became accepted that all

rooms in the hospital did not need windows and that the staff would not suffer psychologically from working in interior spaces. This concept permitted architects to arrange all the diagnostic and clinical areas in a block at the lower floors, which provided much more freedom in planning and permitted better circulation. Even more important, the size of a room was not necessarily dependent on the depth of a bay from corridor to window for both light and ventilation. From this point, many further developments were possible. Improvement in the lighting of these enclosed areas was stimulated as was improvement in the air-conditioning systems from the standpoint of controls and filtration.

#### Fenestration

The patient areas continued to be located in a fenesstrated, air-conditioned, high-rise section. The windows in these patient areas are no longer needed for ventilation or lighting, and probably their primary purpose is for the patients to take advantage of the view. From the standpoint of summer and winter air conditioning, the size of the window can be critical and consequently should be carefully designed. Unnecessary glass areas will add to the initial cost of the mechanical plant and will be a continuous expense from an operational standpoint. There is a question as to whether designers have evaluated the real function of the window or have decided upon an optimum shape and size. Many operating, delivery, and recovery rooms; intensive care rooms; and nurseries are being designed in interior spaces, and there does not appear to be any real need for windows in these areas. However, one can recognize that with respect to intensive care a good case can be made for providing windows. All intensive care patients are not unconscious of their surroundings and would probably benefit from a view. On the other hand, windows could complicate the provision of monitoring and other equipment that must be provided adjacent to each intensive care patient.

The trend toward a much larger percentage of single rooms will probably be reflected in initial construction costs and, of course, will also affect the architecture. The effect on the hospital operation, however, would be considerable since a higher occupancy rate could be maintained and most patients probably prefer the privacy of single rooms. Patient care will also be improved because of many factors, including less possibility of cross-infection.

#### Hyperbaric Chambers

For a relatively few hospitals, a significant develop-

ment in treatment and surgery presently in the research stage involves the use of hyperbaric chambers. This large, complex, and costly facility will pose initial problems from the standpoint of its location in the hospital. Although functionally it probably should be convenient to surgery and treatment areas where it can take advantage of other services, the tendency may be to place it in some out-of-theway location where space is available for its bulk and rather extensive mechanical equipment. Thus the question which arose when cobalt units were first introduced again appears: To what extent should such factors as initial cost, bulkiness and weight be considered against the cost of staff movement, the transport of patients and functional relationship? It would appear that it is more important to place these facilities where they are functionally needed rather than to be chiefly concerned with saving some initial cost when such savings may very well be dissipated in a few years by extra operational costs caused by an inconvenient location.

#### Isolation

In considering the patient areas of the hospital, some mention must be made of isolation facilities. Many hospitals are rather poorly prepared to accommodate various hospital-acquired infections as well as other types of contagious diseases. This problem is not new. Almost 20 years ago in the early days of the Hill-Burton program, recommendations were made to provide appropriate facilities on each nursing unit or grouped elsewhere within a hospital so that patients with contagious conditions, either hospital acquired or otherwise, could be properly cared for. This usually required one or two rooms with a private toilet and shower for each and an interconnected sub-utility room. Since the techniques vary for different kinds of contagious conditions, this arrangement was versatile enough to accommodate most such cases. Because more single rooms were provided in hospitals, many authorities felt that special provisions such as isolation units were not necessary.

Actually, experience has proved that in most cases an ordinary room was quite inadequate. We find only too often that some type of isolation cart must be located in the corridor and that part of the technique such as gowning and handwashing must be carried out in the corridor. It would appear to be far better, not only for the isolated patient and the attendant staff but also for the other patients, if such techniques as gowning and handwashing could be carried out in an enclosed anteroom rather than in the corridor. This, however, does not mean that every single patient room in the hospital would need to be arranged in this manner.

#### Progressive Care

The concept of progressive patient care has been with us for some time now, and, although intensive care units have been accepted by many hospitals, the self-care or convalescent care units are being approached somewhat cautiously.

Self-care units perhaps would be more acceptable if there were flexibility between them and the intermediate care units. There may be some question as to whether or not the self-care room and a room in the intermediate care unit need be different architecturally. If we can ultimately arrive at all single rooms for intermediate and self-care, we will have progressed a long way toward providing versatility. Basically, differences between these services would involve only certain of the ancillary areas such as nurses' stations and supply rooms and the staff organization of the units. Any efforts along these lines for design flexibility will pay operational dividends in the long run, although there would be no distinct architectural expression between different units. Some early intensive care units which were designed as separate wings either in square or round form are examples of little or no flexibility. Although these units were given architectural expression, they were somehow deprived of a good relationship with an intermediate nursing unit which would have provided flexibility in its organization and use. We all now recognize that the intensive care unit should be contiguous to an intermediate nursing unit.

#### Flexibility

One of the more important developments in over-all hospital design is the effort to achieve complete flexibility, not only of space but also in the use of air conditioning, lighting and plumbing. This, of course, must all be an essential part of the initial design. Even now the building techniques are available to permit such flexibility. Whether or not it is worth the effort economically or whether the possibility of ever needing this degree of flexibility is real is what the planning team of each hospital must determine. Personally, I feel that there would be advantages if more simplified building techniques than are now available could be developed that would permit a reasonable amount of versatility. Such a system, however, must be compatible with all aspects of patient safety. Work is currently being carried out on this very challenging problem by the School of Architecture at Texas A&M University (See page 202.)

Although hospitals are accepting air conditioning almost completely, we are finding this can be a mixed blessing in the hospital. Comfort conditioning has been partially achieved in the past without humidity control; however, we find that maintaining summer and winter humidity at specified levels becomes more important as a factor in maintaining an aseptic environment and in reducing the possibility of upper respiratory infections. Various studies and reports strongly indicate the need for humidity control. This may require some changes in exterior wall design in certain parts of the country where condensation would be a problem, but here again compromises would have to be made locally to accommodate particular situations. New concepts in supplying air to operating and delivery rooms by means of ceilingmounted diffusers or ceiling plenums may eventually affect the over-all floor-to-ceiling heights in these critical areas.

#### **Outpatient Departments**

The last few years have seen a tremendous increase in the use of hospitals by outpatients, and I am not referring only to the large number of people who have been using the emergency department as a doctor's office on weekends. The complexity and extent of most diagnostic procedures has caused physicians to refer their patients to local hospitals for most diagnostic work. Consequently, diagnostic units are necessarily sized not only to the inpatient load but also to this rather indefinite outpatient load. This is extremely important from a circulation standpoint and is the reason these services are usually located in the large lower floor block. The ambulant patient load and circulation will probably have considerable influence over future design and certainly should be anticipated in present designs.

There are many other components of the hospital plant which could be reviewed. Radical changes are taking place in food service, and undoubtedly every conceivable kind of development is being tried out somewhere in our large hospital system. Mechanical horizontal and vertical transport systems are in the same stage of development. Although they were used in industry for many years, their adaptation to use in hospitals has been accompanied by many problems. Nevertheless, these problems will be surmounted and conveying systems will serve a very useful purpose in future hospitals.

We cannot overlook the growing role of the hospital in serving the community beyond the so-called "short-term acute patient" needs. Programs are gradually being expanded to include mental health, mental retardation, rehabilitation and other special services usually provided by other groups. In this way all services are strengthened and coordinated and have the advantage of the clinical facilities of the hospital. This trend also, of course, will have significance architecturally.



# ELEMENTS OF PROGRESSIVE PATIENT CARE

In this design project for a medical center for Greenville, South Carolina, students and faculty at the Clemson University School of Architecture make a searching review and an adroit solution for a real site

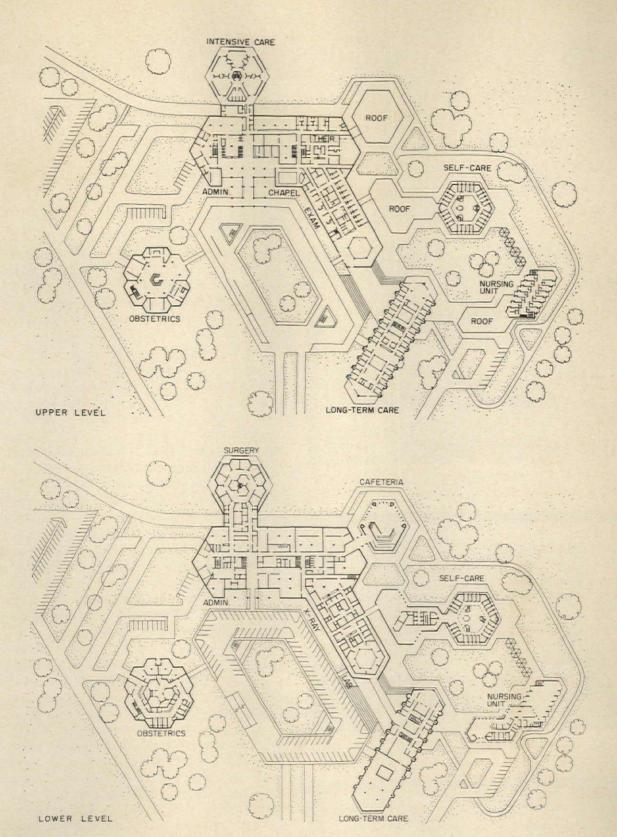
The elements of progressive patient care were translated into the design of a medical center for Greenville, South Carolina, as one of the "Vertical Studio" projects for the spring term at Clemson University School of Architecture. Depth of the study and completeness of the design directed by Professor George C. Means, Jr., were commended by a jury which included representation from the Atlanta District Office, Public Health Service. The project serves here as a review of the problems encountered in any program for progressive patient care, as a demonstration of realistic, forward-looking concern for such problems at the academic level, and as an adroit solution to a complete program for a real site.

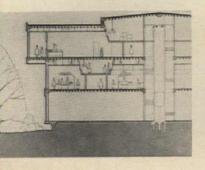
The design problem was for an actual facility complying with all standards of the Public Health Service, to be located on the site of the old Furman University campus at Greenville, S.C. Program for the proposed hospital enumerates the six kinds of care implicit in the progressive patient care concept. They are: (1) intensive care for critically and seriously ill patients who require continuous observation; (2) intermediate care for patients requiring a moderate amount of nursing care; (3) self-care for ambulatory and physically self-sufficient patients requiring in-hospital therapeutic or diagnostic services; (4) long-term care for patients requiring skilled prolonged medical and nursing care, rehabilitation, occupational therapy, and physical therapy; (5) home

care for patients who can be adequately cared for in the home through the extension of certain hospital services; (6) outpatient care for ambulatory patients able to live at home and make regular visits.

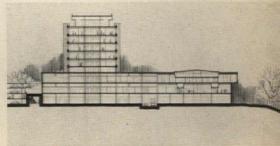
The solution was related to the increasing population of the Greenville area and to a preliminary study of what the effects of the population growth might be on such a center's requirements. Data indicated that the center should approximate Greenville General Hospital in bed capacity and service facilities while providing for easy expansion up to a maximum point beyond which optimum function might be impaired. Adjunct and service facilities were to follow a similar dictum of expansibility.

Spaces to be provided were: (1) administration department including public areas and medical staff facilities; (2) out-patient areas, for 100 to 150 patients daily, to be easily accessible by separate entrance and related to diagnostic facilities, social service and home care offices; (3) diagnostic and treatment departments convenient to both in- and out-patient facilities; (4) pharmacy to be available to the public; (5) surgical and (6) obstetrics departments located to prevent traffic through them to any other part of the hospital; (7) emergency department easily accessible from the outside but also close to obstetrics and surgery. A nursing school, nurses' residence for 150 students, residence for 24 interns. parking, bus and taxi areas also were to be provided.







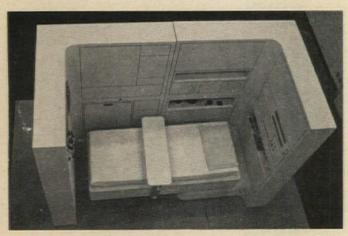


# AN ADAPTABLE BUILDING SYSTEM FOR PROGRESSIVE PATIENT CARE

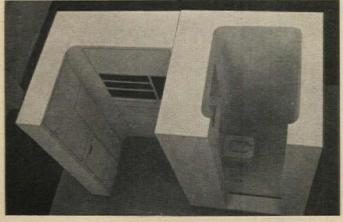
Texas A&M investigates modules and service systems for total flexibility of building layout and all degrees of nursing care



Demonstration of modular assembly



Bed unit with head and foot sections



Storage unit and sanitary unit

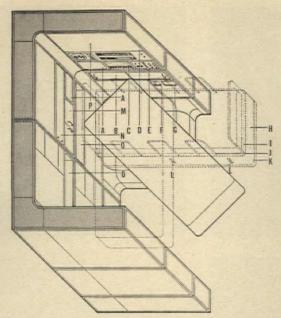
In August, 1964 the study of medical buildings was chosen as a central subject for a new program at the Research and Graduate Center\* of the School of Architecture, Texas A&M University. A preliminary survey had clearly indicated profound operational problems within the medical building field. Rapid scientific progress and economic and social pressures, which are continually shaping the degree and implementation if not the basic function of hospital services, are not matched, according to this survey, by a corresponding rate of progress in the design and construction of hospital buildings. A major result, the survey concluded, is widespread and rapid functional obsolescence of hospitals with consequent waste and reduced effectiveness of medical care.

First project in the medical building research program is therefore related to the function of patient care. Objective of the work is to develop a system of care facilities which will allow rapid adaptation of the building layout to meet changing functional demands. Scope of the work is to accommodate five types of care within the concept of progressive patient care: intensive, general, long-term and self-care; and a home care installation.

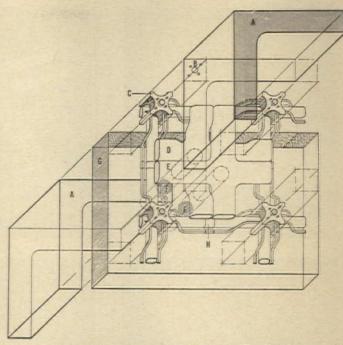
Results of the first phase (first year) of this fourphase project are illustrated here. The objective of this phase was to reach a clear direction and principal solution which, through coming development phases, will be refined to solve over-all objectives.

Basic element of the adaptable building system is the patient care module consisting of the architectural space and medical equipment necessary for the nursing care of one patient. Various components of the module (bed, storage, sanitary, etc.) can be rearranged for different room configurations. The module can receive all types of utilities and bed-care equipment within its structure; it can be moved and rearranged within different parts of an existing hospital or used as a planning device for new construction. Special consideration has been given to sanitary conditions, location of equipment, and variability of the long-term patient environment.

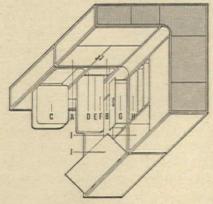
<sup>\*</sup>The Research and Graduate Center of the School of Architecture, Texas A&M University, was established in September, 1963 to conduct research and development in the field of architecture. Because of similar principles and objectives, this center is closely allied in collaborative work with the Hochschule fur Gestaltung, Department of Building, Ulm, Germany.



