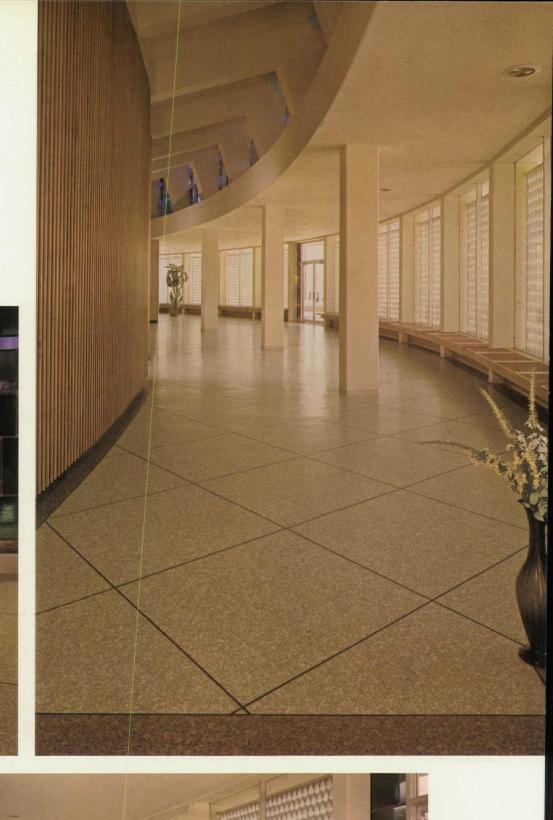


A PARISH CHURCH BY MARCEL BREUER AND HERBERT BECKHARD
BENEDICTINE MONASTERY BY TASSO KATSELAS
ARCHITECTS' OWN HOUSES
BUILDING TYPES STUDY: COMMUNITY COLLEGES—ARCHITECTURE FOR IDENTITY
FULL CONTENTS ON PAGES 4 AND 5

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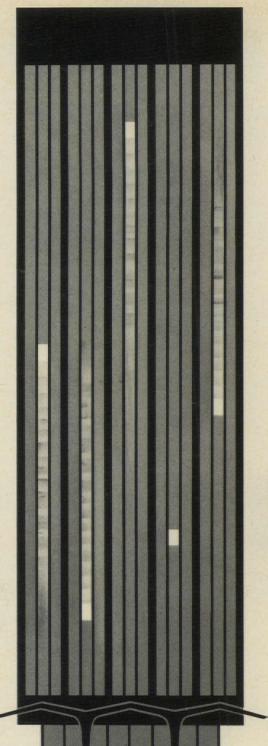
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Muskegon, Michigan

Architects: Marcel Breuer and Herbert Beckhard

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TOOL FOR CURRENT RESEARCH: SEMI-ANNUAL INDEX

As an aid to readers in their use of the RECORD as a continuing reference source, we publish twice each year (in the June and December issues) a semi-annual index to content of the preceding half-year. Next month: the index to Volume 142.



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AN ARCHITECT'S SPECIALTY: SCALE OF THINGS TO COME

In choosing a topic for this last essayyes, retirement has caught me-I seemed to want most to talk about scale. Scale is the special prerogative of architects; they are about the only group consciously sensitized to scale. And scale is one of the real concerns in the future of our cities, or, for that matter, in the future of our lives.

While most architects are likely to treat it as a matter of course, scale is actually an elusive and complex concept, and, I think, much broader in its meaning and its application than is generally realized. I certainly don't mean to belittle architects' concern about scale-it is almost automatic with them. The question I am raising is whether or not they are prepared to put up a fight for a proper scale.

Perhaps the question might be rephrased to something like: while arguing about scale, would an architect always be sure he understood the given situation thoroughly, thoroughly enough so that he should fight for his decision? For scale is not merely a matter of size or amount; it also involves importance, and perfection.

Rockefeller Center might once have been considered out of scale, with its neighborhood if not within itself. And the Empire State Building, and the Mc-Graw-Hill Building, and the World Trade Center, or Pan Am, or many another office building on Park Avenue. Or the Wall street district as a group. In such cases you have to be sure of your determinants-just what is it you mix together in your judgment?

Take a boat ride around Manhattan Island and all those things look magnificent, just as forms against the sky. Those great halls at the late lamented Penn Station were out of scale, but magnificent. Frank Lloyd Wright used to keep his ceilings low, because he said that high ceilings belittled man, but human beings respond to great spaces, and great ceiling heights. Or, they get acrophobia or claustrophobia.

No, scale is not a simple concept; it is not simple of itself, and it gets mixed up with bricks and trees, and different viewpoints, and different times.

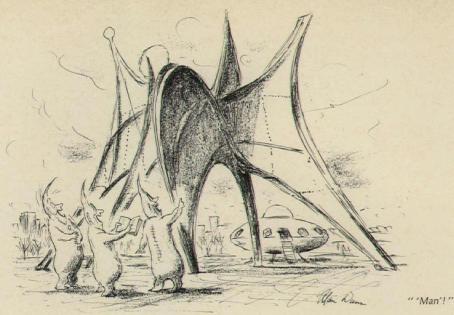
I said viewpoints: just one story of an architect who stumbled over this one. He did one of those new setback towers with a proud little plaza added to the sidewalk. I asked him why he hadn't put something around to define the space, or give it usefulness. He replied that he had tried everything he could think of, but could get nothing that was in scale. In scale with what? With the whole building? No doubt he was working with a model, so his viewpoint of scale was a total one. But in actuality nobody would ever see the building as he was seeing it-unless from a helicopter-so scale became a matter of, say, the sidewalk area and the building up as far as the second floor, so almost anything would be in scale with what any viewer could grasp. Reminds me of the old saying in New York, that nothing

matters, architecturally speaking, above the second floor.

Too negative? Well, scale does matter. My wife and I picked out a little cottage to remodel for retirement. We grabbed at it, when we first saw it, and signed up that very day for a rather fantastic price. (And a silly project that remodeling has turned out to be.) But the site was just exactly right, and I have realized that scale plays a very important part in our fondness for the site. The harbor is the right size; there are boats, but not too many; the views are the right size; the little headland park is the right size; and we're protected from those crowds of "summer people." And we are enlarging the cottage, when we don't need the space, to make it look more in scale. Scale? We're crazy for scale.

Scale in the future? I certainly wish I could give you a table, or a text, or even a few guidelines to cling to, as you take up your assignments to rebuild our cities. What about scale in those megastructures the college kids are drawing and modeling for TV? I can imagine them all being nicely in scale as to sizes of units, and nicely balanced in the Baroque manner, and yet be horrible things for human beings to live in. Or perhaps, just perhaps, even megastructures might be done in a mixture of scales-large size over-all, but broken up with small-scale interstices (like the now famous Paley Park in New York), and open spaces in various sizes and varieties, so that human beings will not feel filed away like numbered computer cards.

Well, I wish, in this valedictory, that I might be more constructive. But I do think it important to emphasize that the matter of scale, however difficult to define or describe, is worth the good fight -Emerson Goble of every architect.



Overscale imperialism; who is to halt it?

While doing that piece (preceding page) about scale, I kept finding new things I wanted to say, but I was afraid I might get it all out of scale. Pardon me, and I'll turn a few points over to architect Benjamin Thompson. If these quotes have a familiar sound, it will be because you read them in our September issue.

"We are living in the age of the mammoth institution, the multiversity and the giant corporation. The population explodes at our door. Yet how big is big? If something good is big, is it better if it's bigger?

"Cecil B. DeMille believed so, P. T. Barnum believed so-and Cadillac still does! Who is to argue against these giants except perhaps a lonely Giacometti whose sculpture reflects the scaleless aloneness of people swallowed by the vacuumed city? Who can take the reins to halt the new imperialism of overscale in the first place? Individual man loses his sense of humanity in an overextended society such as ours, so the architect must now give first priority to the individual, see each person as more than a statistic in the population explosion, and give man the central place in his plans."

Scale and creativeness; do they go together?

Speaking of giant corporations and multiversities, I remember a letter I got after I had written something about the Berkeley kids demonstrating without knowing just what they were griping about. I got a long letter from the wife of one of the ringleaders, explaining it all to me, in words of few syllables. But

when I got through I was still convinced that it was pretty fuzzy.

But if you were to relate the unrest to the environmental effect of just plain giantism, it did seem, at least to me, to add up. The kids were feeling swamped by a feeling of aloneness in the crowds.

At any rate, I am told that such a general hopelessness is fairly noticeable in many young people of today. There are those crowds, that competition, plus a general speedup in everything. Hence the dropouts, the LSD, and so on.

Well, it scarcely seems an atmosphere suited to creativeness. And I don't need to tell anybody in this audience how such a lack of creative urge has affected all art in our time.

Now we have great "think tanks" to undertake a sort of blue-sky type of "research," or other brain-forcing study. It is difficult to imagine such forced committee efforts bringing out any individual creativeness, or any individual satisfaction in the creative push.

In all these giant explosions of our time it would seem that the urge to create, or the confidence necessary for creative work, is being lost in a mire of "overscale," or "over-everything." It is going to be a sorry world indeed if we can't preserve it.

Scale as a human factor is not generally known

When, many years ago, I started flying about in airplanes, I experienced a malaise on every flight, even though it was a short one and a very smooth ride. I took the problem to my doctor; he said, "That's very interesting; I wrote a paper about it in college." I said, "Then I've come to the right man; what causes it?" The master of medication replied

that he hadn't the slightest idea; he had focused on the problem but never found an answer.

Overriding all the friendly advice to the effect that it was all a nervous problem, based on some unrecognized fear, I finally doped out in my own little head that it was a noise problem, and so it proved to be. With a pair of ear plugs, I could fly around like anybody else.

Well, the point of all this is merely that the noise of airplanes went unrecognized as a real medical problem, for many years.

I submit that a similar situation exists with respect to "overscale." It's difficult to realize that one's general lassitude, or a more serious neurosis, could be traced merely to an environmental situation. The symptoms and the causes don't appear to be connected. But think of all of the rioting or "demonstrating" that has gone on recently, and then see if you can relate the discontent to the matter of scale. It is not, of course, as simple as scale, but scale is a fundamental factor in all of the various problems that converge there.

And if that basic ingredient is ignored, I should say it is doubtful if any other ameliorative measures will reach their potential.

Forward to nature: a new watchword

Back to Ben Thompson; let him have the peroration:

"At this point I am not advocating a movement back to nature. I suggest something much harder and more challenging: forward to nature, to an understanding of our own inner natures and to the reality of the nature within people whom we as architects design for."—E.G.



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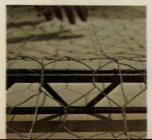
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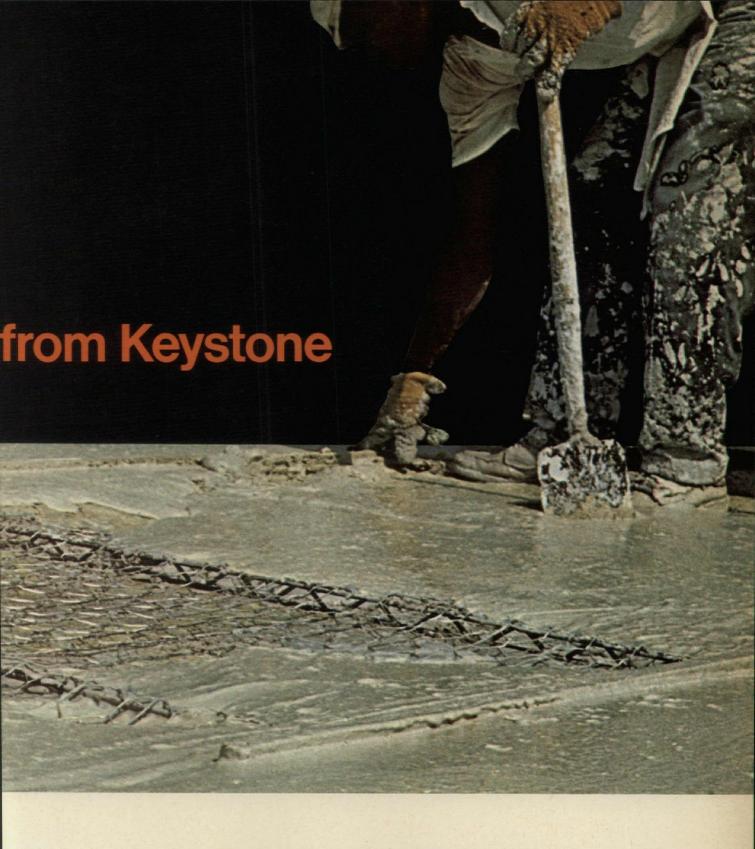
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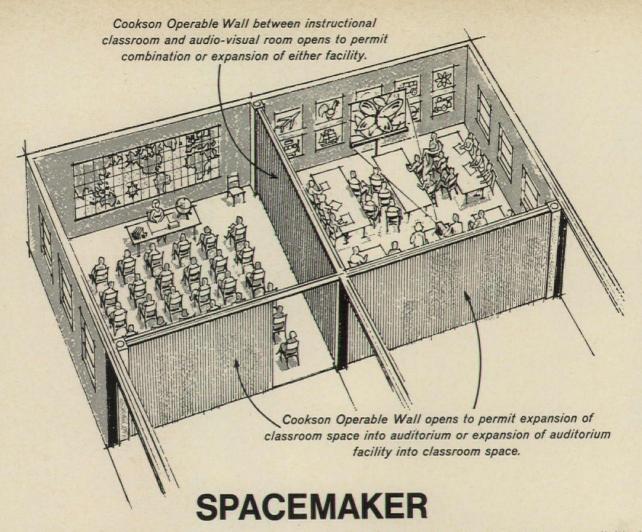
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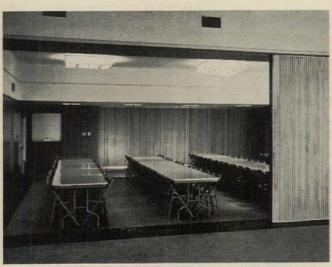
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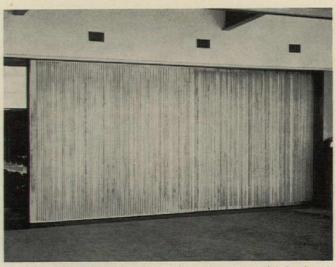
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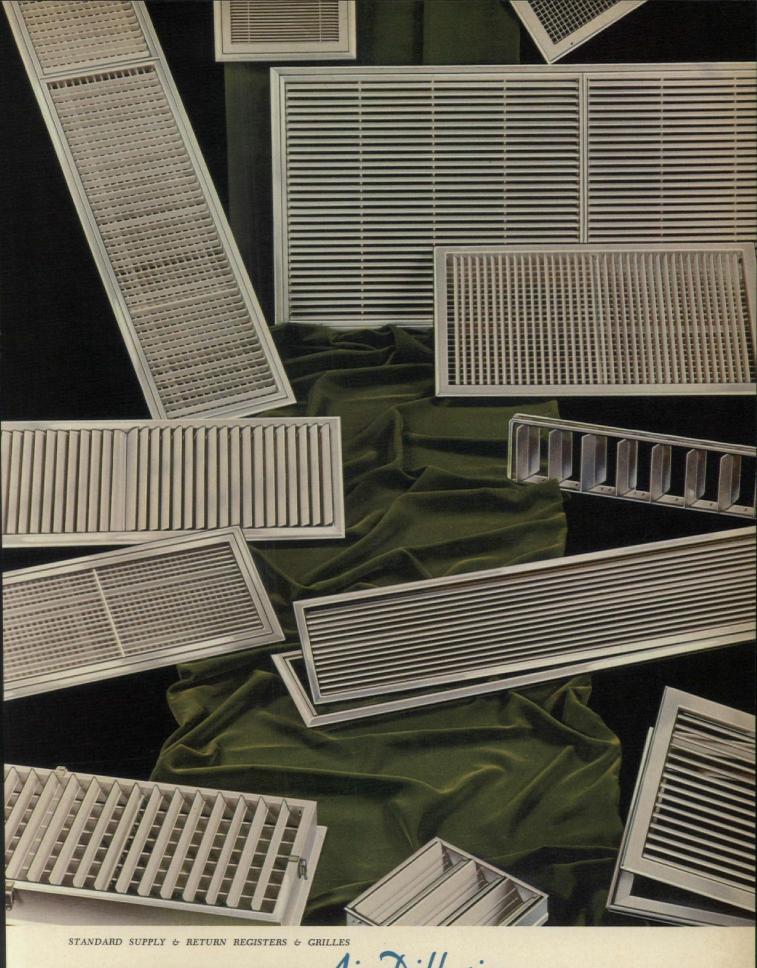
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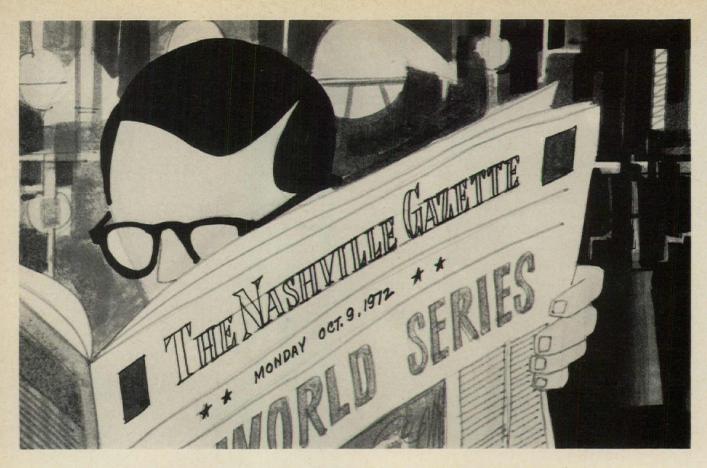
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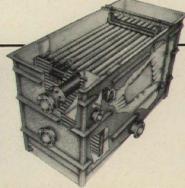
You see, to the men at Bowser-Briggs it's 1972 — and this attitude in thinking five years ahead gives you developments like the Model 610-E with patented Star-Cor® elements or the fiberglass vacuum diatomite swimming pool filters with new rectangular starleaf construction. Leaves are individually removable

for greatest ease of maintenance, and offer uniform precoating-filtering and the most unrestricted water flow.

These are just two examples of Bowser-Briggs' 1972-thinking. You'll also see it in many other areas . . . anywhere there's a need for dehydration, oily waste treatment, filtration, absorption or coalescence. We've been specializing in looking ahead since 1885 (1890 to us), so if you'd like a view of 1972 — in filtration — call your man from Bowser-Briggs. Or send us your requirements, without obligation.

Your future is our business . . . today.





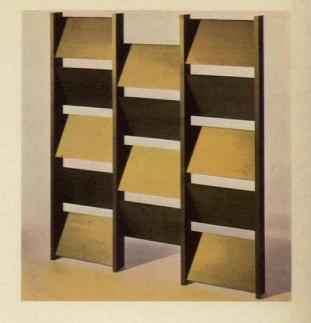
BOWSER-BRIGGS MODEL 618A-FG, FIBERGLASS VACUUM DIATOMITE SWIMMING POOL FILTER

Preferred by leading municipalities. For swimming pools of 134,000 to 806,400 gallon capacity. Approved by National Sanitation Foundation. Complete data available. Write Dept. AR-3

For more data, circle 9 on inquiry card

... MONUMENTAL

On the right is a close look at the pattern. It utilizes "T" bars for greater strength over longer spans. In this application the structural tees are at twelve inches on center, and the large seven inch reversing tabs are slanted to give approximately eighty per cent closure to the screen.





SPECIAL ACCENT...

A special inset of "Monumental" Decor Panel in the building's main entrance carries out the overall theme of the design, showing in closer detail the screening properties of this pattern as well as the handsome Duranodic finish.

e preceding large scale cor Panel was developed om Borden's Deca-Grid le which is noted for its usual flexibility in design.

the right is shown one of rden's custom built Decaid facades as used for the w Haven, Conn. Branch st Office. On this new ilding the screen effecely reduces air conditionI load in summer and are the year round. Decor nel is a functional as well decorative building maial.

more information on ese installations and dels of all the Borden Decor nel styles, write for a py of the 1968 Borden cor Panel Catalog.



Architect: Simeone & Wendler, New Haven, Conn.

BORDEN METAL PRODUCTS CO.

822 GREEN LANE, ELIZABETH, NEW JERSEY 07207

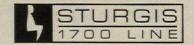




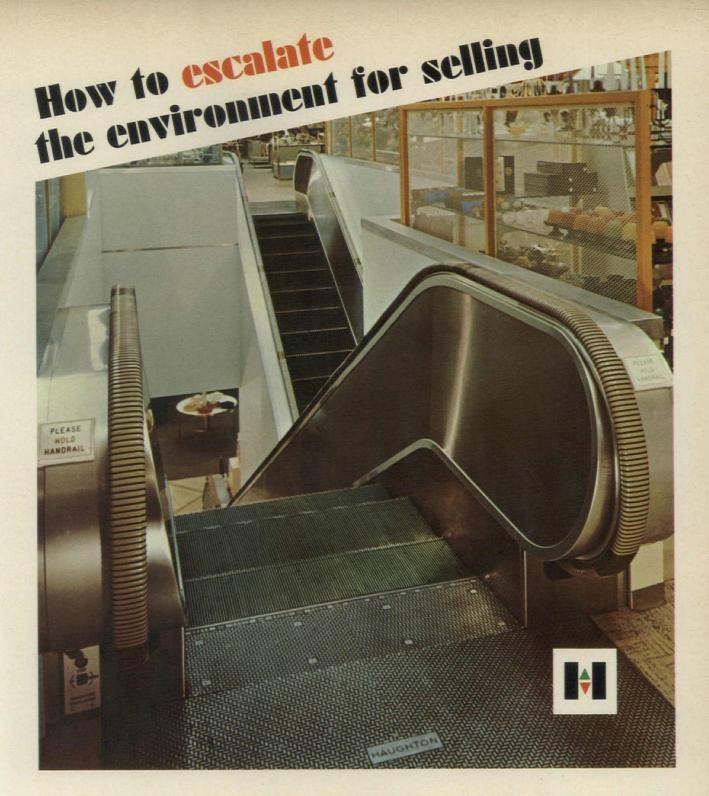
New Sturgis 1700 Line chairs only look expensive.

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Price? Surprisingly low. If you're searching for a chair bargain that doesn't look—or feel—like one, send for a color brochure on the Sturgis 1700 Line. The Sturgis Company, Dept. AM-111, Sturgis, Michigan 49091.



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Lazarus West in Columbus, Ohio knows how. This spacious department store provides smooth, quiet Haughton Escalators to transport customers from floor to floor. Here is convenience that pleases customers and enhances store decor to escalate the environment for selling. Haughton leadership in escalators is available in models to move up to 8,000 people hourly with comfort, safety and reli-

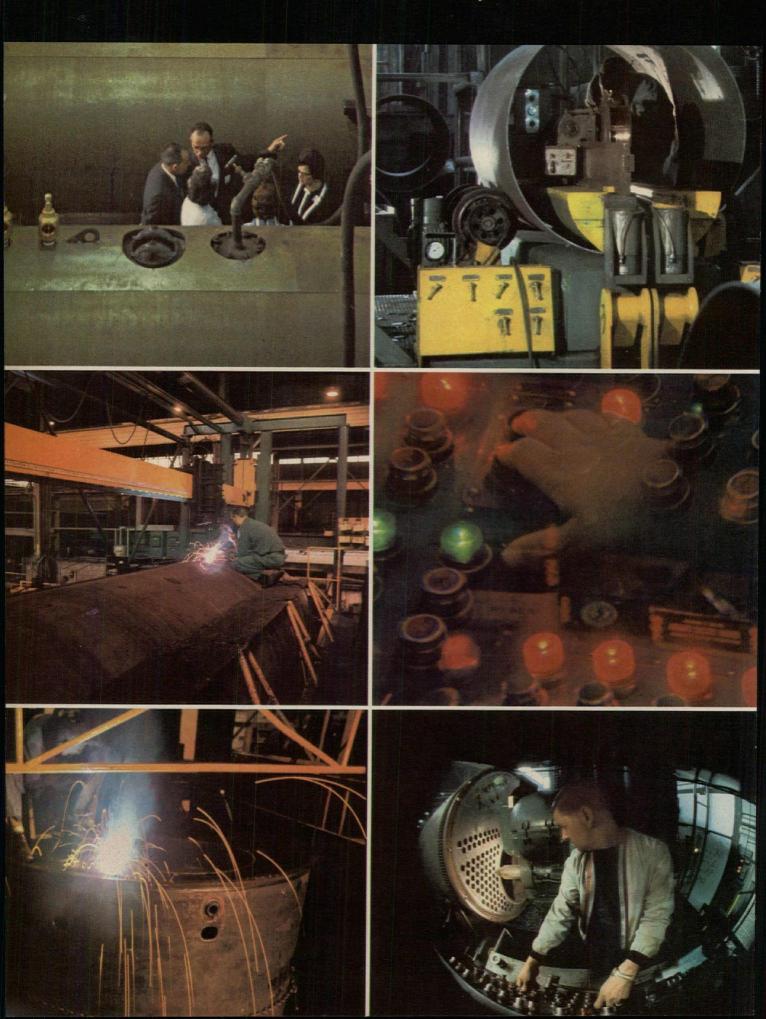


ability in stores, shopping centers, hotels, banks, subways, institutions—wherever compact, space-saving continuous transportation is needed. Call in your Haughton man for specification data on advanced-design Haughton equipment for your building or modernization plans. Or, write us.

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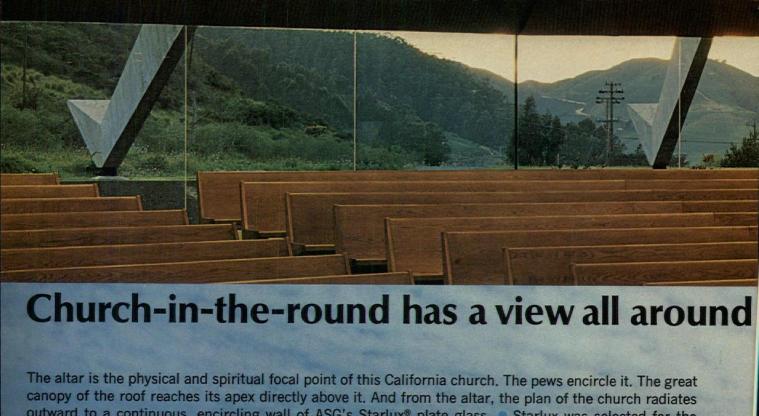
An inviting atmosphere for learning is created utilizing acoustically treated Scale/12 partitions in the above classroom/conference room.

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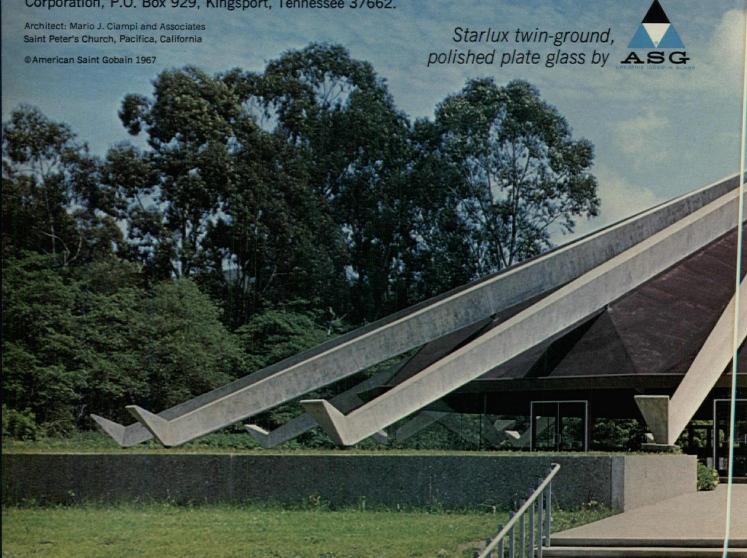
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in classrooms, conference rooms, cafeterias,
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Acoustically rated to class 38 in wood or Formica® clad

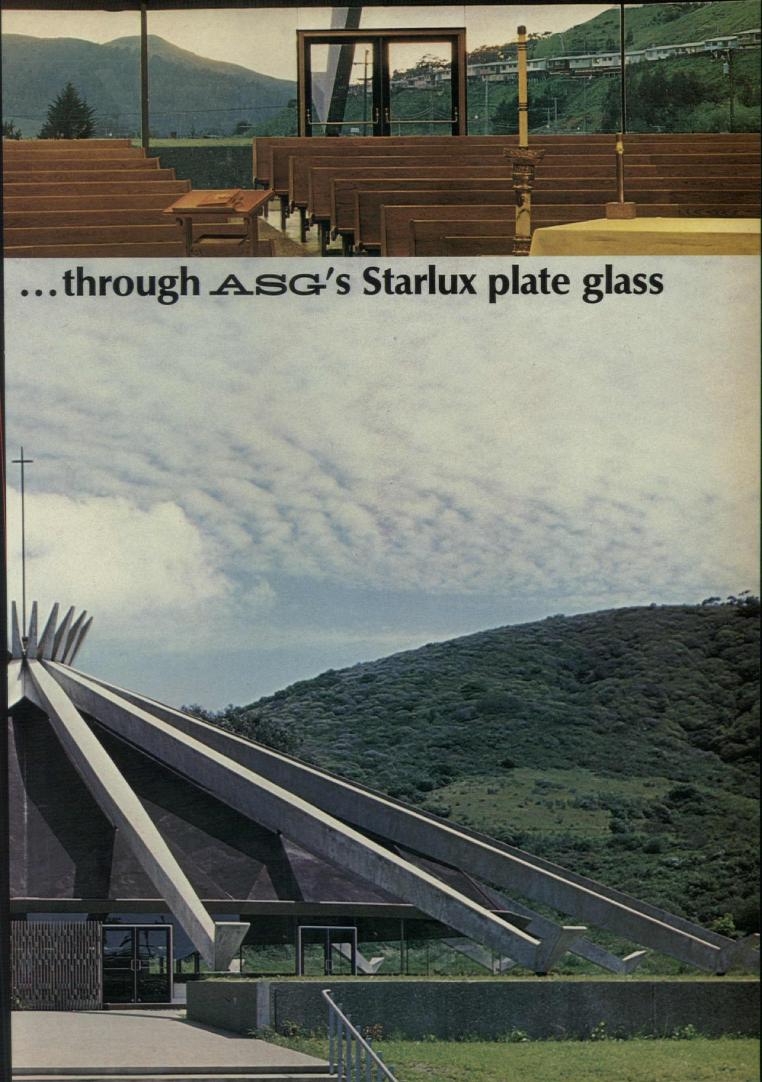


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The altar is the physical and spiritual focal point of this California church. The pews encircle it. The great canopy of the roof reaches its apex directly above it. And from the altar, the plan of the church radiates outward to a continuous, encircling wall of ASG's Starlux® plate glass. Starlux was selected for the exterior wall to bring in all the natural beauty of the wooded basin in which the church is set. Through this uninterrupted sweep of 8-foot-high glass, worshippers enjoy clear, undistorted views in all directions. And from both inside and outside, the huge plywood roof seems to float weightless above the sheer wall of glass. Starlux is specified in fine designs like this by leading architects throughout the country. Specify Starlux whenever your design calls for the superior visual fidelity that only plate glass can offer. Starlux is twin-ground and polished to produce smooth, gleaming surfaces free of distorting "wave." For full information on Starlux, including sizes and thicknesses, write: Dept.D-11, American Saint Gobain Corporation, P.O. Box 929, Kingsport, Tennessee 37662.











Owner: Sisters of Loretto at The Foot of The Cross, Kansas City Architect: Kivett & Meyers, Kansas City

Structural Engineer: Bob D. Campbell & Co., Kansas City

Mechanical Engineer: J. R. Derigne & Assoc., Kansas City Contractor: Sharp Brothers Const. Co., Kansas City Fabricator: Havens Steel Co., Kansas City

Adaptability of open web joists is shown in new education complex

Design of six classroom modules for the new Loretto Academy in suburban Kansas City, included sloping roofs, peaked at the center, with a one-foot overhang at

The structural component—standard production line Sheffield Joists, 32-feet in length plus extended ends.

Design of the resource center building called for a flat roof with spans of 90 feet. Again, Sheffield Joists were selected for structural support.

Thus, both designs employed Sheffield Open Web Joists. The architect and the builder were able to take advantage of all the economies of a long run productionline building component.

The classroom modules are laid out in a horseshoe pattern, with the resource center being the focal point. Classroom modules form the horseshoe on three sides of the main building. The overall design of the complex is adaptable to any function, from individual study to large assemblies, through the use of movable walls and partitions. A common roof element, also supported by Sheffield Joists, connects the buildings.

Why Sheffield Joists?

Why should you specify Sheffield Joists? Consider these points: All Sheffield H-Series, LH-Series, J-Series, and LJ-Series Joists are completely standardized as to types, depths, and lengths and they meet all the specifications of the Steel Joist Institute. In addition, Armco controls all the steps in the production of Sheffield Joists from furnace to finish, thus assuring you a high quality product every time.

Discover the advantages of joist construction and in particular the advantages of Sheffield Steel Joists. Call the Armco office in your city or write: Armco Steel Corporation, Department W-1247 7000 Roberts Street, Kansas City, Missouri 64125.

ARMCO STEE

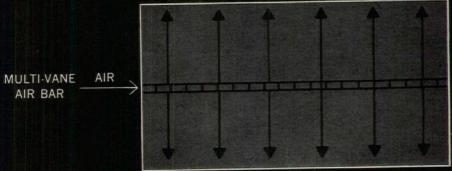




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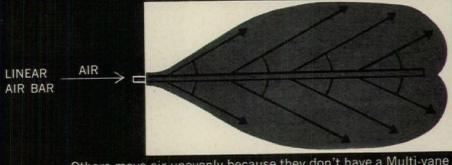
OUR MOVE



AIR PATTERN

We move air evenly. We do it with a brand new linear bar (see our diagram). The bar economically and efficiently and quietly moves air throughout the entire space. We call it the OCF Dimensionaire Ceiling System. It's a total ceiling system. Air, light and sound. There's nothing like it.

HEIR MOVE



AIR PATTERN

Others move air unevenly because they don't have a Multi-vane air bar. Their bars throw out the conditioned air at various angles. As you can see in the diagram, this can create dead spots and drafts in the room. Most air bars don't allow for the wide expanses of economical ceilings the way ours does.

We have a movie you should see. And a brochure. They tell everything about the OCF Dimensionaire Ceiling System, including the Multi-vane air bar. Mail the coupon now, before it slips your mind.

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OCF Dimensionaire Ceiling System

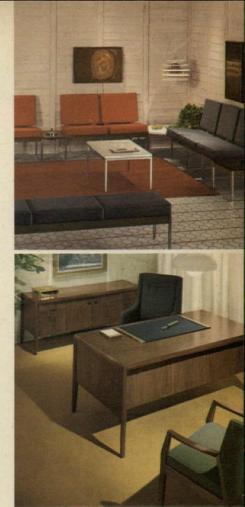
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ROYALMETAL



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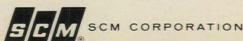
New 2-coat GLID-TILE Epoxide combines the performance of multiple coat systems with the economy of a two-coat system. Now new GLID-TILE Epoxide can be specified for more wall areas; kitchens, bathrooms, storage closets, corridors, dados and stairwells.

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Gas Air Conditioning "Above all, it's dependable"

says E. Hutchinson of the Los Angeles County Museum of Art.

The Los Angeles County Museum of Art. Architect: William L. Pereira & Associates. Mechanical Engineer: Ralph E. Phillips, Inc.



One of the Trane Model 328-4 absorption units.

Great works of art are fragile things. They require a constant temperature, a constant humidity. The Los Angeles County Museum of Art cannot afford to take chances. It needs dependable, precise air conditioning and heating. That's why gas was selected. "Many types of air conditioning systems currently in use in the United States were surveyed," explains Mr. E. Hutchinson, master mechanic at the Museum. "The gas absorption air conditioning system was chosen in the belief that it would be quiet, economical, and above all, dependable. It has been.'

This gas air conditioning system is one of the most sophisticated in the world. Two 330-ton Trane absorption units fed by steam from Kewanee boilers cool 233,000 cubic feet

SOUTHERN CALIFORNIA GAS COMPANY

of air per minute. The temperature is kept at 72°F and the humidity never varies more than 1/2 of 1%. Temperature and humidity are precisely controlled by hypersensitive thermostats built into the return air ducts.

Each building in the three-building complex has its own automatically-controlled system for regulating air flow. In the largest building there are four separate air distribution systems, vertically stacked, each supplying 1/4 of each floor area with cool air. This arrangement provides air conditioning throughout the building even while one of the systems is shut off for servicing.

Whatever your particular air conditioning needs, check with your Gas Company Engineer first. SOUTHERN COUNTIES GAS COMPANY



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Pomona Tile offers American Olean ceramic mosaics

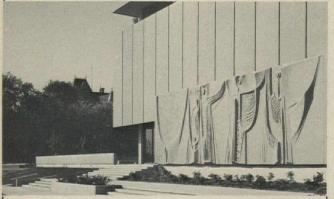
Avocado? Beryl? Cerulean? Driftwood? Name it. Now the complete line of famous American Olean ceramic mosaics are available from Pomona Tile. A wide range of colors and patterns are immediately available from well stocked distribution centers throughout the West. Whatever your needs in ceramic tile, look to the ideapeople at Pomona.

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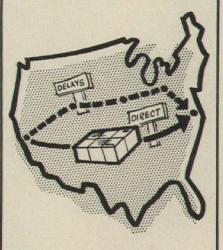
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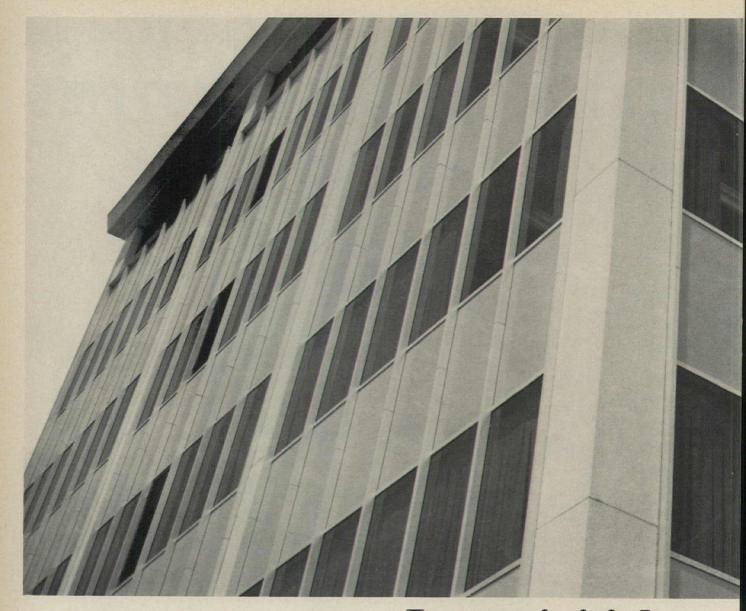
For very little extra money you can build a Blue Diamond partition system into a multi-unit structure that will give occupants almost the quiet of a country house.

Effective sound control is a major factor in selling condominium or co-operative apartments and is an important factor in reducing the turnover of tenants in any apartment house.

Blue Diamond's DIAMONDWALL™ and HD™-Systems offer ratings up to STC 55 which is nearly shout-proof . . . Talk to any Blue Diamond representative.

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Lower initial cost in Union Bank Square's

Union Bank Square, in Orange, California, is a dramatic example of the economy of All-Electric buildings.

The All-Electric Central Tower is a six story office building, steel curtain wall construction, with 84,000 sq. feet of gross space. It was completed in August of 1966.

Right next door is the North Tower, a non-All-Electric building of similar construction and the first building in the complex to be erected.

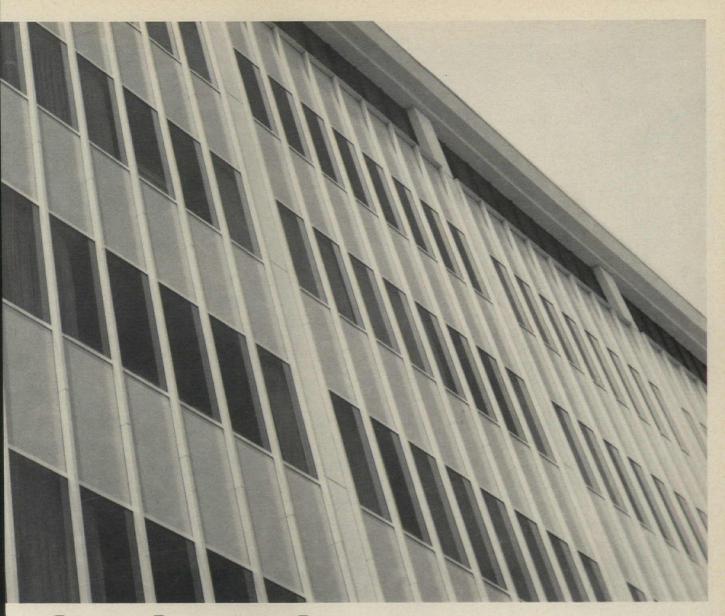
Calculated on a per-square-foot-basis, the combined overall initial, operating and maintenance costs for the All-Electric Central Tower are lower. Electric strip heaters in the ducts and refrigerated electric air conditioning accounted for significant savings in first cost.

Annual operating costs are just under 25 cents per sq. ft. per year. Maintenance time on the space conditioning system in the Central Tower is twothirds less than in the North Tower.

Canal-Randolph Corporation, owner and operator of Union Bank Square, has found that claims for All-Electric buildings are proven in practice.

That's why the third building in the complex, the twelve story South Tower, will also be all electric. Scheduled completion date is July of 1968, and leasing operations for space in this luxury office building have already begun.

We can give you hundreds of other case histories of low annual cost of All-Electric buildings. Write Marketing Engineering, P.O. Box 62, Terminal Annex, Los Angeles 90051.



and total annual cost **All-Electric Central Tower**

Central Tower, Union Bank Square, Orange, California. A Canal-Randolph Property

Building Profile

GENERAL DESCRIPTION

Six-story building 84,000 square feet office tower Steel curtain wall construction

OPERATING COSTS

Total electric Operating Costs - 25¢ per sq. ft. per year

ELECTRIC LOAD

Connected lighting and miscellaneous load - 250 KW Electric space conditioning equipment -Cooling – 300 Tons Heating – 374 KW

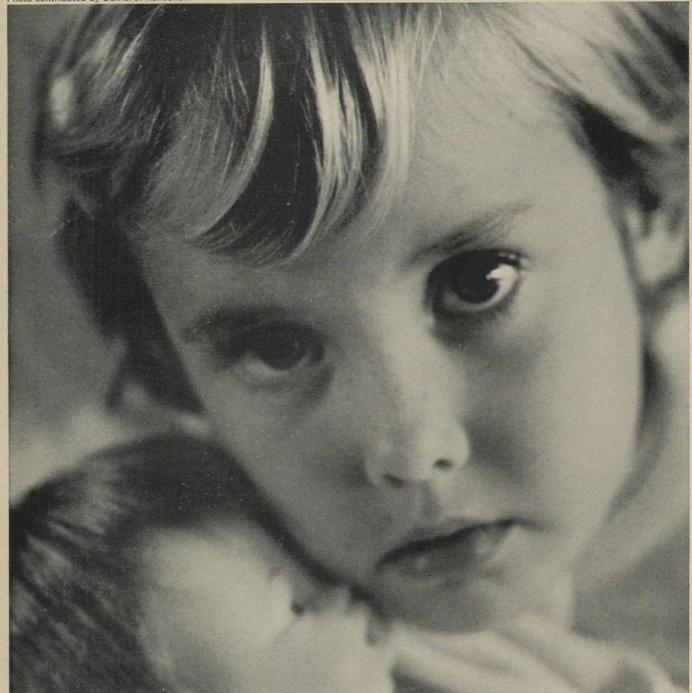
Electric Water Heating - 15 KW

SPACE CONDITIONING

Double-duct electric heating and cooling system

Southern California Edison





You can give her hope.

How? Can you find loving parents for her, give her good health, adjust her to the realities of normal living, remedy any physical or other problems troubling her?

Probably not.

But you can do this: give the United Way. Support the regular community agencies which provide help for all, all at once, all year long — for the young and old, the ill and troubled, the poor and neglected, for members of the Armed Forces and their families, and for victims of disaster.

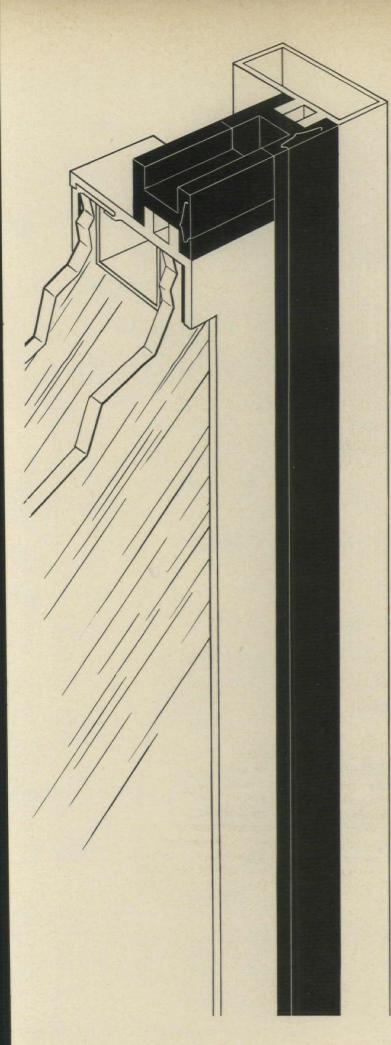
Your voluntary United Way gift is your way of being a good neighbor and friend in your community. It is your way of saying you want to help make your community a better place for all families, including your own, through your United Fund or Community Chest.

Your fair share gift works many wonders/THE UNITED WAY





27 million families benefit by child care, family service, youth guidance, health programs, disaster relief and services for the Armed Forces from 31,000 United Way agencies.



How the Chicago Marriott will zip out the jet blare of O'Hare



Noise is a dirty word to sleepers. And motel keepers!

But owners of the new 500-room Chicago Marriott aren't worried about noise. Not in the least bit! Even though they're close to O'Hare International Airport.

They are putting in Uniprodux® windows. Uniprodux door frames.

Soak up vibration-absorb sound

These Uniprodux windows are uniquely designed to soak up vibration, absorb sound, keep heat and cold out.

They use hermetically sealed POLARPANE Sound Control glass. Anodized aluminum frames. And Neoprene* zipper gaskets that seal out noise and dirt—and speed up installation (windows zip in fast).

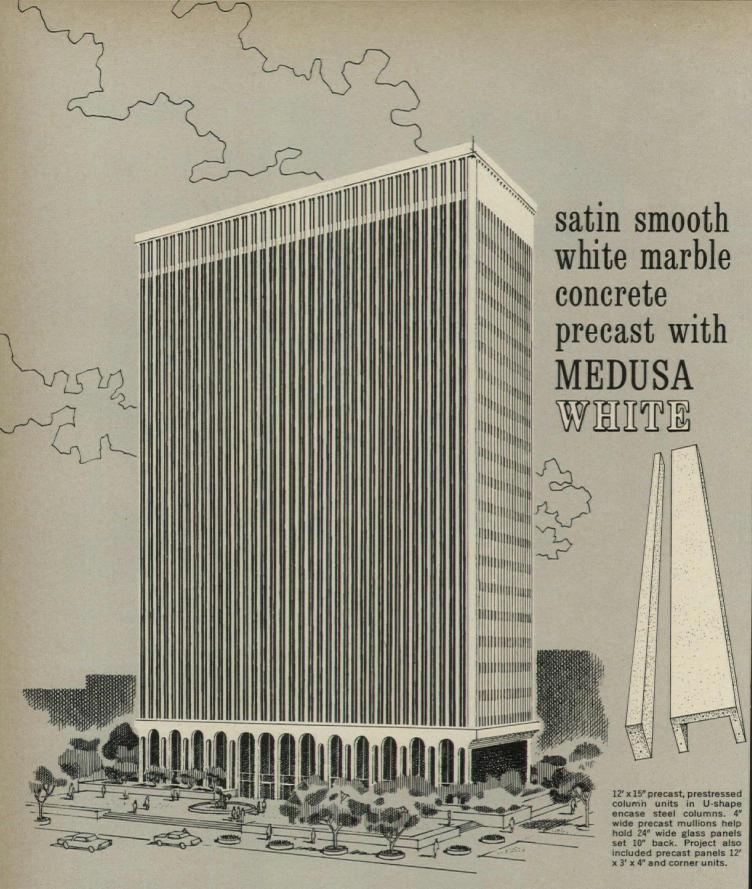
Put the same zip into your next building. Write for complete information about our windows, curtain and panel walls.

