Kentile Moda Moresca Solid Vinyl Tile in four natural tile colors. Individual 12" x 12" tiles permit design flexibility and quick, easy installation. Thickness: \( \frac{1}{8} \)". Easy to clean and greaseproof—in any room—anywhere.

Now the elegance of Old Spain—in solid vinyl floor tile.

**KENTILE**

**VINYL FLOORS**

Texture and colors just like Spanish tile! But Kentile Moda Moresca is far more comfortable and quiet underfoot. Smart in homes, stores and offices. Samples? Call your Kentile® Representative.
NOTED

THE ARCHITECTURAL FORUM / JUNE 1966

FORUM
A monthly review of events and ideas.

KEYHOLE SHOP
Viennese Architect Hans Hollein's first commission wins a prize bigger than its construction budget.

BART'S BILLION-DOLLAR RIDE
The Bay Area is currently building the nation's first new rapid transit system in half a century. An evaluation of the process by which the system is being planned and designed, and of its potential impact on the region and the cities that it serves.

FOCUS
A monthly review of notable buildings.

CHANGE AND A CHURCH
An angular sanctuary by Architect Edward Dart has brought reassurance to a neighborhood in transition.

BOOKS
Robin Boyd on the phases of modernism.

BUCKY'S BIGGEST BUBBLE
The first detailed look at the U. S. pavilion for Expo 67—a Fuller dome that will rise 20 stories high.

THE HAPPY HALENERS
Housing expert Roger Schafer revisits, on Forum's behalf, a remarkable micro-community near Bern, Switzerland.

LETTERS
The BART tracks (page 38) ran above twisting lines of auto traffic. Design by Peter Bradford.

THE ARCHITECTURAL FORUM

Sent without charge to architects registered within the U.S.A. Qualified persons are invited to write the Circulation Manager on company letterhead: Please give your principal state of architectural registration, your title, and the kind of work you do. Correspondence regarding service, change of address, etc., should be sent to the Circulation Manager. Subscription rate is $10 within the U.S.A. and possessions. Elsewhere, $15. College Rate for students and faculty members of U.S. accredited schools of architecture, $5. Single copies, $1.25. Member of Business Publications Audit of Circulation, Inc. Centralized circulation postage paid at New York, N.Y. © 1966 by Urban America, Inc. All rights reserved.

PUBLISHER'S NOTE
Senior Editor Jim Bailey has many friends in the San Francisco Bay Area, where he lived for 13 years before migrating east to join first the national AIA staff and then the new Forum. He hopes he still has them after they read his 24-page story on the Bay Area Rapid Transit System, this issue's major feature.

Bailey's acquaintance with the region and its architects was one reason he was put on the story three months ago. He talked to most of those involved with the planning and design of the BART system, and got a consistently ambivalent reaction. Many were critical of the way BART is being put together, but virtually all wanted to believe that it would be, in the end, a Good Thing. While Bailey was in San Francisco, doing his research, the Chronicle published a series of articles criticizing BART. The architects he talked to conceded that the series was, on the whole, factual, but resented the idea of the Chronicle being so negative.

Bailey's story has turned out to be a bit on the negative side—no matter BART's real accomplishments as transportation planning, rather than shortcomings as a gigantic act of urban design. To get him off the hook with his professional friends, let it be said that he went West with an open mind, and that he was encouraged to be critical where criticism could be instructive—and, we hope, helpful in prodding BART to fulfill its great potential.

* * *

Ann Wilson (her title is assistant to the editor, but in reality she runs the editorial department), just returned from a European vacation, reports that the editorial index is now up to date, i.e., complete through 1965. Art Director Paul Grotz also was in Europe during preparation of this issue. It was designed, and well, by Peter Bradford. L.W.M.
Cabin Crafts uses Acrilan® acrylic to make a complete line of contract/commercial carpet engineered precisely to specifications. You specify...we supply.

Cabin Crafts contract/commercial carpets of Acrilan acrylic pile are specially styled as well as specially engineered to assure the performance, durability and "heft" required for heavy-traffic installations.

Name the quantity...any quantity, and we'll deliver it on schedule.

Cabin Crafts made the contract carpet of Acrilan that makes such a beautiful impression in Georgia's unique new Archives and Records Building in Atlanta. Such an architecturally interesting building demanded an aesthetically rewarding carpet...one that still met the practical demands of exact specifications and built-in performance. These features made it easy for the architect to specify...Cabin Crafts.
Cabin Crafts contract carpeting of Acrilan acrylic pile creates warmth in broad expanse of Archives Building.

Quiet carpeting dramatizes stained glass and handrail (brought from original building) and steps to auditorium.

Sound conditioning with Cabin Crafts carpeting of Acrilan in library and research area.

Fully carpeted auditorium of Cabin Crafts carpet of Acrilan fiber for finer acoustics.

Write for your free copy of Cabin Crafts Contract/Commercial carpet brochure. Write Contract Advertising Department, Cabin Crafts, Inc. Dalton, Ga. 30720
SCHOKBETON®
Another outstanding example of Schokbeton's design plasticity.


For the best in precast concrete, specify Schokbeton

EASTERN SCHOKCRETE CORP.
441 Lexington Ave., New York 17, N.Y.
P.O. Box 56, Brandeisville, Md.

SCHOKBETON-PITTSBURGH
A Division of The Levinson Steel Co.
27 South 20th St., Pittsburgh, Pa. 15203

CREST-SCHOKBETON CONCRETE, INC.
P.O. Box 528, Lemont, Illinois 60439

PRECAST/SCHOKBETON, INC.
P.O. Box 2088
Kalamazoo, Michigan 49003

MABIE-BELL, SCHOKBETON CORP.
P.O. Box 1958, Greensboro, N.C.
Peachtree City, Georgia
P.O. Box 47546, Miami, Florida

INLAND SCHOKBETON
A Division of Nebraska Prestressed Concrete Co.
P.O. Box 2006B, Lincoln, Nebraska 68503

ROCKWIN SCHOKBETON
Division of Rockwin Prestressed Concrete Corp. Subsidiary of United Concrete Pipe Corp.
P.O. Box 2036, Santa Fe Springs, Calif.

TEXAS SCHOKBETON, INC.
P.O. Box 2044B, Sam Houston Station, Houston, Texas 77002

BUEHNER SCHOKBETON COMPANY
301 West 60th Place, Denver, Colorado 80216

640 Wilmington AVE., Salt Lake City, Utah 84106

BASALT SCHOKBETON
A Division of Basalt Rock Company, Inc.
P.O. Box 2540, Napa, California

CANADA
SCHOKBETON QUEBEC INC.
P.O. Box 340, St. Eustache, P.Q., Canada

SCHOKBETON DIVISION
CONCRETE TECHNOLOGY (B.C.) LTD.
720 Nelson Rd.—P.O. Box 68
Richmond, B.C., Canada

SCHOKBETON PRODUCTS CORP., 1270 AVE. OF AMERICAS, N.Y.C. 20, N.Y.—A SUBSIDIARY OF AMERICAN METAL CLIMAX, INC.
Until today there were only two ways to cover a floor.

The hard way.  The soft way.

Now here's the right way—Densylon

With Densylon, made with ACE nylon, you can specify carpet where carpeting was never practical before.


You can do all this with Densylon—and only Densylon. Densylon is the only carpet that keeps every promise other carpets can't because it's different from any other carpet. Densylon is carpet turned upside down: tough on top, soft on bottom. Allied Chemical's tightly-twisted, high-density ACE nylon pile is bonded to a 1/16" backing of B.F. Goodrich sponge-rubber. You don't get that with any other flooring.

Densylon's unique pile is so dense that dirt can't sink in. So tight that the pile can't be pulled up. So tough that furniture legs and spike heels can't mar it. No Densylon installation has ever worn out. Not even the Densylon in the General Electric Pavilion at the New York World's Fair, walked on by more than 15 million persons.

And the biggest pay-off: Densylon actually pays for itself with savings in maintenance alone. Costs a minimum of eighty cents a square yard less to maintain in showcase condition than any other flooring—hard or soft. Vacuums clean in half the strokes ordinary carpets need. Spots and stains—even grease, sponge-mop right off the high-density ACE nylon pile. No scrubbing, waxing, stripping ever.

Densylon's wide spectrum of colors and patterns makes it easy to add prestige, beauty, quiet, warmth and comfort to every floor—with confidence and economy. There are endless applications for Densylon. Send for complete information.

CCC's trademark for its sponge-bonded, high-density nylon carpet

WITH

ACE

NYLON

BY

Allied Chemical

Manufactured by CCC-Commercial Carpet Corporation, New York City, Chicago, Los Angeles; Canadian Affiliate: C.C. Carpet Co., Ltd., Ontario
INTERNATIONAL
controlled air entrance
REVOLVING DOORS
say "welcome" beautifully

Send for Design Catalog R-66.

INTERNATIONAL STEEL COMPANY 1727 Edgar St., Evansville, Indiana 47707
DIVISIONS: STRUCTURAL STEEL • REVOLVING DOOR AND ENTRANCE • LINDSAY STRUCTURE • RAILROAD
SUBSIDIARIES: Extruded Alloys Corp., Bedford, Indiana • Engineering Metal Products Corp., Indianapolis, Indiana

Photo shows: Texas Gas Transmission Corporation, Owensboro, Kentucky • Architects: Skidmore, Owings & Merrill
New Aquameter* faucet has the right angle on water saving

Simplest timing adjustment ...and it's vandal-proof

The American-Standard Aquameter slow-closing faucet is totally new in design, engineering and efficiency. It's the only slow-closing faucet angled for proper use. It's the only slow-closing faucet that accurately measures both the volume and time of flow (from four seconds to two minutes). A special wrench permits removal of the push-button top for setting controls from the face of the fitting. The aerator is removable only with its special key. Construction is of solid brass and other corrosion-resistant metals, with heavy Chromard* plating. The superior Aquameter obsoletes awkward-to-use, vandalism-prone faucets whose only control is the return speed of the handle. For more details, see your American-Standard representative. Or write American-Standard, Plumbing and Heating Division, 40 West 40th St., New York, N.Y. 10018.

AMERICAN-STANDARD
FOR DOOR CONTROL
designed to meet every school building need

CHOOSE NORTON CLOSERS AND UNI-TROLS

Any door within a school can have unique or special requirements. These doors by their location, traffic pattern, adverse environment or esthetic requirement can pose a problem in the selection of proper door control.

Norton makes the most complete line of surface-mounted door closers and unitized door controls. When you specify Norton controls, you can choose from a selection of types that have been designed to meet all of the specific needs of your school doors.
Meeting of the minds.

Innovation. Environment. Service. These are thoughts you live by. So do we. With you in mind. Take this chair for instance. It's new. With many innovations. But it's just one of some 50 Steelcase chairs which respected architects have used in noteworthy office installations. In other items of office furniture, too, your Steelcase representative can offer an impressive number of choices to fit your aesthetic and functional concepts. Most important, though, is what he can do to make your job easier. He doesn't just talk service. He gives it. The kind you like. And that we'd like to tell you about. Why don't you get in touch with Steelcase? Now. While your mind is on innovation and environment. And service. Write Dept. A.

STEELCASE INC., Grand Rapids, Michigan
Los Angeles, Calif. • Canadian Steelcase Co., Ltd., Ont.
Offices and Showrooms: New York • Chicago • Atlanta
Los Angeles • Grand Rapids • St. Louis • Philadelphia
Dallas • Portland, Oregon • Ontario • Quebec.
Jew Pre-engineered Systems for ow rise / High rise / Loadbearing

Fenmark Grid Wall on the lower two floors combines gracefully with the pre-cast sections on the upper floors of the Lippold Building, by architect Leo A. Daly, Omaha, Nebraska. The thin line metal-glass arrangement provides an interesting and “airy” contrast with the massive concrete sections above. The Fenmark wall is color treated inside and out with the highest quality oven-cured polymer coating to match the architect’s and owner’s selection. Available in colors to match or contrast with solar tinted glass.

An unprecedented five year warranty insures the color finish, weather integrity and total performance of the Fenmark system. The Fenmark system may also serve as a load-bearing wall, supporting roof loads on one or two story buildings; Fenestra’s long span “D” panel roof completes the structure providing a single responsibility for the entire roof-wall system.

For the full story, check with your Fenestra representative or write Fenestra Incorporated, Lima, Ohio 45802.
What do you want to do with the heat?

Take it out?  Put it in?
Janitrol makes the unit to fit your exact needs!

Whatever your heat-handling problems, you get more—and better—solutions from Janitrol. More products, with Janitrol’s complete, broad line. More engineering knowledge that pays off in dependable design, easier installation, more customer satisfaction. You get more field and technical assistance with Janitrol’s expert field network and factory training. Faster availability from Janitrol’s two factories plus 12 regional warehouses. It pays to get at least one estimate from Janitrol. For full details and specifications, contact your Janitrol representative. The name’s in the yellow pages. Janitrol gives you more to work with.
Noise comes in many shapes, so does quiet.

Gold Bond® can now offer you almost as many different acoustical ceiling systems as there are kinds of noise. Some are similar to products made by other manufacturers. Some are simply better. Some are completely unique. All of them have been tested and proven. Our Sound and Fire-Testing Center is the most complete facility of its kind in the world. Got a design problem? Attenuation? Humidity? Ventilation? Fire control? Tell us. We'll keep it quiet.

National Gypsum Company, Department C-16, Buffalo, New York 14225.
Modern businesses need such up-to-date communications as television, data transmission, teletypewriter, Tele-Lecture, and complex telephone systems.

These complex communication services are essential not only in office buildings but in all types of major buildings—plan for them in the blueprint stage. You'll avoid costly alterations and unsightly wiring later.

Just call your Bell Telephone Business Office and ask for the Architects and Builders Service.

See the Bell System exhibit, Booths 208-210, AIA Convention, Denver, June 26-July 1.

For further information on communications planning, see Sweet's Architectural File 33a/Be and Sweet's Industrial Construction File 19f/Be.
LEICESTER, MASSACHUSETTS—When Leicester Junior College here was planning to build a new library, the school's trustees were very much concerned about safety because two of the school's library buildings had previously burned to the ground. The cause of the fires was never satisfactorily determined but the trustees were determined about one thing: they didn't want the incident repeated. After carefully studying various types of heating systems using combustion fuels as well as electricity, the trustees decided on an electric heating system and the new library was completed in 1962. When a new dormitory/dining hall was being planned, the trustees again selected an electric heating system and the new 40,000 sq ft building is now under construction.

In keeping with the design of other buildings on the campus, architect G. Adolph Johnson designed the library to be built of Colonial brick veneer with white columns, shutters and trim. The entire first floor of the two-story building is given over to the library. On the floor below are two classrooms each accommodating 30 students. The classrooms are divided by a moveable partition so that they can be made into one large room for social functions.