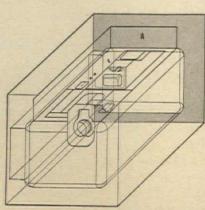
Bed unit, consisting of head sections, foot sections and bed: (A) patient personal light; (B) shelf with sliding doors; (C) patient control and communications panel; (D) monitoring panel; (E) outlet panel, oxygen, vacuum and various electrical; (F) ash tray; (G) paper disposal; (H) bed-bedspring and bed position adjustable; (I) adjustable footboard: (J) adjustable railing; (K) continuous attachment groove; (L) bed controls, separated for patient and nurse; (M) personal items shelf, lockable; (N) telescoping, adjustable examing light; (O) open shelf; (P) blind panel or mirror



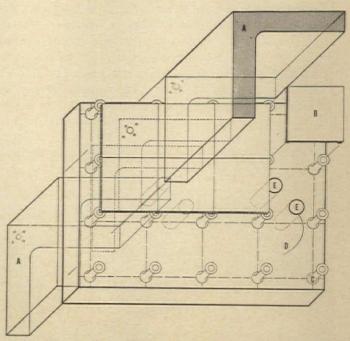
Piping system: (A) patient module section; (B) distribution and collection area; (C) intersection units for five piping systems; (D) climatic conditioning system, supply; (E) climatic conditioning system, return; (F) space conditioning penetrations of existing floor structure; (G) existing floor structure; (H) system connectors between intersection units



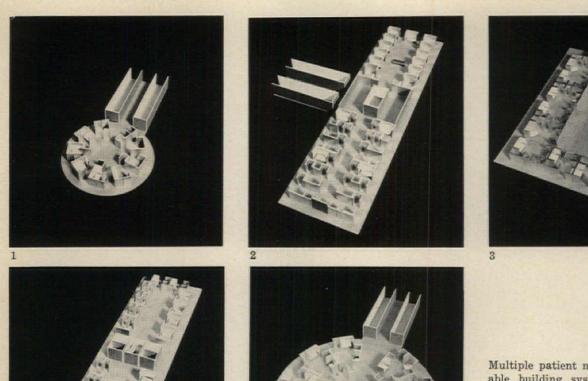
Storage unit: (A) clean linen storage, accessible from both sides; (B) clean equipment storage, accessible from both sides; (C) fold-away chair; (D) open shelf; (E) hidden writing light; (F) writing table; (G) storage, four drawers; (H) open shelves; (I) flower shelf; (J) clothes storage



Sanitary unit: (A) sanitary panel (according to Angelo Colonna, Inc., Philadelphia, Pa.) including shower, foldaway water closet, wash basin and additional equipment



Elevated floor system: (A) patient module section; (B) structural floor sandwich panel; (C) floor panel supports with modular reference lines; (D) existing floor structure; (E) space conditioning penetration of existing floor structure



Multiple patient modules of the adaptable building system for progressive patient care arranged for:

- 1. small intensive care unit
- 2. general care, single rooms
- 3. self-care wing
- 4. long-term care
- 5. general care, double rooms

Modular coordination and distribution of mechanical and utility systems is necessary in order to allow movability and re-arrangement of patient modules in application to new or existing construction. The mechanical distribution system is applied directly over the floor for existing hospitals, or integrated within the floor structure in new construction.

Multiples of the patient module are adaptable to existing construction (as a renovation device in which case all non-structural components of an existing hospital nursing floor would be removed) or for new construction.

Future development phases will involve specialists



Bed unit in configuration for ward conditions.

in engineering, economics, hospital administration, and will include the construction of full-size working test units, under real operational conditions.

The project is titled "Adaptable Building System/Progressive Patient Care," and was awarded a Public Health Service grant of \$136,483 to cover direct costs for the next two years of work including construction of two experimental test units.

Principal developers of the work are Edward J. Romieniec, chairman of the School of Architecture, and James Patterson, project director and assistant chairman of the Research and Graduate Center; in collaboration with Gunter Schmitz, research architect, and Herbert Ohl, head of the building department, both of the Hochschule for Gestaltung, Ulm, Germany.

Major assistance in the planning and development of the work has been given by members of the Public Health Service; the Texas State Department of Health; and the University of Texas Medical Branch in Galveston.

Graduating students active in the project were: James Ashley, Noble Atkins, Thomas Batey, James Brinkley, Robert Collier, William Ferro, John Focke, Charles Johnson, Randolph Myers, Michael McChesney, John McSpedden, Richard Moore, Douglas Ogilvie, Russell Stogsdill.



Alexandre Georges photos

# FIRST PHASE OF A MEDICAL CENTER

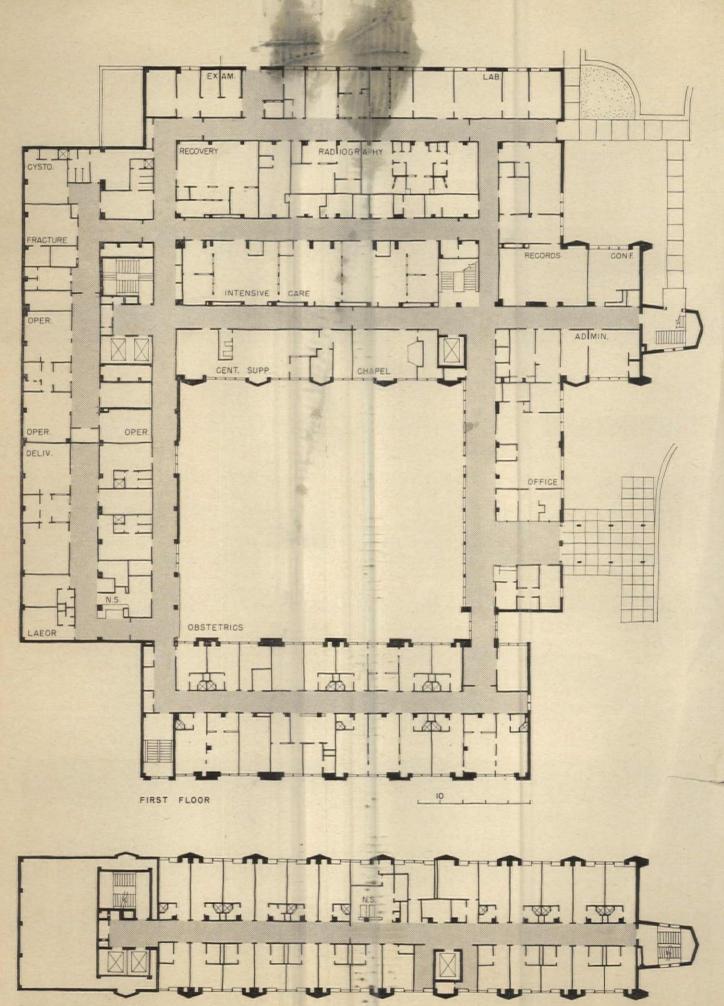
Designed for long range growth, this training hospital for the Medical Mission Sisters of Philadelphia is the first phase of what will eventually be a complete medical center to include a convalescent home, doctors' building, long-term nursing home and other medical and educational facilities. The present hospital is a typical general hospital of 123 beds with central service and mechanical systems sized to accommodate expansion to 250 beds. It is sited near the crest of an 82-acre wooded plot with an 80-foot overall difference in contour levels.

The plan provides for double and single loading of corridors in a two-level structure housing central services and administration around a large central court. A four-level nursing wing rises above this basic structure. It is a central corridor plan with attached stairwell at one end which can be removed for or incorporated into future expansion of the wing. Progressive patient care is the basic organization of design and operation. Patients are encouraged by both layout of ambulatory spaces and colorful aspects of interiors to mingle and live as normally as possible. The approach to obstetrics is to provide prenatal training for natural childbirth and to encourage fathers to be present at deliveries.

Holy Family Hospital, Atlanta, Georgia. Owner: Holy Family Hospital & Medical Center, Inc.; architects: Aeck Associates, Inc.; structural engineers: Chastain & Tindel; mechanical engineers: Lazenby & Borum; electrical engineers: Charles F. Howe; general contractor: Beers Construction Company







Graded and terraced courtyard provides outlook and access to ground-level employe dining and is an outdoor "short cut" to firstfloor business and obstetrical wings which are over closed crawl spaces and complete enclosure of the court.



The obstetrical wing has five small nurseries, each with an anterior work room and all but one with viewing windows to bedrooms on each side.



Controlled visibility from room to room in certain areas, such as pediatrics, is achieved through curtained glass inserts in partitions.



## A MODIFIED FINGER PLAN WITH CENTRAL SUPPLY

This 150-bed hospital, planned for 50-bed future expansion, is an extension of principles developed in design of the Berwick Hospital (see ARCHITECTURAL RECORD, November, 1957). The principle embraces a centralized core of diagnostic, treatment, surgical and ancillary facilities with a finger plan of nursing services. Cafeteria is placed near the main entrance for dual use by public and patients, in line with the progressive care concept of treatment whereby ambulatory patients are encouraged to come in contact with the outside world in a normal environment. While there is some resemblance in concept to the Berwick plan, there have been improvements in traffic circulation, clean and soiled supply handling and organization. Anthony J. Monaco, Berwick administrator, was consultant to the architects of Brownsville. There are 40 long-term care beds included in accordance with the progressive care concept and with Public Health Service and Pennsylvania State recommendations which are beginning to take cognizance of the changing age distribution of general population and the probable effects of Medicare legislation. Other beds are: 76 general nursing, 16 maternity, eight dual use, five intensive care. A complete sewage treatment plant is on the property.

Brownsville General Hospital, Brownsville, Pennsylvania. Architects: Edward H. Noakes & Associates; mechanical engineers: J. B. Wyble & Associates; general contractors: Martin & Nettrour; mechanical contractor: Sauer, Inc.; electrical contractor: Daniels Electric Equipment Company.



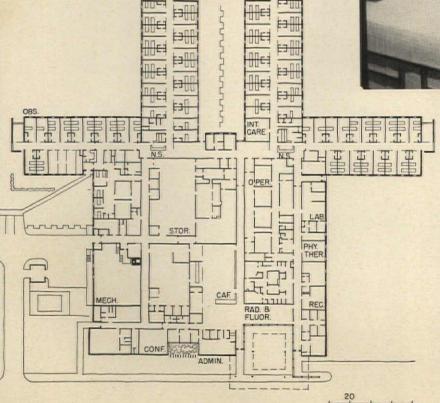


Plan provides centralized grouping of service facilities and a central dispatch system for issuance of all supplies. A partial basement contains air-handling equipment, electrical switchgear and emergency generators. Construction is steel frame with exterior bearing walls with brick facing.



Audio-visual nurse call system includes provision for remote operation of wall-mounted television and also for future physiological monitoring of each patient.



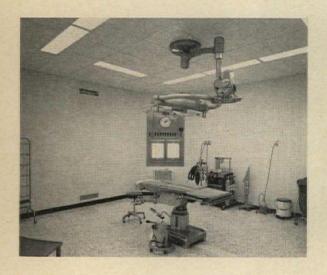


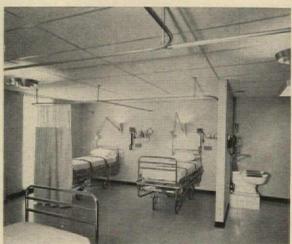




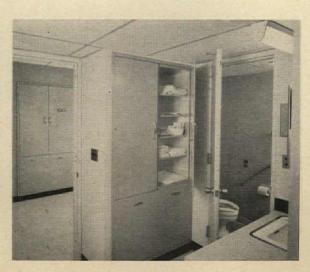
Nursing stations contain medicine preparation areas and are adjacent to doctors' charting rooms with provision of a horizontally slotted pass-through chart rack which improves doctors' visual privacy while maintaining needed chart interchange and vocal contact. Clean supplies are delivered to one side of a vertically divided pass-through closet at each patient room. Soiled supplies are periodically removed through the other side of this closet (bottom, right).

Emergency department, radiology, laboratory and pharmacy are related to each other, to the emergency entrance, and to surgery. Surgical department includes three major operating rooms and one fracture-cystoscopy room equipped as a major operating room. Interior partitioning system retains some flexibility through formed metal channel studs with screwattached gypsum wallboard. All finished interior spaces have vinyl wall covering.











