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FOUR PROJECTS BY HARDY HOLZMAN PFEIFFER ASSOCIATES
THE WORK OF THE 1972 GOLD MEDALIST PIETRO BELLUSCHI
BUILDING TYPES STUDY: CHILD CARE CENTERS
FULL CONTENTS ON PAGES 4 AND 5

ARCHITECTURAL RECORD
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Step-back Celebrity version creates an illusion of "floating light." And concealed lens hinges have spring-steel latches for easy cleaning and relamping.
THE RECORD REPORTS

9 Editorial
Bicentennial Parks: a proposal for a proper birthday present

35 News in brief
Short items of major national interest as well as award-winners and announcements.

36 News reports
A face lift in reverse for New York's Bowling Green Park, an experiment with recycling energy in St. Louis and a new home for the Liberty Bell are subjects in this month's news.

46 Buildings in the news
Including: a Barcelona office building (below) by Jose Antonio Coderch de Semenat; Caracas Concert Hall by Carlo Vannini; a Washington, D.C. high school by Brant and Bryant; the Greenport, New York Aquarium by Knafo, Serra and Associates; Society of American Registered Architects 1971 Awards.

ARCHITECTURAL BUSINESS

65 Marketing architectural services
Focusing in some detail on key segments of the over-all plan of organization for architectural practice—outlined in general terms last month—Bradford Perkins continues his series with some practical pointers on architectural business development.

74 Can the housing census measure quality?
The 1970 housing census omits any notation as to quality other than unqualified implications of the degree of indoor plumbing and the number of rooms per unit. James Carlson makes a plea for better definition as a closer index of the real housing deficit in human terms.

78 Indexes and indicators
Building cost increase rate slows

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Features
House near New York City by Richard Meier and Associates
Latest in a series of interesting houses by Meier, this large residence—eleven bedrooms—combines straightforward wood detailing with glass to achieve remarkable transparency and sculptural richness.

College of Education at Houston
For an imaginative client at an important university, Wilson, Morris, Crain & Anderson have designed a structure that encourages innovation in searching for new teaching ideas and techniques.

Designing the learning environment: four projects by Hardy Holzman Pfeiffer Associates
Three of the projects included in this portfolio—a school, a training center for firemen and a children's museum are obviously instructional facilities, but the fourth project—an industrial medical clinic is not usually considered as such. So profound is this firm's interest in communication and learning, however, that it rubs off on everything they do and thus even the clinic becomes a school for its patients.

Pietro Belluschi: The 1972 Gold Medalist
A look at the work of this year's AIA Gold Medalist Pietro Belluschi over the 50-year span of his practice.

Building Types Study 433
127 Child care centers
Child care centers serve many social and community purposes, but their most important job is to be places where young children grow and learn. This study discusses some generally-agreed-upon criteria for day-care center design.

130 Five child care centers in New York City by Frank Williams
Belmont Day Care Center (page 130), Daughters of African Descent Day Care Center (page 131), Marcus Garvey Day Care Center (page 132), Anthony Avenue Day Care Center (page 133), 140th Street Center (page 134).

135 Park Slope North, Brooklyn, N.Y.
Beyer Blinder Belle, architects.

135 Henry Street Child Care Center, N.Y.C., Welton Becket and Associates, architects.

136 Charlestown Playhouse, Charlestown, Pa., Oskar Stonorov, architect.

137 Dulwichwood Nursery School, London., Stillman and Eastwick-Field, FRIBA, architects.


139 Modular Child Care Centers, Denver, A-B-R Partnership, architects.

140 Planning Ideas

Architectural Engineering
143 A system's disciplines become clear as an architect works with it for two high-rise dormitories
A factory precast system replaced a conventional steel-framed building when the system was offered at the same cost, and the architect determined there could be added functional advantages and reduced time from design through construction.

151 Product Reports
197 Office Literature
198 Personal Business
207 Update
208 Classified Advertising
212 Advertising Index
215 Reader Service Inquiry Card
DAP Acrylic: the sealant that can do things others can’t

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DESIGN CONCEPT. This plan for a National Seashores Visitors’ Center calls on concrete as the basic building material to reflect the shapes and rugged forms of the rocky coast line setting. Extensive areas of glass permit visitors to enjoy the view while using the center’s restaurant, tourist information and lecture facilities.

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For more data, circle 5 on inquiry card
The American Revolution Bicentennial Committee proposes that each park would have as its focal point a permanent pavilion building (perhaps like the cable-supported prototype designed by Lew Davis), and that each pavilion might include a state historic exhibit, a bazaar where “arts and crafts indigenous to the state could be displayed and sold,” a multiscreen theater, and—most importantly—an amphitheater where “live performances by national and international entertainment and cultural groups could take place.” Performances of groups from around the world—say the Metropolitan Opera (or Aretha Franklin), the Bolshoi (or Arthur Mitchell’s Dance Company), Joe Papp’s Shakespeare Theater (or “Hair”), a great New Orleans jazz band (or Crosby, Sills, Nash and Young)—would be eased by an ingenious “utility” scheme devised by Davis, Brody. They propose a series of movable pods or modules that would “plug into” identical utility outlets at each park. Thus, a stage set for a play, for example, could be built in one such pod, and it could be transported, by truck, rail, or water, from park to park. At each park—even for the proverbial one-night stand—the module could be plugged in and ready for performance in minutes.

Finally, in debating the expenditure (as it will undoubtedly be debated by conservative and militant alike) we need to think in the broadest possible terms. RECORD senior editor Mildred Schmertz said it well in the book “Open Space for People” which she edited and which has just been pub-
lished by the AIA: “... open space is essential for man's most important needs. We are wearing out what we have, including the great parks which have been preserved as a legacy from the past. We are squandering the rest through inadequate advance acquisition. We must conserve what is left for the future. We must find ways of creating and acquiring new kinds of open space within the imperatives of technology.”

And so, it seems to me, that the proposed networks of Bicentennial Parks is a fine way to at once increase our desperately short supply of recreation and open space; a suitable gift (suitable both environmentally and politically) from the Federal government to the states and their people; and a spirit-lifting way to celebrate the 200th anniversary of the United States. Other celebrations—notably the much-talked-about Philadelphia exposition—seem to be fading away—the most optimistic view available on Philadelphia is that their program “is still bleeding.”

Some questions about quality:
Who designs the parks?
Mr. Mahoney and the Commission's Design Director Jack Masey both are clearly intent on maintaining high standards of planning and pavilion design. As noted, Davis, Brody's pavilion design is only a prototype (though it sets a very high standard indeed of design and appropriate innovation). According to the Commission: “No two parks would be alike. Each would be a unique architectural conception, reflecting the unique characteristics of its site, region, and program. ... A National Design Review Board will be established to ensure that standards of design excellence and function are adhered to throughout the parks. Over-all guidelines ... will be contained in a Design Standards Manual and the States will be obliged to conform to the criteria. ...”

Under the initial proposal, “architects, planners and designers ... would be selected through state and regional commissions established by a National Design Review Board whose role it would be to monitor and coordinate the design of all the parks.” That's a bit indefinite and bureaucratic—and since indefinite and bureaucratic things seem to tend to not turn out too well—a bit scary. If we're going to do these parks, let's do them right.

One suggestion: The Bicentennial Commission is about to embark on a major feasibility study. Part of that study will be discussions with architects—and with the national staff of AIA. So ...

Why not seriously consider the idea of a major programming, planning, and design competition, under the joint auspices of the Bicentennial Commission and the AIA. Within broad parameters already established by the Commission, architects could in a first phase make an over-all programming and design proposal, then in a second stage develop the design more carefully.

There might be a competition in each state; or perhaps there should be a national competition with a great many winners, from which state commissions could choose.

At any rate, a competition format would, one hopes, establish for the parks a high level of design quality. It would seem a unique suitable competition for young and inexperienced architects—for there is little body of experience bearing on such a design problem, and the parks should be—in their developed focal points—fresh and festive. And with a developing surge of interest in the Centennial as 1976 approaches, the network of parks would make a fine, visible, people-oriented body of work with which America's architects could perhaps develop more awareness of architecture. And that's worth doing!

—Walter F. Wagner, Jr.

The West Front again. Again? Again.

What do you do now that the Architect of the Capitol is an architect, and a g one, and he comes out for extension of the West Front? (It was easy when Architect of the Capitol wasn't an architect.)

Well, you do the same thing. You-it's still a bad idea, and a costly one, that maybe some of the tourists rather enjoy the sense of history that rounds the only remaining portion of original walls than have a little more wing-around space inside. And if the city still that our legislators need more space, the answer is still build it somewhere else. Hooray for the AIA for having it—it has volunteered, again, to "... a leadership role in marshalling the support of all those concerned in this against demolition of the West Front.

Quote of the month:
From Russian guests

A six-man delegation of Soviet architects headed by E. I. Sidorov, chief executive for housing and civil construction, Cit Moscow, just completed an 18-day tour of seven U.S. cities. At a just-bef takoff press conference, Mr. Sidorov wisely avoided naming his favorite building, though he did admit "personally—I like San Francisco best." Professionally speaking, he said that in studying the structures and spans of many U.S. buildings, he found "... many of the architects and engineers' solutions were very brave ... very brave indeed."

And I guess we were all struck by statistic that the Russians supplied: They have just completed a 2.3-million-unit housing year.
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Architect uses sloping steel columns to give building rugged dramatic effect.
make the new headquarters and research building by Burroughs Wellcome Co. seem like a natural extension of the ridge on which it is located, Architect Paul Rudolph used sloping steel columns in a geometric, modular design.

The structure, located in Research Triangle Park near Raleigh, North Carolina, combines the functions of corporate headquarters and research facilities.

The sloping steel columns, set at a 22.5-degree angle, help to make the building seem to be an upward extension of the ridge. The steel-framed irregular ends of the structure were designed to facilitate incremental expansion in all directions in future years.

Geometrical modular units are also a unique part of the design. The large skylights and inward-slanting windows made possible by this design allow light to flood deep into the interior.

The completed building will house about 450 employees, and will contain 300,000 sq ft of space. Besides research facilities and offices, there will be a cafeteria, auditorium, library, and a lobby three stories high.


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A colorful new brochure on coil-coated panels using these finishes, and the names of paint manufacturers who supply them, is in the current Sweet's Architectural and Industrial Construction Files. Or write Dow Corning Corporation, Dept. A-2301, Midland, Michigan 48640.

Silicones for coatings from DOW CORNING

For more data, circle 20 on inquiry card
An airport needs pretty-tough carpet

Until now you had a choice of pretty carpets that weren't very tough. Or tough carpets that weren't very pretty.

But in many contract installations you need both. So we conceived carpets that are pretty and tough.

You can choose handsome original designs from our Masterworks Design Program. Or we'll create an exclusive design to meet your specific requirements.

But these carpets are a lot more than pretty. They're made from 100% ANSO nylon so they hide dirt better. And they're tough enough to stand up to your heaviest traffic areas.

In fact, Allied Chemical guarantees carpets of ANSO nylon against excessive wear for 5 years (We've got more guaranteed carpet fiber installed than anybody — over 40 million square yards.)

If you need pretty-tough carpet, ask for ANSO. Or contact Allied Chemical Corporation, Fibers Division, Contract Department, One Times Square, New York, N.Y. 10036. Phone: (212) 736-7000. For more data, circle 17 on inquiry card.
About half the buildings erected in downtown Chicago in the last few years are AEROFIN COIL equipped.

From "Big John" to "Ma Bell" Aerofin Heat Transfer Coils have run up quite a track record in Chicago—with its hot, sticky summers and deep-freeze winters.

Check out those landmark structures with Aerofin coils. Building profitability relates to the reliable performance of Aerofin coils with remarkably high exchange co-efficients, yet compact enough not to steal useable/rental space.

From heat recovery to controlled variable volume systems, get more efficient cooling/heating with dependable Aerofin coils. Chicago's confidence in Aerofin could color your coil thinking. Call our specialists in: Atlanta, Boston, Chicago, Cleveland, Dallas, New York, Philadelphia, San Francisco, Toronto, Montreal.

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9. 230 West Monroe Building
10. Blue Cross-Blue Shield Building
11. Illinois Bell Telephone Building
12. Illinois Bell Telephone Building
13. Chicago Civic Center
14. U.S. Court House and Federal Office Building
15. Sears Building (under construction)

AEROFIN HEAT TRANSFER COILS come in many sizes, configurations, circuitry—copper or aluminum helical fins. Designs range from preheat or reheat applications, sprayed coil humidification control, freeze-up hazard reduction, to customized climate systems.

Aerofin is sold only by manufacturers of fan system apparatus. List on request.
Dover Stage Lift helps recycle an old movie palace

In a Cinderella-like transformation, the old Penn vaudeville and movie theater in Pittsburgh has become a showcase for the arts. Now known as Heinz Hall for the Performing Arts, this unique building is not only the new home of the Pittsburgh Symphony, Pittsburgh Opera, Civic Light Opera, Pittsburgh Ballet and the Pittsburgh Youth Symphony, but also offers complete theatrical and film facilities for international attractions.

Much of the neo-Baroque opulence was retained in the multi-million dollar renovation project. But extensive revamp was necessary for conversion the old movie palace into a building that functions efficiently and beautifully for its diverse new tenants.

A major addition was a Dover Stage Lift, 14' x 54' in overall dimensions. Raised, it provides a needed extension of the stage area; lowered, it serves as an orchestra pit.

Dover Stage Lifts are used in theaters, concert halls, opera houses and drama centers throughout the country to provide more flexibility and imagination in staging musical and dramatic presentations. Call us in for design and engineering assistance, or check our catalog in Sweet's Files. Dover Corporation, Elevator Division, Dept. A-4, P. O. Box 2177, Memphis, Tenn. 38102. In Canada: Dover/Turnbull.

For more data, circle 25 on inquiry card
News in brief

Architectural construction started the new year with a seasonally-adjusted decline, but... The F. W. Dodge index of architect/engineer designed construction entering the contract stage slipped seven per cent to 154 (seasonally adjusted, 1967 = 100) from December's record 165. January data showed a sharp, seasonally-adjusted drop in apartments following December's record volume. Declines in the non-residential sector were centered primarily in commercial building where contracting for both offices and stores turned down significantly during the month. Manufacturing, still recovering from the recent recession, remained unchanged. Both educational building and hospitals recorded advances. January's slow start in architectural construction should not be construed as a sign of a weakening market during the coming year. The month's weak performance, according to the F. W. Dodge study, is primarily a result of random or irregular factors. But unlike 1971's steady upward trend, architectural construction is expected to exhibit more of a saw-toothed pattern this year, with one month's gain being partially offset by another month's decline. Setbacks are expected during the year in apartment building but they should be outweighed by gains made in non-residential construction as the business recovery accelerates. By the end of the year, the average value of the architectural construction index is expected to advance from three to four per cent over 1971's average.