The library's electric heating system consists of resistance down-flow wall units in the library area and 24 kw unit ventilators in the classrooms. The building is used six days a week from 9 a.m. to 10 p.m., September through June. Operating costs have been lower than originally estimated and a rate reduction of about 6 percent that went into effect in January 1966 will mean even lower operating costs in the years to come. The economy and satisfactory performance of the library's electric heating system over the last four years, coupled with its safety, comfort and convenience features, led to the selection of electric heat for the college's newest building, the dormitory/dining hall.
1. CATEGORY OF STRUCTURE: College Library

2. GENERAL DESCRIPTION:
   - Area: 6,915 sq ft
   - Volume: 70,000 cu ft
   - Number of floors: two
   - Number of occupants: 100
   - Types of rooms: library area and 2 classrooms

3. CONSTRUCTION DETAILS:
   - Glass: double
   - Exterior walls: Colonial brick veneer, 2" styro-foam (R/7). U-factor: .084
   - Roof or ceilings: pitched roof with hung ceiling, mineral wool (R/22). U-factor: .042
   - Floors: wood
   - Gross exposed wall area: 4150 sq ft
   - Glass area: 550 sq ft

4. ENVIRONMENTAL DESIGN CONDITIONS:
   - Heating:
     - Heat loss Btu/h: 123,000
     - Normal degree days: 6,800
     - Ventilation requirements: 13cfm/student
     - Design conditions: —10F outdoors; 70F indoors
   - Cooling: None

5. LIGHTING:
   - Levels in footcandles: 100
   - Levels in watts/sq ft: 2.5
   - Type: fluorescent

6. HEATING SYSTEM:
   - Electric resistance down-flow wall units in library area and unit ventilators in the classrooms.

7. ELECTRICAL SERVICE:
   - Type: overhead
   - Voltage: 120/208v, 3 phase, 4 wire
   - Metering: secondary

8. CONNECTED LOADS:
   - Heating: 95 kw
   - Lighting: 17 kw
   - Water Heating: 5 kw
   - Other: 2 kw
   - TOTAL: 119 kw

9. INSTALLED COST:*
   - General Work: $113,210
   - Plumbing: 4,950
   - Electrical: 14,280
   - Heating: 9,560
   - TOTAL: $142,000
   - *Building was completed September 1962

10. HOURS AND METHODS OF OPERATION:
    - 9 a.m. to 10 p.m., six days a week, September through June.

11. OPERATING COST:
    - Period: April 1965 through March 1966
    - Actual degree days: 6,982
    - Actual kwh: 109,620
    - Actual cost: $1,877.84*
    - Ave. cost per kwh: 1.71 cents*
    - *For total electrical usage

12. UNUSUAL FEATURES:
    - The library's heating system has zone control and night setback with central over-riding control, locked thermostats and low voltage.

13. REASONS FOR INSTALLING ELECTRIC HEAT:
    - Trustees of the college were extremely concerned about safety because two library buildings had been destroyed by fire. After studying various types of heating systems, they selected electric heat and the library became the first electrically heated building on the campus. Low operating costs and satisfactory performance led to the selection of electric heat for the college's newest building, a dormitory/dining hall now under construction.

14. PERSONNEL:
    - Owner: Leicester Junior College
    - Architect: G. Adolph Johnson, AIA
    - Consulting Engineers:
      - Mechanical: Richard Burke
      - Electrical: Francis Shepard
    - General Contractor: F. W. Madigan Co.
    - Electrical Contractor: Mutual Electric Co.
    - Utility: Massachusetts Electric Company

15. PREPARED BY:
    - John S. Stobierski, Commercial Sales Department, Massachusetts Electric Company

16. VERIFIED BY:
    - G. Adolph Johnson, AIA

---

NOTICE: This is one of a series of case histories of buildings in all structural categories. If you are an architect or consulting engineer; an architectural or engineering student; an educator; a government employee in the structural field; a builder or owner, you may receive the complete series free by filling out the strip coupon at the left and mailing it to EHA. If you are not in one of the above categories, you may receive the series at nominal cost.

ELECTRIC HEATING ASSOCIATION, INC. 750 THIRD AVE., NEW YORK, N.Y. 10017
Top Honor Awards of 1965

The only honor award made this last year by the American Institute of Architects went to the B.M.A. tower in Kansas City, Missouri. Built of white marble it rises an impressive 771 feet above a bricked plaza. Window walls of heat reducing glass are inset 6 feet from the marble facade to provide ease of window maintenance and weather conditioning economies. Off the plaza is the lobby, the walls of which are of Italian Tuscan and Travertine marble. Entering the elevators through stainless steel doors one is attracted by the pure white Consoweld wainscot trimmed with stainless steel and contrasting with a charcoal colored ceiling. Lighting is obtained through numerous 2" diameter down lights resulting in a very handsome appearance. The architect is Skidmore, Owings & Merrill. The elevator cars are, of course, by Globe Van Doorn.

Just 3 times in the last decade has the Municipal Arts Society of New York awarded its bronze plaque to any building. To the only skyscraper that the late Eero Saarinen ever designed was awarded this distinct honor with the inscription "An Outstanding Example of Architecture Befitting the City of New York." This is the new 38 story black granite CBS Building on the Avenue of the Americas. The plan is like a rectangular doughnut, the center core housing all elevators and service facilities. There are sixteen high speed electronically controlled elevator cars. Interesting is the elevator decor. A feature is the removable panels covered with specially imported leathers edged with oxidized bronze — the whole set off by a softly lighted ceiling. Eero Saarinen and Associates are the architects and the elevator cars are, of course, by Globe Van Doorn.

The American Iron & Steel Institute top award for 1964-1965 went to the IBM Building in Seattle for both the “Best Design” and “Best Engineering” class in the high rise category. The finned appearance of the facade was achieved by covering the exterior columns of steel pipe and tubing with precast concrete covers. Steel arch girders support the base leading into the lobby. The elevators of this interesting building are perfectly custom-styled to this monumental structure, the interior of the cars being most attractive with applied panels of Regency Walnut Formica and set off with stainless steel reveals. The ceiling is of suspended aluminum eggcrating sandwiched between plexiglass, thereby giving a soft yet luminous lighting effect. The architect is Minoru Yamasaki & Associates. The elevator cars are, of course, by Globe Van Doorn.

Let your new buildings join the rapidly growing list of prestige structures like these award winners and look to Globe Van Doorn of Milwaukee for the best in elevator cars.
Roof design declared in
Johns-Manville roofing materials meet unique needs of Coleytown Junior High School—Joseph Salerno, Architect.

The Coleytown school in Westport, Connecticut, illustrates the new freedom in roof design—with the new generation of built-up roofing materials from Johns-Manville. Here's how advanced J-M roofing products were used with imagination in this functional modern design:

- **J-M Last-O-Roof** was the choice for the fan-shaped folded plates over the auditorium (1) and the library (2); for the roofs of the arts and crafts rooms (3); and the octagon roofs (4) of the detached gymnasium. Last-O-Roof is a single-membrane plastic elastomer roof. It adapts to practically any roof configuration and can be used on practically any slope. Application is fast because the membrane and cements arrive ready to use, require no on-site preparation. The roof is finished with a reflective coating of Last-O-Lume®—white here, but also available in colors.

- **J-M Gravel-Surface Roofing** was used on the flat roof area (5). It’s built up with Johns-Manville base and finishing felts, plus a flood coating of the J-M bitumen, Aquadam®, and a white gravel topping. Here the gravel surface contrasts attractively with the gleaming Last-O-Roof surfaces that rise from the flat areas.

- **J-M No. 80 Flexstone® Roofing** covers the “eyebrow” sunshades (6) over classroom windows. The top ply in this asbestos roof specification is No. 80 Flexstone cap sheet. Its felts are 85% asbestos fiber, so they are actually flexible coverings of stone. These asbestos felts are asphalt-saturated, then asphalt-covered, then firmly embedded with a layer of ceramic granules. No. 80 Flexstone can be finished in white or in a variety of colors.

- **J-M Last-O-Flash®** was specified for all of the flashings. This is a heavy polyisobutylene film embedded with woven glass fiber for extra toughness. Developed as a component for Last-O-Roof, it can also be used with other roof specifications at parapets, eaves, vents, skylights, even as a through-wall flashing... in fact wherever flexible, durable flashing or waterproofing material is required.

You may not need the variety of roofing materials and specifications used for the Coleytown school. Or all of the other versatile roofing services available from Johns-Manville. The important thing is that they’re at your disposal, offering you complete freedom in the design and construction of any roof. Explore the possibilities in Catalog BU-165A. For your free copy, write Johns-Manville, Box 111, 22 East 40th Street, New York, New York 10016. Cable: JOHNMANVIL.

Johns-Manville
Some people believe a door should stand the test of time. Schlage does.
feel a lock should have a long trouble-free life. Hence, we start with materials for which we pay a premium — special strip steel, for example, rolled to our precise specifications. We machine these materials to extremely close tolerances, and maintain quality control through a unique system of rigid inspection. The result is a superior lock. A lock that, in terms of maintenance and longevity, makes economic sense. We make this kind of lock in 101 handsome designs and 23 finishes. Making them takes ingenuity, skill and experience. But who should know more about making cylindrical locks than the people who invented them?
Bayley windows daylight the school

Architect Jules Gregory created an environment to make learning a joy. This vital school focuses attention on the interplay of children to the world around them. The architect chose Bayley steel classroom windows because section strength avoided sight line clutter while permitting use of large gray glass lights. Permanent steel windows are economical, initially and through time. For steel or aluminum windows and curtain walls, application assistance, and responsible performance contact

The William Bayley Company, Springfield, Ohio. Also see Sweets, Catalog 17a/Bay.

exposed steel: beauty and economy

This building turned out so well the owners are building a second just like it. A 5/16" steel plate and wide flange mullion facade encloses 650,000 square feet of usable area. The wall is free of expansion joints and serves to stiffen the building through composite action of the steel plate with concrete fire protection and the steel beams and columns. The steel facade is painted graphite black. The owners calculate that even with periodic painting the exposed steel wall offers great economy. The original paint job is expected to last for at least ten years. The building's classic simplicity presents an honest statement of the function and beauty of steel. For more information about this building or constructional steels, contact a USS Construction Marketing Representative at our nearest sales office.

United States Steel: where the big idea is innovation
How to divide a large room in half
(or quarters or eighths)

Grant 1500/1600 door hardware

Grant Folding Door Hardware enables you to divide large openings or small. It operates quietly, easily, quickly. No binding or chattering to dismay the user, no headroom excess to destroy the installation's clean lines.

If you must consider the division or sub-division of areas, you'll find Grant Folding Door Hardware the most effective, efficient means to that end. Complete data is available on request.

GRANT PULLEY & HARDWARE CORPORATION • EASTERN DIVISION / 5 High Street, West Nyack, New York • WESTERN DIVISION / 944 Long Beach Avenue, Los Angeles 21, California
ALL SUPPORTED Sanymetals

CLEAN IN CONCEPT DESIGN AND FUNCTION • THEY PROVIDE FOR EVEN, EASY LIGHTING AND FAST, SANITARY CLEANING BECAUSE THERE ARE NO LINING OR FLOOR SUPPORTS • SOLID DESIGN OFFERS BUILT-IN, RECESSED ACCESSORY UNITS • CRAFTED BAKED ENAMEL • PORCEANA • STAINLESS STEEL AND...

WELL, WHY NOT WRITE FOR ALL THE FACTS

Sanymetals®

BY THE Sanymetal® PRODUCTS COMPANY, INC.
1701 Urbana Road, Cleveland, Ohio 44112
We rabbeted all four sides of our new Armstrong Tegular Travertone™ ceiling panels. When you lay them in, they extend 11/32" below the exposed grid, creating a bold, dimensional effect that’s enhanced by the fissured Travertone design. And note how the dimensional effect can be attractively accentuated by painting the grid, as seen above.

The panels are finished with a washable vinyl latex paint. They clean quickly and easily with a moist cloth or sponge. If desired, they can be repainted without noticeable effect in acoustical efficiency. Made of non-combustible mineral fiber, Tegular Travertone carries the UL label with a Class I Flame Spread rating. Tegular Travertone Fire Guard is available with a 2-hour UL Time-Design rating for a floor-ceiling assembly (3-hour beam protection).

As for acoustical efficiency, Travertone’s N.R.C. specification range is .65—.75. Average attenuation factor is in the range of 40 decibels (ceiling STC 36). Light reflectance is high, with no unpleasant glare ("a" light-reflection coefficient).

Tegular Travertone is available with or without ventilating perforations. Panel size is 24" x 24" x 3/4", for installation in standard exposed, suspended grid. The panels can be easily removed, too, for quick access to wiring, plumbing above.

Like to know more about new Tegular Travertone? Write: Armstrong, 4206 Rooney Street, Lancaster, Pa.
Out in Texas, where cowboys are not in the least embarrassed to use motorized transportation to round up cattle, driver education recently faced a critical test. The occasion was the April 28 completion of the final section of the Dallas Thornton Freeway (below), a 12-lane complex with 11 entrances and exits for six expressways intersecting the 1.8-mile link.

All during April, newspapers, billboards, television and radio stations dunned away offering freeway instructions in a campaign “cast in a positive vein to avoid alarming drivers before they even got on the road.” General Motors, in recognition of what it called “the pivotal significance” of the Thornton Freeway, picked up the $6,000 tab for the driver education operation.

Nevertheless, there was little assurance that Texans would be happy about Thornton’s many left-hand turnoffs for right-hand exits—even knowing they were traveling what is, to the Texas Highway Department, “the most sophisticated piece of highway engineering ever done.”

Why did it run into trouble in Congress? One reason is the present Congressional mood in respect to all new domestic programs, which is compounded of rebellion against LBJ, anticipation of the Alaskan Eskimos—Weaver brought the program through a series of hair-raisingly close votes until, by late May, it faced only one further obstacle. This was the sequence of events:

Last year, the House and Senate both approved the rent supplement program, but the House killed a $12 million appropriation to get it started. This year the program seemed well on its way after the House, by a 198-190 vote, approved $12 million for the balance of fiscal 1966 (the Administration had asked $30 million, without really expecting to get it all).

But on April 25, Republicans and Southern Democrats on the Senate Appropriations Committee ganged up to knock out the $12 million by a 15-12 vote. Two days later the Senate overrode the committee and restored the funds. The key man was Senator E. L. Bartlett of Alaska, who had been among the nay-sayers in the committee. After the Administration reversed its opposition to a Bartlett bill providing $10 million in housing assistance to the Eskimos, the Senate reversed his to rent supplements and cast the tie-breaking vote.

There still remained the matter of appropriations for fiscal 1967, however. The Administration was asking $38 million. On May 5, the House Appropriations Committee rejected a subcommittee recommendation of $22 million. The vote was 25-21.

On May 10, with no aid from the Eskimos, the House restored the $22 million. The margin this time was four votes: 192-188.

“They still call me ‘Landslide’ Weaver,” quipped the secretary. One last landslide still was required—passage of the fiscal 1967 funds by the Senate—but HUD officials were optimistic.
It was the first time since demolition of the San Francisco exposition of 1939-40 that engineers had been given the chance to measure the resistance of entire buildings to weight and vibration. BRAB, which received government and foundation support in the testing program, will report on the results next spring.