*Registered DuPont Trademark

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White Georgia marble dust and chips . . . white silica sand . . . and Medusa White make striking precast units for this handsome 21-story Buffalo "original" by Minoru Yamasaki. Honed finish and low water absorption rate keep them clean.

Medusa White is ideal for meeting color specifications whether as natural white or as a tinted matrix with colored aggregates. And Medusa White is strong. Use it with confidence. Ask your precast producer about Medusa White or write P.O. Box 5668, Cleveland, Ohio 44101.

MANUFACTURERS AND TRADERS TRUST CO., Buffalo, N. Y. Architect: Minoru Yamasaki, Birmingham, Mich. Gen. Contractor: John W. Cowper Co., Inc., Buffalo, N. Y. Precast Producer: George Rackle & Sons Co., Cleveland, Ohio.



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Five Los Angeles buildings cited as best of past 20 years

Five buildings in the greater Los Angeles area have been cited as the best of the best building erected in that area in the past 20 years in an "Architectural Grand Prix" co-sponsored by the city and the Southern California Chapter of the American Institute of Architects.



Edward A. Killingsworth, president of Southern California Chapter, A.I.A., left, with Mayor Sam Yorty of Los Angeles at opening of Grand Prix exhibition at Los Angeles City Hall Rotunda.

The winning buildings included: the Department of Water & Power Building in the Civic Center, designed by Albert C. Martin & Associates; The Scientific Data Systems Building in Redondo Beach, designed by Craig Ellwood Associates; The School of Business Administration at the University of Southern California, designed by I. M. Pei; Columbia Broadcasting System's Television City, designed by William L. Pereira and Charles Luckman; and Union Bank Square, designed by Harrison & Abramovitz with Albert C. Martin & Associates as associate architects.

Serving on the jury, which cited a total of 36 buildings, were architects John Merrill, chairman, Sam Hurst, and George Dudley, journalist Art Seidenbaum, and Kenneth Ross, general manager of the Municipal Arts Department.

The jury commented: "Because it is still only half-built, unlike other major megalopolitan centers, Los Angeles has the opportunity to be a much more beautiful city from more points of view in future points of time. This we believe is an extremely important advantage and gives this Grand Prix awards program an added purpose. Not only are the city and the A.I.A. recognizing excellence over the last 20 years of Los Angeles growth, the sponsors are also trying to promote future excellence by these examples."

California Council discusses "The City and the Region"

Architects have a public responsibility to make it easier for individuals to obtain architectural consulting services on housing matters, Robert L. Durham, national president of the American Institute of Architects, told architects at the 92nd annual convention of the California Council, A.I.A. in Mission Bay Park, San Diego, last month.

"We have a public responsibility to see that home owners and home builders who cannot afford to or do wish to use full architectural services can do so," Mr. Durham said. "Further, we must explore the multi-disciplinary team in community design and the systems approach to design and building."

Three other speakers—a sociologist, a transportation engineer and a planner -spoke on "The City and the Region." The sociologist, Dr. Cyril Roseman, director of urban studies at San Francisco State College, urged the strengthening of ties between architect and sociologist in the attack on problems of the city; the transportation engineer, William L. Garrison, director of the Center for Urban Studies at the Chicago Circle campus of the University of Illinois, called for establishment of 10 to 12 experimental cities in which to study performance of their environments.

The planner, John R. James, former Chief Planner for England and Wales, said that he could not "comprehend the United States' inability to place curbs on sprawl," adding that in his view government-directed planning is no more undemocratic than taxation of the public. Core city, open space and new towns he characterized as a "new trilogy with which to work," and planning as a "hard, difficult, dirty business."

The California Council, headed this year by Howard Morgridge of Los Angeles, will have Burton L. Rockwell as its president next year. Edward Killingsworth, vice president-elect, will become president in 1969.

Elisabeth Kendall Thompson

Bauhaus books and documents stolen in Chicago

A group of books, magazines, letters and research material on the Bauhaus belonging to Howard Dearstyne was stolen from a parked car in Chicago on September 10. The material included Bauhaus magazines published between 1928 and 1932; personal letters from Wassily Kandinsky to Mr. Dearstyne; letters from Mr. Dearstyne written to his mother while he was a student at the Bauhaus from 1928 to 1933; two cases of handwritten notes on 3 x 5 cards; and a carbon copy of a manuscript containing 14 chapters for a book "Inside the Bauhaus" which Mr. Dearstyne is writing.

Among the books taken were Hans Maria Wingler's "Das Bauhaus"; Walther Scheidig's Bauhaus 1919-1928; "Germany in the Twenties"; Oskar Schlemmer's "Briefe und Tagebucher"; and a photostatic copy of a Bauhaus catalog of about 1929, the property of Harvard's Busch-Reisinger Museum.

With the possibility that the books, magazines and letters (all bearing Mr. Dearstyne's name except for the catalog) may turn up in some rare book shop in the United States or abroad, the owner would appreciate hearing from anyone who runs across any of this material. Mr. Dearstyne may be reached at: Department of Architecture, Illinois Institute of Technology; Crown Hall, Chicago, Il-

Bowersox succeeds Haynes at Producers' Council

John K. Bowersox will succeed John L. Havnes as managing director of The Producers' Council and will assume his new position about December 1. Mr. Haynes, having been associated with the construction industry in various executive capacities for over 30 years, is retiring after having served in the Council's top staff position since 1953.

Mr. Bowersox has been director, Building Contractors Division, Associated General Contractors of America. He has been with A.G.C.'s national headquarters staff since 1952.

Remodeled subway station is prototype for improvement of Boston's transit system

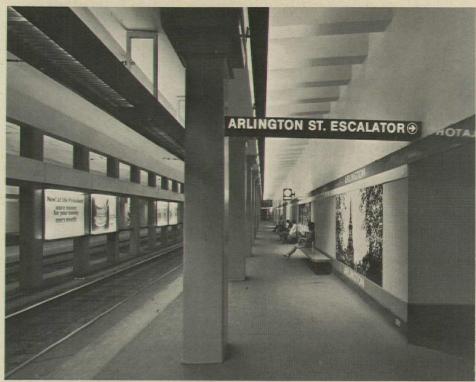
The Arlington Station in the Boston subway system has been completely revamped and opened in August as a prototype for revitalizing the entire transit system of the Massachusetts Bay Transportation Authority. The architecture and design firm Cambridge Seven Associates was retained by the M.B.T.A. in January, 1965 to produce general standards and specifications to guide the overall development program. Acting upon the study by Cambridge Seven, the M.B.T.A. soon took steps toward modernizing 40 transit stations at a cost of \$9 million, with a Federal grant covering two thirds of the cost.

The tangible result of these efforts is the Arlington Station designed by Cambridge Seven Associates (Paul E. Dietrich, principal in charge; William K. Goodwin, project manager) with Sylvan R. Shemitz as lighting consultant. The graphics and station components incorporated in the Arlington station will now be used throughout the system. The M.B.T.A. program now includes redesign of 14 subway stations by 10 architectural firms.

"Design in Transit," an exhibition which will continue through November 12 at the Institute of Contemporary Art in Boston, shows the problems and solutions to the mass transportation system in Boston, urging the spectator to inspect the Arlington Station itself, located two blocks from the I.C.A. The exhibit stresses the role of the designer and the architect in solving those problems.

The Cambridge Seven conceived of the transportation system as a total structure and had two basic aims in their planning: to make the structure quickly comprehensible to the passenger; and to provide him with means for orientation within the structure.

A color-coded system was set up for the M.B.T.A.'s four lines, graphic standards established and new turnstiles, exit gates, token booths, lighting fixtures, clocks and numerous other items were designed. more Record Reports on page 238





Before and after photographs of the Arlington Station clearly show the transformation. These changes will be typical of all the modernized stations, including the graphics, subway "furniture," new fare collection equipment, striped end walls, and specially designed lighting.







aided through new lighting. Glare-free fixtures light both ceiling and floor; they are heavily constructed to withstand vandalism. Special lighting accents graphics along platform and between tracks. Downlights demark the turnstile area.



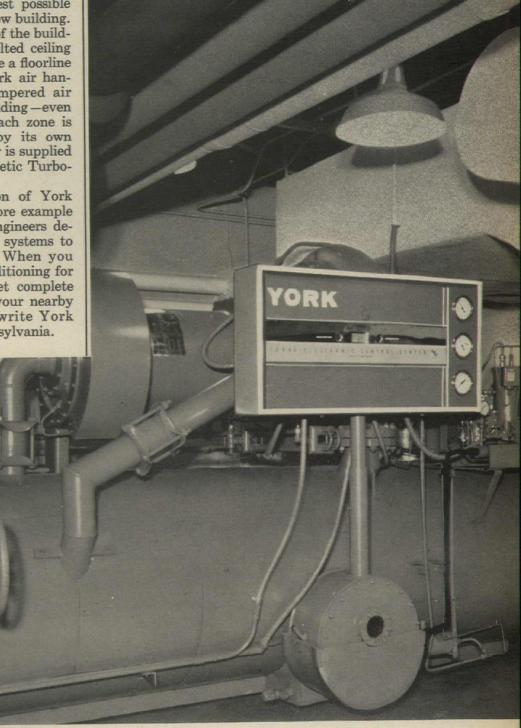
Gloom of the station is dispelled and perception of graphics

Platform side walls are reserved for detailed information about the system and about the surrounding neighborhood of the station. Advertising posters are located across the tracks from the platforms to "provide relief for the waiting period, and become a changing exhibit."

York air conditioning provides freedom of design for modern auto agency

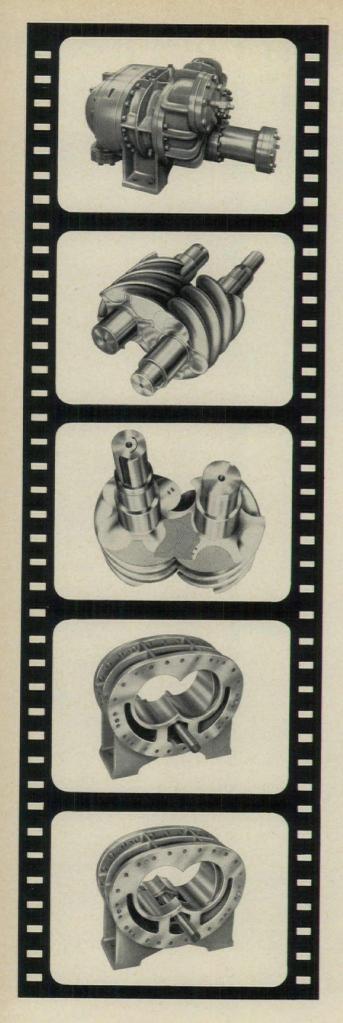
Schilling Motors, Inc., of Memphis, Tennessee, called on its architect and engineer to select the best possible way to air condition its new building. The architectural design of the building—with a concrete vaulted ceiling—made it necessary to use a floorline diffuser system. Five York air handling units circulate tempered air throughout the entire building—even to the service garage. Each zone is individually controlled by its own thermostat. Chilled water is supplied by a York 125-ton Hermetic Turbopak centrifugal machine.

This expert application of York equipment is just one more example of how architects and engineers depend on York units and systems to meet design problems. When you design or specify air conditioning for any kind of building, get complete specification data from your nearby York Sales Office. Or write York Corporation, York, Pennsylvania.



Acchanical equipment room at Schilling Motors, Inc., Memphis, Tenessee. All water lines are color-coded and clearly marked. Thermometers nd pressure gauges indicate readings at boiler and chiller as well as at ach air unit. Basic system consists of a York Hermetic Turbopak of 125 ons capacity. Chilled water at 44° is circulated to five York central tation air handling units, both single-zone and multi-zone. Architect, Roy P. Harrover and Associates; Mechanical Engineer, Office of Griffith C. Burr; Mechanical Contractor, George Wilson Company; General Conractor, M. C. White Construction Company.





Picture of the space



"Positive Displacement" Helical Rotary Compressor: Permits completely stable operation over wide spectrum of suction and discharge pressures. No valve plates, suction and discharge valves, pistons.

Basic design is built around male and female helical rotors. Rotors work like gears, suction gas enters the interlobe spaces and flows axially through the compressor.

As discharge port uncovers, the compressed gas is discharged by further meshing of the lobes and interlobe spaces.

Unique slide valve capacity control system provides infinite stages of capacity reduction down to 10% of full load. When compressor is fully loaded, slide valve is closed.

Unloading starts as slide valve is opened, creating an opening in bottom of rotor housing through which suction gas can by-pass back to inlet port area before compression.

age product for air conditioning...here today!

Package Chiller

Picture one of the most significant achievements of the air conditioning industry... the Dunham-Bush PC-X Package Chiller of tomorrow. Here's an application of the rotary motion compressor to air conditioning and refrigeration... pure poetry in motion.

Smooth . . . unbelievably smooth. Quiet . . . so quiet. This engineering masterpiece is vibration free, compact, light weight, yet the personification of design simplicity.

The culmination of many years of research and development and actual field testing, these units feature the DB-X helical-axial flow compressor. Additional features include operational flexibility of condensers and compressors that are direct driven with a choice of open or hermetic motors.

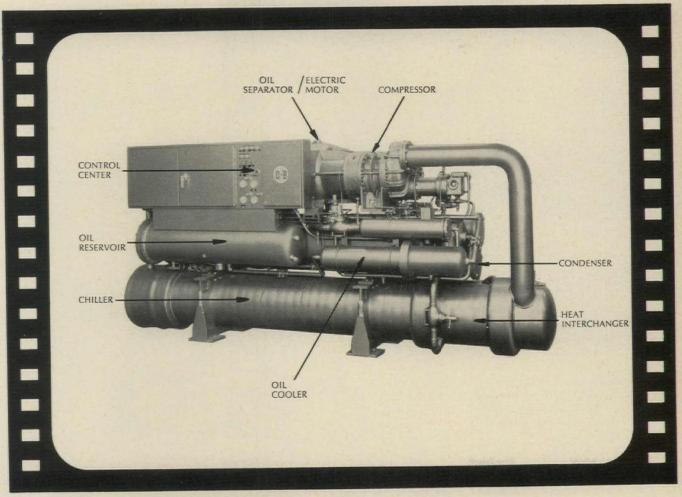
Focus on the unique single slide valve capacity control system providing infinite stages of control down to 10% of full load with complete system stability.

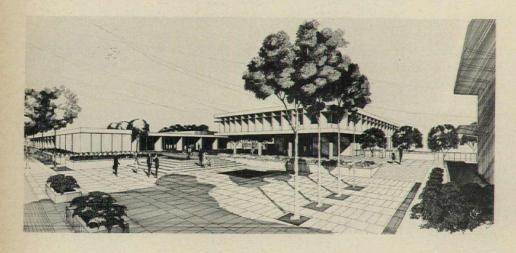
A masterpiece of design and construction, the PC-X line will save you operational dollars, installation space and maintenance costs. Write today for full details. Dunham-Bush, Inc., West Hartford, Connecticut 06110 • Ontario, Canada • Portsmouth, England.



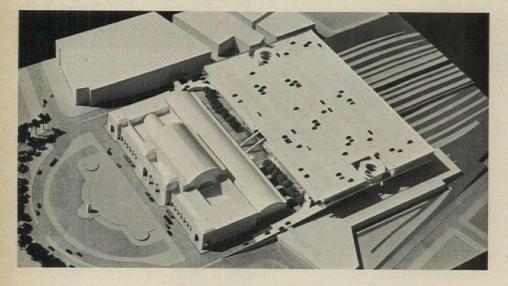
DUNHAM-BUSH

MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF REFRIGERATION . AIR CONDITIONING . HEATING EQUIPMENT





Two new buildings in the San Leandro Civic Center, San Leandro, California, designed by Campbell & Wong & Associates, have been sited in their relation to the existing City Hall (circa 1933) to create "a recognizable civic open plaza." The Public Safety Building is a two-story pan joist concrete structure housing police and fire facilities with a joint communications center. The Municipal Courts building will house two courts and general office space, and is connected by an underground corridor to the holding cells in the Public Safety Building basement.



A visitor center and parking garage at Union Station, Washington, D.C. has been proposed by Cooper & Auerbach, Architects, in a study prepared for Secretary of the Interior Stewart L. Udall. The visitor center, which includes two movie theaters and a main hall containing a depressed film diorama projected from below, would be incorporated into the Union Station (at left in photograph) as part of a \$5-million renovation and remodeling. Adjacent to the station would be a four-level, \$11-million garage for 3,036 cars and 116 buses. The garage would be built over railroad tracks, forming a huge train shed below. A new railroad station, costing \$3.5 million, is proposed for the mezzanine level of the parking structure above the train shed.

The Mississippi Power Company headquarters building, Gulfport, Mississippi, designed by Curtis & Davis, will be a seven-story structure containing 75,775 square feet, which will utilize a high-level lighting system to provide heat in the building. The building will be lighted by 7,000 4-foot-long fluorescent lamps arranged in clusters of four per fixture with 250 fixtures per floor. An auxiliary heating coil system is provided for the coldest days. A highly reflective glass-wall exterior will reduce glare from white sand on the waterfront site and will cut the air conditioning load. The building will have concrete framing with an exposed-aggregate finish.

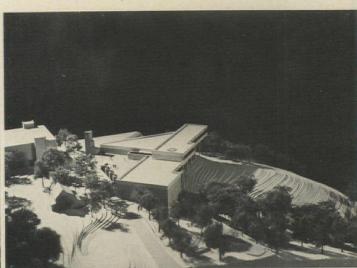




An office building at 345 Park Avenue, New York City, designed by Emery Roth & Sons, will be sited to respect neighboring buildings. The tower face of the 44-story building will be aligned with the adjacent Seagram Building, while a raised L-shaped plaza containing approximately 23,000 square feet, will be concentrated on the corner of the site opening on to St. Bartholomnew's Church. The plaza will be patterned of pink and buff granite with sunken seating areas placed within a landscaped setting. On three sides, the tower will have a base element the same height as the base element of the Seagram Building. The building will have 1,575,000 square feet of rentable space. Owner-builder is Samuel Rudin.



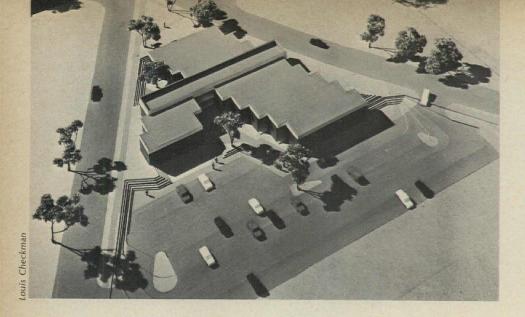
An office building for Rockefeller Center, New York City, designed by Harrison & Abramovitz & Harris, will be a 54-story tower containing 1.8 million square feet of rentable space. The project will occupy the entire block from 49th to 50th Streets on the west side of the Avenue of the Americas, across from the R.C.A. Building. The building will be a sheer rectangular tower rising from a six-story base element. Welton Becket & Associates are serving as consulting architect to Standard Oil Company, New Jersey, joint owner and principal occupant of the building. General contractor for the project is the George A. Fuller Company.



The College Union Building at Wagner College, Staten Island, New York, designed by The Perkins & Will Partnership, is a four-story tiered building aligned to take advantage of panoramic views of the Verrazano Narrows Bridge and New York's Upper Bay through the largest possible

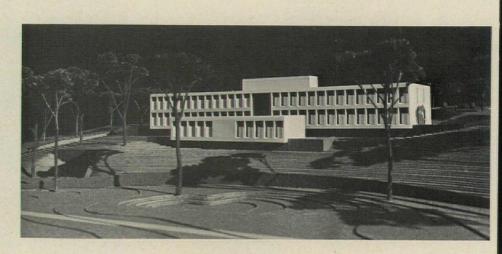


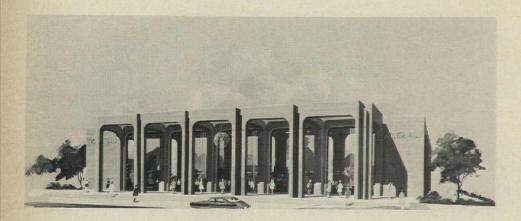
expanses of glass on the waterfront side. The \$3.3-million project, to be faced with exposed buff-colored concrete with red brick infill, will provide a dining room, kitchen, college offices, lounge, game rooms, book store, art gallery and music room.



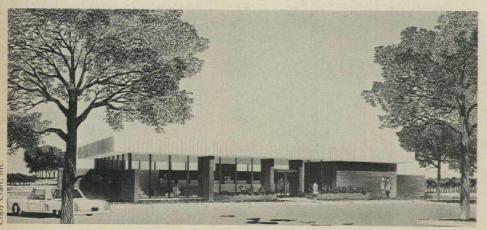
The South Huntington Public Library, South Huntington, Long Island, New York, designed by McDowell-Goldstein Architects, is one of 17 projects cited in the New Jersey Society of Architects annual exhibition at the 67th annual convention of that organization. The library is designed for a small triangular site and will house 136,473 volumes by "squeezing" the required functions into the site using an offset modular structural system. The building will have a steel frame and interior and exterior walls of brick, with exposed aggregate concrete spandrels. The awards jury, comprised of architects Victorine duPont Homsey, Percival Goodman and Sidney L. Katz, praised the project for its "masterly handling of difficult site and excellent method of inviting the public to the center."

The Kennedy Sinclair Office Building, Wayne, New Jersey, designed by Arthur Rigolo, Architect, is another winner in the New Jersey Society of Architects exhibit. The building consists of three separate wings, connected by glazed corridors, developed up a steep site. The front wing houses cafeteria and classrooms with a general office wing behind and an executive office wing (not shown in photograph) behind that. Each of the wings is cantilevered from stone walls which create grade change. The building will have an exterior of sand-blasted poured-in-place concrete and will contain 26,000 square feet. The jury praised the project as a "monumental building beautifully adapted to site."

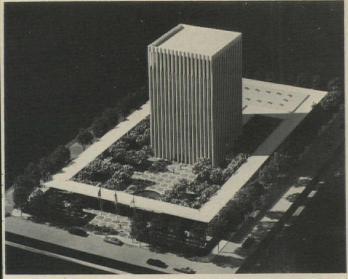




A Saks Fifth Avenue store located in the 33-acre Prudential Center in Boston, designed by Charles Luckman Associates, will have two-story porticoes at each end of the building to highlight the main entrances and large display windows. The two-story building will contain 110,000 square feet and will cost \$2.75 million. The exterior will be faced with warm-toned brown masonry. Partner-incharge for the project is Charles W. Stanton with John McNamara in charge of design and Joseph Staron as project architect.



A branch bank for the Detroit Bank and Trust Company, located in the 113-acre Nankin Industrial Park in suburban Westland, designed by Eberle M. Smith Associates, Architects and Engineers, will be a one-story structure with a part basement and will contain 5,570 square feet. The glass and brick building will have safe deposit boxes, night depository and coupon rooms at ground level along with drive-in banking windows. Parking will be provided for 60 cars.

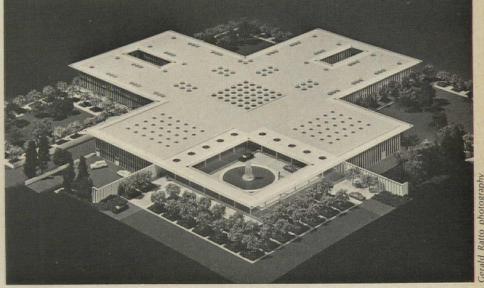


The Palo Alto Civic Center, Palo Alto, California, designed by Edward Durell Stone, is a \$5-million project having eight floors plus three underground parking decks for 750 cars. A concrete colonnaded canopy will surround the project with building materials to be reinforced concrete with precast exterior walls. The main feature in the interior is a Council Chamber, 60- by 70-feet, seating upwards of 150 people besides the 17 council members and staff. There will be 25 4-foot round skylights in the chamber's 18-foot-high ceiling. The building, scheduled for completion by June 1969, will contain approximately 85,000 square feet.

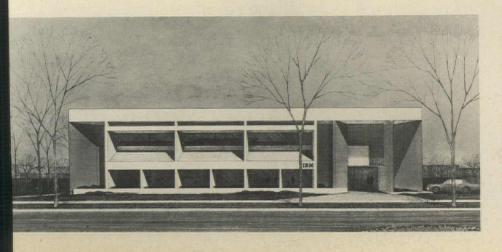


The Ahmanson Center, Los Angeles, also designed by Edward Durell Stone, will be a three-building office complex consisting of a 40-story tower and two curving 10-story structures. The buildings will enclose a split-level landscaped plaza organized around a large central reflecting pool. The buildings will be faced with travertine and will contain a total rentable area of 1,009,520 square feet—the tower containing 605,520 square feet and each of the curved structures containing 202,000 square feet. Parking in four underground levels will accommodate 2,000 cars. The first phase of construction on the \$75million project is scheduled for completion in 1970.

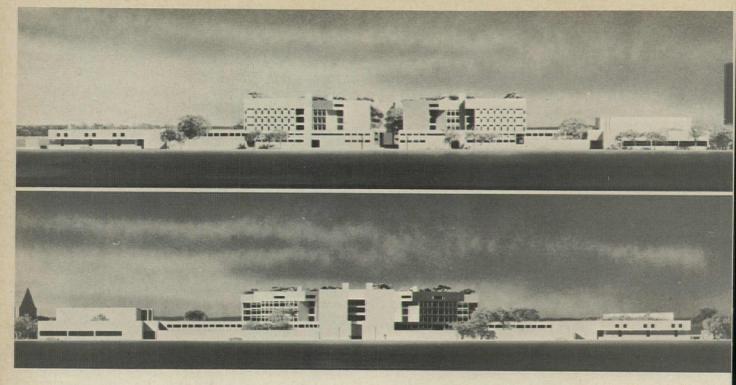
Valley General Hospital, Renton, Washington, another project of Edward Durell Stone, will contain 84 per cent of private rooms with each group of four private rooms sharing a balcony or terrace. The three-floor hospital, which will contain 196,400 square feet, will have a bed capacity of 209 plus unfinished space to accommodate an additional 43 (plus future expansion of approximately 100 beds on a fourth floor). The building, of reinforced concrete with precast exterior, will be located within a landscaped setting with fountains in the entranceway and two-story atrium. The building will also contain extended care unit, intensive care unit, coronary care unit, pediatrics section, five major operating rooms and eight-bed recovery room. Completion of the project is set for October 1969.

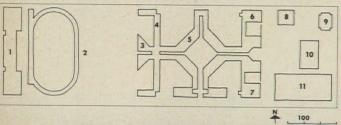


Serald Ratto photography

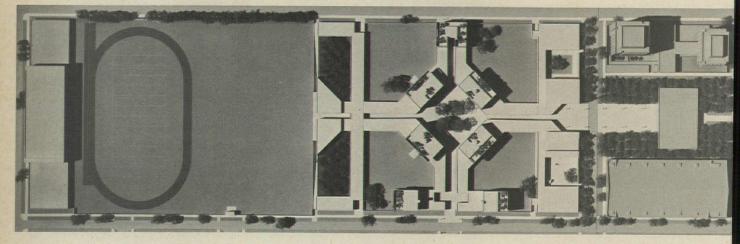


The I.B.M. Office Building, Colorado Springs, Colorado, designed by Leroy B. Miller, will be a two-story building with partial basement. The building will be used as a branch sales and service office. Exterior materials will be a grey-brown face brick and exposed concrete, with windows deeply recessed and protected by concrete sunshades. The structural system of the project will be steel with concrete floor and roof slabs.





- Future gymnasium
 Athletic fields
- 3. Dining
- Married housing
- Undergraduate housing
- 6. Music
- 7. Art
- 8. Dormitory under design by Harry Weese
- 9. Existing dormitory by Harry Weese
- 10. Future theater
- 11. Existing field house



University of Chicago superblock is planned as a "village" of integrated activities

A superblock for University of Chicago student facilities, designed by Edward Larrabee Barnes, Architect, is planned as a "village" concept, and strives for a humane relationship between the individual and the community. Within the complex, designed as an organic unit, are a network of pedestrian streets, seven courtyards, a central urban space, four quiet grassy courts, and two terraces shaded with groves.

Facilities provided in the superblock include dormitories and dining facilities

for 785 undergraduates and 64 graduate students, playing fields, a full gymnasium, art gallery, a 750-seat concert hall, post office, bookstore, sidewalk cafe, recreation rooms, club rooms, and practice rooms.

The dormitory facilities include seven six-story towers with roof gardens which have entrances and lounges opening off the pedestrian streets. Eight other dormitories are two-story wings that look out onto courtyards.

Two wedge-shaped dining rooms,

overlooking the playing fields, can also be used for meetings and dances. Below the dining rooms are lounge and recreational facilities.

The public-oriented activities in music and art-the gallery and concert hall—share a plaza entrance. Both buildings will have wide glazed halls doubling as reception areas, and internal courtyards which may be used for possible future expansion. Faculty offices will be located above, overlooking residentia courtyards.

When he's racing against time, the odds are better with VIP.

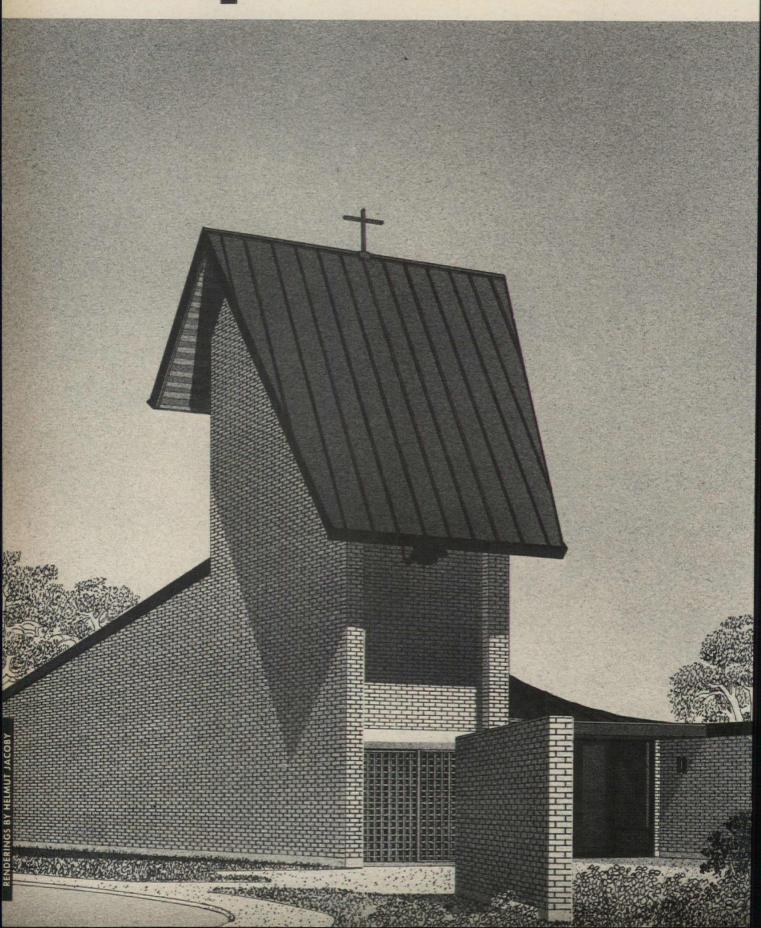
When he calls for an elevator, chances are it's already on the way. Because a VIP elevatoring system is always on the alert. It *predicts* workloads by computer. Anticipates calls. And only VIP distinguishes car calls from hall calls, for precise predictions and faster service.

Otis

So many extras are standard with VIP



Architectural acceptance and...



...the architectural press.

the major architectural publications. We are therefore particularly gratified that so many Terne-roofed If the dramatic revival of Terne roofing can be measured quantitatively by the millions of square feet which have been installed throughout America during the last few years, it projects have been cited for excelcan also be measured lence in these qualitatively by the media. character of the Herebuildings on presented which Terne has with pride been specified. and our And where quality thanks to the architects responis involved, there is probably no better objective sible for them-are a standard than few notable examples of such buildings. that provided by

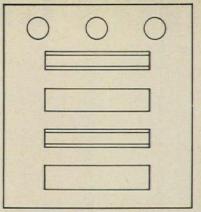
Lansing Presbyterian Church: Lansing, Mich. Architect: Edward D. Dart, F.A.I.A. PROGRESSIVE ARCHITECTURE, Nov. 1963

"Stornoway": Ligonier, Pennsylvania Architect: Winston Elting, F.A.I.A. ARCHITECTURAL RECORD, Jan. 1965 RECORD HOUSES, 1965 Arena Stage: Washington, D.C. Architect: Harry Weese, F.A.I.A. ARCHITECTURAL RECORD, Feb. 1962 PROGRESSIVE ARCHITECTURE, Feb. 1962

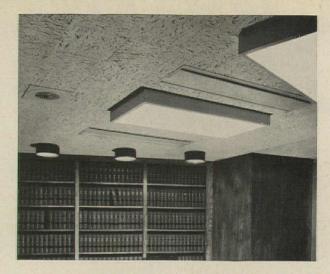
▲ Haley Funeral Home: Southfield, Michigan Architects: Birkerts and Straub PROGRESSIVE ARCHITECTURE, June 1962

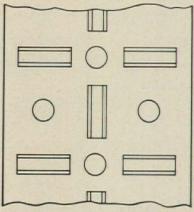
Follansbee

FOLLANISREE STEEL CORPORATION . FOLLANISREE WEST VIRGINIA



In this library and reception room, two Moduline units have been combined with circular surface-mounted light fixtures.





Moduline units in this school cafeteria are separated by incandescent lights, but can still be served by straight-line ductwork.



Adaptable Carrier Moduline air terminals have no "or equal"

You can get an idea from these examples how adaptable Moduline® units are.

They have a clean, functional 1' x 4' face dimension. Harmonize with any type of hung ceiling. Integrate with lights in dozens of ways. And may be installed as random singles, linked in pairs, or coupled in lines of any length.

With planned integration of lights and units, zones of any size or shape can be designed for flexibility of partitioning and space usage.

Adaptable? Very!

It is the only air terminal that compensates instantly for changes in duct pressure and is powered by duct pressure itself.

Result: You can use it with low-cost, single-duct systems for room-by-room temperature control—without the problems up to now associated with variable volume equipment.

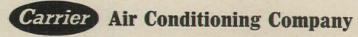
Set up? Easy—just dial the maximum cfm to match the space load. The unit automatically balances to the desired temperature regardless of the pressure. No more probing at every outlet to

check air quantity.

Air delivery? Smooth and quiet at any volume, low to maximum. No drafts, no stratification, no waterfall, no dead spots.

And factory-installed controls are powered by supply air. No external wiring, or pneumatic connections. More headaches eliminated.

For complete details, call your Carrier representative. Or write us at Syracuse, New York 13201. Represented in Canada by Carrier Air Conditioning (Canada) Ltd.

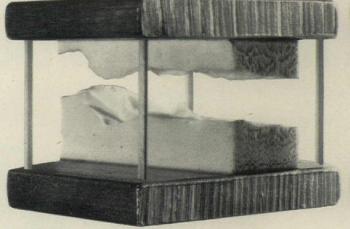


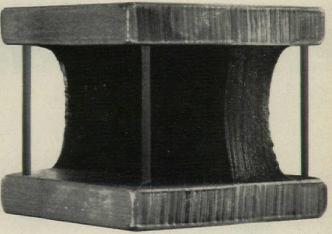
More people put their confidence in Carrier air conditioning than in any other make

Which sealant would you use in your next building?

SILICONE

POLYSULFIDE





Random samples of silicone and Tested-Approved polysulfide-base sealant compared in expansion test.

Result: silicone (photo above left) fails cohesively at 50% stretch. Polysulfide (photo right) holds up at 50%, 100%, 150% elongation -and recovers.

Conclusion: Tested-Approved polysulfides promise a true seal of security even in face of most pronounced joint movement.

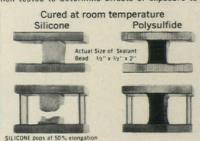
For sheer strength—the kind that keeps buildings leak-free and sound at the joints under severest conditions-no sealants can touch Thiokol Tested-Approved LP® polysulfide base compounds.

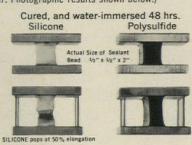
Their adhesive bond to all materials, even without priming, is virtually indestructible. Their cohesive muscle and rubbery flexibility permits greatest expansion and contraction—and return to normal dimension without rupture.

Tested and Approved polysulfide base sealants are formulated to meet the industry's most demanding performance specifications. They are identified by Thiokol's "Seal of Security"-your guide to total long-term weatherproofing protection.

SEALANT SAMPLES BEFORE AND AFTER TEST

(Samples used in test were of same dimensions, used same substrate, cured in accordance to manufacturers' recommendations. Sets of comparable samples were also immersed in water for 48 hours and then tested to determine effects of exposure to water. Photographic results shown below.)





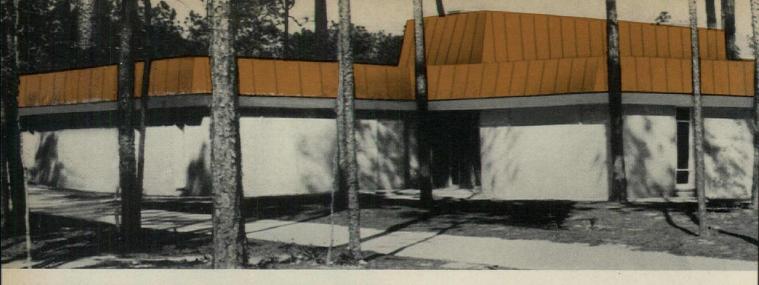


*The manufacturer warrants by affixing this seal to his label that the product is a duplicate of materials independently tested and approved by- and in accordance with standards estab-lished by-Thiokol Chemical Corporation. The seal means you can specify with confidence.



part of the Widening World of Thiokol Building Sealant Technology...

THIOKOL CHEMICAL CORPORATION 780 N. Clinton Avenue, Trenton, N.J. 08607. In Canada: Thiokol Canada, Ltd., 377 Brant Ave., Burlington, Ontario



REVERE COPPER makes possible



THE UNUSUAL fascia design that is also used as soffit trim, shown above from various angles, is of standing seam construction, fabricated from 25,000 lbs. of Revere 16-oz. cold rolled copper. Structure is the W. J. WOODHAM HIGH SCHOOL, Pensa-

cola, Florida. Architect: ELLIS W. BULLOCK, JR., A.I.A. Contractor: DYSON & COMPANY . . . Sheet Metal Contractor: MCCORMACK ROOFING COMPANY . . . all of Pensacola, Florida. Revere Distributor: MOBILE STEEL COMPANY, Mobile, Alabama.

Because of the versatility and workability of copper, architects today are using it to create many unusual effects. The new conception of the old cornice you see on these pages is one of them.

Here the architect ELLIS W. BULLOCK, JR., A.I.A. used copper for the standing seam fascia, extending it from cap flashing to soffit trim in one continuous sweep . . . not only decorative, but practical.

makes possible, an increasing number of architects are

With the virtually unlimited designs which copper

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801 EXECUTIVE OFFICES: 230 Park Avenue, New York, N. Y. 10017

FIRST AND FINEST IN COPPER AND BRASS-FULLY INTEGRATED IN ALUMINUM

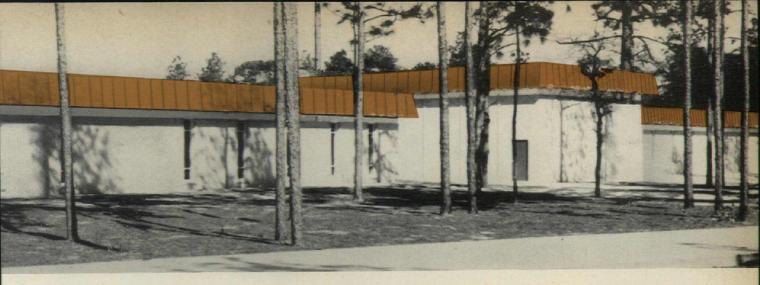
using man's oldest metal to help create the newest in architectural construction.

What other building material combines such beauty with utility? What other building material gives such service year after year? What other building material takes on the desired natural patina with age, or the popular bronze tones accomplished by oiling? And, when properly designed, copper is rated at the lowest cost per year of actual service of all roofing and flashing materials.

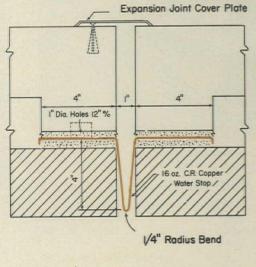
Get to know copper better. Send for the 88-page Sweet's insert shown on opposite page. This insert was intended for the 1967 edition of Sweet's but we missed the deadline. Don't wait for '68. Send for your free copy today. You will also receive free companion piece, "The 4 Revere Improved Systems of easy-to-install Flashings," for the complete weatherproofing of masonry buildings.

You have much more freedom when

For more data, circle 35 on inquiry card



a new concept in cornice design

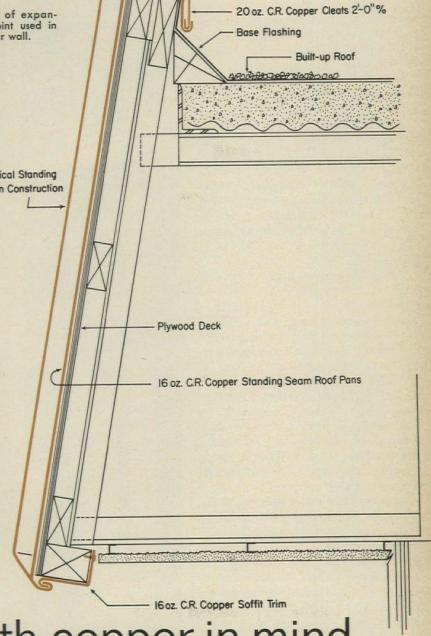


Detail of expansion joint used in exterior wall.

> Typical Standing Seam Construction



SEND TODAY for your free copy of this 88page Revere Brochure that illustrates the design principles and techniques of applying sheet copper in every phase of building construction including roofs, flashing, fasciae, gutters, expansion joints.



you design with copper in mind

ON THE CALENDAR

DECEMBER

3-7 Annual convention-exposition, N.A.H.B.—International Amphitheater, Chicago.

JANUARY

9-13 Winter Meeting of the National Society of Professional Engineers—Shoreham Hotel, Washington, D.C.

25-28 Annual meeting of the Society of Architectural Historians—Chase-Park Plaza Hotel, St. Louis, Missouri.

OFFICE NOTES

NEW FIRMS, FIRM CHANGES

Natale R. Anzelmo, Architect, is a new associate member of the firm De Sina & Pellegrino, A.I.A., Architects of 140 Cedar St., New York.

Rudolph M. Arsenicos and William R. Upthegrove have combined their firms in a partnership for the general practice of architecture. The new firm, Arsenicos, Upthegrove, Architects is located at 321 Northlake Boulevard, North Palm Beach, Florida, 33403.

Bear, McNeil, Schneider, Bloodworth & Hawes, Architects is now Bear, McNeil, Bloodworth & Hawes, Architects, Peterson & Smith, Associate Architects. The address remains 5502 N.E. Glisan St., Portland 13.

Brown, Healey & Bock, Cedar Rapids, Iowa architects and engineers, have added three new associates: Herbert M. Stone, project architect; Jack C. Miller, who will head the structural engineering department; and Harold R. Bogert, who will be in charge of field supervision.

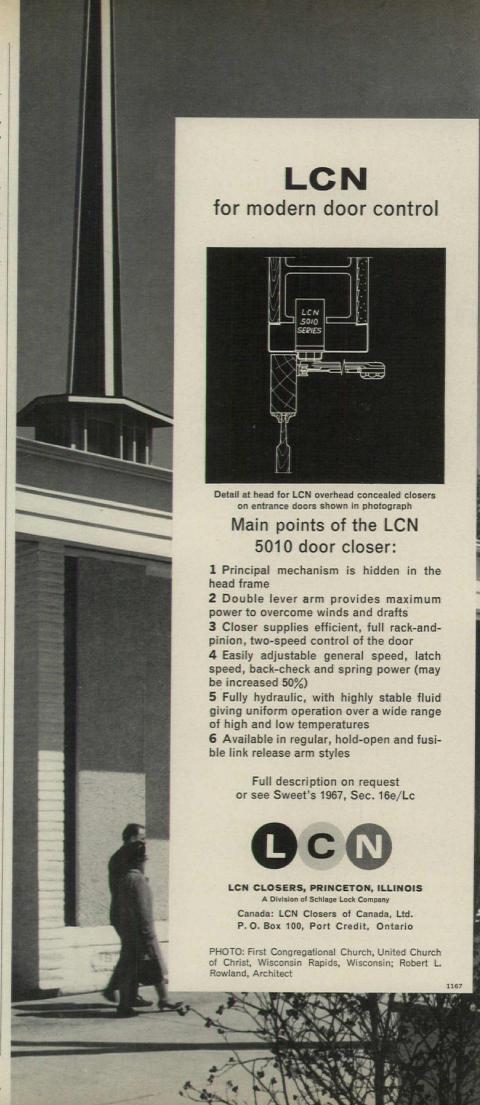
Nine associate partners have been elected by Caudill Rowlett Scott. The new partners are David C. Bullen, Ralph C. Carroll, James Falick, A.I.A., Louis E. Finlay, A.I.P., Brawley M. King, A.I.A., Jack W. Smith, A.I.A., William T. Steely, Charles B. Thomsen, A.I.A. and Michael H. Trower, A.I.A.

Forrest Coile and Associates, Architects have elected L. Duane de Blasio, A.I.A. an associate of the firm. The firm maintains offices in Newport News, Virginia and Washington, D.C.

Freeman, French, Freeman, Architects have announced the retirement on July 1, 1967 of John C. French, Jr., A.I.A. Robert A. Metz, A.I.A., Frederick A. Senftleber, A.I.A., Lloyd S. Pelley, P.E. and William M. Duff, A.I.A. are new associate partners of the firm.

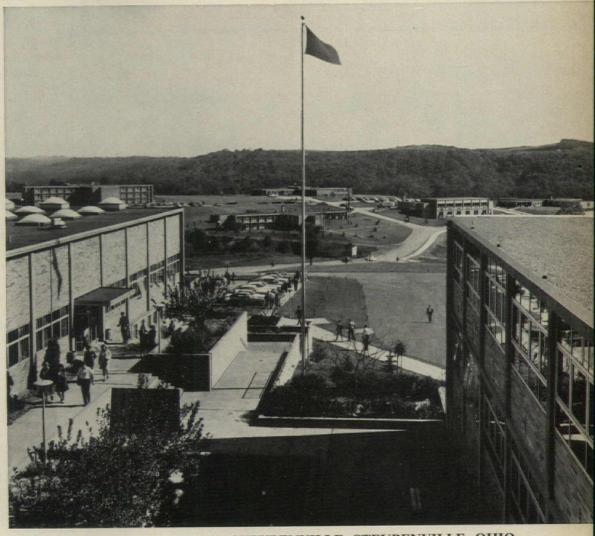
For more data, circle 36 on inquiry card

continued on page 56





• FLORIDA PRESBYTERIAN COLLEGE, ST. PETERSBURG, FLORIDA. Enrollment: 811. Campus: 281 acres; 50 buildings. Cost: \$11,000,000. Opened: 1960. Architects and engineers: Connell, Pierce, Garland & Friedman; Perkins & Will; Harvard & Jolly. • THE COLLEGE OF STEUBENVILLE, STEUBENVILLE, OHIO. Enrollment: 1,100. New campus: 50 acres, nine existing buildings (future will total 16). Cost of existing buildings: \$5,000,000. Construction began: 1960. Architect: Joseph F. Bontempo. Engineer: Michael Baker, Jr.