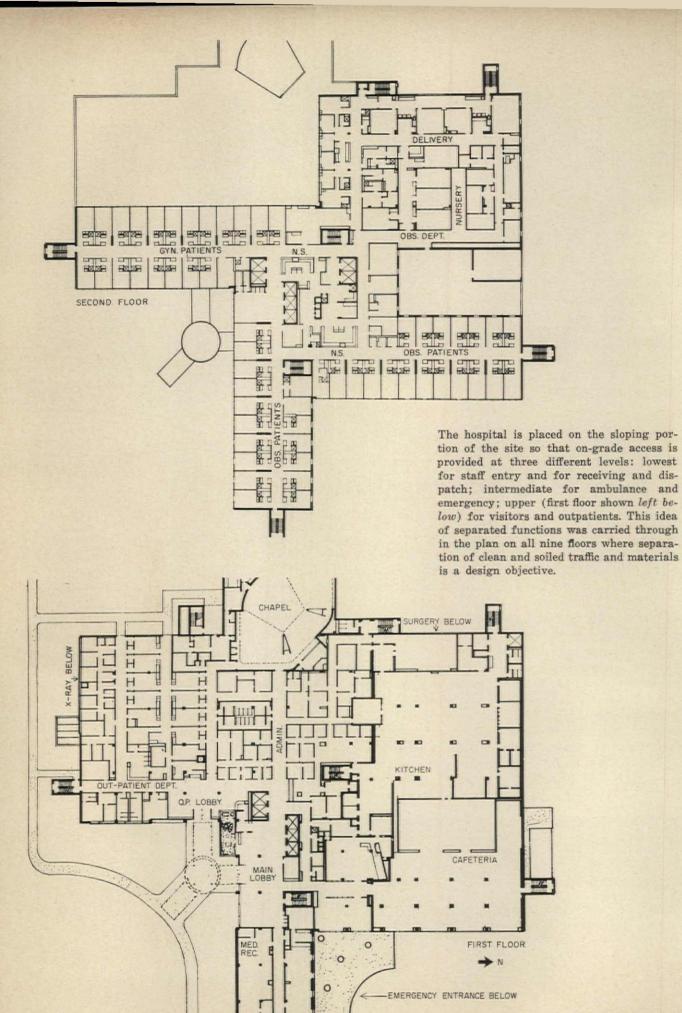
Arteaga photos

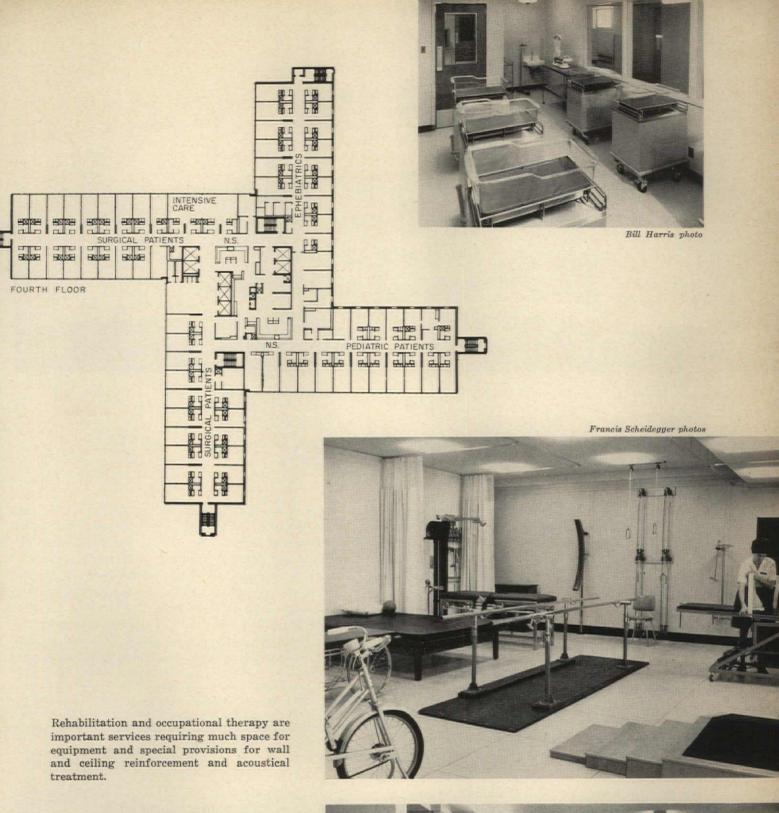
# PROGRESSIVE CARE ON A GRAND SCALE

This 600-bed general hospital for the Sisters of Mercy, the largest private hospital in Missouri, was designed to provide high quality progressive care in the face of steadily rising costs and to maintain the Sisters' tradition of personalized human service in spite of the size of the undertaking. The hospital, in fact, grew out of an existing urban hospital of 358 beds and was relocated on a 123-acre site 12 miles outside the city to permit still further expansion and the incorporation of modern technical advancements. The old hospital has been converted into a center for post-acute care. The new site is near the projected 1980 center of population of the St. Louis metropolitan region. The \$18 million complex includes the main hospital; residence and training school for 285 student nurses and technicians connected by tunnel to the hospital; boiler house; an auditorium-gymnasium; and three 12-family apartment buildings for resident physicians and interns. The site was master planned for subsequent construction of a connected convent. Human scale and warmth are design goals in short corridors of the pinwheel plan, exterior walls of vertical black porcelain framed in anodized aluminum, extensive use of color and special lighting.

St. John's Mercy Hospital, St. Louis, Missouri. Owner: Sisters of Mercy; architect: Bernard McMahon; structural engineers: Louis Krasner and Hale and Harvie; mechanical engineers: Delanry Sheldon & Associates; electrical engineers: Van & Vierse; landscape architect: Stuart Mertz; hospital consultant: Gordon A. Friesen; kitchen consultant: Frank T. Hilliker







Mechanization and control of central supply and dispatch is centered at the lowest level (plan not shown) in a virtual assembly line called Processing. Here, every supply item passes a control point on its way to the hospital working areas and is directed by automatic conveyor to its proper destination. Communication is direct to any patient room or nursing station and is part of a highly developed audio-visual electronic intercom system. The pass-through closet for soiled and clean supplies is used for each patient room.





Francis photos

### EXPANSIBILITY AT LOW COST

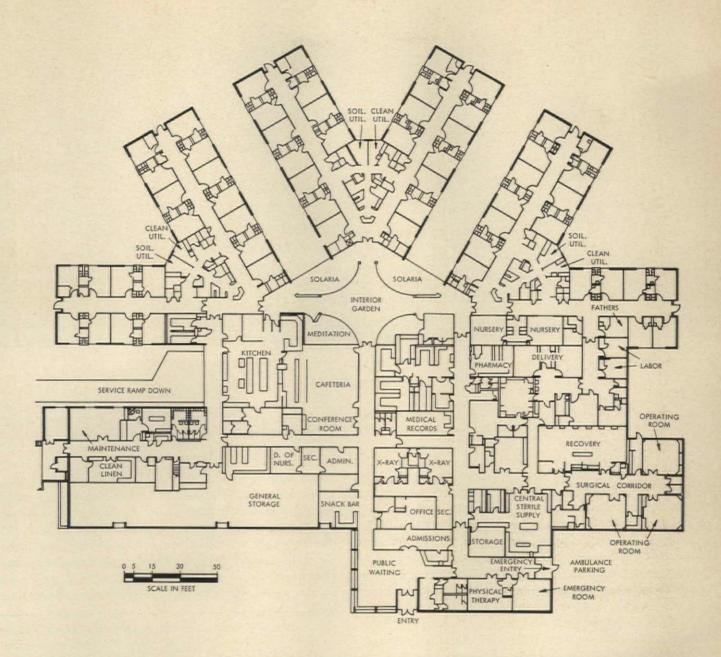
Expansibility and low cost were primary program requirements for this 100-bed hospital for a rapidly growing community 15 miles from Dallas. Administrator John M. Shaw and his board of directors also made a plea for departure from ordinary design in an effort toward "esthetic utilitarianism." In the interest of low cost, a first phase one-story plan was adopted to eliminate elevators and simplify mechanical services. Structural provision is made for both vertical and horizontal expansion to about 200 beds. A V-fingered, double loaded corridor nursing unit was devised such that a nursing station at the apex of the V would control two wings with the farthest room 70 feet from the station. There is a 10-bed obstetrical wing adjoining the core building which

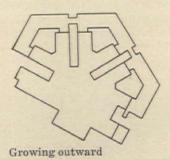
houses surgical, diagnostic and central services. This wing has access to an additional 21 other beds which are reserved for non-contagious female surgery. The hospital provides 16 pediatric, 42 medical and 42 surgical beds over-all. It has been observed that the distance from public waiting areas to patient units is perhaps unavoidably long and crosses hospital traffic. Similarly, the surgical suite is somewhat remote from patient units, although it is reasonably close to emergency and diagnostic centers. Future expansion will be by wrap-around wings or high rise.

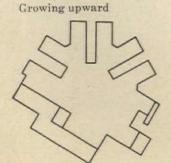
Memorial Hospital of Garland, Garland, Texas. Architects, engineers and planners: Broad & Nelson; structural engineer: R. L. Rolfe; mechanical engineers: Zumwalt & Vinther; hospital consultant: John M. Shaw

Information center in skylighted garden court not yet fully developed













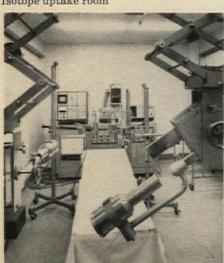
## ADVANCED TECHNOLOGY IN A COUNTY HOSPITAL

This 615-bed hospital for Los Angeles County combines unusual qualities of planning for progressive patient care and advanced therapeutic and mechanical services on a large scale at low cost. The eightstory structure includes a two-story outpatient clinic equipped to handle 9,000 patients a month and a twostory wing contains 24 separate laboratories in one of the largest such sections in the United States. Construction bids came in at \$2.5 million under a budgeted \$14 million. Design of the acute unit is on a central core nursing unit plan with patient bedrooms peripheral to the core on single loaded corridors. Bedrooms containing one to four beds face only north and south to avoid extremes of east-west solar exposure. South bedrooms are shielded by horizontal aluminum shades to reduce air-conditioning loads.

Technical and mechanical provisions include operating rooms with provisions for X-ray and closed circuit television; individual temperature and humidity control for bedrooms; five separate but functionally integrated systems of pneumatic and mechanical conveyers provide both vertical and horizontal transport of communications and materials.

Harbor General Hospital and Outpatients Building, Torrance, California. Owner: Los Angeles County; architects: Welton Becket, Adrian Wilson, Paul R. Williams, Francis J. Heusel: structural engineers: Brandow and Johnston; electrical-mechanical engineers: Levine and McCann; civil engineer: John S. Gregory; general contractor: Robert E. McKee, General Contractor, Inc.; landscape: Cornell, Bridgers and Troller

Isotope uptake room

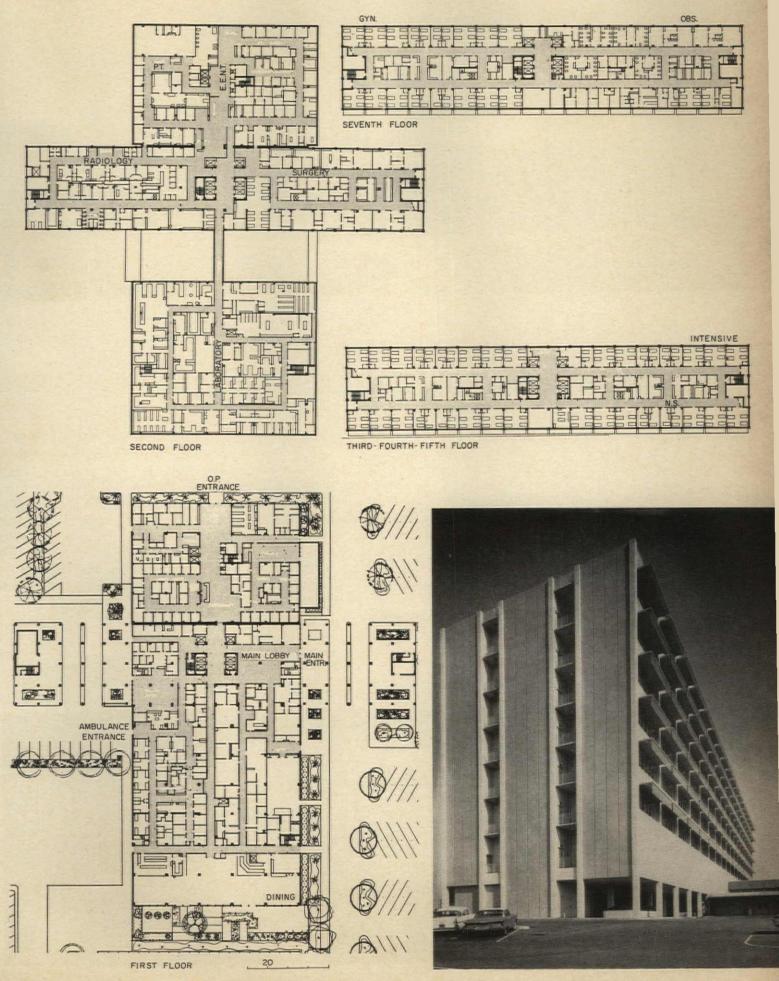


Transfusion laboratory



Major operating room





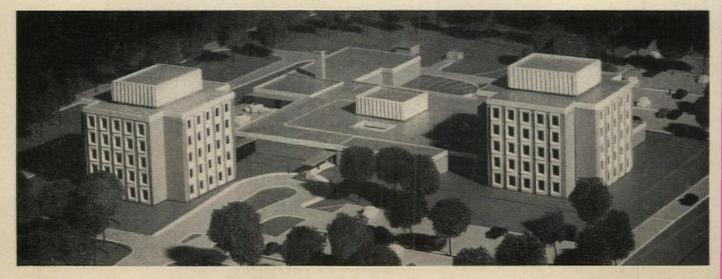


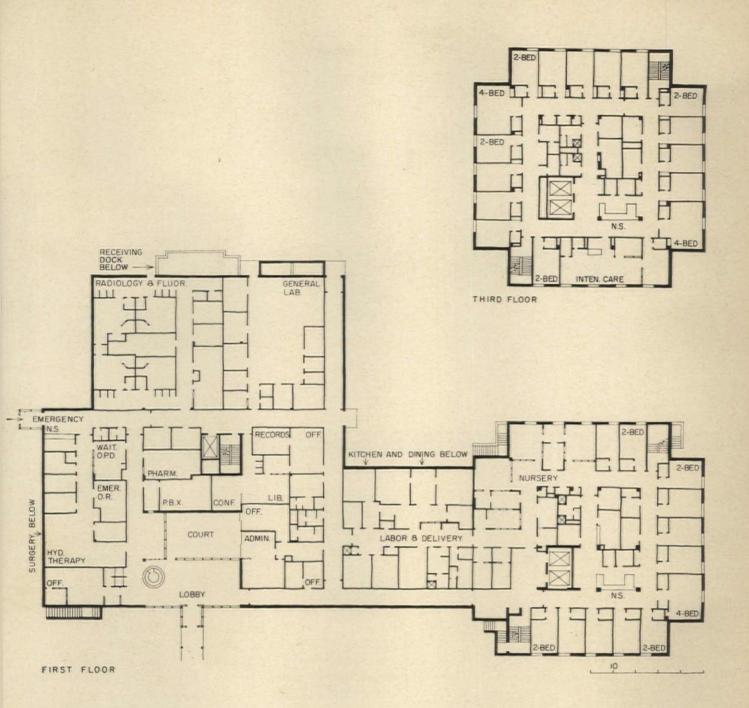
Balthazar photos

### ALL SYSTEMS GROW AT BOTSFORD

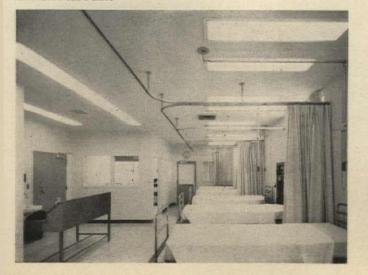
Construction has been completed on the above 202bed first phase of Botsford General Hospital which is designed for future expansion to an ultimate 500 beds. The multi-story patient bed unit is a satellite unit connected to the ancillary unit by means of a corridor on the basement and first floor levels. The future 300-bed patient wing will be constructed in a similar manner (see model below). The ancillary two-level base unit housing central services is designed so that all departments can be expanded with the least amount of expense. This permits sizing of these services without encumbering present costs for future expansion. This unit now contains at upper ground-floor level, emergency, X-ray, laboratory, administration and obstetrics. On the lower level are: surgery, kitchen and dining room, central storage and employes' facilities. Placement of surgery in the basement, remote from the present nursing wing and with its traffic past kitchen and dining areas is a compromise with future plans to place the new surgical nursing wing adjacent to surgery. The staff reports that even the present arrangement works very well under present surgical loading. The boiler house is also a satellite unit connected by corridor on the basement level. When future expansion is completed, it will include a laundry attached to the expanded boiler house.

Botsford General Hospital, a unit of Zieger Osteopathic Hospital, Inc., Farmington Township, Michigan. Architects and engineers: Smith, Hinchman & Grylls Associates, Inc.