**PICKING UP THE PIECES**

Amid the rubble that announces “progress” in our older cities, there is often a lot of anonymous sculpture—some of it touching, some of it grotesque, some of it merely pretentious, but most of it as little noticed before demolition as during.

A few years ago a group of New Yorkers who had been spirited away choice pieces of this wreckage decided to organize as the Anonymous Arts Recovery Society. They soon got together with the venerable Brooklyn Museum across the river, which had a memorial fund set aside for a sculpture garden.

The result, opened this spring, is the Frieda Schiff Warburg Memorial Sculpture Garden, the country’s first Happy Hunting Ground for terra cotta fauns. Here, among 200 nameless columns, keystones, and cartouches—the sources of many of them left unrecorded by A.A.R.S. enthusiasts on the run—are such big-name items as capitals from Louis Sullivan’s Bayard Building (still standing, without them) and one of the ladies who used to hold up the clock in Penn Station (below left).

Money was limited, so many of the pieces are merely strewn about on ivy-planted banks (below). They may not show off too well that way, says Marvin Schwartz, the museum’s curator of decorative arts, “but that may convince people that the buildings themselves must be saved, not just the ruins.”

**MOLECULES ON THE PLAINS**

The Committee for National Land Development Policy last month proposed construction of 25 new, preplanned “molecular cities” in America by 1995. Describing the present U.S. city as “an almost hopeless tangle,” the committee said its problems could be solved “only by transferring basic 

(continued on page 87)
Hans Hollein's first commission was even smaller than most first commissions: a shop and showroom 12 feet wide for a candle maker. But it brought him an enthusiastic client and a prominent location on a fashionable Vienna shopping street. That was all Hollein needed to shake Vienna's architectural complacency. His shop confronts the city with a cool, precise plane of polished aluminum, interrupted by a keyhole-shaped opening to arouse the curiosity of the passerby and two angled showcases to give him a hint of what is inside as he approaches. But the name of the shop is not revealed until he walks into the keyhole (overleaf).
Passing between two enameled aluminum signs, close by at eye level (see previous page), the customer enters a shop no larger than a commodious dressing room. The polished aluminum of the front follows him inside, but here it picks up reflections of the reddish carpet and the orange shantung which lines the display niches. But the most important added material is the clear mirror in floor-to-ceiling panels that produce endless reflections, and thus make the shop look much more spacious.

The candles themselves add polychrome detail to the disciplined composition. The custom-designed candles could not be displayed burning, but the warm colors reflected in metal and glass compensate visually for the missing flames and candlesticks.

To dramatize the displays of candles in the niches, Hollein has designed a set of prismatic aluminum blocks that can be stacked in innumerable arrangements (opposite). Denser arrays of candles are presented in the back room of the shop, on shelves and sliding trays that line the walls. All surfaces in the back room are of light gray plastic laminate, except for the aluminum cabinet doors and gates in the rear wall, which are visible from the entrance (previous page). A display niche on the axis of the entrance uses back lighting to show the internal structure of special candles made of differently colored layers of wax.

The character of the shop is set by the jewel-like precision with which Hollein has handled the metal details. To keep the aluminum sheet unbroken by screws, it was attached to supporting brackets with epoxy glue, except where panels had to be removable. Wherever possible the sheet has been folded over rather than joined at corners, to make joints less conspicuous.

The silky texture of the polished aluminum has been complemented by brighter metals at some points: chromium plated brass in the show window frames, chromium plated steel in the door hardware (specially designed for the specially designed aluminum door), and stainless steel in the central light fixture.

Heating and cooling equipment, all of it quite ordinary, has been left exposed. The overhead air conditioner has been given a new aluminum mask on the interior, but the warm air intake and grille to the left of the door are undisguised. An almost whimsical suspended fan distributes conditioned air to the back room (see previous page).

Most of the lighting is equally simple. The architect-designed stainless steel fixture at the center of the shop provides general illumination and is visible from outside through the “keyhole.” Spotlights over the candle displays, which look rather industrial, are actually custom made of chromium-plated steel.

Hollein’s remarkable development of a minor commission, and his meticulous metal detailing, won him the $25,000 R. S. Reynolds Memorial Award, to be presented at the A.I.A. Convention in Denver this month. It is the first time in the ten years of the Reynolds program that the award has gone to a work that cost less than the prize.

FACTS AND FIGURES

PHOTOGRAPHS: Franz Hubmann.
One weekday morning in December, 1969, if all goes according to plan, a suburban commuter in the San Francisco Bay Area will enter a handsome new building not far from his house, purchase a ticket from an automatic machine, walk through a computerized turnstile, and take a fast escalator to a canopy-sheltered platform. Not more than two minutes later, he will board a sleek, shiny train, walk down a carpet-covered aisle, and sit in a wide, upholstered seat. Riding in quiet, air-conditioned comfort, he will be whisked away on clickless tracks at speeds reaching 80 miles an hour. He will gain his destination in a fraction of the time it would have taken by car or bus.

He, and hopefully some 100,000 others like him, will be riding BART (for Bay Area Rapid Transit), the first totally new mass transit system to be built in the U.S. in more than 50 years, and the first to openly challenge the dominance of the automobile.

A lot more than the future of the Bay Area will be riding on BART's billion-dollar attempt to rescue the area from traffic strangulation and drastic decentralization of its urban centers. The outcome will be watched closely by officials in scores of other cities who want to know, without having to find out the hard way, whether a modern version of the traditional fixed-rail rapid transit system is an answer to their own problems, or merely a false hope.

Luring the commuter

To win its gamble, BART is banking on a simple, but untried, formula: provide a system so fast, so convenient, so economical, and so plush that at least half of the commuters in the three-county district served by BART will gladly leave their cars at home. BART's planners exude confidence that they will carry it off, and they point to the fact that voters in the district embraced the concept of rapid transit in 1962 when they passed a $792-million bond issue—the largest of its kind in history—to finance construction of the system. (An additional $180 million in surplus Bay Bridge
tolls, $71 million in revenue bonds, and $8 million in Federal grants will make up the remainder.)

BART will link the urban core of San Francisco-Oakland with more than a dozen suburban communities in the East Bay. Its 75-mile route will have 12½ miles of subways in downtown San Francisco, Oakland, and Berkeley; 31 miles of elevated lines (BART, for obvious reasons, prefers to call them "aerial lines"); 24 miles of surface lines; a 3½-mile twin tunnel through the Berkeley hills; and a 4-mile tube—the world's longest—under the Bay. Twenty-three of its 37 architect-designed stations will have free parking lots, ranging in capacity from 300 to 1,500 cars.

BART's lightweight aluminum trains, riding on a wider-than-normal track gauge for greater stability, will maintain an average speed of 50 miles an hour, including stations stops. (Other U.S. systems have trouble exceeding an average of 20 m.p.h.) The transbay trip from downtown San Francisco to downtown Oakland will take eight minutes; the same trip by car can take at least 30 minutes during rush hours. The trip from Walnut Creek to San Francisco now requires 45 to 55 minutes; BART's schedule is 28.

BART's trains, to be automatically operated from a single control center, will initially be scheduled at two-minute intervals at peak hours, with a maximum of 15 to 20 minutes at slack periods. Eventually, as patronage picks up, BART aims to reduce the peak-hour headway to 75 seconds.

Fares, ranging from 25 cents to $1 for a single trip, will be high by conventional transit standards, but easily competitive with the cost of commuting by car. Passengers will be checked in and out of the system by magnetically coded tickets purchased from automatic, self-service fare collection machines. The tickets, with values as high as $20, will be read by electronic exit and entry gates, the trip amount deducted, and a new entry made on the back to tell the rider how much value he has left. BART may also issue credit cards and bill regular patrons monthly.

BART is even thinking of providing "train screen" barrier walls between the station platforms and the train to shield passengers from noise and air blasts. The screens would be balustrade height in the 22 above-ground stations, and full height in the 15 subway stations. Automatically controlled gates would open in unison with the train doors.

Voices of dissent

Despite BART's space-age trappings, some look upon its prospects with less than enthusiasm. Martin Wohl, former director of Harvard's Transport Research Program and now a National Science Foundation fellow at Berkeley, claims that "San Francisco has been sold a 19th-century system with a few modern-day embellishments to make it appear futuristic." In choosing electric, fixed-rail transit, says Wohl, BART has tied itself to an "unchanging, immobile and inflexible system that will be in stark contrast to the highly mobile society it will serve."

Noting that more than 80 per cent of the area's downtown workers live within 12 miles of their jobs, Wohl predicts that BART, with its system of widely spaced stations averaging two miles apart, will be too inconvenient to be used by enough of the close-in workers, and will have too few potential customers from the outlying regions.

John W. Dyckman, chairman of Berkeley's Center for Planning and Development Research, shares these views. "As an answer to the problem of urban transportation," he wrote in Scientific American, "BART has great shortcomings to match its great promise."

It is too early to tell whether BART or the critics are right about these basic transportation planning decisions, and too late to change them. But BART is more than transportation—it is the largest single act of urban design currently underway in the U.S. On the following pages is an analysis of the processes by which the design phase of BART is being carried out, of the results to date, and of the impact which the system will have on the cities it serves.
The three men who have played perhaps the most important individual roles in BART's planning and design entered the process at significantly spaced intervals. One, an engineer, was in from the system's first conception in 1953. Another, a newspaperman turned publicist, came in just before the November, 1962, bond election and stayed on to become BART's general manager. The third, an architect, was engaged less than three years ago.

The engineer was Walter O. Douglas, partner in the giant firm of Parsons, Brinckerhoff, Hall & MacDonald, the first professional consultants hired by the San Francisco Bay Area Rapid Transit Commission. The commission, established by the State Legislature in 1951, asked Parsons, Brinckerhoff for answers to four basic questions: Is an interurban rapid transit system needed for the Bay Area? If so, what communities should rapid transit serve and along what routes? What type of transit would best meet the Bay Area's needs? And finally, is the cost justified?

In 1953, after two years of study, the engineers produced a far-ranging report that answered the first and fourth questions with a resounding "yes." "We do not doubt that the Bay Area citizens can afford rapid transit," they said. "We question seriously whether they can afford not to have it." The system they proposed joined San Francisco and Oakland by a transbay tube, and extended into Marin County, north and south along the East Bay shore, through the East Bay hills into residential Contra Costa County, and down the Peninsula. A later stage was to loop the bay, going as far as San Jose to the south, Napa and Santa Rosa to the north, and Livermore to the east.

The report was more than a system diagram: it constituted the first land-use master plan ever developed for the Bay Area, and to this day it remains the only one. It went far beyond engineering considerations, incorporating the research and conclusions of planners Adams, Howard & Greeley of Boston and Lawrence Livingston Jr. of San Francisco, plus assorted experts in population, economics, real estate, industrial land planning, traffic and transportation—as well as a planning staff employed by the engineers. A large committee of city planners throughout the area also participated in its development.

"The report," says Walter Douglas, who headed the project and is often called the father of Bay Area transit, "was a bona fide regional expression of the planning profession of the area. We acted more as a catalyst than anything else. Nobody can deny that many of the finest minds in the country in
he regional planning field participated in the report."

In 1957, the Legislature transformed the commission into the Bay Area Rapid Transit District, covering the five innerbay counties affected by the plan's first stage. The district was composed of directors officially appointed by county boards of supervisors and committees of mayors, and was given authority to levy taxes to support a general obligation bond issue if approved by the voters.

The BART District's first task was to produce a more detailed plan, complete with alignments, station locations, performance standards, and cost estimates, on which to base the bond issue. Again it called on its original consultants (now called 'arsons, Brinckerhoff, Quade & Douglas) who formed a joint venture with Tudor Engineering and Bechtel Corp. The plan proposed by the joint venture (Parsons Brinckerhoff - Tudor-Bechtel) looked substantially like the final route map at upper left—but with a few significant differences.

The 1957 legislation required approval of county supervisors before the bond election. BART offered its first major setback when the supervisors of San Mateo County, just south of San Francisco in the neck of the peninsula, pulled out. They felt that the county would pay too much and gain too little. Then Marin County, to the north, was so afraid of the old Gate Bridge could not safely carry transit facilities.

The solid lines on the original map in two major directions of commutation, representing first-stage construction, became dotted lines representing a later extension of the system.

BART then turned to the job of selling rail transit to the auto-minded residents of the remaining three counties (one of which, Contra Costa, had come within a single supervisor's vote of dropping out too). As chief salesman, it hired B. R. Stokes, political reporter for the Knowland family's Oakland Tribune.

"We didn't turn down a single request," recalls Stokes. "We talked to groups of all sizes and types."

The law required a 60 per cent majority for approval of the $792 million bond issue. BART got 61.2 per cent. BART also won a taxpayers' suit that followed the election (and caused a six-month delay). Stokes was appointed general manager of the operation, and, to no one's surprise, the joint venture of Parsons Brinckerhoff - Tudor-Bechtel was retained to carry their plan through design and construction.

The budget upon which the bond issue was based had not contained any money for landscaping or architectural services.

The budget upon which the plan was based had not included any money for landscaping or architectural services.
"It'll knock your eyes out," predicted BART Director H. L. Cummings early last year. He had just returned from the offices of Sundberg-Ferar in Southfield, Mich., a suburb of Detroit, where he got a preview look at the prototype passenger car which the firm had designed and built, working with the St. Louis Car division of General Steel Industries. Cummings described what he saw as "fabulous, something way beyond our dreams."

Later, after the prototype was trucked to the Bay Area and unveiled last June, Cummings' raves were taken up by his fellow directors and the BART staff. Falk praised its "jet liner luxury." Stokes said it "epitomizes, more than any words can do, our entire philosophy."

BART had been expecting great things from Sundberg-Ferar, who won the contract after BART had interviewed four industrial design firms. The other candidates, so the widely circulated story goes, made rather quiet, sober presentations, while Sundberg-Ferar put on a spectacle that tremendously impressed the board and staff.

The prototype design is "simple, straight-forward, logical, easy to accept," says Carl W. Sundberg, who with Montgomerey Ferar, an architect, founded the firm in 1933 after both had worked as designers in the styling section of General Motors.

"We gave the nose a sophisticated, sculptured look, yet we kept it simple; we used no gimmicks or clichés strictly for the sake of appearance. We wanted the car to appeal to all ages an
talks of life, so we gave it a set look to reach the younger generation, yet a solid, practical, even dignified look to appeal to adults."

Some fear that the luxurious exterior will be an irresistible temptation to vandals. Falk dismisses: "You don't decide not to build a new house just because someone might throw a rock through the picture window. We tried to make the car so attractive it will discourage malice of this sort." Others find the car's design too slickly "Detroit." Architect Edward C. Bassett of SOM feels it should have had a "timeless quality, in the tradition of true industrial design."