THE COLLEGE OF STEUBENVILLE, STEUBENVILLE, OHIO

FOR EASY EXPANSION, REASONABLE COST

for the campus's entire heating system is only six to eight hours per year.

The colleges chose All-Electric design for other important considerations as well. Such as quality of study environment.

At Florida Presbyterian all buildings are air-conditioned to provide students and faculty with maximum environmental comfort throughout the year. At Steubenville all buildings incorporate provisions for future air-conditioning. In both cases, indications are that air-conditioning is considerably more economical with All-Electric design.

Another consideration was extra space. Because electric heating requires no bulky equipment, campus buildings gain extra space that can be used for classrooms, offices and dormitory rooms.

(At Steubenville the space originally reserved for a boiler room is now the college book store.)

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come the opportunity to discuss them with you in connection with your next project.

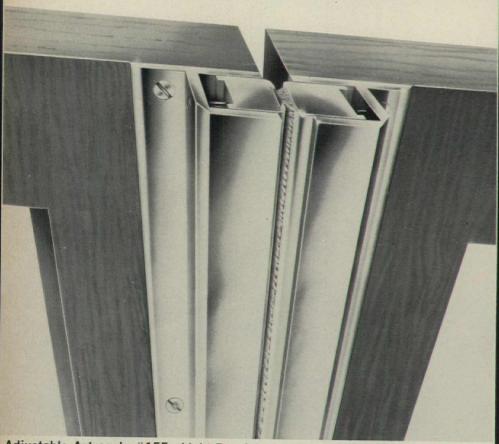
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continued from page 52

Hammel Green and Abrahamson, Inc., with offices at 1210 Wesley Temple Bldg., Minneapolis and at 2675 University Ave., St. Paul, has named six new vice presidents and associates. The new appointments of the Twin Cities architectural and engineering firm are: Robert S. Takaichi, Kenneth C. Schultz, Brian R. Morgan, Theodore R. Butler, Wesley E. Sorensen and Richard D. Babcock.

Heyl-Treby, Architects, announce the admission of three partners to form Heyl-Treby-Associates, Architects and Planners, 4347 Hamilton Boulevard, Allentown, Pa. The new partners are Monroe W. Frey, James D. Howard, A.I.A. and John Philips, A.I.A.

Hunter, Heiges & Associates have appointed Charles E. Rogers, R.A., William J. Douglass, Jr., R.A., and Sam L. Miletta as associates. The architectural and engineering firm's offices are in Sharon and Meadville, Pennsylvania.

William F. Hecker has been elected a vice president of the St. Louis architectural firm, William B. Ittner, Inc.

Harold J. Landrum, formerly with Berger-Landrum-Field Architects, Inc., has established his own architectural practice. The St. Louis firm, with offices at 329 N. Euclid Ave., is renamed Berger-Field Architects, Inc.

Dennis F. D'Jock and Kenneth E. Ziehr are now Associates in the Wisconsin firm of Larson, Playter, Smith Architects and Associates of 419 S. Barstow St., Eau Claire.

Robert D. Davis and Alan L. Gallion, architects, and Alvin Ficks, engineer, have been designated associates in the planning, architectural and engineering firm of Albert C. Martin and Associates, Los Angeles.

David Mayes, landscape architect, formerly with Royston, Hanamoto, Mayes & Beck, has opened a new office at 555 Clay Street, San Francisco. The landscape architectural firm, located at 50 Green St., San Francisco, continues as Royston, Hanamoto, Beck & Abev.

Outcalt, Guenther, Rode and Bonebrake, Architects has named Robert Harter Snyder, A.I.A. and Jack P. Curtis, A.I.A. as general partners and will continue the practice of architecture and planning as The Outcalt-Guenther Partners, Architects and Planners, 13124 Shaker Square, Cleveland.

Curtis E. Flannery has joined the staff of Peck Associates as Associate Architect. The architectural firm is located in Paducah, Kentucky.

James Toms Quinn, A.I.A., and James Bradford Wiggins, A.I.A., have

continued on page 63









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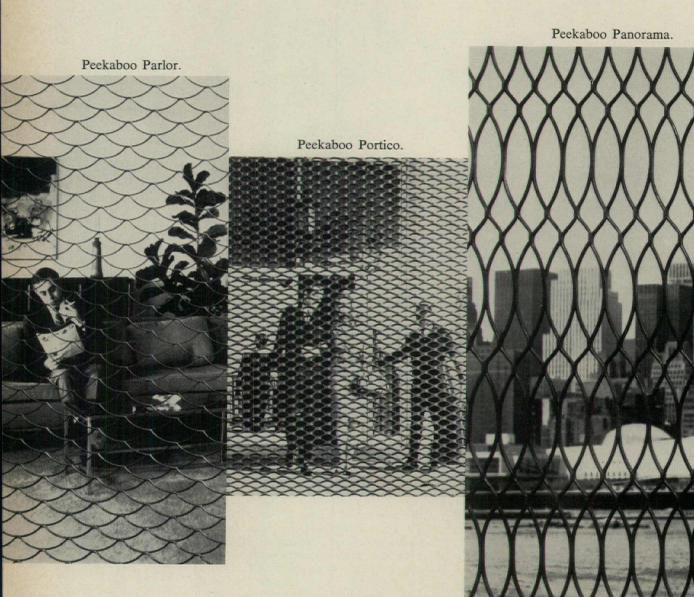
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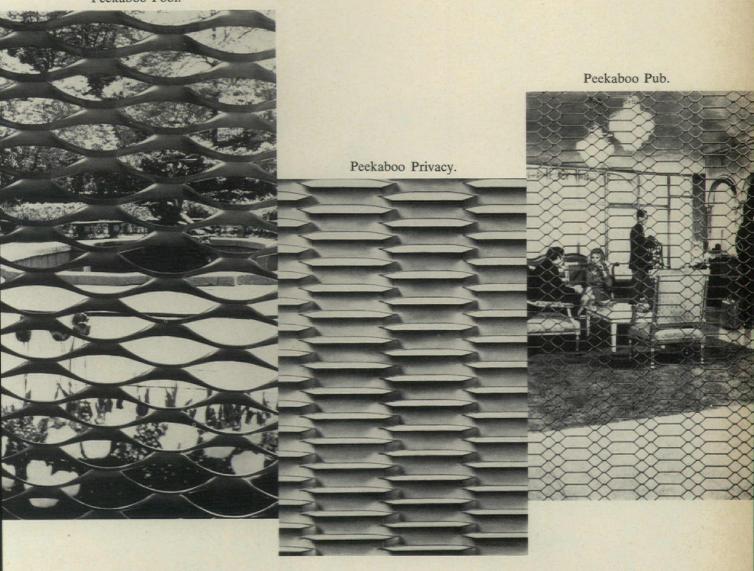
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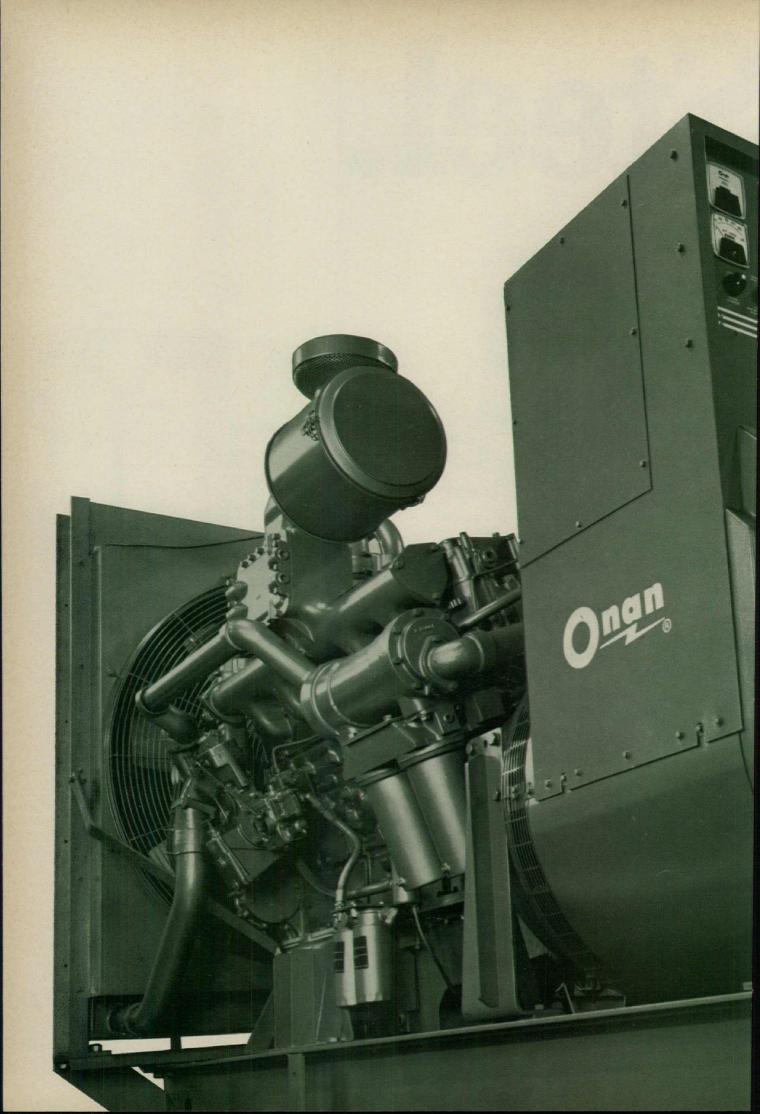
It's the paintable, bronzeable, laquerable, galvanizable, rubber-or-plastic-coatable steel of the future. You can see how all those perforations add versatility and visual appeal. What you can't see is how the same perforations make it lighter per foot, stronger per pound, and even more rigid than the original sheet of solid steel. But we'll be glad to explain. Write us for a comprehensive expanded steel catalog.

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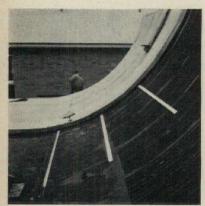
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continued from page 56

formed the partnership Quinn-Wiggins, Architects at 109 Oberlin Road, Raleigh, North Carolina.

A new firm has been established under the name of Remer & Weber, Architects and Planners at 26400 Southfield Road, Lathrup Village, Michigan. Principals in the firm are: Bernard Remer, A.I.A., who is in charge of design; Kurt A. Weber-Stroebele, in charge of production and supervision; and Robert W. Marans, A.I.P., consultant to the firm.

William B. Tabler, F.A.I.A. announces the promotion of one of his staff architects, Yoshiro Hashimoto, to the status of Associate.

Philip Collins Warren and Gus Nick Paras announce the formation of a partnership for the practice of architecture and urban planning. The new firm, Warren and Paras, is located at the Bay Area Executive Center, 5445 Mariner, Tampa, Florida.

Lee E. Ham, president of Wilsey & Ham, architectural, engineering and planning firm of San Mateo, California, announces the association of Eduardo Baranano, A.I.A., A.I.P., as Vice President for Planning, and of Paul Reiter, A.I.A. as Senior Architect and Associate.

Adrian Wilson Assoc. recently appointed Joseph L. Amestoy, A.I.A., as an associate. He is stationed at the architectural and engineering firm's new Corporate Home Offices, 621 S. Westmoreland Ave., Los Angeles.

Wilson & Company, Engineers and Architects of 631 E. Crawford, Salina, Kansas, announces the appointment of five new partners. The newly added general partners are Elmer N. Pearse, Robert L. Baier, Robert E. Crawford, Robert P. Selm, and Lewis C. Crawford.

NEW ADDRESSES

Benedict Adams, Architect, A.I.A., Suite 7, 2550 Valley Rd., Sacramento, Calif.

Fred Bassetti and Colleagues, 2027 Fifth Ave., New York City.

Brand & Moore, Architects, Engineers, Planners, 130 West 42 St., New York, 10036.

Eugene Kinn Choy, A.I.A. & Associates, 2410 Beverly Blvd., Los Angeles.

Daverman Associates Inc., Architects, Engineers and Planners, Vandenberg Center, 200 Monroe N.W., Grand Rapids, Mich.

Thomas Echternach/Architecture/ Drawing/Painting, 1831 Westcliff Dr., Newport Beach, Calif.

Ranger Farrell and Associates, Consultants, Irvington-on-Hudson, N.Y.

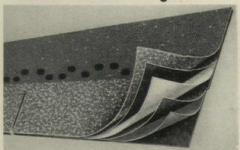
continued on page 120

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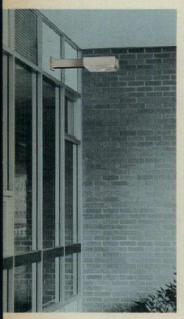
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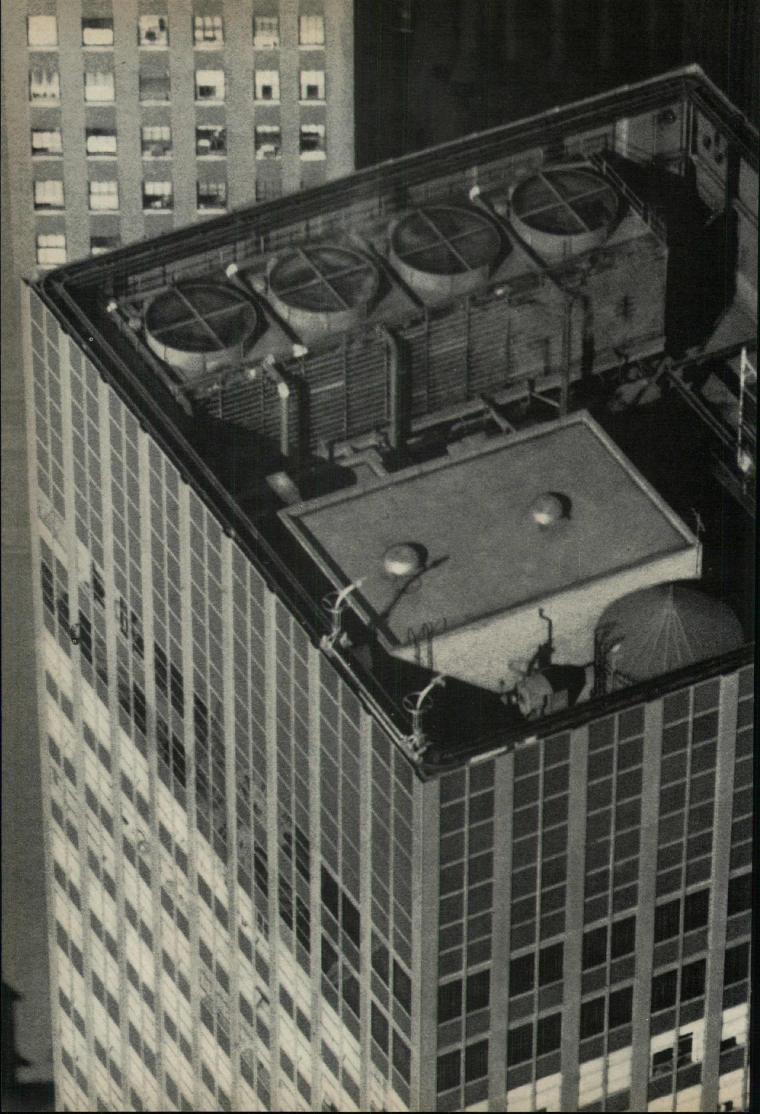
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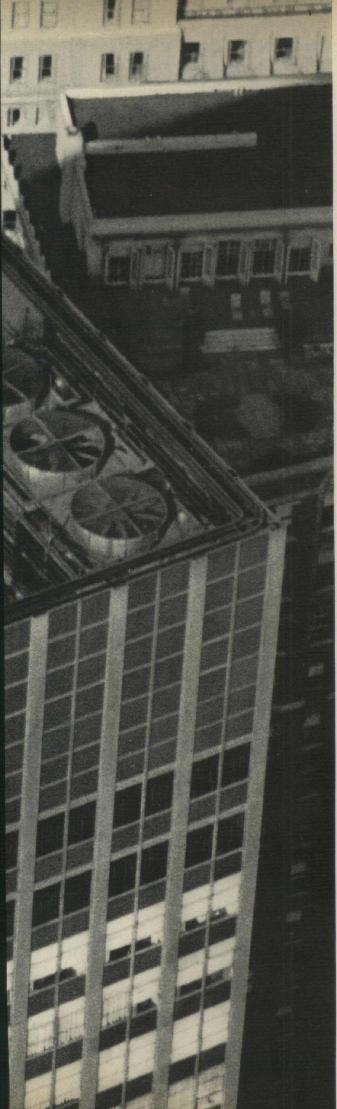
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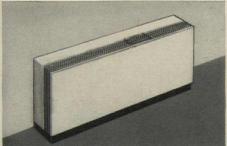
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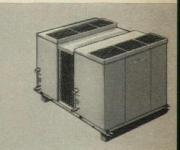
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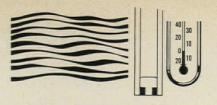
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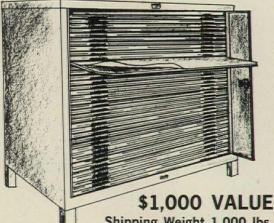
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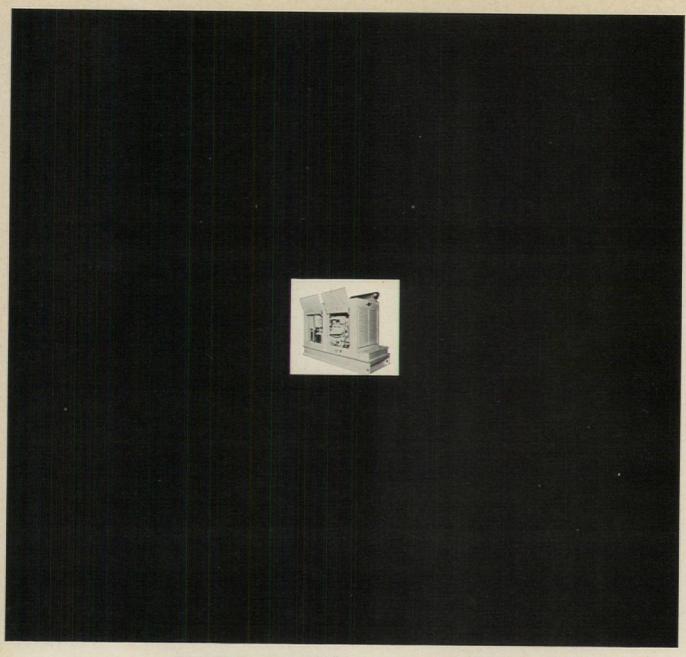
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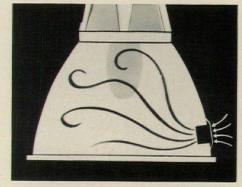
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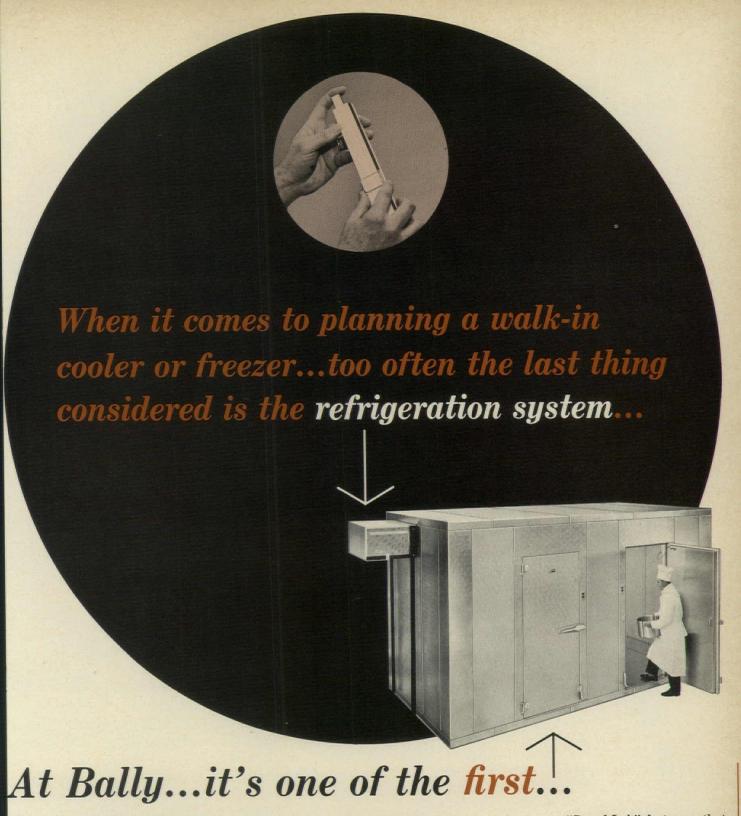


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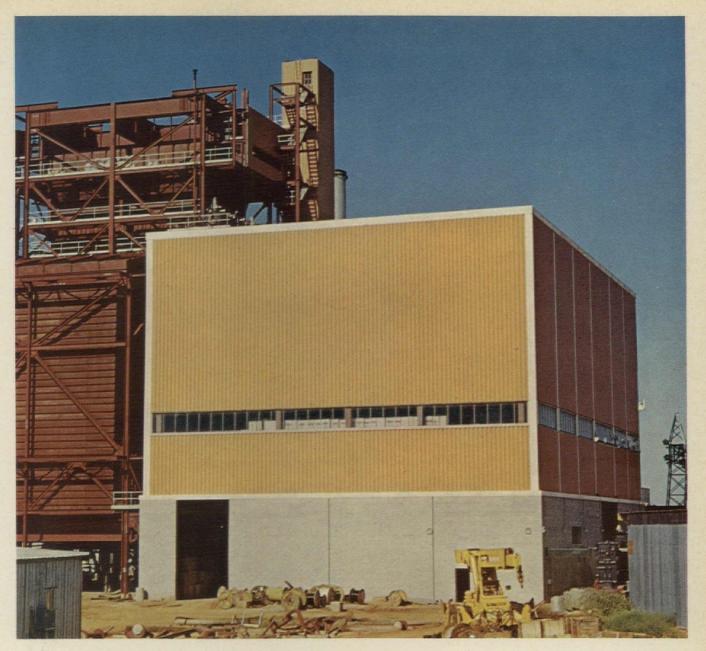
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George Nemeny uses ceramic tile for beauty and freshness to up-date Stanford White design.



George Nemeny (F.A.I.A.) tore down walls, installed skylights, window walls and white ceramic tile to update this Kings Point, N.Y., house designed by Stanford White at the turn of the century. He flooded the dark interior with light and centered on highlighting a magnificent view of Long Island Sound while retaining the spirit of the Classic Revival original.

Glazed ceramic tile for kitchen countertops and splash

areas provides a sanitary, scratch-stain-burnresistant and easy-to-clean surface for preparing food. The center island topped with tile offers an attractive cooking and snack spot with work and storage areas combined.

Unglazed ceramic tile gives a safe, non-slip, easy-to-clean surface for bathroom floors, walls and the step-up tub in the master bath. Floors in the kitchen, dining room, powder room and solarium are also ceramic tile. The builder for this rejuvenation was Laimons Birkmanis and Cramer Bros. of Cold Spring Harbor installed the tile.

For a long-lasting, carefree material that offers you unlimited design ideas for interior and exterior use in either new or remodeling projects, specify ceramic tile made in the U.S.A. The triangular mark at right appears on every carton of wall tile, ceramic mosaic tile and quarry tile when you select and install Certified Quality Tile. This seal is your

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ARCHITECTURAL BUSINESS

news and analysis of building activity ... costs ... practice techniques

F. W. Dodge construction outlook: 1968

After two years of sub-normal activity, the construction industry is expected to rebound during 1968 with total contracts climbing toward a record \$57 billion—a 10 per cent increase over 1967.

Prepared by F. W. Dodge Economics Department, George A. Christie, Chief Economist

At just short of \$52 billion, the 1967 value of contracts for new construction won't look a great deal different—in total, at least—from the year before. What's more, this year's modest advance in dollar value has been mostly cancelled out by rising building costs, leav-the physical volume of newly-initiated construction virtually unchanged. But right there the similarity between 1967 and 1966 ends.

Though the totals for the two years will end up pretty much the same, the all-important difference is the *direction* things are taking. In 1966, tight money and cutbacks in public programs led to a progressive weakening of construction demand. This year, by contrast, has been one of almost uninterrupted improvement as 1966 blocks were removed.

While almost no building type failed to reflect in some way the unusual economic and political environment of 1966-67, it was the housing market, of course, that reacted most violently. By midyear, home building was well along in its recovery, with further improvement still to come.

But while builders were quick to benefit from the much-improved climate in construction markets early this year, the building products manufacturers had yet to see any real improvement in new orders or shipments of their products at mid-year. The best that could be said was that building materials inventories, which had been rising sharply all through 1966, finally leveled off during the first half of 1967. In a period in which most manufacturers' net earnings were slipping, building products makers were among the hardest-hit.

In most respects, 1967 was a "getting-back-to-normal" year after 1966's distortions. But with conditions changing rapidly, "normal" is no longer what it was two years ago.

Any analysis of 1968 must begin with a look at the general economy

As 1967 draws to its close, the economy is beginning a period of renewed expansion. Recovery from the slowdown that plagued most of the opening half of the year had to wait until excessive inventories were worked off. And that called for a temporary cutback in output. Market demand held steady throughout this adjustment period, and summer brought a welcome upturn in industrial production, ending the "mini-recession" of 1967.

Now, with a general agreement on the direction that business trends will be taking over the foreseeable future, the key issue has become how strong the advance will be. Careful analysis of the true strength of the 1968 demands of consumers, business, and government will be needed to guide the important decisions about what are the appropriate national economic policies for these times: How much budgetary restraint? How much tax increase? How much monetary expansion? These decisions, in turn, will bear upon the amount and kinds of construction projects initiated next year.

The sources of growth in 1968: spending by government, industry and consumers During 1967, huge increases in government spending—mostly related to Vietnam—have been the economy's prime driving force. The combined total of Federal, state, and local spending (which makes up only about one-fifth of total

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88
93
95

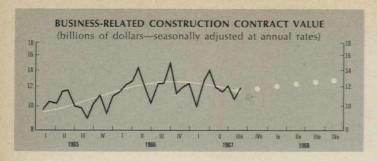
GNP) was responsible for more than half of this year's entire \$42 billion gain in Gross National Product.

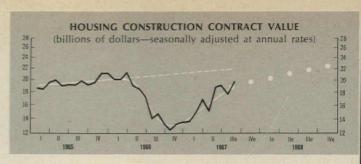
In this period of fast-rising defense outlays, the business sector has served as a kind of involuntary safety valve by cutting back sharply its rate of inventory accumulation and leveling out its plant and equipment investment. And with some of the pressure taken off the economic system during this lull in business capital spending, funds moved back to work filling a neglected need for housing.

In 1968, the demands of govern-

Dollar Volume of Construction Contracts (millions of dollars)

type of constructio	n 1967	1968	
nonresidential	prelim-	esti-	%
buildings	inary*	mated	change
Commercial	\$ 5,875	\$ 6,125	+ 4%
Manufacturing	3,650	3,725	+ 2
Educational	5,200	5,250	+1
Hospital	1,775	1,950	+10
Public	950	1,100	+16
Religious	775	800	+ 3
Recreational	800	825	+3
Miscellaneous	700	700	_
TOTAL	\$19,725	\$20,475	+ 4%
residential buildings			
One and Two Family	\$13,700	\$16,200	+18%
Apartments	4,150	5,225	+25
Nonhousekeeping	1,350	1,525	+13
TOTAL	\$19,200	\$22,950	+20%
TOTAL BUILDINGS	\$38,925	\$43,425	+12%
nonbuilding			
construction			
Streets, Highways			
and Bridges	\$ 6,400	\$ 6,725	+ 5%
Utilities	1,900	2,000	+ 5
Sewer and Water	2,050	2,150	+ 5
Other	2,600	2,650	+ 2
TOTAL	\$12,950	\$13,525	+ 4%
Total Construction	\$51,875	\$56,950	+10%
Dodge Index (1957-59=100	150.3	165	
demand groups			
Business	\$11,875	\$12,350	+ 49
Family (housing)	17,850	21,425	+20
Institutional	8,650	9,025	+ 4
Community	13,500	14,150	+ 5
TOTAL	\$51,875	\$56,950	+109
* Eight Months Actua	1. Farm 14	lantha Esti-	





ment will grow somewhat less rapidly, but they will nevertheless be some \$15 billion greater than in '67. With military spending budgeted to level off in 1968, there is growing pressure for expansion of domestic programs—particularly those bearing on the urgent problems in our cities

At next year's indicated level of government spending, the task of keeping the Federal deficit within bounds will be even more difficult than it was last year. And because of this potential fiscal imbalance, no forecast of 1968 economic activity would be complete without an assumption about the hotly-debated income tax surcharge. Congress seems in no mood to be rushed on this issue, but the best guess is a compromise measure which will boost taxes by 5 per cent at the start of next year.

The demands of the business sector will be a more expansive force in 1968, mostly through additions to inventory. After this year's stock pruning, moderate inventory expansion will parallel rising consumer demand. But the role of business spending for plant and equipment in next year's growth will be small by past standards. (Analysis of this area is deferred until the following section.)

Finally, personal incomes will be substantially larger in 1968. And in contrast to current buyer resistance, consumers will be spending a higher proportion of their 1968 incomes. Even though taxes take a bigger bite, total consumer spending can rise by as much as \$30 billion next year. With the added weight of higher investment in housing, the consumer will be a more important factor in next year's economy.

Combined with 1967's government-dominated economy, 1968 offers a somewhat more balanced expansion. All sectors—business, government, and consumers—will be adding to total demand, and whatever slack now exists will be taken up over the course of the year. Even with the restraint of higher taxation, GNP will advance by more than \$50 billion in 1968 to about \$840 billion.

Business construction in 1968: over-all gain spurred by stores

After 15 consecutive quarters of expansion, the great capital boom of the 1960's

finally ground to a halt in the opening quarter of 1967.

No single event fully explains the reversal in contracting and producers' goods orders that spelled the finish of the long capital spending boom. It was more than mere chance, of course, that its timing coincided closely with last September's suspension of the investment tax credit and rapid depreciation.

In retrospect, however, considering the excessive inventory position industry found itself in by the end of last year (and the subsequent reduction in industrial output that was necessary to restore balance) it seems highly unlikely that the rising trend of capital expansion could have lasted for more than another quarter even with the investment incentives still in effect.

As it actually happened, the cessation of growth in capital spending at the beginning of this year amounted to little more than a mild setback, with the promise of a short duration.

While last fall's suspension of the tax credit and depreciation incentives was the catalyst for a decline in capital spending, their restoration half-a-year later did little to spark an upturn.

As long as excess capacity overshadows industry, there's little reason to expect much growth in capital spending. But the most difficult period may already be over. The gap that opened during the first half of 1967 happened because firms had to reduce output (for inventory reasons) at the same time that their previously-ordered plant and equipment was still becoming available for use. The inventory correction was virtually completed by mid-year, and a return to normal production (for current demand plus something extra for inventory) should boost the operating rate into the mid-80's by the year's end. Past experience shows that when operations get beyond 85 per cent of capacity, firms begin investing for expansion.

Late in 1967 rising output will begin stimulating a revival in plant and equipment spending that will extend into 1968. The size of next year's gain will be small, however. The recent downturn in corporate profits has already reduced the supply of funds available for investment, and next year's surtax will lower

net profitability on future revenue. The rise in fixed investment outlays next year will probably fall short of 5 per cent.

The 1968 value of contracts for new business-related construction will be affected by these trends in the following ways:

Manufacturing buildings: With some reduction in industrial plant contracts already in progress late in 1966, the further adjustment to excess capacity and declining output in the first half of 1967 was fairly mild. Signs of renewed increase in contracting were evident toward yearend, a 2 per cent gain for next year is indicated.

Stores and warehouses: A strong upward trend in store building broke sharply in the early part of 1966, turning into a slide that lasted well into the current year. A good part of that loss will be recovered in the year ahead as improved housing activity stimulates a 10 per cent gain in store contracting value.

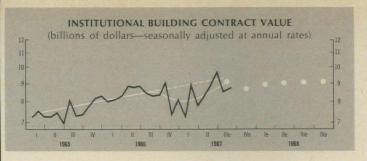
Offices: A spurt of office building activity during the middle part of 1967 helped boost the year's contract value to a new high. The return to a lower rate toward year-end has this category headed for a moderate decline in 1968, however. Utilities: The three years 1966-67-68 will be a period of extraordinary expansion of utilities capacity with almost as much new construction initiated as during the previous five years. The flow of these big projects is erratic, but strong.

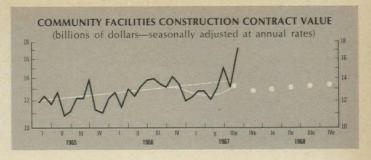
After a small decline in 1967, the combined value of all business-related construction contracts will advance about 4 per cent in 1968 to regain its 1966 peak level.

Housing construction in 1968: ready money and a big demand

One-family housing was first to benefit from this year's turn-around in the mort-gage market. After a severe decline that had cut the rate of newly-contracted single-family units by 56 per cent at last October's low point, activity almost instantly reflected November's switch to credit ease. Contracts for new units bounced back 15 per cent by year-end, and by mid-'67 had recovered 85 per cent of last year's pre-credit-crisis level.

Apartment building fell farther than one-family housing, and took several





months longer to respond to the improved money market conditions. Once it did, though, the multi-family building recovery was even more dramatic. From a low rate of only one-third its 1966 peak, apartment building finally began to pick up in February, 1967. By mid-year the rate had alread reached 75 per cent of its former volume.

As a result of the Fed's boldly easy money policy during 1967, and the heavy return flow of funds to the savings institutions, further recovery in home building can be anticipated for the final months of the current year. Even with its very weak beginning, 1967's total residential building volume will top that of 1966 by almost 100,000 units.

With housing activity once again nearing its former stride, the forecast for 1968 requires a different approach. For too long, the housing market has had only one dimension—credit. When funds became scarce, housing suffered; when they were made available, housing recovered. This means, of course, that there hasn't been anything even vaguely resembling a consumer-oriented housing market for the best part of two years. Instead of responding to the needs of families for shelter, the supply of housing has been rationed by the rigidities of the capital markets.

The inadequacy of the supply of new housing units to come forth under these conditions is partly indicated by the sharp drop in the rental vacancy rate. After half-a-dozen years of stability at between 7 and 8 per cent, the rate slipped below 7 per cent during 1966, and dropped all the way to 6.3 per cent by mid-1967 as available apartments were grabbed up. A similar scarcity of single-family housing is reflected in sharp price increases in both new and existing homes.

But now, the availability of mortgage financing is beginning to put the housing industry back in touch with its prospective buyers. The question of need (or demand) is relevant once again.

The basic need for shelter arises from net growth in the number of households—either newly-formed families or individuals who live alone. A secondary source of housing demand stems from the replacement of existing shelter. In the period 1960-65, household formation

generated an average need for about 900,000 new units each year, while replacement demand amounted to something over 500,000 annually. (Other factors affecting the supply/demand equation—population, mobility, vacancies, mobile homes, second homes, etc.—were largely offsetting.)

Perhaps the most critical—as well as the most frustrating—aspect of housing demand is its postponability. And largely because of this strong element of postponability, the yearly volume of housing starts rarely corresponds closely with annual family formation. It is only over somewhat longer periods of time (say, five-year averages) that this relationship has meaning.

Demographic trends of 1960s draw guidelines for 1968 outlook

- Household formation during the first half of the 1960s was actually lower (by 7 per cent) than it was in the preceding five-year period. Housing volume nevertheless managed a modest gain between 1960 and 1965 chiefly because the replacement demand was very high. Even so, the biggest gain in housing between 1960 and 1965 was packed into the early part of this period. Growth in new housing starts has been absent since 1963.
- During the second half of the 60's the rate of household formation is slated for an *increase* of about 10 per cent. The marriage rate—which stayed level throughout the early sixties—began to rise around the middle of the decade as more persons reached marriageable age. A continuation of this trend is anticipated for the rest of the 1966-70 period, at least.
- During the first two years of this current period of rising household formation, the housing market has been blighted by a severe capital shortage. When housing starts should have been in excess of 1.5 million per year, they fell far short—at 1.2 million in 1966 and 1.3 million in 1967.

This review of the demographic pattern of the early and middle sixties suggests that two strong forces are now at work for housing demand. One is the rising trend (after a period of decline) of household formation; the other is a carryover of postponed demand for the past two years when some half-a-million potential units were not built.

Going into 1968, the mortgage market is in its best shape since early 1966. The anticipated modest expansion of business capital spending implies that industry will not be making unusual demands on the capital markets in 1968. On the other hand, the additional threat of mounting inflationary pressure raises the probability of a switch to tighter money policies sometime during the year. The proposed tax surcharge is, therefore, insurance against the likelihood of another credit squeeze. Money will be far from "easy" in 1968, but there's good reason to expect that it will be available for housing-though it will be expensive.

In the closing quarter of 1967, the rate of housing starts is expected to be above 1.4 million units, giving next year a good running start. With adequate financing in 1968, housing activity will begin to reflect the true demand for shelter, with the following results:

- Total public and private housing starts up 15 per cent to 1.5 million (private, nonfarm units at 1.45 million).
- A peak rate of 1.55 million starts (total basis) in the final guarter of 1968.
- A stronger gain in apartment starts (where most of the backlog of demand is).
- Contract value of 1968 housing up 20 per cent to \$21.4 billion.

Institutional construction in 1968: colleges and hospitals to gain

Institutional building was another casualty of last year's credit shortage. Late in 1966 the high cost of borrowing forced many municipalities out of the capital markets, causing them to cancel or postpone plans for new schools and hospitals. As a result, the closing months of last year brought a temporary interruption of the steadily upward trend of institutional building (see chart above).

Just as soon as the long-term capital market eased the least bit, the latent demand for educational and health facilities quickly reasserted itself. Lower interest rates in the first quarter of 1967 permitted states and municipalities to increase their borrowing to a record amount—much of it for school and hos-

pital construction. By mid-year, the rate of contracting for institutional buildings was right back on trend.

School construction, in the absence of extraordinary circumstances (like 1966's credit squeeze, or the introduction of a new Federal aid program), is basically a response to demographic change. In this context, only two things really count at the present. One is that the growth in total school enrollment is clearly in the process of slowing down. The other is that the "mix" of enrollments is still shifting heavily in favor of the higher ages. In fact, by 1970 elementary school enrollment will actually be declining.

Estimated contract values of new educational building in 1968 is a composite of further gains at the college and high school levels, largely offset by declining elementary school building. The result: a slight sag in physical volume, and a small gain in contract value next year.

Hospital construction—also a reflection of financial market conditions at that time was dealt a severe, but brief, setback late in 1966. Like educational building, contracts for hospital projects recovered swiftly in early 1967 and were above normal levels by mid-year.

A return to the established 5 per cent per year growth trend of the 1963-66 period—which reflects the construction experience under all of the public aid programs currently in effect—is a guide to 1968 performance. After 1967's small increase (due to the artificially depressed early half), next year's resumption of previous growth will involve a better-than-average gain of close to 10 per cent.

Total institutional buildings contract value (including a few small categories not discussed above) is expected to advance by 4 per cent in 1968 to \$9 billion.

Community facilities construction in 1968: highways and sewers will increase Key construction types in this group can

be expected to behave as follows:

Highways: There is solid support for a continued advance in the value of highway contracting in 1968. Allocations from the Trust Fund, at \$4.8 billion for fiscal '69, are up 9 per cent. What's more, some of this money may be available for early release to states that use up their previous year's allocations ahead of time. Where previously this type of work had been unique for its high productivity and

over the past two years.

With allowance for some decline from the unusually high amount of bridge construction during the past two years,

relatively stable cost, the price of high-

way construction has risen 5 per cent

1968 contract value for streets, highways, and bridges will advance an estimated 5 per cent.

Sewer and water systems: Another good year is in the making for sewer and water supply systems. As in the past few years, it will be sewer facilities that contribute most of the growth.

The Clean Water Restoration Act of 1966 will be supplying more aid money for state and local sewerage treatment projects, and on better terms. Some \$200 million in construction funds will be available in 1968 (some of it on a 50-50 matching basis), with supplemental allotments likely if local requests exceed the amount of money available.

Public buildings: Contract value of public buildings in 1967, at just about an even billion dollars, was not much changed from the year earlier.

In 1968, GSA's federal office building program is bound to be a target for budget paring, but offsetting forces will net out to a modest gain in contract value for the year ahead.

The total value of contracts for all community facilities (including several project types not specifically analyzed above, such as airports, recreational facilities, military construction, etc.) is estimated at \$14.1 billion for a 5 per cent increase in 1968.

Forecast sees moderate gains in building costs and physical volume

Labor and materials costs in the building trades continued their steady advance through 1967. Prices of key building materials were also higher, after a firm increase in 1966 the current year's average price boost was a mild one. Overall, the composite index of building costs was headed for a 1 per cent advance in 1967, slightly below the typical gains of the past several years.

Average building cost per square foot (as measured by contract value at mid-1967) was 7 per cent above the level a year ear-

Physical Volume of Building Contracts (millions of square feet)

nonresidential buildings	1966 actual	prelim- inary	esti- mated
Commercial	442	422	445
Manufacturing	312	275	300
Educational	245	240	230
Hospital	59	62	67
Public	37	39	42
Religious	45	42	42
Recreational	47	43	43
Miscellaneous	40	42	41
TOTAL	1227	1165	1210
residential buildings			
One and Two Family	1007	1095	1260
Apartments	328	333	415
Nonhousekeeping	81	74	80
TOTAL	1416	1502	1755
TOTAL BUILDINGS	2643	2667	2965

lier. Some of this rise was the result of the higher labor and material costs described above, but most of the change was due to a pronounced shift that took place in the "mix" of project types between the early part of 1966 and the first half of the current year.

For one thing, the amount of residential building—which, on a square foot basis, is one of the lowest cost building types—was disproportionately small in early 1967 as a result of the mortgage squeeze. And in the industrial building area, a higher-than-normal volume of outdoor chemical and petroleum plant construction boosted value without adding to square feet. Consequently, apparent cost per square foot was much higher in the first half of 1967.

Both these unusual developments were becoming less pronounced toward year-end, and a more normal relationship between building values and square feet of floor area is anticipated for 1968.

In summary: over-all gain in '68 with a strong surge in housing

After two years of below-normal growth, the construction industry can now anticipate a period of strong expansion. Changes in market conditions stimulated a solid recovery in contracting for new construction work during 1967, and they will permit an advance of about 10 per cent in contract value, for 1968.

All the major sectors of the industry will see improvement in the year ahead. Expansion of commercial building will help bring a 4 per cent increase to the business-related sector even though manufacturing plant construction will be lagging for a time. Institutional building will benefit from a renewed growth in hospital and health facilities as school building levels off. And highway construction and sanitation projects will support a 5 per cent advance in public works next year.

But the big gain in 1968 will be coming from the market where it is most overdue-housing. Responding quickly to 1967's easier credit conditions, residential building improved steadily from its badly-depressed level at the beginning of the year to an almost-normal rate by year-end. Mortgage money was expensive in 1967, but the year's housing recovery was solid evidence that when a need for housing exists, it's the availability rather than the price of credit that really counts. With a growing current need for housing-plus a backlog of carried-over demand-1968 will bring continued expansion of the revival that began this year. With a strong start and steady improvement, 1968's housing value may top the weak 1967 total by as much as 20 per cent.



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Get the complete story on Mono-Flat panelboard fronts from your Square D Field Engineer or distributor. Or write Square D Company, Dept. SA, Lexington, Kentucky 40501.



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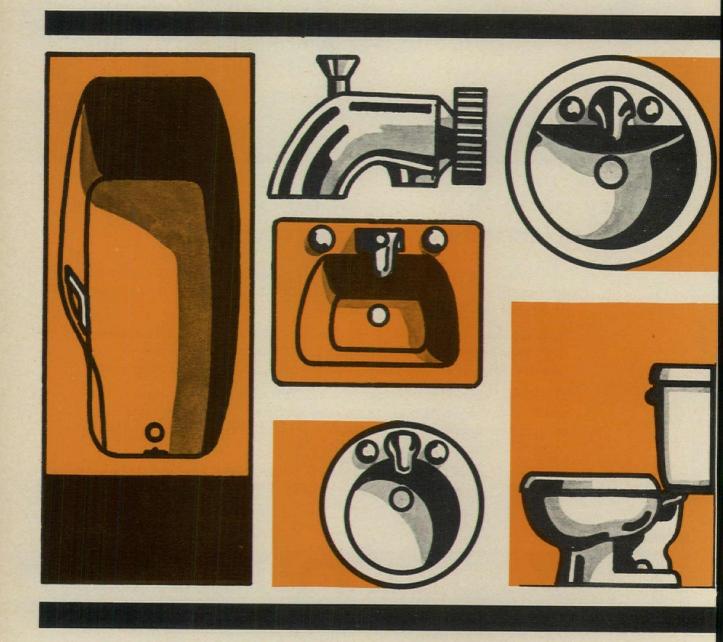
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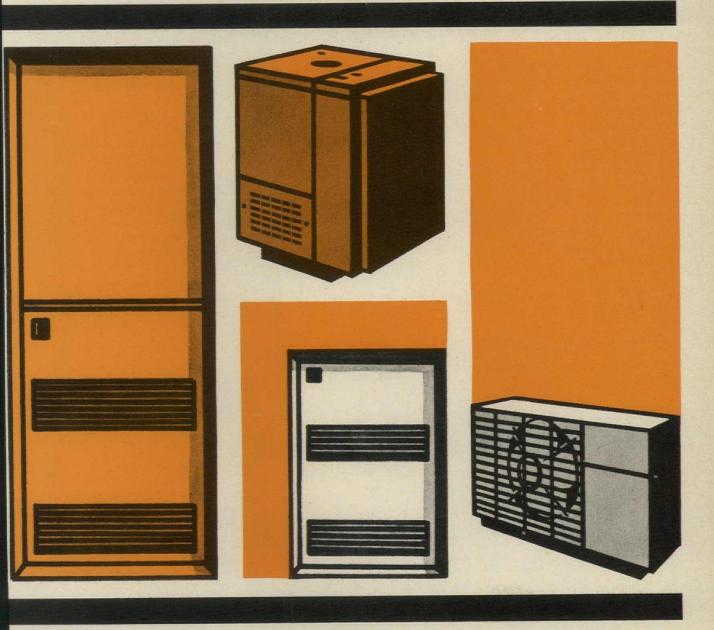
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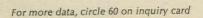
If a company's conscience can be measured by the care it takes to uphold the quality of its products you'll find conscience working overtime at Crane. After all, we have an excellent house record and we aim to maintain it.

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CURRENT TRENDS IN CONSTRUCTION

James E. Carlson, Economist F. W. Dodge Company A Division of McGraw-Hill, Inc.

Hospital building potential stronger than ever

A little over a year ago, Medicare began paying the first medical bills for a number of our citizens. By the end of June nearly four million patients had received assistance to the amount of \$2.4 billion.