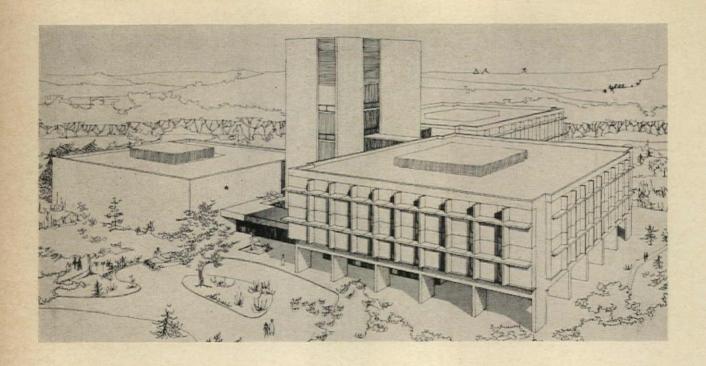


Intensive care unit

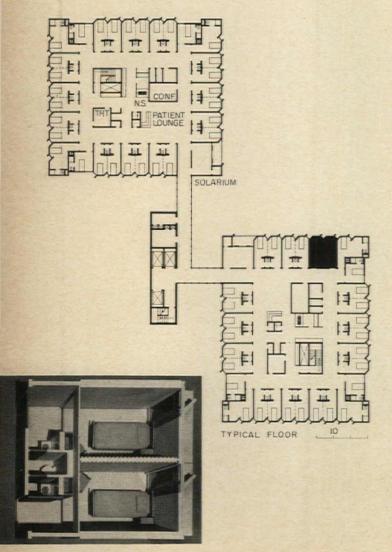


Court adjoins lobby





### NEW APPROACH TO THE DOUBLE-SINGLE ROOM



In a deliberate move away from the compact massing characteristic of many general hospitals where the arrangement of central services has dictated close coupling of functional areas, Rex Whitaker Allen and Associates have designed a physical separation of interior function in this 87-bed first phase of a general hospital, master planned for anticipated expansion to 225 beds. Separation resulted in a three-unit composition of shapes grouped around a central vertical circulation tower. Two of these satellite units are threestory medical-surgical pavilions including obstetrical, pediatrics and intensive care areas. Main floors of these units house administrative, cafeteria and kitchen services. A third unit will house the surgical suite, delivery and labor rooms, diagnostic and physical therapy, emergency and outpatient de-

The new hospital will offer patients a new kind of room called a "duo-room" in which each bed has an exterior window and separate doorway to the corridor while a soundproof folding partition between the beds permits either double or effectively single occupancy at a low rate.

Woodland Memorial Hospital, Woodland, California. Architect: Rex Whitaker Allen and Associates; structural engineers: Pregnoff and Matheu; mechanical engineers: Kasin, Guttman and Associates; electrical engineer: Mel Cammisa; general contractors: MacDonald and Nelson, Inc.

## Architectural Engineering

#### Design of Steel Columns Can Be Speeded With New Set of Tables

Structural engineers doing steel framed buildings, according to the new A.I.S.C. specification, can speed up their column design work tremendously through a new guide, "Practical Steel Column Design," by Robert E. Rapp, P.E. This guide presents 84 pages of computer-calculated column tables containing all the information needed to make a proper and quick selection of a column subjected to either axial or combined loads. Using these tables an engineer can select a column in a few minutes as opposed to perhaps an hour's time using hand calculations.

The first section of the manual contains information on column behavior, with a thorough explanation of the effective length factor, K. (The introduction of this factor, together with the necessity for taking into account column bending in both directions, had made steel column design increasingly difficult.)

The manual explains the K factor and gives rational approaches for applying it in normal engineering practice. Also methods of designing proper bracing requirements as related to the effective length factor are explained, as well as the interaction formulas.

Robert Rapp, formerly New York Regional Engineer for the New York Institute of Steel Construction, participated in research and development for the new (Sixth) Edition of the A.I.S.C. manual.

The guide, now on press, will be available for \$3.90 from M. T. Hughes Company, 418 Broome St., New York, N.Y. 10012

#### To Spread Total Energy

An Energy Information Center—a clearing house for technical data relating to total energy systems—will be established by the natural gas industry as part of a massive effort to promote the installation of gas-fired engines and turbines for the genera-

tion of electricity and other prime mover applications.

The five-year program, which is expected to cost slightly more than \$1 million, will be administered by a newly-formed organization, the Group to Advance Total Energy, or "GATE." Twelve gas companies have joined in the formation of "GATE."

## Program For Underground Wiring In Residential Areas

The Copper Development Association has established an information program on underground residential electrical distribution that is designed to furnish statistics, case histories, and technical information to all those interested in underground residential wiring. This program will be headed by Paul M. Heilman, C.D.A.'s Electrical Product Market Development Manager. The Copper Development Association, Inc., has headquarters at 405 Lexington Avenue, New York, N. Y. 10017.

U.R.D. has gained impetus from the expressed interest of the White House in beautifying the American Landscape.

#### Wind: Not Enough Known About How it Affects Structures

The problem of designing buildings to resist wind has become more acute recently as buildings have grown taller, building frames frequently more flexible, and building enclosures less conventional. The problems are manifested in cracked partitions (when building frames have been too flexible), large lights of glass blown in or sucked out, and roofs ripped off.

The fact that pertinent research and many analytical studies are in progress, but that much more is needed, is apparent from a review of the published proceedings of the conference, "Wind Effects on Buildings and Structures." This international meeting, believed to be the first of its kind, was held two years ago at England's National Physical Labora-

tory. During the three-day conference, 24 papers were presented on: design wind speeds, wind structure, wind loads on full-scale buildings, experimental determination of wind loads in wind tunnels (mostly French authors); wind clauses in codes of practice and the response of structures to gusts.

In discussing wind-pressure measurements on a 15-story building in London, C. W. Newberry of England's Building Research Station stated that: "Positive pressures appear to build up rapidly and to act simultaneously over large parts of the surface, while the principal suction peaks, which occur with the wind at a glancing angle to the face of the building, appear to be of very short duration and to act over small parts of the surface only at any one instant. The major short duration pressure changes are linked with changes of wind direction caused by turbulence rather than by changes in the speed of the incident wind. This suggests that a new approach may be desirable in the consideration of gust factors, and that there may be important differences between the effects of the natural wind and the steady conditions used in wind-tunnel testing."

Copies of the proceedings are available from the British Information Services, Sales Division, 845 Third Avenue, New York, N. Y., for \$12 a set.

#### Engineers' Image High in Public Eye

A Gallup survey sponsored by the National Society of Professional Engineers has shown that engineering is topped only by medicine in terms of public esteem. While engineers ranked second, there was widespread lack of understanding as to what engineers actually do.

Respondents in the Gallup sampling were handed a card listing nine professions, and asked: "Suppose a young man came to you and asked your opinion about taking up a profession. Assuming that he was quali-

fied to enter any of these professions, which one of them would you first recommend to him?" A total of 33 per cent said doctor, 18 per cent said engineer, and 11 per cent said scientist.

Next in order was lawyer, 7 per cent; clergyman, 7 per cent; dentist, 5 per cent; professor, 4 per cent; government administrator, 3 per cent; and banker, 2 per cent.

#### Course in Acoustics

Acoustics will become a full-fledged graduate degree program at The Pennsylvania State University this fall. Penn State will offer a program leading to a degree in acoustics. Both the master of science (M.S.) and doctorate (Ph.D.) degrees will be offered in Engineering Acoustics through the University's Graduate School.

## Fire Safety Study on Combustible Materials

The Plastics in Construction Council of The Society of the Plastics Industry, Inc., has contracted with Illinois Institute of Technology Research Institute for a general study of building design and occupancy as related to fire safety considerations of combustible building and furnishing materials.

This was announced by Jay G. Somers, Construction Council Chairman. The project is to be both exploratory and experimental, according to Dr. Russell B. Akin, Chairman of the Council's Research Committee. The first phase is to begin soon, with several roundtables of building, fire and insurance officials, architects and testing organizations. As needs for additional information are defined, experimental work will be undertaken by Illinois Institute of Technology or by other laboratories with facilities and experience.

The project will be supervised by Professor Gerald L. Maatman, Director of the Fire Protection and Safety Engineering Department of Illinois Institute of Technology.

The study will range over many principles of building design and include combustible materials other than plastics. This is because the companies in the plastics industry today supply such diverse things as flame retardants for wood, adhesives for laminating plywood, strengthen-

ing agents and moisture barriers for concrete.

A major aim of the project is to define practices and materials tests so as to provide a centralized guideance to the many building codes.

#### The Energy Situation: What it Will Be in 20 years, 200 Years

Two hundred years from now, approximately 30 per cent of all energy consumed in the U. S. may be derived from solar energy—this development was predicted by L. P. Gaucher of the Scientific Planning, Research and Technical Department of Texaco, Inc., at this year's Solar Energy Society Conference. Some closer range predictions: "For the coal industry, things look rosy . . . due to the expected vast increase in electric power generation, coal consumption is expected to increase rapidly.

"Even though there is an abundance of it now, natural gas probably will be the first source of energy to become short in supply . . . it is probable that sometime after 1980, the natural gas supply will begin to pinch."

After noting that the peak of consumption of natural gas could be expected to occur about 1990, the author predicted that even before this time we will see a small amount of high Btu gas, i.e., "natural gas equivalent," to be made by the gasification of coal and oil.

At first, he suggested, this gasification will be done in a small way for peak-shaving purposes, but as natural gas becomes scarce and more expensive, the gas pipelines and distribution grids will be fed more and more with high Btu gas from coal (or from coal and oil) just as it used to be in the "manufactured gas" days.

An interesting question is: when this time comes, how much coal will be used for electric power generation and how much for manufactured gas?

#### **Environmental Research**

Research into the "total environment" has been given impetus in England by a research grant to the University of Liverpool from Pilkington Glass Company. A Pilkington Research Unit has been set up to undertake a series of studies of the environment within a number of building types. A study on factories was completed and a report issued in 1962, and this has been followed by research into office buildings, the results of which have just been published in the form of a 160-page report, price 30s, called "Office Design: A Study of Environment."

The office building study was carried out by a multi-disciplinary research team, consisting of an architect, a psychologist, a geographer and a physicist.

The first part of the report summarizes present findings and existing trends in office design, while the latter part reports on a detailed study of a recently completed contemporary office building in Manchester, and the reactions of the staff to their new environment.

The reader will not find any startling new discoveries, but will undoubtedly be impressed by the amount of ground the report covers; if it does not offer solutions to the problem of designing an ideal office environment, it does in any case illustrate convincingly the complexity of the problem.

A study of this report and other recent environmental studies suggests that environmental research in the future will have to concentrate much more of its effort on devising a disciplined research methodology. While a detailed and complete observation of an environment is essential, it is also important that the results be formulated in such a way as to make possible some objective evaluation of the data, with a view to the eventual formation of valid design principles.

## This Month's AE Section

Welded Apartment Framing Cuts Costs, page 223.

What Belongs in Acoustical Specifications, page 227.

Building Components: Use of Turntables in Buildings, page 235.

Product Reports, page 237.

Office Literature, page 238.

## WELDED APARTMENT FRAMING CUTS COSTS

By Horatio Allison, Horatio Allison Associates, Structural Engineers

Welded continuous steel framing has been receiving increasing recognition as an economical structural framing system for multi-story apartment buildings in the Washington, D.C., area. The typical residential apartment building in the District is between four and 10 stories high, although some higher apartments have been built.

The steel-framed apartment structure is considerably lighter than its equivalent concrete structure. For example, in a typical 10-story apartment building with normal bay size, the interior column loads are approximately 40 per cent less than those in a comparable concrete building. For this reason, spread footings are usually feasible under a steel framed building, while mat, pile or caisson foundations are normally required under the concrete building area in Washington, D.C.

The Oakhill Apartments project, which we are now designing, is of special interest because welded steel construction made it possible to use spread footings on a site that was sold as a pile site, i.e., the price of the land was reduced \$500 per unit below the going market price for the 1,000 units involved.

#### Regular Bay Spacing

Good architectural planning is essential to an economical structural design. One of the primary considerations should be regular bay spacing, even though this may require some architectural compromise. A varied appearance can be achieved by offsetting the bays, but retaining the essential regularity which leads to repetition of framing members.

Various owners have discovered that apartments with balconies rent considerably faster than those without balconies. Many types of balcony details are possible with steel framing. Careful attention to design is required, however, to achieve economy and to assure proper clearances for windows and provide proper drainage.

The first welded building we de-

This article is based on a paper given at the A.I.S.C. National Engineering Conference in Memphis earlier this year.

signed had an undesirable balcony support detail which we corrected on subsequent buildings. Heavy seat angles protruding from the building were used to support balcony cantilever beams. These interfered with the window work, and caused plastering problems at interior columns where partitions did not occur. The use of Saxe clips plus butt welded connections took the place of the seat angle detail.

Flush ceilings are easy to achieve in steel-framed buildings. This materially contributes to the total economy of the building. Girderbeams are kept shallower in depth than the joists, and if nailable channels for fire-rated dry wall or rib lath for plaster are used, the ceiling construction passes smoothly below

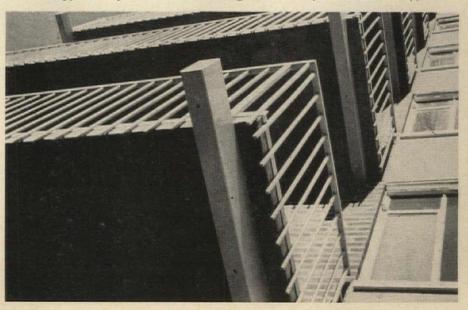
the girder beams. For practical purposes, this detail is impossible to achieve in simply framed steel buildings unless the beam span is short compared to the joist span.

#### Structural Design

When we originally experimented with the design of welded apartment buildings, our approach was to use essentially the same design techniques we had used for concrete frames. We found that a two-cycle moment distribution system was accurate within a few per cent for most conditions. In fact, it was found that the two-cycle method is generally more accurate for steel than concrete, since the column-to-beam stiffness ratio is generally greater. As with all design proce-



Regular bay spacing is essenial to economical welded framing, above. Balconies can be supported by cantilevered rectangular tubes (with drain holes), below.



dures, however, the designer must be familiar enough with his own work to recognize a condition which requires a more rigorous analysis.

#### **Welded Connections**

When our firm first became involved in welded apartment framing, I was reluctant to believe that the beams could be cut to a tolerance that would allow effective fillet welds for shear. I didn't consider the fact that if the beam was too short it could be placed adjacent to the column at one end where fillet welds would be used, while at the other end a square butt weld could be used. If the beam was even shorter, square butt welds could be used at both ends.

#### Lightweight Concrete

We have also found that since the use of a semi-lightweight concrete floor fill will generally reduce the joist weight one size, this will more than pay for the lightweight concrete and the savings in beams, columns and foundations will be real.

In our opinion, if the cost of lightweight concrete is \$2.50 to \$3.50 per yard more than stone concrete, the lighter material should be used since it results in a seven per cent reduction in total load in the lower columns where live load has been reduced. This is a significant difference and should be considered.

#### Use of High-Strength Steel

Steel work for our first apartment project weighed about 8½ lb per sq ft, including beams, columns and open web joists with an erected cost of about \$1.25 per square foot. But in a later project, the use of A-36 steel reduced the total weight to about 7.7 lb per sq ft.

A fully welded, high-strength steel frame will have much stiffer floor beams even though their moments of inertia may be less than half that of simply framed beams. For instance, a typical simply framed beam for one of our apartment projects would have been a 10 WF 25 with a total deflection of .64 in. and a live load deflection of .43 in. The welded 8 WF 17 floor beam has an approximate total load deflection of .38 in. Thus it is apparent that a welded high-strength beam will be considerably more rigid than the larger beam it replaces.