The prototype's most controversial feature is the control "pod"—the detachable section at the front that gives the car its sculpted profile. The pod houses all the automatic control equipment for each train (plus a manual control panel which the operator will use only in emergencies), eliminating the need for expensive, space-consuming control cabins in each car. But the BART trains are shuttles (there are no loops), which means that the wheelless pod must be hoisted and attached to both ends, thus greatly complicating the frequent procedure of changing the length of trains.

Nevertheless, BART is so delighted with Sundberg-Ferar's work that it has hired the firm to design all the station hardware (ticket booths, turnstiles, vending machines, housing for the automatic fare collection system) and all the graphics (the BART symbol, route maps, and directional and information signs in all stations). It would be surprising if Donn Emmons did not feel that he should have been given an active role in the work turned over to Sundberg-Ferar. Instead, he can do little more than express his opinions, along with members of BART's and the engineers' staffs.

At the time Sundberg-Ferar was given the graphics contract, Emmons already had put together a set of criteria and standards for station signing and had proposed that Saul
Thirty miles of burly elevated track structures will be run through both countryside and city. Bass be hired to execute the designs. The proposal, according to Emmons, was vetoed by Stokes, and his preliminary work was turned over to Sundberg-Ferar. So far, the fat, interlocking “ba” symbol is the only phase of the graphics to reach final board approval. It is not an entirely promising beginning.

While Emmons has been generally bypassed on the development of the system’s hardware, he is directly responsible for the design of BART’s most important single visual element: the elevated track structure that will cut through cities, towns, suburbs and countryside along some 30 miles of the route. Emmons’ basic design, which will be used for all but special long-span and switch structures, employs a hexagonal concrete column with transverse pier beams supporting slender, overhanging girders. Each of the trapezoidal girders is notched at the end to enclose the tops of the piers, lessening the apparent bulk of the structure. Each track rests upon a separate girder, making it possible to bank the track separately on curves and sharply reduce the required rise.

When Emmons presented the design to the board for approval, he brought along sketches of several alternate schemes which his office had worked up. Most of the other schemes, Emmons says, were done “tongue in cheek,” but the board took them seriously. An internal hassle developed over which design was the best. It reached such proportions that, in desperation, the board decided to call in an out-

The design of BART’s elevated track structure (a test section is shown at right) became the subject of unexpected controversy. When Architect Emmons presented it, he also showed a few alternatives for contrast (including the two above). Some of the directors like them better. Below a long-span section in Daly City, for which the basic structure was modified by Architects Gerald M. McCue and Associates.
ide authority to referee the debate. It picked John E. Burchard, former dean of humanities and social science at MIT, who at the time was in residence at the University of California in Berkeley as a visiting lecturer in architecture and urban design.

Burchard studied all the designs and issued a philosophical report on elevated structures in general and Emmons’ several schemes in particular. “The first aesthetic question,” Burchard said, “is whether to state [the rack structure’s] presence very strongly, even brutally, or to let it be as modest an element as possible. Were we speaking of a viaduct spanning a chasm or a bridge crossing a bay we might make a good case for a bold, almost dominant statement. But in our case the structure goes on and on. In such circumstances the dramatic solution is not really acceptable and we are left with the necessity to find a design which is modest and compatible but not a piece of camouflage.”

Burchard concluded that the scheme originally proposed by Emmons was the best, calling it “far more direct and positive and good looking, while at the same time free of any affectation.” He also advised the board to be “influenced most” by Emmons’ opinions: “Not only are his qualifications high, but it is essential that the person involved in these decisions be close to the process by which they are subsequently implemented.”

Emmons says he was assured that he would be involved in the design of structures for special situations where the basic structure would not serve, but Stokes apparently has never said one was special. For the design of one such structure, however—a 230-foot bridge spanning an intersection in Daly City—the engineers have brought in Gerald M. McCue & Associates as consulting architects. The design, employing a rigid-frame center span on V-shaped columns, is “one of the most happy results of collaboration between architects and engineers I have ever seen,” says Walter Douglas.
BART has become easily the largest single employer of architects in the San Francisco Bay Area. A total of 14 firms have been commissioned to design—or, as some would have it, refine—the system's 37 stations.

The involvement of so many firms was the direct result of a decision made shortly after Emmons and Thresher were brought in. The two architects toured the rapid transit systems of Europe. Thresher recalls that they were struck by the differences between the “sterile” stations of Berlin, designed by the city architects, and the “delightful” stations of Stockholm, designed by a variety of private architects working from schematics furnished by the engineers.

They returned, says Thresher, convinced “that we must deliberately avoid monotony” by use of a multitude of architects, “even though we knew it would be a lot tougher that way.” This philosophy was accepted by BART and the engineers, and Emmons drew up a list of what he considered to be the best of the Bay Area architectural firms. BART reserved the right to make the final selections. Of the chosen 14, only one firm, Mahler & Martens (which was given four stations), was not on the Emmons list. The process of station design is now at midpoint, and the widely varying results to date (samples below) have as much to do with procedures as with the talents of the architects involved.

The beginning was promising. Immediately after his appointment, Emmons began putting together a research staff to help
develop design criteria for the entire system. "Nobody had any idea of what the architecture of rapid transit should be," he says. It was like trying to determine what a modern office building should be if the last one were the Woolworth Building."

Emmons made what seems, at first in retrospect, a daring choice of a leader for his research team: Christopher Alexander, the young British architect-mathematician, then just arrived at Berkeley, who has since become a leader in the attempt to bring the design process into line with the cybernetic revolution (see "A City Is Not a Tree," April and May 1965). Alexander and his group studied the transit systems of New York, Chicago, Philadelphia and Toronto; talked with a cross section of those involved in transit, from administrators to janitors to passengers; consulted a number of behavioral scientists; and fed their findings through computers.

The output was a list of some 500 root requirements for transit design — neither specifications nor performance standards, but what Alexander called "relational characteristics." Examples: people should not have to sit touching strangers; a passenger should encounter as few obstacles as possible between the time he enters the system and the time he reaches his seat in the train; there should be no dead-end station corridors where a woman could be trapped.

The research had been underway about a year, and had cost nearly $100,000, when it was abruptly halted by BART and the engineers. They had seen Alexander's list of requirements, and had dismissed it as a "joke book."

According to Alexander, the engineers rejected his work because it dealt with basic relationships, rather than numbers. The relationships were so basic, in fact, and so simple to talk about, that BART couldn't believe they had any value, in Alexander's view. Alexander feels BART and the engineers were not interested in anything except
The name of the game is engineering, and the rules for design are fixed well in advance.

According to the joint venture's Walter Douglas, Alexander's work was rejected because "it couldn't be focused into the decision making process." Says Douglas, "We were never enthusiastic about what could be accomplished by sociologists and psychologists and people of that nature. We have always been enthusiastic about what could be accomplished by such people as lighting consultants and acoustical consultants."

As these words indicate, the wedding between Alexander and the hard-headed engineers of BART was far from an ideal match. Emmons, the man in the middle, says that "a lot of good information came from the research, and that most of it was incorporated into the Manual of Architectural Standards, a 201-page document developed by Emmons' office as a guide for the architects designing the individual stations.

But many of the station architects interviewed by the Forum interpret the incident as the decisive encounter in a struggle over basic design philosophy, from which the engineers emerged the winners. At issue, they feel, was the question of whether BART's architects would be permitted to engage in truly conceptual design, or merely serve as cosmeticians for concepts already established by the engineers. "The name of our game is engineering," Stokes answers flatly. "Engineers have to be in the lead. Ours is a systems approach that brings architecture into all the other con-

Right, two further variations: For a light industrial area in El Cerrito (top), DeMars and Reay have bowed out the platform area to accommodate the escalators, freeing space in the ground-level concourse. For the Ashby station in Berkeley (bottom), where height was a problem, Wurster, Bernardi & Emmons made the entrances understreet tunnels and sunk the lofty, glazed concourse below grade.

Left, Emmons' office supplies architects with the diagrams such as the one at top, showing all of the essential station elements and desirable circulation paths. This one is for a suburban station in the morning: thus, the major flow is to the trains and the minor (dotted lines) from them. The center diagram shows how such a program was interpreted in the plan of the San Leandro station. The bouncing balls in the bottom diagram represents the steps a two-stage station design must go through.
Architects are involved in the projects almost from the beginning."

The rules of Stokes's game—the official design procedure for the BART stations—is a complex, lengthy process that, according to discussions with the station architects, is breached more often than it is followed. The procedure involves seven stages, with each stage subject to full review by the Design Review Group (composed of Emmons and key staff members of both the joint venture and BART), the Board of Control of the joint venture (composed of principals of each of the three engineering firms), officials of the cities involved, the architectural review committee of BART's Board of Directors and, finally, the full board.

First, a "station locator," who is usually a design engineer but never an architect, prepares a rough site development plan for the station area, puts it through the review process, and polishes it into a "design approval map." Then a design engineer from one of the joint-venture firms works with Emmons' office in preparing a detailed site development plan. The station architect then begins his work under the direction of the design engineer, and it is put through the full review process at five points: definitive station layout, architectural preliminaries, and three times during preparation of the contract documents.

A great deal of the station design, as this indicates, is fixed before the station architect comes along. The site plan tells him the precise location of the station on its site, and the layout of parking lots and external circulation. And the manual tells him a great deal more about its internal organization.

All stations, the manual specifies, must contain the following: a Free Area, entered without paying a fare, where patrons buy tickets; a Paid Area inside the collection gates; a Concourse between the entrance and the tracks, which always must be at mezzanine level in the subway stations; a Platform, always 700
BART was able to squelch an architects' revolt, but it has yet to master its budget problems.

feet long; a Canopy sheltering the platform, always 280 feet long; a Station Core near the covered portion of the platform, which must be in operation at all times while other areas are closed off during slack hours; and service spaces for electrical and mechanical equipment.

The manual further specifies certain standard items, such as a station agent's booth and the canopy, that must be incorporated in the station design. It also tells the architect exactly what materials he can and cannot employ on the interiors.

"Working within the framework of these standards," says the manual, "each project architect will be free to use his imagination and skill to design the best possible station." Some of the architects have been quite willing to accept the limitations of the manual and the complex design procedures as necessary, and make the best of them. Others find them more a strait-jacket than a framework.

A common complaint has it that too much depends on the design engineer. As one of the architects put it, "If the design engineer is knowledgeable and understanding—and many of them are—he can do a lot to get things approved. But if he isn't, he can block everything you're trying to do." Others go even further. "There is no one in the organization with an understanding or real interest in architecture," says one architect. "They talk about having the best architects they could find, but they have no real conviction." Says another, "They
be a pinched and mean concept of what stations should be." Emmons, for his part, can offer little help when problems develop. The station architects are not allowed to consult directly with him, but must first through proper channels at the joint venture. In an attempt to force a change, one of the architects drew up a petition manding that Emmons be given more authority and that architects be allowed more design freedom. The petition received several signatures when BART found out about it and squelched the revolt. The firm that instigated the plot, so the story goes, had been promised another station commission, but when the plot was uncovered, the station went to someone else. "We didn't want it anyway," says the architect.

Trouble of another kind, developing for months, came to a climax in February. The low bid for the downtown Oakland subway was $61.5 million—28 percent over estimates. A majority of the BART board, which had been watching inflation take its toll of the budget, wanted to admit the necessity of finding more money. But a two-thirds vote was needed, so instead BART cut back and called for new bids. Stringent economy has been the watchword of BART and its engineers ever since. "The budget heroes have got control of the situation," charges one architect. "The engineers do all the estimating, and the only way we can argue with them is for us to privately do our own estimating. If they can get a 5 percent gain in economy, it doesn't matter that we have 50 percent loss in quality."

Around the offices of BART and the joint venture, there is a stock answer for such charges. Says David G. Hammond, the district's director of development: "The architects often go off in directions that were never intended. They want to build the best monument possible, but we have to strike a balance between a Taj Mahal and the budget." The balance hasn't been struck in favor of the Taj Mahal.

The principal problem of the subway station architects has been to give some spatial quality to the mezzanines, despite low ceiling heights specified by the engineers. For two under Market Street (left), SOM slightly arched the ceilings, recessed the lights between exposed structural members—and proposed to take out two rows of columns to leave the clear span shown in the model photo (loads would have been taken by the side-walls to the slab beneath). BART first accepted the scheme, then rejected it on grounds of cost. The Market Street subways contain both BART and municipal trolleys.

For two especially constricted subways stations on Broadway in Oakland (top right), Gerald M. McCue & Associates opened the platform level to the mezzanine, making the mezzanine appear a balcony. For the downtown station in Berkeley (bottom right), Maher & Martens had it easier. The main entrance emerges into a landscaped plaza, so the architects created what they call a "jewel box" to bring light into the mezzanine.
"We are designing a transit system, not the Bay Area," says George L. McDonald, BART's director of public relations. The remark goes far to explain the approach employed by BART in carrying out the largest planning operation in the history of the Bay Area. There are no physical planners or urban designers on BART's staff. Instead, BART depends on transit engineers, public relations men, and sometimes its station architects to work out the details of location and design with the 17 communities astride its route.

As for the tremendous developmental impact that BART will have on areas outside its narrow property lines, BART's attitude is one of sympathetic non-involvement. "We are a catalyst that can make a lot of things happen," says B. R. Stokes. "But we have to limit ourselves to our facilities. We have no business usurping the role of planning commissions, city councils, supervisors, and the business community."

But the system and its surroundings are inextricably bound together, and BART often finds itself deeply embroiled in what goes on beyond its boundaries. Classic case history is the seven-year struggle among BART, the city, and private business interests over Market Street. BART will run a subway under Market from the waterfront to Civic Center, offering a dramatic opportunity to transform the divided street into the grand boulevard it has always hoped to be. The opportunity is a long way from realization.
The struggle began over stations. BART wanted to have four tracks on Market, at which time the streetcar level would come in handy.

When it came to the design of the subway, BART became firm. The city wanted BART to consolidate the utility lines under Market, which, among other beneficial results, would have allowed the station mezzanines to be built closer to street level and the basements of adjoining stores. BART rejected the idea when it decided to build the subway by tunneling between stations rather than digging up the street. (A plan to join the mezzanines into a continuous underground concourse was a casualty of the same decision.) As it is, the mezzanine floors will be about 23 feet below the street surface, far beneath the level of the store basements.