Although the fears that the Medicare program would trigger a huge influx of needy patients-swamping our already inadequate hospital system-have not materialized, there's no question that hospital admissions have risen. And the gain has been concentrated in extended care units (see RECORD, October, p. 169) administering to the aged-who are Medicare's biggest beneficiaries. While a crisis level in admissions did not occur, and probably will not, the needs of Medicare patients are putting an added burden on existing hospitals. This backlog of needs is bound to keep hospital and health treatment facilities among the construction industry's fastest growing building types during the next few years.

Funding programs to supplement Hill-Burton are in the works, but Vietnam-related economy measures will probably prohibit any action this year.

While hospital design always presents a challenge to the architect, the types of facilities we'll be needing in the years ahead appear to be somewhat different from those needed in the past.

The latest available figures on hospital needs show that the greatest deficiencies exist in two areas: long-termcare beds and beds in mental hospitals. The 1965 Hill-Burton survey of state plans and needs shows that in each of these categories, existing acceptable beds accounted for only half of the needs at that time. Existing facilities in other classifications were in better shape. Acceptable beds in general hospitals were running at slightly over 80 per cent of needs, while tuberculosis hospitals—the needs for which have been on the decline for a number of years-rated a bed-acceptability score of 97 per cent.

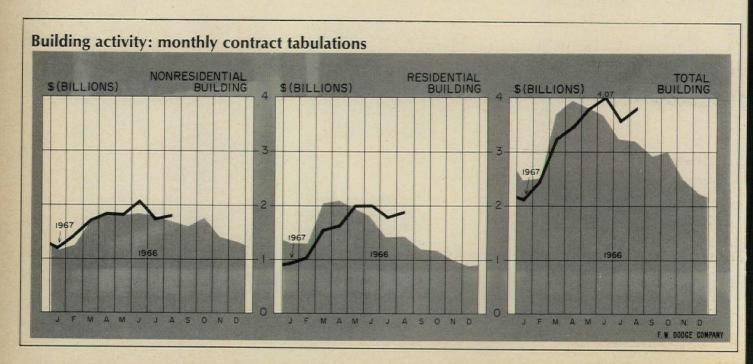
On a unit basis, the needs are more revealing. The mental bed deficit stands at 445,000, long-term-care bed needs at 410,000, and general bed needs at 130,000. The size of the backlog comes into even better focus once we realize space requirements range from 500 to 1,000 square feet per bed, depending on the type of facility.

The design requirements for both long-term-care and mental hospital facilities differ considerably from those of the general hospital. Long-term-care facilities are generally small (ranging from

an average of 40 beds per unit in private facilities to around 125 beds per unit in government-run facilities), but need unique features to accommodate patients who are physically disabled, or afflicted with one or more of the disorders that typically accompany old age. Mental hospitals also have special design problems.

While the nation is somewhat better off in terms of general hospital accommodations than in long-term-care facilities and mental hospitals, a good deal of construction will be going on here too. And more emphasis will be put on modernization in the years immediately ahead. Recent surveys have pointed up deficient conditions in a number of the nation's general hospitals, particularly in urban areas. A bill currently in Congress would provide funds specifically for modernization.

The construction of community health centers, particularly in the field of mental health, is still another area that is due for considerable expansion in the years ahead. These facilities had been developing at a faster rate than that of hospitals generally, but growth was halted by tight credit conditions during 1966. A resumption of the former expansion is evident this year though.



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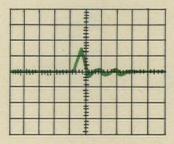


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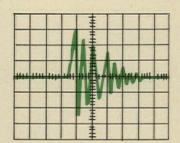
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A 50-foot length of 1" pipe with water at 60 P.S.I. flow pressure and a velocity of 10 feet per second was used in these tests.

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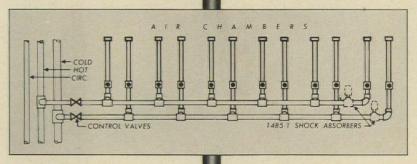
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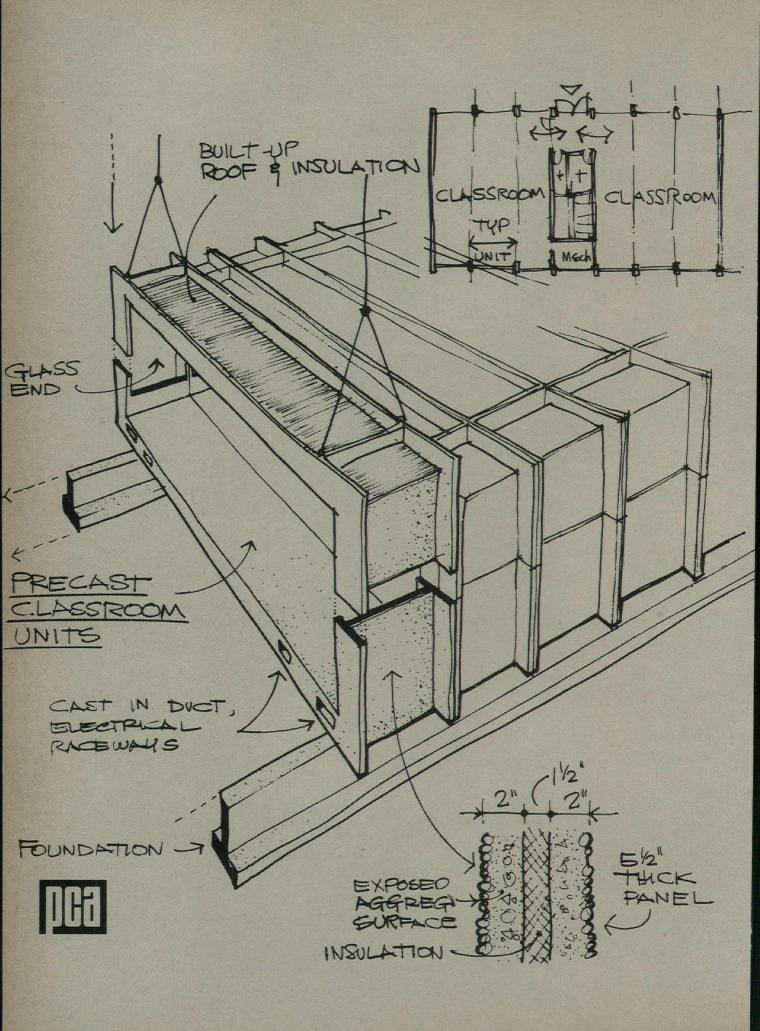
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TRENDS AND ANALYSIS

Lawrence C. Jaquith, Economist McKee-Berger-Mansueto Inc. Construction Consultants

Study shows weight of wages in building costs

In emphasizing the lack of reliable information on the construction industry, two top-ranking members of the Bureau of Labor Statistics pointed out in a recent article in the Monthly Labor Review that, "we do not even have satisfactory indexes of year-to-year changes in construction costs."

This is far from encouraging for the architect. If the BLS can't find a useful construction cost index for its work, how can he? Any index that the architect could gain direct job-assistance from would be most difficult to compile. This is because a more specific level of information is necessary to provide a meaningful index for the architect, and this in turn requires more detailed data. In other words, the BLS can probably utilize a fairly aggregative index in most of its studies. But the architect cannot really use that type (e.g., one that lumps the costs of several building types together), no matter how good it is. He certainly can't use it for checking a budget, not if he expects any degree of accuracy.

We've discussed this problem in previous columns, pointing out some of the various limitations of indexes as they are currently compiled and used, in the hope of clarifying some areas of misunderstanding. And, in attempting to suggest some of the theoretical and practical aspects of constructing an index, we

reported in last August's column the results of a study that weighed the effects of wage rates on building costs.

The approach taken in this study was based on the assumption that city-to-city differences in the cost of any given type of building occur primarily because of major differences in wage rates.

This is a generally accepted premise; so to test it out we calculated a school building cost index based solely on wage rate differentials. Materials prices, labor productivity and market conditions were held constant. To "prove" the accuracy of the results, the index was checked against various published indexes. It was found to correspond quite closely in most cases. More importantly, the method of assigning weights and then adjusting these weights to various cities proved to be an important operational step.

Hospital cost study shows minor importance of materials prices

Up to that point, the study was satisfactory, and, to make it more realistic, some of the restrictive assumptions have been dropped. This second phase of the study was developed in the following manner:

To begin with, a completely different type of building has been selected for analysis—hospitals.

The additional analytical steps taken are such that materials prices and pro-

ductivity are no longer assumed to be constant. Thus city-to-city cost differentials in hospitals are based on differences in wages, materials' prices and productivity. Since this increase in the scope of the study required additional data and created some problems in weighting, the number of cities has been held to 15, using New York City as a base.

First, a breakdown of labor and materials' costs has been made of a typical hospital building in New York City. In this cost distribution, Table 1, the first column indicates the per cent of the total building cost actually accounted for by the labor portion of each major trade shown at the left. The second column indicates the per cent of total job cost accounted for by the materials used by each trade. The total of the two columns is less than 100%. This is because the remaining 7.4% represents miscellaneous trades and equipment, mainly the latter, which are associated with the work of each of the twelve major trades.

How many materials items really affect a cost index

As in the first study, assigning weights to labor presented no difficulty—the actual percentage that the labor portion of each trade accounts for in the total building cost is used. But assigning weights to materials does pose a prob-

Table 1. COST DISTRIBUTION ON TYPICAL HOSPITAL—NEW YORK CITY

% of total job cost							
rade	Labor	Materials	Total*				
ricklayers	7.2%	4.7%	12.0%				
Carpenters	3.5	5.3	12.0				
ron Workers	1.3	3.7	5.0				
Common Laborers	5.4	0.0	6.0				
athers	2.0	1.0	3.0				
lasterers	2.6	0.4	3.0				
oncrete Workers	7.8	6.2	16.0				
ainters	0.2	0.3	2.0				
lumbers	3.5	6.5	10.0				
teamfitters	5.5	4.5	10.0				
heetmetal Worker	s 6.0	2.0	8.0				
lectricians	5.9	7.1	13.0				
OTAL	50.9%	41.7%	100.0%				

'	Reinforcing Steel Bars (#2-5)	Standard Common Brick (GR.S.W.)	Plywood (3/4" BB Exterior)	Ready Mixed Concrete (3000 psi)	Steel Pipe (2" ø Schedule 40)	Copper Pipe (3/4" ø TYPE/K Soft)	Steel Conduit (3/4" ø Concealed)
	\$/LB	\$/M	\$/MSF	\$/CY	\$/LF	\$/LF	\$/LF
New York	.1175	68.00	180.00	16.30	.50	.68	.185
Baltimore	.1050	58.00	178.00	14.75	.55	.63	.180
Chicago	.1200	63.00	178.00	16.00	.52	.67	.190
Cleveland	.1100	55.00	173.00	15.00	.52	.65	.180
Denver	.1150	50.00	170.00	15.20	.54	.64	.195
Los Angeles	.1250	70.00	170.00	16.50	.60	.68	.195
Pensacola	.1050	57.00	180.00	15.00	.56	.67	.175
Philadelphia	.1000	65.00	173.00	15.80	.59	.65	.185
Pittsburgh	.0950	52.00	172.00	15.00	.52	.64	.185
Providence	.1100	57.00	178.00	15.35	.55	.67	.180
St. Louis	.1150	62.00	175.00	15.50	.56	.69	.180
San Diego	.1100	65.00	175.00	15.70	.62	.70	.195
San Francisco	.1200	75.00	165.00	16.85	.60	.70	.195
Seattle	.1300	67.00	155.00	15.15	.60	.68	.195
Washington, D.	.C1175	62.00	172.00	15.20	.56	.65	.180

	Brick-	Car-	Iron	Com-	TAGE !	CATES 1	Con- crete				Sheet Metal	Elec-	
Cities	lay- ers		pen- ters	Work- ers	Labor- ers	Lath- ers	Plas- terers	Work- ers	Paint- ers	Plumb- ers	Steam Fitters	Work- ers	tri- cians
New York	8.01	7.11	7.81	5.80	6.90	7.20	5.91	5.85	7.93	7.20	7.30	8.37	
Baltimore	5.40	4.79	5.87	3.06	4.65	4.65	3.12	4.48	5.35	5.35	5.09	5.30	
Chicago	6.13	5.87	6.46	4.51	5.60	5.70	4.63	5.23	6.01	6.04	6.00	6.18	
Cleveland	6.16	6.11	6.11	5.17	5.91	5.86	5.27	5.30	6.01	6.26	6.05	5.45	
Denver	5.05	5.25	5.11	3.70	5.02	4.90	3.36	4.28	5.35	5.35	5.12	5.36	
Los Angeles		5.80	6.74	4.54	5.70	5.68	4.73	5.56	7.44	7.44	6.47	6.66	
Pensacola	4.35	3.98	4.99	2.25	4.55	3.83	2.30	3.26	5.05	5.05	4.70	4.60	
Philadelphia		5.38	6.25	3.85	5.42	5.82	3.93	4.77	6.12	6.12	6.12	5.96	
Pittsburgh	6.28	6.16	6.10	4.13	6.05	5.94	4.15	5.13	6.05	6.09	6.18	6.45	
Providence	5.41	4.73	5.78	3.80	5.41	5.18	3.85	4.10	5.60	5.53	4.90	5.00	

5.48 5.63

4 96

5.20

4.26 4.70

3.44

Table 3 WACE RATES IN ILS CITIES

	Based On Labor Differentials*	Based On Labor and Materials Differentials
New York	100	100
Baltimore	82	77
Chicago	91	89
Cleveland	91	87
Denver	83	79
Los Angeles	91	92
Pensacola	77	72
Philadelphia	88	85
Pittsburgh	89	85
Providence	84	80
St. Louis	90	88
San Diego	91	91
San Francisco	98	100
C	96	95

81

* Materials prices held constant

Washington, D.C.

lem. Few items consume a large portion of total cost. So, if the procedure for weighting labor is followed in weighting materials, two alternatives are available. Either dozens of items, most assigned with a very small weight can be used, or only a few items plus a large constant factor. The first approach creates a formidable problem in data collection; the latter represents little improvement over the first study in which all materials prices were held constant.

6.97

5.25

3.44

St. Louis

Seattle Washington,

San Francisco

To overcome this, weights were not assigned to each material on the basis of its share of total cost. Instead, a representative material used by each trade was selected. It was then assigned a weight equal to the per cent of total building cost accounted for by all materials used by that particular trade.

Prices in the 15 cities have been obtained for these seven representative materials (Table 2) as have the 1967-68 wage rates for the major trades (Table 3). The rates include all fringe benefits; prices are an average of suppliers' quotes. To provide a basis of comparison between the approach described above and the previous, more restrictive approach, two separate indexes have been calculated for hospital buildings. One is

based on labor and materials differentials; the other on labor differentials only.

8.87

5.74

5.77

6.25

5.58

6.43

5.95

Wages turn out to be the prevailing influence

5.06

The results verify the original assumption—that the sizable differences in the cost of a given building stem primarily from the equally large differences in wage rates from city to city—but in quantifiable terms. Previously, similarities between this index and various published indexes were offered as "proof." Now, by including materials in the index, the actual per cent differences in total building cost attributable to wage rate differentials and the per cent differences attributable to materials cost differentials can be shown (Table 4).

Total materials costs were found to fluctuate only 6 per cent from the mean; wage rates ranged as much as 35 per cent above or below. As a result, when there was a major difference (over 5 per cent) between cities in the cost of a given type of building, the amount of the difference attributable to wages averaged over 90 per cent. Among cities where the difference in total building cost was less than 5 per cent, wage rates were found to be quite similar. Therefore, an index

based solely on properly weighted wage rates, though implicitly restrictive in its assumptions, is still more accurate than might be assumed. Of the cities examined, most differed approximately 3 per cent in total cost after weighted material costs were introduced, and none differed by more than 6 per cent. But even this degree of change is large enough to prohibit the exclusion of materials costs from an index that claims to be sensitive.

Productivity and market conditions cannot be ignored either. In the previous study these factors were held constant. But wage rates had been adjusted for an eight hour day where applicable; in this phase they are not. This introduces a less restrictive assumption about productivity. It implies, not unreasonably, that in those cities where certain trades work less than eight hours, productivity is higher.

A much more detailed analysis of differences in productivity is now underway and determinants of market fluctuations are being investigated. The reporting of these findings should offer a clearer picture of the relationship that each factor bears to the total cost of a building.

Copper strike may affect construction costs—and plumbing codes

At press time the nation-wide strike against the copper industry was about to enter its fifth month—and the stalemate showed few signs of ending.

When 42,000 workers walked out two weeks after their agreement expired last June 30th, about 90 per cent of the total domestic copper production came to a halt. Output is down to 66 tons per day compared to 3,766 tons per day at this same time last year. And as inventories of construction materials dwindled, some contractors were anticipat-

ing probable delays in shipments.

At one point there was a slight indication of a possible settlement. On October 16th, a small producer (2 percent of total U.S. output) in Arizona reached an agreement with its 650 employees. Other locals offered to accept this package from other producers in the area but it was quickly rejected. The contract would have amounted to a 75-centsan-hour pay hike over 3 years, or an increase of over 7.7 per cent annually. In other parts of the country, most locals

are members of the United Steel Workers of America and are asking for a 98-cents-an-hour boost. The top offer from the "Big Four" producers (Anaconda, Kennecott Copper Corp., Phelps Dodge Corp., and American Smelting and Refining Co.) has been 50.6 cents. Any settlement over this amount would significantly trim industry profits and could lead to a round of general price increase—not a favorable prospect for holding down the wage-spiral, but perhaps a foo in the door for plastic pipe makers.

INDEXES AND INDICATORS

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

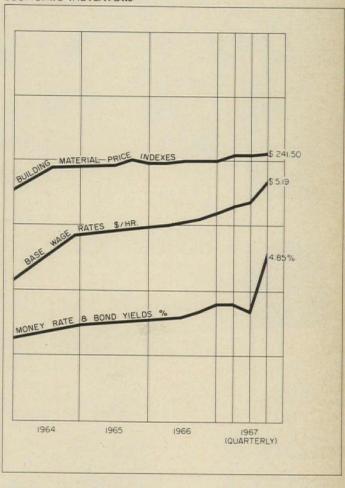
NOVEMBER 1967 BUILDING COST INDEXES

		1941 a	verages for eac	h city = 100. % change
Metropolitan area	Cost differential	The second secon	non-res. res.	year ago
U.S. Average	8.5	282.7	301.1	+2.12
Atlanta	7.2	319.4	338.8	+1.82
Baltimore	7.7	282.2	300.2	+1.90
Birmingham	7.5	258.2	277.6	+1.53
Boston	8.5	253.8	268.6	+1.53
Chicago	8.9	316.0	332.4	+2.69
Cincinnati	8.8	274.1	291.3	+3.64
Cleveland	9.2	288.9	307.0	+7.70
Dallas	7.7	263.6	272.2	+1.39
Denver	8.3	289.5	307.7	+2.52
Detroit	8.9	289.3	303.7	+1.48
Kansas City	8.3	252.3	267.1	+1.30
Los Angeles	8.3	289.0	316.2	+2.48
Miami	8.4	275.3	289.0	+ .84
Minneapolis	8.8	284.9	302.9	+3.81
New Orleans	7.8	255.1	270.3	+3.01
New York	10.0	297.5	320.0	+3.20
Philadelphia	8.7	282.3	296.4	+2.66
Pittsburgh	9.1	260.9	277.4	+1.25
St. Louis	9.1	279.7	296.4	+1.84
San Francisco	8.5	364.4	398.7	+1.29
Seattle	8.4	259.7	290.2	+3.17

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0 \div 10.00 \Longrightarrow 80%) or they are 20% lower in the second city.

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

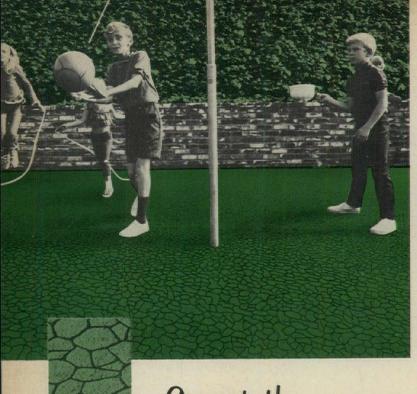
ECONOMIC INDICATORS



HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

												1941 avera	ge for ea	ch city :	= 100.0
Metropolitan								1	1966 (Q	uarterly	1)	1	967 (Q	uarterly)
area	1952	1960	1961	1962	1963	1964	1965	1st	2nd	3rd	4th	1st	2nd	3rd	4th
U.S. Average	213.5	259.2	264.6	266.8	273.4	279.3	284.9	286.3	287.3	290.4	286.6	292.7	293.7	296.5	
Atlanta Baltimore Birmingham Boston Chicago	223.5 213.3 208.1 199.0 231.2	289.0 272.6 240.2 232.8 284.2	294.7 269.9 249.9 237.5 289.9	298.2 271.8 250.0 239.8 292.0	305.7 275.5 256.3 244.1 301.0	313.7 280.6 260.9 252.1 306.6	321.5 285.7 265.6 257.8 311.7	322.2 288.6 267.1 258.5 312.6	323.3 289.6 268.1 259.6 313.7	328.5 289.4 269.7 260.9 318.9	329.8 290.9 270.7 262.0 320.4	332.4 290.4 272.9 262.9 320.4	333.4 291.5 274.0 263.9 321.3	334.6 294.9 273.8 264.8 327.3	
Cincinnati Cleveland Dallas Denver Detroit	207.7 220.7 221.9 211.8 197.8	255.0 263.1 239.9 257.9 259.5	257.6 265.7 244.7 270.9 264.7	258.8 268.5 246.9 274.9 265.9	263.9 275.8 253.0 282.5 272.2	269.5 283.0 256.4 287.3 277.7	274.0 292.3 260.8 294.0 284.7	274.7 293.0 261.7 294.6 285.5	275.7 294.1 262.6 295.5 286.5	277.2 299.2 265.8 296.6 295.7	278.3 300.7 266.9 297.5 296.9	278.7 300.0 267.6 297.6 298.0	279.6 301.3 268.5 298.5 299.1	287.3 302.6 269.5 304.0 300.1	
Kansas City Los Angeles Miami Minneapolis New Orleans	213.3 210.3 199.4 213.5 207.1	237.1 263.6 256.5 260.0 242.3	237.1 274.3 259.1 267.9 244.7	240.1 276.3 260.3 269.0 245.1	247.8 282.5 269.3 275.3 248.3	250.5 288.2 274.4 282.4 249.9	256.4 297.1 277.5 285.0 256.3	257.3 298.0 278.4 285.7 257.1	258.2 298.6 279.2 286.6 258.0	260.0 301.6 282.9 288.3 258.8	261.0 302.7 284.0 289.4 259.8	260.8 303.6 283.4 292.0 262.3	261.9 304.7 284.2 293.1 263.4	263.4 309.0 285.2 299.2 266.7	11111
New York Philadelphia Pittsburgh St. Louis San Francisco Seattle	207.4 228.3 204.0 213.1 266.4 191.8	265.4 262.8 243.5 251.9 327.5 237.4	270.8 265.4 250.9 256.9 337.4 247.0	276.0 265.2 251.8 255.4 343.3 252.5	282.3 271.2 258.2 263.4 352.4 260.6	289.4 275.2 263.8 272.1 365.4 266.6	297.1 280.8 267.0 280.9 368.6 268.9	297.8 281.7 268.9 282.2 376.2 271.1	298.7 282.6 270.1 283.2 377.7 272.1	302.8 285.3 270.7 287.0 384.7 273.9	304.0 286.6 271.7 288.3 386.0 275.0	309.4 287.1 272.2 290.3 388.1 276.5	310.6 288.1 273.1 291.3 389.2 277.5	312.5 292.8 274.1 292.3 389.6 282.6	

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period 200.0) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 \div 200.0=75%) or they are 25% lower in the second period.







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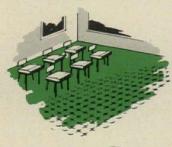
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In short, Honeywell can design, build, install, guarantee and service the complete temperature control and protection system you need for any commercial building you design.

Make us prove it. For examples of operating economies in other buildings, just mail the coupon.



SUN CONTROL

IT'S NEW

CONDITION: Lake Michigan exposure on Lake Point Tower, a statuesque, 70 story, triform luxury apartment building. Structure must provide for sun, rain, wind, heat and cold atmospheric conditions.

REQUIREMENTS:

Reduce glare
Reduce heat from the sun
Reduce outside noises
Provide visibility and light
Reduce air conditioning costs
Reduce heating costs
Application must blend aesthetically
with the building

SOLUTION: Polarpane's new SS 10 INSULATING GLASS UNITS (11,400—44" x 80") with $\frac{3}{16}$ " Glaverbel bronze sheet glass outside and $\frac{3}{16}$ " Glaverbel clear sheet glass inside with a hermetically sealed $\frac{5}{8}$ " airspace.

COST FACTOR: The low cost of Polarpane's SS 10 Unit will be recovered in a few years as a result of the high insulating values and low solar energy transmission.

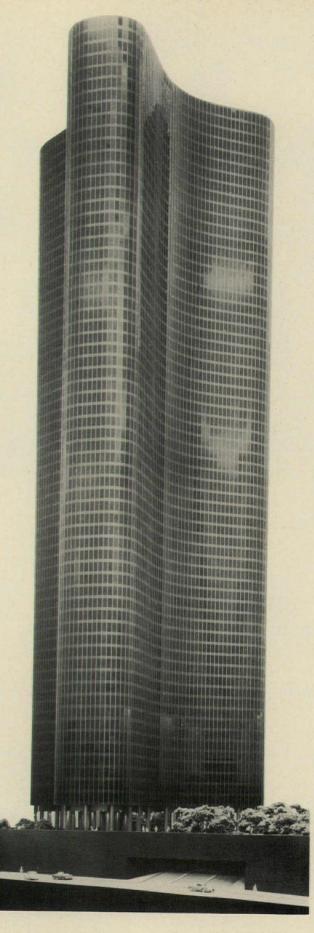
CONSULTATION: For the latest in sun, glare and sound control glass products, call on Polarpane.

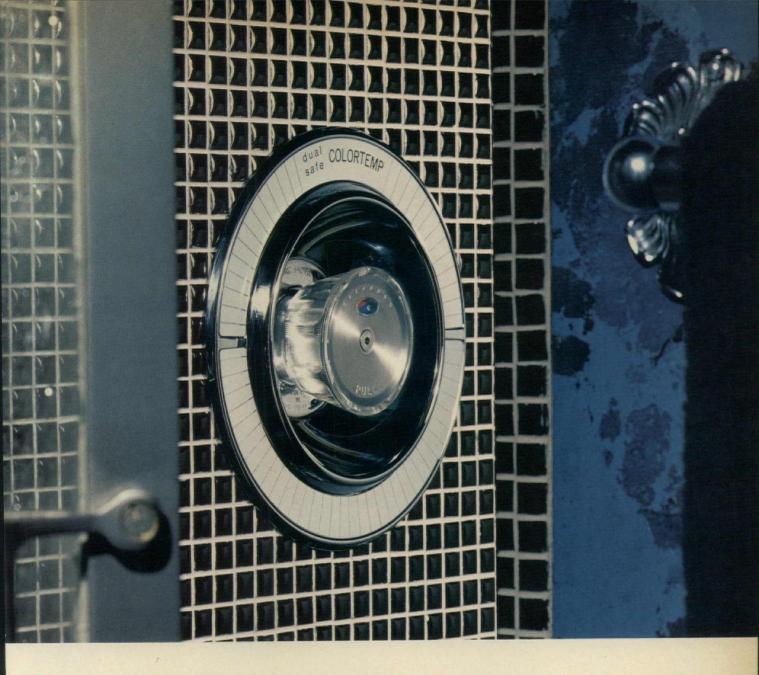


Lake Point Tower Ltd., 505 North Lake Shore Drive, Chicago Developers: Hartnett-Shaw & Assoc. & Fluor Properties Inc. Architect: Schipporeit-Heinrich, Inc. General Contractor: Crane Construction Company, Inc. Curtain Wall: Cupples Products Corp. Glass & Glazing: National Hamilton Glass Company

Polarpane

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This shower control protects your comfort two ways. Beautifully by Speakman.

Dual-Safe Colortemp's red and blue dial regulator lets you pre-set the precise water temperature you enjoy most. **Dual-Safe** Colortemp shower valves hold temperature constant—automatically balances hot and cold water pressures.

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It's what's outside that counts. Dial red for hot. Blue for cold. In-between for just right. With Speakman Dual-Safe Colortemp you can see what you're doing—visibly pre-dial

the safe comfortable water temperature you desire.

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Dual-Safe Colortemp for dual safe comfort in the shower. Beautifully designed and exceptionally engineered by Speakman. Why not let Speakman quality speak for you.

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costs less really than you think/by SPEAKMAN

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makes International Revolving Doors brainy as well as beautiful



A finger, a hand, an elbow, a hip, a knee or a toe pushed gently against any part of a wing starts the door turning.



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DIVISIONS: Structural Steel, Revolving Door and Entrance, Lindsay Structure, Railway **SUBSIDIARIES:** Extruded Alloys Corp., Bedford, Ind. and Engineering Metal Products Corp., Indianapolis

For the better homes in any neighborhood it's wood windows.





Raiph Huszagh, Architect





Designed by Lee Blake



Designed by Ernest Blaylock, Southern Decorators

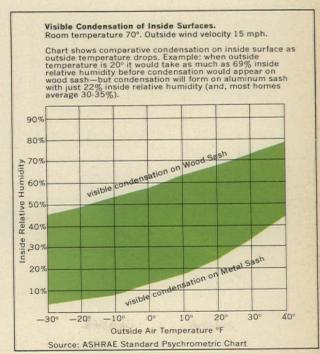
Why wood windows?

First, let's take condensation. When warm interior humidity hits a cold metal frame in winter, condensation takes place. Water drops form, drip over sills and down walls or wallpaper. Homeowners can't do anything about this problem. It's just the nature of metal—what heating engineers call excessive Thermal Conductivity. With quality wood windows, troublesome condensation cannot happen—the chart at right tells you why.

Then, take total home comfort. Cold metal surfaces conduct heat or cold from rooms faster than wood surfaces. Again, too much Thermal Conductivity. Wood simply is a better insulator against heat and cold. That's why wood windows help keep homes more comfortable in winter, cooler in summer.

From every standpoint, it's wood windows! Wood windows blend with any architectural style — they're available in every type, style and size imaginable. And they give homes a warmth and beauty unmatched by any other type of window.

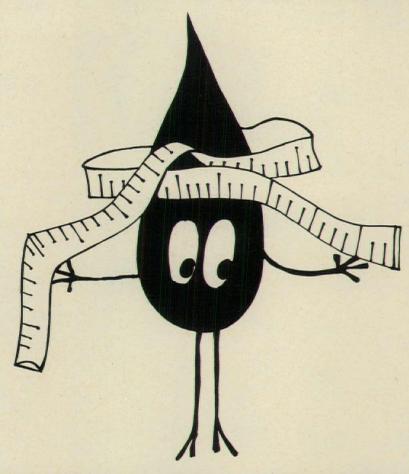
Free Window Condensation Calculator. Based on ASHRAE data, our exclusive Condensation Calculator helps you determine condensation problems so you can select the correct windows for the homes you design and build. It's free. Send requests on your business letterhead.





PONDEROSA PINE WOODWORK and the Western Wood Products Assn. DEPT. AR-117, 39 South La Salle Street Chicago, Illinois 60603

Barney Bitumen has slimmed down.



New Owens-Corning Fiberglas* roof insulation comes with improved thermal control!

Ever since we introduced Fiberglas roof insulation in 1940. Owens-Corning has been making a good thing even better.

First we added an asphalt cover as the best base for every built-up roof. Then we reinforced the cover with Fiberglas, to make it even tougher. Next we made 3' x 4' board the standard for the industry, thereby reducing potential joint problems. Then we devised a new taping system, to weld it all together. Now we've developed a way to make Owens-Corning Fiberglas roof insulation give still greater thermal control!

New Fiberglas roof insulation—symbolized by a slimmer Barney Bitumen - has a better thermal efficiency. You'll find verification stamped on every board. It contains more air spaces for better insulation, too - with an exceptionally low "k" factor. And Owens-Corning Fiberglas is still the only insulation with certified "in-place" thermal performance.

New Fiberglas insulation, as always, will not shrink or warp. And with Fiberglas insulation you get moisture resistance, resilience, and fire-safety, too. And you get all these advantages with no increase in price. For these advantages specify Owens-Corning Fiberglas.

Check these new standard sizes for future references: Thermal value for Fiberglas nominal thickness

Conductance	Thickness
.12	21/16"
.13	17/8"
.19	15/16"
.24	11/16"
.27	5/16"
.36	3/4"
.54	1/2"

To obtain a complete chart, write to: Owens-Corning Fibergias, Dept. Barney B., P.O. Box 901, Toledo, Ohio 43601.

BEST BASE FOR EVERY BUILT-UP ROOF



*Fiberglas is Owens-Corning's Trademark.

KNOB APPEAL t gives a door a whole new personality. A well-rounded one. (Even the keyway's rounded.) It's also the toughest lock on the block. Because deep-down (right to the core) it's very security minded. It's the kind of appeal that wins friends... and dissuades enemies. Copenhagen key-in-knob design in Yale Mono-Lock. LOOKS AS GOOD AS IT LOCKS For more data, circle 77 on inquiry card Yale is a division of EATON YALE & Division of Eaton Yale & Towne, Inc



Swirl Pattern in the Long Island Home of Architect Joseph Mauro

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Tablet Arm folds out-of-way . . . reveals arm rest.



Posture-perfect support.

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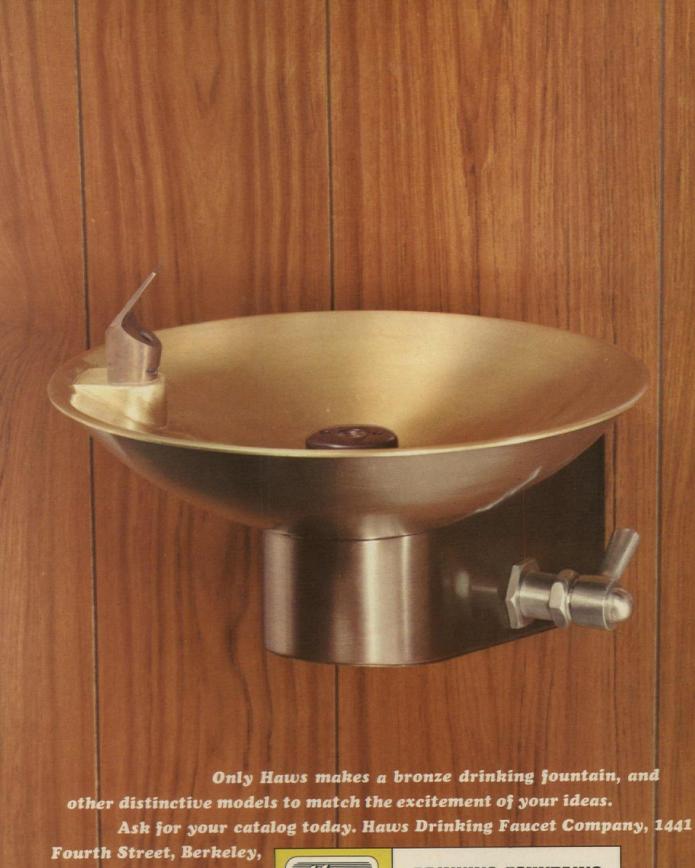


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Jamison all-metal banana room doors maintain critical temperature levels and also provide gasketed seal to contain gases used in fruit ripening.



All-metal smokehouse door with high Jamison see-thru acrylic doors add temperature fiberglass insulation. Special gasketing and triple locking prevent escape of smoke and heat.

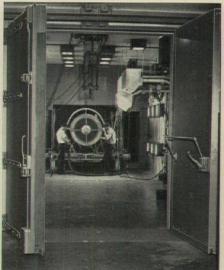


efficiency and convenience in large, busy kitchens. They open easier and improve employee supervision.

If you have a door problem, there's a Jamison door to solve it



Jamison door at entrance of controlled atmosphere (CA) apple storage room. Door is overlap type with heavy, durable gasketing to maintain room temperature and gas composition.



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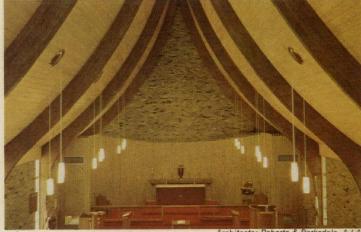
reedom to plan imaginatively... with versatile Southern Pine



ne modern applications of Southern Pine laminated beams, decking, siding and paneling open new dimensions for design eativity. Here, in this striking library foyer one immediately senses a promise of tranquility and permanence. The inspiring veep of maximum spans achieved by the high stress value of Southern Pine affords unique and economical planning latitude.



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Architects: Roberts & Barkso

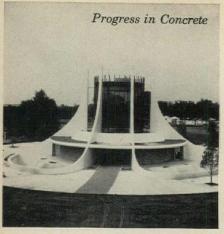
In this church, you see how the warmth and beauty of Southern Pine create a truly spiritual feeling in contemporary setting. Its enduring qualities provide economy for today's modern construction programs, with extremely low maintenance cost assured through the years.

Specify Southern Pine

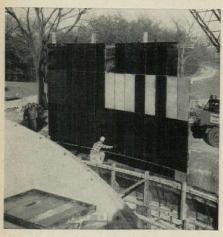


From the member mills of the Southern Pine Association, P. O. Box 52468, New Orleans, La. 70150

For more data, circle 81 on inquiry card



LABOR COSTS CUT 20% WITH SYMONS GANG FORMS



Kansas City's newest attraction The Great Ape House at Swope Park Zoo. The circular ape house features six concrete pylons that extend 56'8" above ground level.

Callegari-Kahn Construction Company, the contractor, working with Symons engineers in Kansas City worked out plans where gang forming could be used on the pylons, and moat

walls. Pylons were poured in three lifts, and for the first 20', gangs 20' x 30' were erected. The top gang sections were also formed on the ground with the reinforcing steel tied in. Formwork, re-bars and scaffolding were then lifted into position as one unit.

On one of the pylons, a steel rung ladder was specified to be set in the concrete. The steel rungs were fastened to the gang sections by placing them right through the panel faces. In strip-ping, the rivets which hold the plywood face to the form's steel frame were taken off, allowing the gangs to be broken back. This type of "gang" forming cut costs considerably.

William M. Linscott, of Linscott, Kiene, & Haylett, was impressed with

the economy of gang forming, and will approve it again on other jobs.

Complete illustrated story sent on request. Just ask for the Ape House

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



CONCRETE FORMING EQUIPMENT SYMONS MFG. COMPANY 122 EAST TOUHY AVE., DES PLAINES, ILL. 60018

MORE SAVINGS WITH SYMONS

continued from page 63

Richard S. Hertzberg, Architect, A.I.A., 150 East 37th St., New York City. Kitchen and Hunt, A.I.A., Architects, 20 Hawthorne St., San Francisco, Calif.

Konikoff and Kennedy, Architects, 905 West 21st St., Norfolk, Va.

Lorenzi, Dodd & Gunnill, Engineers & Architects, 1400 Allegheny Bldg., 429 Forbes Ave., Pittsburgh.

Marmon & Mok Associates Architects and Planning Consultants, 420 Baltimore Ave., San Antonio, Texas.

McElvy-Jennewein & Associates/Architects A.I.A., Exchange National Bank Bldg., Suite 1020, Tampa, Fla.

Yosh Nakazawa and Associates, Inc., Architects Engineers, 906 Davis Street, Evanston, Illinois.

Michael D. Schwartz, A.I.A., 6 East 45 St., New York City.

Staunton & Freeman, Consulting Engineers, 101 Park Avenue, New York.

Herbert Vise, Architect, 65 Longwharf, Boston, Mass.

Helge Westermann, Richard Miller Associates, Architects, 1855 Broadway, New York City.

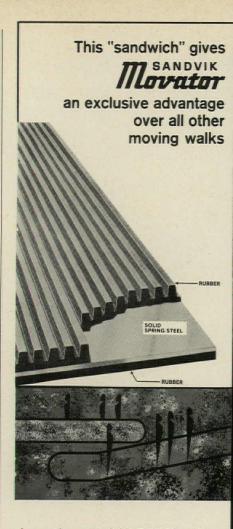
Wimberly, Whisenand, Allison & Tong Architects, Ltd., 2222 Kalakaua Ave., Honolulu, Hawaii.

Minoru Yamasaki and Associates, Architects and Engineers, 350 West Big Beaver Rd., Troy, Mich.

ADDENDA

The domed hall designed by Alden B. Dow for the Kalamazoo Nature Center was constructed of acrylic plastic. The RECORD regrets an incorrect identification of the material on page 166 of the September issue.

ARCHITECTURAL RECORD regrets that the credits for the Quebec Pavilion as given in the current official Expo 67 Information Manual and published in our July issue were incomplete. A complete list of credits, provided at our request by the architects, follows. Owner: The Government of the Province of Quebec. Architects: Papineau/Gerin-Lajoie/Le Blanc, architects and Luc Durand, associated architect-Gustave Maeder, graphics and exhibit conception; Boulva, Wermenlinger & Associates, structural engineers: Bouthillette & Parizeau, mechanical and electrical engineers. Consultants: Gilles Tremblay—musician composer in charge of all sound effects; Jean-Pierre Beaudin -static photography; Dick Nye-dynamic photography; Yves Dallaire-lighting effects.

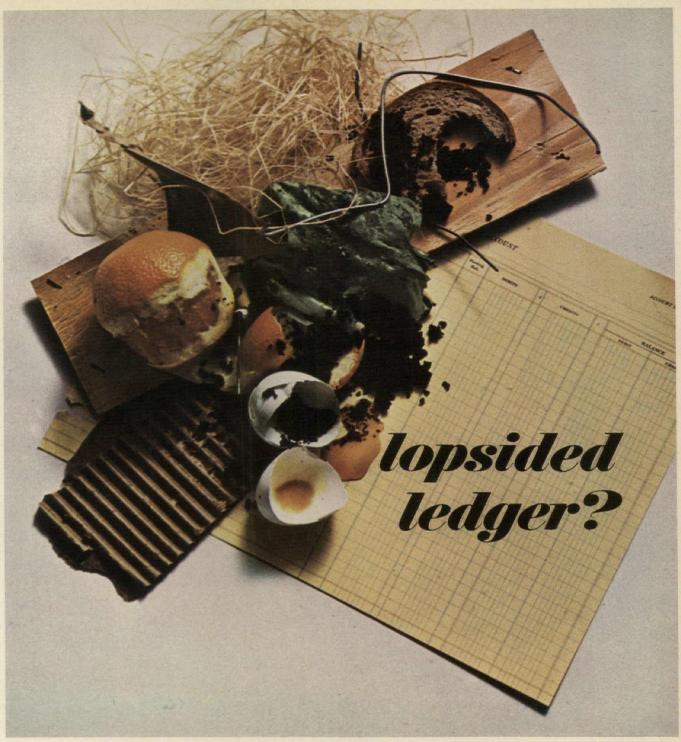


A continuous, SANDVIK hardened and tempered spring steel belt with a permanently-bonded rubber covering gives SANDVIK MOVATOR moving walks an exclusive combination of advantages. The heavy gauge, one-piece endless steel belt provides the rigidity and permanent strength to assure a smooth, safe and comfortable ride. The grooved rubber covering assures a safe, non-slip surface. Sandvik's wide-rib, narrow-groove tread contour combined with a special landing plate design prevents the catching of ladies heels to a greater degree than any other design.

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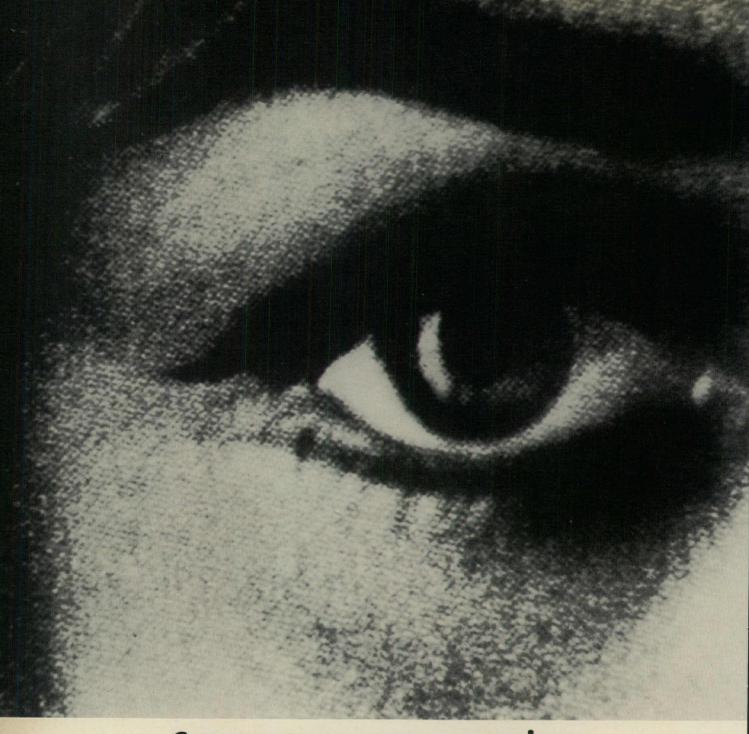
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Brulé it

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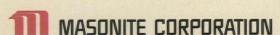
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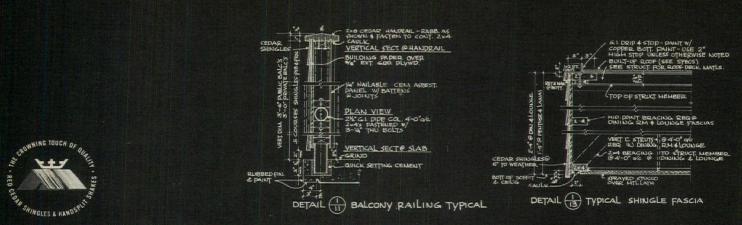
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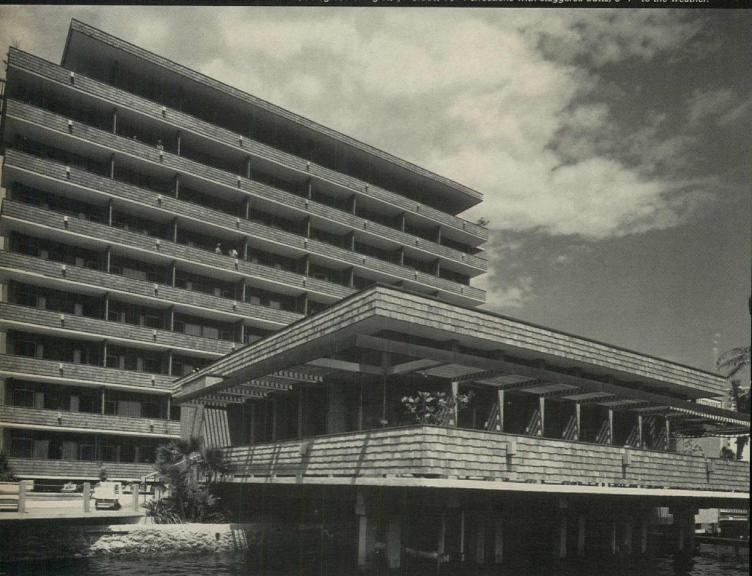


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Sands Harbor Inn, Orlando, Florida Architect: Paul Robin John/Certigrade Shingles, #1 Grade, 18" Perfections with staggered butts, 6 -7" to the weather.



Red cedar shingles: to keep a "high-rise" down to earth.

One of the most difficult design problems facing the architect of the modern high-rise, is to find a way to fit his building naturally into its setting.