The 10 WF 25, A-36 simply framed beam for Oakhill Apartments, now



The Madison Apartment uses a practically uniform bay spacing in each wing. The joist and structural steel weight, including columns, was only 6 lb per sq ft and the erected price of steel was \$108,950, or 90 cents per sq ft.

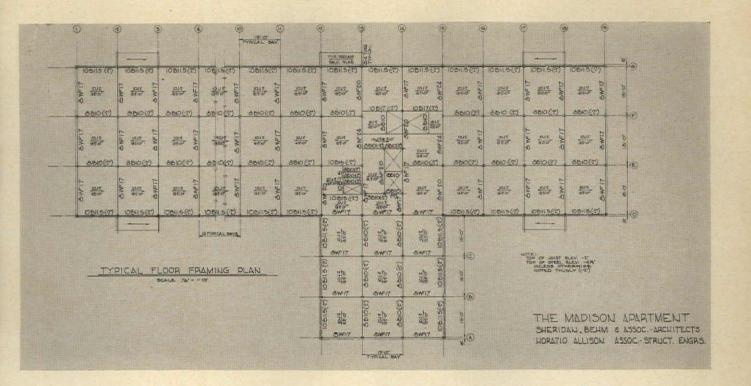


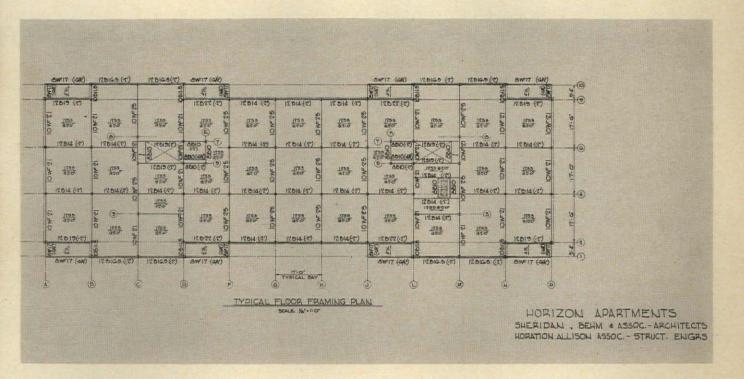
Horizon apartments is framed in A-36 steel with 8 WF columns and 10 WF beams. Uniform bay sizes were used for framing, but modified by offsetting end bays, producing a slight variation in plan and breaking up an otherwise flat facade.

being designed, would cost 21 cents per sq ft using an erected price of \$280 per ton. For continuous framing, the 55 Ksi 8 WF 17 would cost 17½ cents per sq ft using a high erected price of \$340 per ton.

Since the Oakhill Apartments has not been bid, or built, I cannot show actual costs, but on a similar project, a 100 unit building with approximately 121,000 square feet of framed area, there were 143 tons of open web joists and 220 tons of structural shapes which were erected in place for \$108,950 dollars. This is equivalent to a joist and structural steel weight (including columns) of 6 lb per sq ft and an erected price of 90 cents per sq ft.

The loading conditions we assume in our design are almost impossible to achieve, in practice. Generally, from the first interior row of columns to the exterior wall, there are





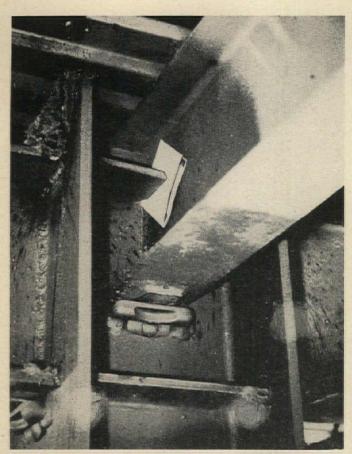
few partitions, and the middle bay generally has many partitions. Our loading criteria, 40 psf live load and 20 psf partition load on the exterior span with neither live nor partition load on the interior span, is a loading condition for maximum column moments that is for practical purposes impossible to achieve. For the opposite of this loading condition to occur on the adjacent floors is, again for practical purposes, impossible.

#### Computer Calculated Tables

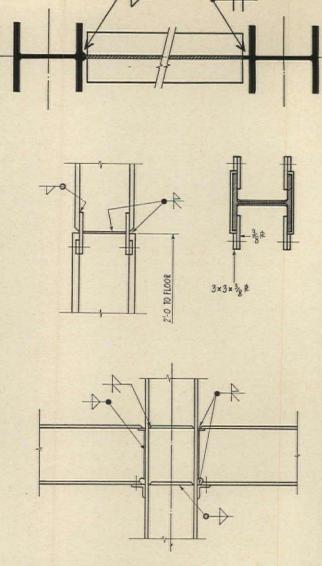
Designing columns with substantial moment has always been a problem since there has been no direct solution. The 1961 A.I.S.C. Code and the 1963 revision has made the problem even more acute with the introduction of new and more complicated concepts. For the design of columns in tier buildings, we felt that it was absolutely necessary to reduce the hard bullwork required. We con-

cluded that the only reasonable solution was to prepare column tables on a computer showing the allowable moment with a specified load.

Our firm has prepared a column "book" that covers the 8-in.-wide flange sections adequately for our design needs. We have tabulated loads and moments for 10 lengths, 8K's and three yields. Since each condition requires two sides of a page, this set yields a 480-page



If a beam is too short for fillet welds at both ends, a square butt weld can be used for shear (top drawing). Typical column splice is shown in the center drawing. Beam to column connection is illustrated in the bottom drawing. The photograph shows a missed full penetration butt weld (pieces of cardboard slipped into the gap).



book. A complete set of books for various size columns would come to about 5,000 pages at a cost of about \$1.00 per page. Being a small firm, we cannot afford to prepare such a volume for ourselves. We simply go to the computer center and get any combination of length, K's and yield we need. The only factors which we do not consider in the column tables is  $C_b$  which we take conservatively as unity,  $K_y$  which we take as one, and  $C_m$  for which we use .85.

Any discussion of welded steel frames without some reference to the effective length factor "K" would be incomplete. Here consulting engineers have a complete new design criterion. The January, 1964 issue of the A.I.S.C. Engineering Journal had an article by Ted Galambos of Lehigh University entitled "Lateral Support for Tier Building Frames". This article gave a logical design criteria for lateral stability by either steel rod "X" bracing, or required thickness of masonry walls. We have come to the conclusion

that, for economy, bracing of one kind or another should be used so that K=1 wherever possible.

#### Beam and Column Connections

The detailing, fabrication and erection of a welded steel building can be made very simple if the condition of regular bays has been met. The Madison, which is really a relatively small building, has approximately 300 beams detailed on one sheet.

We have had more problems with column splices than any other joint. The welder in the field knows that columns are compression members and resists making full penetration welds, i.e., it is impossible to get them to back-gouge and make the back up passes. We now have the columns detailed with a gap so that a full penetration weld has to be made. Inspection of welded construction is something we insist on. We make it a practice to hire an inspection agency and then check their work ourselves.

The photo shows a missed full

penetration butt weld joint through which I was able to stick two pieces of cardboard. This was but one of many such joints in this building. At the time this picture was taken, I had a final report certifying that the job was properly done. It is obvious that the design engineer, or an engineer in the office familiar with the design requirements, must inspect the job personally.

We recently completed a 15-story building in Fairfax County, Virginia, utilizing many of our techniques. The lateral loads are resisted by "X" bracing. The total weight was about 712 psf with a low cost of less than \$1.25 per sq ft.

In closing I would like to add that, basically, our philosophy is that while we want to choose the proper beam and column sizes, we are not especially interested in refining our calculations to the extent that they are more accurate than is justified by the unknowns introduced by live loads, live load reductions and wind loads.

### WHAT BELONGS IN ACOUSTICAL SPECIFICATIONS

By Ranger Farrell

Problems involving excessive sound transmission, excessively high noise levels and excessive reverberation in buildings can be prevented in two ways. The first way is through careful design and detailing on the architect's drafting board. This first method is applicable when the architect is accomplishing his acoustical goals through the use of conventional building materials. The second way is through precise and tightly worded specifications. This approach is applicable when dealing with a factory manufactured and assembled product such as an air-conditioning compressor or an acoustical tile. The second approach is also applicable with fieldfabricated products such as acoustical plaster where installation techniques will cause the product's acoustical efficacy to vary from job to job.

In many instances an architect is called upon to design occupancy spaces within buildings designed by other architects, mechanical engineers, etc., and must protect his client from acoustical problems caused by the building owner's equipment or nearby tenants. This can hopefully be accomplished by the preparation of carefully worded lease clauses limiting acoustical intrusion of various sorts by the building owner and the other tenants.

It is the purpose of this article to outline some of the available technology related to acoustical specifications and lease clauses. Unfortunately, it is also necessary to point out some of the limitations in implementation of this material.

Listed below are some of the matters which are covered in acoustical specifications:

- 1. Noise of self-powered equipment, i.e., air compressors, fans, fan coil units.
- 2. Noise of air-powered equipment, i.e., diffusers, induction units.
- 3. Sound transmission through partitions, doors, ceiling and floors.

The author is head of the consulting firm, Ranger Farrell and Associates, Tarrytown, New York, specializing in acoustics. He also is an assistant professor of architecture at Cooper Union for the Advancement of Science and Art.

4. Sound absorbing properties of various prefabricated and site-fabricated materials, i.e., acoustic tile, acoustic plaster.

5. Vibration, which is acoustical energy in structures which may be felt by the sense of touch or be heard by the ear, such as that generated by subway trains, air-conditioning compressors, and so on.

One general comment before getting down to details-many specifications which come into our office for review state that a machine or device should be made in such and such a way and shall provide a certain acoustic performance. Often, unfortunately, this combination of a descriptive specification and a performance specification is self-contradictory. In other words, the item described often is not capable of performing in the way the specification requires. Undoubtedly, the only way to overcome this is to limit oneself to one form of specification or the other and never use both simultaneously.

The selection of a descriptive or performance specification must be established by many criteria. If the product being described in the speciPart 1: Mechanical Equipment

fication is a standard item, as opposed to a product custom made for a particular project, the descriptive specification is undoubtedly the easiest for the manufacturer to meet.

When the item is to be custom made, a performance specification leaves the design in the hands of the manufacturer. If the product involved does not show in the completed building, there is little doubt that everybody is best served by a performance specification. However, when the product is to be exposed, and is to be custom-made, as for example an air-conditioning diffuser (this situation has arisen in many modern office buildings, with slotted T-bars used both to support the acoustic ceiling and as the air diffuser) a conflict arises because the architect cannot allow the manufacturer complete freedom in the visual design. On the other hand he should not impose such severe limitations on the manufacturer that he cannot meet a performance specification. Undoubtedly, with projects of this nature the end result must be negotiated with the manufacturer.

Performance specifications written

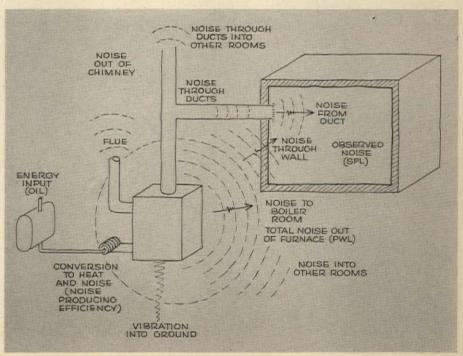


Figure 1: Acoustical specifications must distinguish between sound power level (total sound energy output) of a piece of mechanical equipment and sound pressure level (sound energy measured in the room after attenuation and absorption).

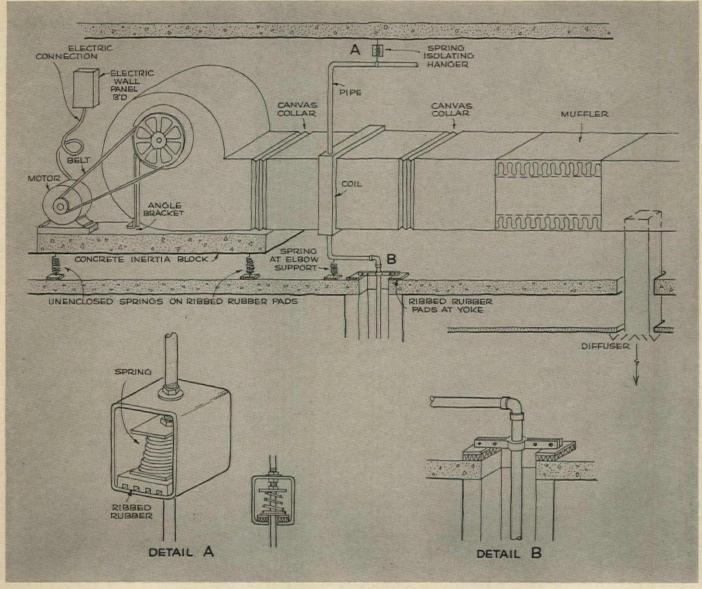


Figure 2: Some of the acoustical devices for preventing the transfer of vibration from a fan and its motor.

about any of the five kinds of acoustical devices listed above can be divided into five parts.

The first of these deals with the scope of the specification.

The second is a statement of the required performance in objective, intelligible terms.

The third requires of the bidder a proof-of-performance capability and a statement of the method by which his data have been obtained.

The fourth establishes the method by which the owner and/or architect/engineer will establish whether or not the product, as installed in the completed building, conforms to the requirements of the specification.

And finally, the fifth paragraph specifically states who will assume the responsibility if the product does not meet the specification.

The second and third paragraphs of the specification, performance data and the bidders statement of capability, often may be replaced by a statement requiring data of such and such a level, measured and reported according to "standard no. XXT61" where an appropriate and acceptable standard is available. The existing standards associations. whose acoustical standards can be considered the most reliable currently available, are the International Standards Organization (I.S.O.). American Standards Association (A.S.A.) and the American Society for Testing Materials (A.S.T.M.). A number of industry groups have prepared or are preparing acoustical standards and test procedures of excellent technical quality. Among these are the Acoustical Materials

Association (A.M.A.), American Society of Heating, Refrigerating, and Air Conditioning Engineers (A.S.H.-R.A.E.) and the Air Diffusion Council (A.D.C.).

#### Self-Powered Equipment

Self-powered equipment is often located within an enclosure designed by the architect. For this reason the noise of that equipment, as heard by building occupants, will be modified by the construction of the enclosure. The manufacturer of that equipment therefore cannot be solely responsible for the satisfaction of the building occupants. For this reason the architect and his engineers and consultants must predict on the basis of known wall constructions, sound absorbing materials, etc., what the maximum allowable sound levels are

within the room. As is pointed out later in the paragraphs discussing acoustic power levels, it does not make sense to write the specifications in terms of sound pressure level unless it is expected that the manufacturer will include sound-absorbing or other noise control treatments within the room. It is normally, of course, the duty of the architect to accept the responsibility for the complete design of the room. For this reason the performance requirements should be stated in terms of the acoustic power level as a function of frequency.