BART originally planned to have entrances to the subway on only one side of Market’s major intersections. The city, pointing out that the result would be to greatly increase pedestrian-vehicle conflicts on the wide street, is asking for Federal...
With subways, cities can make the most of a good thing; with aerial lines, it's not that easy. One reason is that BART is willing to go along. Through most of the horse trading with BART, the city has acted only after insistent prodding by a number of private organizations. Chief gadfly has been the Market Street Development Project, set up by the San Francisco Planning and Urban Renewal Association and headed by Architect-Planner Gerald J. McIndoe, who has proposed many of the changes made to date. It was only last year that Mayor John F. Shelley set up an official Transit Task Force under T. J. Kent Jr., his coordinator of planning, housing, and development. The Task Force, through its architectural and planning consultants, Mario J. Ciampi & Associates and John Carl Warmke & Associates, is now developing a Market Street master plan to make the most of the opportunities presented by BART's construction. Ciampi and Warmke last month proposed that the street be narrowed to four lanes and the sidewalks be widened from the present 22 feet to 35. The city's supervisors approved this first step, and the architects are now at work on the rest of the plan. Apart from the prospect of widened sidewalks, only a single piece of open space has been planned along Market as a result of BART: a sunken municipal plaza connecting with the Powell Street station mezzanine. BART certainly cannot be blamed for the fact that there...
In 1964, ART took some 60 government and business leaders from San Francisco and Oakland to Penn Station in Philadelphia, which takes described as "an outstanding example of what cooperation between public and private sectors of a metropolitan area can do with transit as a planning spur." Later ART had Architects Emmons, Corn, and McCue do design studies on integration of subway entrances with new commercial buildings and plazas. So far there have been no takers among private developers.

The controversies over BART's subway lines are basically matters of making the best of a good thing. The same cannot be said of the system's aerial segments. Aside from the historically blighting effect of elevated tracks, no matter how well designed, each aerial station will be served by acres of open parking. BART is building only one garage structure (at the station near its Oakland headquarters). Because of BART's budget problems, moreover, the landscaping of parking lots has been cut back, and some will be left undeveloped for years to come as raw and vacant land.

As they see land being cleared, the cities and suburbs along the aerial lines are awakening to what, in physical terms, BART will mean to them. Berkeley awakened early. For seven years it has been fighting BART's plans to run elevated tracks down the middle of three of its major streets.

BART defends the aerial lines on two grounds: they are more pleasant for the riders than subways, and they are cheap. Subways in cities, Walter Douglas says, cost between $25 and $30 million per mile, elevated lines $5 to $6 million. BART, Douglas pledges, will not run elevated structures on city streets unless there is 100 feet between building lines, and will buy property to meet this standard. BART and Berkeley finally reached an informal compromise: When bids are taken for the elevated lines, BART will
BART and the cities are having a tug of war. The likelihood is that neither side will win.

include an alternate for putting about two thirds of them underground. Berkeley will pay the extra $150,000 in engineering costs required to include the alternate, and will then have 75 days to decide whether to pay the extra construction costs of a subway. Neither side is completely happy with the arrangement—BART faces the delay, if not the cost, of a change in its plans, and Berkeley faces a whopping bond issue.

Because of such city-system conflicts all along the line, BART still has to sign route and station agreements with seven of the 17 communities it will pass through. The fault is by no means all BART's. Only a handful of the cities have made any attempt to plan for the impact the system will have on them. Most have been too content to sit back and watch speculators buy up property around the stations.

"A pet theme of local communities," says Ernest Born, "is to cash in on BART by getting it to build new sewers, put in new paving and curbs, and make other improvements that they should pay for themselves." If anything, says Born, BART "tries too hard to keep people happy. It has spent millions of dollars on asinine investigations to satisfy stupid politicians."

"No one can say that the Bay Area has not had an opportunity to fully explore and evaluate the impact and potential which rapid transit will have on its communities," says McLinden. "Its failure to make the most of this chance can only be attributed to lack of initiative on
part of communities, and lack of imagination during the detailed study period.”

The detailed study period, of course, was BART’s responsibility, and McLindon and others say that many of BART’s — indeed the communities’—current shortcomings can be traced to the absence of any regional, city neighborhood planning at this point. “Of course these aspects are beyond the comprehension and control of the transit engineer,” says McLindon. “From the very outset, the team should have been made up of planners, architects and landscape architects, as well as engineers. This team should have been prodding local communities into action, and requesting definitive plans with which the system could have been integrated.”

BART feels that its planning obligations were taken care of with its first rapid transit plan completed in 1956, in which a number of planners participated. “When the District studies began,” says Walter Douglas, “we did not try to redo that original report. We knew of no reason to redo it, and I still don’t.”

That early plan, points out Architect-Planner Rai Y. Okamoto, was only “a regional framework to identify the needs and specify solutions in general terms. The Bay Area has continued to grow with no reference to the plan.”

BART erred, says Okamoto, in not building “mechanics for continuous planning” into the process. “At the District level, there are keen and aware people,” he says. “But when it gets down to hard rock, the engineers take over. They are reluctant to accept more new variables that might arise from somebody’s making an impact study.”

Okamoto speaks from direct experience. He and his partner, William H. Liskamm, have conducted such studies in downtown Berkeley and Richmond and in San Francisco’s Mission District. The firm’s Mission plan (see below) illustrates more than anything that has yet been done the system’s great potential as a shaper of cities.
“Now under construction, RAPID TRANSIT for the Bay Area,” exults the cover of a promotional brochure distributed by BART. “A congestion-free, 75-mile network of SUBWAYS·AERIAL LINES·SURFACE LINES comprising the world’s fastest, safest and most modern urban transportation system.” BART’s circus-poster claims are essentially true. The system will be a feat of transportation engineering to match San Francisco’s famed bridges.

If engineering were the beginning and end of transit, in fact, there would be little about BART to question. But transit is much more. It is a force of unmatched power for shaping the growth of a metropolis. BART, whether it likes to admit the fact or not, is indeed designing the Bay Area, as the experience of other metropolitan areas proves. In booming Toronto, two thirds of the city’s major building construction in the last five years has been within walking distance of the stations on its 11-year-old transit line.

BART presents certain paradoxes. It will be the first truly modern transit system in the U.S., yet it is being planned according to 19th century concepts of the relationship between transportation and metropolitan form. “The system is not evolving, it is just happening,” Lawrence Halprin says. “We have tried to build cities this way. It doesn’t work.”

A second paradox is presented by BART’s use of planning and architectural talent. On the one hand, it engaged city planners in the earliest stage of the system’s development, then dropped them when it got to the point where detailed planning decisions had to be made. On the other hand, it excluded architects from the early, conceptual phase, then brought them in too late to take full advantage of their abilities.

Several of BART’s architects recently gathered for a luncheon discussion of the system’s problems and prospects. They were asked what they thought should be done to bring BART to its full potential. There were many detailed suggestions about procedures, but in the end all agreed that it was basically a question of leadership. As one put it, “I would get the best man in the world and put him in full charge. BART has lost the breadth of vision that it had in the early years. It needs a great leader.’’

Throughout the process of BART’s planning and design, the leadership has come from two directions: the engineers and the publicists. One side of this curious partnership has been primarily concerned with moving people, the other with convincing people. Money has been spent willingly for these two purposes—but grudgingly for the kind of substantive urban planning and design that could make BART the agent of the region’s transformation.

It is not too late for BART to change direction, but the problem is complicated by the fact that money is now in short supply. BART has a lengthy list of items which have pushed costs to date far beyond estimates. The chief item is inflation, but others include changes requested by communities, landscaping, and “architectural features” that should have been budgeted for in the beginning.

So far BART has continued to hope against hope that somehow it can bring the system in with the funds at hand—and without going back to the voters for more. BART is currently engaged in making a series of sweeping cutbacks. Many of them affect design, as might be expected, but others even affect the system’s safety. Pedestrian passages over and under railroad tracks near BART stations, for example, have been eliminated in the economy wave.

BART is on its way, but the closer it gets the less of a bargain it becomes. Unless changes are made in its procedures, BART’s shiny trains will pass through an environment that is worse, not better, for its presence. BART should bring urban planners and designers (including Emmons) into the heart of its decision-making process—not as consultants, or consultants to consultants, but as full participants. BART needs to find the money, and the broad-gauged leadership, to do the job right.

—JAMES BAILEY
EXPO SHAPES UP

Until recently, selling Montreal's Expo 67 has seemed an uphill task. The 1,000-acre site looked like two islands of mud in the St. Lawrence, and the New York World's Fair had left a bad taste in the mouths of public and exhibitors alike. But suddenly things are looking up: $11 million in advance tickets have been sold in just two months, and the Expo pavilions are taking shapes that already promise more architectural interest than Flushing Meadows ever offered. Expo's own constructions to date include the 1,500 ft. Bridge of the Isles, with a sturdily handsome suspension section over the Lemoyn Channel (top left); and the permanent Administration and News Building (lower left), with its projecting floors and hooded entries. At right, a sampling of the exhibit pavilions under construction (from top):

1. The Netherlands' tubular aluminum space frame, which cantilevers one of its three exhibit spaces out 45 ft.;
2. the flaring centerpiece of the Canadian Government pavilion, which will eventually take the form of an inverted pyramid 108 ft. high;
3. the conical, cedar-shake-clad Western Provinces pavilion, which will have giant fir trees growing out of its top;
4. the Scandinavian pavilion, raised on steel stilts over what will be a sculpture garden and open-air restaurant. (For a preview of the U.S. entry, see page 72.)

MALTESE MISCELLANY

Scalloped roofs, latticed balconies, and multi-paned windows are tossed together on the exterior of Richard England's Paradise Bay Hotel at Cirkewwa, Malta (photo above). Composed of a curved and a rectangular block, it is set neatly into two levels of an abandoned quarry. The upper section houses 32 of the hotel's 40 bedrooms. The lower, curved unit, which looks out on irregularly shaped swimming and wading pools, includes kitchen, dining hall, bar, lounge and remaining guest rooms. The blue and white trimmed concrete block exterior hides bearing walls of local stone.

BROADWAY BIBLE HOUSE

The beefed-up bearing wall building is clearly becoming the new vernacular of SOM-New York. This one houses the column-free offices of the American Bible Society, and is located on upper Broadway in Manhattan, in the changing precinct between Columbus Circle and Lincoln Center. The first story is cast in place concrete, and from there up the structure is made of burly prestressed pieces. Called "Bible House," the building contains offices, an auditorium, and a large library.

CAMPUS PORTE COCHERE

Paul Rudolph's latest, the $1.5 million Charles A. Dana Creative Arts Center at Colgate University, sends its heavy fascia outward to become a porte cochere over an entryway to the campus. The rhythmic facade reflects the multitude of facilities housed in the building, including a 400-seat auditorium. At least two changes have been made in the design since it was unveiled to the not entirely enthusiastic comments of Philanthropist Dana: the fascia, which was to extend in the other direction too as a bridge to the hillside, doesn't; and the walls, instead of being corduroy concrete in the Yale manner, are plain concrete and striated block.
26-story tower that is the major element of the John Fitzgerald Kennedy Federal Office Building, dedicated last month in Boston, is split into two slabs, served by a service core and staggered to bring more sunlight into the interior. It and the attached 14-story structure were designed by The Architects Collaborative. A noncommittal curvilinear wall of quartz-studded precast panels covers both the steel frame of the tower and the concrete frame of the low wing. Circular corner windows, reminiscent of the 1930's, are decked on the interior by hefty corner columns. This is the first major landmark completed in the still largely empty Government Center. The crane at the right in the lower photo, incidentally, is hoisting pieces of the new City Hall.
Dovetailed into an old block the Pilsen neighborhood of Chicago, the Emmanuel Presbyterian Church says clearly that something new is happening. Using blade-like wall planes set at regular angles, architect Edward Dart has given the church perplexing forms unlike anything else in the endless grid around.

The site is in the midst of poor but respectable area on two miles from the heart of the Loop—an area that has been absorbing new minority group mostly Negroes and Mexicans, recent years. The church is meant to serve as an anchor for the remaining English-speaking whites and a place of welcome for the newcomers.

As much as it differs in form from all that is around it, Dart church fits snugly into its allotte space, even relies on adjoinin buildings in its design. It offers the neighborhood reassurance that change is not something to be feared.
The line of building fronts is broken at the church by an open space shaped like a shallow funnel, as if to encourage the congregation to gather and enter. At the point of the funnel, where it seems the entrance ought to be, stands a small belfry (left), made more prominent by slight distortions from the expected rectangular plan (below).

The actual entrance is tucked away in a corner of the forecourt, playing its part in a roundabout process of entry that leads the worshiper almost 90 ft. from the church’s gate to the point— actually only 30 ft. from the sidewalk—where he comes into the sanctuary (right).

To reach this point he has gone up a front walk that turns twice and rises once (an awkward budget version of the ascending terraces originally planned); passed through a polygonal narthex (which offers an unexpected back-stage view of the chancel through glass doors); turned again, and climbed up a ramp that rises between blank brick walls toward an acute blind corner. Only at the last moment does the left-hand wall fall away, revealing the entire sanctuary in one wide view.
The sanctuary is a fan-shaped space, defined by free standing planes with light coming in between them from hidden sources. Only the obvious heaviness of the brick keeps them from looking like flats on a stage.

A tilted ceiling plane intersecting these planes at odd angles makes the spatial geometry almost impossible to grasp. (Actually, the relation of the roof to front and back walls is much simpler than it looks, as the sketch below shows.)

The congregation is spread out in a wide arc, facing several focal points—cross, pulpit, communion table—so that everyone seems to be directly in front of something. The farthest section of the fan is occupied by the choir (right), tilted up behind a low brick wall, but still clearly part of the congregation. The round brick pulpit and the black granite baptistery (below right) are handsome as objects and perfectly at home in this space.

The church as a whole has much in common with Victor Lundy's Church of The Resurrection in New York (Jan./Feb. issue). But Lundy's church had to be a powerful, unified sign of hope in a neighborhood of doomed buildings, Dart's building is subtler in form, smaller in scale—shaped to fit, not to resist, the environment around it.

—John Morris Dixon

FACTS AND FIGURES

PHOTOGRAPHS: Orlando Cabanban.
BOOKS


REVIEWED BY PHILIP JOHNSON

In reading Robin Boyd I cannot help thinking of the time, a generation ago now, when Henry-Russell Hitchcock was similarly engaged in writing contemporary architectural history in his monumental Modern Architecture of 1929 and the picture book, The International Style: Architecture 1922-1932.

Like Robin Boyd, Hitchcock was writing history about buildings barely off the drawing board and, like Boyd, trying to find good and great architecture in the maze of contemporary work. I cannot help but think Hitchcock's task was a simpler one. In the early 30's we could see the triumph of the International Style. The dominance of Le Corbusier (1) was already complete. The Barcelona Pavilion (2) had already established Mies, and the Bauhaus building, Gropius. The continuation of that triumph seemed assured. And indeed it was.

But today, and I wonder if the fact that I am sixty has anything to do with it, the picture does not look as clear, the lines so well drawn. Indeed, my own sense of lack of direction is quoted against me by Boyd. Apparently I said somewhere, “Why can we not wander aimlessly?” I was all for a principle of lack of principles, as it were. Boyd will have none of this, and his description of the situation today in the world of architectural design is completely convincing. At least to me.

Since I must recommend that every architect read every word, it may seem unnecessary for me to paraphrase the main thesis; but since Boyd does dress up his main points with discussions and, especially at the end, with a moral appeal for Realism, Functionalism, and even Truth (values I find too elusive to be satisfactorily invoked), it might not be out of place to give my impressions of his history.