Ten architects, from nine foreign countries, have been named Honorary Fellows of The American Institute of Architects. The ten, elected by the board of directors of the 24,000-member national professional society, are: Luis Arizmendi, Spain; Jai Rattan Bhalla, India; Henri Delaage, France; Sir Roy Grounds, Australia; Thomas Howarth and Jean Louis Lalonde, Canada; Vayden R. McMorris, Jamaica; Gueorgui Orlov, U.S.S.R.; Luis Ortiz Macedo, Mexico, and Michael Scott, Ireland.

Wolf Von Eckardt, architecture critic of the Washington Post has been named the recipient of The American Institute of Architects' 1972 Architecture Critics' Medal. Canadian author, architect, and educator, Peter Collins, has been named the winner of the AIA's 1972 Architecture Critics' Citation. Both men will receive their awards at the AIA convention in Houston, May 7-10.

President Nixon was warned by NAHB President Stanley Waranch that unstable lumber pricing could seriously threaten the economy. Prices have been scraping authorized ceilings for the past four weeks, in some cases exceeding them. Waranch stated that stud and plywood prices have been 18 to 20 per cent higher than a year ago.

Four architects have been named to the National Public Advisory Panel on Architectural Services by Rod Kreger, of GSA. The four are: Grant Curry Jr., Pittsburgh; William C. Muchow, Denver; B. Rea Nesmith, El Paso, and Kenneth C. Black, Lansing. The panel advises GSA on selection of firms to design government buildings and in developing designs reflecting regional architecture.

Skidmore, Owings & Merrill are the winning architects for the New York City Convention and Exhibition Center. The $100 million Center, nearly a decade in planning, will be completed just before the opening of Expo '76.

An omnibus housing bill, calling for the establishment of a National Institute of Building Sciences within the National Academy of Science, is now set for quick Congressional consideration. The new body would make its technological research available to the construction industry. The bill authorizes an $18 million budget over the first five years, after which, the Institute would become self-supporting. Spokesmen for the Senate Banking Committee say that such a national resource would help remove code obstacles and speed new technology into the building stream.

James Stewart Polshek has been named Dean of the Columbia University School of Architecture. Polshek succeeds Kenneth A. Smith who served as Dean for nine years. David E. Glasser will serve in the newly created post of Associate Dean.

The 16th annual convention and exhibit of the Construction Specifications Institute will be held in Minneapolis, June 19-21. The convention will focus on the specifier's expanding role as well as the greater demands made on his time for research and evaluation in the specification process.

The Urban Land Institute's spring meeting will take place in Toronto, Canada, May 23-25. Delegates will examine Toronto's metropolitan transit systems and will study the completed new town of Don Mills as well as two new towns now under construction.
ARCTIC CITY
An international design team under the leadership of Frei Otto, director of the Institute of Lightweight Structures at Stuttgart, has developed plans for a climate-controlled, domed city capable of supporting 20,000 persons in frigid regions. Recent oil and mineral discoveries in polar areas stimulated the research which was financed by the West German chemical firm of Farbwerke Hoechst in Frankfurt. The domed city would support the work of recovering these resources. The study predicts that the first of these cities will be completed in "12 years at the latest." Customers for the domed project would most likely be large oil companies.

The dome is fashioned of a double-layered polyester fabric a mile and a quarter in diameter. It would be pneumatically tensioned and supported by a cable netting of specially prepared, PVC-impregnated, high-strength polyester fiber with a maximum height at its center of 790 feet. Once erected, dome pressures would be maintained by a system of computer operated fans.

Electric power for the city would come from a nuclear reactor, situated just outside the dome. Thermal discharge from the reactor would warm the surrounding water, creating an ice-free harbor for supply of the city and also partially warm the air which would be taken into the city through a 985-foot air exchange tower adjacent to the dome. Temperatures inside the dome would be maintained at levels common in temperate climates.

Inside the dome, an artificial sun (a battery of electric lights) would run on a track across the dome during the long arctic winter in order to give residents a sense of diurnal rhythms. In summer, rotating shutters would shield out the sun during portions of the six-months arctic day.

Construction of buildings in the city itself would be open to a variety of technique and materials. The city would contain separate residential, business and city center districts plus a large park. Intracity transportation would be by fast or slow moving sidewalks.

The study argues that domes up to about 14 miles in diameter are practical—beyond that point, the costs become prohibitive.

The Tokyo planning firm of Kenzo Tange & Utrec performed the over-all city planning, while the London consulting engineering firm of Ove Arup & Partners provided structural engineering details for the protective dome roof.

WILL THE GLOVES COME OFF?
President Nixon's 19-page environmental message calls on Congress to get on with the work of passing new laws submitted last year plus new amendments now proposed. Nixon wants this to be a year of action. He's seeking a toxic-wastes disposal control law, state programs to control sediment discharge from construction projects, charges on sulphur emissions starting in '76, another $88 million for clean energy production, clarification of tax exemptions for plants recycling their wastes, $23 million more for noise reduction research and another $12 million for studying health effects of air pollution.

All these are hopeful signs—but critics point out that Washington is a city of rhetoric and every initiative by the administration is introduced as "the boldest," "the more urgent" and "the longest overdue." In a city of verbal overkill, where every program is "highest priority," a rhetorical stance is not enough. The President must be prepared to fight "tooth and nail" for the programs he really wants. Capitol Hill observers are watching and waiting.

ST. LOUIS EXPERIMENTS WITH WASTE DISPOSAL
The city of St. Louis and the Electric Co. have joined the Environmental Protection Agency in sponsoring a demonstration aimed at combining ground and other municipal wastes—pulverized coal to fire boilers to generate electricity at a power plant. Says EPA Administrator William D. Ruckelshaus: St. Louis project, if successful, would provide a way to use energy that would otherwise be wasted, and procedure would become available that would be used in a number of large cities across the country to help solve the problem of waste disposal." EPA estimates the value of such waste to be at least half that of coal.
EDY ADDRESSES

ARCHITECTS AND ENGINEERS

architects and engineers from parts of the nation swarmed Capitol Hill on Tuesday, March 13, to present their annual visits to members of Congress to argue for passage of legislation advantageous to architectural practices. This invasion of congressional offices followed a week of sessions in which delegations addressed to the annual Public Affairs Conference, co-sponsored by the American Institute of Architects and Consulting Engineers Council, briefed on current bills and lobbied members in which issues were discussed in detail.

Subjects of the concurrent seminars were housing, transportation, use, labor relations, research, and technological conversion as subjects affect the design profession. Nearly a score of Congres-

sional cease and Senate also partici-
pated.

Unfortunately, a day of hearings the A-E procurement measure scored by Rep. Jack Brooks (D-Texas) who delegated a chance to the House panel in action on Wednesday, May 7. The bill would legalize currently prevailing methods of A-E acquisition on Federal projects, stating a General Accounting Office report to force a bidding procedure.

Senator and Kennedy also detailed pro-

visions of his proposed National Energy Policy and Priorities Act which would authorize $2 billion in three years to establish a framework of policy and priority for civilian science and technology. He also took the opportunity to criticize the recent decision to extend, rather than restore in place, the West Front of the U.S. Capitol Building.

NEW HOME FOR LIBERTY BELL

Because security is inadequate and its present home too small to accommodate the crowds that Expo '76 will almost certainly generate, the Liberty Bell will be moved to a bell tower soon to be constructed nearby as part of a $5 million Visitors Center. Designed by Cambridge Seven Associates, the Center will provide information and assistance to visitors in locating Philadelphia's historic buildings. In its new setting, the 220-year-old symbol of national independence will hang four feet off the floor so that visitors can touch it and examine its famous crack. The bell has not been rung since 1846 for fear of enlarging that crack.

Construction of the new center is expected to begin in July or early August.

HUD TO REVISE INSULATION STANDARDS

The White House has directed HUD to issue revised insulation standards for apartments and other multi-family structures coming under FHA-insured mortgages. The new rules will cut maximum permissible heat loss by 40 per cent with costs to be recovered through lower fuel costs. HUD already has new single-family standards reducing maximum permissible heat loss by about one-third.

HOUSTON CONVENTION

New efforts by the AIA to influence national growth policies will be the theme and prime focus of the 1972 convention in Houston. Delegates to the convention will debate, amend, and vote on a major policy document—the Report of the Task Force on National Policy (RECORD, February 1972). A year in the making, the Report recommends a number of strategies aimed at assuring intelligent use of our dwindling land reserves and proposes methods for creative, humane rebuilding of our crumbling and chaotic urban areas.

A Marketplace of New Ideas, to be located in the Albert Thomas Convention Center, is a new activity this year. Through seminars, slide presentations, and training laboratories, the Marketplace will provide an interchange of the latest developments in architectural practice and the construction process. More than 50 presentations of topics of vital interest to architects will be in the Marketplace. Among them: computer systems, legislative issues, employer-employee relations, Federal agency programs, financial management and cost accounting, planning special environments, and ecological concerns.

Dr. Rene Dubos, microbiologist and experimental pathologist, renowned for his writing and lectures on man's relationship to his environment, will deliver the keynote convention address, "In Praise of Diversity," on Sunday, May 7. On Wednesday, Texas Senator John Tower will address the convention.

The convention's round of social activities—the McGraw-Hill Dode Party, a Night at the Alley Theatre, and the Houston Chapter's Texas Fiesta, will be capped by the Gold Medalist's Ball honoring Pietro Belluschi (see page 119) on the evening of Wednesday May 10.

The Building Team Conference this year will follow the convention on May 10-12.

IS THE AIA EMBLEM OUT OF DATE?

Some architects think so and are petitioning the AIA's board of directors to commission a new design that is "more representative of the emerging new image of the architect." If the board disagrees, the matter may be brought to the attention of the membership at the forthcoming Houston convention.

HOME APPLIANCES TO BE RATED FOR EFFICIENCY

A great deal of electrical energy could be saved if room air conditioners were more efficient. That making them more efficient is not a technical problem was brought out at RECORD's Round Table on Energy Conservation (January). Rather, efficiencies have been going down because the public has not demanded any better.

The fact that room air conditioners represent a large electrical load apparently has moved the Municipal Service Administration of the City of New York, under administrator Milton Muscits, to work out a joint government-industry campaign to conserve energy by rating the efficiency of the units. As a result of a meeting with the Association of Home Appliance Manufacturers, the AHAM organization has agreed to publish and disseminate: 1) a consumer purchase and use book; 2) forms for estimating the size of air conditioners best suited for the customer's needs; 3) data that will permit consumers to compare the efficiencies of various models; 4) suggestions for saving electricity through shading, better insulation, reduction of heat from lights and appliances, and proper maintenance.

Further, and most importantly, AHAM will require that every air conditioner sold in New York City be rated according to energy efficiency (Btu/watt-hour).
Lucalox® lamp
Once you join General Electric's Savings in Light Association, you discover there are a number of important advantages.

And none of them is more unbeatable than the Lucalox® lamp.

The Lucalox lamp is, quite simply, the most efficient general lighting source available.

Specifically, a single 1000-watt Lucalox lamp puts out an average of 130,000 initial lumens of light. That's 130 lumens per watt—approximately ½ more light per watt initially than any other comparable general light source available.

The lighting efficiency of the Lucalox lamp becomes even more impressive when you consider that it's double the efficiency of the average mercury lamp (which is around 60 lumens per watt). That's a pretty good reason to think about updating your present mercury or other type of lighting system.

And when you begin to investigate that possibility, you make another interesting discovery.

Often, to increase your lighting levels, no change in existing wiring or electrical distribution systems is required when Lucalox lamps and fixtures replace your existing lighting units.

Lucalox lighting has many applications: street lighting, parking lots, industrial lighting, highways and others. Anywhere you want to increase your lighting levels and conserve electricity.

(And nobody knows for sure how much improved lighting may save by reducing accidents and crime, or by increasing productivity in factories, etc.)

Lucalox lamps are available in three sizes: 250 watts for smaller areas, the popular 400-watt size and a 1000-watt lamp for high mounting areas.

You can't beat Lucalox lamps for efficiency and savings in your total cost of light. And since most of the cost of light is in maintenance, power, etc., the way Lucalox lamps perform can mean major savings in your total lighting costs. And, as is usual in lighting, the cost of the lamps is relatively unimportant.

So take advantage of Lucalox lamps. Call your General Electric lamp representative. Or write: General Electric, Dept. C-110, Nela Park, Cleveland, Ohio 44112.

GENERAL ELECTRIC

For more data, circle 26 on inquiry card
By itself an aluminum column cover is a thing of joy and beauty forever. The trouble starts when you try to make a waterproof joint between a pair of them.

Let's say the job calls for a 3/8" joint between 12-foot panels. The panels are set in place at 8:30 a.m. The temperature is 50°F when the sealant is applied. (Above, left).

But now the temperature starts to rise. By 4:00 p.m. it's 85°. And those dark-colored, dull-finished, insulated panels are up to 175°. The joint has compressed to 1/4". This is normal building movement. But look what's happened to the sealant. (Above, center).

Heat speeded the cure. And by 4:00 p.m. the sealant has cured to a firm bead 1/4" wide.
Now the temperature drops. By 9:00 p.m. 20°; the joint opens up to \( \frac{7}{16} \)". And while the job called for a \( \frac{3}{8} \)" cured bead that could elongate 25\% either way, it actually winds up with a \( \frac{1}{4} \)" cured bead that must elongate more than 50\% to \( \frac{7}{16} \)". It probably won't stick it (Above, right).

Here's how you can avoid this problem. Design the joints at least \( \frac{1}{2} \)" wide. This way, you will wind up with a \( \frac{3}{8} \)" cured bead that has to move just 25\% of its cured width.

If it is aesthetically feasible, use 6-foot instead of 12-foot panels. You'll cut panel expansion in half and stay well within the sealant's movement capability.