One of the more difficult areas in the specification of self-powered equipment within enclosures is the limitation of transmitted vibration to acceptable levels. The eventual freedom from vibration in the completed building will be the responsibility of several subcontractors, installers and manufacturers.

For example, in the case of a reciprocating refrigerant compressor, if it is adequately isolated from the building structure, the general contractor may have had to prepare an isolated concrete inertia block, the vibration mounting sub-contractor to have had to install spring isolators to receive the machine, the plumber will have had to provide flexible couplings in his pipes, and finally, the electrical contractor has had to install flexible conduit between his wall box and the compressor drive motor.

Although the specification can be addressed to the general contractor, who in turn is responsible for selecting suitable components for each of the trades, it is not normally considered within the province of that contractor to employ technical consultants familiar in detail with the vibration isolation requirements imposed. It is almost always assumed that the technical consultations will be handled at the architectural or mechanical engineering level. For this reason, specifications covering each of the contracts are the only vehicle to transmit the recommendations of the technical consultant.

In the case of self-powered equipment which is exposed to the room, the architect must establish the difference anticipated between the sound pressure level and sound power level. This is clearly not the role of the manufacturer. Thus again it is necessary to state the performance requirements in terms of the power

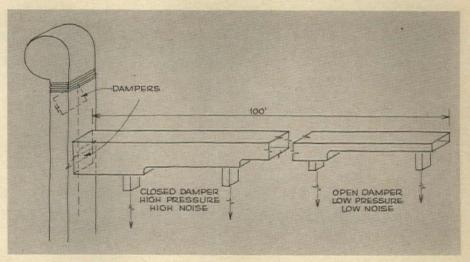


Figure 3: When a duct run is too long, the necessity of closing down dampers at the beginning of the run is likely to produce an undesirable amount of noise.

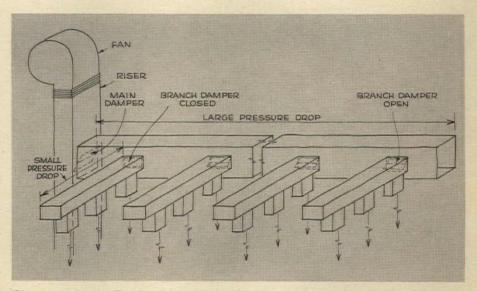


Figure 4: The air distribution system in Figure 3 could be redesigned so that fewer terminal outlet are provided on each run, avoiding the noise probem.

level. With the manufacturer's responsibility to meet the power level specification for exposed equipment lies one of the most interesting aspects of noise specification writing.

Taking a device such as a unit ventilator as an example, the industry is sufficiently competitive, at least so far as noise generation is concerned, that all unit ventilators are by and large the same. Often the noise levels generated by unit ventilator, say in a classroom, are acceptable but slightly higher than ideal.

If one writes a specification limiting the noise levels to the ideal condition, the manufacturers have only two choices—first, to bid the job knowing that they cannot conform to the specification or, second, to modify components to meet the specifica-

tion. Because of the tooling and labor costs, no manufacturer really dares to bid on the basis of meeting the specification. Unfortunately, this condition has arisen because the owner and/or architects have not been rigorous in enforcing the conditions of acoustical specifications.

The history of nonconformance to acoustical performance specifications is so long lived that it appears necessary to include a phrase such as "no bids will be accepted unless they contain documented evidence of ability to conform to the following performance requirements." Such a phrase would obviously make all of the manufacturers aware that a bid based on their product line will not be accepted by the owner or architect if it cannot meet the stated requirements.

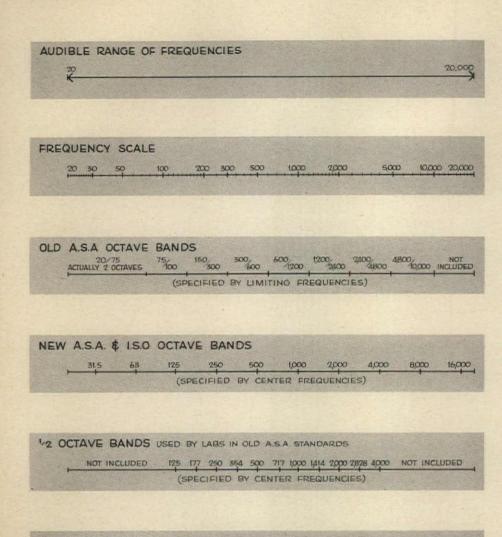


Figure 5: Comparison of the various frequency scales in common usage.

#### Air-Powered Equipment

The specification of acoustical performance of air diffusers, grilles and induction units is almost identical in principle to that for self-powered equipment. The primary difference is that the mechanical engineer has a major responsibility.

Most problems due to the operation of air-powered equipment are caused by poor design or faulty installation. Poor design (the selection of undersized units to deliver excessive amounts of air) is actually executed by the mechanical engineer, but often under strong pressure from the architect, who wants small, unobtrusive-looking devices. The manufacturer cannot be expected to perform magic and, say, quietly deliver air at 1,000 cfm through a 20 sq in. opening. On the other hand, the problem of proper balancing is in the combined hands of the mechanical engineer and the sheet metal contractor. Improper balancing can occur as a result of poorly layed-out ducts, incorrectly installed ducts, improper fan selection or improper fan installation, i.e., wrong sized sheaves.

One example of improper design is shown in Figure 3. Frequently a large number of diffusers or induction units are placed at regular intervals along a very long duct. Thus, units nearest the fan room are subjected to air pressures sufficiently great to drive air the entire length of the longest duct run. On the other hand, the most remote units are subjected to pressures just sufficient to drive the required amount of air. (In fact, very frequently the remote diffusers do not have enough pressure and it is not possible to deliver the required amount of air.) In such a case, the velocity of flow at those nearest diffusers must be limited by closing the unit damper.

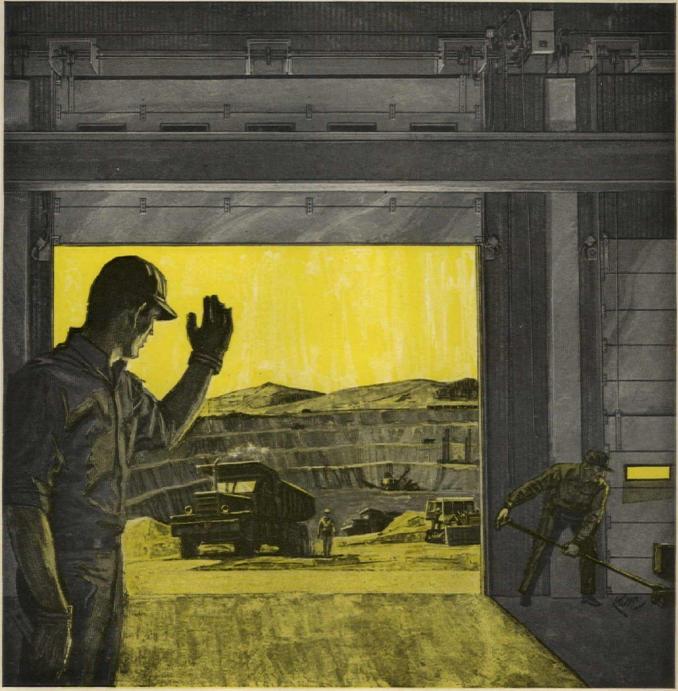
It is recommended that a duct run of this sort be redesigned as shown in Figure 4 limiting the number of devices on each branch to a number (or spacing) which is sufficiently small to permit only small pressure differences from the nearest to the farthest. Ideally, the difference between the pressure drop of the first unit and the pressure drop of the last unit should be on the order of .02 in. H.O. To provide balancing of the system it is recommended that volume dampers be placed on each branch. It is, of course, possible to omit the volume damper on the last branch and control the pressure and flow through this branch by means of a master control damper probably located in the mechanical room. The first branch damper(s) may, of course, generate some noise. It is, therefore, desirable to install a length of lined duct immediately after each of the branch dampers.

For some installations it is desirable to specify both a top limit (to keep the device from being too noisy) and a bottom limit (to provide some masking noise) to the allowable sound levels. The duct layout described above permits achieving the desired result. This is done by opening the branch dampers a certain amount and closing down all of the diffuser dampers a similar amount. This can be adjusted to provide the correct amount of noise after the completion of the building, provided: a) There is sufficient pressure in the last branch to permit closing the dampers down, and-

b) The dampers are all accessible.

#### Frequency Dependent Data

Within the various standards groups mentioned in a previous paragraph. as well as a number of other organizations interested in this field, are a number of people who have been campaigning strongly for "one-number" rating systems for the noises generated by various devices. Several other one-number rating systems have been in use for some years. As an example, the now defunct N.F.M.A. fan rating system used an "A" scale sound level meter reading to rate various fans. It is conceivable that in the future we will know enough about the acoustical behavior of devices such as fans and the subjective response of building occucontinued on page 242



Multiple-leaf "OVERHEAD DOOR" stands up in Iron Range Country.

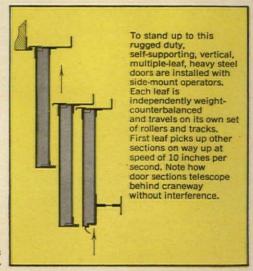
# A rugged problem in dependability solved by new "OVERHEAD DOOR"

You may never have to dig into the rocky problems of such massive doors requiring such unusual dependability. But most architects do run into a stubborn vein of closure problems from time to time. When you do, our Architect Design Service can help you solve them with skill and imagination, and The "OVERHEAD DOOR."



#### OVERHEAD DOOR CORPORATION

General Offices, Manufacturing Division: Dallas, Tex. Factories: Hartford City, Ind.; Salem, Ore.; Athens, Ga.; Oxnard, Calif.; Cortland, N.Y.; Hillside, N. J.; Lewistown, Penna.; Nashua, N. H. In Canada: Oakville, Ontario.



## Now you can subdue radiant heat at window areas with PPG Feneshield fabrics

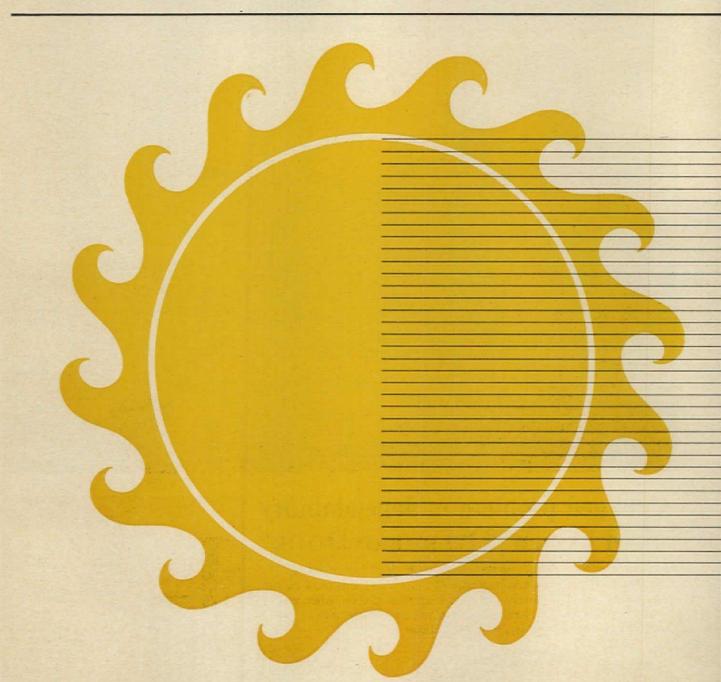
The sunny side of any building on a clear day presents the problem of controlling the amount of heat entering through vision areas. Building occupants working closest to window areas can be uncomfortably warm. If the air conditioning is increased to make them comfortable, people further back from the windows may be too chilly.

One way to handle this problem is to contain the heat at the window by means of Feneshield-fabric window treatment and heat-absorbing vision glass before heat can affect the interior climate.

Mechanical shading devices do limit transmittance of the sun's radiation by reflecting much of it back to the outdoors. But they also tend to absorb the heat they intercept and reradiate it inward.

A practical and economical solution to radiant heat control is the use of Feneshield fabrics, made of PPG Feneshield® fiber glass yarns. Tests conducted by PPG show that Feneshield fabrics produce an astounding reduction in solar heat.

A large percentage of radiant heat from the sun is reflected back to the outdoors by the Feneshield treatment. Heat absorbed by the fabric is removed largely by contact with conditioned air. Very little heat is reradiated inward. Uniform interior comfort is maintained right up



to window. And, of course, air conditioning loads are reduced.

Get technical facts. Results of PPG tests on Feneshield fabrics and other shading devices are yours for the asking. This research has produced a new system, based on fabric characteristics, which provides a scientific method for selecting fiber glass draperies to meet any given environmental control need.

Through the Feneshield rating system, you can also choose Feneshield fabrics to control glare, improve acoustics, enhance a good view or modify a bad one. Moreover, Feneshield fabrics offer you substantial savings in mainte-

nance over other types of shading devices.

Personal help for you. Participating Feneshield fabric drapery converters have authorized drapery fabric presentations which show the wide range of fabric weaves and colors available. They can help you select fabrics for specific installations through the use of PPG technical data. Write PPG for names of converter representatives near you and for technical information. Use the coupon.

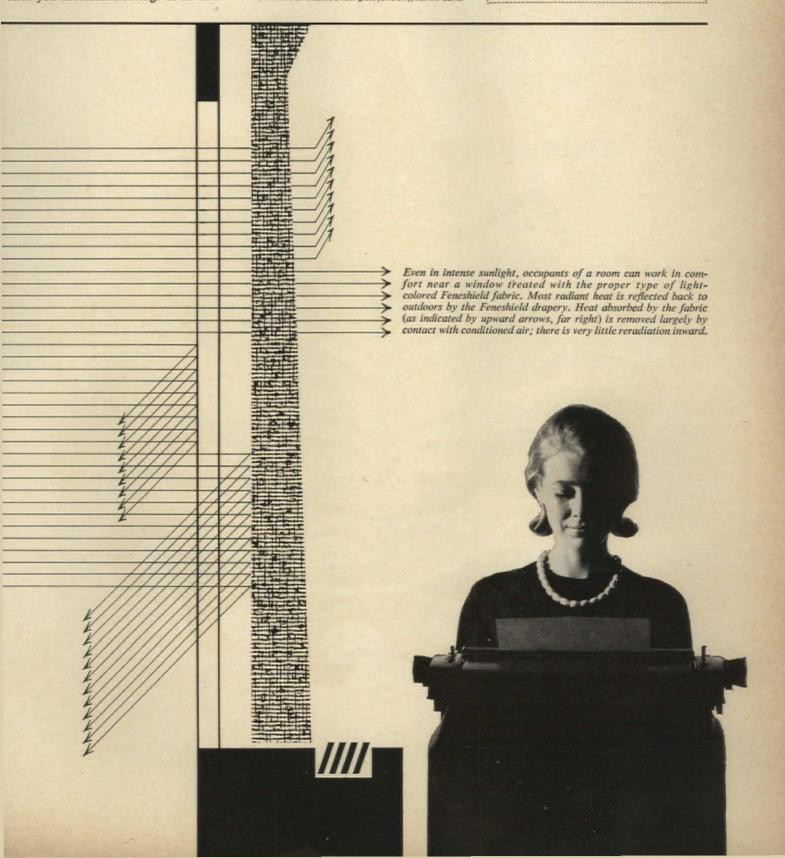


Pittsburgh Plate Glass Company
Fiber Glass Division, Dept. 301
One Gateway Center
Pittsburgh, Pennsylvania 15222

□ Please send me technical information on
Feneshield fabrics.
□ Please send me names of authorized Feneshield converters.