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Because they resist decay and extreme weather conditions,

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RED CEDAR SHINGLE & HANDSPLIT SHAKE BUREAU

5510 White Building, Seattle, Washington 98101 (In Canada, 1477 West Pender Street, Vancouver 5, B.C.)

Our diffusers limit your choice. Up your costs. And make you look just great.

We make just two louvers. That's it. They're both expensive and exclusive, and as functional as you can get. We also offer an egg crate diffuser known as Thin Cell. It's our one concession to conformity.

Our new Louver Lens is all the name implies. A lens and louver in one. With all the efficiencies of both. And it's slotted for unobstructed air flow.

The Sinko Specular Parahex Louvers are striking simplicity itself. And offer brightness control that's unmatched, by providing unlimited footcandles of illumination without reflected glare.

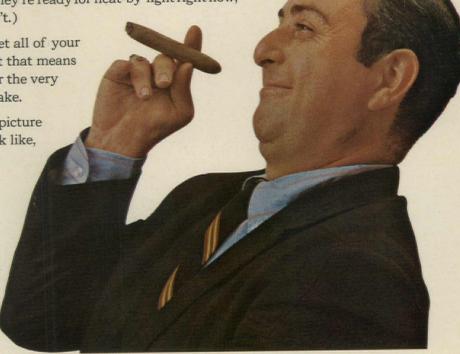
(Incidentally, both of these louvers show you're a plan-ahead kind of a guy, because they're ready for heat-by-light right now, even if the building isn't.)

We don't expect to get all of your business. Only that part that means a lot to you, and calls for the very best. That's what we make.

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SHOWCASE

The HARTFORD BUILDING Pacific Headquarters THE HARTFORD INSURANCE GROUP San Francisco

Adjacent to historic Old St. Mary's Church this 33-story tower rises free against the skyline in the Nob Hill district. At street level it achieves an openness which belies its use of constricted site on California Street, San Francisco's most distinguished downtown address.



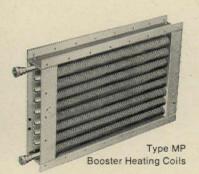
STRUCTURE

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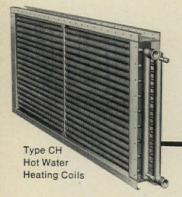


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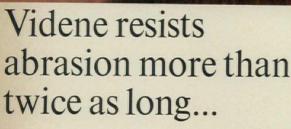
Foot-operated Bradleys are doubly sanitary, too: hands touch only a spray of clean, tempered water, never germ-laden faucets. And the bowl is automatically rinsed clean by the running spray. Result: Duos are also ideal for food handling areas and first aid rooms. Finally, Duos save water and water heating costs, maintenance time, and installation costs.

Duos are available in a variety of beautiful colors and stainless steel. Insist on Bradley Duo Washfountains — they belong in modern schools!

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GOODYEAR

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For more data, circle 91 on inquiry card

t the "International Congress on Religion, Architecture and the Visual Arts," recently held in New York City, several leading theologians representing major faiths and a few thoughtful architects spoke so forcefully on this issue that it became the central theme of the Congress. Several of the panelists argued that no religious buildings, other than those which function explicitly for social welfare, health or education should be planned or constructed in the foreseeable future. Instead, religious organizations should guide their followers in the physical, social and religious reconstruction of their own neighborhoods and communities. Said architect and author Patwant Singh: "... one has to assess the validity of spending millions on temples, churches and synagogues while the most fundamental needs of a staggering number of people around the world remain unrealized." Other leading speakers described as obsolete the concept of the church building as a vessel of symbolic and expressive power-a freestanding monument to God, dominating its surroundings, enclosing a sacred space and built of durable materials for eternity. Dom. Frederick Debuyst, O.S.B., editor of the Belgian magazine Art d'Eglise asserted: "Notwithstanding certain exceptions, I am definitely more interested in the construction of small house-churches or church-centers: that is, groups of interrelated rooms or inter-related small buildings on a human scale. They are for me the very kind of spaces and places our growing cities are particularly lacking and which could be realized everywhere, without requiring geniuses to build them. ... [we must turn] away from all seeking after special forms, away from neo-sacral visions, and back to places where interiority prevails over exteriority, the world of living persons over that of objects, and hospitality over monumentality." Another Belgian theologian, Canon Francois H. Houtart believes that "the sense of a 'sacred space' is a quasi-magical concept. A place is holy when a holy function is performed in it, . . . but this is true for any place where it happens."

Said Prof. J. G. Davies, director, Institute for the Study of Worship and Religious Architecture, University of Birmingham, England: "As regards monumentalism, I cannot do better than quote from the Messagio of the Futurist architect Antonio Sant'Elia issued in 1914: 'We have lost the sense of the monuInfluential churchmen speaking for several established modern religions have begun to question the high priority still given to the construction of conventional houses of worship, whatever their architectural form. They ask—should there be a

ARCHITECTURE FOR THE CHANGING **CHURCH?**

mental, the massive, the static, and we have enriched our sensibilities with a taste for the light and the practical. We no longer feel ourselves to be men of the cathedrals and ancient moot halls, but men of the grand hotels, railway stations, great roads, colossal harbors, covered markets, glittering arcades, reconstruction areas and salutary slum clearances." Here speaks modern secular man and I am with him. Not for us is what Le Corbusier describes as 'this solidly built thing which sets out to defy time and decay, and which is an expensive luxury by which wealth can be shown.' Dignity is one thing, monumentality Moreover, if I am right, from the Christian point of view, in seeing the Church's function as that of a servant, I cannot approve of a church building which denies that role and presents instead an image of domination. The servant Church should not erect prestige buildings."

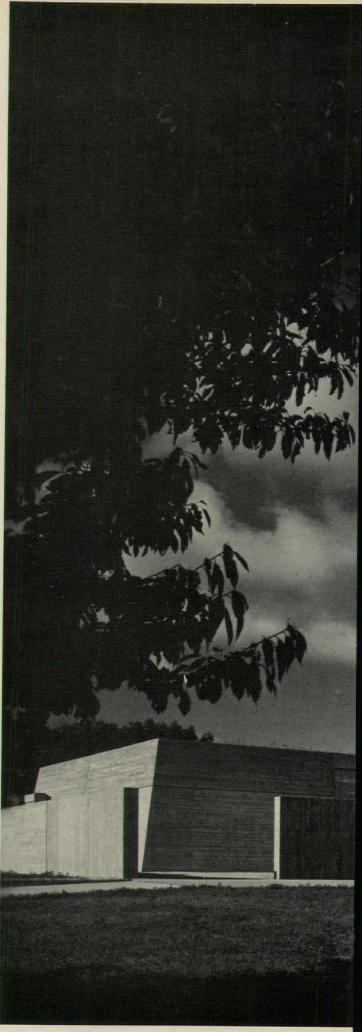
Architect Philip Johnson, who appeared on one of the final panels, made it clear to the large international audience of religious leaders that he deeply disagreed with Singh, Debuyst, Houtart, Davies and the rest. Said he: "If you don't want to build great and lasting buildings, you don't need me and I don't need you. If you believe that the act of worshipping in a garage makes it a holy place, I cannot help you. You may think an altar table should be a simple wooden plank, but I think it should be of the finest marble. And it seems obvious to me that a church building should have the dominant position in a building group of which it is a part. When I designed the campus for the University of St. Thomas, I made the campus church the focus of the composition. It didn't occur to me to do otherwise. Please remember, furthermore, that no country has built less for greatness than contemporary America. Now we don't even have buccaneer robber barons-like Commodore Vanderbilt who built Grand Central Station-who will build grand spaces for the future. I want great structures again. For whom is it worth building a great and holy place, if not for God?"

If the spirit unveiled at this Congress and so eloquently opposed by Johnson should eventually prevail, the church by Marcel Breuer and Herbert Beckhard and the monastery by Tasso Katselas shown on the following pages, would both ultimately be treated with the special reverence due to objects which are among the last of their kind. It seems probable, however, that eminent theological advice will be disregarded. Heads of parishes or monasteries, like their contemporary counterparts in secular life, will not soon give up the symbolic and expressive functions of architecture, and the chance of creating beauty therein.

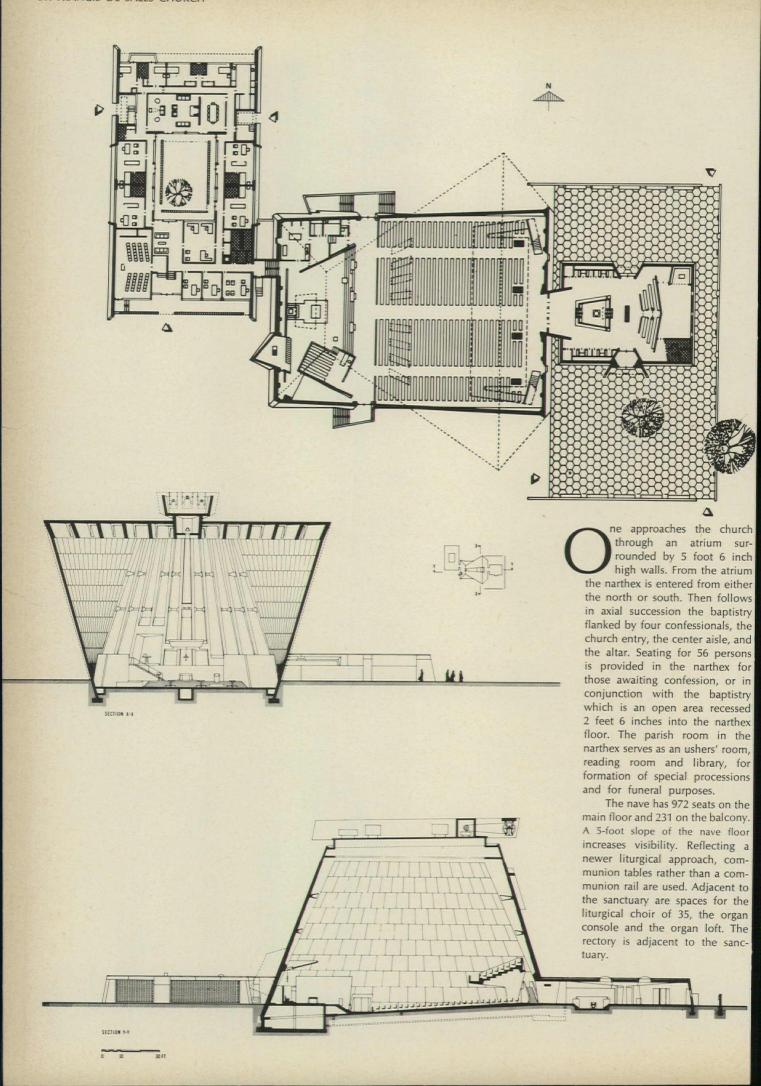
Mildred F. Schmertz

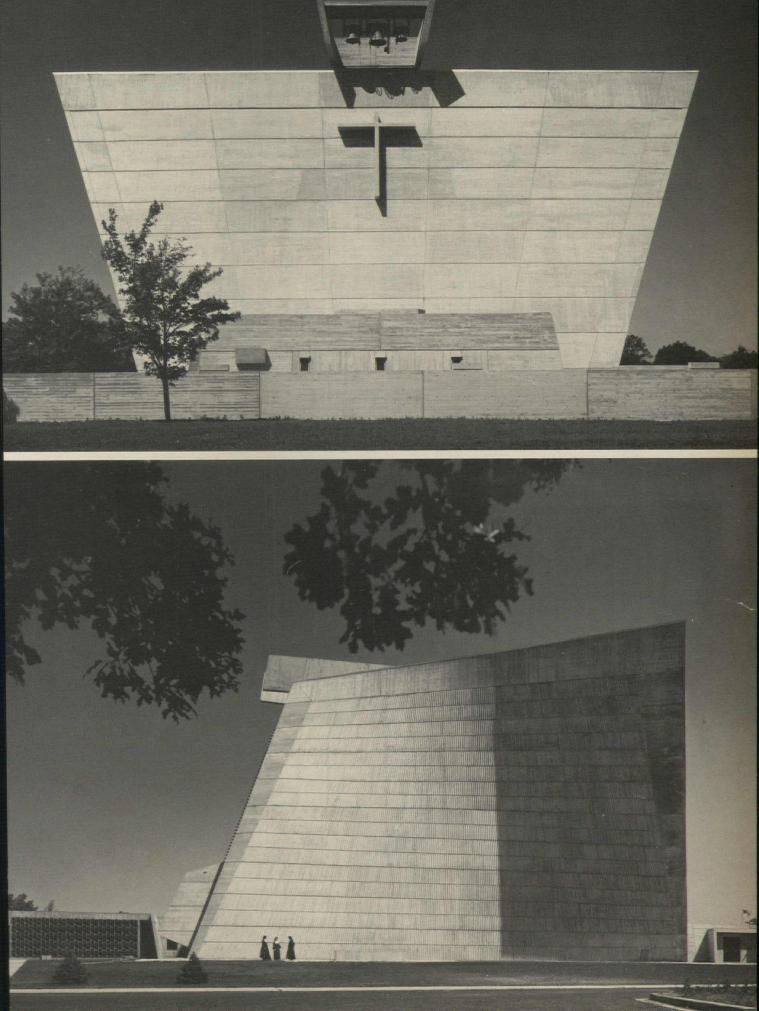
A BOLD GEOMETRIC IMAGE FOR A CHURCH

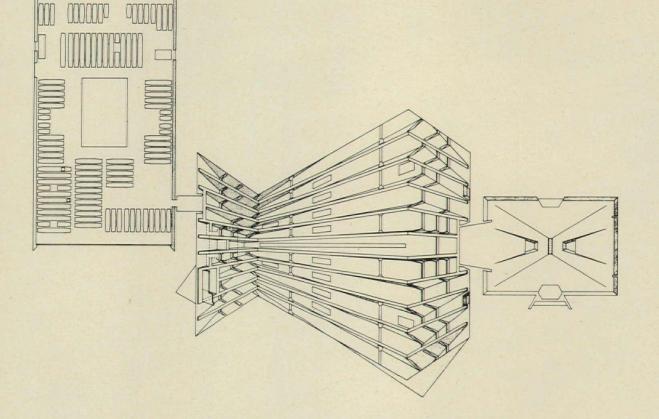
t. Francis de Sales Church in Muskegon, Michigan, recently completed by architects Marcel Breuer and his partner Herbert Beckhard, is a major work of religious architecture which exhibits great technological daring and expressiveness. In explaining their approach, the architects assert their belief that a high degree of architectural imagination is still appropriate to religious forms. Says Breuer: "How much this building affects those who see and enter it, how much it signifies its reverent purpose, will depend on the courage its designers manifest in facing the age-old task: to defeat gravity and to lift the material to great heights, over great spans-to render the enclosed space a part of infinite space. There the structure stands—defined by the eternal laws of geometry, gravity and space." To achieve their aim Breuer and Beckhard chose a geometry of hyperbolic paraboloid side walls, parallel at their base to the long axis of the nave. As these planes complete their rotation they resolve into backward tilting trapezoidal end walls, perpendicular to the nave axis. The broader of the two, shown in the photograph at the right, occurs at the juncture of the nave and the low mastaba-like narthex. Designed to receive the side walls, it is wide at the top and narrow at the bottom. At the sanctuary end, shown on the cover, the reverse occurs. There the trapezoid is smaller, and appropriately narrow at the top to sharpen the focus on the altar.

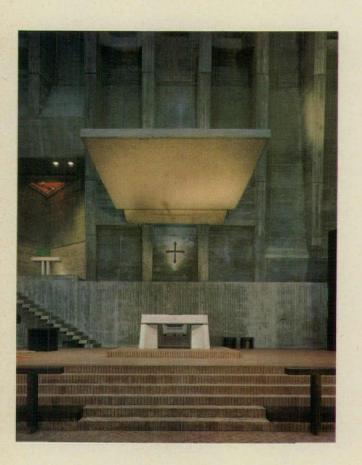






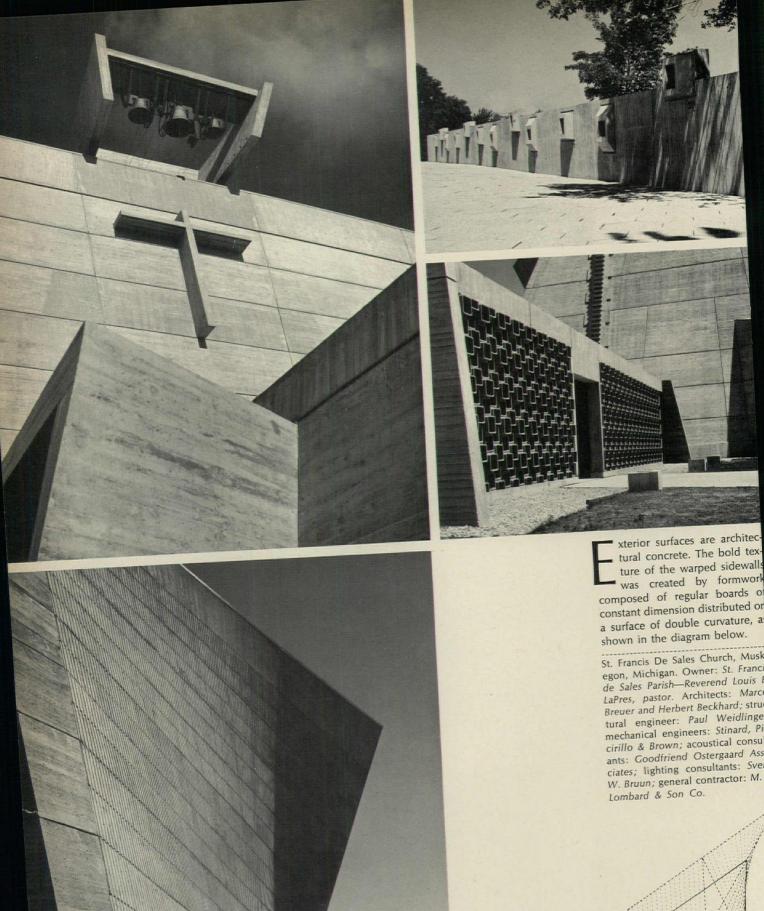


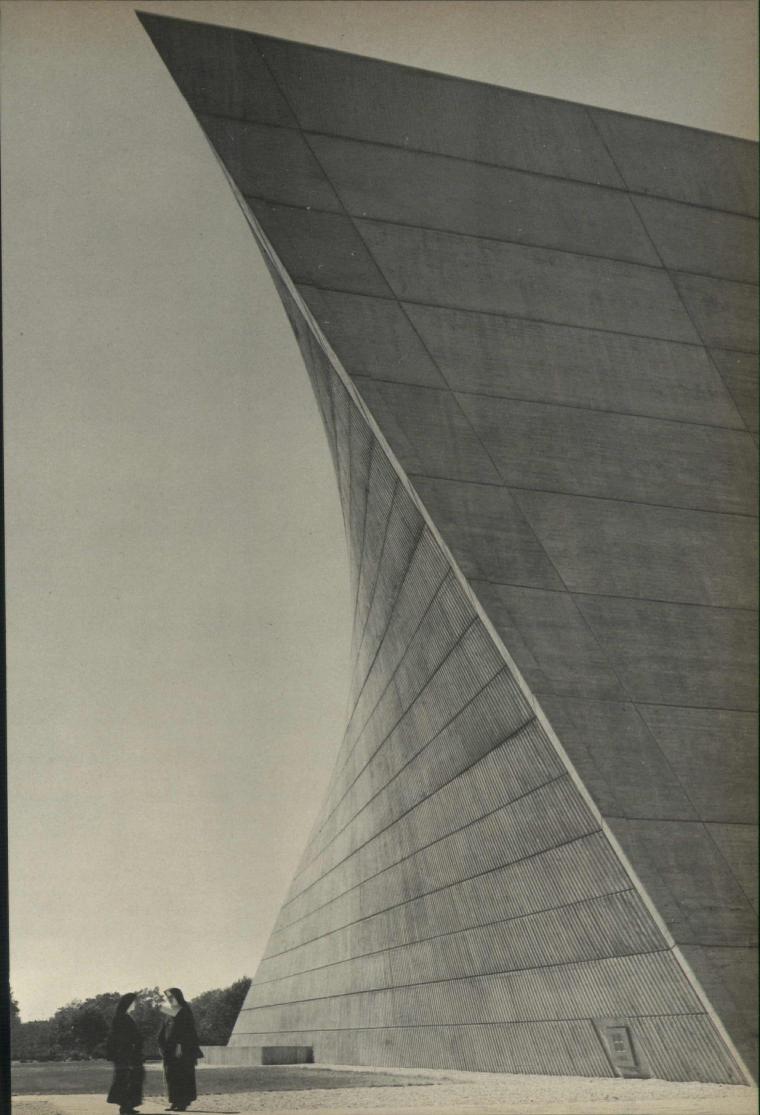


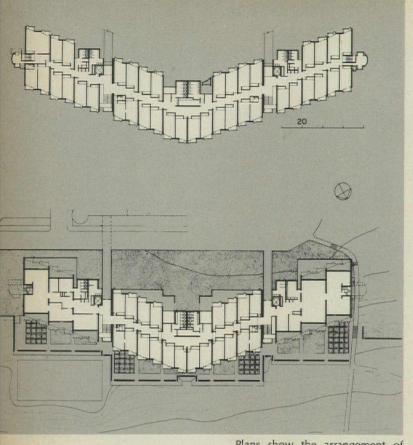


he 75-foot-high structure is topped by a concrete trough which houses the suspended bells. It also contains ventilating equipment. Natural light is introduced to the nave by means of skylights while artificial lighting originates from a special lighting slot running the length of the roof. Indirect lighting from behind the sanctuary screen walls and the back of the balcony augments this system. A rather unusual feature of the sanctuary is the chapel for the Blessed Sacrament. It is elevated from sanctuary level so that it may be seen from all points. The celebrant faces the congregation and his chair is behind the altar. By means of lighting control either the main altar or the chapel becomes the focus of attention. The church space i spanned by means of a system of rigid concrete arches connecting three trapezoidal planes: the front wall, the rear wall and the roof, The hyperbolic paraboloid sidewalls are self-supporting, enclosing the space and stabilizing the structure. The balcony is a freestanding element in the nave supported and cantilevered from four columns located so as not to interfere with the visibility of the sanctuary from any seat. Both narthex and rectory have loadbearing exterior walls.

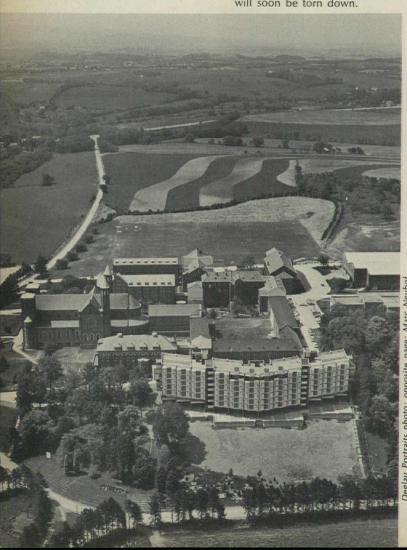








Plans show the arrangement of spaces at the terrace level and a typical floor. The Seminary and College is located in rolling farm land. Older monastery living quarters adjacent to the new structure will soon be torn down.

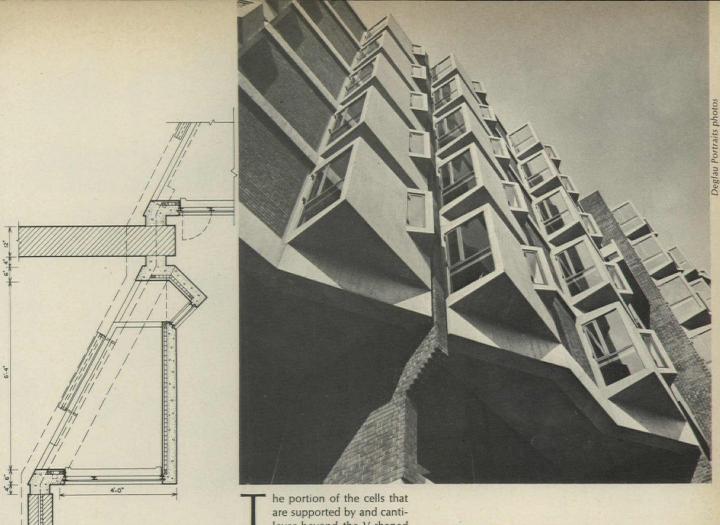


COMMUNITY AND PRIVACY FOR BENEDICTINES

he Monks of St. Vincent, members of the Benedictine Order which engages in missionary activities, pastoral ministry and education, have recently completed a new monastery on the grounds of their 121-year-old campus at Latrobe, Pennsylvania. Their architect Tasso Katselas, had the advantage of working with a deeply committed and articulate client whose demands were subtle yet clear, and he has rewarded them with his finest building to date. In the words of Father Roman J. Verostko artist and member of the College and Seminary faculty, the monks sought "a living environment which would serve them well in their search for values in their specific way of life. Each monk is provided with a private room. Architecturally designed with respect for the need of individual privacy, it provides only an indirect windowview out, creating a strong sense of being within. The architecture here serves the human need for rest, quiet, study and presence to self. Or the other hand, dialogue with others and openness is encouraged with the provision of wide views toward nature to be shared in common areas such as the recreation rooms, the terraced court walks, and the roof garden. Thus the architect has created an environment which are ticulates the two basic demands of any community life: respect for the individual as a pri vate and responsible person; and respect for the individual's need to share experiences."



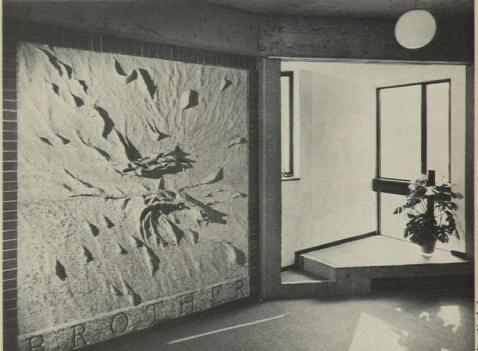


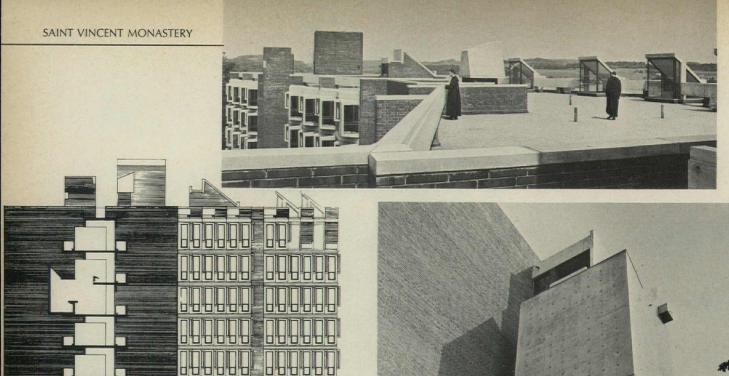


he portion of the cells that are supported by and cantilever beyond the V-shaped edge beams are precast. An interior space created by the alternately flat and projecting units is shown below. The relief sculpture, cast in cement, is one of several different designs by Father Verostko which are imbedded in the walls of the monastery. Each of these has been created to express a biblical word or phrase which reminds those who live there to "love one another," and to say "yes to life."



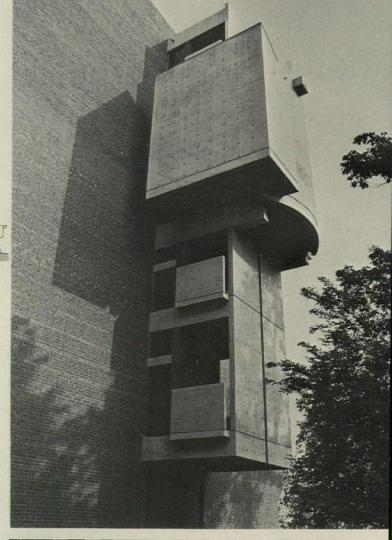
I/2" DOUBLE

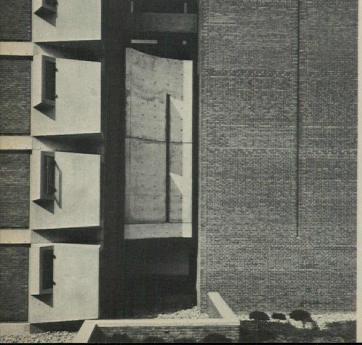


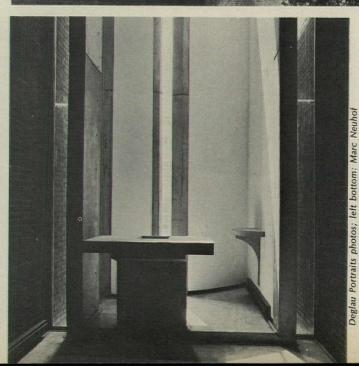


oof (at top) is designed for walking. Skylights illuminate studios and novice spaces. The handsome sculptured forms shown at the right enclose the chapels, located at opposite ends of the monastery corridors. The curved exterior wall and the interior of a chapel for the infirm are shown below.

SAINT VINCENT MONASTERY, Latrobe, Pennsylvania. Owner: Benedictine Society of Westmoreland County. Architect: Tasso Katselas; structural engineers: Richard Gensert Associates; mechanical engineers: Evans and Associates; electrical engineers: Anton J. Eichmuller and Associates; general contractor: Pevarnik Brothers, Inc.







Architects' own houses

Campbell solves tight site and budget problems with a compact, three-level, expansible home



Possibly one of the most difficult of all architectural design problems, and one of the results that is most interesting to see, is the house that an architect designs for himself and his family. The reconciliation of the different demands of needs, highly developed personal tastes, and realism in budget matters-all of which is difficult enough with the best of clients-becomes an even greater problem when an architect has to argue with himself about the inevitable adaptations that must be made. And, of course, added to this is the realization that the completed house will be regarded as a sort of showcase for his architectural skills.

John Carden Campbell, of Campbell & Wong & Associates, has used a great deal of ingenuity and skill in the design of this very attractive—and pleasantly unselfconscious—house for himself. The greatest problem, as well as the greatest asset, was presented by the lot itself. It is small (60 by 80 feet), steep, uphill and costly (\$30,000). But it has a most spectacular water view of San Francisco, many



Karl H. Riek photos

beautiful plum trees, and is in an excellent weather area.

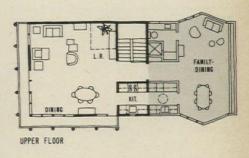
Campbell has outlined his design objectives for a house on this site as follows: "1) to design a very economical house for a very expensive lot, which could be expanded later to justify the original land cost; 2) to make the greatest use of the view; 3) to get two cars and about 1400 square feet of house on the site without cutting the trees; and 4) in addition to these basic factors, it was desired to create a house whose interiors and the exterior were related to each other—to produce an integrated structure on a limited budget."

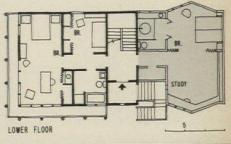
All these objectives have been handsomely achieved in the final house, which seems unusually spacious for the square footage, and which cost about \$27,000. In arriving at the three-level scheme, Campbell comments that, "after the cars are on the small lot, one must build over them to save land. For economy, the house is a box sitting on a carport. Also, because of the trees that were to be saved, and to get the most expansive view, the living room, kitchen and future dining room were placed on the top floor. The master bedroom has a good, though not as broad, bay view. And because of the size, the setbacks, the view, and the trees, the house is angled on the site and kept close to the street to leave room for expansion. To integrate the structure with the interiors, specially designed crystal-cut boards were used inside and out for walls, furniture, exterior rails and panels, the front door and even some picture frames."

John Carden Campbell Residence, Sausalito, California. Architects: Campbell & Wong & Associates; engineers: William Gilbert of Gilbert, Forsberg, Diekmann & Smith; contractor: John Sonne; interior designer: John C. Campbell.









As can be noted in the plan, the Campbell house has been reduced to four rooms by combining functions: a large living-dining room, a compact kitchen, a large master bedroom and study, and a small second bedroom. The scheme permits future expansion to three bedrooms, two baths, dining room and upstairs toilet.

The great feeling of space in the house has been created, not only by using the same specially cut boards inside and out, but by all white interiors, the sense of extension given by the balconies, and the actual shapes and sizes of the rooms. The living room is 21 feet square, with 12-foot ceilings. The idea of unity is further carried out, as can be noted in the photo at left, by treating walls, cabinets and curtains in a consistent manner: The curtains are linen tapers, cut and hemstitched to match the two sizes of the boards, and the same striated pattern is seen inside and out. Yellow, orange and tile red are used as accent colors against the all-white background.



Huygens creates a strong modern house with a traditional form

■ When deed restrictions require the design of a new house to "relate to its historic neighbor", a contemporary-minded architect building for himself has to exert even more ingenuity than usual to reconcile the two points of view. Remmert Huygens has achieved this in a straightforward manner by exploiting "rustic" qualities of contemporary materials.

The new house is located on a wooded, hillside site in Wayland, Massachusetts, and looks over the Sudbury River valley and towards the hills of New Hampshire. Across the street is the historic neighbor to which the house had to be related: a large white frame residence and red barn, built in the 18th century as an inn on the post route to New York.

Huygens' own program required virtually a one-room house, with a studio which could later be converted into two children's bedrooms, and a dressing room which could become a second bathroom. An in-line floor plan was desired to give all rooms morning sun, as well as some share of the view to the west.

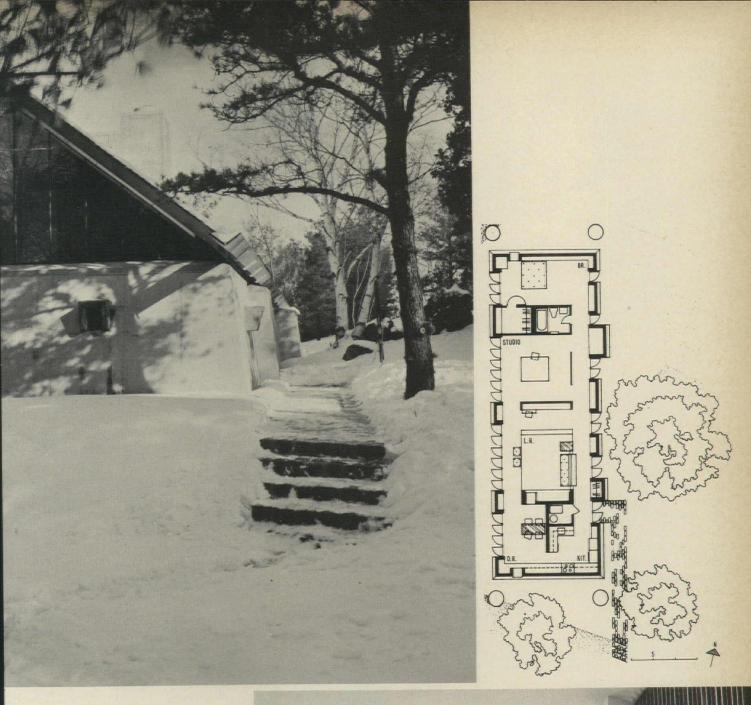
The concept of the house was determined by simple and clearly defined elements: a number of separate, battered concrete wall masses, and a tent-like, cedar-shingled roof. Huygens has commented that, "the advantage of being one's own architect is that it is possible to take one single, simple idea, build it, and carry it through without being forced into any compromise or elaboration." Here, to accentuate the voids between the unrelated wall masses, all openings have French doors made of thin rolled-steel sections. The battered walls give horizontal bracing for the roof.

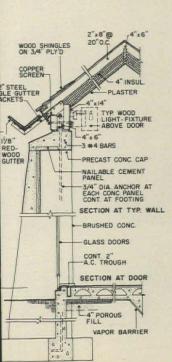
Remmert W. Huygens Residence, Wayland, Massachusetts. Architects: Huygens and Tappe; structural engineers: Souza and True; contractors: Osmond Brothers.













Alcorn obtains low cost by unconventional plan



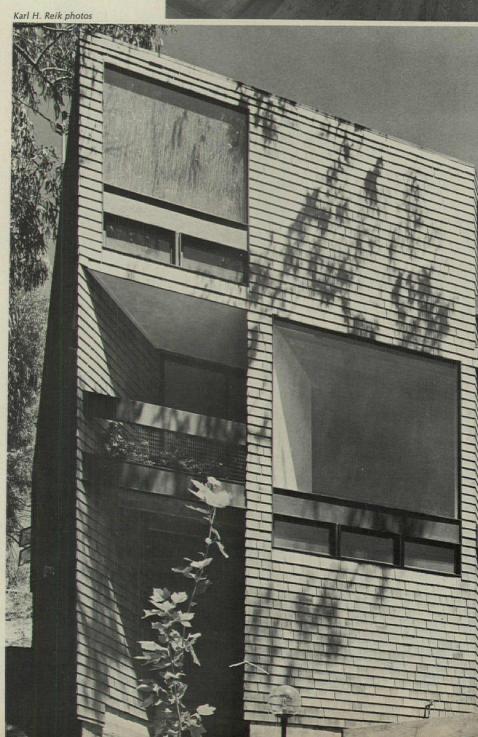
 Some fairly unorthodox techniques, both in planning and over-all design, were used by James Alcorn of Skidmore, Owings & Merrill in this house for his family in Berkeley, California. As he describes it, the house is "situated on a 45foot-wide lot which slopes up from the street at the rate of 2:1, and commands a cloistered view of the Berkeley campus, the Bay Bridge, and San Francisco beyond. Due to the steepness of the site and a desire for a usable outdoor area, it was deemed feasible to locate the living room and adult area on a lower level, thereby placing the kitchen, dining room, laundry and children's area above and adjacent to a sheltered outdoor deck.

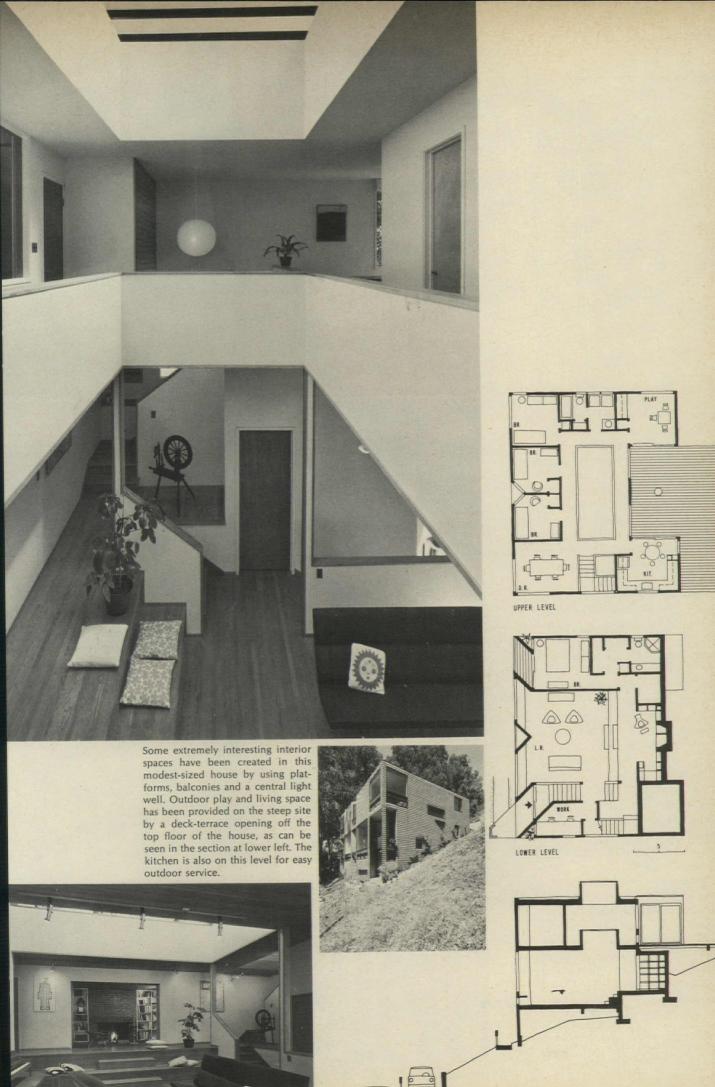
"The main views from the house are located in a diagonal relation to the front face of the house, and by canting the supporting walls in the line of view a larger viewing area was obtained.

"The design of the house grew, as it were, by a study of subtraction. From a cube, notches and openings were carved to provide the desired views and penetrations. A vertical penetration of the second floor and roof culminates in an 8- by 8-foot skylight, which has fixtures for night lighting from above. This central space and the adjacent gallery is the hub of daily activity."

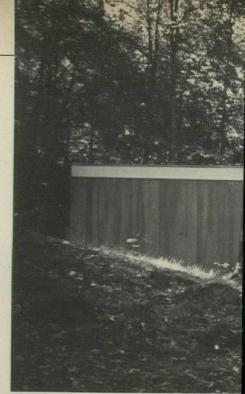
The house has a balloon frame, on concrete piers, grade beams and retaining walls. The exterior is surfaced with natural cedar shingles, and has aluminum window frames and black trim. The roof is tar and gravel. Interiors are finished with white-painted gypsum board. Ceilings in the living areas are Douglas fir. The cost was about \$30,000 for approximately 1950 square feet of floor space.

Mr. and Mrs. James Leigh Alcorn residence, Berkeley, California. Architect: James Leigh Alcorn; contractor: Kenneth Feenstra.





Freidin uses trim simplicity to make the most of a modest budget



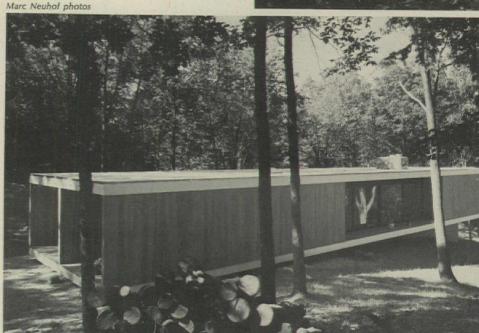
■ An ample, sophisticated house has been achieved here on a \$30,000 budget by rigorous but discerning adherence to simplicity in design and materials.

The plan of the house is very straightforward: a long scheme places studio and guest room at one end of the house for quiet and privacy, family bedrooms at the other end, and living and service areas in the center. A slope in the site is utilized to provide the heater and utility room on a lower level under the west end of the house.

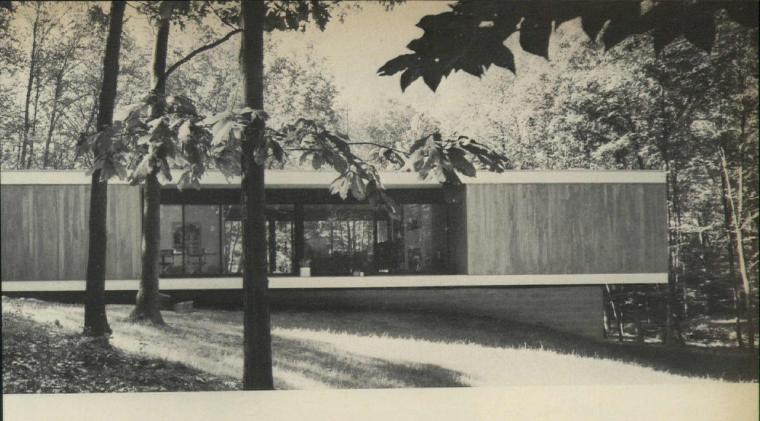
One of the things that gives the house its special character is its precision in the midst of a rambling, wooded setting. Jack Freidin describes its concept as a "house set on a recessed base so that it floats above the ground with controlled views of the surrounding woods. It is clearly separate and distinct from the ground-related to the site, yet not disturbing it. The use of fixed and sliding glass not only frames the view from each interior space, but relates that space with the site both visually and functionally." And one might add that, in spite of the compact, self-contained air of the design, the little recessed, outdoor decks by each of the glass walls provide a very positive and useful link with the grounds from most interior spaces.

The wood frame construction is also kept very simple. Roof joists, 24 feet long, span the width of the house, and are cantilevered over dropped beams supported on posts every 14 feet. Posts are supported on the exterior foundation wall. The floor framing is the same as the roof, except joists rest on the concrete block foundation wall.

Jack Freidin Residence, Weston, Connecticut. Architect: Jack Freidin; engineers: Wiesenfeld & Leon; contractor: William G. Major Construction Co.





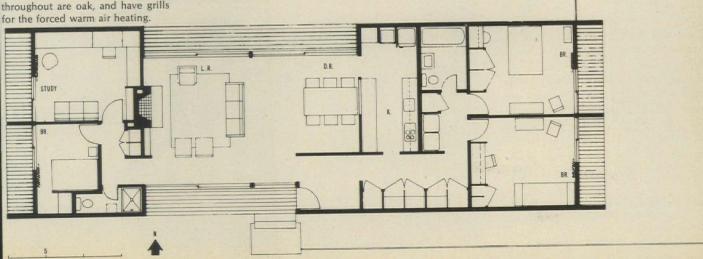




An atmosphere of tidy, unaffected informality pervades the Freidin house. Most surfaces are natural-finish and easy to maintain, with restrained use of white paint for accent. The exterior is sheathed with cypress siding; concrete block used for the foundation is left exposed where the ground slopes to permit a lower level for a utility area. The sheathing is installed on the diagonal in the inset deck areas at each end of the house.

Some areas of the cypress siding are carried inside as interior finish, but most walls and all ceilings are surfaced with gypsum board. Floors throughout are oak, and have grills





Killingsworth gains spaciousness with garden rooms

A walled compound of pavilion-like rooms, each with its outdoor counterpart, gives an unusual sense of space and luxury to this house. And the dominant theme of intermingled gardens and rooms is all-pervasive: even the central core of the house is a skylighted "garden room", and baths have little private patios for sunbathing. An extra spatial dimension was also given to the house by using 12-foot-high ceilings and doors.

Killingsworth comments that his planning problem was "to develop a residence for a family of four, with a minimum number of rooms of maximum size to accommodate large groups of friends or clients." A special provision was convertible garden space for outdoor concerts and theater, with seats for 200.

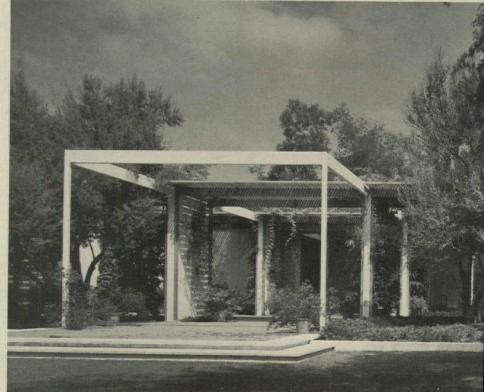
A very big interior space was created by using an open plan for entry, living, dining and family room areas. As the kitchen is also an extension of this space, and only partially screened by baffle walls, all the cabinets were "designed as furniture". For the boys' bedroom, which is the size of two normal rooms, a "suite" was created with sliding dividers, which separate the room into two sleeping areas with a sitting area between. The master bedroom is enlarged by a large, relatively open, dressing-bath area, which has a "two-story" closet to take advantage of the 12-foot ceiling height. At the opposite end of the house are two more isolated rooms, which serve as a studydesign area for Mr. Killingsworth and as an office, lounge and hi-fi area for the theater group. The house has 3,200 square feet, and cost about \$65,000.