Better still, you might talk to us while you are still in the design stage. We're Tremco. And we cope with aluminum column cover sealant problems every day of the year. We also have some 15 basic sealant formulations to work with — including such familiar names as MONO (our job-proven acrylic terpolymer), DYmeric (our Tremco-developed polymer), and Lasto-Meric (our polysulfide).

With all this going for you, you can stop worrying about the mating habits of the all-aluminum column cover. Because Tremco will come up with a sealant system that will stick with you for years on end. The Tremco Manufacturing Company, Cleveland, Ohio 44104, or Toronto 17, Ontario.

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Our light heavyweight

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Note: This 1.6" Pk has "C" value of .12, and "R" value of 8.33 and is equivalent to as much as 3" of competitive material.

*Permalite Pk: Listed by FM for Class 1 Steel Deck Construction (fire and wind uplift); UL Metal Deck Assemblies Construction Nos. 1, 2 and others.

Building Products Division

Rigid Roof Insulation

For more data, circle 28 on inquiry card
This is why Executone created Room-Tuned Sound.

Even the finest sound systems ring, whistle, howl, echo—or the sound in other disturbing ways. Sound engineers will tell you that the room itself usually causes the problem. Working from this premise, Executone engineers have come up with a solution: Executone Room-Tuned Sound Systems. These professional sound systems employ sophisticated techniques yet simple to electronically match amplifiers to the room they serve. Before installing a system, Executone sound engineers determine the room’s “acoustic personality.” This is the room’s environment, the sum of its size, shape and volume—plus the influence of materials used in the walls, ceiling, floor and furnishings.

They then select the proper combination of Executone professional sound components to match the room’s personality and function. And where a room has acoustic deficiencies, the engineers “tune out” unwanted variations and “tune in” needed sound reinforcement.

The result is an Executone Room-Tuned Sound System. Consistently clear and balanced sound, free of feedback and distortion. People using the system become more confident and audiences more attentive.

Executone Room-Tuned Sound Systems are backed by our own expert local service people who provide prompt, dependable maintenance.

If you’re ready for a sound system that will never embarrass you, call your Executone man now.

Or write for free portfolio, “Executone Room-Tuned Sound Systems.”
The Owens-Corning Energy Conservation Award. "Triangles," a Steuben crystal sculpture that captures and refracts light from multiple triangular planes.
Announcing the first Owens-Corning Energy Conservation Award for architects and engineers.

Show our Awards Jury a building design that doesn't waste energy—and you could win one of the three Energy Conservation Awards Owens-Corning will present this year.

The Awards Jury will be looking for three things: Creativity. Originality. And designs that save energy.

We're running this program because of the urgent need to conserve energy. Too many buildings waste energy and contribute to environmental pollution.

By offering Energy Conservation Awards, we hope to stimulate new designs and ideas for conserving energy. We also want to honor the architects and engineers who do the best job of designing buildings and mechanical systems that save energy.

The winning combination of energy-saving ideas could be in the building you're working on now.

Who can enter. All registered architects and professional engineers practicing in the U.S. are eligible. As individuals. Or in teams. But to qualify, your entry must be a commissioned building project—in the design process, under construction or a completed structure.

The use of Fiberglas* products is not an entry requirement.

The Awards. The Awards Jury—outstanding professionals in the fields of architecture and engineering—will present an award in each of these categories:

- **Institutional**—schools, hospitals and government buildings, for example.
- **Commercial**—office buildings, shopping centers, retail stores and similar structures.
- **Industrial**—including manufacturing plants, research centers, warehouses.

Equal emphasis will be given to all entries in each category, regardless of project size.

Winning architects and engineers will receive a Steuben crystal sculpture—the multi-faceted polyhedron shown on the opposite page. The firms and building owners associated with the winning entries will receive Steuben plaques.

**Send for entry details now.** Completed entries must be submitted by August 31, 1972, so that winners can be notified in September 1972.

For a brochure giving complete details, contact your local Owens-Corning representative. Or write: Owens-Corning Fiberglas Corporation, Energy Conservation Award Program, Fiberglas Tower, Toledo, Ohio 43659.

*Exclusive of Canada. T.M. Reg. O.-C.F.
Dunbar High School in Washington, D.C. by Bryant and Bryant black-owned architectural firm consists of a learning tower and adjacent facilities to serve both community and school. The tower is composed of split levels connected by up-escalators and dumb ramps. There are three four-level "houses" for different age groups each having—besides learning areas—its own kitchenette, a combined lunch and multi-purpose space and a terrace. Robert Jongh, chief designer; Hector Rillo, project architect.

The Caracas Concert Hall by Giancarlo Vannini, architect, and Emmanuel Gavillet, civil engineer, is shown in its preliminary design stage. The main hall for 2,500 people is to accommodate chamber music, symphonies, opera and ballet. The almond shape dominates the elevations and the plan which includes a 500-seat hall.

The Century I Condominium Ocean City, Maryland by William Robert Wakeham of Valand, Building and Associates will have ground-level, rainy-day play under the raised structure; club lounge, game room, sauna, steam and massage areas on the first floor; and a swimming pool, deck and dune walk on the ocean front. There will be 167 one- to two-bedroom units, all with level portions and with living and dining areas facing the Atlantic and bedrooms facing a bay. The building will be 26 stories high, a skip-corridor plan, of cast- in-place reinforced concrete.
Aquarium designed by Knafo Serra for a Greenport, Long Island waterfront site is to be a unique aquarium-museum-teaching facility where graduate and high school students could conduct studies. A multi-storied tank will form the core with exhibits, services, laboratories, instruction and lecture rooms in the starfish shaped wings. On stilts, the structure will leave the grounds free and protected for outdoor exhibits. There will be a rooftop restaurant around the tank.

Edificios Trade in Barcelona by Jose Antonio Coderch de Semenat is sheathed in black glass. There are three underground levels for mechanicals and parking. In the area connecting three of the towers are restaurants, gym, sauna and shops on the ground floor; conference rooms and auditorium on the mezzanine.

The Steamboat Village Inn (right in photo) and Plaza (left, rear) in Steamboat Springs, Colorado, designed by Ken R. White Co. offers 80 hotel rooms, 22 condominiums, a dining room, lounge, saunas, game room, meeting rooms and shops.
The Society of American Registered Architects 1971 Awards Program

The 1971 Awards Program of the ARA indicated a far higher standard of design than has been true of its past programs. The premiated designs shown below (and the Third Honor Award winning Red Wing, Minnesota marina, shopping center and housing development, not shown, by the ARA president's firm, Liebenberg, Kaplan, Cotter & Associates) were judged by F. Schmitt, Paul F. Colebrook, Jr., Herbert H. Johnson, Andrew Ferendino, Wahl J. Snyder, Samuel H. Kruse, John Hellman, Jr., Boulanger and Sidney Epstein with Blake Hughes, RECORD publisher, as jury chairman.

The Los Angeles Resource Center (far left) and the Disneyland Hotel (left) in Orlando, Florida by We Becket & Associates both won Honor Awards.

Holyoke Community College, Massachusetts by Daniel, M. Johnson & Mendenhall, with F. Richard Karl Koch as consulting architect, won a Second Honor Award.

The Parkland Junior High School (top, above) and the William Allen Physical Education Building (above), both in Allentown, Pennsylvania and St. Steven's Lutheran Church shown in Bethlehem, Pennsylvania by Everett & Associates all Honorable Mentions.
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And as it stretches in front
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Armstrong
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One way would be to cut your drafting time by, say, half. That would take care of the profitability and productivity. And it would free your people for more creative tasks.

Easier said than done? Of course. Unless you consider putting Itek's Positive Printmaker to work for you.

You can use the Positive Printmaker all the way through, from renderings to schematics to design drawings to working drawings.

With the Posi you can perform scissors "paste-up" drafting, size and scale your work, rearrange drawing elements, and add details which you might not normally include. It even gives you diazo intermediates up to 18" x 24".

So you never have to draw anything twice. That gives your staff more time to be creative. And that's real profitability.

Write today for more information, including rental and leasing plans.
Efficient building idea: Use this much more Fiberglas roof insulation and save up to $27,000 every 60,000 sq. ft.

Those are the potential savings you could realize on the initial cost of heating and cooling equipment. Your client could also save an additional $2500 a year on fuel.

Simply by using 2 1/4” instead of 3 1/8” of Fiberglas* roof insulation. These particular savings were figured for a suburban office plaza in the northern climates (zone 1). Factors taken into account were: the normal temperature range of the region, size and type of roof deck, the “U” improvement due to thicker insulation. And the added cost of the thicker insulation.

How much can you and your client save by using 2 1/4” insulation?
Send for our free booklet “Raising the Roof.” It’ll show you how to figure your own savings for your section of the country for common types of roof decks.

Write Mr. A. D. Meeks, Architectural Products Division, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

Energy Conservation Award
Owens-Corning is offering awards to stimulate new designs and ideas for conserving energy. Special Steuben sculptures will go to the three architects or engineers who—according to a panel of independent judges—do the best job of designing buildings that don’t waste fuel. See our announcement in this magazine for details.

Owens-Corning is Fiberglas

For more data, circle 32 on inquiry card.
Enkalure II soil-hiding nylon.
When things are at their worst, we're at our best.
Before the miseries of winter are left behind, this carpet will be left with a lot of things worse than snow, slush or rain.

Of course, since the carpet’s made of Enkalure® II nylon, they’ll be a lot easier to hide.

That’s because Enkalure II’s unique construction makes it harder for dirt to accumulate.

And harder for dirt to be seen. The reasons for this are simple.

Unlike conventional nylon fibers, Enkalure II fibers have smooth, sloping surfaces. Which means there are no deep grooves to trap dirt.

In addition, Enkalure II’s special multilobal construction acts like millions of tiny reflectors, to bounce light in every direction. This intensifies the color and makes it appear brighter than any other soil-hiding nylon available. Even when dirty.

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The World Trade Center is a project of the Port of New York Authority. Engineering and development were carried out under the Authority's World Trade Center Planning and Construction Division.
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Marketing architectural services

By Bradford Perkins

president, D’Orsey Hurst and Co., Inc., a division of McKee-Berger-Mansuetu, Inc.

The architect who wants to achieve a steady and growing volume of interesting projects has already pointed out there is an organizational difference between “steady” (growing”) has to seek new clients and convince them that they should commission his firm. Even those clients who come “over the transom” must have had some presentation other than the yellow pages of the telephone directory. A prospective job, perhaps? In some way made known?

We have already emphasized (RECORD, March 1984) the need for developing and following a plan for all aspects of a firm’s business, including business development. What follows is a more detailed introduction to the development and implementation of a marketing plan.

The importance of a successful business development effort was memorably illustrated by H. H. Richardson. A widely known client’s job asked him, one day, to see his son who aspired to be an architect. “What,” she asked, “is the most important thing in architectural practice?”

“Getting the first job!” Richardson replied.

“It is the course that is important,” she agreed, “and after that what is most important?”

“Getting the next job!” was Richardson’s response.

The “how” of business development is something that can be taught as a series of lectures and workshops. Professionals are sell themselves, not an encyclopedia or vacuum cleaner. Each firm has to be extremely active in developing that approach which is right for it, because a successful professional business development program is the key to the unique personality of the firm.

The first steps in this molding process, as pointed out in the March article, are internally consistent statement of the firm’s goals and an objective analysis of the firm’s strengths and weaknesses. Certain offices may want only prestige projects, while others prefer to aim at the top firms. But if that is the firm’s product, then the architect must know this.

The most important guide in this process should be what is known in other businesses as the “marketing concept.” This concept, if it is well developed, can be used effectively not only to help sell professional services but also to improve the quality of the service sold. In simplest terms, this concept has been defined as “finding a need and filling it.” Every client has needs which he expects the architect and engineer he commissions to understand and to fill.

How to identify the client’s needs

Each client’s needs are somewhat different, of course, but there are certain general if not universal expectations. The typical client wants an architectural firm that considers all aspects of the job—function, cost, schedule, esthetics, etc.—and designs effectively to meet the project’s schedule. While meeting these practical requirements, the firm is still expected to produce attractive facilities.

Increasingly in today’s complex milieu, professional firms are expected to deal effectively with the many management problems areas that affect so many projects. In addition to the normal and familiar procedural areas of management, clients are beginning to expect more and more of the professional’s participation in such areas as community relations, qualifications of contractors, project financing, etc.

It is a more simplified concept of what it sounds to say that clients want a professional who is easy to work with. The day of the prima donna is past, and the corporate client especially is accustomed to dealing with well-defined levels of authority with the various aspects of their projects. So the professional firm must not only sell its overall capacity and specialized capabilities to carry out the project, it must also set up those capabilities in a way that will assure the complex client that the project will get the attention of the most senior and most qualified personnel available at key points in the procedure.

While the exact needs of particular projects differ from client to client, groups of potential clients do share roughly similar categories of emphasis in their needs. For example, hospital clients typically consider an understanding of the facilities’ operational requirements as paramount. Others, including many industrial clients and developers, rank project cost and schedule as their primary concerns.

As part of its initial planning effort, the firm should select and concentrate on several potential client and building types. Some concentration is necessary, for as even the largest, most diversified firms know, the broadside approach rarely works. The selection of target building types will naturally be guided by the principals’ and staff’s interest, the firm’s long- and short-term objectives, the competition, the projected volume, whether or not the firm is or could be qualified to handle the project type, profitability, and many related issues.

Part of the process of narrowing the field down to two or more target groups (no firm should concentrate on just one because of the risk) will be research into the major problems facing each group: i.e., financing, operating methods, the need for flexibility, growth potential, site problems, etc. Also, the firm should find out as much as possible about the strengths and weaknesses of other firms in the field, their presentation methods, the design selection process, and, of course, the target group’s basic level of sophistication in construction programing and management—since all of these factors will affect the architect’s own costs and methods of doing business.

While all of this research will have the effect of narrowing the field of target groups, it should not be regarded as simply a search for the easiest windfall. The most fertile ground may indeed lie among clients with the most difficult or the most neglected problems. The search, in fact, is for a market for services within the professional’s most outstanding potential.

Identify the target—then shoot straight

As we move from the general to the specific, the question becomes: “How does one identify and contact prospective clients within the target group?” Many professionals do not seem to realize that there are
usually at least three routes to each client: The architect contacts the client; an intermediary contacts the client; or the client contacts the architect. Virtually every successful firm uses all three, and there are neither ethical nor business reasons to favor one over another.