Name
Title
Company
Address
City

Zip Code\_



#### EGGERS PLYWOOD COMPANY OF TWO RIVERS, WISCONSIN. PHONE 414-793-1351.

You find distinctive craftsmanship in every detail of Eggers custom hardwood plywood . . . in accurate interpretation and final representation of the architect's design . . . in faithful adherence to specifications . . . in beauty of grain and finish, Eggers' experience in custom craftsmanship began in 1884. It proves that the beauty and warmth of wood is only the beginning in achieving beautiful paneling. More important to final appearance is the care and skill expressed in expert matching of face veneers; in perfect finishing that reveals species color and texture; in creating precisely the effect you want. This is custom craftsmanship — our specialty. You'll find it in Eggers architectural plywood doors, panels, office furniture and other uses in outstanding installations all over America. You'll find it in whatever your creative mind visualizes in custom plywood for your next project, when Eggers produces it. Get the whole story — write for our Plywood Catalog for Architects

## craftsmanship



For more data, circle 99 on Inquiry Card

## **Building Components**

Application and Specifications of Materials and Equipment

### THE USE OF TURNTABLES IN BUILDINGS

By D. Bruce Johnston\*

The use of turntables in buildings can result in savings of both cost and space, while at the same time substantially increasing a building's flexibility. There are a wide variety of possible applications for turntables in contemporary architecture, but whatever the application or size of turntable, there are certain basic requirements which the architect can reasonably expect the manufacturer to satisfy.

Smoothness of operation is essential; jerking and vibration are completely unnecessary and the architect can realistically expect that the turntable will produce very little or no sensation of movement or motion. The turntable should be carefully tested following its installation to ensure that it operates smoothly without disturbing objects placed upon it.

Subflooring should be provided by the turntable manufacturer. This is an extremely important factor and should be included in the architect's specifications. The turntable manufacturer, because of his specialized knowledge, is obviously the most suitable person to determine the subflooring design and requirements. The best results can be obtained by having the subflooring pre-assembled at the factory, so that it can be trimmed to a circle while the turntable is rotating on its own center.

Tapered wheels should be pro-\*President, Macton Machinery Company, Inc. vided on all turntables. These specially designed wheels provide longer wear and smoother operation. The reason for this is that a tapered wheel can theoretically give perfect rolling while traveling around a circle, whereas a parallel face wheel tends to travel in a straight line, and when made to travel in a circle can only do so by much slippage.

To illustrate the different ways in which turntables can be used effectively, and to point out some of the factors that have to be considered, a number of "case histories" of turntable installation in modern buildings will be given.

#### Revolving Restaurant

The first revolving restaurant to be designed for a permanent building in the continental United States was opened last summer at the top of the 13-story Holiday Inn, Baltimore, designed by William W. Bond, Jr., architect. The doughnut shaped dining area has an outside diameter of 84 ft and an inside diameter of 58 ft. As it travels at the rate of one revolution per hour, the movement is so slow and gradual that diners have commented that they are unaware of movement except for the ever-changing view.

Powered by a ½ h.p. motor, the turntable is friction-driven in a manner similar to the phonograph turntable. It can be stopped or started by a simple pushbutton. The turntable revolves on polyurethane wheels and there is a thin layer of felt between the plywood subflooring and the steel framing. This combination makes the turntable completely silent.

#### Drive-in Bank

Even in crowded metropolitan areas, some banks are beginning to find it necessary to provide drive-in facilities in order to meet the demands of their customers. Where space is at a minimum, the use of turntables is often the only practicable way of meeting these requirements. With the installation of a 22 ft diameter turntable, it becomes possible to offer drive-in service in a lot as narrow as 25 ft in width. The Farmers and Mechanics Bank in Minneapolis, McEnary and Krafft, architects, had such a problem, when they decided to erect a 10-story addition on a plot 68 ft wide. By using a turntable to provide drive-in facilities, they were able not only to offer drive-in convenience, but also to use the additional 30 ft for extra street level banking area.

Specifications included three drivein windows; two approach lanes in order to provide a large reservoir of cars; an automatic gate (similar to those found at airport parking lots)





Rotating restaurant under construction before application of the plywood top. Right, completed restaurant at the top of the Holiday Inn, Baltimore.



Installation of a hollow turntable around an existing building column provides drive-in facilities in a bank in Minneapolis.



Tellers booths are on the exit side of the turntable; an automatic gate closes the turntable if all three booths are occupied.

which would close immediately after a car drove onto the turntable; and an automatic gate which would close on the exit side of the turntable when all three windows were occupied.

The whole installation was complicated further by the fact that the new building was to join onto an existing building and the turntable was to be located in part within the original building. Because of the location of a building column of the existing building, it was necessary to make a hollow turntable of 34 ft outside diameter by 12 ft inside diameter. Two approach lanes were provided, each controlled by a red and green traffic light. A short distance before each of these traffic lights an electric eye was installed in each lane, and the electrical control is designed so that one car at a time (from alternating lanes) is automatically allowed to go through, funneled into a single lane.

#### Turntable Stage

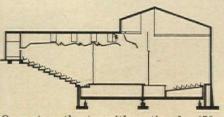
The recently completed Fine Arts

Hedrich Blessine

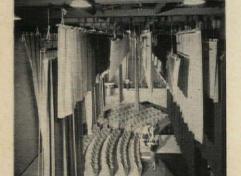
Center, Knox College, Galesburg, Illinois, Perkins and Will, architects, has, as its focal point a turntable stage, 66 feet in diameter, which supports an overhead structure incorporating a stage, orchestra pit and audience seating. The design load alone is approximately 675,000 lb. To this should be added the weight of the turntable, 90,000 lb. Thus the total theoretical design load to be rotated is in excess of 750,000 lb.

The design of this revolving stage reflects aspects of two general categories of turntable engineering and construction. The first is the socalled "pie-section" type of construction in which radial beams support a platform which may be plywood, steel or concrete. In this type of design, the load may be placed on the turntable in any location or it may be moved on from any direction. Such a unit is used for handling automobiles, trucks, or incorporated into a conventional flat theater stage with a rotating center, flush with the floor.

Section showing proscenium theater with seating for an audience of 600.



Open stage theater with seating for 450.



Interior of the Fine Arts Center at Knox College showing the turntable.

The other basic type of construction is similar in general concept to the railroad turntable, wherein the load is confined to central tracks of one kind or another. In such cases the turntable usually consists of two main beams over which the load always rolls, plus a secondary structure designed to complete the circle of the turntable.

The Knox College turntable features an upper deck or overhead structure which consists of a stage supported by columns placed in rectilinear pattern. An arc in one edge of the stage is used for a few audience seats in a quasi-radial position in much the same manner as the orchestra seats in a theater. Directly opposite, another arc forms the orchestra pit, employing a support which is a combination of both these systems.

The transfer of these superstructure loads down to the turntable base is accomplished by means of columns with a maximum column load of 9 tons, employing a unique design which embodies both engineering principles described above.

The turntable rotates 180 deg and is stopped by a rocker arm type of limit switch, which trips the magnetic starter. The turntable then may be jogged into position by means of a jog button until such time as a second limit switch is tripped. In this case, the turntable cannot be operated in that direction any farther, but only in the reverse direction. Two similar limit switches are placed in the reverse position so that the turntable may be rotated 180 deg in the other direction.

After the turntable had been installed, it was found that there was not more than 1/16 in. variation in radial dimension as it rotated throughout its 207 ft circumference.

## Product Reports

For more information circle selected item numbers on Readers Service Inquiry Card, pages 339-340



#### MOISTURE-PROOF ACOUSTICAL PANELS

Armstrong's new acoustical material, Ceramaguard, is said to have the same degree of acoustical efficiency as conventional products, but is unaffected by water, even when completely submerged. The new product is a ceramic type material with a totally inert composition, which does not expand, contract or weaken under prolonged exposure to high humidity. Ceramaguard offers sufficient spanning strength to enable it to be installed without sagging in panel sizes up to 21/2 ft by 5 ft. Armstrong Cork Company, Lancaster, Pa.

CIRCLE 300 ON INQUIRY CARD

#### RECESSED AND SEMI-RECESSED CYLINDER DOWNLIGHTS

The new 3-200 line of precision cast aluminum cylinder downlights features extra durability for both outdoor and indoor wet locations. Unitized construction with integral cast baffles makes the units virtually indestructible. Satin or black anodized

#### COMPACT DICTATING MACHINE

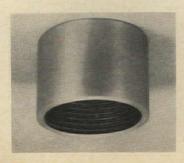
Weighing only 28 ounces and measuring 6 ins. by 5 ins. by 2 ins. in depth, the IBM Executary Model 224 dictating machine can be used successfully in or out of the office. A built-in microphone eliminates the need for a separate microphone and cord and the machine is powered by a single battery which gives up to 16 hours of dictation. Recording is done on a magnetic belt, each one holding up to 10 minutes of recording. The belts are easy to change and can be mailed in an ordinary letter sized envelope. Magnetic belt recording allows correction of errors, as the recording head can be moved back to the place where the mistake was made and the correct information dictated over it. IBM Office Products Division, New York 22, N.Y.

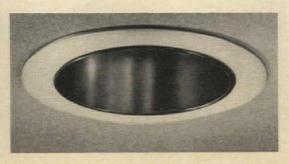
CIRCLE 301 ON INQUIRY CARD



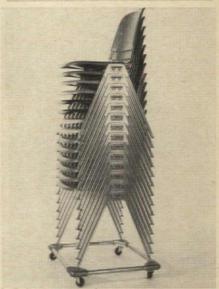
finishes are available. Twenty models can be supplied with 4 different types of engineered light control: low brightness open baffle, cast louver guard, reflector intensifier, and symmetric prismatic refractors. McPhilben Lighting Inc., Brooklyn, N.Y.

CIRCLE 302 ON INQUIRY CARD









#### NEW EXECUTIVE AND STACKING CHAIRS

Deeply cushioned executive chairs, upholstered in leather with a plastic back, have been designed by Charles Pollock. The chairs, which tilt and swivel, are supported by an aluminum extrusion, which outlines the chair and holds all the parts together, so that no other support is needed except a brace in the seat connecting the upper chair to the steel column and cast aluminum base. The stacking and ganging chair designed by Don Albinson is made of injection molded plastic and die-cast aluminum. The back and seat "give" with the body for long range comfort. A stack of 20 chairs occupies 4 sq ft of floor. Knoll Associates, Inc., New York, N.Y.

CIRCLE 303 ON INQUIRY CARD more products on page 302

## Office Literature

For more information circle selected item numbers on Reader Service Inquiry Card, pages 339-340

## FLOORS FOR COMPUTER INSTALLATIONS

A comprehensive 12-page brochure gives a detailed explanation of the concept of infinite access floors, which was developed as a solution to the problem of installing automatic data processing equipment in industrial and commercial buildings. The company's Floating Floor system provides a clear underneath space of any desired height, covered with an assembly of removable panels supported by pedestals. Each panel is capable of supporting concentrated loads of 2,500 pounds. The pedestal assembly has been tested to 12,500 pound loads without deformation of any part. When properly installed, with each panel precision made to .003 in. tolerance, the Floating Floor provides an ideal air plenum. All panels are interchangeable and can be removed at any place for maintenance, modification or expansion of facilities. Panels and pedestals are made of die cast aluminum; flooring surfaces are available in vinyl, vinyl asbestos, plastic laminate, wood parquet or carpeting.

The brochure, No. 1020, supplies all the basic information required by architects and engineers, including detail drawings and architectural specifications. It includes a typical floor plan of a computer room, cross referenced to the details. Floating Floors, Inc., New York, N.Y.\*

CIRCLE 400 ON INQUIRY CARD

#### SLIDING AND FOLDING DOOR EQUIPMENT

A new series of four illustrated catalogs covers the company's line of sliding and folding door hardware, folding doors and room dividers. The three hardware catalogs feature a special fold-out Tracerback with specifications, drawings and opening requirements side by side for easy comparison and direct tracing. The door catalog includes color-photos, specifications, opening requirements and an ordering chart for the complete line of wood bi-folding doors and room dividers. Kennatrack Division, Ekco Building Products Company, Canton, Ohio.

CIRCLE 401 ON INQUIRY CARD

#### STRUCTURAL ADHESIVES

Details of 16 different structural epoxy adhesives in the *Concresive* line are given in a new 8-page bulletin. The information is given in chart form and includes for each product: description; product use; pot life; set time and cure time at 75 deg F; application method; coverage; specific advantages of the adhesive. General information on epoxy adhesives is also given. *Adhesive Engineering Company, San Carlos, Calif.* 

CIRCLE 402 ON INQUIRY CARD

## TECHNIQUES OF ARCHITECTURAL RENDERING

Different rendering techniques and their most appropriate uses are shown by means of examples and brief explanations in a well-set-out, 12-page booklet. Students are likely to find this publication of interest. QA Architectural Arts, Los Angeles, Calif.

CIRCLE 403 ON INQUIRY CARD

#### NEW LIGHTING DESIGNS

The Chandeline Signature collection of lighting fixtures is shown in a handsome new catalog. Designs by a number of leading European designers are shown. The glass used in this collection is hand-made blown lead crystal in a variety of special finishes. Chandeliers, wall brackets, pendants, spots and opal modules are included. Photos of some of these fixtures in actual settings are shown in an accompanying magazine, Prevue, which is also available from the company. Prescolite Manufacturing Corporation, San Leandro, Calif.\*

CIRCLE 404 ON INQUIRY CARD

## ELEVATOR PLANNING BROCHURE

A useful booklet for architects and building owners called "Elevator Planning for New Construction or Modernization" has recently been published. The brochure outlines basic steps in planning for elevators and other vertical transportation in bank, office, hospital, hotel and other building types. Charles W. Lerch & Associates, Denver, Colo.