A word of warning: The following resumé may differ from Boyd's in many ways. He himself is quite accommodatingly liberal, not to say loose, in his terminology. For example, he labels the Kurashiki Town Hall (3) by Tange as Third Phase, when quite obviously it is Second Phase. We can afford in these murky waters to be slightly indistinct.

It seems then there are three phases of modern architecture of the last generation. By using the word "phase," the author reduces the dangers of the brick-bats that Hitchcock received for the nasty words International Style. (It is amusing to note, that no matter how much vilification we received for using the words International Style, the term is still used, even by the present author, and still means exactly what we meant it to mean 35 years ago when Alfred Barr first coined it.)

The First Phase then includes the International Style, all the work from the 1920's revolution to the present. This phase is based on the now old ideas: structural honesty; repetitive, modular rhythms; clarity, expressed by oceans of glass; the flat roof; the box as the perfect container; no ornament. Today Mies is the lone giant still sensitively producing works of art of the First Phase. Many fine SOM skyscrapers and much lesser work by lesser architects continue the tradition. Fortunately or unfortunately, the First Phase principles were easily adaptable by commercial and industrial builders, and the rallying cry of the intellectuals of the twenties and thirties became the slogans of the speculative builders of the fifties and sixties.

Came the reaction and the Second Phase. All over the world we were bored. The fifties were groping. On the one hand, decoration came back; on the other, historical reminiscence. We have only to think of Paul Rudolph's Wellesley Gothic, Edward

tone's Venetian Huntington artford, my own Classical Lin-
din Center (4), or Yamasaki's-othic tracery. Although Louis
ahn belongs to a later story, is love of castles and San Gi-
ignano. One of Boyd's words or the main tenets of the Se-
ond Phase is the jaw-breaking ord "monolithicism." That is,
e stuffed our functions in those sys
co into preconceived geometric anus. The cube, the cylinder,
trirectangular solid. Or even into warped shapes or bunch of
ape clusters; my Dumbarton oaks being one example. The
ape was primary. We even ent in for vaults, hyperbolic
araboloids, gables, even for symboic shapes (consciously or
consciously) like the winged id of Saarinen's TWA (5).
The special story of Kenzo tange is illustrative. Starting
ith pure International Style First Phase) at Hiroshima,
tange quickly went Second phase with his famous town
als. Two features stand out: is love of Japanese architectural
nd the fitting of function into hapes, shapes, shapes. The best
es are Kurashiki. The plain rectangular block is made of
racst concrete "logs" that lap at the corners like a log cabin.
The building is lifted off the ground, clearly recalling the shosoin at Nara. The windows are cut in at arbitrary but effective spots.

The Third Phase, what is happening out front in architecture
n the sixties, is naturally hard to explain. In art, labels are better attached after a long wait. I think of "Gothic" and "Baro-
que," both pejorative terms when they were invented. So Boyd is in a spot and I am, too, since it is obvious from the book that I am essentially Second Phase.

My description, therefore, of the Third Phase may be (1) prejudiced (age envies youth); (2) sympathetic but inaccurate (papa never understands junior); (3) absurd (old goat pretending to swing); (4) fair (I have seen everything). (A footnote to this talk of "age." It is meant only as between Second and Third Phase architecture. Both Louis Kahn and José Luis Sert are, in years, older than I.)

Anyhow, easier than talking principles, let us quote buildings included in the canon of the Third Phase today and deduce a few basic threads of consistency. Boyd lists specifically Kahn's Richards Laboratories, Rudolph's Arts* and Architecture Building, Sert's Married Student Housing (6), Tange's Yamanashi Press Building (7), and Johansen's Taylor House.

Why he omits the key English building, Leicester University Engineering Building by Stirling & Gowan, I can't imagine. It beautifully illustrates the Third Phase and is perhaps the strongest of the lot. Consider it included (8).

What have these buildings in common that makes them a group? What identifies the Third Phase? Since what something is not is easier to make precise than what that something is, these buildings are not rectangular skin-interesting boxes like the First Phase, they are not arbitrary shapes like the Second. They are not all glass with even bay systems poised on pilotes above the ground like the First Phase, or carefully smooth-material monolithic "significant" forms like the Second.

On the contrary, within the general modern movement with its emphasis on functionalism, structuralism, anti-axiality and anti-ornamentation (all these modernisms are scrupulously present), the Third Phase has found a new way toward the synthesis of unity and diversity, clarity and complexity.

In many cases a functional element has been picked out and exaggerated to make breaks and strength of intent, viz., the exhaust pylons of Kahn's Richards Laboratories, the vertical communications of Tange's Yamanashi Press Building, or the toilets in Paul Rudolph's Government Center. Sometimes a single element is repeated but at various scales, like the sun boxes of Rudolph's Milan House or Johansen's Taylor House. Sometimes great gashes are introduced in the buildings, not in. The change from Kurashiki to the Yamanashi Press Building is a case in point. The Second Phase clothed great rooms with a single significant shape. The Third in a play of external space semi-enlosed by functional elements strongly expressed.

Often the Third Phase, unlike the First, but like the Second, reaches back into history but is more apt to pick more recent models. Stirling's Leicester reminds me of Hannes Meyer's drawings for his entry in the League of Nations competition of 1927 (9). Haering's Garkau and Tatlin's Utopian schemes are especial favorites. Wright's "looseness" as in the Robie and Kaufmann house designs is analogous to the play of space in the Third Phase.

The Third Phase is contemptuous of careful finishes. Coming from Le Corbusier and his English Brutalist followers, the "toughness" of raw concrete, unpointed brick work is favored. It seems to the sixties more honest (handicraft is gone forever, anyhow), more of our era.

Functionalism has taken a new turn. Every architect realizes that function is not the sole maker of form, but the functional parts are made the basis of form much more than in the Second Phase. "What the building wants to be," in Kahn's phrase. Johansen's proposed library for Clark University expresses separately almost every varying function in the building. Big rooms hang out big, small rooms small.

Perhaps the most "far out" building actually to be realized yet in the Third Phase is Tange's Yamanashi Press Building in Kofu City, Japan, now nearing completion. At first it strikes the observer like an A.A. student's design made into a big instead of a small model, since so much of the "plug in" quality seems already to be there. It seems
BUCKY'S BIGGEST BUBBLE

A little less than a year from now, on the island of St. Helène where the St. Lawrence River flows past Montreal, a 20-story Crystal Palace will officially present the U.S. at Canada's Expo 67. This Crystal Palace will be the biggest dome ever built by Buckminster Fuller, and it will dramatize the theme of the U.S. pavilion even more strikingly than the exhibits inside it.

That theme is "Creative America," and in picking Bucky Fuller to dramatize it, the U.S. Government (which has not always been very imaginative in such matters) did itself proud.

General descriptions of Bucky's biggest bubble (and of the exhibits it will house) have appeared in earlier issues of the Forum. This is the first detailed account of how this building was commissioned; of how the dome will be constructed, shaded, and ventilated; and of how the exhibits will be displayed inside it.

Why Bucky?

The job of producing the official U.S. exhibit for Expo 67 fell to the U.S. Information Agency and its director, Leonard H. Marks. But at the operational level, where—in the end—the quality of any such enterprise is determined, the key decisions were made by relatively unknown officials and, in particular, by Jack Masey, a graduate of Yale's school of arts and architecture, who had been appointed chief of design.

Masey had worked with Bucky and his domes before: in Kabul, Afghanistan, in 1956 (that dome was reused elsewhere about a dozen times); and in Moscow in 1959. He had not only found Bucky's domes easy to ship, easy to put up, easy to fill with exhibits, and easy to take down and reassemble elsewhere; he had also discovered that the domes, almost invariably, filled foreign spectators with awe at U.S. technical virtuosity, and with delight at U.S. aesthetic sensibility. So, when USIA asked for a great, big enclosure to house proof of American Creativity, Masey asked Fuller for the biggest dome yet.

The model seen at left shows what USIA (and Montreal) will get; and the details described on these and the next pages suggest that the dome may, just possibly, steal the show at Expo 67. If so, this will be a tribute to a small number of very atypical U.S. Government officials who were willing to take a big chance. But if Bucky triumphs, his success will not be an unmixed compliment to Creative America for, after all, Masey and his associates had to go to a man in his seventies for the best example of design creativity in the U.S.—and where does that leave everyone else?
The pavilion can be regarded as a prototype 'environmental alve,'" says Buckminster Fuller. It will enclose sufficient space for whole communities to live in a benign physical microcosm." One reason Bucky's bubble will be climatically benign inside is that the skin carried by the spherical space frame has been designed to act like the skin of some sort of animal. A number of the hexagonal acrylic domes will have exhaust vents in the center to permit the interior to "breathe"; and each of the acrylic domes will be shaded by a device straight out of science fiction: a system, in Bucky's words, of "mechanically actuated, triangular, metallized plastic sun shades that will provide dynamic modulation of the interior climate."

The device functions as follows: a motor will be mounted over the center hub of each group of three interior, hexagonal frames. This motor is activated by the rays of the sun, and each of the 600-odd motors has been programmed to go into action when those rays strike it at a predetermined angle. When the motor goes into action, it starts to pull at three sets of cables (six cables per set). These cables, in turn, begin to unwind the metallized plastic shades that are normally wrapped around window-shade-type rollers. The rollers are overlaid on the interior hexagons. The drawings at left show how the triangular plastic shades are gradually and automatically unrolled.

The first of these fantastic gadgets was assembled and tested in the manufacturing plant a couple of weeks ago, and the pictures at right show a typical, tri-hex shade assembly in operation.

Skeptics may ask whether it makes sense to use a skin that requires such complex shading and ventilating devices. (Although all the acrylic domes will be hexagonal, there will be 45 differently shaped hexagonal domes in all.) The answer is that the Montreal dome is not meant to be a "building" designed simply to house and enclose; it is meant to be a demonstration of an ultimate "controlled environment," protected but not cut off from the outside world. "From the inside there will be uninterrupted visual contact with the exterior world," Bucky says. "The sun and moon will shine in, the landscape and sky will be completely visible, but the unpleasant effects of climate, heat, dust, bugs, glare, etc. will be modulated by the skin to provide a 'Garden of Eden' interior." The interior will contain 6.7 million cubic feet of space—about the cubage of the Seagram tower.

Even without these mechanical effects, the dome should be quite a sight: Bucky describes it as a "Geodesic skybreak bubble," and explains that it has a spherical diameter of 250 feet, an actual height of 200 feet, and a surface area of 141,000 square feet. "There will be 27 miles of pipe weighing 600 tons, and 5,900 hubs weighing 120 tons," he adds. This means that, not counting the weight of the plastic domes or the shades, Bucky's dome will utilize only about 4 ounces of material to enclose 1 cubic foot of space.
Any exhibits designed to fill such a spectacular enclosure would appear doomed to obscurity. Yet the exhibit structure (left), designed by the Cambridge Seven may turn out to be almost as spectacular as the dome that will house it.

The structure will be a series of platforms on different levels, connected by escalators, bridges and elevators, and containing exhibits of American creativity in the arts, sciences and technology. The arrangement of the platforms will make possible some highly dramatic exhibition techniques: objects will be visible not only at eye level, but also from above and below, while the visitor is standing or in motion.

The Cambridge Seven—another rather far-out group not usually commissioned by bureaucrats to do important work for the U.S. Government—will draw upon other Creative Americans to help select material for their show. Much of that material, especially in the arts, is likely to be controversial, and some Members of Congress, undoubtedly, would prefer a Hallmark-type exhibit.

But those who selected the designers of the official U.S. Pavilion at Expo 67, and of the exhibits it will contain, understood one all-important fact: that next year, in Montreal, "Creative America" will be on view before an international audience that knows a great deal about where the action is in U.S. art, design, science and technology. To trot out mediocrity before such people would be an insult.
FEEDBACK:

The Happy Household Of Halen

BY ROGER SCHAFER
The image of the structure on these pages, clean white in its setting among the trees, has been coming in and out of the international architectural consciousness for the past five years like a recurrent formal vision. It shown up periodically in various European professional magazines, in the proliferating journals of architecture, and, just a few months ago, in *Use Beautiful*, where it contrasted strikingly with the full-color decorators' palaces elsewhere in the issue.

This checkerboard structure is a housing colony of Halen, a Bern, Switzerland, built in 1961 by "Atelier 5" (E. Fritz, S. Gerber, R. Hesterberg, H. Hostettler, N. Morgenthaler, A. Pini, F. Thormann). It could be described as an 80-unit condominium, in U. S. housing terms; or as a microcommunity, isolated and containing within itself all the appurtenances of a small village (except, of course, a school or church).

I choose to call it a colony because of the nature of Halen's residents. I visited Halen in early spring, not so much to see at first hand its jutting forms, which I was predisposed to like, but to see how well it worked as human habitation.

I was struck immediately by the fact that this is not only a special place; it is inhabited by special people. They are the kind of people one might find in a middle-income Manhattan cooperative—bright, liberal, culture-conscious people—but in Halen perhaps a little richer and a little farther out. Halen is not an alternative to the Levitt-like villas favored by the suburbaners of Bern. It is more of a single-structure Greenwich village set among the trees.

This article is one of our periodic revisits to notable buildings to see how they have stood the test of use—hence the term "feedback." Mr. Schafer is an urban renewal consultant to commercial and nonprofit groups whose experience with U. S. cooperatives dates back to 1937.
Halen’s cooperative householders are unmistakably fond of the place. In five years, only six families have left (four for unrelated reasons, two because they simply didn’t like it). On the other hand, the waiting list is nominal. Few move out of Halen, but it appears that few others want in.

What keeps the crowds from Halen’s gates is the compactness of its dwelling units (sample plans at right) in relation to their cost. Residents have a choice of several types of row houses, most two or three stories, containing from three to six rooms. Each has a little something extra: a terrace, an entry garden, a tall living room with balcony gallery. But each is somewhat narrow, and provides a quantity of space that, while well arranged, is below Swiss standards and far below what Americans expect at a comparable price.

In the view of those who live in Halen and like it, this shortage of private space is made up in shared amenities. There is, first of all, the surrounding forest preserve, criss-crossed by paths. There is a community swimming pool and large playground. There is a laundry, a large parking garage where cars are kept from sight, a service station, and, on the central plaza, a gemütlich general store and a coffee house. (In case squeeze on living quarters is too tight, there is also a row of spare rooms or studios to let.)

All of these elements are linked in what is, in essence, a large building—a continuous rather unyielding environment. The structural elements are concrete, either left exposed, stuccoed and painted white. Public spaces are paved. But hardness of what has been built is ameliorated by the green that has grown around it. There is scarcely an unpaved square meter that has been left unplanted—whether terrace, roof top or open hillside.
Among the Haleners, at one time or another, have been seven members of Atelier 5 and their families. The architects had designed it as an experiment as they wanted to see first hand how it worked. Personally, I consider this an enormous step: should be an AIA regulation that architects live with the buildings for a time after completion.

Halen was an experiment, but Atelier 5 denies that it was intended as a model. "Take heed, the architects warned in their British annual, World Architecture. "We had no intention of putting forward a prototype."