To illustrate typical approaches, let us look at one client group—hospitals. Many people know about a hospital's building plans long before the architect is selected. To name a few: hospital consultants, regional health planning agencies, government (Federal, state and local) health agencies, local newspapers, and, of course, hospital administrators.

Aggressive firms interested in hospital work might contact all of these sources directly to ask if they know of any proposed building plans and to express an interest in being of service if and when there is a need for the firm's capabilities. This, of course, implies those capabilities exist and are in some way documented. The direct approach requires backup by direct response to any client's expression of interest. There is another kind of backup implicit in and supported by more indirect approaches, such as attending the conventions every target group has, joining the group's associations and participating in its committees, etc.

One way to expand the potential use of intermediaries is through association with other firms. Several large firms, for example, have made a successful career of lending their national names and impressive experience to local architects who may have certain contact advantages but limited staff credentials for major projects.

The best and most frequently used intermediaries are friends and past clients. All firms should maintain close contact with as many people as possible—especially past clients. To quote one principal of a 600-man firm: "Everything leads somewhere."

How to get the client to come to you

The third category, that of client-initiated contacts, is the most desirable but, of course, the hardest to achieve. Most firms, who enjoy a large number of unsolicited contacts received them as a result of satisfied clients and one or two well known projects. In fact, virtually every successful "design-oriented" practice can trace its reputation back to one or two early successful projects.

The impact of many of these projects can be assisted by an effective public relations program. Articles in the trade journals of the target client groups, newspaper features, places on client convention panels, etc. are the most effective. Too often a firm's public relations program is aimed at the design profession's trade journals, which are useful in building a firm's general reputation, but other architects are not clients. So if your building is published in an architectural journal, see that the prestige of that event is made known to the client group as well as to your peers.

Let your presentation show your wares in clients' terms

Whatever the route to a client, the next step is to convince the potential client to select your firm for a project. Although, unhappily, a few projects are awarded on the basis of contacts and pressures rather than qualifications, most are not. In fact, most clients try to choose on the basis of some rational criteria.

The major purpose of a firm's marketing and sales planning is to prepare itself to satisfy these criteria better than any other firm. The successful architectural business development effort must achieve this in order to provide the firm with a consistent means of differentiating itself from the many other offices competing for the same project. In other words, if you believe the firm should be selected for a project, find some way to demonstrate it in the client's terms.

Specifically, go back to the list of typical client needs at the beginning of this article. Each client presentation and support material should be structured to leave easily understood answers to each of the client's primary needs. Leading school boards, for example, want to be reassured on the chosen architect's understanding of educational concepts, ability to control costs and to have the new facility open for class at the beginning of the school year, the experience of the proposed project architect and principal in charge, etc. If the firm's demonstrable capabilities and experience do not provide these ready answers, then it must work to build its marketing strengths. Some firms do this by such techniques as hiring senior experienced staff; using strong consultants; and preparing special presentation materials. Several can trace large numbers of projects to their decision to take these steps. This is the "marketing concept" applied to architectural practice.

The various client contacts must also take into account who in the client's organization is listening. The late D'Oresey Hurst, founder of our management consulting firm, noted that since fewer commissions are being awarded by a single individual, it is important to distinguish:

1. "initiators" who establish the initial contact,
2. "influencers" whose goodwill is important but who don't make the final decisions,
3. "permissers" who can narrow the list of firms under consideration,
4. "deciders" who make the decision.

All of those are important, and contacts with each must be fitted to the client's particular needs. If, for example, one or all of the above are a committee, remember that many committees look at the "safe" decision. As one architect, noted selection committees—both corporate and public—are as concerned with protecting themselves from criticism as they are in selecting the best firm. If a project is a doghouse, many committees will prefer to award it to a firm that has done eighty previous doghouses, for one can criticize them for awarding an "eighty-first." A firm that best meets a client's needs as well as makes itself the "safe" decision will consistently get a share of projects.

Exactly how the effective message is transmitted—by oral presentation, slide shows, brochures or sky writing—depends on the client as well as the architect's own presentation capabilities. As long as it is relevant, expressed in the client's language, it demonstrates an understanding and interest in the project, it is likely to be generally correct. In spite of how obvious these points are, however, it is a constant source of wonder to us that most firms use the same brochure, slide show, consultants and other "point-of-sale" material and approach for every client contacted.

Marketing (the overall planning) of sales (the implementation of the plan) must be a dynamic process. Each project, presentation, new staff member, etc., should contribute to the firm's next project. As a result the firm must continue to learn from the answers to such questions as why it was chosen for or lost a project, what does new staff add to the firm's knowledge of a client type, or what changes are taking place in the firm's potential clients.

How much effort and cash investment should be devoted to all of the above steps will, like all other aspects, vary with the firm's objective. A firm with national aspirations will typically spend more than one wishing to stay small. Typically the amount spent including salaries will range from five to eighteen per cent of the firm's income. Whatever it is, it should be carefully budgeted and then controlled in accordance with the guidelines outlined for final planning and control which will be contained in the next article in this series.
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Can the housing census measure quality?

The nation's housing stock, or inventory, is the composite total of every dwelling unit (including raised ranch, condominium, mobile home and slum tenement) in existence at a given point in time. It stood at 68.7 million units when the 1970 Housing Census was taken, a gain of over 10 million since 1960. That's a lot of homes, but the gain in the previous decade—1950 to 1960—was more than 12 million. A slowdown in the rate of progress? That depends on how you look at it.

Additions to the housing stock are not just "more units" added to a stable base of dwellings. They are a net figure—the gain that exists after losses due to natural disasters, demolitions or abandonments are subtracted from the total. And, since a significant portion of the losses—most of those due to demolitions and abandonments, anyway—are lower value, or substandard housing, there exist distinct quality factors that are not at all reflected in a "numbers only" analysis of changes in the housing stock.

The Government gave up rating housing units as "sound," "deteriorating," or "dilapidated" with the last census, because they felt that it was too subjective a criterion. The results supposedly varied greatly from one census enumerator to another, despite specific sets of instructions on what factors to look for in evaluating any given structure.

There do exist a number of factors in the housing census that can help us evaluate the changes in the quality of the housing stock that have taken place over time, though. One that should serve as a significant indicator of quality is the condition of the plumbing facilities in the structure.

As recently as 1950, one-fourth of the homes in the nation lacked separate bathtub or shower facilities. By 1960, this figure was halved to 12 per cent, or 6.9 million units. And by the 1970 census, it had shrunk to 3.3 million units, or five per cent. Similar progress was discernible with respect to flush toilet facilities and piped-in-water, though in 1970, there were still 2.7 million units in the nation lacking an indoor toilet, and 1.7 million units that still relied on an outside well or spring for their water supply.

Regionally, the South rated the lowest over-all quality score in the last census. With 31 per cent of the nation's dwelling units in 1970, it accounted for 61 per cent of the units that were deficient in bathtub or shower facilities. The figures for flush toilet facilities and piped-in-water show a similar regional split. Lack of progress in the South? Quite the contrary. Of the 3.6 million units lacking bathtub or shower facilities that were removed from the housing stock, or renovated between 1960 and 1970, 1.9 million, over half, had been in the South.

It's not so much the plumbing as where the plumbing is Terms such as "the housing problem," or the "housing crisis," so much in vogue in recent years, are not normally associated with specific regions of the country, though. These terms have a distinctly urban accent. But, the data for the nation's central cities, are not very revealing—at least so far as things like plumbing facilities are concerned. While one-third of the nation's housing stock is located in cities, only 17 per cent of the units deficient in over-all plumbing facilities are found there. When we broaden the picture to look at the central cities and their surrounding suburban areas, that is, the metropolitan areas of the country, the situation is about the same. Roughly two-thirds of the nation's housing stock is located in metropolitan areas, but only one-third of the units deficient in over-all plumbing facilities are in those areas. And, the data for the major metropolitan areas does not bear much differently either, disbelief any contention that we are dealing with a "big city" problem. The top ten metropolitan areas of the country, where 22 per cent of the nation's dwelling units are located, account for less than ten per cent of the units deficient in plumbing facilities.

There are aspects of the central city housing stock that point to something less than ideal conditions. This is particularly true among rental units. The median number of rooms in central units. The median number of rooms in central city apartments was 3.8, for instance, while rental units in the nation as a whole had 4.0 rooms. And, for this smaller apartment, the city dweller pays a dollar more a month in rent than the national average. Basically, the same conditions were found in the 1960 census also without relation to actual room size.

But, the statistical portrait of the nation's stock of dwelling units painted the 1970 Housing Census does not seem effectively communicate what housing conditions are really like in this country. Basically, it fails in three ways, but in all fairness the only one can be directly blamed on its internal design: first, the mass of data on plumbing facilities numbers of rooms, and the like that is presented about the nation's dwelling units is we still do not have an effective measure of the actual "condition" of those units in. Scrapping the judgmental criteria "sound," "deteriorating" and "dilapidate because of "serious problems with responsibility," as was done in the 1970 Housing Census, did not strike me as directly facing the issue. Perhaps a change in terminology or more effective training of census takers would have been better alternatives to simply deleting that section of the survey. If anything, this part of the survey should have been expanded to include some indication of the over-all size a layout of the dwelling unit. A room count is not always an effective measure of living space.

Another failing of the housing census—and this is a failure of most statistics presentations—is that it offers no way matching the observed data with the human condition to which it relates. That is to say, in human terms, there is a distinct difference between not having piped-in-water or a flush toilet on a small farm in Kansas and not having these amenities in downtown Philadelphia. We can appreciate the difference, but we are unable to place numerical value on it.

Thirdly, and this is in part related to the second failing, there is no provision for judging the social context in which the nation's housing inventory is set. Housing is only one facet of a larger community network. It seems logical that a structurally sound dwelling unit in a crime-ridden slum cannot be given equal weight in any headcount of housing with a similar unit in a suburban bedroom community. But, after all we have been able to do so far, I appreciate the difference.
McQuay® Hi-Line Fan Coil Units reduce installed costs without reducing comfort

McQuay’s new upright Hi-Line Seasonmaker® Fan Coil Units can save 15% and more on installed costs but still offer greater flexibility than conventional units. They’re shipped with all chilled, hot water and drain risers and all internal control systems already installed. The contractor merely places the units above each other on the floors, sweats the factory-supplied couplings together, connects the power and plugs in the external thermostat. All units produce equal water pressure drop, virtually eliminating system balancing.

Hi-Line units can have single, double, triple and top duct discharge to service one room or a number of rooms. Five sizes from ½ to 2 tons with 200 to 800 CFM. Available features include standard and low-flow coils, with or without reheat coils, for two-pipe and four pipe systems; both full and supplementary electric heat; fan cycle control; 2-way and 3-way valve cycle control; single stage thermostats with manual or automatic heating-cooling changeover, and two-stage and sequenced heating-cooling thermostats.

For complete information on these upright Hi-Line Seasonmaker Fan Coil Units, ask your McQuay representative for Catalog 770.

Or write McQuay Division, McQuay-Perfex Inc., Box 1551, 13600 Industrial Park Blvd., Minneapolis, Minnesota 55440.

Look to the systems leader...

The cost saver

Reducing installed costs without reducing comfort makes McQuay® upright Hi-Line Seasonmaker® Fan Coil Units ideal for such applications as apartments, hotels, office buildings and hospitals.

For more data, circle 50 on inquiry card
Smoothee® Door Closers for Interior Doors... by LCN

The 4030 Series compact LCN “Smoothee” closer provides the following features: 1. Adjustable hydraulic back check; 2. Adjustable main swing and latch speeds; 3. Full rack and pinion action; 4. Optional hold open arm or, 5. Fusible link hold open arm. The closer mechanism that revolutionized the door closer industry. May we send you a catalog?

LCN Closers, Princeton, Illinois 61356

For more data, circle 51 on inquiry card
They love us in...

Notre Dame, Ind.
University of Notre Dame Athletic and Convocation Center
20'x10' Combination Cooler/Freezer
Architect: Ellerbe Architects, St. Paul, Minn.
Dealer: Aslesen, Minneapolis, Minn.

Washington, D.C.
Andrews Air Force Base
96'x36'x10' Refrigerated Warehouse

Los Angeles, Calif.
Straw Hat Pizza Palaces
12'x14'x8'4" Reach-In Cooler
Dealer: Design Services Inc., Menlo Park, Calif.

Clearwater, Fla.
Pinellas County School Board
24'x98'x10'7" Commodity Storage Cooler
Dealer: R. D. Bateman Co., Tampa, Fla.

VOLLRATH WALK-IN

Wide, Vollrath modular walk-ins have proven their utility and versatility. Pre-engineered, factory-built panels enable to specified size on site, and may be easily dismantled to enlarge, relocate or to convert cooler to freezer. Units are full 2 and 4 foot increments, not nominal dimensions, to simplify layout and maximize cubic capacity. Fire retardant, 4" thick foamed-in-place core provides superior insulating properties. With a choice of 5 interior and exterior finishes, plus the most complete selection of options and accessories, there's a Vollrath walk-in adaptable to your varied requirements. Specify Vollrath!

Send for your personal copy of Vollrath's complete Walk-in Design and Specifications Manual - limited number available.

Mail to: ADVERTISING DEPT., THE VOLLRATH CO., SHEBOYGAN, WISCONSIN 53081

Name __________________________________________
Title ________________________________
Firm ________________________________
Address _______________________________________
City __________________ State _________ Zip ________

All Vollrath Walk-ins N.S.F. approved.

For more data, circle 52 on inquiry card
**BUILDING COST RISE SLOWS DOWN**

Average building costs have gone up 2.4 per cent in the last six months instead of 4.5 per cent which might have been expected from previous increase rates. The national average now stands at 7.7 per cent over a year ago.

This apparent slow-down in the rate of building cost inflation was revealed in a Dodge survey conducted in March of 1972. The Dodge surveys regularly cover 182 metropolitan areas, and composite price figures or indexes are based upon wage rates for 10 building trades and prices of five key materials weighted for their influence on the overall building cost.

The reasons for the moderating rate have to do with market conditions as much as they do with Phase-2 constraints, according to most observers.