CIRCLE 405 ON INQUIRY CARD

#### SPECIFICATIONS FOR BUILT-UP ROOFING

Information on the various types of built-up roofing products supplied by the company is given in a comprehensive manual. Fire-Chex shingles, Fire-Chex roll, asbestos felts, and roofing emulsions are dealt with in detail. Specifications are given for different types of surface, and construction details are shown by means of diagrammatic drawings. Photographs are included to show a typical construction process. A section on general requirements deals with methods of attachment and gives information on decks-nailable and non-nailable; steep deck applications and roofing over existing roof. The Philip Carey Manufacturing Company, Cincinnati, Ohio.\*

CIRCLE 406 ON INQUIRY CARD

#### SOUNDPROOFING WITH LEAD

A 12-page guide to soundproofing with lead stresses practical means of achieving successful sound barriers. Results of laboratory testing of lead sound barriers at the Riverbank Acoustical Laboratories are made available for the first time. The booklet explains rating methods and gives detailed information about specific requirements as set forth by FHA and other authoritative sources. Step-by-step directions for designing and constructing effective sound barriers are given. Lead Industries Association, Inc., New York, N.Y.\*

CIRCLE 407 ON INQUIRY CARD

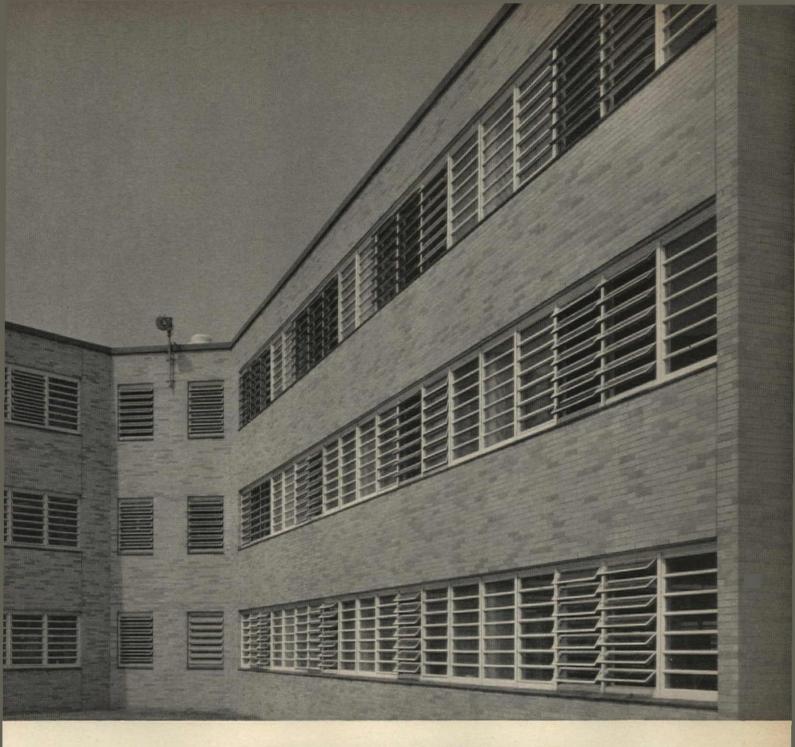
## PRE-ENGINEERED STEEL BUILDINGS

Six folders have just been published giving basic information on pre-engineered steel buildings, their advantages and applications. The folders cover uses of these buildings for manufacturing plants; shopping centers and stores; recreational facilities; automobile showrooms; warehouses; classrooms and gymnasiums. Sheet Committees, American Iron and Steel Institute, New York, N.Y.

CIRCLE 408 ON INQUIRY CARD

\*Additional product information in Sweet's Architectural File

more literature on page 326



# USE BAYLEY WINDOWS WITH RESTRAINT

The new Workhouse of the City of New York on Riker's Island uses moderate and maximum security guard windows by The William Bayley Company for durability and safety. Bayley detention windows are available in steel and aluminum with wide enough style ranges for architectural freedom. Stainless steel windows are on the drawing board.

Bayley institution windows provide optimum structural strength with clean appearance. And the reputation for excellence goes back 85 years. Call in a William Bayley representative on your next institutional job. The William Bayley Company, Springfield, Ohio.



BAYLEY
METAL WINDOWS and
CURTAIN WALLS

Department of Public Works, City of New York, Bradford N. Clark, Commissioner, and associated Architects Brown & Guenther, New York City, N. Y. Contractor: John T. Brady Company, Inc., New Rochelle, N. Y.

For more data, circle 100 on Inquiry Card



Janitrol 570 Series Year Round Comfort Package eliminates need for giant central heating and cooling plant in apartment buildings. Features closet-size heating-cooling units and through-the-wall condenser.

Janitrol's 570 Package was made for the man who designs, builds or rents apartments. And for the man who lives in one, too.

The entire heating unit and cooling coil fits into only 12" x 28" of floor space. Tucks easily into the corner of a small closet. Needs zero clearance on the side and back and only 6" in front. Needs only a 4" vent pipe.

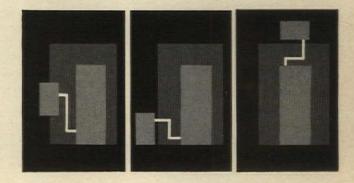
The condensing unit is only  $39'' \times 18\frac{1}{4}'' \times 18\frac{1}{4}''$ . Installs easily through the wall—or on the roof or on an outside slab.

Yet this compact package delivers 2 tons of cooling and 80,000 Btu heating. It was designed for apartments. But it's also the perfect

answer to small house year round comfort or large house zoned heating-cooling. Installation is literally a snap. Charged refrigerant lines have quick-connect couplers at both ends.

Janitrol's 570 Comfort Package may well be the best unit for your next job. Available in 1½, 2, 3 ton cooling and 50,000, 80,000, 100,000 and 150,000 Btu Heating Packages.

Get at least one estimate from your Janitrol Dealer. He's in the Yellow Pages. Janitrol gives you more to work with.



#### Acoustics

continued from page 230

pants, to be able to devise meaningful one-number rating systems. In the meantime, however, I feel strongly that any application of onenumber rating systems is done out of sheer laziness and prohibits a logical process of engineering design. Time consuming and dull though it may be, there appears to be no short cut. The only logical way to specify the parameter is as a function of frequency. The frequency scale selected may be any of the ones in common usage; however, certain traditions have developed over the years and since there is a considerable backlog of data on existing products, it seems sensible to stick with traditions.

In the specification of absorption coefficients of materials the frequencies utilized are octave bands desig-

nated by their center frequencies. Thus, typically, one will find these coefficients at 125, 250, 500, 1,000, 2,000, and 4,000. On the other hand, ratings of sound transmission through acoustic tiles measured according to A.M.A. 1-2 by the room to room-method is usually designated "attenuation" and given by the 1/2 octave bands designated again by their center frequencies. Thus, the attenuation will be listed at 125, 177, 250, 354, 500, 707, 1,000, 1,414, 2,000, 2,828, 4,000. Measurement of noise generated in the laboratory is usually carried out in full octave bands of frequencies and are at present designated by the upper and lower limiting frequencies of each octave band. Thus, the numbers published will be at the following frequencies: 20/ 75\*, 75/150, 150/300, 300/600. 600/1,200, 1.200/2.400. 2,400/ 4.800, 4.800/10.000.

Acoustical laboratories now generally publish octave band data designated by center frequencies. Also the bands so designated have slightly different limiting frequencies than the old bands, the limiting frequencies being higher by approximately 1/3 octave. For most equipment (excluding those containing strong pure tone components) data taken according to the two types of octave bands are almost directly comparable. The newer band designations are 31.5, 63, 125, 250, 500, 1,000, 2,000, 4,000, 8,000, 16,000.

Obviously, the selection of one or two diffusers in a small remodeling job does not justify an engineer's analysis of the noise problem. On the other hand, when selecting the induction units for a 60-story Manhattan office building, to trust the acoustical outcome to luck is pure folly. Even if it takes two or three days of analysis to predict the outcome the time is well spent in terms of years of occupant satisfaction. Thus, one can hardly justify not doing a frequency analysis of the anticipated noise levels, sound transmission, sound absorption, etc., and a frequency dependent comparison with some accepted criterion on what constitutes a satisfactory result.

\*The range 20 to 75 is not truly an octave band. Actually, it is an approximation of the two octave bands 18.75/37.5, 37.5/75. Some instrumentation which has recently come into usage uses only one of these bands and

thus the lowest frequency bands will be listed

in published data as 37.5/75.

## TOTAL FI FUATION IORIZONTAL PUMPING LEYEL WELL SIZE SETTING STANDING WATER LEVEL

What every architect

and builder should know...

about home water systems

FRICTION LOSS

TOTAL

HFAD

Red Jacket's new pump reference file, 'Practical Engineering Information' should be at the side of anyone interested in designing and building homes beyond the water mains. Complete and comprehensive, it covers everything from average water requirements for home and farm, procedures for determining distance to water level, practi-

cal suction lifts . . . to water friction tables and how to estimate operating costs.

As a handy reference it will help you be sure you're specifying and installing the right size and type of pump and tank for present and future requirements for any home water system. It's yours for the asking - just use the coupon!

|    | 4      |    |    |
|----|--------|----|----|
| RE | DJA    | CK | ET |
|    | SYSTEM |    |    |

P.O. BOX 3888 · DAVENPORT, IOWA

| for or | and me your file, "Practical Engineering Information<br>or A.I.A. File No. 29-D-5  |
|--------|--|
| □ PI   | ease have your Red Jacket man call.  |
| Nam    | e  |
| Firm   | Name   |
| Addre  | ess  |
| City_  | The state of the s |
| State  |  |

For more data, circle 183 on Inquiry Card

# Fresh ideas for trusted woods.



Architectural Millwork from stock Western Wood Products. Bright, fresh elegance in interior design can result from the coordinated use of stock Western Millwork products in the creation of distinctive, original settings.

The wood windows in this interior, straight out of stock catalogs, not only help create a style of definite character, but also offer the added benefit of reducing temperature control costs because of wood's natural insulating properties.

The solid, stock raised-panel doors, which carry the feeling of depth and distinction even further, indicate there's a Western Wood door style to complement any decor or design.

Stock mouldings are used throughout, accenting architectural details and bringing shadow and depth into play. From the wainscot with its delicate rosettes to the divider screen that shapes space, stock mouldings work to unite parts into an organized whole.

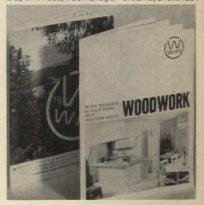
Use stock Western Millwork in its many forms as tools to personalize, individualize and maintain design theme and continuity. Use it in residential, institutional and light commercial structures. Use it painted, stained or left natural — whatever the decor requires.

Send for your free copy of a full-color idea book showing Western Millwork now in use. We'll also mail you a Moulding Plans Book which details moulding in-

stallation and use. Clip the coupon and they are yours . . . free, of course.

#### WESTERN WOOD PRODUCTS ASSOCIATION

Dept. AR-965, Yeon Bldg., Portland, Ore. 97204



| Name    |       |     |
|---------|-------|-----|
| Firm    |       |     |
| Address |       |     |
| City    | State | Zip |





## Place Victoria

# for more than a million square feet, which is best: electronic or pneumatic controls?

UNTIL recently, almost all "big job" comfort control systems have been one-type installations—all electronic or all pneumatic. But when the first tenants began moving into Montreal's new Place Victoria in May, 1965, a new era opened in the design of environmental control systems.

The environmental control system for this new Canadian Stock Exchange Tower is the first ever installed which selectively combines the most desirable features of four different types of controls along with new concepts in air distribution equipment and building automation—all designed, manufactured, and installed by a single manufacturer.

Because compatibly designed Electronic, Pneumatic, Electric, and Hydraulic controls are standard Barber-Colman lines, our application engineers were able to select the exact controls best suited to Place Victoria's various requirements. And with nineteen different fan systems, the requirements are bound to be varied. For instance, five systems furnish air for perimeter system induction units. Nine supply Barber-Colman Jetronic Single Inlet Mixing Units for interior zone comfort. Three condition the five below-ground garage and utility levels. Two serve the lobby.

Pneumatic Controls are installed on the 4700 induction units and Barber-Colman Jetronic Single Inlet Mixing Units. These controls are most economical where there is no local source of electricity, and they are ideally suited to simple multiunit sequencing control.

Electronic and Electric Controllers and Actuators control all central fan systems. They are best for this application because of the ease and simplicity with which they provide desirable features such as these: Resetting of hot and chilled water temperatures to match outdoor weather conditions; remote selection of space temperatures; recording and retrieval of building automation data at the Selectronic Control Center.

Hydraulic Controls are used selectively in shopping and store areas to control radiators and wall-type convectors. These compact controls combine the advantages of Electronic, Pneumatic, and Electric Control in a unit-mounted system that offers excellent accuracy for smaller air conditioning and heating units.

All systems are tied together at a Barber-Colman Selectronic Control Center located on the fifth floor. From here, all fan systems can be monitored and controlled by a single building operator. Because electronic and electric controls are used on the various fan systems, temperature can be read out and analyzed "Selectronically" without intermediate conversion of signals.

From the time that this project began, a Barber-Colman engineering and installation "Task Force" worked closely with Place Victoria's owners, architects, engineers, and contractors. Result: A complete environmental control system that fulfills exactly the descriptions of operation required in the final specifications.

Today, Barber-Colman is the only company with the experience and staff to design, manufacture, install, guarantee and service all types of comfort control systems and air distribution products. This unique capability enables Barber-Colman to offer important installation and service benefits on your next building.

For more details on the ultimate in fully integrated automatic controls and engineered air distribution systems, contact the Barber-Colman field office nearest you. Or write for our five new booklets outlining the features and advantages of Barber-Colman Electronic, Electric, Hydraulic, and Pneumatic Controls, and Selectronic Control Centers.



This Barber-Colman Selectronic panel controls the climate on all 52 floors of Place Victoria. It provides 42 points of remote indication control and reset on fan and secondary water systems. With it, the operator can read temperatures at each of these points and change the thermostat set point without even leaving the 14' x 20' Selectronic room. A television-like screen at left enables the operator to see equipment layouts for the various systems he is monitoring, simply by pressing a button. (In addition to the Selectronic panel, there are also 14 Barber-Colman graphic control subpanels located throughout the building. These show local system temperature readings and indicate when air filters in the system need changing.)



#### BARBER-COLMAN COMPANY

Rockford, Illinois 61101 In Canada:

BARBER-COLMAN OF CANADA, LTD. Toronto, Ontario

... where originality works for you



\*4-Inch Rib was specified for the Las Vegas Convention Center.

Las Vegas Convention Center Architect: Adrian Wilson and Associates

## Do wonders...

or do functional, hard-working designs.

Both look better longer with highly corrosion resistant

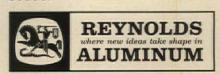
Reynolds Aluminum Roofing and Siding



One of the most important materials you have to specify is roofing and siding—usually the most noticed parts of buildings. With Reynolds Aluminum roofing and siding you can be certain of better perform-

ance than with most other materials. There are no chips or cracks to mar your design whether you specify a mill finish or a Colorweld<sup>®</sup> baked enamel finish. Aluminum is highly corrosion resistant, too. Streaks and stains won't ruin a building's appearance.

Design flexibility is greater, too. There is a large selection of configurations, thicknesses and finishes.\* Panels adapt from single skin to insulated wall systems quickly, easily. Aluminum's reflectivity is higher...heating and cooling costs lower. Lighter in weight...less time and effort to erect. See your Sweet's File, Section 8b/Rey or AIA File Number 12-C for more information. Or write: Reynolds Metals Company Building Products and Supply Division, Dept. AR-965, 325 West Touhy Avenue, Park Ridge, Illinois 60068.



Watch "The Red Skelton Hour," Tuesdays, CBS-TV