Switzerland seems to have
taken them at their word, for no compact colonies quite like Halen have appeared there since. In Bern, it is regarded as a curiosity, not as a serious alternative to suburban sprawl.

What about the construction of Halens in America? Each of our major metropolitan centers could use a few, if only for the same kind of specialized clientele that Halen has attracted. But given the American predilection for private space, open and enclosed, my guess is that the market could not absorb a great many such developments. I find this fact a sad one, because life in Halen struck me as a very pleasant kind of life indeed.
Design Continuity—San Franciscans and New Yorkers who are of Chinese origin (or who happen to be addicted to Chinese food) are thoroughly familiar with the little red pagoda shown at left: It is, of course, one of the more thoughtful contributions to the field of gracious “street furniture” visible in the US streetscape, and it hurts to see a fine architectural firm like Kelly & Gruzen pay little attention or respect to the idea of “continuity.”

The committee said it had surveyed 400 industrial firms, and had found that future decisions on plant locations were likely to be made on the basis of availability of natural resources, “without regard to whether such sites now have populations of potential employees.”

The committee proposed putting industry underground, in “modules” of sub-cities that would gradually grow around a central core (rendering below). Transportation between the modules and the core would be along underground and surface highways of up to 30 or 40 lanes. There was no mention of nonautomotive transit.

Joseph Timan, president of Horizon Land Corp. and chairman of the committee, called for Federal assistance in launching the plan. The committee, he reported, is “in contact” with HUD.

VISON OF A PARK

The Pennsylvania Railroad last month announced that it planned a 148-acre apartment and office building development along the Allegheny River northeast of Pittsburgh’s Golden Triangle. First step will be the clearance and landscaping of the entire site as a “land bank” for subsequent staged development.

Planning consultant for the project, called Penn Park, is Chairman Robert W. Dowling of City Investing Co. Dowling released the rendering above. Asked who the architect was, a railroad spokesman mentioned “Rudolph,” which didn’t seem to fit the image Dowling showed. It turned out that he was speaking of Rudolph Associates, renderers, rather than Paul. Penn Park’s architects have yet to be chosen.

PLAN FOR 30 MILLION

In 1929, the Regional Plan Association produced the first comprehensive plan for the New York Metropolitan Region (22 counties spread over three states, and containing 551 separate municipalities.) To RPA’s surprise, many of the 1929 recommendations have become reality — most for better, some not quite.

Last month, RPA got ready to produce its Second Regional Plan, so as to guide the growth of the metropolitan region (now enlarged to an assumed 31 counties) through the remaining years of the century. To help prepare that plan, RPA nominated a committee of 125 top architects, planners, educators and labor, civic, business and religious leaders. The first half of this imposing group met for three days late last month in Princeton, N.J., (part of the newly annexed area) discussed the premises upon which RPA proposed to base its new plan, suggested alternatives, and advised some shifts in emphasis.

According to RPA’s projections, the New York Region will contain more than 30 million people by the year 2000. This population will be very differently constituted, in terms of employment, income, age-levels, etc., from the region’s present 18.9 million. How to cope with the increase and the changes in make-up were the principal objectives of this first meeting. The completed Second Regional Plan will be published next year.
UP & DOWNS

ADMIRABLE DEDICATION

The architects of Boston have done something that their organized brethren in other cities might well envy. They have just dedicated a new six-story building (below) conceived by and built for architects, devoted entirely to the needs of the profession.

Even before its new headquarters in Back Bay was built, the 77-year-old Boston Architectural Center was quite an institution. Besides maintaining a steady program of lectures, conferences, refresher courses, and the like, the center provided something unique: a low-tuition evening school of architecture to which local architects donated their time.

When construction of the new Government Center forced the B.A.C. out of its musty old converted quarters on Beacon Hill, the directors decided to build a new building with public exhibition space and offices for the Boston Society of Architects as well as bigger, better teaching space. They went about it the proper way, too: held a competition and built the winning scheme, by Ashley & Myer, quickly and with few discernible changes.

Last month they christened the almost-completed building with days of meetings and parties. The intellectual high-point was a two-day conference on the Future of Architecture. Hardly a new subject, but they covered it well, giving most of the platform time to technologists, developers, anthropologists and other non-designers who (for the most part) had something pertinent to say to architects. What they said, in various ways, was that the architect better get with it if he wants to even exist in the future.

If attendance and attention are an indication, Boston architects are willing to face the challenge. The new center gives them a clear head-start.

CONSTRUCTIVE CONTRIBUTION

Just when Boston architects should have been patting themselves on the back over their new Architectural Center (below), they got punched in the nose by a front-page scandal. Architects have generally managed to stay out of the more or less perpetual political scrapping that goes on in Massachusetts, but this time they were right in the thick of it.

Ironically, things had been looking up lately in the area of state-sponsored architecture. The University of Massachusetts, for instance, had been making careful, enlightened choices of architects for its vast expansion program with the support of Governor John Volpe.

When the time came to choose an architect for the $30 million University Medical School to be built in Worcester, the board of trustees went through a year-long process, screening hundreds of applicants with the help of Pietro Belluschi, former dean of the M.I.T. school of architecture. Last September they submitted a list of five firms or teams in order of preference to Governor Volpe. He accepted it with such apparent reluctance that the trustees leaked word to the press that the school would be designed by their first-choice team, The Architects Collaborative of Cambridge with Ellerbe & Co. of St. Paul, Minn.

But the governor's office remained silent for several months. Then, in late January, he commissioner of administration, John J. McCarthy, announced that the job had been awarded to Ritchie Associates of Brookline, a firm not even considered by the trustees (although it has specialized in hospitals, most of them small). Ritchie was teamed with Campbell, Aldrich & Nulty, who had been the trustees' second choice.

When the trustees protested, McCarthy heatedly asserted his official right to appoint architects for state projects and his duty to support Massachusetts architects. But then he decided to bring in Ellerbe & Co. after all as consultants, adding an estimated $400,000 to fees for the job.

The Democrats in the Massachusetts Senate hearings were held in early May on three bills, languishing in Congress since last summer, that would encourage the undergrounding of power lines. Indications were that the legislation would be allowed to languish a little longer.

Representative Richard L. Ottinger of suburban Westchester County, N.Y., author of the bills, complained of the Interior Department's lack of support for them. Two of the bills direct the Interior to undertake research into the "economic and other" damage done by overhead lines and into methods of undergrounding, and the third provides tax incentives to utilities who bury their wires.

Utility spokesmen, who speak softly but carry large political sticks, told the Senators that a modest research program wouldn't do much harm, but that undergrounding was awfully costly. Their alternative: a "Beauty" program of improving the appearance of overhead lines, already underway.

General Electric Co., asked for pictorial examples of Beauty, supplied the picture above, showing...
erhead transmission towers of Pittsfield, Mass. They would disguise structures indeed, if it weren’t for those messy wires.

Hang Gas Stations Be Beautiful

Recently there were the signs that the power lines’ Beutility might be ended soon by oil industry Gas

stations. At the invitation of Mrs. Johnson, the American Petroleum Association showed 144 colored photos of beautified stations in the Room of the White House. This is a growing emphasis on tasteful display of merchant graphics by Chermayeff & Geary and a handsome steel and plastic pump by Eliot Noyes.

Also by Noyes: a crisp prototype station (second from bottom) to be tested in Connecticut.

Pittsburgh announced the results of what it called the first design competition ever held for gas stations in an urban renewal area. The winner (and only entry): the pleasant, almost sign-free Gulf Oil pavilion shown at bottom, designed by Architect Michael R. Cozza. Two of them will be built in the East Liberty renewal area, coincidently close to the world’s first drive-in gas station (above) built by Gulf in 1913.

Ban the Box

The automotive industry has its Ralph Nader, President Johnson has Senator Fulbright, and now the Post Office Department has William H. Qualls.

Mr. Qualls is executive director of the City-County Planning Commission in Lexington, Fayette County, Ky. He recently discovered that the Post Office Department had stopped extension of front-door mail delivery to new subdivisions on Lexington’s fringes, leaving them with rural type curb-side boxes. Then he discovered that the move was part of a nationwide policy that would affect some seven million addressees.

Mr. Qualls fired off letters to Mr. Johnson, Mrs. Johnson, the Post Office Department, and the Forum. “It’s sort of pathetically funny that FHA is instituting a new policy to get developers to eliminate poles by putting all wiring underground in new urban area subdivisions, while another federal agency is instituting another policy to put up mailbox poles in the same subdivisions,” he wrote to the Forum. “They say the boxes will blend right into their urban surroundings. Yeah, just like our telephone, electric, stop signs, and other poles blend right in!”

Assistant Postmaster General W. M. McMillan replied that the policy was not a new one, and that it was necessary to cut postal deficits. Mr. McMillan noted that “there are on the market several designs of contemporary mailboxes” and forwarded, postpaid, a departmental flier showing some of them (sample below).

Meanwhile, the Department held

“Mailbox Improvement Week” May 16 to 21. Postmaster General Lawrence E. O’Brien proclaimed that mailboxes that look their best “can be an unusual and beneficial contribution to the natural beautification efforts of the President and First Lady.” He commended boxholders who had “painted their mail receptacles in decorative colors and provided ornamentation such as iron-work representations of dogs and other animals.”

Mr. Qualls, unconvincing and undaunted, sent along some photographs of such spontaneous efforts at beautification in the Lexington area (sample below).

Leaders

Two for HUD

President Johnson last month filled the last two vacancies in the top management of HUD. Appointed assistant secretary for demonstrations and intergovernmental relations was H. Ralph Taylor, New York urban renewal consultant formerly of the New Haven Redevelopment Authority. Taylor is regarded as a sure-handed urban affairs professional.

The assistant secretaryship for housing and renewal assistance went to Don Hummel, mayor of Tucson from 1955 to 1962 and former president of the National League of Cities. Hummel’s credentials are less obvious than Taylor’s, aside from the fact that the President wanted a mayor in
the post. Tucson had no urban renewal program during Hummel's term of office; he was preparing to turn one before the voters when he left in the wave of Goldwaterism that swept Arizona. Since then he has been a contract developer of tourist facilities in national parks.

Hummel's responsibilities will include most of those once handled by Urban Renewal Commissioner William Slattery, now head of the Urban Policy Center of Urban America Inc., and Public Housing Commissioner Marie McGuire. Mrs. McGuire reportedly has been offered the ambassadorship to Sierra Leone, the former British colony on the west coast of Africa.

**VISUAL RIGHTS**

The venerable Architectural League of New York, founded in 1881, has been putting along serenely for some years now—awarding fellowships, holding exhibits, sponsoring symposia. Last month, the League was literally shaken to its foundations.

Elected to its presidency was Architect Ulrich Franzen. With him came in six new vice presidents: Interior Designer Emily Malino, Engineer Lev Zetlin, Landscaper Architect Robert Mallkin; Artist Max Spivak; Sculptor Isamu Noguchi; Architect (and Editor) Peter Blake.

Franzen immediately called for the League to become "activist," to undertake design demonstration projects, to arouse the people of New York so they would "demand their visual rights." He and the executive committee, seeking a drastic change in the League's image to match the Franzen program, also agreed to explore ways of leaving its drab little building on East 40th St. for new quarters.

**HONORS**

**THE SEASON**

Come spring, awards fall upon the architectural scene like blossoms. The following were announced last month:

► The biggest of them all—AIA's Gold Medal—will go to Kenzo Tange of Japan (shown above, right, at the Japan Arts Festival exhibit he designed for New York's Union Carbide building). It is, in a sense, an award to the strength and vigor of current Japanese architecture, which Tange pioneered, as well as to his own remarkable body of work.


► Constantinos Doxiadis, architect and city planner, has been named recipient of the third annual Aspen Award, ($30,000). He was cited for the urban renewal projects he has designed, and for his creation of "ekistics—the science of human settlement."

► Romaldo Giurgola, chairman of the Columbia University department of architecture, was named recipient of the Arnold W. Brunner award by the National Institute of Arts and Letters.

► Benjamin Thompson, chairman of the department of architecture at the Harvard Graduate School of Design, was elected a Fellow of the American Academy of Arts and Sciences.

► The Municipal Art Society of New York awarded its Bronze Plaque to a modern landmark, 375 Park Avenue (the Seagram building), and its architect, Mies van der Rohe and Philip Johnson.

**OUTCOME**

**UTZON: THE END**

The following report is by the Australian architectuic critic (see page 78) Robin Boyd, a member of the Forum's Board of Contributors.—Ed.

Jorn Utzon has been replaced as architect of the Sydney Opera House by a panel of four appointed by Davis Hughes, New South Wales Minister of Public Works. Hughes also called together all of Utzon's engineering consultants and asked if they would work with the new panel. They said yes.

Chairman of the panel is the government architect, E. H. Farmer. The other members appointed by Hughes were Lionel Todd, 36, who will be in charge of contract documents; D. S. Littlemore, 55, to be in charge of supervision; and Peter Hall, 34, to be in charge of design.

Hall was chief designer in Mr. Farmer's department until his recent resignation to set up in private practice. He has earned an outstanding reputation for a young architect, but he has not exactly proved himself to be a second Utzon—nor suggested in his work that he had any desire to be one.

Meanwhile, Utzon rendered his final professional account. It was for about $500,000—some for work done on Stage 2, the main building contract now nearing completion, and some for Stage 3, the interior acoustical structures and fittings, which are by no means fully designed yet. The bill was not accompanied by any of the drawings done so far in development of Stage 3. While the new panel was reported to be "familiarizing itself" with the project, it could not get far without them.

For a while it looked as if a nasty dispute might develop over the drawings. But the Government made an "interim payment" of $150,000 to Utzon's lawyers, and they handed over the plans. On May 17 workmen removed Utzon's name panel from the fence in front of the soaring Opera House.

**Walter McQuade**

is on vacation. His column will be resumed in the July-August issue.

The FOCUS GROUP

Luxury without bulk. Scaled to today's architecture. Comfort in full measure. FOCUS GROUP by Harter.

HAR TER
Harter Corporation, Sturgis, Michigan 49091
that seven round towers were casually spaced around the site. Suspended among the towers are the various floors. At one major point three whole floors seem to be left out making a vast, impressive void. The effect is staggering in conception. I hope it will be great in reality.

This caveat is necessary because like much early work of any phase, the ideas are apt to outrun execution. I am reminded of the beauty, clarity and slight unbuildability of early Le Corbusier and Mies sketches. There are many problems ahead for the Third Phase. It can disintegrate or it can become, as Boyd profoundly hopes, the architecture of the 20th century after the “failures” of the First and Second Phases. To a devout Second Phase man like myself, the danger ahead for it seems alarming!

But there can be no doubt the phase exists. There are too many elements in common. There is too much polemic, moralization and mystique simply to say it does not actually have validity. As a clincher to a doubter like me, too many good architects whom I have admired for more than a decade are leaders of the Third Phase today.