**School equipment costs**

<table>
<thead>
<tr>
<th>Chalkboard: slate 1/16-in.</th>
<th>3.30 SF</th>
<th>Chalktrap, aluminum</th>
<th>2.20 LF</th>
<th>Headrail, 2 X 1 1/4-in. aluminum</th>
<th>0.90 LF</th>
<th>Map rail, 2-in. aluminum</th>
<th>0.90 LF</th>
</tr>
</thead>
<tbody>
<tr>
<td>porcelain steel on 1/16-in. hardboard</td>
<td>2.60 SF</td>
<td>ceramic enamel glass, 1/4-in.</td>
<td>2.80 SF</td>
<td>sliding, custom design</td>
<td>4.50 SF</td>
<td>Edge moulding, 1/16-in. aluminum</td>
<td>0.80 LF</td>
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<tr>
<td>Chalkboard: slate 1/16-in.</td>
<td>3.30 SF</td>
<td>Chalktrap, aluminum</td>
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<td>Edge moulding, 1/16-in. aluminum</td>
<td>0.80 LF</td>
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**Cost differentials compare current local costs, not indexes.**

**HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES**

1941 average for each city = 100

<table>
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<td>298.2</td>
<td>305.7</td>
<td>313.7</td>
<td>321.5</td>
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<td>335.3</td>
<td>340.4</td>
<td>361.5</td>
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<td>301.0</td>
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<td>329.8</td>
<td>338.6</td>
<td>371.0</td>
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<td>273.9</td>
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<td>291.4</td>
<td>294.0</td>
<td>300.2</td>
<td>301.2</td>
<td>339.0</td>
<td>371.0</td>
<td>393.3</td>
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<td>275.3</td>
<td>282.4</td>
<td>285.0</td>
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<td>294.0</td>
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<td>358.4</td>
<td>383.0</td>
<td>363.0</td>
</tr>
</tbody>
</table>

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 on one period (e.g., 1960) divided by the index for a second period (1961) 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 (180/133 = 75%) or they are 25% lower in the second period.
1. To give you measurably more—we do more. There's a Kohler generator set to match your specs. More than 1,000 models—gas, gasoline and diesel fueled—including brushless sets from 300 to 500 KW. 2. Measure dependability: No other generator set manufacturer makes as many component parts. Therefore, no other can exercise greater quality control. Every set is tested under full load and registered in our files for accurate service reference. 3. Measure cooling efficiency: Kohler doesn't settle for automotive-type cooling. We design our system to the application for higher ambient temperatures. 4. Measure vibration control: Who else uses elastomeric couplings on generator shafts to prevent torsional damage? Nobody. And Kohler doesn't consider vibration dampeners to be optional equipment. We design and build a complete dampening system into virtually every set. 5. Measure service: Because we're big, we're easy to find. The Kohler service network is worldwide. Kohler does more, does it right, and has for more than 50 years. Free literature? Write Kohler Co., Kohler, Wisconsin 53044.
YOU CAN TRUST
Sanymetal®
TO PROVIDE FEATURES THAT ASSURE...

- smooth surfaces
- flush hinges
- concealed latches
- proven performance
- genuine value

...inside and out

RECESSED TOP HINGE BRACKET is factory installed... integral with pilaster. Hinge and pin fully recessed in door... hygienic, vandal resistant.

CONCEALED LATCH... no exposed fasteners, stainless steel bolt, concealed and flush-mounted, smooth, vandal-proof operation.

RECESSED BOTTOM HINGE... super-strong hinge tested to 1 million swings—proven in use to 10 million operations... fully recessed in door surface.

BOTTOM HINGE POWER BEARING... fully concealed—inside and out. Door rides on thrust bearing with power return to pre-set opening... the only hinge with "muscle" and "memory."

Sanymetal®
PRODUCTS COMPANY, INC.,
1701 Urbana Road, Cleveland, Ohio 44112

For more data, circle 54 on inquiry card
Our Carpet Standardization Program Saves You Money.

We're CCC, the largest manufacturer of commercial and institutional carpet systems with millions of square yards of references on the floors of major corporations, hospitals, schools and stores.

When you standardize on CCC for corporate carpet, we become your single source of responsibility for product performance, delivery, installation and maintenance.

Our program will reduce your administrative costs, assure you of consistent quality and price and give you centralized control of carpet purchases.

One call to a CCC corporate specialist will take care of your carpet needs from coast to coast. He's one of 70 experts we have around the country and he's backed by a nationwide network of certified installers and regional standards operations managers.

To make sure you get maximum wear-life from your carpet at minimum life cycle cost, our man can help you set up a comprehensive maintenance program that's based on a building survey by a CCC maintenance consultant. The survey enables us to recommend a detailed plan for floor care procedures, frequency and equipment... including a CCC-formulated and endorsed line of maintenance chemicals.

Your CCC corporate specialist knows all about trench headerducts and other subfloor access systems and the best way to integrate carpet with them. He's well versed in leasing and can document how our Showplace program will give you a completely carpeted building without using capital funds.

The CCC system features heavy duty Densylon carpet, constructed of Anso nylon and bonded to fire-retardant sponge rubber cushioning. It has outstanding appearance retention, is easy to clean and keep clean, and contains a static control system. Densylon and our other heavy duty brands are available in a wide range of styles and colors so your standardization program can have all the design flexibility you want.

A carpet standardization program will effect a significant reduction in your operating costs if your supplier has the experience and expertise to make it work. CCC has both. Fill in the coupon and we'll share them with you.
"If I were building a gym, I'd specify a Trophy-finished floor"

By Hank Iba*

"I've seen enough basketball courts in 50 years of coaching to convince me. Trophy® is the finest, best-playing gym finish around."

That's the voice of experience speaking. And, like Hank Iba, coaches all across the country have shown an overwhelming preference for Trophy. That explains why over 18,000 basketball courts—high school, college, professional and almost every championship court—are sealed and finished with Trophy.

When you're designing or building a gymnasium it helps to know what coaches, athletic directors and administrators want in a gym floor. Hank Iba can tell you.

"They want a light finish with built-in controlled light reflectivity. They want abrasion resistance and a slip-resistant surface that won't rubber burn. And they want a floor that stands up under multiple uses and is easy to maintain.

"They get it—all of it—with Trophy."

So make sure you give them the floor they want. Specify Trophy Gym Seal® and Trophy Gym Finish®.

Write, wire or call collect for Hillyard's complete, free gym floor treatment file and for Uniform Numbered Files for every type of floor. Or ask for a certified Hillyard Maintainer® for expert, no-obligation help. See the Hillyard section in Sweet's for a complete listing.

NEW COLORED PORTLAND CEMENTS TO BRIGHTEN THE FACE OF AMERICA.

For the first time in the long history of portland cements, the architect, or precast producer has available a veritable rainbow of new Colored Portland Cements . . . from Medusa . . . the Cementmaster. All are pigmented, intermilled white cement base products manufactured under a strict scientific process for maximum color control.

Ten stock colors, plus white, available for color design flexibility. Special colors upon request. For a free sample of Colored Portland and literature, write Medusa, P.O. Box 5668, Cleveland, Ohio 44101.

The Medusa Trademark head shown includes ten basic colors of new Medusa Colored Portland Cements

For more data, circle 57 on inquiry card
How Vari-Tran® helped Maryland Blue Cross establish a good neighbor policy.

Problem: Build a large, efficient office complex surrounded by a new residential community. And in the process enhance the beauty of the neighborhood.

Solution: Turn the building a piece of sky-sculpture Thermopane® insulating glass made with Vari-Tran active glass. Because Vari-Tran reflects sun's heat and light, it reduces air-conditioning needs and results in reduced construction and operating costs. In addition, Maryland Blue Cross Inc., Vari-Tran's aesthetics what the doctor ordered. Building on a raised site, and using silvery Vari-Tran, the result is an ever-changing reflected skyscape. On clear, cloudless days, the building takes on myriad solid hues which change throughout the day.

Maryland Blue Cross figures that Vari-Tran's reflective beauty helped establish good will among their neighbors. But remember, even if aesthetics aren't your most important consideration, Vari-Tran can provide comfort and save money, too.

Either way, drop us a line: Libbey-Owens-Ford, Toledo, Ohio 43695.

Hi-Performance Glass
The glass that cuts building costs

For more data, circle 58 on inquiry card
Amweld puts the heat on fire door costs

We've added Underwriters' "B" label to our polystyrene core door to give you an economical fire door. It's our Super Core, available in either 1¾" or 1¾" thickness.

Super Core fire door offers fire protection, plus excellent sound retardation, moisture resistance, and cold weather insulation characteristics at an economical price.

Super Core is the reason.

A rigid, pre-cured, pre-formed polystyrene core is permanently bonded to cold-rolled steel panels with structural thermosetting adhesive. This combination gives our door its inner strength, assures dimensional stability, and results in a smooth, attractive exterior. There is no sacrifice in quality or materials. You get the same kind of precisely engineered, hard-working product that you've come to expect from Amweld.

Specify Amweld Super Core. It's the perfect door for stairwells or other areas requiring fire protection. And, it's available in 18- or 20-gauge, full-flush or seamless, in a wide range of widths and heights.

Want to know more? Contact your Amweld distributor or call us. Amweld Building Products, 370 Plant St., Niles, Ohio 44446. Phone (216) 652-9971.

For more data, circle 59 on inquiry card.
Classroom and lecture hall seating . . .
in arrangements to fit your most versatile needs

Tablet-arm seating, beam-mounted for floor or riser applications, or floor-mounted pedestals . . . plain or upholstered fiberglass shells . . . fixed or folding tablet. Arrangements in rows, staggered, curved in-line or other configurations to fit your needs. Floor-mounted units adaptable to floor pitch. Posture curved, durable, fiberglass shells. Comprehensive room planning and consulting engineer services are available. Write for details.

For more data, circle 60 on inquiry card
Lechmere shows its true colors

Life's a little brighter for customers at one of New England's largest hardgoods stores, Lechmere Sales, at Liberty Tree Mall.

The reason? GTE Sylvania's Metalarc HID lamps.

Thousand-watt Metalarcs flood the outside. And 360 four-hundred-watt Metalarc/C's light up the inside.

Customers feel secure as they walk through the parking lot, because with powerful Metalarcs they can see and be seen. These lamps deliver nearly twice the light of ordinary 1000-watt mercury lamps. And their color rendition is so good, a customer can spot his car by its color.

Inside the store, phosphor-coated Metalarc/C lamps spread a warm, natural light. The merchandise stands out in its own true colors. Reds don't look purplish. Yellows don't look greenish. Blues don't look garish. (And people don't look sickish.)

Customers don't come back complaining, "Gee, that wasn't the color we thought we saw in the store."

The entire store is lit up so bright and the merchandise can be seen so clearly, that shopping is a pleasure.

Metalarc/C's even make life a little brighter for management.

Compared with fluorescents or...
Inside and out.

Incandescent lamps and fixtures are needed. So you can design better-looking ceilings, yet pay less for installation and maintenance.

To top it off, Metalarc/C's last a long, long time. The newest 400-watt lamps are rated for an average life of 15,000 hours. That's about 4 years, if the store stays open 6 days a week from 10 to 10.

We'd like you to know the ins and outs of Metalarc lighting.

Talk to your nearest GTE Sylvania sales representative or independent electrical distributor.

And learn the whole, colorful truth.

To find their names, look under "Lighting" in the Yellow Pages. Or write to: Sylvania Lighting Center, Danvers, Massachusetts 01923.
Laundry needs—in terms of type of equipment and provision for flexibility—have changed dramatically. New synthetic fabrics and rising labor costs have called for new kinds of equipment, greater degrees of automation—and the adaptability of both to changes in the size and sort of work loads.

In planning laundries to meet these conditions, you can count on uniquely qualified help from American. Our credentials—over and above our long experience—include the industry's most extensive R&D program and the new and improved process machinery that it has produced—machinery that is now proving itself in the "new" laundry operations of today.

For dependable help in planning up-to-date laundries—that stay up-to-date—call on American. We can help you with complete floor plans, equipment recommendations, flow diagrams, capacity and personnel data—anything you need to provide the most efficient facility for the purpose.

Tomorrow's equipment is ready today at American.

The American Modular Industrial Drycleaning System
The American Slant Line Washer
The 6044 Cascadex Washer/Extractor
The Super Thermatic Drying and Conditioning Tumbler
The Tru-Feed Spreader Feeder
The Foltronic Primary Folder
The Trumatic II Primary Folder
The Trumatic Cross Folder
The Formatic Steam Finisher
The Formatic Wet System Finisher

American
American Laundry Machinery Industries
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Shown here (left to right) is an exterior photo of the new 3-story addition which is connected to the original school by a double-deck enclosed passage-way. Also shown is the school science laboratory and two art studios.

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Not many architects produce houses that illuminate philosophic concepts at the same time that they solve esthetic and programmatic problems. Richard Meier does. There is a clarity in Meier’s work that compels every architect, no matter what his bias, to study the buildings and absorb the lessons each offers. This house near New York for a family with six children is worth study on four levels: First, as it responds to the work and thought of Le Corbusier. Second, as it conveys the special delight of architectural sculpture. Third, as a thoughtful solution of the clients’ program on a specific site. Fourth, as a series of details which solve house-building problems economically and well. In short, it is a very comprehensive approach to residential design.

Richard Meier believes that every architect working today has been affected by Le Corbusier. In his own work, and particularly this house, he cites Corbusier’s interest in structural clarity, of the relationship of the horizontal plane to its columnar support and the ensuing visual framework. He cites the bold expression of vertical circulation patterns, such as the ramp, and their incorporation as major design elements. Finally, he cites the play of light and shadow upon form. That is, after all, one of the principal ways in which Le Corbusier defined architecture.

And it is in this way that Meier has particularly succeeded here. As in his earlier houses, Meier has carefully balanced interior daylight level with the exterior light. Thus, even in the daytime (when many glass buildings become solid mirrored volumes), there is a transparency that is reminiscent of Corbu’s tropical buildings—those at Chandigarh or the mill owners’ building at Ahmedabad. In other words, in a climate that requires tightly composed and completely enclosed buildings, Meier has achieved the apparent openness of an unenclosed building. That has been the main esthetic quest of a generation of architects.

The illuminated building at twilight (left) conveys the quality well, but transparency in daylight is the true test. With admirable bravura, the architect has used ramps to connect four levels and has underlined...
their presence with quasi-industrial detailing such as the welded pipe railings and the arched metal glazing structure. The juxtaposition of the arched glass wall and the two glass walls of the living room (right) produces a visual depth that has eluded most designers.