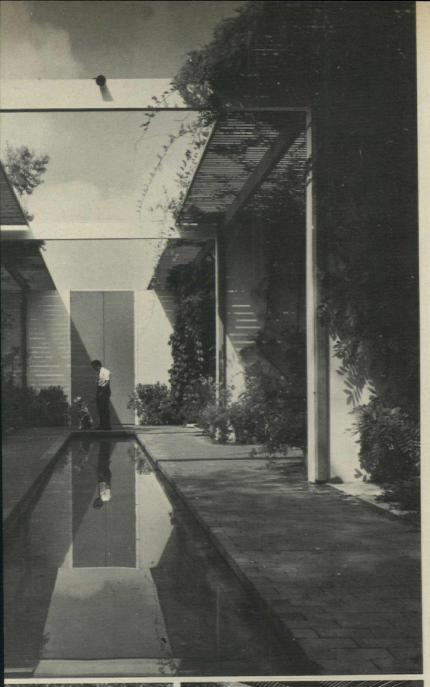
Edward A. Killingsworth residence, Long Beach, California. Architects: Killingsworth, Brady and Associates; contractors: Stromberg and Son; interior designer: Stan Young of Frank Bros.

Julius Shulman photos







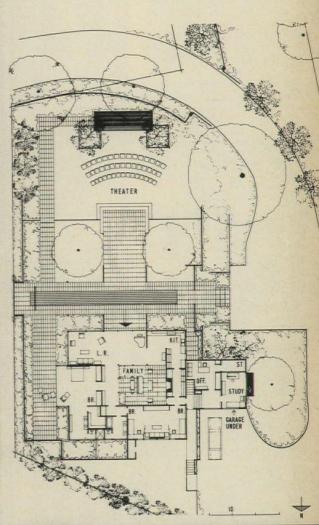




The entrance to the Killingsworth house is through 12-foot-high doors (top left), into an enclosed garden with a long shallow reflecting pool (two photos above). A pergolalike structure (two photos at bottom) projects into the garden, and doubles as outdoor living area and as a stage for music and theater. Portable plywood panels are used to convert the open pavilion into a proscenium-type stage.

The exterior walls of all the

The exterior walls of all the main rooms of the house are glazed floor-to-ceiling to closely link the garden areas with the indoor spaces.





Even though all living areas in the Killingsworth house are conceived as a big, open plan (right) some sense of separation is lent by the use of alcoves, colonnades, and differences in floor treatment. Some areas are carpeted, while the cen-tral family room, kitchen and service areas have the same brick paving as outdoor terraces and walks. Hotwater radiant heating is installed in the concrete floor slabs. Walls are wood frame and plaster.







9 COMMUNITY COLLEGES

BUILDING TYPES STUDY 377

®

More than 50 new community colleges a year for the next 10 years: this is the prediction of the American Association of Junior Colleges. And it is a modest prediction indeed in the face of mounting enthusiasm for the two-year public college with its comprehensive (academic and trade-technical or vocational) curriculum.

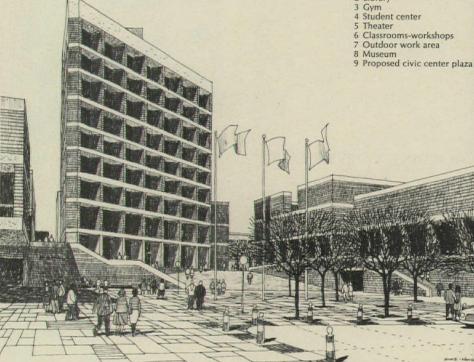
A community (or junior) college is generally very different architecturally from other colleges. There are several good reasons. Many seem to come into being as complete campuses: Their innovative and locally inspired curricula rely on equally innovative physical plants to give them the identity—the "sense of place" they lack because of the fluidity of their commuting student bodies. And finally, most are designed to increase the interaction between students of different curricula (academic and trade-technical), different cultural background, and different ages. It is basic that these colleges are located where the need is, where the students are, where the location will induce attendance by people who never thought that they could aspire to college training. The community college emphasizes learning, and multiplies its campuses rather than change the low student-teacher ratio. In its philosophy of widening public contact with higher education, the public community college presents a concept whose importance to the future cannot be over-estimated. In designing the new campuses for the increasing number of these colleges, architects have -Elisabeth K. Thompson a rare and exciting challenge.

Laney College, an urban campus for a center city site

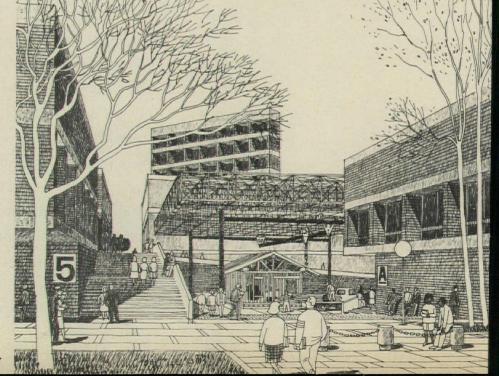
"Bringing the college to the student"-a prime objective of the community college—is the basis for location of Laney College in the center-city section of Oakland, California. Laney is one of four campuses being developed by the fouryear-old, six-city Peralta Junior College District in northern Alameda County on San Francisco Bay, and is the only one on a center-city site. The problems of its site are real: the site is restricted in size (65-70 acres) and pierced by two main streets, a major elevated freeway, the channel from a lake, two surface rail lines and, subsurface, the new Bay Area Rapid Transit line. But its opportunities are also real: it places a comprehensive (academic as well as trade-technical) college in physical proximity to lower income segments of the population which would not otherwise consider college-level training. Furthermore, since it is in a redevelopment area, Federal funds are available for site acquisition. Even more than most community college campuses, Laney is designed to promote association with each other of students from the various curricula. Its five two-story classroom buildings, placed on the periphery of the campus, are divided into two or three sections, connected by stairs or ramps leading from plaza level to upper floor classrooms. Trade-technical labs and classrooms are at plaza level, academic classrooms are on upper levels. The main entrance faces the city's Civic Center and a BART station, and is adjacent to a nearly completed city museum. The nine-story administration-faculty office which will dominate the campus incorporates tutorial labs and classroomconference rooms near faculty offices for special instruction.

LANEY COLLEGE, Peralta Junior College District, Oakland, California. Architects and engineers: Skidmore, Owings & Merrill; acoustical engineers: Bolt, Beranek & Newman; soils consultants: Woodward-Clyde-Sherrard & Associates; food service consultants: Lea & Schafer





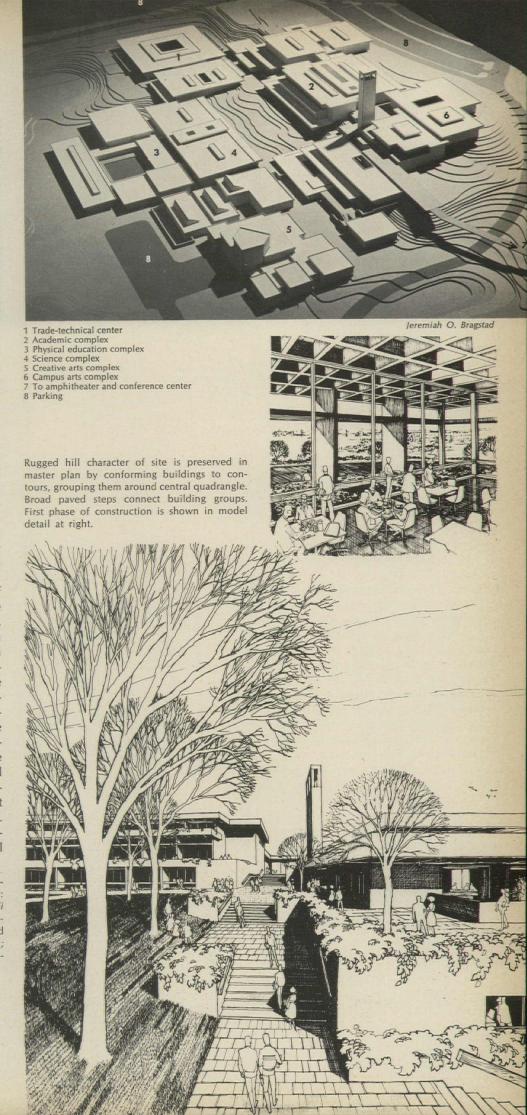
Entrance and administration building (above); outdoor work area and classroom buildings (below)



Merritt College, a compact campus to crown a hill site

Merritt College, like Laney, has been in operation in long-outgrown old buildings. Unlike Laney, however, this college will serve a predominantly middle class area. Its new campus will be on a 125acre site in the East Oakland hills with a superb view over Oakland and San Francisco Bay. The location makes it a carcommute campus, and a good part of the campus is given over, in small plots, to parking. The buildings are organized as a tightly grouped, almost urban complex, centered on a quadrangle. The complex steps down the hillside from the academic and campus center buildings which are at the highest point of the site. Where Laney mixed the different types of facilities, Merritt groups them: creative arts, academic, trade-technical, science, campus center and physical education form separated entities, connected with each other by broad steps and landscaped courts of varied character. The buildings are one- and two-story structures for the most part, designed on several levels according to the slope of the site. Now in working drawings, the college will be built in two phases: phase one will include buildings for physical education; science; trade-technical; creative arts; administration and student personnel; store, library and cafeteria. The academic complex and student center, and further site development, will make up phase two.

MERRITT COLLEGE, Peralta Junior College District, Oakland, California. Associated architects: Reynolds & Chamberlain and Wurster, Bernardi & Emmons, Inc.; structural engineers: Gilbert-Forsberg-Diekmann-Schmidt; mechanical and electrical engineers: Frahm, Maykel and Edler; landscape architects: Lawrence Halprin & Associates.

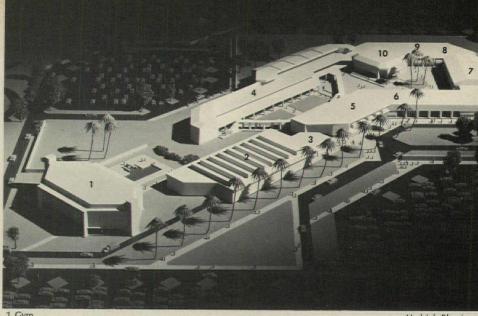


Alameda College, a mall campus with built-in student mix

Alameda College, third of Peralta District's four campuses, has a problem which many community colleges face: an uninteresting, flat site in a nondescript neighborhood. Alameda's site is adjacent on one side to the tunnel which connects the island of Alameda with the city of Oakland, and on the other to the Alameda Naval Air Station; it is surrounded by commercial and light industrial development of little quality, and by middle-class housing projects. The uninviting site was a primary factor in the campus design, which turns away from its surroundings to create its own environment. The long mall (or alameda) formed by the buildings which line it on either side is the main street of campus activity, a single open space which both unifies the campus and provides a focal area. Paved and landscaped, the alameda is designed to be a social force among the students, a place for meeting and mingling, with such activity generators as the gym and the student center at opposite ends. The college is to be built in two phases, the first (to provide for 2,500 of the eventual 5,000 students) to include academic and trade-technical buildings, theater and administration.

Peralta's fourth college will be located on an unusual waterfront site in Berkeley. Like the other Peralta colleges, it will be planned for 5,000 students.

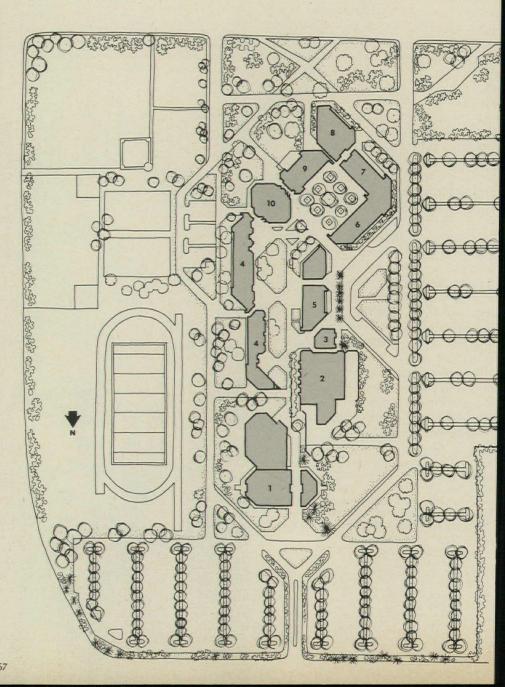
ALAMEDA COLLEGE, Peralta Junior College District, Alameda, California. Architects: Stone, Marraccini & Patterson and The Perkins and Will Partnership, a joint venture; structural engineer: Stefan Medwadowski; mechanical and electrical engineers: Buonaccorsi & Associates.



Hedrich-Blessing

- Automotive Shop
- Classrooms
- Administration Vocational arts

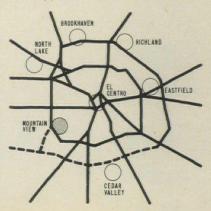
- Bookstore and music
- Student union
- 10 Theater

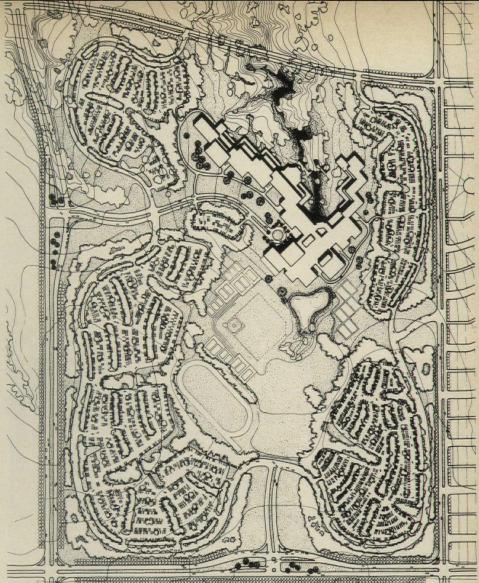


Mountain View College, first of six new campuses near Dallas

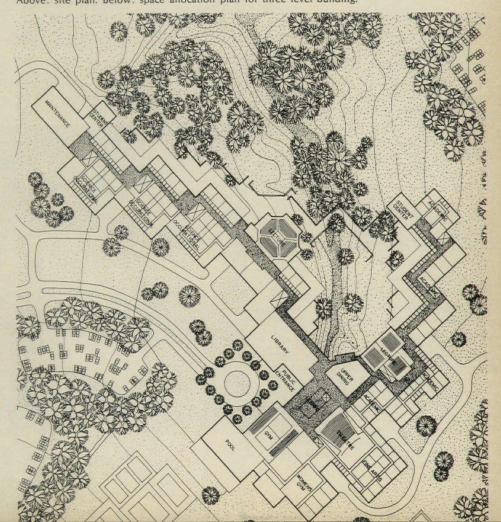
The plan for Mountain View College concentrates all of its facilities in one buildng, with a solution not unlike that of an enclosed mall shopping center, college activity centering on the corridor, or pine, of the building, and outdoor spaces eliminated in favor of interior areas. Major spaces, because of the situation of the building on the site, have a scenic view toward the one outstanding natural feature of the site, a wooded arroyo which the building encompasses. The educational program called for 'great communality and interaction, and he breaking down of barriers and demarcations." The plan disperses student centers (dining rooms and lounges) hroughout the instructional area; provides "collection spaces" at strategic points (as outside theater and gym); places "listening stations" (for electronic contact with library) in widened portions of the corridors near instructional spaces, defines classrooms unconventionally; and uses glass for visual communication of student and class activities to minimize demarcations between kinds of curricula.

MOUNTAIN VIEW COLLEGE, Dallas County unior College District, Texas. Architects: Harell & Hamilton and Chan/Rader & Associates; tructural engineers: Terry, Rosenlund & Co.; mechanical and electrical engineers: Gregersen, Gaynor & Sirmen, Inc.; civil engineer: Raymond ... Goodson, Jr.





Above: site plan. Below: space allocation plan for three level building



Central Oregon College, a community college for commuter and resident students

Central Oregon College at Bend, Oregon is the exception among community colleges, most of which are commuteroriented. Central Oregon has a residence hall for 100 students for whom commuting would be impossible. The college serves a 10,000 square mile district in a semi-arid rural area remote from other institutions of higher education. Like other community colleges, however, it offers liberal arts training for transfer students, terminal academic curricula, and technical-vocational courses. The 145-acre site (which the architects helped to select) is on the slope of a high wooded butte, with a spectacular view of the Cascade Mountains. The beauty and ruggedness of the site influenced the decision to keep the buildings low and to group them informally, minimizing excavation of the solid volcanic rock on which they stand and preserving the view to the mountains. The site configuration-steep slopes on the upper reaches of the butte, more level areas lower down-made it necessary to use the lower slopes for playing fields, physical education buildings and some tradetechnical buildings which require large spaces on one level. On the upper slopes is a commons area, largely academic buildings, but incorporating also such vocational-technical buildings as engineering technology and nursing. A tight budget made economy essential: the use of local materials and simple details, and a prototype classroom building, made possible an average cost of \$17.50 per square foot.

CENTRAL OREGON COMMUNITY COLLEGE, Bend, Oregon. Architects: Wilmsen, Endicott, Unthank & Associates; structural engineers: Honey & Kramer; electrical engineers: Balzhiser & Colvin and Klawa & Mehlig; mechanical engineers: Balzhiser & Colvin and Keith Kruchek & Associates; interiors: George M. Schwarz & Associates and Lila Colwell, Inc.; contractors: E. E. Steinlicht; Degree Construction Co.; Leagjeld Construction Co.; Vik Construction Co.



Roofs of all buildings insulate against extremes of temperature in area and shield windows from sun. Student center (above), library (right) and typical classroom building (below) are part of commons on upper slope.





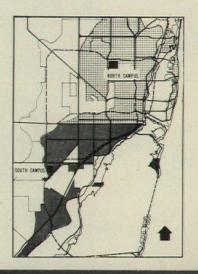




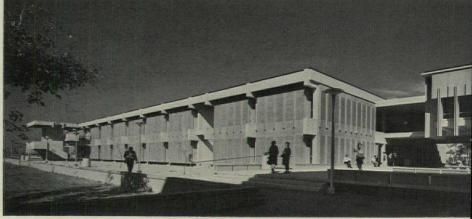
Miami-Dade County's North Campus, one of two campuses for expressway commuters

In the seven years since the city of Miami and Dade County, Florida combined forces to operate a junior college, the district has built two campuses, each for an eventual 10,000 students, and now projects a third, to be located in downtown Miami. North Campus, the first to be completed, is on the site of an old Navy air field-a flat, bleak open area which had two virtues for a junior college: it was unusually large-230 acresand it was near an existing expressway. A sizable site is not a necessity-Laney College has only 65 acres and Alameda, 61 acres—but it is certainly desirable in an area of rapid population growth and where travel is largely by individual car. The problem of designing these two community college campuses proved to be not unlike that of designing a regional shopping center: it had to be easy to reach from miles away and it had to provide parking areas to accommodate large numbers of automobiles. At North Campus, parking is provided for 8,400 cars. Against this vast array of vehicles, the architects used the college buildings to create a "defensive group" within to escape the automobile. Parking areas and buildings are so disposed, however, that no car is ever parked farther than a five-minute walk from a building. In fact, time-how long it takes to go from one point to another-is the basis on which the dimensions of the inner area were determined, just as the locations of the three campuses are premised on the time it will take students to reach a campus by expressway.

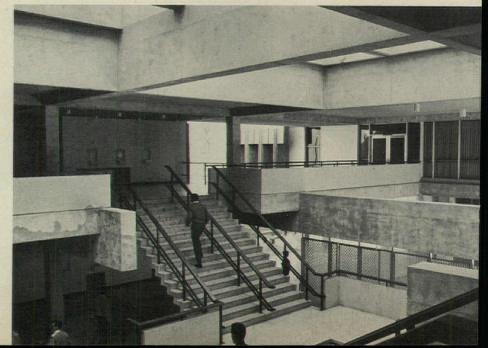
MIAMI-DADE JUNIOR COLLEGE, NORTH CAM-PUS, Miami, Florida. Architects: Pancoast, Ferendino, Grafton; structural engineers: Dignum Associates; mechanical and electrical engineers: Oboler & Clarke; contractors: M. R. Harrison and Millman Construction Co.

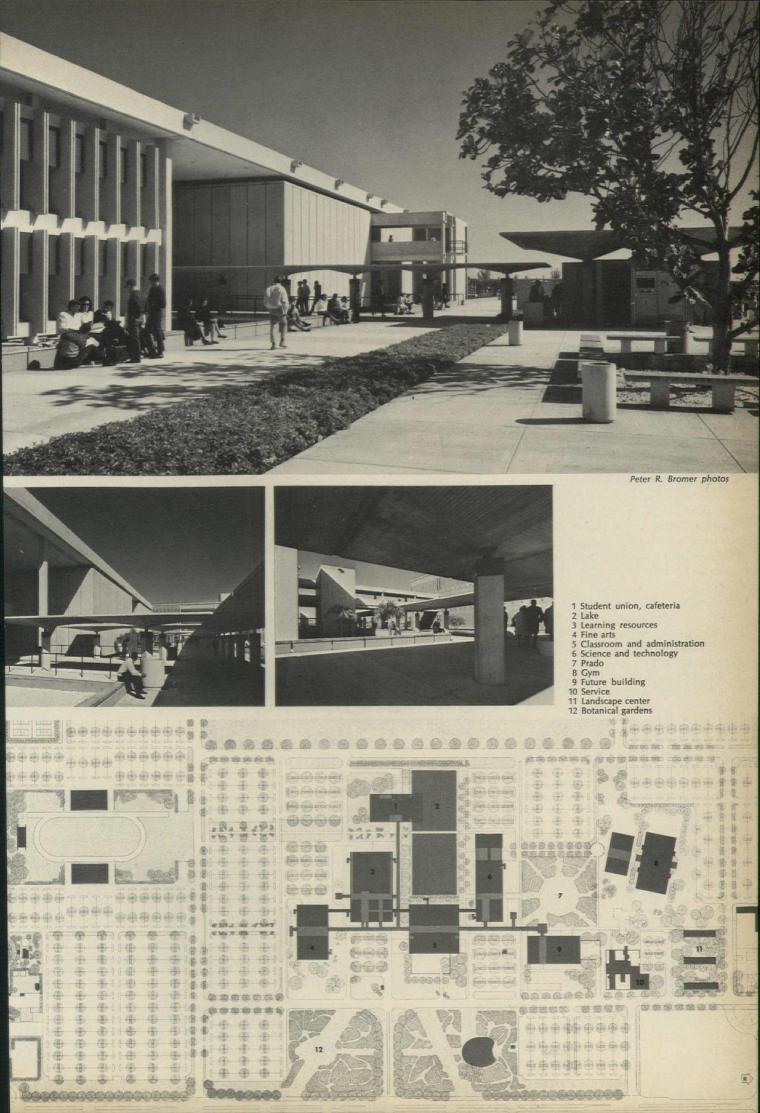


To define the paths and make walking between buildings as pleasant as possible, covered walk connect all major elements of the campus and act as transition elements between the hot sun baked outdoors and the non-air-conditioned three-story skylighted concourse (bottom) and the almost windowless air-conditioned instructional spaces which open off the concourse



Bridges at second floor level limit the amount of vertical travel between sections of a building and between buildings. Gray precast concret panels on a concrete frame are used for exterior and interior walls of all buildings.

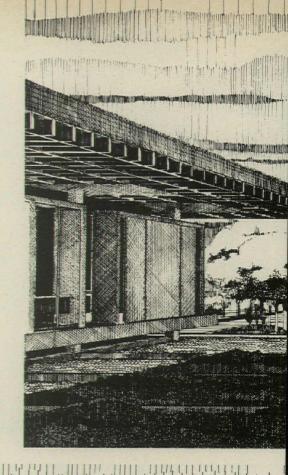


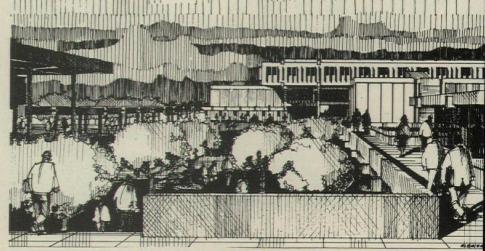


Miami-Dade County's South Campus, compact urban college in an as yet undeveloped area

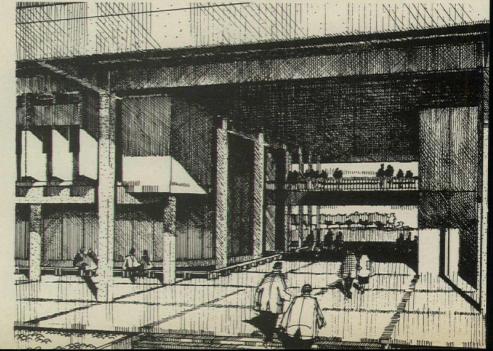
The site for South Campus is in what is presently a wild and isolated area with only a scattered population around it. Its selection at a time when the price was still low was based on the Metropolitan Dade County General Land Use Master Plan which showed that the area would be served by two major expressways. As at North Campus, the automobile is not permitted to intrude on the campus core, and this is made obvious by the raising of this central area above the surrounding area (a device which also puts the buildings at an elevation above flood level). The core at South Campus is more compactly planned than at North Campus, creating internal spaces of an urban character. Two major open spaces, defined by buildings and covered walks, provide for different kinds of activity: the somewhat formal entry plaza, flanked by lakes (which serve as catch basins), and the academic plaza where most student activity will take place. The buildings have greater individuality than those at North Campus, but the campus derives unity from the building masses and their use of wide overhangs, and from the over-all use of sandblasted precast concrete panels. The first phase of construction—administration, classroom and learning resources buildings, entry plaza and parking for 3,000 cars-is now completed. When the entire campus is finished it will serve 10,000 students. By 1975, with three campuses in operation, the college will serve 30,000 students. MIAMI-DADE JUNIOR COLLEGE, SOUTH CAM-PUS, Miami, Florida. Architects: Pancoast, Ferendino, Grafton; structural engineer: Larry Brill; mechanical and electrical engineers: Oboler &

The architects describe this campus as "a small city of interconnected geometric masses and urban plazas." The compact plan gives it much of its urban character; formal planting at the entry plaza (right) enhances this.

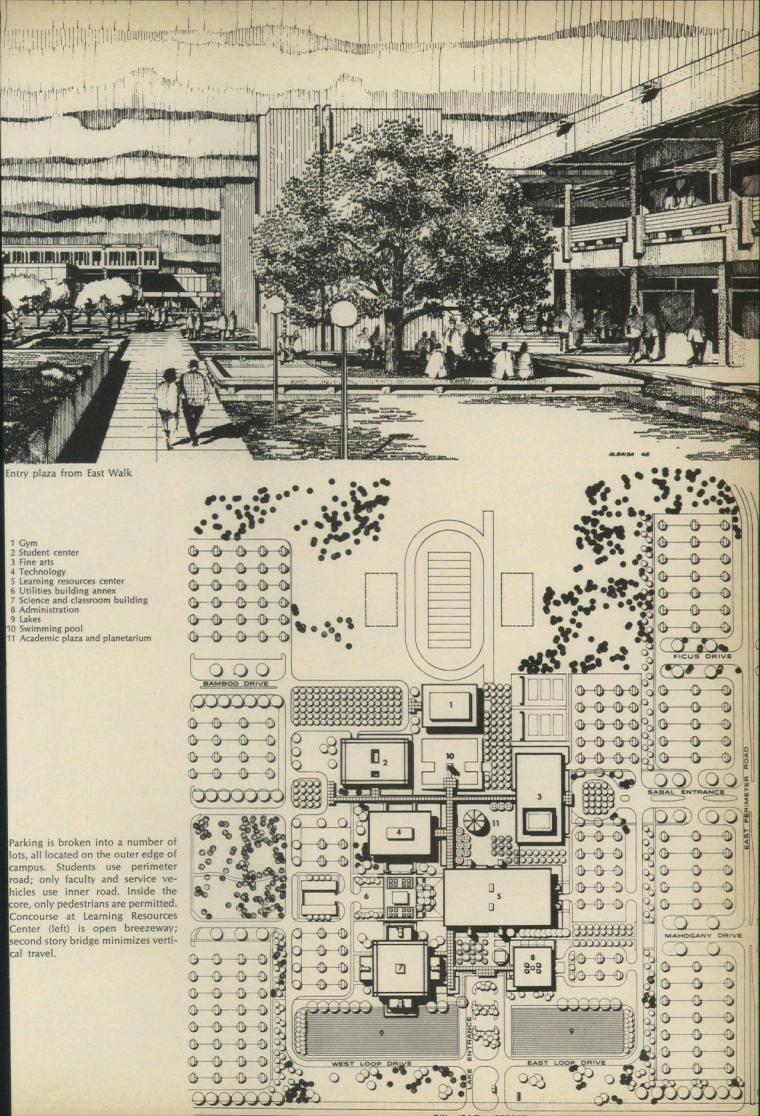




Above: Academic plaza science building beyond. Below: Concourse through Learning Resources Cel



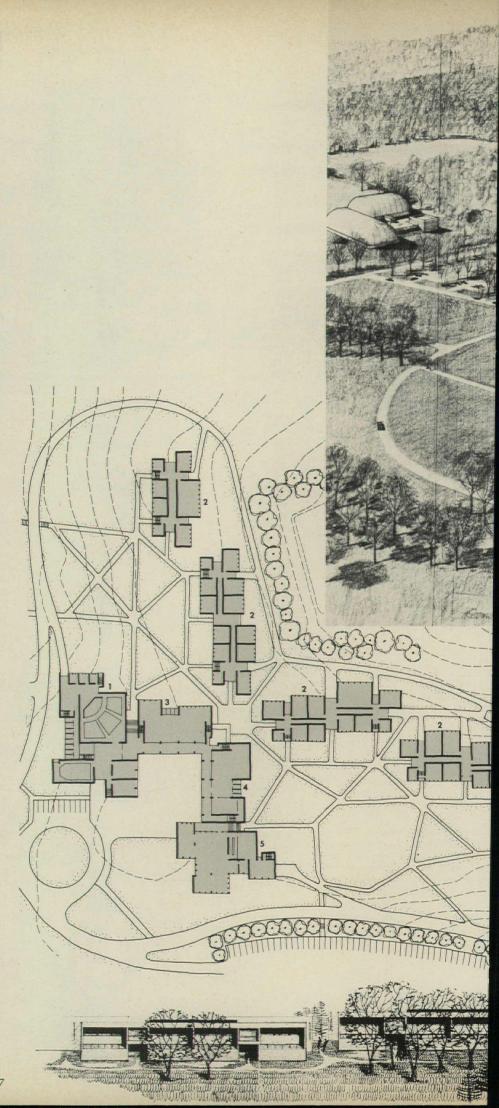
Clarke; contractor: Fred Howland.

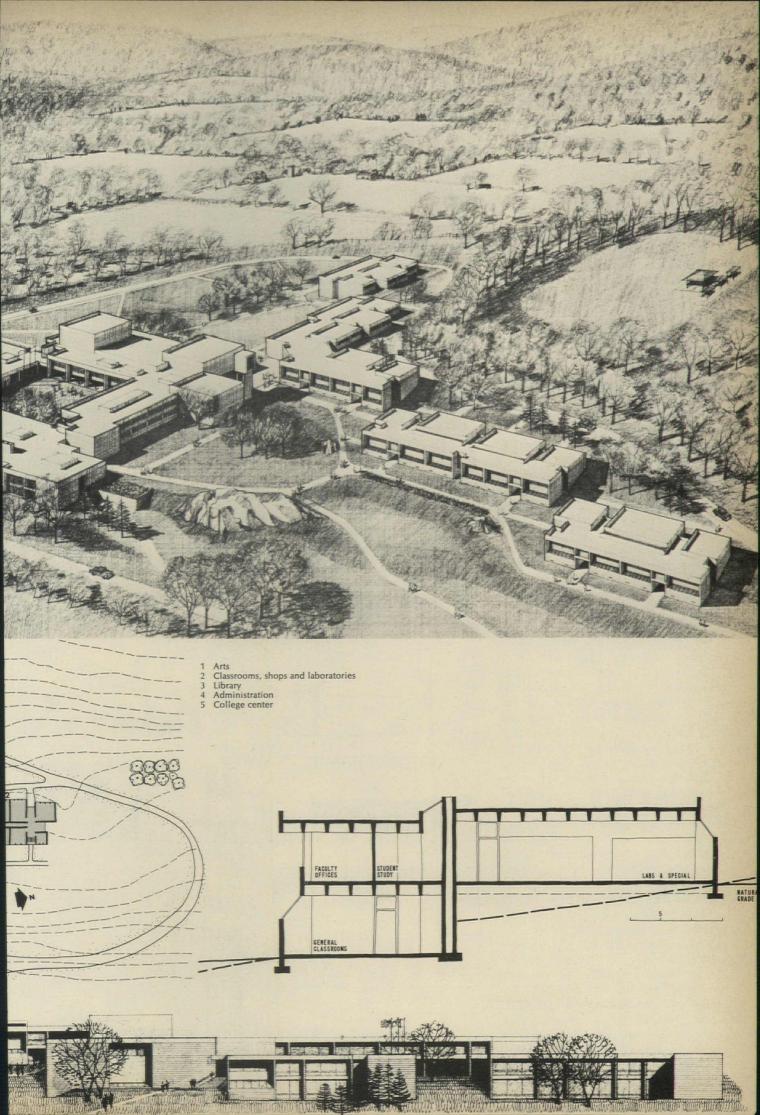


Berkshire College, a rural campus with urban vitality

Berkshire College will be built on a wooded hillside overlooking the town of Pittsfield. Its distinctly rural character is both advantage (in the amount of space that it offers) and disadvantage (in its complete lack of anything to which to relate). To overcome the latter, the master plan for the college creates a great court which is both a place of identity and a center of movement, with all the vitality of an urban market place and all the beauty of a scenic outlook. The buildings which surround and create the court are those to which the public will come: cafeteria, lecture halls, auditorium-theater. From the court will radiate walks into the countryside, a happy response to the special qualities of the site. The court thus answers the need for a focus; and it also solves the program requirement that the physical plan and the building designs induce mingling of students, in all types of courses, with each other and with faculty, and of the college community and the town. Typical classroom buildings (seen at right in perspective) contain classrooms, student study rooms and faculty offices in an arrangement which itself contributes to the mingling (see section). The low heighttwo stories at most-of the buildings is in keeping with the scale and tradition of the area and the informal atmosphere desired for the campus. Elevators will be unnecessary for handicapped students since the buildings are designed to fit the slope of the site. Now in working drawings, Berkshire will be one of seven new community colleges to be built by Massachusetts, where a state Board of Regional Colleges administers the system. Locations for colleges are selected by the Board on a fairly broad regional basis.

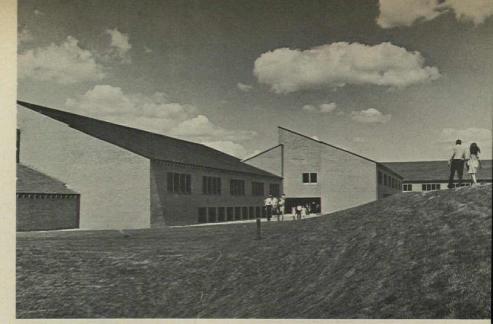
BERKSHIRE COMMUNITY COLLEGE, Pittsfield, Massachusetts. Architects: Benjamin Thompson & Associates—associate in charge: Thomas Green; structural engineers: Le Messurier Associates; mechanical engineers: Francis Associates; landscape architect: Carol R. Johnson.

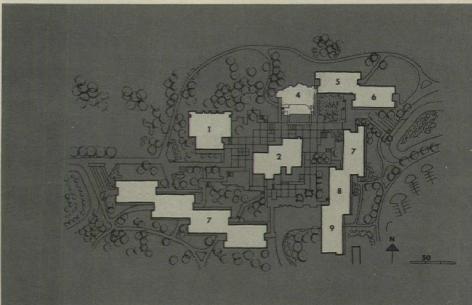


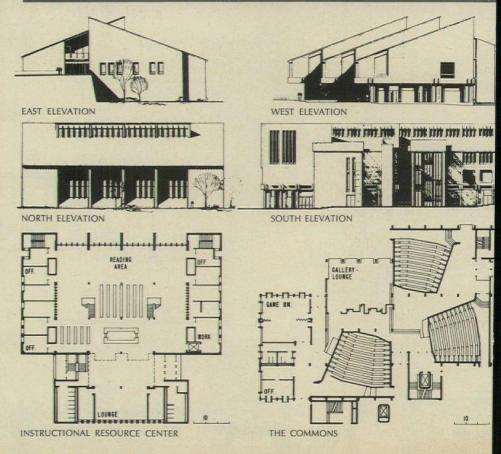


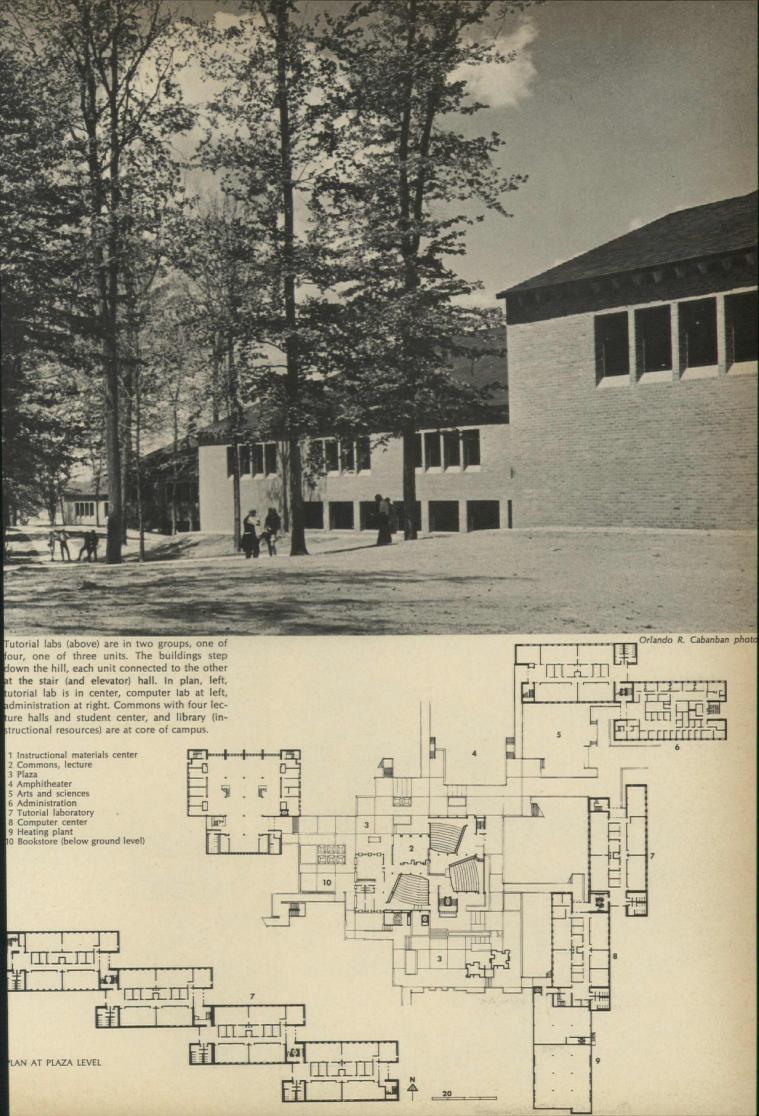
Oakland College's
Orchard Ridge Campus,
a unique college with
few classrooms

Orchard Ridge's audio-tutorial concept of teaching and learning, based on the ideal of one teacher to one student, is a unique and unusually appropriate approach to education at the community college level. With this method the student can schedule his "learning periods" (in which he uses audio-visual equipment in a "tutorial lab" with an instructor present to assist or answer questions) at his own convenience. Since community colleges serve persons in jobs as well as those training for jobs, this freedom can be all-important in the decision to continue education past high school. At Orchard Ridge, the student attends one weekly general session in a lecture hall, and a discussion and quiz group meeting, for each course he takes. In addition he spends as much time as he feels he needs in the tutorial lab where the necessary materials-filmstrips, tapes, slides and projectors, books, experimental set-ups, etc.—are available. The labs are open 14 hours a day, and the student can use them whenever he wishes. Tutors are present the entire time. Each lab building is used for one field of study, with labs on the first floor, tutorial areas on the second. The tutorial area is really multiuse space, providing for study, conferences, group discussion or relaxed conversation. Furnished with study carrels equipped with a variety of electronic learning aids, lounge furniture, and tables and chairs for seminars, and carpeted throughout, these are the "classrooms" where learning goes on. The architectural solution for this program is a plan with virtually no classrooms, four 100- to 200seat lecture halls, seven tutorial lab buildings and administrative offices grouped around common facilities: library, lecture halls and student commons. Although this campus is not yet fully built, it is in operation. Its experimental-and controversial-method is being carefully watched as a possible bellwether for future higher education institutions. Al-











ARCHITECTURAL ENGINEERING







Plastic design method cuts steel costs 10 per cent in Maryland high rise

In the first U.S. high rise to be designed plastically—the 11-story Stevenson Apartments in Bladensburg, Maryland—a saving of 10 per cent in the weight of steel was realized, according to the structural engineer Ray Allison of Horatio Allison Associates. While engineers have employed plastic design in other multistory buildings for the floor framing only, this structure is said to be the first application of full plastic design to a braced multi-story building, i.e., including the design of both columns and beams.

As an example of the savings produced by plastic design, Allison says that 10B15 beams were used, rather than the 10WF21's that would have been required if the structure had been designed according to the elastic method.

Total cost of the steel frame plus floor joists amounted to \$1.17 per sq ft for the 160,000 sq ft building, with steel savings amounting to ½ lb per sq ft. Cost of the deck at 44 cents per sq ft and of the ceiling at 30 cents per sq ft brought total cost of the structure up to \$1.91 per sq ft, a very favorable cost in competition with concrete in the Washington, D.C. area, according to engineer Allison.

With elastic design, the load-carrying capacity of steel members is based on their known strength in the elastic range

-the range in which strain is directly proportional to stress and the steel is not stressed beyond its yield point. But with recently acquired laboratory test data of the Fritz Engineering Laboratory at Lehigh University on the ultimate strength of steel members in multi-story braced frames, it is now possible for engineers to employ ultimate strength (plastic) design methods for sizing columns and beams in this type of structure. In other words, since determinations have been made as to the loadings at which steel members will yield in braced frame configurations, appropriate safety factors can be applied to the ultimate strength values to give safe, but more economical, steel structures. (Beyond the yield point, steel is "plastic"; it yields with little or no addition of load.) The behavior of steel structures utilizing plastic design under service loads is essentially the same as

those designed with the elastic method, because structural members still are never stressed to the yield point. A computer program developed by

Ray Allison is said to have been a key factor in reducing the plastic design method to practical application for the apartment building. The computer was employed to produce a thick set of tables for design of columns. The computer print-out sheets which helped Allison reduce design time drastically are, in effect, tabulated clusters of several computations for a variety of conditions. They were prepared for both A36 and A572 steels, having yield strengths of 36,000 psi and 50,000 psi, respectively. For each column length, typical sizes are listed along the left-hand margin of the printout sheet, and typical loads are listed along the top of the sheet.

Framing of the new building is straightforward, welded

The A36 floor framing for the building's long axis consists of 16 bays on 18-ft centers with 10B15 beams along the exterior walls and 10B11.5 beams for the two interior rows. Along the short axis, main floor framing consists of 10B15 members in three bays. Columns are 8in, wide-flange members of A572 and

Prestresse	d foundation	resists	thrusts	
from pa	raboloid shell:	5	,	17
Building	components:	research	shows	

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A36 steel, varying from 8WF67 sections in the basement to 8WF24 sections for the roof.

The all-welded structure will use a type of simple buttweld connection that Allison has perfected. They are designed as much as possible "so that the welder can't weld them wrong."

The building is 271 ft long and 53 ft wide. Lateral loads are resisted by cross-bracing in four partitions perpendicular to the exterior walls. At the foundation, the braced bays are anchored to bolts sunk in poured caissons.

Sheridan, Behm and Associates of Arlington, Virginia were architects for Stevenson Apartments; structural engineer was Horatio Allison Associates of Rockville, Maryland; owner-builder is Leegate Corporation.

Negative report on "Instant Rehab"

An interim evaluation of the Instant Rehabilitation experiment by the Institute for Public Administration, a private New York City organization assigned the task of monitoring the project, is reported to seriously question the value of extensively renovating many of the city's old law tenements. The study is said to estimate that the rehabilitation costs were about \$25,000 a unit as opposed to the estimated cost of \$13,000 a unit. The New York Times reported that the institute tried to discount cost incurred because of the project's experimental nature. One consultant to the project has stated that with development work completed, it now should be possible to meet the figure of \$13,000. Even so, those familiar with low-cost housing point out that this is still expensive construction, merely for refurbishing very old buildings.

One HUD official is said to have attributed the high costs in part to "an outmoded building code that adds considerably to construction costs." An example given was that the present code prevented the use of a "certain kind of heating system." The RECORD had indicated in previous coverage of the project (January, May 1967) that the City building department would not issue certificates of occupancy to the first two renovated because venting of gas heating units in the core units did not comply with code.

Manufacturer to continue rehab experiments

Armstrong Cork Company has announced that it will undertake a second rehabilitation project. In April, Armstrong completed rehabilitation of a three-story row house in North Phila-

delphia at a total cost of approximately \$34,000. Now the company plans to refurbish seven single-family row houses in its home city, Lancaster, Pennsylvania. In the Philadelphia project the manufacturer was unable to do much to improve the exterior appearance of the building. But in Lancaster "a whole spectrum of exterior improvements" is being considered. Armstrong will incorporate as many of its flooring and building products as possible at Lancaster in order to evaluate their suitability for rehabilitation work. The company also hopes to learn whether substandard housing can be rehabilitated by private means on a profitable basis.

Full-scale fire tests conducted by NBS

New data on the effects of fire on both steel and concrete structures, and on building design and materials, have resulted from full-scale burn-out tests in experimental apartment-dwelling structures at Carteret, New Jersey. The tests, conducted by the Institute for Applied Technology of the National Bureau of Standards, included photographic records, visual observations, and instrument measurements of temperature, smoke, gas composition and deflection of floors and walls. The test building was designed and erected by Pratt Institute's School of Architecture under a grant from the Low-Income Housing Demonstration Program of the Department of Housing and Urban Development.

In both steel and concrete constructions, an appreciable amount of smoke penetrated the adjacent apartment after 20 minutes and the room directly above the fire after 45 minutes. There was no evidence of rupture, collapse, or other structural failure within the roof or floor assembly as a result of the fires, although an appreciable deflection of one floor system was observed.

Congress takes notice of the lumber standard hassle

After all the years of wrangling and the long series of softwood lumber standard proposals and rejections thereof, some prominent Congressmen have finally expressed views on the whole sorry affair. Apparently what aroused Congressional ire was a proposal by a special three-man panel, appointed by the Department of Commerce, that Congress pass a law giving Commerce the authority to impose a standard. The panel members were Dr. Chalmers W. Sherwin, Commerce Deputy Assistant Secretary for Science and Technology and the hearing chairman; Gerald A. Pollack, Commerce Deputy

Assistant Secretary for Economic Affairs; and Dr. George M. Jemison, Deputy Chief of the U. S. Forest Service. The panel had been appointed to hear views on questions relating to the recent rejection by the Department of the latest proposed lumber standard.

Representative Arnold Olsen of Montana vigorously criticized the Department of Commerce in these words, "The findings of the three-man panel are unbelievable, although they are not more unbelievable than previous actions by the Department and its agencies in the conduct of this travesty in the name of 'public interest.' It reflects the key problem in the Department—any opposition means no action.

"These recommendations are but a fitting climax to a comedy of errors which has imposed upon the softwood industry the mask of tragedy. The American consumer, I submit, has been the real victim of the vacillation and equivocation surrounding the minor officials of the Department and their activities or inactivities in resolving this issue."

New treatment helps wood shingles resist fire

Wood shingles and shakes, can now be successfully treated to make them fire-retardant, according to Ralph H. Bescher of the Kopper Company's Forest Products Division.