Boyd does not speculate too specifically on the why of this Third Phase, whence it arose. Matthew Nowicki once wrote, "Form does not follow function; it follows form." The Third Phase forms must have come from somewhere. The answer seems to be Le Corbusier. Although Ronchamp is certainly shaggy and additive in its elements, Boyd seems to consider it Second Phase. More of a clean ancestor is the design of the Jaulh houses. The British Brutalists derived an entire manner from these two houses. Their powerful vaulting, their crude in- and- out random fenestration seem to have liberated a whole generation.

The key building, however, is Le Corbusier’s Dominican Monastery, La Tourette (10), of 1957-60. Although it is a rectangle, the functional or pseudo functional divergencies, the casual treatments of the “facades,” the top-heavy treatment of the cells, the total lack of conventional base (one might think the building was designed upside down) are presages of the agglomerative style of the sixties. This group impressed every designer in the world. Most of us could not if we would follow Ronchamp, but La Tourette could speak to all, not translationally, but conceptually. The Third Phase was born.

To repeat, every architect must have this book. To narrow my recommendation, read pages 142 to 155 where the characteristics of the Third Phase are outlined. From page 155 to the end of the book, Boyd moralizes. Perhaps this is most important but not to this reviewer. I believe architecture, even present architecture, just happens. Rationalizations are interesting; Mies (less is more), Kahn (servant spaces) have interesting minds and their theories illuminate their work. But architecture will have immortality for different reasons that are hard for contemporaries to fathom. First, Second, Third Phase, all can be good (or bad). History will tell.

There are a few annoying things about Boyd’s book. Being a collection of essays, the point of view shifts uncomfortably from section to section. Sometimes Boyd is writing for the general public, sometimes for the initiated critics, historians, and fellow architects. Sometimes he is analytical, sometimes hortatory. Small price, however, to pay for the insights, the appreciative vignettes, the basic rightness of his story.

The drawings accompanying the text are by the author and are intended only to recall the buildings to the educated reader. Unfortunately, in drawing my glass house he omitted the axially symmetrical entrance door (11), which changes the character of the design. Accidents will happen. In all sketches of this kind the sketcher sees what he wants to see. The axiality of the glass house was not what he wanted. Postage stamp size photographs would surely have done as well.
In these school buildings where design brings a uniquely modern touch to traditional New England architecture, Hope's new Weatherstripped Steel Windows, in custom sizes, have been installed with pleasing effect. Construction of Hope's Weatherstripped Windows is in keeping with Hope's traditional standard of quality: Frames and ventilators are hot rolled solid steel sections with all corners mitered and solidly welded for maximum strength and rigidity; solid bronze hardware is furnished on all ventilators for permanence and durability; and Hope's exclusive continuous Neoprene weatherstripping reduces air infiltration by over 60% (confirmed by independent laboratory tests) and is well within the maximum rate established for weatherstripped aluminum windows.

For details on windows and engineering services, call your local Hope's representative; he's in the yellow pages. Write for Weatherstripped Steel Window publication No. 181-65 or see our catalogs in Sweet's Architectural File.
Our desk is soundproof. Also moveproof.

Ouch!
It really hurts to watch some moving men handle an office desk. Bump, bump, bump. Then pretty soon it's goodbye desk.
(And you'd be surprised to know the number of times office desks are moved. In one company alone that we know of, a desk has been moved 5 times in just 6 months!)
The answer, of course, is our 500 line desk. It's moveproof.
We've put a special honeycomb core inside the walls to give them unusual strength. So when the desk is moved on a dolly, the walls won't buckle. And the drawers won't get out of whack.
Another thing. The drawers are soundproof. Slams are muffled by the honeycomb inner wall, and by the 100 lb. felt that lines the walls inside the drawer opening.
Everything about our desk is made the way office furniture ought to be. Furniture that looks beautiful and works beautifully—a solid investment for the management who pays for it.

ART METAL INC
JAMESTOWN, NEW YORK
creative architecture is recognized by Remington∗!

Remington heating and air conditioning specialists took the time to consider the architect. They studied his problem. Then they designed the flexible Remington Incremental® comfort system with which the architect could give free reign to his imagination . . . to let the originality of the design show through.

More and more architects are discovering the limitless possibilities of the Remington Incremental comfort system of heating and air conditioning, and are eager to incorporate it in their latest projects.

Remington gives the added advantage of individual temperature control for each area regardless of season. Ductwork has been eliminated, and there is no need to consider a huge central unit or tower.

Write today for further information.

SINGER
CLIMATE CONTROL DIVISION
Dept. AF-66, 62 Columbus St., Auburn, N.Y. 13021

∗ A Trademark The Singer Company

LETTERS

SET BACK IN SYDNEY

Forum: The Sydney Opera House (April issue) by Jorn Utzon is a complete failure and will set the profession of Architecture back at least 50 years. We architects came a long way to build a respectable profession based on responsible decisions on esthetics, construction methods, and costs. The experiences from this opera house will cause many future projects to go to engineers instead of architects. It is amazing and shows a total lack of construction knowledge or responsibility for a project to increase from $9 million to $49 million.

WALLACE D. JENCO
Architect

PLEASSED PROPRIETORS

Forum: Your presentation of our new laboratory building in your April issue is especially interesting to us of Chevron Research, and we're happy you considered the building sufficiently noteworthy to publish an article on it. We are proud of it and pleased with it.

I am sure that had you reporter been more familiar with research laboratories, your article would additionally have pointed out how unusually well suited the building is for the safe, efficient and pleasant conduct of chemical research. As an example, for protection of health the air turnover in the laboratories is higher than in any structure with which we are familiar. This large volume of air is conducted into and out of the labs and offices with no disturbing noise and no noticeable draft. Further enhancing this safety and comfort factor is the warm and pleasant appearance of the laboratories.

That all arrangements worked out well can be ascribed to careful study of a detailed full-scale mock-up of a laboratory module, plus close team work of Standard Oil and Chevron Research personnel with Gerald McCue, a gifted architect who understands laboratories and their inhabitants.

As proprietors of this attractive, highly functional new building, we sincerely appreciate the excellent recognition given it in your publication.

A. H. BATECHER
President
San Francisco
Chevron Research Co.

CENTER OF CONTROVERSY

Forum: Your commentary on "second unveiling" of the Authority's World Trade Center (April issue) was in itself a second unveiling of alleged "objections" to which your pages carried some of the defensive answers two years ago.

Modest research would have produced the following answer to the four questions raised anew by the City Planning Commission: 1) the Trade Center fits within the existing area; 2) the Planning Commission also noted that the 17th Street widening and off-street parking plan for the Trade Center will "adequately accommodate the estimated future traffic"; 3) Plaza Building structures were not modified expressly to harm the with the City Planning Commission's waterfront plan announced in December and that fact specifically pointed out in press release and picture caption distributed at the "second unveiling"; 4) legislation enacted for New York and New Jersey during the Port Authority to undertake the World Trade Center in legislative findings concurring the relationship between the Port Authority and the City Planning Commission of the Trade Center and the Port Authority, and the courts have held that legislation as legal and proper.

While the citizens comprise the "emergency committee" parently did not see the light to New York and its environs; until January 1966, the quest for the Trade Center and its impact on the New York metropolitan area had been thoroughly explored and applauded by nongovernmental groups and the metropolitan press during the six-year period it went public discussion. Indeed, among the endorsers are the Citizens Union, Citizens Housing Planning Council, and the Regional Plan Association. The project has also been approved by the governors of New York and New Jersey, former Mayor Wagner and other members of the administration of the City of New York, and the state and Federal courts up to and including the U.S. Supreme Court.

AUSTIN J. TE CLow.
Executive Director
The Port of New York Authoritative
New York City

For further news of the T Center, see page 31—Ed.

(continued on page-
This is the Inside Story of a Revolution
The revolution is the third dimension in acoustical metal ceilings. Textured Metal Pan, a new ceiling concept from the Steel Ceilings Division of The E. F. Hauserman Company. Textured Metal Pan lends a soft sculptured appearance to the proven durability of metal pan ceilings. Joints and perforations virtually disappear and the resulting visual effect is vibrant, continuous and monolithic. New function is combined with this new look. For the first time, positive control of room to room sound transmission can be assured, and functional absorption is maintained. Textured Metal Pan is designed and engineered to blend perfectly with any interior and to perform in a wide range of office and institutional situations. Write for the Acoustical Metal Ceilings brochure from the Steel Ceilings Division, 5711 Grant Ave., Cleveland, Ohio.

STEEL CEILINGS DIVISION
THE E. F. HAUSERMAN CO.
LETTERS
(continued from page 96)

V0 TOWERS

Sum: Let me congratulate you on the excellent “Tale of Two Owners” in the April issue. With this story you have entered the id of first-class art analysis—great advance over the usual arid criticism, which is only too often ill-founded. The comparison of two excellent works certainly requires a more subtle approach, too, than the examination of isolated pieces of architecture with pretty obvious faults. Whereas I believe that the theme of your analysis wholly responds to such a high standard, I severely doubt your last sentence: “Brunswick is a fine job, and CBS is a great one.” This statement is clearly not based on the excellent “Tale of Two Owners” in the April issue. With this story you have entered the id of first-class art analysis—not just my opinion.

OSWALD W. GRUBE
Engineer

HERE CREDIT IS DUE

Sum: This letter concerns the tide you had in your March article about IBM architecture. I do not know who did the research for this article but obviously it is very sparse. There are several glaring errors in the article. In the first place, the firm of Burns & McDonnell did not perform the architectural design for this building at Endicott even though they were a member of the group that did. The architects-engineers for this particular building are known as the MESA group which is made up of Ammann & Whitney in New York, Burns & McDonnell in Kansas City and our firm in Miami. This particular building was designed by myself and my design team with the full cooperation of IBM’s staff and their enthusiastic support, including Mr. Eliot Noyes.

In the second place, you are comparing a utilitarian production building with office buildings or laboratories and this is like comparing sheep and goats. This building required or even demanded that there be no windows because of the nature of the manufacturing operation. It also demanded a schedule that was extremely difficult to meet in order to get the product on the market as quickly as possible. This accounts for the so-called “package deal” that you mentioned in your article.

In actual fact, the architect-engineer team was not selected by the contractor and the contractor simply became a normal client after the selection. The solution was arrived at by the designers without interference by the contractor or client except for scheduling that was critical. Of course, IBM showed all the normal client interest and watched the entire progress of the job very carefully.

All of us in the MESA group feel that this was a very successful job from every standpoint, particularly from the standpoint of satisfaction of the function and also we believe it is a very handsome building. . . . I am enclosing two or three photographs that we have had made [example below]. We do not feel that there has been any diminution of IBM’s desire to build better buildings although they may be a little more cost conscious in the face of rising prices.

OSWALD W. GRUBE
Engineer

HERBERT H. JOHNSON
Architect

Miami

GENERAL ELECTRIC

FREE OUTDOOR LIGHTING APPLICATION MANUAL

Over 280 pages of simplified, easy-to-use application and product information on:
- parking area and decorative lighting
- roadway lighting
- sports and recreation lighting
- industrial and commercial lighting
- luminaire and lamp data

Periodic mailings keep the manual perpetually up-to-date.

If you are a qualified architect, consultant, engineer, or contractor, your free copy of OLP-1066 will be delivered by your nearest G-E Sales Engineer—a good man to know.

Write us on your professional letterhead and mail to: Outdoor Lighting Dept., General Electric Co., Section 460-76, Hendersonville, N. C. 28739.

Schoolline® semi-concealed wardrobe

The newest and most exciting answer yet for the classroom wraps problem... a high capacity semi-concealed wardrobe, that keeps wraps dry, open to air, provides easy access while preventing a useful surface of either tack board or chalk board. Racks are of quality construction to give long, attractive, quiet and safe service, and are easily installed or relocated. Pat. Pend.

For complete information and specifications, write for Catalog SL-48

VOGEL-PETERSON CO.

© 1965 V.P. Co.
No gimmicks. No fads.

PEERLESS Presidential Suite V is an entirely new concept in office furniture design.

The lines are clean with the elegance of wood, the colorful crispness of metal. This is total design by Peerless; total design at its functional best. Wood legs flow into solid wood top perimeter—encompassing metal panels and wood grain laminated top. Specification literature, and contract prices, of the complete series is available and identified as Suite V brochure.

For your copy, write

Peerless Steel Equipment Company,
Philadelphia, Pa. 19111
The Redevelopment Division of Urban America, Inc. Announces a Lecture-Workshop

“achieving superior urban design through urban renewal”

DAVID A. WALLACE A.I.P, A.I.A., Professor of City Planning, University of Pennsylvania; Wallace, McHarg, Roberts & Todd, Philadelphia.

ROGER MONTGOMERY A.I.A., Professor of Architecture and Director, Urban Renewal Design Center, Washington University, St. Louis, Missouri.

july 14-15, 1966
princeton inn
princeton, n.j.
Now — at no extra cost — you can add color to every area of your school ... with Republic color lockers ... your choice of 19 standard colors.

Republic Lockers stay bright and attractive too... heavy baked enamel finish over a five-step rust inhibiting coating keeps them new looking.

There are six types, ninety-one sizes to meet every need. And these heavy-duty lockers have interchangeable parts to make rearrangement or expansion easier.

For complete details on how Republic can provide the most colorful, economical, efficient answer to your locker requirements, just send us the coupon.
Yale wrapped a well-turned, well-polished wood knob around a pin tumbler lock mechanism. Does this make it different from any other lock you've ever seen? More beautiful? More admired? You can bet your life on it.

Yale® looks as good as it locks
The finest name in locks and hardware

Brentwood design
in Yale Mono-Lock

Eaton Yale & Towne
Judgment at Lauderdale:

SINGLE-SOURCE, COORDINATED LIGHTING WINS APPEAL IN ALABAMA COURT HOUSE CASE!

"Melding a variety of fixtures into a functional yet smooth-looking lighting system can get pretty complicated," says Malcolm E. Smith, A.I.A., of Northington, Smith, Kranert & Associates, architects. "Particularly in the Lauderdale County Court House where we had some definite ideas requiring fixtures not available in standard designs. That's where Day-Brite entered the picture. Besides standard styles which met our requirements, they also had the facilities to come up with everything we needed, on a custom basis. I can't say how much time and trouble was saved by having all our needs filled by one manufacturer. But it was considerable. And we achieved exactly what we wanted, with no design compromises. The results add up to mighty convincing testimony in favor of a one-stop source for lighting."

CUSTOM DESIGNING is just one of several ways in which Day-Brite can make a valuable contribution to your lighting needs. To learn more about these services, contact your Day-Brite representative. He's eager to help. For the best solution to any lighting problem, look to Day-Brite... where the creative answers are coming from.

DAY-BRITE LIGHTING • A DIVISION OF EMERSON ELECTRIC • 5411 BULLER • ST. LOUIS, MO. 63147

LAUDERDALE COUNTY COURT HOUSE
Florence, Alabama

Architect: Northington, Smith, Kranert & As Consulting Electrical Engineer: Hazzard &