It is this transparency, of course, that makes the house truly sculptural in contemporary terms. It is not enough, today, for external massing to be powerful or pleasing. In both sculpture and architecture there ought to be an interplay of internal and external spaces: a topological continuity is the ideal. Set as an object in a meadow, the scale of the house is deceiving. The linear quality, so obvious in the second level plan, is largely achieved by the connected pool house/playroom. The total length on that level is almost 160 feet but the house itself is only 85 feet long. Thus, using a swimming pool and ancillary structures, Meier has maximized the thrust of the form into the site.

It is a large house—eleven bedrooms—but it definitely has a residential scale. When the six children are at home with their friends, and young visitors are very frequent, the ramps are alive with running, shouting youngsters. It is an indoor playground. A device which architects have always identified with monumentality, or at least with access for the handicapped, is used here to express an open and informal style of living. Although the plan organization of the house indicates a compartmentalization usually identified with much larger buildings, the intensity of use (a dozen people live here after all) requires such zoning.

Finally, in spite of its steel frame, this is a wood house which owes as much to American house-building techniques as it does to European formal traditions. The 4 ft.-6 in. wide ramp is wood framed, and, like most of the floors, is of dark-stained oak boards. This material, played against glass and white walls inside and out, adds a warmth that is entirely appropriate.—James D. Morgan

The rear and side elevations (left) are designed as a tight skin to complement the rich forms of the main facade. A symbolic freestanding steel column (bottom left) has been placed on the structural grid.
The linear organization of the house, emphasized by the ramps and the second-level connection to the playroom/poolhouse, relates well to the site. Formerly a pasture in which horses grazed, the land was gently shaped including a mound which screens the entry from the drive. The existing lake was also modified.
The living room is a two-story glazed pavilion, partly defined by the winding metal stair (right) that continues up to the bedrooms on the third level. Yet the space is contiguous with the circulation spine on both levels and with the areas beyond: dining and music below and children’s recreation above. Specially-designed white lacquered wood furniture grouped around the fireplace provides a remarkably intimate area for entertaining. The steep stairway behind the fireplace (left) leads to a small deck. From the interior, the deck provides a smaller-scale sitting area to one side of the fireplace. From the exterior, it creates a well-proportioned opening, with the upper glass thoroughly shaded, thus assuring transparency.
Ramps in the acrylic-glazed gable are the most compelling architectural feature of the house. Framed 2 by 12's and surfaced with stained oak flooring, their springback helps to give a domestic scale that might seem an inappropriate monumental design element. Entry (right) with its red, asymmetrically-pivoted door, leads immediately to the ramp which ascends above the living room (above right). The second leg of the ramp lands above the entry, adjacent to the master bedroom. There, a cylindrical two-story space (right and far right) is topped by a flat skylight, details for which are shown on the next page. The details indicated on the section through ramps (above) also appear on the page.
These drawings are taken from Richard Meier's construction documents. The wall section (left) is cut through the rear elevation. Note the extensive use of dimension lumber and the straightforward design of the fixed glazing detail. Steel operating sash are installed in a similar fashion. The curved gallery window above and the flat roof skylight below are also examples of effective minimal detailing. The wall section is reduced at $\frac{1}{4}" = 1'-0"$ and the tails at $\frac{3}{16}" = 1'-0"$.

Architects: Richard Meier and Associates; Dorothy Alexander and Sherman Kung, project manager. Littenberg and Childs, Engineers: Severud-Perrone-Stack Bandel (structural); Dalton and Don (mechanical & electrical). Contractor: Burton M. Saks Construction Company.
Wilson, Morris, Crain & Anderson have recently completed a handsome, surprisingly flexible College of Education on the campus of the University of Houston. In plan, the building is a Greek cross, symmetrical about every centerline, with core elements split-up and placed in four, free-standing towers outside the building where the arms of the cross intersect. Sited at the center of a long quadrangle, the building's symmetry and omni-directional orientation are, in part at least, a response to its focal location.

The four-story, 120,000-square foot structure is reinforced concrete with core and shear walls poured-in-place and post-tensioned. Window walls are bronze-tinted solar glass framed in anodized aluminum sash and protected by conspicuous, carefully articulated sun screens. Entrances, at grade, are located behind each of the four towers.
Inside, the rigid geometry of the forms begins to disappear. By transferring the core elements to the building's periphery, the architects were able to provide a superimposed sequence of large central spaces, defined by point supports but otherwise unencumbered. On the first floor, a Large Group Instruction Area can accommodate 300 people. It also doubles as a conference center for the College, the University or the surrounding community. The second and third floor spaces, partly opened to each other (photos above), form the Learning Resource Center—a space or series of sub-spaces in which a wide variety of learning situations can be generated.

Surrounding these central spaces on each floor are assorted faculty and administrative offices, audio-visual labs, seminar rooms, lounges, practice teaching classrooms—all with non-bearing partitions that can be rearranged as new needs arise. A system of paired columns separates the large and small spaces, delineating interior circulation and picking up intermediate structural loads (see plans).

The educational program is subject to continuing revision, so the architectural program emphasized flexibility. The assumption was that the best facility would be one that got out of the way of the educational program. To both client and architect, this meant innovative, open planning. It meant planning for a future full of practical uncertainties—a future in which tools, techniques and perhaps even purpose will improve. As knowledge in nearly every discipline continues to explode, the concept of teacher as "dispenser of knowledge" gives way to more viable alternatives. The burdens of education are being transferred at an earlier age to the learner.

The function of the College, therefore, is to train and retrain teachers, to encourage experimental attitudes, in short, to influence both the direction and the quality of present and future education. In spite of these uncertainties, the building has a surprising sense of self-assurance. The forms have a clarity and confident logic. The detailing, inside and out, is precise and sure-handed. Metaphorically, the building seems to answer more questions than it asks. Such ambiguities as exist center on the shifting, multiple use of the building's varied interior spaces, and it is in these spaces, of course, that the building's long-range effectiveness will be gradually determined.
Nearly all spaces in the College are provided for comfort and acoustical control. Furniture has been carefully selected with a view toward flexibility and, in some cases, multiple function. Ceilings are lay-in acoustical tile with custom-designed, recessed lighting fixtures. Air diffusers are supplied by a double duct system from mechanical spaces on each floor.
The Large Group Instruction Area, which seats nearly 300, can be comfortably used by one or more smaller groups simultaneously. Smaller spaces whether administrative or teaching, are designed with the same eye toward flexibility and uncertain future needs.

The projects on the following pages are all educational complexes—although only three can be conventionally considered as such. The elementary school, museum and firemen training center each have a formal and traditional teaching mission, but the industrial medical center does not, at least for its patients. All four projects, however, will when complete, prod, stir, arouse, excite, stimulate, exasperate and ultimately educate their users.

The buildings of Hardy Holzman Pfeiffer Associates teach as organizations of space for human interchange, for developing self-awareness, for community and for privacy. Their inventions fascinate in their essence as constructions. By using conventional materials unconventionally, and unfamiliar materials in a familiar way, the architects force their users to really see what they are looking at. They keep finding fresh contexts for old things, and time-honored contexts for new things.

The architectural game they so exuberantly play is paralleled in their methods of architectural presentation. Bored with miniaturization—they don’t wish to show the client a tiny little model of his perfect little building to be—they make their mock-ups out of combinations of anything which suits them. Told that perhaps their presentation techniques overwhelm content, accused of not being serious, of trivialization, of creating curious toys, they argue that their models are for the purpose of stimulating the conversation, and for suggesting a broader range of visual values. Malcolm Holzman adds “—anyway all models are toys.”

The architecture that emerges has a strong structural discipline. The bids on each building are within or under its limited budget and comparable to the national average where it applies.

Hardy Holzman Pfeiffer Associates are a small office and all the work is done by themselves and a six-man team which consists of Thomas W. Casey, Neil Dixon, Michael Franklin Ross, M. Herbert Staruch, Marvin Wiehe and Peter S. Wilson. —Mildred F. Schmertz
This school which occupies a sixteen-acre site is to become a part of the rural setting which appears in the top photo. The architects have tried to make it a modest addition to this scene—low lying, minimally landscaped and with its great diagonal skylights, explicitly functional like the farm buildings which are its neighbors. The educational cluster areas have metal walls which are stepped by half levels into and over the sloping site.

Schools are messy but the mess is fun says the second photo from the top. The model photos above and to the right show the ways in which the happy chaos will be gently ordered. At the heart of each cluster there will be a small instructional materials center containing a library reference area, TV and computer outlets and audio-visual devices. Each cluster contains a semi-enclosed planning area and home base for the teachers assigned to the cluster. An open access spine connects the three clusters and leads to the gymnasium, the large group instruction area, the principal instructional materials center and art, music, administration, service and other facilities.

An open plan for rural children based upon three multi-level clusters each of which function like a one-room schoolhouse. The lively model (opposite page, top) shows the typical team teaching cluster which forms the basis of Hardy Holzman Pfeiffer Associates design for the Southwest (Mt. Healthy) Elementary School. It is now under construction for the Bartholomew Consolidated School Corporation near Columbus, Indiana. The cluster model at first glance looks like one of the firm’s preliminary models for a theater-in-the-round and suggests the influence of spatial ideas which have emerged from their widely known theater work. Hugh Hardy insists, however, that “our buildings don’t really look alike because they are all different solutions to different programs” and it is true—if one studies it carefully—that the cluster model gradually stops appearing to be a setting for drama and begins to look like a setting for life.

Although the Southwest School is only the latest in a series of excellent schools designed by distinguished architects for Columbus and its environs, it is the first in that area to feature an open plan for team teaching on a non-graded basis. The non-graded cluster works at his own pace in each subject and is assigned groups of varying sizes at a similar level of achievement. Implications of this teaching approach for school design major since the concept abolishes the graded classroom we know it and with it, the various corridor configurations.

What would once have been the classroom area is divided into three multi-level centers which can handle a minimum of 90 students each. The cluster areas correspond to standard academic divisions lower primary (kindergarten through second grade), intermediate (third and fourth grade), upper primary (fifth and sixth grade), and special education classes. Within each center, large group, small group and individual instruction proceed simultaneously. The physical divisions between groups consist of changeable floor level, cleverly juxtaposed materials and finishes and contrasts in type and intensity of natural and artificial light.
Unlike most new medical buildings which function primarily as antiseptic containers for their frightening equipment (left and below) this new clinic has been designed to educate and relax the patient as well as treat him.

Were it not for the figures in white coats it would be hard to tell what the elegant model (opposite page) is meant to be. The remaining photographs and drawings give no additional clues and for once words are really needed to buttress the visual language of an architectural project. This is because the Columbus Occupational Health Center to be constructed in Columbus, Indiana will be like no other, and has no precedents as an image of medical treatment.

The interior planning concept of the center challenges the commonly held theory that a clinic is merely a series of individual self-contained boxes connected by corridors. During careful examination of the services the clinic would perform and the kinds of activity it would engender, the architects discovered that not all functions require the same degree of privacy. It was found that only examination rooms need the degree of aural and visual privacy provided by walls extending to the ceiling and conventional doors. Activities such as physiotherapy, eye examination, cardio-pulmonary tests and dressing can be performed in alcoves enclosed by height partitions and folding screens. Sight testing, weight recording, x-ray areas and nurses stations are open.

The architects believe many of the activities of a medical center are essentially interesting to the waiting patient who will take advantage of opportunity to educate him. The laboratory area has been encased in glass but is visually open to the waiting area. The latter consists of two geodesic domes which can be seen in the models and plans, will be equipped with audio-visual devices to disseminate educational medical information and record individual medical histories. The sequence of events which occur along the wai ramps has been planned to cupy the entire duration of waiting cycle in order to reduce boredom and anxiety.

In the public spaces, highly polished metal walls will contrast effectively with the rougher surfaces of textured concrete block. The perimeter wall will be of black glass affording a smooth background for the exposed structural and mechanical systems. The interior face of this wall which will be supported by open web joists will be illuminated from above by a continuous skylight. In the daytime, the black reflecting glass skin will prevent people on the outside from seeing while providing excellent view from within the building. At night, when the building is empty, its interior will be visible from outside.
Planned to serve children from all ethnic backgrounds to foster their curiosity about the world and themselves.

Whether they are designing a school, a clinic, a firehouse or a museum, Hardy Holzman Pfeiffer Associates are hard at work in behalf of the already intellectually curious and are just as eagerly attempting to prod the bored and somnolent into awareness and energy. Architects who study even a medical clinic in its aspects as a teaching mechanism for its patients and arrange things so that the latter may learn a little medical science while they wait (previous pages), can be expected to surpass themselves as architect-teachers when they get a museum to do.

From the beginning the Brooklyn Children's Museum, designed for the New York City Parks Department, has been conceived of as a total learning experience and is being designed as such. In the architects' words the museum is not to be "a remote fortress for the preservation of the priceless and unique. Unlike the traditional museum, it must encourage active exploration and an interplay between seeing and doing. It will not be designed as an additive series of contained and separate rooms. Rather, it will offer an additive series of interlocking spaces adapted to many activities."

The architects are designing the first exhibit which will be based upon a broad range of concepts including those indicated in the posters (up left). Entitled "Who Am I will enable the child to discover more about himself, his family, and the community."

The building is essentially a concrete box to be partially buried in Brooklyn's Boro Park in the Bedford Stuyvesant area. It supports a plateau top which functions as a continuation of park land. The most recent photograph (opposite page) is an early one. The plateau has since been redesigned as an even more active area and will contain a number of objects "as found" such as a 19th century New York City street kiosk and a lamp post, both from the Queensborough Bridge (left), a porcelain steel silo, a fiberglass onion dome, a granite stand and an interstate highway bridge and sign.
A master plan which provides streets and turnarounds for learning to drive fire trucks, simulated buildings for all kinds of fire fighting, and a school for academic disciplines.

Firehouses are fun to visit, fire fighting equipment is fascinating, and firemen have a discipline which is wonderful to watch (left). Fire fighting is also a dead earnest para-military enterprise and a training center for firemen has much in common with an army training camp.

In the past, New York City's firemen went through their basic training on Welfare Island. Since the Urban Development Corporation has taken over this site for housing, it will build the New York City Fire Department a new school on Wards Island. The Firemen Training Center serves as the academic and physical training facility for all New York City firemen. Three specific activity areas have been developed to accommodate the school's varied programs: physical training, service and education and administration. The physical training facilities include the fire tower, the basic training building and the advanced training group, consisting of the replicas of a loft building, a tenement and a frame dwelling. These five buildings can be seen in the plan and photos (below).