The search for the solution, he said in a talk before the National Fire Protection Association began shortly before the 1961 Bel Aire fire in Los Angeles, which destroyed more than 500 buildings at a cost of \$30 million. This conflagration "forcefuly showed the hazard of spread of fire caused by flying brands"—fragments of burning shingles carried aloft by air currents and coming down sometimes miles distant to ignite brush and wood shingle roofs of other buildings.

Wood shingles and shakes treated by the process now qualify or the Underwriters' Laboratories "Class C" label which signifies the roof covering is effective against light fire exposure. This is the same rating given the asphalshingle typically used on dwellings.

Permanency of the treatment, said Mr. Bescher, is indicated by the fact that Western red cedar shingles and shakes put through a test simulating 800 inches of rain beating on a roof over a 10-year period retained their fire-retardant characteristics. They were subjected to tests of flame exposure, spread of flame, resistance to burning brands, and generation of flying brands. Untreated shingles were tested in the same way for comparison.

PRESTRESSED FOUNDATION RESISTS ROOF THRUSTS

Piers and ties between piers were post-tensioned to take shell loads

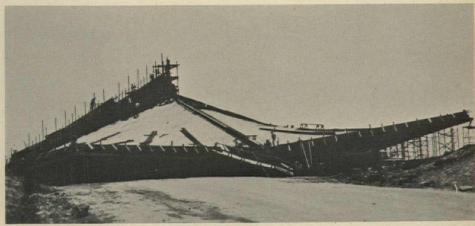
By R. M. Gensert, R. M. Gensert Associates, Structural Engineers

Four hyperbolic paraboloids, one of which is tipped above the other three to form a clerestory, work architecturally to help unite the congregation and sanctuary of Holy Trinity Church near Pittsburgh. But the simple geometry of the individual hyperbolic shells belies the complexity of foundation design which has to resist shell thrusts imposed unsymmetrically to the four piers.

The foundation problem arises from the fact that the roof structure is unsymmetrical about all centerlines but one. For this reason the thrusts of one roof shell are different in magnitude and direction than those of the adjacent shell. These thrusts are resisted partly by steel ties located below grade between the piers and partly by the internal shear resistance of the piers. The ties (cables) were prestressd to keep the piers from being overstressed. Ordinary ties would have stretched under load (elastic elongation), causing excessive load to be thrown into the piers. On the other hand, prestressing for both dead and live load could have overstressed the piers in a reverse manner. For this reason, the ties were prestressed for dead-load conditions and continuously reinforced for live load conditions. This could be done because full live-load seldom, if ever, occurs.

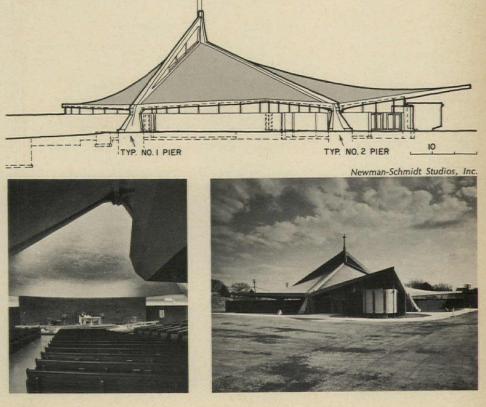
Since the piers were subjected to bending as well as to shear stresses, the piers also were prestressed (see photos page 175).

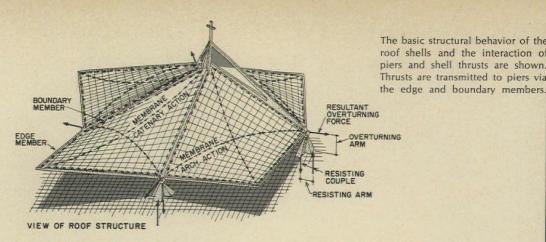
The ties had to be placed at varying elevations at the four piers in order to balance the overturning forces caused by shell thrusts—the reason being that the rock could withstand only a minimum amount of unbalanced pressures. In the case of pier 3, it was necessary to extend the pier 15 ft deeper into rock than for the other piers, because the rock at the nigher elevation was of insufficient quality and quantity. If both ties at pier 3 had been placed at the lower elevation, the resisting moment would have been arger than the overturning moment. To overcome this problem, one tie was lo-



Forming of the four shell segments was simplified because of the "straight-line" geometry of the hyperbolic paraboloid. Over-all maximum dimensions of the roof are 190 by 180 ft; roof area is 18,000 sq ft. Note at the top of the photo the clerestory opening, provided by tipping one shell above the three others. The two side shells are the same shape; back and front are different.

From the outside the higher shell elevates the apex of the church; inside its greater height, together with daylighting from the clerestory, gives a spacious feeling to the nave.



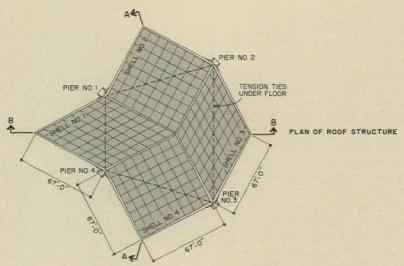


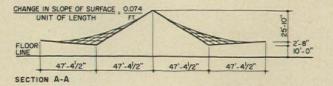
cated at the elevation normal to all other piers, and the other tie was located at a lower elevation, such that the overturning moments and the resisting moments at the pier were in balance.

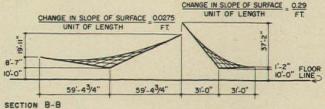
Controlling shell movement due to temperature change

The shells have a tendency to move due to temperature change. During the day, the sun heats the top surface of a shell causing it to elongate more than the bottom surface. This temperature differential, if shells were left unrestrained, would produce downward deflections of the cantilevered portions of each shell. At night, the top surface would cool, and cantilevers would recover their previous deflections. Since the building has continuous glass under the perimeter of the roof, it was necessary to provide vertical steel ties, one on each side of a cantilever, to restrain downward shell movement in order to prevent cracking of the glass. The ties were designed to withstand tension or compression, depending upon the action of the shell under various temperature conditions. The ties were not installed until after formwork had been decentered and shell movement could be observed and measured. The ties were fixed in place when the shell movement had reached mid-point between maximum and minimum deflection. There are two ties for each shell, each about 10 ft from the cantilever tip.

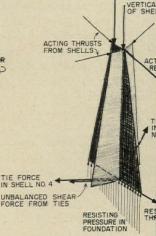
After observing movement due to temperature for several weeks, the engineers decided to measure the strains in edge members and the 41/2-in. shell slabs. Photoelastic strain gages were mounted at various points, strip-type gages to measure strain in any one direction, and rosette gages to determine the direction of maximum principal stresses. Strains were computed by measuring the displacement of color fringes on the photoelastic gages. Strain gages on the shells indicated either a general expansion or contraction of the roof, uniform in all directions and originating from the crown of the roof. Strip gages on the



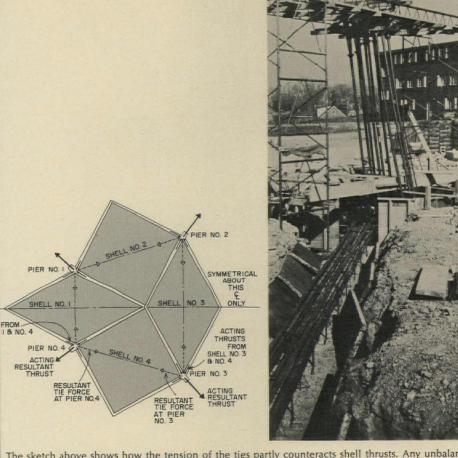




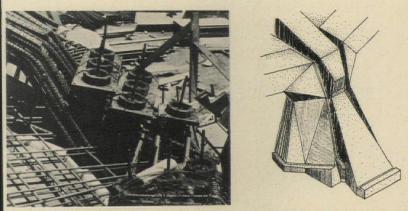
Tension ties (shown in roof plan above) take part of the shell thrusts. They were prestressed to counteract the tendency of steel to stretch. An alternate scheme of ties connecting piers diagonally would not provide enough stability for piers, nor would it serve as a means of prestressing a tie for each shell in the group.



RESTRESS

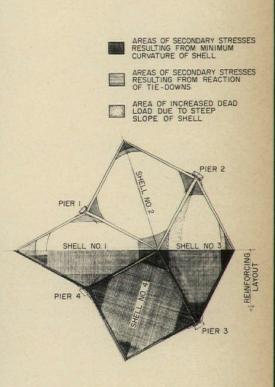


The sketch above shows how the tension of the ties partly counteracts shell thrusts. Any unbalanced forces have to be resisted by the piers themselves. Since the piers are subjected to bending as well as shear from the thrust of shells, they are prestressed. Photo above shows prestressing cables in place for tie members (in trench) and for piers (held by scaffolding).

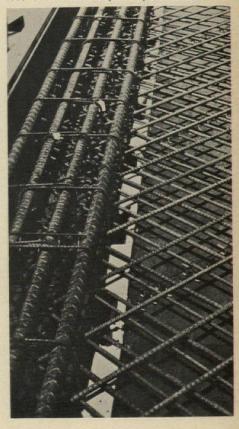


The basic shape of the piers was derived from the need to have sufficient bearing area as well as resistance to shear; faceted design helps "break up" the over-all mass.

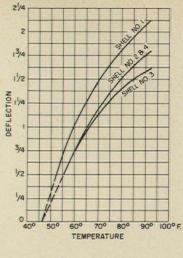




Drawing above shows how steel reinforcement pattern (lower half) corresponds to types of stresses (upper half). Reinforcement was increased for areas of secondary stresses resulting from: 1) minimum curvature of shell; or 2) reaction of the tie-downs (which keep the shells from rotating downward and crushing the glass). The dotted area indicates the increased load due to the steeper slope of shell no. 3.



The sun's heat caused the shells to flatten out because of greater expansion on the top side than on the bottom. Since shell no. 1 had the greatest movement (maximum deflection at tip was 21/8 in.) more strain gages were affixed to it for study purposes than to the other shells. Sketches below indicate nature of shell movement.



INCHES

edge members confirmed the condition of a linear elongation of edge beams, combined with bending when the top surface was hotter than the bottom due to heat of the sun.

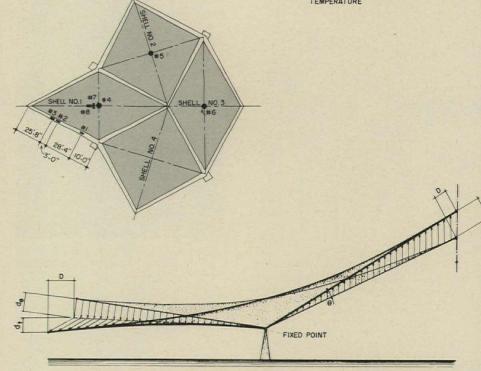
Stress values, converted from strain measurements, were higher than would be expected due to the temperature differential itself (3,860 psi at gage no. 1). Since the concrete had not cracked, it was concluded that the strains measured by the gages and the deflections did not reflect loading conditions from thermal effects alone; rather they were presumed to be due to free distortions of the structure that was undergoing volume changes as temperature varied. In other words, the concrete had not yet fully cured, and so restraint was less than it would be when concrete had gained fuller strength.

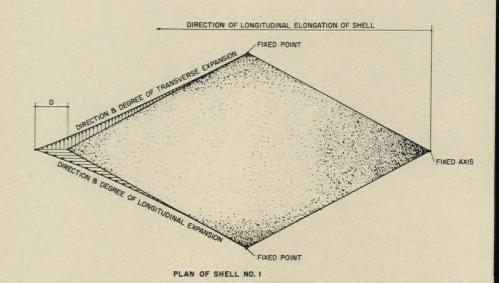
Loads had to be carefully sequenced to avoid overstressing

During the construction process, stresses were introduced into the structure in a uniform way, commensurate with the various capacities of shell slabs, ribs, and ties. Reversal of stresses from prestressing was as critical as the effects of dead load of the structure.

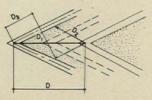
To prevent overstressing of the structure during decentering of formwork, it was necessary to shorten the shores in progressive increments, working from zones of maximum deflections toward zones of minimum deflections. First, shores under the ribs and near the piers were completely removed; then shores at the center portion of each shell slab were shortened by one full turn; the zone immediately adjacent to this was shortened by one-half turn; and the next adjacent zone by one-quarter turn. Finally, the ribs were decentered working from their free ends toward their supports at the piers.

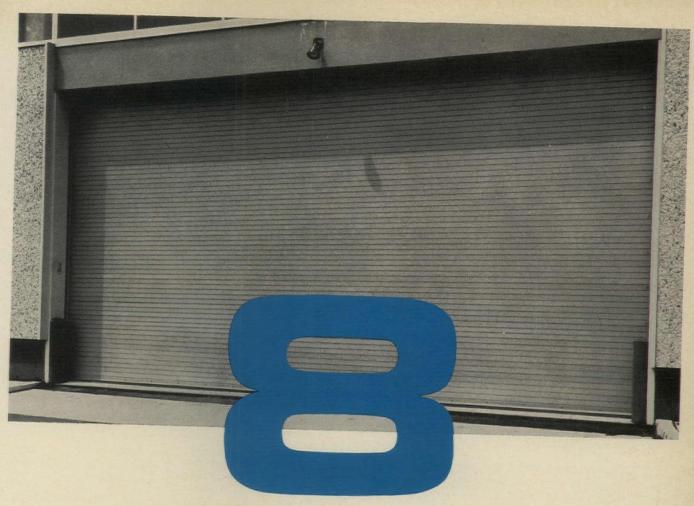
HOLY TRINITY ROMAN CATHOLIC CHURCH, Moon Run, Pennsylvania. Architects: Williams-Trebilcock; consulting structural engineers: R. M. Gensert Associates, Miklos Peller and Lyle Amiet, project engineers; contractor: Charles F. Campbell, Inc., Richard Ellsworth, in charge.





ELEVATION OF SHELL NO. I





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For more data, circle 92 on inquiry card

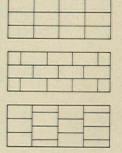
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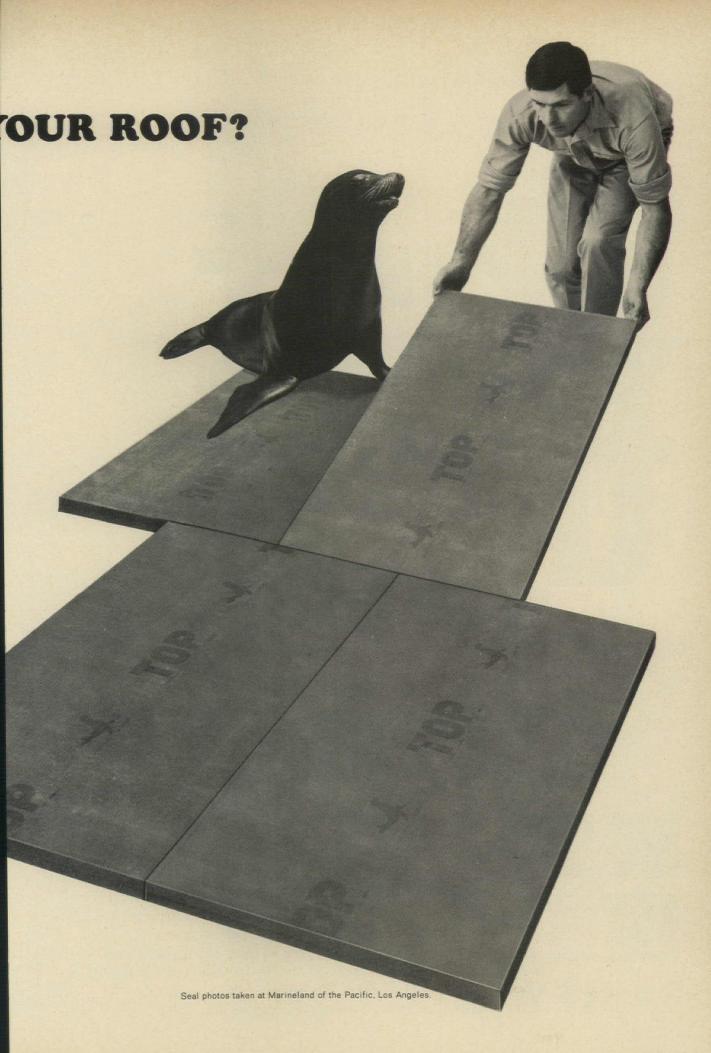
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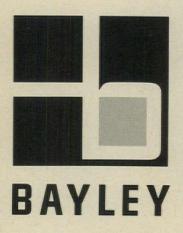
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For more data, circle 94 on inquiry card

Research shows how to construct successful tile-metal lath partitions

A good ceramic tile installation is always a case of the right materials, right methods, and right techniques used in the right places. This has been reaffirmed by recent studies of tile installations on steel stud/metal lath partitions.

When some difficulties and doubts about tile's suitability for metal lath arose, the Tile Council of America undertook a year-and-a-half study to find out why. The trade association's Princeton, N.J. research center discovered that there are some important "do's" and "don'ts" involved when ceramic tile is asked to be its own wall (i.e., minus the rigid support of a structural backing).

Lean, thin mortars—not exceeding one inch from the lath to the back of the tile—and hard, well-cured grouts, the Tile Council researchers found, go a long way toward taking the risk and mystery out of this type of installation. Other recommendations include: 1) the use of diamond mesh lath, expanded 3.4 lbs./yd. tied securely to the studs and lapped one inch horizontally and vertically; 2) a long cure, preferably as much as 10 days, for the mortar; 3) dry-set mortar for setting ceramic mosaic tile; and 4) the use of a polyethylene film for three days over tile grouted with dry-set grout.*

An improper portland cement mortar installation of ceramic tile on metal lath actually can be self-destructive, the Tile Council found. When tile is set on lath with mortar that is too rich and more than one-inch thick, the stresses caused by the inevitable shrinkage of the mortar are excessive.

In the first few months of their study, the Tile Council researchers saw rich mortar installations of wall tile bow, crack and lose bond within six weeks of construction. Cracks formed in the mortar and went through the tile. Bond loss started at cracks in the bed and at the edges of the walls and progressed, slowly or rapidly, across the walls.

Very different results came, however, from the experimental walls set with lean mortars, for scratch coat and setting bed, of one part portland cement to one-half part lime to four parts dry sand by volume. These proved that ceramic tile on steel stud partitions can and do resist mortar's dimensional instability.

The researchers also said the neat portland cement bond coat for the conventional setting of wall tile should be applied to the firm float coat in a continuous layer not exceeding 1/16-in.

* The Tile Council's 1967 Handbook containing the reference details for metal lath installations is available from the Tile Council of America, 800 Second Avenue, New York, N.Y. 10017. thick. Dry-set mortar must be as specified by the manufacturer for wall tile. And it should be applied with a notched trowel to cured portland cement.

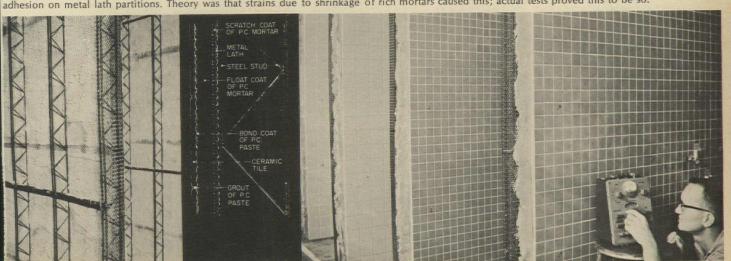
The longer the mortar is allowed to cure—up to 10 days is recommended—the safer the tile installation will be. Tests showed that in normal conditions a next-day installation with dry-set mortar is all right, but it is least desirable.

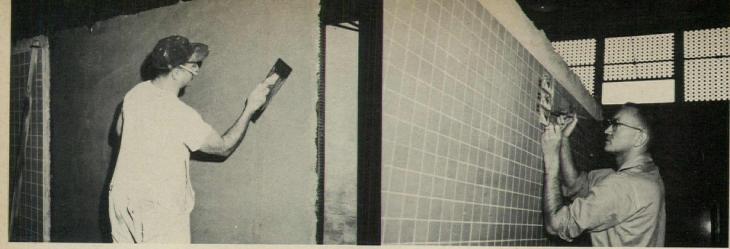
Analysis reveals varied patterns of stress in varied installations

At the beginning of the study a basic stress analysis revealed the potential stresses possible with variations in thickness and richness of the mortar bed. The accompanying graphs show the result of this analysis. While it has been found that actual stresses seldom are more than one-tenth as severe as those calculated, the relative magnitudes remain valid.

Both conventional and dry-set installations of wall tile performed well every time during the tests when mortars were lean and thin. Dry-set installations of ceramic mosaics did, too. But ceramic mosaics set in the conventional way showed some loosening. Therefore, the Tile Council does not recommend this method for the small tiles. When ceramic mosaics are being set on metal lath partitions, the dry-set mortar should always

At the Tile Council's Research Center, 20 separate test walls, 8 by 8 ft, were built and instrumented to determine the reasons why ceramic tile may lose adhesion on metal lath partitions. Theory was that strains due to shrinkage of rich mortars caused this; actual tests proved this to be so.





Electrical strain gages were applied to tiles of test walls in order to follow behavior (right). It was found that lean mortar back-up, properly cured, plus hard grout for tile joints, would produce good results; dry-set mortar applied to portland cement mortar should be used with mosaic tiles.

be spread on the wall not on the sheets.

Of course, regardless of the mortar used, all partitions must be plumb and flat within one-quarter inch of true, top to bottom, at corners and in plane.

Hard, well-cured grouts improved tile's resistance to bond loss

On the experimental walls of rich mortar, which itself made them susceptible to failure, soft punky grout caused rapid bond loss everywhere. When the same kind of walls had hard, well-cured grout, failure did not occur as quickly or as completely.

For grout to be hard it must be damp cured for at least three days. In dry-set mortar installations the grout must be covered immediately after the grouting job is complete. The next day the wall must be wetted down and the cover replaced. As a cover, polyethylene film is effective, easy to use and inexpensive.

If the hard grout is to be effective the joints must be completely filled. Spacing mix of mosaic tiles does not permit complete filling of the joints, and this is another reason for not setting ceramic mosaics conventionally.

When wall tiles are soaked before being set conventionally, grout usually cures hard without any help. But in unusually dry conditions, covering the wall after grouting is a reasonable precaution.

The Tile Council's study has shown that a membrane behind the wire lath, such as building paper, is not a necessary part of a ceramic tile installation. In fact, in normal dry areas no membrane should be used.

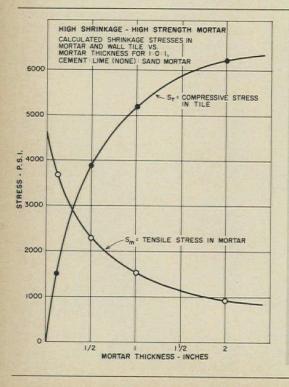
Two distinct shrinkage effects were uncovered in the study

The shrinkage effects are of two kinds, with regard to their nature, the time they take place, and their seriousness.

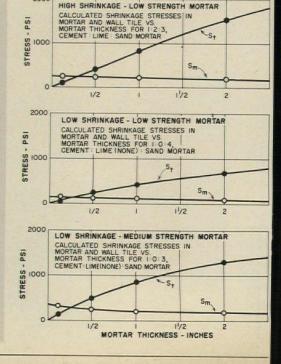
The first, which occurs during about the first week, is called shrinkage gradient effect. The mortar layer shrinks faster on the lath side, where it is exposed to air, than on the tile side, resulting in a non-uniform or "gradient" shrinkage. With the high-shrinkage mortar, test panels showed noticeable bowing due to

this phenomenon—as much as 1½ in. This bowing effect, if not minimized, can cause tiles to "pop" off partitions.

The second kind of shrinkage effect, unrelated to the gradient effect-and occurring later-results when the mortar shrinkage builds up tensile stresses in the mortar, inducing compressive stresses in the tile. Theoretically these stresses could be quite high. That they are not is due to the fact that the mortar "creeps"; in other words, during the curing stages the mortar does not offer much resistance to shrinkage, and tensile stresses do not build up very high. Advantages of lean mortars are that not only do they have less shrinkage, but they have higher creep rates than rich mortars. The dangerous strains are not the ones applied early when the creep is likely to be at a maximum, but rather the sharp smaller strains applied later as by sudden humidity drop (when the heat is turned on in a building). These strains are dangerous because the creep capacity is less when hydration of the mortar is more complete and its moisture content lower.



These graphs show theoretical stresses resulting in mortars and ceramic tile due to shrinkage of the mortar. While the actual stresses are less than 1/10 as great, the shrinkage is enough with "rich" (high-shrinkage) mortars to cause tiles to lose bond at the tile-mortar interface. Actual stresses are less than theoretical because of "creep" in the mortar during the curing period. Lean mortars are best because they shrink less than rich mortars and their "creep" is greater.



For more information circle selected item numbers on Reader Service Inquiry Card, pages 285-286

GLASS WARRANTY / The regular 10-year warranty on *Thermopane* insulating glass has been extended to 20 years. *Thermopane* with the *Bondermetic Seal* is composed of two or more lights of glass separated by a space of dehydrated, captive air, hermetically sealed around the edges at the factory with a metal-to-glass bond. The units can be manufactured with glare- and heat-reducing glass in the outside light for eye comfort and heat control. • Libbey • Owens • Ford Glass Company, New York City.

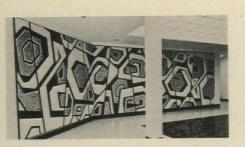
Circle 300 on inquiry card



FLYASH BRICK / A pilot plant, contributing to a project being developed by the Coal Research Bureau, West Virginia University, is exploring the economic and technical feasibility of converting flyash into a marketable brick, while contributing to a cleaner atmosphere. Flyash, an air pollutant, is found in smokestack gases (at the rate of 20 million tons in the U.S. in 1965) during the burning of pulverized coal. Cost of dumping the approximate 90 per cent of flyash that cannot be used for conventional asphaltic concrete, building block, grout, soil stabilization, cement and light-weight aggregate is high.

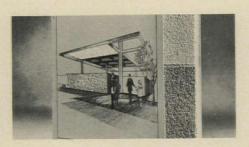
Nearly three-fourths of the new brick is the flyash. This is blended with a coarse aggregate (such as the bottom ash produced at the same time as the flyash) and precise small amounts of sodium silicate. The brick comes in standard reds, buffs, and whites, with an extremely smooth surface. Extensive tests indicate that the brick is at least comparable to regular brick. Diamond Chemicals, Cleveland.

Circle 301 on inquiry card



AGGREGATE WALL MURAL / Jan Armata designed this mural which is executed in aggregate surfacing applied over a specially pre-formed base to achieve a three dimensional effect. The substrate for this application at the William Hands Special Vocational School in Windsor, Ontario is concrete block which was leveled with a plaster coat. Sculptured styrofoam shapes and 45 deg foam glass edges were put into place using a wet scratch coat as the adhesive. A tight scratch coat was applied over the entire sculptured surface. Each section or shape was stripped with wood to set off the various relief depths or patterns prior to the application of the bedcoat. After adequate masking or outlining of the separate surface areas, the particular finish for each area was applied. Finestone Corporation, Detroit.

Circle 302 on inquiry card



SAND-SURFACE PANELS / Asbestos reinforced *Glasweld* panels now have a sand surface. The fine aggregate face of the sand panels is a controlled silica, and the binder is of the same tenacious formula used for coating regular *Glasweld*. The product is completely incombustible and panels are guaranteed for structural integrity for the life of the building. They also carry color-fast guarantees. U.S. Plywood, New York City.

Circle 303 on inquiry card

DRAFTSMAN'S PENCIL / An automatic lead holder, the *PumPencil*, pumps lead at a calibrated length of one thirty-second of an in. per stroke. The superfine lead is thin enough to eliminate pointing, but resists breakage. The refillable pencil holds a yard of 0.8 mm graphite lead (in 17 grades), or *Film-King* lead (in 4 grades). These leads are guaranteed not to smear on polyester films. • L. L. Ridgeway Enterprises, Inc., Houston.

Circle 304 on inquiry card



CEILING PANELS / Polarized light and sound control are combined in a glarefree, low-brightness luminous panel. Multilayer polarizing units are of doublepanel construction using light-stable vinyl. Units are self-extinguishing with a flame spread of 25 and are approved for installation under sprinkler systems. Available in 2 ft by 2 ft squares, the panels are designed basically for commercial and institutional installation, but are also used in residential kitchens and bathrooms. Polrized Corporation of America, Northridge, Calif.

Circle 305 on inquiry card

BUILDING PANEL / Alsynite/Structoglas panels (reinforced fiberglass) are available in a line that is both translucent and UL rated for a flame spread of 25. The panels are high-strength, impervious to weathering, shatter-proof, and corrosion resistant. They are said to be ideal for industrial skylighting, side wall construction, schools, and metal buildings—any use requiring the utmost safety.

Reinforced Plastics Div., Reichhold Chemicals, Inc., Cleveland.

Circle 306 on inquiry card

more products on page 188

For more information circle selected item numbers on Reader Service Inquiry Card, pages 285-286

GLASS COATING / A brochure presents test results and illustrations of glass flake epoxy coating, available in 12 colors. The material may be used on concrete, plaster, metal or wood surfaces and is reported to be highly resistant to acids, industrial fumes, and weathering. Armstrong Paint & Varnish Works, Inc., Chicago.*

Circle 400 on inquiry card

METAL DECK STUD WELDING / Shear connector studs that can be end-welded directly through the metal deck to achieve composite action are illustrated in a 12-page technical brochure. Costsaving benefits and techniques are documented. ■ Gregory Industries, Inc., Lorain, Ohio.*

Circle 401 on inquiry card

LIGHTING / 12-page brochure offers a complete line of wood-appointed fluorescent lighting devices. Included is a walnut bookshelf which provides high intensity, diffused lighting for study areas. Lamar Lighting Co., Inc., Freeport, L.I., N.Y.

Circle 402 on inquiry card

STEEL ROOF BEAMS / An 8-page brochure describes a ready-made roof "package" including four stock-size beams and purlins, trim, and accessories. Drawings show how the beams can be inverted and combined for continuous slope, multi-span arrangements of unlimited widths. • The Ceco Corporation, Chicago.*

Circle 403 on inquiry card

AIR CONDITIONING / The 1967 Directory of Certified Room Air Conditioner Models lists 1,579 models of 54 brand name participants. Both window and through-the-wall installation designs are covered. National Electrical Manufacturers Association, New York City.

Circle 404 on inquiry card

CERAMIC PLANTER DESIGNS / A catalog totalling 37 pages contains full-page color photos of the design series and reproductions of 12 high-chrome matte glazes.

Clay Design, Los Angeles.

Circle 405 on inquiry card

BUILT-UP ROOFING SYSTEMS / A 52-page manual defines the architect's responsibilities for built-up roofing performance during design, application, and maintenance stages. A special section explains frequently misunderstood terms and conditions of roof bonds. Owens-Corning Fiberglas Corporation, New York City.*

Circle 406 on inquiry card

AIR CONDITIONING / Residential and commercial applications as well as a "total comfort system" for year-round climate control are described in a 12-page bulletin. • Westinghouse Air Conditioning-Sturtevant Divisions, Staunton, Va.*

Circle 407 on inquiry card

WHITE MASONRY CEMENT / Eight pages of full-color illustrations show walls demonstrating the color effects produced with white mortar.
General Portland Cement Company, Dallas.

Circle 408 on inquiry card

STEEL FIRE DOORS / Construction features, ratings and hardware flexibility are demonstrated in an 8-page brochure. Amweld Building Products, Niles, Ohio.

Circle 409 on inquiry card

PAINTS AND PRESERVATIVES / A 4-page brochure describes products for protecting wood bleacher seats and woven wire fences, a rust preventive for recreational and playground equipment, and a paint additive which assures smooth application of oil, varnish or asphalt-base paints. ■ The Flood Company, Hudson, Ohio.

Circle 410 on inquiry card

FLEXIBLE SPACE SYSTEMS / A 12-page guide for designing buildings that have changing space requirements includes sample plans and a six-point checklist for maximum effectiveness. The systems illustrated are designed around 5 ft sq modules which provide a building nucleus consisting of a roof/ceiling sandwich and supporting columns. Rheem Manufacturing Company, Paramount, Calif.*

Circle 411 on inquiry card

BEAM STRENGTH THEORY / The "weakest link" theory for calculating strength and load-carrying capacity is defined in a 36-page report. New data on char formation rates of three widely-used woods in heavy construction is given. Insulating value of hardboards and other woodfiber building boards are among the topics discussed. • U.S. Forest Products Laboratory, U.S. Department of Agriculture, Madison, Wis.

Circle 412 on inquiry card

BATHROOM PRODUCTS / Over 100 models of bathroom cabinets, mirror-doors and wall mirrors are shown in a 32-page catalog. • The Grote Manufacturing Company, Madison, Ind.

Circle 413 on inquiry card

EXPANSION JOINTS / A 24-page manual describes a complete line of non-metallic joints and flexible couplings. A technical section details recommended sizes, dimensions, allowable movements, and forces to compress, deflect or elongate. ■ Garlock Inc., Palmyra, N.Y.

Circle 414 on inquiry card

BALL BEARING HINGES / All hinges shown in the 5-page brochure feature 3-knuckle construction with pins and plugs concealed in the barrel, fully concealed bearings, and self-lubricating sleeves for lateral wear. • Hager Hinge Company, St. Louis.

Circle 415 on inquiry card

FOLDING FURNITURE / An information source for study carrels, electronic classroom desks and mobile listening centers describes equipment for various phases of audio-visual instruction. • Howe Folding Furniture, Inc., New York City.

Circle 416 on inquiry card

FIRE PROTECTED WOOD / A 16-page brochure points out many reasons why fire protected woods have received building codes recognition and are gaining wide acceptance as a construction material.

Koppers Company, Inc., Pittsburgh.*

Circle 417 on inquiry card

^{*} Additional product information in Sweet's Architectural File



They're a whole new idea in masonry facing—look like stone, weigh far less, and they come with the patterns built right in.

Now you can add unique patterns and texture to your building exteriors—at a fraction of the weight and expense of other masonry materials.

Made by the new Johns-Manville ACE (asbestos-cement extrusion) process, stone-hard Colorlith panels are available from stock in a variety of continuous ribbed patterns. And in contrasting meerschaum white and stone gray colors with a textured

sand-blasted surface. Also available is a natural color (smoke) with a sand or aggregate surface. You can extend a distinctive pattern vertically to the full height of the building, or alternate plain and ribbed panels horizontally for fresh design effects.

ACE Colorlith panels let you design new economy into your buildings, too. They weigh only a fraction as much as precast concrete panels. Two men can carry a 12-foot panel, so cranes are not needed. Because of less weight, structural framing can also be reduced. Maintenance costs

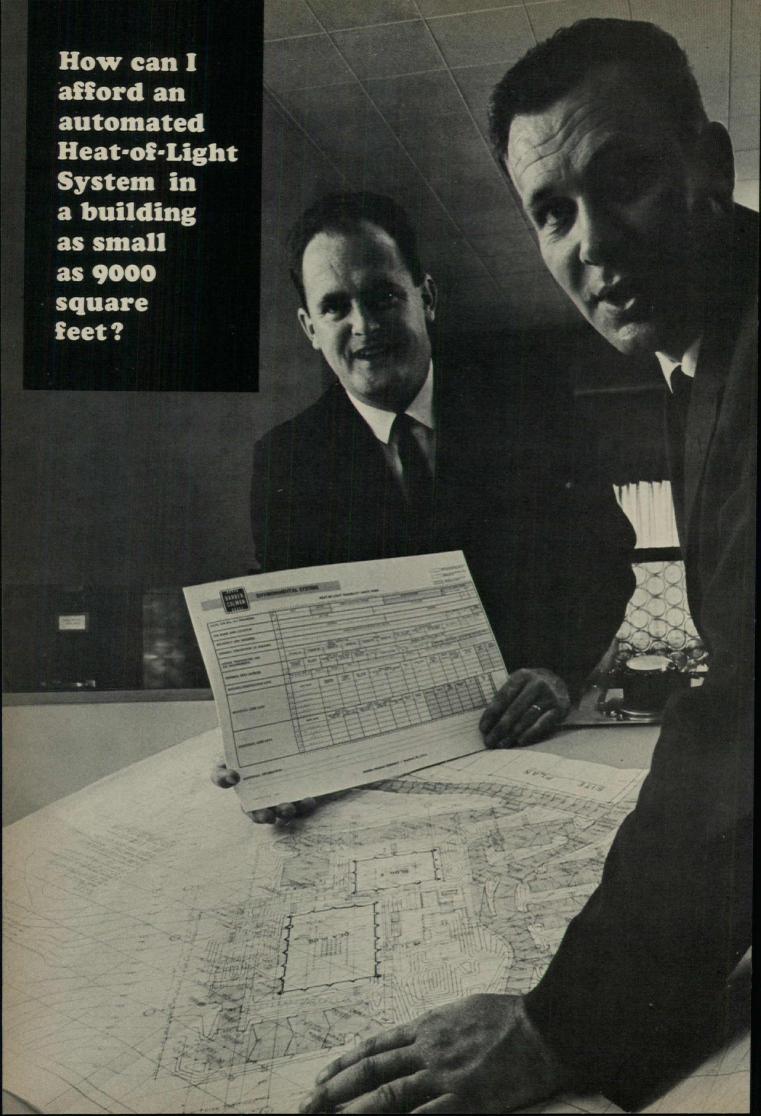
are minimal with a material that's proof against fire, weather, rot and corrosion—and free from the veins of weakness in natural stone.

Explore with us the possibilities of ACE Colorlith panels for your next design. Write for details on stock panels, and information on how we can work with you in developing custom patterns.

Johns-Manville, Box 111, New York, N. Y. 10016.

N. Y. 10016.

Johns-Manville



"Automation is only for BIG buildings."

piffle!

A Barber-Colman automated Heat-of-Light System can be installed profitably in almost any size building with a standard lighting level of 100 foot-candles or more. And you can specify as much, or as little, automation as you want or need. It's flexible ... and e-x-p-a-n-d-a-b-l-e, too. Clip coupon for more facts.

When you specify Barber-Colman, you get exactly the amount and type of automation you want or need . . . no more . . . no less. Barber-Colman offers all types of control: electronic, electric, pneumatic, electronic-pneumatic, and hydraulic. All compatible with Selectronic Control Centers.

Unique single-source responsibility for climate control

Barber-Colman is the *only* company in the industry offering single-source supply *and* responsibility for all your air distribution and automatic control requirements. What's more, Barber-Colman's complete line gives you and your consultants the design freedom to specify any type of control required. (Barber-Colman can be impartial—we furnish them all).

Innovator in latest types of automatic control

Among the unique B-C controls available is an economical electronic-pneumatic transducer that lets you add electronic flexibility to the basic simplicity of pneumatic actuation. Among the newest controls available are the electronic solid-state proportional unitary fan speed control and SCR time-proportioning electric heat controllers for use with Heat-of-Light and electric heat systems. Barber-Colman introduced both. And our new electronic Microtherm can now be specified for low-cost zone control.

Among the many control functions that can be included in your B-C Selectronic Control Center are temperature indication, individual system slide projection, set point adjustment, motor start/stop, system analysis with multipoint recorder, data logging, system scanning, off-normal and alarm annunciation, and variable demand programming. If you need a computer added for dynamic optimizing, we will add this too.

Costs no more than old-fashioned systems

The installed cost of an automated Barber-Colman Heat-of-Light System for a typical small-to-medium-size building is only \$2 to \$5 per square foot. Operating costs are extremely advantageous. All reheat and some of the heating come directly from the

lights - energy that you have already paid for.

Automated HoL Systems for every need

The Heat-of-Light concept has caught on fast. There are hundreds of installations from coast to coast. City, county, state buildings . . U.S. Government agencies . . colleges and universities . . . grade and secondary schools . . . supermarkets, hospitals, and clinics. No building is too large . . . and no building over 9000 square feet is too small for Heat-of-Light . . . and the right amount of automation!

Get all the facts

Barber-Colman will be glad to make a free computerized Feasibility Study to determine (1) if a Heat-of-Light System is feasible and (2) which variation is best suited to your project.



BARBER-COLMAN COMPANY

ROCKFORD, ILLINOIS 61101
... where originality works for you
In Canada: BARBER-COLMAN OF CANADA, LTD.
Weston, Ontario

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7	Please have your local rep	resentative	call	me to	arrange
	a computerized Feasibility	Study.			

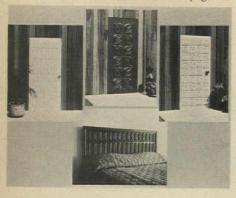
Please send me your new booklet on the Barber-Colman Heat-of-Light System.

Name_____

Company____

Street______State____Zip Code____

continued from page 183



SCULPTURED DOORS AND PANELS /

A residential and commercial series is thermoformed of impact-resistant Kydex. acrylic-modified polyvinyl chloride sheet. Panels and doors are light weight and durable and come in four patterns and eight colors. All doors are 13/4 in. thick and have hardwood edges that permit trimming to fit openings. Sheets of the Kydex are applied to a hardwood frame and the core area is filled with rigid polyurethane foam which provides thermal and sound insulation. The wall panels are made of a single thickness of .080-in.thick Kydex. They can be applied with contact cement. Rohm and Haas Company, Philadelphia.

Circle 307 on inquiry card



OFFICE FURNITURE / This reception desk is in two units, one with file and drawer space, the other with a glass top. Made in walnut oil finish. Vladimir Kagan Design, New York City.

Circle 308 on inquiry card



BRONZE TABLES / Hard edge and soft gleam are part of a collection of four tables designed by Sam Mann. Original designs are hand-etched and engraved in acid, and reproduced on metal—no two table tops are identical. A final coating resists alcohol, water and cigarette

burns. Each table is signed by the artist.

Selig Manufacturing Co., Inc., New York City.

Circle 309 on inquiry card



FURNITURE / This lightweight easy chair has an anodized aluminum tubular frame, thick foam rubber seat cushion, and fiber-glass back. It is upholstered in "Cosmos," a wool fabric by Grete Jalk from Unika Vaev. Also matching ottoman. Fritz Hansen, Inc., New York City.

Circle 310 on inquiry card

VERSATILE SEATING / Using various combinations of this single seat and table unit on the metal beam allows many seating arrangements. Groupings of up to seven seats in a row are possible. Tables and seats may be interchanged on different beam lengths with three table sizes and several shell finishes. Plastic lami-



Classroom Counter-Top Fountains Complete "self-rimming" type pre-assembled for easy installation. Stainless steel receptor has push-button-operated, two-stream projector with automatic stream control. Goose neck glass-filler faucet optional. Also available in porcelain-enameled cast iron.

MODEL No. 5641



Automatic Freeze Protection

For outdoor installations exposed to freezing temperatures. Automatic frost-proof supply valve and drain assembly provide complete draining into plumbing cabinet mounted on interior wall face. Available in stainless steel or porcelain-enameled cast iron.

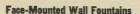
MODEL No. 5901

ARE YOU GETTING THESE EXCLUSIVE

Fully-Recessed Wall Fountains

Stainless steel drinking fountain with self-closing lever handle and removable drain strainer plate. Push-button, glass-filler faucet and matching cuspidor with flushing jet optional. Exposed fittings chromium plated. Also available in heavy vitreous china.

MODEL No. 5804



Integral-trap housing, concealed wall hanger. Self-closing, cross handle stop with automatic stream regulator and two-stream, mound-building projector. Choose from 3 models. Push-button glass filler optional. Available in stainless steel or heavy vitreous china.

MODEL No. 5913







nates are used for the seat and back shells. • Joerns Furniture Co., Stevens Point, Wisc.

Circle 311 on inquiry card

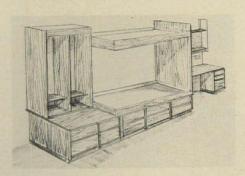


FIREPLACES / Flambeau installs flush to a wall or into a wall, or it can be free-standing as room divider with or without a flue. It can be a woodburning, gas, or



electric unit. The Donley Brothers Company, Cleveland.

Circle 312 on inquiry card



DORMITORY BUNK / A three-in-one bunk bed wardrobe-desk provides efficient use of dormitory space. The unit is available in several versions. • Corco, Inc., Chicago.

Circle 313 on inquiry card



LIBRARY SHELVING / Rest-On-Wall provides total visual display and great arrangement flexibility. The system rests against any wall surface with no need for fastening to ceiling or floor. The patented metal uprights with cantilevered footpiece direct the center of the gravity to the vertical surface of the wall and the more weight placed on the unit, the more securely it is held in place. Built-in fingertip-adjustable No Mar levelers compensate for walls that are not plumb or unlevel floors.

Albert Voigt Industries, Inc.

Circle 314 on inquiry card

more products on page 196

Halsey Taylor VANDAL PROOF FEATURES?

- STAINLESS STEEL CONSTRUCTION WILL NOT CHIP, DENT, CRACK, STAIN, OR WEAR THROUGH.
- LOCK SCREWS TO PREVENT REMOVAL OF EXPOSED FITTINGS.
- SOLID FORGED-BRASS, CHROME-PLATED PRO-JECTORS AND CROSS HANDLES.
- · SOUIRT-PROOF, TWO-STREAM PROJECTOR.
- STURDY METAL PLATE COVERS BOTTOM OF WALL FOUNTAINS — PREVENTS TAMPERING WITH VALVES & FITTINGS.

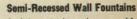
If you'd like complete information about Halsey Taylor drinking water equipment for schools and other public places, write for new catalogs:

- HALSEY TAYLOR DRINKING FOUNTAINS
- HALSEY TAYLOR ELECTRIC WATER COOLERS

Halsey Taylor.

THE HALSEY W. TAYLOR COMPANY 1560 Thomas Rd., Warren, O. 44481

For more data, circle 97 on inquiry card

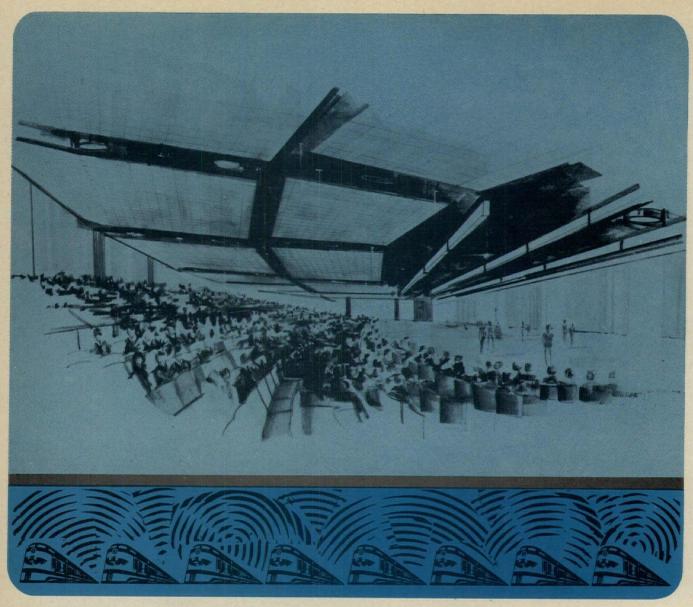


Stainless steel, semi-recessed fountain with self-closing, cross handle supply valve. Automatic stream regulator. Push-button glass-filler faucet and matching cuspidor with flushing jet optional. Exposed fittings chromium plated. Also available in heavy vitreous china.

MODEL No. 5800





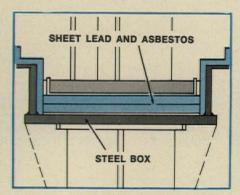


Lead-asbestos cushions let the Forum sit on Penn Station without feeling it

The rumble of trains rolling in and out of Penn Station directly below will never reach the audience in the Forum—an auditorium in New York's new Madison Square Garden Sports & Entertainment Center. They'll sit in vibrationless quiet because the entire amphitheatre is isolated from the rest of the building by lead-asbestos pads.