The service facilities include the mask service unit, a combined firehouse-marina facility and a garage. The education and administration buildings have been separated from the training and service area (as the plan indicates) and will be developed in a park-like setting as part of the overall landscape plan. The model photo (right) of a portion of the cafe within this building.

The overall architectural character of the center is derived from the linear organization of the training and service buildings set within the linear, open, hard surfaced training strip along a common spine. Landscaping and planting parallel to the strip further define this area and create a different ambience for the education and administration building, separated from the training and service center by a major open space and a sloping earth berm.

At the interface of the two distinctively different areas will be provided.
The sloping roof of the education and administration building of the Firemen Training Center will be of corrugated steel. Offices, classrooms, lecture halls, public circulation and exhibits spaces occupy the ground floor and mezzanine.
For fifty years Pietro Belluschi has been expressing his philosophy of "eloquent simplicity" in one way or another but always in deep humility and with gentle persuasiveness, through his buildings, his spoken and written words, and through his various ways of teaching. The message is so fundamental, and its delivery has been so modest and unassuming, that the importance of this approach to architecture has been understood and adopted by fewer than it warrants. Its significance now, at a time when architecture is overwhelmed with the fruits of technology and the products of free expression, takes on a new dimension of urgency.

This year Pietro Belluschi is the AIA Gold Medalist, chosen for the honor for his most distinguished service to architecture, the extent of which has never been fully recorded. Since publication in 1953 of the "Northwest Architecture of Pietro Belluschi," presenting an overview of his work through 1951, there has been no survey of his work. Only through such a survey will the meaning of his philosophy—and the inseparability of his beliefs, his words and his work—become clear and his work be understood.

Belluschi reviewed his fifty years in architecture last year at an extraordinary event in the Pacific Northwest—The First Abbey Conference, at Mount Angel Abbey,
in his former home state of Oregon. It was a rare occasion—especially so because Bel­luschi at 72 saves his energy these days for design, not speeches—in its revelation of both the man and his work, of the enduring quality of his ideas, the timeless nature of his beliefs, the passion and compassion that undergird his philosophy, and the "elo­quent simplicity" that so expressively sums up his approach to architecture.

His early work in Oregon and Wash­ington (pages 119 and pages 120-123, top) remains as fresh, as real, as clear in purpose today as when he produced it 30 and 40 years ago, not because he designed a "style" but precisely because he did not. He searched for form in structure, and found it a wellspring of ideas. He probed the "facts and circumstances" of each job that came to him and from them derived his design. "The solution," he said last year in talking of this early period and particularly of one of his favorite buildings, the Portland Art Museum (right; below), "is in the functional demand." What the clients wanted, what the locality suggested, what the building was to be, were the "func­tional demands." But his way of translating these demands into buildings was individual, a combination of sensitive awareness and clear, logical, practical good sense.

... I believe that architectural forms

Museum buildings span forty years of Belluschi's practice

The Museum Art School and the pedestrian Mall and Sculpture Court through which it is entered, represent the final phase of the Portland Art Museum's development plan, carried out over a 40-year span by its architect, Pietro Belluschi. Architecturally harmonious with the earlier buildings, the new building (pages 120, 121, and 122) consists of three floors of studios, an auditorium located to serve both Museum and School, an exhibit gallery, and administrative offices. The landscaped Mall and sunken Sculpture Court (left, below) replace a street vacated by the city at the request of the Museum and connect with Portland's "Park Blocks," making a fortunate and delightful addition to the city and a handsome entrance for the School. The first wing of the Museum (at top) completed in 1932 but commissioned earlier, was the first important public building for whose design Belluschi was responsible. The second wing (opposite page, top), added in 1938, more than merely meshed the two wings. It enhanced the original facilities and heightened their effectiveness architecturally as well as for display of art objects, with a large dramatically skylighted sculpture court and with innovative monitor lighting in the six new galleries it provided. Both natural and artificial lighting are important elements in design of new Art School building (opposite).
which are not born of the peculiar demands of the job to be performed, but which come out of preconceived esthetic theories alone, will be in constant danger of becoming artificial, tricky, and fashionable... their transitory quality will be even more evident after they have gone out of fashion...not only the emotions but also mind and logic must be satisfied before lasting values may emerge.” (Regionalism in Architecture—Pietro Belluschi; RECORD, December 1955.)

When he first arrived in Oregon—after a year at Cornell where he received a degree in civil engineering (he already had a doctorate in architectural engineering...
from the University of Rome) and a year as an engineer in a mine in Idaho—he thought it “wild, unfriendly country, lacking in softness and femininity, not like the hills of Tuscany and the Roman countryside I remembered.” He especially did not like tall stands of Douglas firs, and the dark weather, so unlike his native Italy. But as he drove (in an old Ford) the plank roads of the wild coast and ferried the rivers (there were no bridges then) that emptied into the Pacific Ocean, he came to see the beauty of the place and, perhaps from this intimate experience of its natural geography, to understand in a rare way how to express this particular part of the world in his

In the 40 years since the first building was completed, the original design decisions have proved themselves, rooted as they were in the museum’s requirements and not in the style of the moment. The solution was then, and it has continued to be in all of Belluschi’s work, in the “functional demand,” to use his terse and descriptive phrase, of the building itself.

medium, architecture.

"Regionalism at its best cannot be measured or imposed, is not a school of thought but simply a recognition within its own sphere of what architecture is to human beings, a deep regard for their emotional demands, and this need not be forfeited even in the most practical demands of a project..."

"It would be impossible for us to retreat or escape from a world in evolution but... we must believe that a society of men may gain wisdom by seeking again the things man can understand and love, and conversely by learning to love all that lives near him..."

"The plea we can make is not that we go back to what once was, not that we become romantic, but that we face creatively as free spirits and in deep honesty the complexities of our modern world, never forgetting that man is the measure of all values." (ibid.)

The Museum brought Belluschi his first national acclaim, though regionally he was already known for the elegant simplicity of his houses. In 1948 the Oregon State Hospital at Salem (page 122), set a new standard for humanitarian design of institutional buildings, especially for the mentally ill. But it was the Equitable (now Commonwealth) building (page 123), also

The structural system—four interior columns and a central core, inverted-V braces (or "wind braces") to transmit wind loads on exterior columns—precisely reflects architectural concept. Architects and engineers worked closely from the earliest design concept, achieving through their collaboration exceptional economy in the weight of the steel (21 psf vs. 25 in conventional design), and providing Boston's column-free office space as well as a satisfying aesthetic statement. Slender intermediate columns veil V-braces on exterior..."
completed in 1948, in which his pioneering concepts really caught the profession's attention. It was not the first multi-story curtain wall building, but it was the first of a new generation of buildings to make use of the idea and to do so in a unique way which was at once regional and trans-regional. The gleaming aluminum sheathing which covered the reinforced concrete frame was a product in excessive supply in the Northwest after World War II, and the Equitable proposed a market for its use on structures. Its list of "firsts" is imposing. Belluschi recalled one of them, the traveling crane window washer, last year: "I got the idea from the way train windows were..."
"This device is really...made the flush exterior walls of the table possible." The boldness of the concept, its direct expression, pared to essentials, is a perfect statement of Belluschi's that "an architect must train himself to eliminate, refine and integrate."

When he left Oregon a few years later to become dean of the School of Architecture and Planning at MIT, his office was hired by Skidmore, Owings and Merrill. The era ended for him, but ahead of him, though he did not know it, were opportunities for a new and different kind of practice, something few architects ever envision, the challenge he had sensed when he

ent work: a miscellany
building types in many places

spoke at Reed College on the eve of his departure:

"The ideals of the modern architect may be very briefly summarized thus: He must come to terms with his environment; only then can he hope to become again creative, not in the anemic method of the academy or as a hireling of the wealthy, but as a lively interpreter of the new social order and as a prophet of his age."

During his first years as dean, he served on numerous architectural juries and advisory commissions, a new dimension to the educational career he had undertaken. Soon he was asked to consult on projects of all kinds and of great scope, in all parts of the country, and abroad. But for Belluschi consulting is no tangential association; it is complete involvement with the problem. His practice became a new kind of professional service for which he was uniquely qualified. Retirement from the MIT deanship gave him the time this kind of practice required, and that new demands asked. Old clients (the Museum, the Equitable, The U.S. National Bank) wanted new buildings. New clients were numerous. In every instance, he associated with a local firm, often a young firm. His name was on churches, temples, office buildings (though on the Pan Am, it was Gropius, not Belluschi, who was primarily responsible), schools and college buildings—the list is varied and long.

It is likely, however, that great has been his contribution in the design of individual buildings, it is his work—serious, honest and practical as well as intensely creative—on projects that have affected the quality of cities by changing the concept of their pattern that will eventually be recognized for its pioneering concepts. For through "eloquent simplicity" he has brought to decision makers of all kinds—politicians, financiers, developers his message of good design, and because his work is as good, or even better, than theirs, they have listened. And all have benefited. —Elisabeth K. Thom
CHILD CARE CENTERS

This is ARCHITECTURAL RECORD's first Building Types Study devoted entirely to child care centers. Child care centers serve many social and community purposes, but their most important job is to be places where young children grow and learn. Child care centers are hard to design. They must be flexible, simulating, scaled for children but comfortable for adults, inviting to the community—and dirt cheap. Despite that last requirement, the buildings we have chosen have been successful in many ways. Child care centers are, by definition, resources available to working mothers; but we have included two private nursery schools which are closely involved with their communities and for which most of the architectural problems are the same—Jonathan Hale
CHILD CARE CENTERS: THE PROBLEMS AND THE MEANINGS

WHO WANTS CHILD CARE CENTERS?

Child care centers have been going up by the hundred in the last few years. There are two main reasons: the entry, en masse, of mothers into the work force, and the still-dawning understanding that a child's earliest experiences are crucial for later ability to learn.

One reason that is missing is any real government support. There is very little Federal money for child care programs, and very little Federal guidance for designing and setting up a child care center. Few states have large-scale care programs and most have no standards for early childhood care away from home. New York City has perhaps the most extensive program in the country, but even there, cutbacks in state funds have brought new construction to an end and some existing services are threatened.

Nationwide, one out of three mothers of children under six works. During the time the mothers are away from home, their children are cared for by friends or relatives, by licensed child care centers (about 25 per cent), by unlicensed child care centers where children are often given minimal attention, or the children are left alone. By some estimates, 600,000 small children are left alone each day.

According to education experts, 50 per cent of a person's ability to learn is achieved by the age of four; and a stimulating environment where a child receives considerable attention can affect this ability enormously. Educators have been intuitively aware of this for decades; but during the last ten years, there has been a great increase in the amount of reliable information about how children learn. At the same time, people have been discovering the failure of schools to reach many underprivileged children. The Federal Head Start Program was started under President Johnson to help deprived preschool children attain the patterns of thought necessary for later learning. Head Start was an administratively small program, but it continued to provide the only Federal support for preschool education.

WHO OPPOSES CHILD CARE CENTERS?

Last fall, Congress passed a large-scale program of Federal support for child care centers. President Nixon vetoed the bill, arguing that such a program might weaken the family structure, and arguing that the $2 billion program was too expensive. Opposition to child care centers has come from some communities because the center would bring in the children of poor neighbors. Also, many educators believe that long hours spent away from home would hard on small children. Finally, child care can be extremely expensive. The ratio of teachers to children in the New York City program is about four times that of the city's public schools. What's more, child care centers are open from 8 a.m. to 6 p.m.; the cost is $2,500 per child per year.

An alternative to the child care centers is the placement of small groups of children in private homes. At least one urban community claims success with an inexpensive plan; however, in the hands of untrained adults, a great deal is left to chance.

Private child care centers are springing up in large numbers, especially in areas such as Texas, where there is little or no government support for child care. Children of franchised centers are run for profit, at a low cost to parents. Many charge as little as $20 per week. The quality of the care varies widely, although some of the franchised centers have achieved a good reputation. Some educators insist decent child care is impossible for less than three times the $20 and not a few balk at the whole idea of marketed child care.
ROLE OF THE ARCHITECT WITH THE COMMUNITY

A good child care center is a real community resource. It frees mothers to work (in some cases, freeing many fathers who must work more than one job) and it gives children a solid foundation which will make it possible for them to survive in school later, when providing a much happier and more stimulating environment than they could otherwise.

The first group of child care centers on the following pages, by architect Frank Williams, in association with architect Neil Herget, were designed to make the most of their high-density inner city sites, reaching out to their neighborhoods. Under the New York City system, the community controls the completed center but does not control its design. That is determined by the Department of Social Services and by a private builder, from whom the building is then rented by the city and given to the community group. Within the set program, there is still room to respond to the community. On one narrow through-block Williams terraces his building back from the street, providing two entrance plazas and a through-the-block connection (page 130). On other sites, he provides inviting "front porches" (page 132).

To many in poor communities, monumental or institutional buildings are a retreat and an affront by the wealthier owners from which they are excluded. It is up to the architect to keep his building in having that image—no mean trick if building is, in fact, the creation of an outside government agency.

Many architects and administrators of child care centers believe they should provide services for adults as well as children. Their center on page 134 contains many community facilities, notably medical and psychiatric counselling. The center at the bottom of page 135 also contains counselling facilities. The center on page 132 incorporates a drug rehabilitation service. Many centers contain after-school facilities for their children.

While there have been some efforts to provide the small children’s spaces available for adults at other times of the day, the general feeling appears to favor leaving the small-scale spaces and the children’s space-in-progress for the children alone. The furniture is, of course, far too small adult use, but more important, daily rearrangement makes it very difficult to maintain any sort of continuity.

...IN CONSTRUCTION

Building a child care center is an exercise in doing more with less—much less. The A-B-R Partnership, architects, used prefabricated units made by local modular builders to put up three low-cost child care centers in Denver (page 139, top). The Early Learning Center, Stamford, Connecticut (page 138), Egon Ali-Oglu, architect, was built six years ago for $13 per square foot, using a system of precast concrete elements. In New York City, architect Frank Williams used load-bearing brick to help reduce the cost of his centers to $20-22 per square foot in a city where school construction can run as high as $60 per square foot. The Charlestown Playhouse, north of Philadelphia, Oskar Stonorov, architect (page 136) incorporates the stone bearing walls of an old church. The Henry Street Child Care Center, Welton Becket and Associates, architects (page 135, bottom), uses the roof of an adjoining building for a playing area. Direct remodeling is sometimes more desirable than new construction, although some schools have found it nearly as expensive. The Shady Lane School in Pittsburgh, remodeled by Paul Curtis and Roger Smith (page 140, top) was a Victorian house. The Hilltop Center, Dorchester, Mass., PARD-Team, architects (pages 141, middle, 142, top) is a remodeled supermarket with big plate glass windows that provide a link to the community.