These pads—alternating layers of sheet lead and asbestos—are confined in steel boxes affixed to the main flooring over the station and to the supporting perimeter columns of the main building. The beams and supporting columns of the Forum fit into these boxes and rest against the insulating pads, effectively separating the Forum from the vibration-carrying elements of the main building construction.

Lead's limpness, density, mass, corrosion-resistance and versatility of form offer permanent answers to vibration and sound attenuation problems in buildings, aircraft, boats and machinery.



ST. JOE

ST. JOSEPH LEAD COMPANY

250 Park Avenue, New York, New York 10017
The Nation's Largest Producer of Domestic Zinc and Lead

PB-324



Vollrath walked in to the walk-in business...

with our eyes wide open

We're now manufacturing modular walk-in cooler/freezers.

How come?

After a thorough examination of the food service equipment industry and our role in it, we decided that the modular walk-in is a natural extension of our already large line of mobile equipment. So we walked in.

Frameless construction.

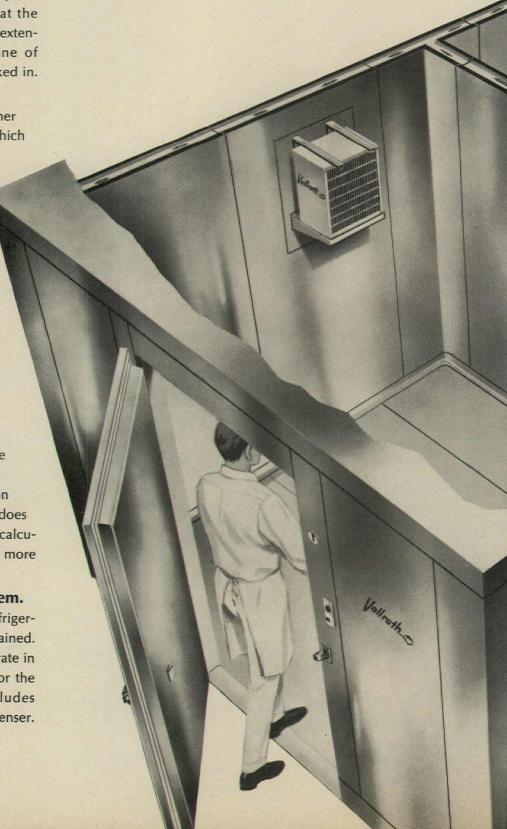
Rather than produce just another walk-in, we're offering units which incorporate the latest, most modern features. For example, we use foamed-in-place urethane insulated stainless steel modular panels for maximum rigidity and insulation qualities. (We use other metals, too.) This eliminates the need for wooden frames and braces. Tongue and groove panel ends insure a positive seal between modules.

The full measure.

Unlike other manufacturer's units, Vollrath walk-ins measure out to the full stated size. We don't short you a few inches on nominal dimensions. Not only does this simplify your own space calculations, but it actually gives you more refrigeration for your dollar.

Package refrigeration system.

Vollrath's compact package refrigeration unit is entirely self-contained. Ready to plug in, ready to operate in one-tenth the time required for the average remote system. Includes compressor, fan, coil and condenser.







CELWAY

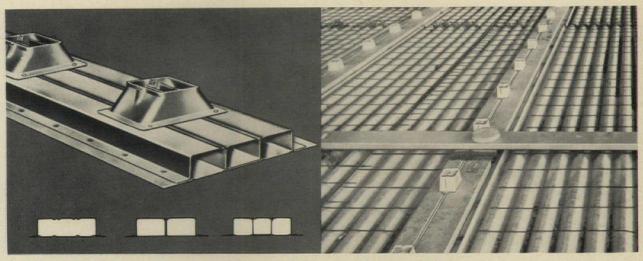
Puts Telephone, Electric and Signal Service Anywhere You Want it... in One Fitting

Instant success. It's Cel-Way, the in-floor electrification system that makes a success of any building. Cel-Way puts telephone service, electric outlets, even special signal service anywhere you want it today ... or anywhere it might be needed in the future.

New, architectural style fittings eliminate floor clutter. They provide outlets for either telephone or electric or signal service—or all three—in a single fitting. Even accommodate up to 5 telephone amphenol jacks in a single fitting. Twelve types available for a variety of service requirements.

Cel-Way is the practical, economical way to electrify floor slabs—a method that's compatible with all types of construction; slabs 2½" thick and up, for slabs on grade or concrete or steel frame construction.

Get complete information. See Sweet's File 1J/GR or write for Cel-Way product manual. Granco Steel Products Company, 6506 North Broadway, St. Louis, Mo. 63147. A subsidiary of Granite City Steel Co.



Factory-installed single, double or triple inserts can be spaced at any centering along cells to provide access to single, double or triple cells. Service fittings can then be installed at any desired location. Openings in inserts are designed to facilitate pulling large cables.

Cells and pre-set insert spacing can be designed to fit any building module, thus assuring widest flexibility of desk or equipment placement. Pre-set inserts eliminate noise, mess, and expense of core drilling through slabs for later relocation. Unique cell transitions provide practical way to get header ducts into thin slabs.



IMAGINATION IN STEEL



continued from page 189





LANDSCAPE EDGING / Made from steel plate and finished with a thick coat of paint, this edging promises to reduce grounds maintenance costs and give protection to driveways, athletic running tracks, parking areas, pathways, and flower beds. It provides a border between gravel and grass and stops weed growth along fenced areas—and a lawnmower will roll over it. Available in three weights.

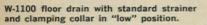
Joseph T. Ryerson & Son, Inc., Chicago.

Circle 315 on inquiry card



100 years designing drains to do the job better...





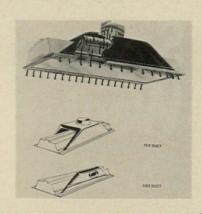


W-1100 floor drain with standard strainer and clamping collar in "high" position.

The W-1100 is a significant example of Wade's distinctive design and versatility. No other drain in its class can out-perform it. Check these exclusive design and installation features and find out why . . .

- Reversible strainer collar and clamp device permits maximum vertical adjustment of strainers.
- Wide slots in collar provide rapid secondary drainage.
- Available with ½" IPS trap primer connection and 25 strainer types.
- Two piece body construction with removable collar permits easier and faster caulking.
- Leveling thumb screws support drain body on soil pipe while yarning and caulking.
- Non-corrosive bolts secure clamping collar to body.

for the finest in design and service, specify...Wade

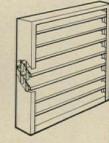


MULTI-PURPOSE LIGHT TROFFER / This unit, which incorporates interior heating, cooling and lighting, requires no additional air-diffuser units in suspended ceiling construction. The installation flexibility of Air/Light allows low-cost rearrangement of ceiling fixtures to accommodate changes in floor plan layouts. One suggested application is in open commercial structures where air flow requires balancing in volume and pattern.

Good Manufacturing Company, Inc., Chicago.

Circle 316 on inquiry card





ALUMINUM LOUVER / PressLok uses no bolts, welds, rivets or fastening devices to hold the blades in place: they are secured by internal pressure. The uniform stress distribution makes it impossible for blades to be knocked or pulled loose and the basic internal pressure principle is said to provide exceptional rigidty. M & T Engineering Co., Chicago.

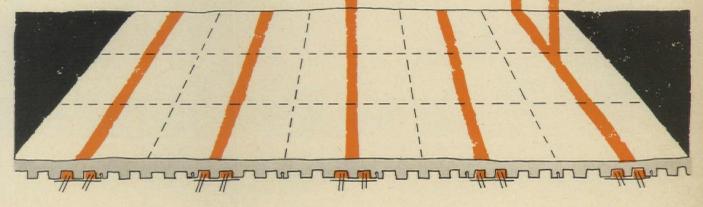
Circle 317 on inquiry card

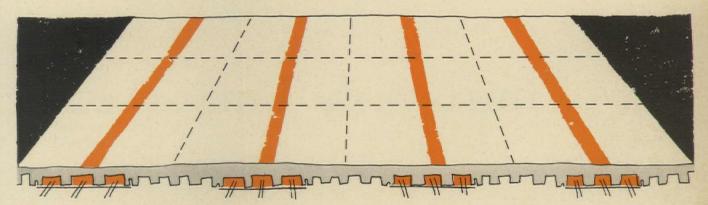
more products on page 200

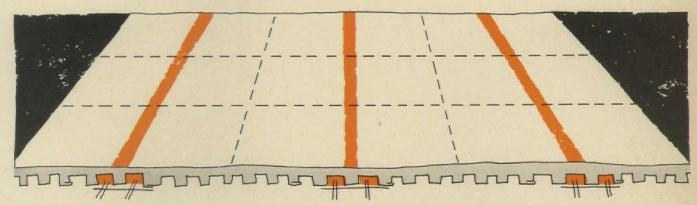
Hi-Bond Celluflor blend system matches electrification to any planning module











Things have changed. Inland Hi-Bond Celluflor and floor deck are now available in such a wide range of profiles that you can match electrification and building modules simply by blending the cellular and non-cellular steel panels.

You are not limited to 2', 4' or 6' grids or to completely floor-wide installations that are too extensive and expensive for the requirements. Instead, you design electrification specifically to meet the client's present and anticipated needs.

For instance, if you are planning around a 4'-6" building module, you can choose from six combinations of Inland Celluflor and floor deck to deliver electrification on this module. There are other economical Hi-Bond Celluflor blend systems to satisfy the requirements of architectural modules from 3'-0" to 6'-0"—in 6" increments. Each is an exceptionally strong, fire-rated floor

system. And – you can provide the strength and economy of composite slab/beam construction.

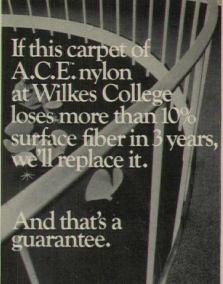
That's real flexibility, isn't it? Let us tell you more about it in the brochure, "Unlimited Flexibility in Floor System Electrification." Write today to Inland Steel Products Company, Dept. K, 4069 W. Burnham St., Milwaukee, Wis. 53201.

MIAND Inland Floor Systems

F-1



OCTOBER 20, 1967



And that's a guarantee.

If this carpet of

in the Allentown

loses more than 10%

surface fiber in 3 year

A.C.E. nylon

Public School

we'll replace it.

NOVEMBER 17

This is all the Time we've taker

NOVEMBER 3, 1967

this carpet of .C.E. nylon in the loag Hospital oses more than 10% urface fiber in 3 years. æ'll replace it.

and that's a uarantee.

IME

If this carpet of A.C.E. nylon in this office reception area loses more than 10% surface fiber in 3 we'll replace it. And that's a guarantee.

If this carpet of A.C.E. nylon in the Giant Supermarket loses more than 10% surface fiber in 3 years. we'll replace it.

And that's a guarantee.

DECEMBER 1, 1967

DECEMBER 15, 1967

DECEMBER 29, 1967

You're looking at just 6 of the 12 full-color ads that will tell the right ople the right thing: Allied Chemical is the only fiber producer to give a ear guarantee... any carpet of A.C.E. nylon is guaranteed against as little 10% pile surface loss. This guarantee covers any commercial installation (all 12) will illustrate actual in-operation application like restaurants, schools, clubs, permarkets—every, and all, high-traffic areas). We intend to hit the people (your nt) who should know about our A.C.E. 3-year guarantee program. There is no er program like this anywhere.

And we're taking the time to tell you beforehand because we anticipate

ion from our program. It's that unique; it's that important.

We think you'll want to take the time to send for more information out ALLIED CHEMICAL A.C.E. PROGRAM. It'll be that important to you.

mical Corporation, against excessive surface wear for e years when properly installed and maintained. The antee will cover surface wear to the extent of loss ore than 10% (per square yard) of pile fiber. e carpet fails to perform as guaranteed, it be replaced at our expense upon request of customer. The guarantee does not cover , burns, pulls, cuts or damage due to im-

er cleaning agents or methods."

s Carpet is guaranteed by Fibers Division, Allied. To find out more about A.C.E., the specially engineered nylon for commercial carpets, send this coupon to Allied Chemical Corporation, Dept. A.C.E., No. 1 Times Square, N.Y., N.Y. 10036. Allied

(hemical

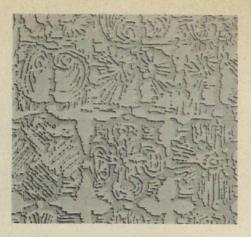
Address Occupation.

For more data, circle 102 on inquiry card

Type of Installation_

continued from page 196





PLASTIC LAMINATES / Three designs have been added to the decorative surfacing Textolite line. Paisley is available in four muted, soft contrast colors and has a pattern repeat of 40 in. Laurel (not shown) is a small-scale, delicate floral design in antique, honey and blue. It is low in contrast, and the pattern repeat is in 30-in. squares. Orleans is available in off-white. Textolite is highly resistant to wear, heat, stain, burns and marring.

General Electric, Laminated Products Dept., Coshocton, Ohio.

Circle 318 on inquiry card



New building owners, prior to the Hickman System, should have blamed the weather and not the architect for the troubles and problems produced by roof leaks at eaves and expansion joints. Thermal reaction between roofing felts and metal water dam-cants, other than galvanized steel*, causes roofing felts to crack as badly as shown above . . . Now this condition can be prevented; refer to Sweet's 21G-Hi and see proof that the Hickman System "gives positive control of roof water at eaves." Also, see how tar drippage and water stains on building exteriors are prevented.

* When installed in maximum 10' lengths to react independently have a thermal coefficient compatible with roofing felts.

Smart looking facia profiles in Kalcolor, Fluropon (Kinar-500) and baked enamel enable you to combine wall beauty with positive roof perimeter protection.



2520 INDUSTRIAL ROW, TROY, MICHIGAN 48084 PHONE (313) 549 8484

CAN YOU GUESS HOW THE SEVEN THOUSAND PLUS FEET OF ROOF PERIMETER

ON THESE BUILDINGS ARE POSITIVELY PROTECTED AGAINST LEAKS? See Sweet's 21G-Hi.

LATROBE SENIOR HIGH SCHOOL, LATROBE, PA.; BARTHOLOMEW-ROACH-MOYER-WALFISH, ARCHITECTS.





VINYL WALLCOVERING / Stonehenge with its surface interest and varying color values is available in 15 colors. L. E. Carpenter & Company, Inc., New York City.

Circle 319 on inquiry card



ALUMINUM SIDING / Tensil-rib aluminum roofing and siding sheet has been designed for industrial, commercial and residential buildings. Width is 32 in. and lengths are up to 30 ft. A non-siphoning lap design prevents leakage through a rigid siphon-breaker safety edge. Only one accessory angle is necessary for mos flashing details. The siding assures long maintenance-free installations with no rusting, rotting, or peeling. Inchols Wire & Aluminum Company, Davenport lowa.

Circle 320 on inquiry care

more products on page 21

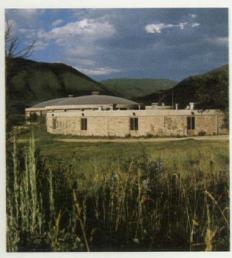




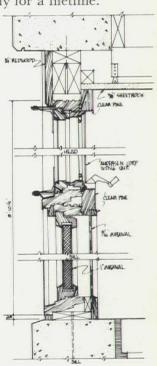
Aspen High School: Beautiful setting, unique design, and stock Andersen Windows.

You don't *expect* it—a school right in the middle of a high, mountain meadow. Especially a school consisting of six circular rotundas.

You might expect custom windows, though, in a design so different. But there was no need for them. The students look at the mountains through stock Andersen Casements. Just one of six types and hundreds of sizes available.



One big Andersen advantage is that it doesn't take a crew of window specialists to install them. They're weathertight summer or winter. In fact, welded insulating glass and close Andersen tolerances can mean up to 15% fuel savings in some buildings. They're designed and assembled to operate smoothly and silently for a lifetime.



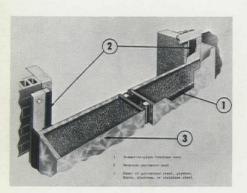
Which brings us to the real question: Why design for custom millwork, when stock Andersen windows are as "custom" as the occasion demands? Check Sweets File, or call your Andersen Distributor for a Tracing Detail File.

Andersen Windowalls



Window Beauty is Andersen
ANDERSEN CORPORATION • BAYPORT, MINNESOTA 55003

continued from page 210



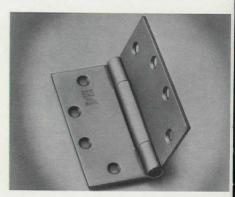
INDUSTRIAL DOORS / A foamed-inplace core of urethane foam for automatic, manual, and double-swing doors
will be provided when strength with
low weight or high impact resistance is
required. This construction with wood,
metal, or Kayon sheathing forms a monolithic structure that reportedly has good
strength-to-weight characteristics. It also
reduces the doors' transmission of sound.
With full-perimeter neoprene seals, the
doors promise to prevent loss of air. ■
Clark Door Company, Cranford, N.J.

Circle 325 on inquiry card

FIBERGLASS SUMP TANKS / Primarily for commercial, industrial, and institutional buildings, these sumps are available in a variety of sizes and have extra thick wall sections.

Vessels & Shapes, Warren, Mich.

Circle 326 on inquiry card



SLIM HINGE / The pin is hidden and the ball bearings are concealed in this three-knuckle hinge. There are no horizontal lines so that the slim-vertical look of the *Tri-Con* is accentuated. Self-lubricating *Delrin* sleeves, which line the barrel, run top to bottom, so there is no direct contact of pin to metal knuckle. The same hinge may be used right or left. Hager Hinge Company, St. Louis.

Circle 327 on inquiry card



STAIR ACCESSORIES / Friction-Grip's nosing and tread design consists of closely-spaced pyramidal points. The double row of grippers on the tread affords protection where maximum wear and potential danger lie. The corrugations run full depth and have no dust-collecting crevices. The nosing needs no metal strips. Made of resilient, wear-resistant vinyl, both the tread and nosing are available in several colors. The Mercer Plastics Company Inc., Newark, N.J.

Circle 328 on inquiry card



Beautifully styled — permanently attractive colors — heavy duty steel components and built to your exact length and multiple shelf requirements. They meet your need as to height from hook or hanger to the floor, as well as spacing between shelves. Easy spacing adjustment is made possible by our unique U wallmounts. Colorful and durable double prong nylon hooks come with Shelf #SL-300U and are keyed over tubing to prevent rotating and spaced on 2nd and 4th tubes to allow ample coat space. Matching boot shelves are mounted off the floor for easy cleaning. Pat. Pend.

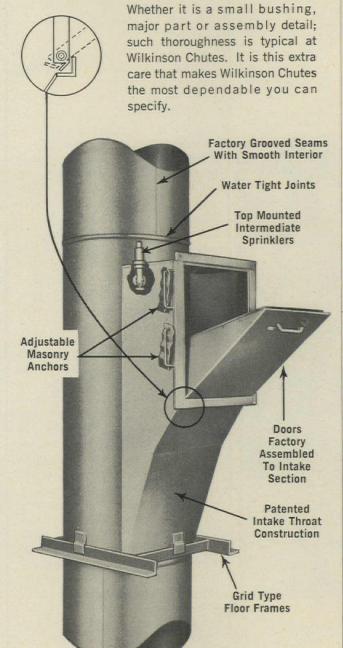
For complete information and specifications, write for Catalog SL-48.

OGEL-PETERSON CO. | "The Coat Rack People"

For more data, circle 117 on inquiry card

200,000 TEST CYCLES

That's how often we checked out the new nylon door pivot bushings now being installed in Wilkinson Chutes. Unlike their predecessors, these bushings do not corrode, never require lubrication . . . and wear longer.



Chutes for dust, rubbish, soiled linen, garbage and paper . . . completely automated linen handling, vertical and horizontal.

See our complete catalog in Sweet's Architectural File

WILKINSON CHUTES, INC.
619 East Tallmadge Ave. Akron, Ohio 44310

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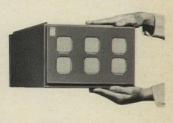
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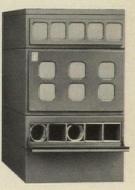
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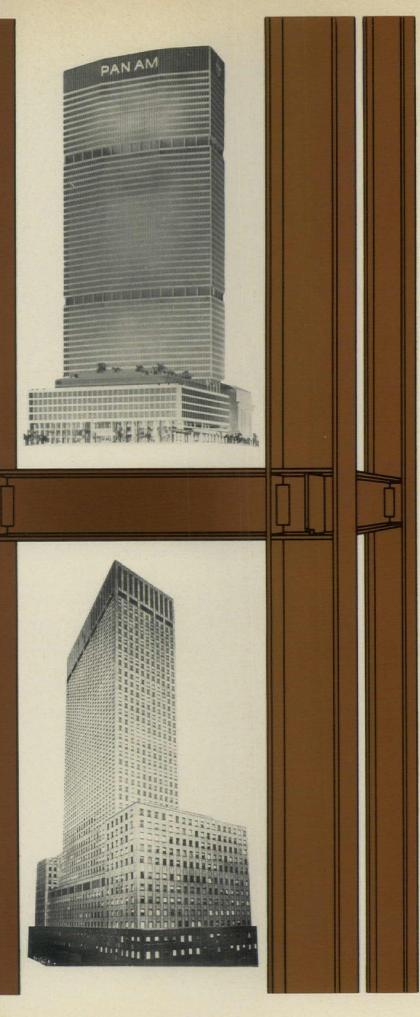
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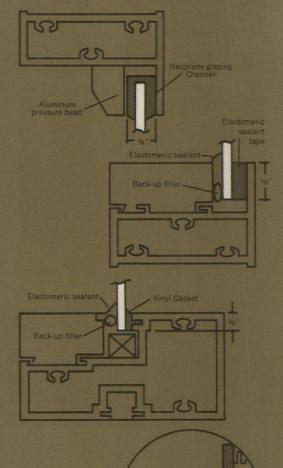




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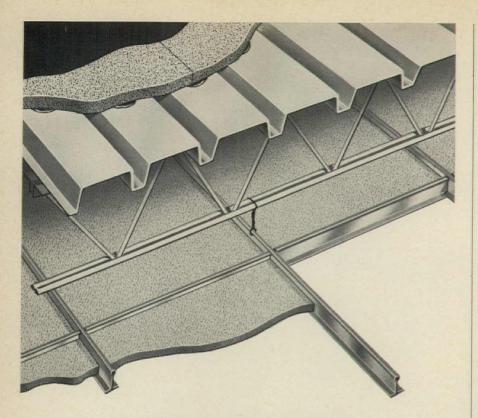
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Fine Arts Commission approves Three Sisters Bridge design

A design for the Three Sisters Bridge (over a particularly scenic section of the Potomac River) was approved by the Commission of Fine Arts of Washington, D.C. at its September meeting. Approval of the design by structural engineer Paul Weidlinger, consultant to the Department of Highways, came after rejection by the Commission of six earlier schemes by other designers.

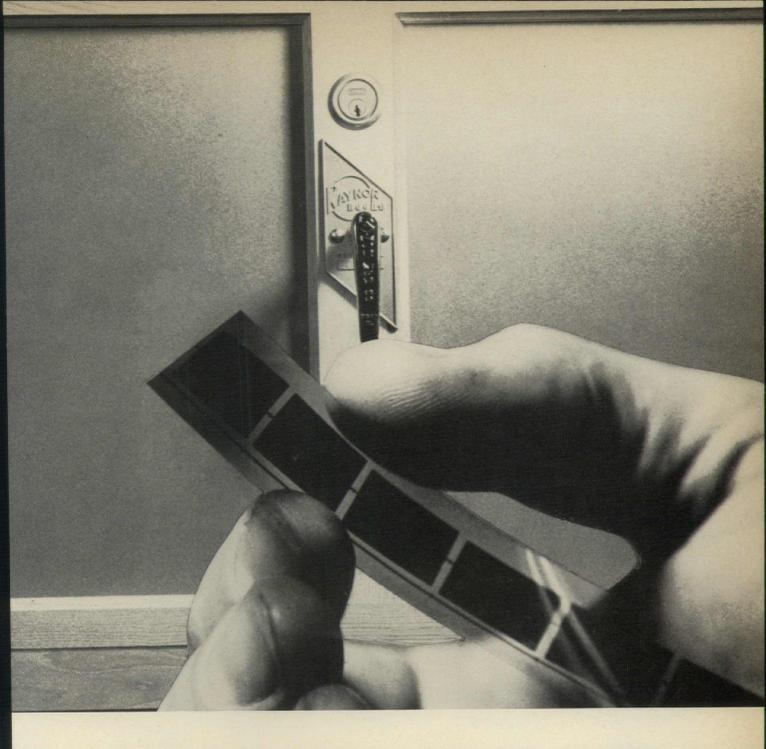
In other actions, the Commission approved the final building in the Watergate project on the banks of the Potomac River just north of the Lincoln Memorial, a complex of office and apartment buildings designed by Luigi Moretti in association with Corning, Moore, Elmore & Fisher. The Commission also rejected the design of a tunnel for the south leg of the inner loop highway system in downtown Washington. The proposed tunnel would have passed under the reflecting pool between the Washington Monument and the Lincoln Memorial, necessitating the destruction of 50 to 75 mature trees. The Commission recommended that the tunnel either be buried deeper so that the trees would not be disturbed, or that the route be realigned to avoid the reflecting pool, and ideally pass under the present site of the Munitions Building, which, according to Charles Atherton, secretary of the Commission, "would, in effect, remove an unsightly temporary building which has survived since World War I.'

Nominations sought for Reynolds Memorial Award

Nominations are now being sought by The American Institute of Architects for the 1968 12th annual R. S. Reynolds Memorial Award. The \$25,000 award is conferred annually on "an architect, who, in the judgment of his profession, has designed a significant work of architecture, in the creation of which aluminum has been an important contributing factor."

To be considered for the award, an architect can be nominated by others, or he can nominate himself by notifying the A.I.A. in Washington, D.C., requesting a nomination form and competition program. The nomination form should be submitted prior to February 15, 1968.

A data binder, containing the maximum amount of appropriate information for the use of the jury (which will consist of five distinguished architects appointed by the A.I.A.) should be submitted by March 19, 1968.



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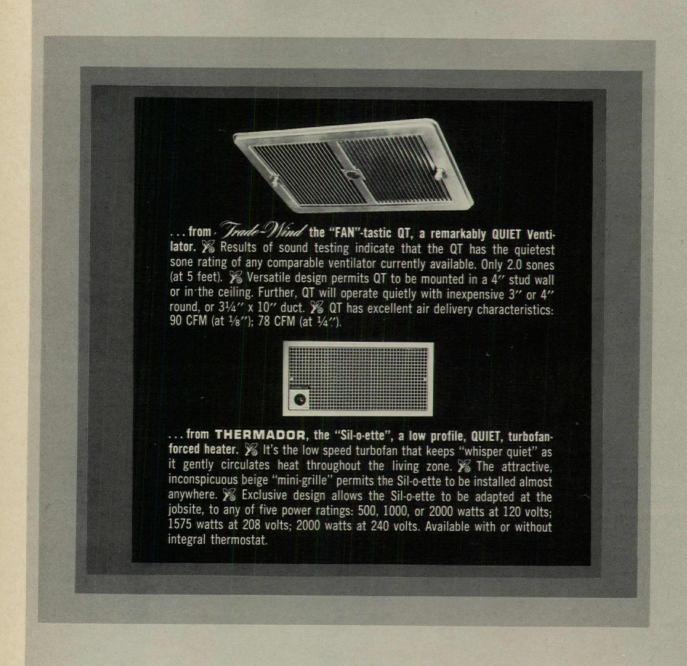
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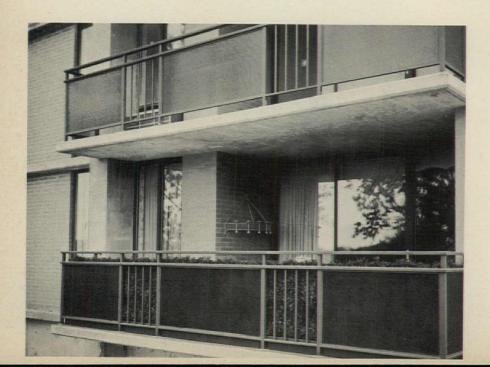




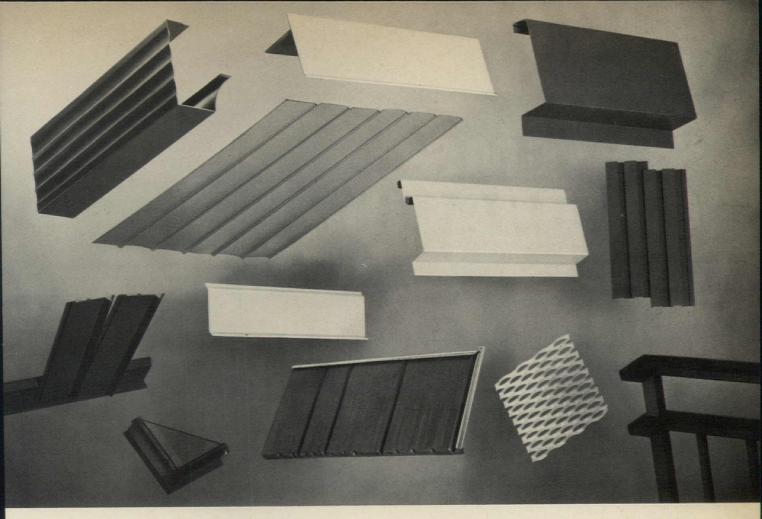
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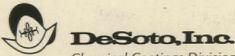
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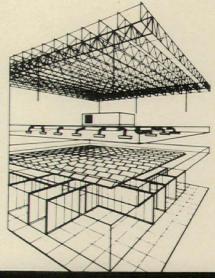
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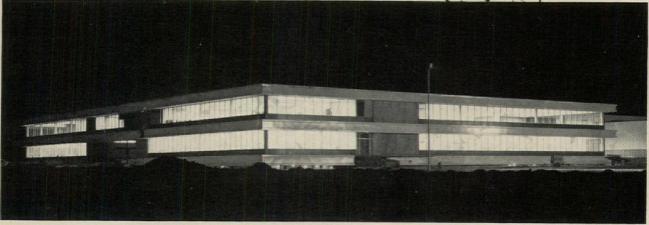
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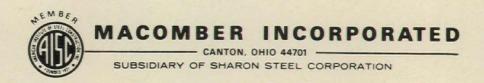
SUNDSTRAND AVIATION-Rockford, Illinois. Archt.: Larson and Darby, A.I.A.; Contr.: Sjostrom and Sons, Inc. Consulting Engineers were The Engineers Collaborative, the Chicago firm that worked with Macomber in developing the VLMC System.

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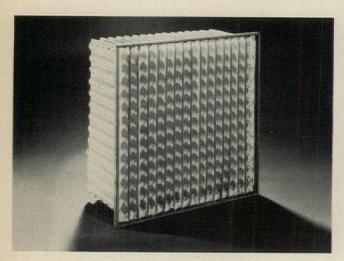
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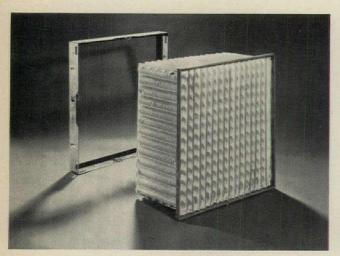
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New AAF Duracel disposable-cartridge filter



All media exposed to air flow-no obstructions

Rigid, molded construction permits cell to maintain shape regardless of air-flow conditions. Non-collapsible new Duracel cartridge is only 12 inches deep and has cleaning capacity of 2,000 CFM.



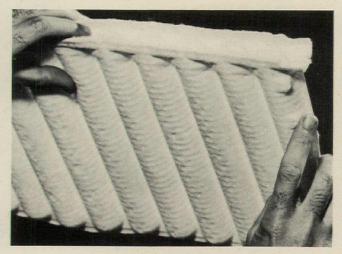
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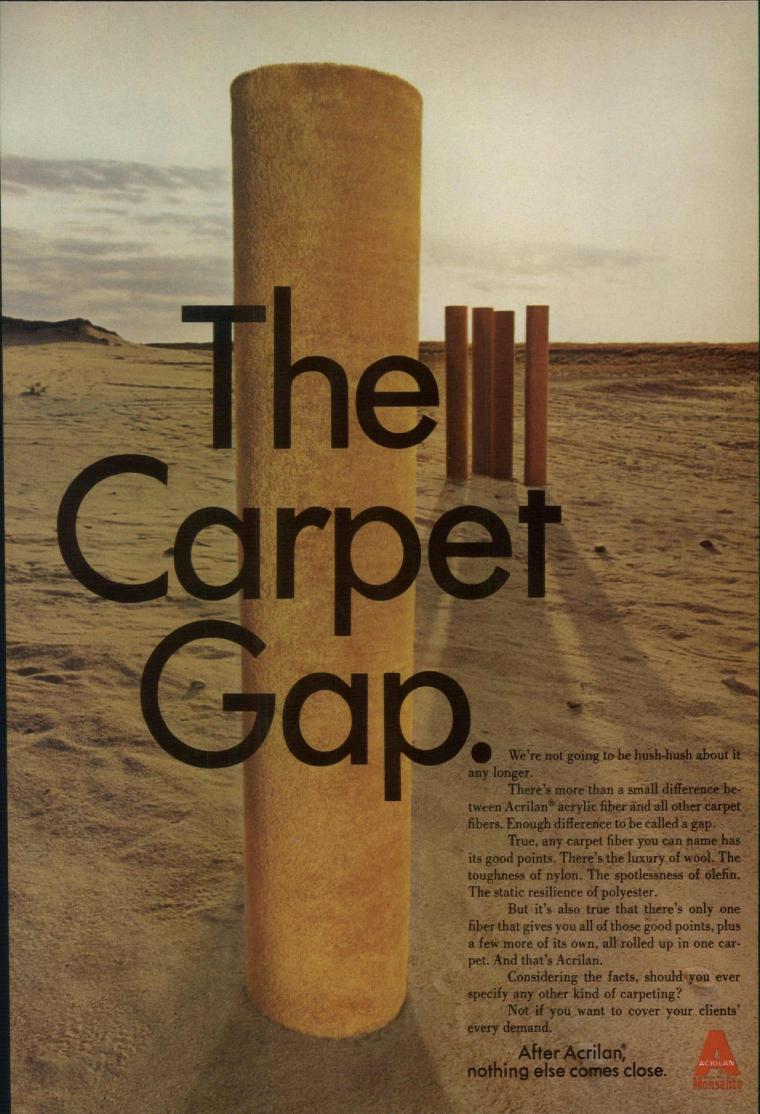
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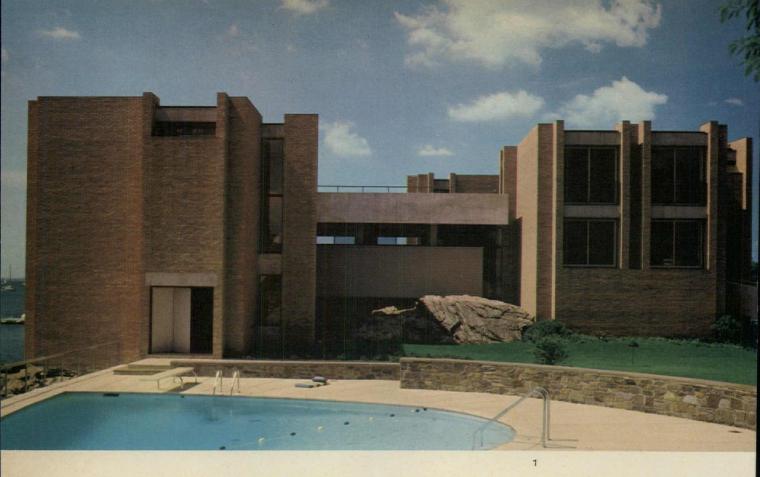
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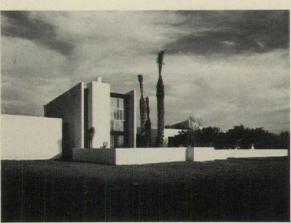
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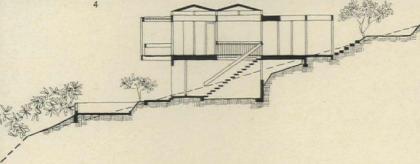


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If you think that compact kitchens are pretty much alike, you don't know the Crane Chef, and its reputation for quality and performance. Ask your local Crane distributor for details or write to Crane Co., 4100 South Kedzie Avenue, Chicago, Illinois 60632.

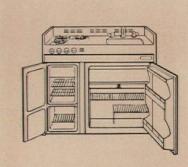
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Write for complete catalog information. The General Fireproofing Company, Dept. AR 26, Youngstown, Ohio 44501.



A. Reveal strip makes the desk top seem to float above the frame.

B. Double-deck cushioning—a latex foam rubber pillow on top of the latex foam rubber-cushioned seat.





Runcorn master plan

RUNCORN NEW TOWN MASTER PLAN. Prepared for the Runcorn Development Corporation by Arthur Ling. Runcorn Development Corporation, Chapel Street, Runcorn, Cheshire. 137 pp., illus. \$12.00.

Runcorn is being developed as a New Town 14 miles from Liverpool in an over-crowded Cheshire area. This plan is intended to be the guide for the growth of the town whose ultimate population is to be approximately of 90,000-100,000.

This New Town has to integrate a new population with an already existing one. The plan breaks new ground by proposing a specially reserved route for a rapid transit bus service forming the spine of a series of communities surrounding a central Town Park. Everyone will live

within easy walking distance of the bus stops at the local centres. The bus route -in figure "eight"-has the town center at its intersection with supplementary loops serving the industrial areas. Urban renewal is planned as a combined operation with new development elsewhere. It is planned to be a town without through traffic in the residential areas. Complementary to the public system is an outer expressway for service inwards to the residential communities and outwards to the industrial areas. There is an over-all aim at a planned balance between the use of public transport and the private motor car.

The character of the master plan is well defined in this comprehensive report of the proposed development of Runcorn.

The planning of health facilities

HOSPITAL PLANNING AND ADMINISTRATION. By R. Llewelyn-Davies and H. M. C. Macaulay. World Health Organization Monograph Series, No. 54. World Health Organization, Geneva, Switzerland. 215 pp., illus. Paperbound, \$5.25. PLANNING THE COMMUNITY HOSPITAL. By Roy Hudenburg. McGraw-Hill Book Company, 330 West 42 Street, New York, N.Y. 10036. 438 pp., illus. \$16.95.

ARCHITECTURE FOR THE COMMUNITY MENTAL HEALTH CENTER. Edited by Coryl LaRue Jones. Mental Health Materials Center, Inc., 104 East 25th Street, New York, N.Y. 10010. 168 pp., illus. \$8.50.

The World Health Organization has recently developed the monograph Hospital Planning and Administration. Its principal authors have collaborated with international specialists in this very broad

field and the articles they collected in this pamphlet should be particularly helpful in the re-planning of regional or national medical facilities, and to the planning of new health services of new countries.

The information is comprehensively stated and is fundamental to the general problems related to the planning and organization of hospitals. The first section, examining planning on a regional and national scale, is mainly directed to the attention of health authorities; the second section provides information on the planning procedure of hospitals, while the third and final section pertains to an analysis of the requisites of the principal departments within a general hospital.

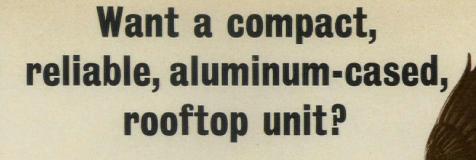
The monograph points out some pitfalls that lie in the path of hospital planning authorities, and it shows mistakes that have been made in the past. Moreover, it presents a comprehensive survey of the general principles that should govern the subject.

Planning the Community Hospital is another comprehensive, non-technical treatment of planning health facilities. It discusses both administrative and functional needs. The author divides his subject into six systems—housing, therapy, administration and business, supply, housekeeping, and utilities. The hospital is treated as a social organism; focus is on the economic and social influences that are today changing the hospital's basic character, and the fluidity that must characterize the planning is brought out.

This discussion is directed to one type of hospital, the community hospital which must serve the health needs of varying segments of the population. Community mental health service is discussed in Volume II of a series sponsored by the National Institute of Mental Health. The first volume was directed to the over-all planning, programing, and design for a community mental health center while this book, Architecture for the Community Mental Health Center treats only the programing phase in the over-all development of a center.

Six case studies are reported on. The case studies were conducted at a design fete held at Rice University; each was

continued on page 27-



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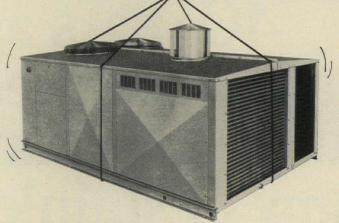
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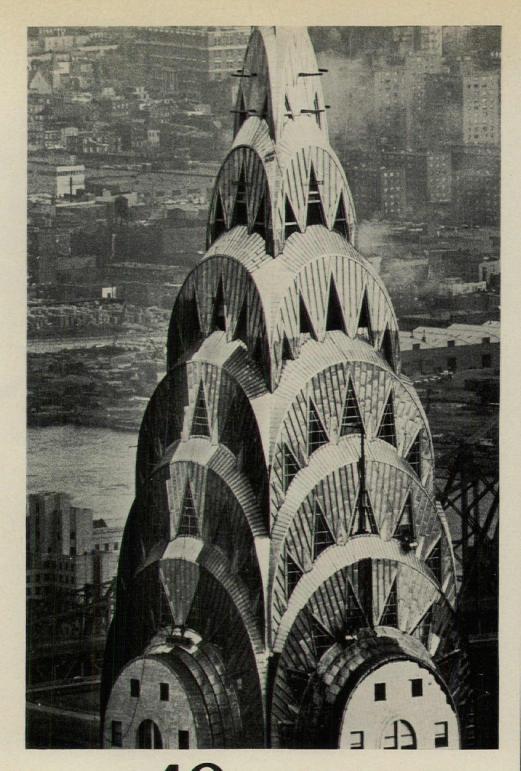




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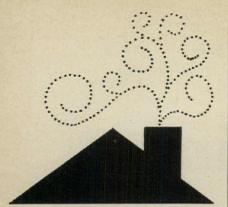
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continued from page 270

programed collaboratively by mental health specialists and architectural specialists. The research, financed by the National Institute of Mental Health, indicated that since no two communities are alike, no two centers will be alike. The solutions have generic application to urban, suburban, and rural community mental health centers as well as association possibilities with a general hospital, a university hospital, a medical research center, a state mental hospital, and with commercial and educational institutions. They are imaginative solutions to a demographic, geographic, ethno-sociologic, and programatic mental health services prototype. "The material given for each case study summarizes the programing phase which must precede psychiatric program and the architectural program. The two programs are interdependent steps toward establishing a community mental health center as an integral part of the community. Without a community diagnosis upon which a psychiatric and architectural response can be made, the mental health center becomes an expensive, misplaced, geographic institution fully capable of alienating the persons who must need its services. The community must be defined before its potential can be determined and before a mental health center can offer appropriate mental health service."

The case studies are realistic and the competent solutions deserve the attention of those involved in the new planning for community-based mental health services. The research indicates an overlap of interest and understanding on the part of psychiatrists and architects for the private and general welfare of people.

BOOKS RECEIVED

PALLADIO. By James S. Ackerman. Penguin Books Inc., 39 West 55 Street, New York, N.Y. 10019. 195 pp., illus. Paperbound, \$2.25.

SAFETY IN THE HOME, By Anne S. Acland, British Information Services, 845 Third Avenue, New York, N.Y. 10022. 32 pp., illus. Paperbound, \$.95.

THE GREAT TRADITION OF WESTERN ARCHITEC-TURE. By Bruce Allsopp, Harold W. Booton and Ursula Clark. Architectural Book Publishing Co., Inc., 151 East 50 Street, New York, N.Y. 319 pp., illus.

LORDS OF CUZCO, A History and Description of the Inca People in Their Final Days. By Burr Cartwright Brundage. University of Oklahoma Press, Norman, Okla. 458 pp., illus. \$6.95.

PULLMAN, An Experiment in Industrial Order and Community Planning 1880-1930. By Stanley Buder. Oxford University Press, 200 Madison Avenue, New York, N.Y. 10016. 263 pp., illus. \$7.50.

continued on page 280



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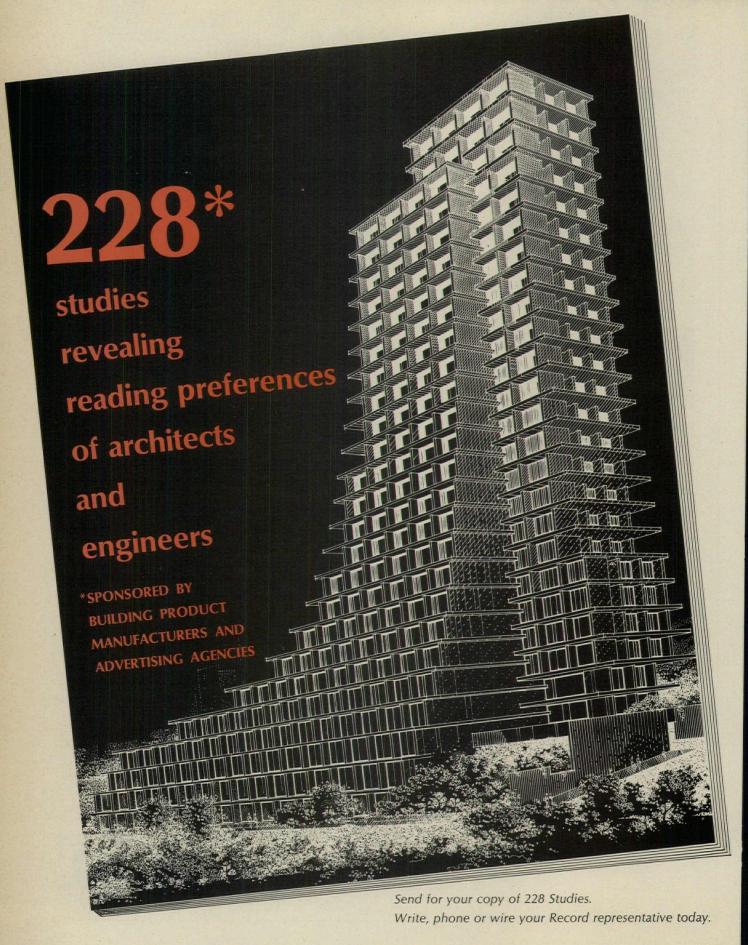
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READERSHIP STUDIES -1966-August, 1967

Record

A & E N

	:	1st	2nd	. 3rd	: 4th	5th	:
1	:	15					
	:		14	1			
				: 13	: 2	No.	3
V			1		: 6	9	:
				1	8	4	:

equally significant is the fact that the Record's margin of eadership over the second place magazine has widened at the same time. In 1965 the margin of preference for the Record over the second place magazine was 19 per cent. In 1966, it was thirty-five per cent. In three recent independent readership studies, the Record's leadership over he second place magazine has widened to more than fifty per cent. Here are the results of these studies, in response to the question, "Which architectural magazine do you ind most helpful in your work?"

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ecord	: 107		117	73
A	: 61	:	78	: 46 :
F	31		35	25 :
&EN	: 13	:	14	7
IA J	: 9	:	19	18

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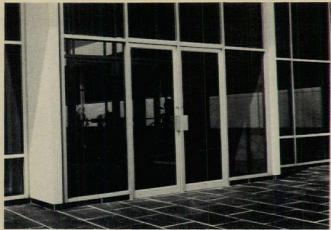
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- 2. Title of Publication.—ARCHITECTURAL RECORD (combined with American Architect, Architecture and Western Architect and Engineer).
- 3. Frequency of Issue.-Monthly, except May, when semi-monthly.
- 4. Location of Known Office of Publication.—330 West 42nd Street, City, County and State of New York—10036.
- Location of Headquarters or General Business Offices of the Publishers.
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