More information

An excellent, highly-detailed book, Patterns for Designing Children’s Centers, by architect Fred Linn Osmon, was recently prepared for the Educational Facilities Laboratories, Inc., a non-profit organization funded by The Ford Foundation. The book is available from EFL, 477 Madison Avenue, New York City, 10022, for $2.00.

The Day Care and Child Development Council of America, Inc., in Washington, D.C., is also a good source of information for the child care architect.
Given a standard New York City Department of Social Services program and a rock-bottom budget, architect Frank E. Williams opened a narrow site to the neighborhood, providing a through-block connection and two plazas. The site plan (opposite page) shows a proposed mid-block mini-park linked to a shopping street (top). Playrooms for 15 to 20 children each open directly onto terraces for quiet outdoor play. The roof provides a space for active play. The structure is load-bearing brick. The choice of facing materials was up to the builder, not the architect. The configuration of the building, terracing towards the street, with entrances clearly denoted by stair towers, is designed to be inviting to the community. Although the completed building falls below the architect's conception, its basic strengths are not lost.
DAUGHTERS OF AFRICAN DESCENT
DAY CARE CENTER, BROOKLYN, NEW YORK

On a more congenial site, and with a very sympathetic builder, this is one of the most successful of architect Frank Williams' centers. The child care section above is an after-school center which has a separate entrance (top left in plan). Classroom arrangement is a direct expression of the New York City program, grouping community and administrative facilities for the child care section around the main entrance (bottom in plan), linked to the playrooms by a sunny gallery. An open "front porch" is an invitation to the neighborhood. This center was started by a women's organization which felt child care was the most immediately effective way they could help their community. Builders were Rentar Development Corporation.
On a tight mid-block site, this center by Frank Williams makes the utmost use of the resources at hand. Keeping to the scale of the surrounding buildings, it provides a "front porch" on which neighborhood kids love to play. Even before it was opened, this building was a part of its community. Two playrooms open onto their own terrace. The rear was designed to make the most of neighboring gardens. Small interior terraces (below) bring light to a central multi-purpose space and also to the adjacent buildings. Typically of New York City child care centers, this is located in a healthy neighborhood which, however, has many underprivileged residents. It combines child care with other community resources, notably in this case, a drug prevention and rehabilitation facility on the lower level.
This Bronx, New York center by Frank Williams steps down toward a park across the street which, in turn slopes sharply up. Community facilities on a lower level are reached by a separate entrance. The whole corner is given over to entrances and a "front porch," making this one of the most welcoming of Williams' buildings. Williams believes that an open, accessible building will discourage vandalism, which is largely a result of alienation. But the success of such openness depends also on the center's administration. It takes courage in some neighborhoods.
140TH STREET CENTER

The top two levels of this Bronx, New York center by architect Frank E. Williams are a child care center. Lower floors contain a community counseling service and an after-school center. Williams believes, with many others, that as many community resources as possible should be combined with child care. A small plaza welcomes passers-by. Many playrooms open onto a roof terrace, a second "ground level" for the child-care part of the center. A terrace bridge creates an entrance portal to the plaza below. (Under construction.)
RK SLOPE NORTH

Brooklyn Child Development Center

Designed by Beyer Blinder Belle, architects, has a program similar to those of the preceding centers, with financing is through the state. The center is scaled to surrounding houses. Back yard play space supplements a roof play area.

Clerk in charge: John H. Beyer, project architect: Yogesh Sethi, project design: Joseph Tyborowski.

HENRY STREET
CHILD CARE CENTER

Malton Becket and Associates designed this Manhattan child care center for the notorious Henry Street Settlement. The roof of the adjoining building serves as play area and supplements a large ground level play yard behind the center. Space for community counseling is also included. The structure is steel with brick facing to fit in older existing buildings on either side.
The late Oskar Stonorov designed the Charlestown Playhouse in 1937, using the bearing walls of an old church. Mrs. Stonorov still runs the Playhouse, a private nursery school which has always had close ties to its community. The location is a large wooded hillside north of Philadelphia. Over the years, Mr. Stonorov designed additions—always clear and simple and full of light. But in 1964, Mr. Stonorov, writing about the Playhouse, said, “I am sure that the architectural form of a nursery school has not yet been developed. . . . Such a building must have the ability for improvisation to a degree non-existent today. . . . Various age groups from two to five might be housed in spaces which have different scales.” The Playhouse does contain a wide variety of spaces, from a two-story glass-walled central room to small rooms which cantilever out from the second level (right, above). It is at ease with its surroundings and informal inside without being dull.
JULWICHWOOD NURSERY SCHOOL, LONDON, ENGLAND

Useful scaling, planning and use of materials reveal a deep concern for the children in this assured and straightforward design by architects Stillman and Eastwich-Field, FRIBA. Finland and Scandinavia are far ahead of the United States in child care awareness; however, this facility, which cost about £5,000 to build in 1966, is more expensive than most British preschools. The 60 children aged 3 to 5 in each of the daily sessions are not divided into groups, but move freely through the building, whose hexagonal spaces provide variety and reduce the scale. Structure is brick and concrete; floors are wood plank and electrically-heated floors are covered in resilient tile. Window sills are low, and sliding doors provide easy access to the outside play area, where a popular feature is a hill of earth excavated during construction.
EARLY LEARNING CENTER, STAMFORD, CONNECTICUT

Architect Egon Ali-Oglu designed the Early Learning Center of precast concrete elements, cutting costs to $13 per square foot in 1966. It is a private community-oriented nursery school with a modified Montessori program. Children 2½ to 5 use an undivided space containing a skylighted central area filled with learning materials, which the school's director, Mrs. Margaret Skutch, compares to a Mexican market place. The carpeted floor is the furniture in this area—dark gray to hide dirt and set off the bright-colored materials. There is also a stepped seating area. Shelves are painted boards on concrete blocks. Children walk directly out to the play area whenever they want. A non-carpeted area (left in plan) is for wet activities. Interesting colors, objects and textures abound. Windows are tinted brown, fixtures are incandescent for warm light. Slightly older children have their own wing (bottom of plan), recently designed by Paul Curtis and Roger Smith into a series of varied multi-level spaces.
THREE DENVER CHILD CARE CENTERS MADE OF MODULAR UNITS

The program called for a temporary facility that could be moved in two to five years, so the A-B-R Partnership, architects, designed a demountable modular building. Denver has at least two modular builders, one in the community to be served, and one nearby, both employing people who would benefit directly from the center. Eventually, the center, funded by Model Cities, expanded into three centers, two in Denver’s black ghetto, one in a Chicano neighborhood. As the architects put it, “the design and site development concepts are basic at best”, but this form of construction opens many possibilities.

ROrO OrO OORTY INFANT CENTER FOR CALIFORNIA MIGRANT WORKERS

California migrant workers have a life expectancy of 38 years. A large reason for this average is the very high death rate among children under five. In migrant communities, child care centers can have mendous importance. The design below, Sanford Hirshen and Partners, architects, the result of a highly-detailed study funded under a grant from theisenberg Foundation. Care is provided for new-born babies to three-year-olds—32 children in all. Storage units and glass partitions separate groups acoustically but not visually. All playrooms open outside. The center uses prefabricated trusses for the roof spans and a foam core wall panel system made by the Production Technology Corporation, a non-profit organization set up to train migrant workers in factory skills.
GOOD IDEAS

The following three pages show details from several child care centers—suggestions which aren’t likely to show up in any program, but which can add a great deal to the way a place feels and the way it is used.
Children and teachers find y ways to use carpeted, sp ned areas. In a new build­
the steps can be sunken; 
remodeled building the 
can be built on platforms, 
the Shady Lane school 
in Pittsburgh, designed by 
Curtis and Roger Smith, 
which was originally a 
Victorian house.

Children enjoy special places 
that the children can still be 
contact with the room out­
and they should have 
more than one entrance. This 
the CIC Good Hope Road 
center for Children, Washing­ 
D.C., remodeled from a 
store by Paul Curtis and 
ner Smith with Margaret 
ch, whose Early Learning 
appears on page 138.

The big plate glass windows in 
the Hilltop Center, Dorchester, 
Massachusetts, give the chil­ 
ren a lot to look at and make 
the community aware of the 
center. The center was a super­ 
market, remodeled for child 
care by PARD-Team, architects, 
Sam Mintz, architect-in-charge. 
The atmosphere is relaxed but 
stimulating. A big red plush 
Victorian couch sits next to the 
window (rear, right).
MAKE YOUR OWN FURNITURE

The seats in this picture are computer reel cans stacked to different heights for users of various sizes—a brainstorm of Margaret Skutch (page 138). The CLC Good Hope Road Center for Children, Washington, D.C. (see also page 140).

STIMULATION

"You can't have too much a child care center," say educators. Others would verify that, but it's important to note that most of the materials in this room came from old ones used by the children. A little bright colors or sophisticated supergraphics, by contrast, might or might not be stimulating. The children are playing in an indoor sandbox. Top Center, Dorchester, Massachusetts. PARD-Team, architects, Boston, Massachusetts.

FLOORS FOR INFANTS

The floors in the infant area of this Swedish child care center are sheet vinyl with a cushioned backing. Low covered mattresses are used as furniture. Hendriksdalberget Barnstuga ("child cottage") Stockholm, Sweden.
A system's disciplines become clear as an architect works with it for two high-rise dormitories

A factory-precast system replaced a conventional steel-framed building when the system was offered at the same cost, and the architect determined there could be added functional advantages and reduced time from design through construction.

Nearing completion on the University of Delaware's Newark campus are two high-rise dormitory buildings constructed with the Bison factory precast concrete system that has been highly successful in England. The system used for the dormitories, designed by Charles Luckman Associates, has precast, load-bearing exterior and interior walls, 27-ft prestressed concrete planks, and an aluminum and glass infill between precast spandrels.

Several European industrialized housing systems, of which the Bison system is one, are being franchised in the U.S. and Canada. While only a few projects, using several of the systems, have been completed so far, a modicum of experience has accumulated, and, importantly, the disciplines of the industrialized housing process, based upon the concept of factory-produced structural components, are beginning to be understood. Further, the professionals who have worked with these systems are getting an idea of what these systems can and cannot do.

Proposed originally in steel, the structure was switched to the precast system

University of Delaware housing officials decided to take the private developer route in getting their dormitories built, and sponsored a competition whose entries were judged on the basis of quality of architectural concept and cost. The winning entry was that of Ogden Development Corporation, headed by Charles Luckman, in a joint venture with Frederic G. Krapf and Son, Inc., Wilmington general contractor. A $10.5-million contract was let for the two dormitory towers and a 27,000 sq ft student commons, the project being designed to accommodate 1,300 students. The towers have 375,000 sq ft and incorporate 255 one-bedroom apartment units and 197 two-bedroom units.

The Ogden Development Corporation-Krapf joint-venture's original proposal was for a conventional steel-frame design. Shortly after winning the contract they learned that they could obtain the industrialized concrete system without an increase in cost, while at the same time...
gaining some square footage in the apartments. The proposal for supplying the system's concrete units was made by Strescon Industries, Inc. of Baltimore. Further, the system promised improved acoustical privacy, interior finishing and maintenance.

The same basic floor plans as originally worked out were retained, with the exception that one-bedroom and two-bedroom apartments were grouped so that bearing walls would align across the short dimension of the plan, a condition preferred by the structural engineers for shear-wall design. Also, the depth of the floor plan was adjusted to match the 8-ft-width module of the floor planks.

Because the floor plans were changed only to this extent, the architect found that a much larger variety of wall panels was required than would have been the case if the concrete system had been selected at the start, and the floor plans laid out considering the nature of the system. The variations consisted mainly of different types of panel connection details, different reinforcing patterns, slight differences in dimensions, etc. Over half of the panels on a typical floor had some variation, even though minor. But the original plans were retained because redesign would have cost both time and money.

The collaborative efforts of those participating in the project have paid off in terms of high-quality appearance as well as in construction time—the structure was erected at a rate of one floor per week per building. This meant that the plumbing and electrical trades were inside for their work—which was done conventionally on site—much sooner.

For the architect, the Luckman firm sees a reduction in the number of working drawings required. Of course he still must prepare the floor plans; perhaps detail an infill curtain wall, and do normal interior detailing for bathrooms, kitchens, door bucks, etc.

But, the architect and structural engineer found—as others have—that the checking of shop drawings on a building that has not been done before takes considerable time. Of course, if the same sys-
Wall panels are supported by spider braces until planks are set and corner joints poured. Bearing walls support floor planks, which are 27-ft long except for projected areas, where they are 15 ft. Panels at corners use "stretched-out" support and "stiffened" at the ends. Openings in the floor slabs for passage of pipes and ducts were provided by putting blockouts in the continuous forms. In other cases, they were cut out after the concrete had set and the slabs cut to length. For small penetrations needed for the plumbing wall, the structural engineer permitted a series of openings across the width of the slab made by cutting out top and bottom surfaces, but preserving the sides of the slab. In some cases, the slabs were supported by a steel track on which the slab was rolled into place. The engineer allowed a maximum of two ribs to be cut (see drawing, page 146). Additional shear reinforcement was provided in the area where the opening was to be cut so that load would be transferred to the other ribs. No wiring is run within the wall panels, or the floor slabs. Because of the long span of the slabs and the need for only occasional shear walls along the corridors, many of the partitions could be drywall, with wiring being run within these. Where outlets were needed in bearing walls, they were run in recesses cut in the walls. The recess was covered with a metal plate held by clips, fastened to wooden plugs cast in the panels.

No wiring is run within the wall panels, or the floor slabs. Because of the long span of the slabs and the need for only occasional shear walls along the corridors, many of the partitions could be drywall, with wiring being run within these. Where outlets were needed in bearing walls, they were run in recesses cut in the walls. The recess was covered with a metal plate held by clips, fastened to wooden plugs cast in the panels.
The drawings show the types of openings provided in the floor planks for penetration of ducts, plumbing, and electrical risers. Planks with the large opening had to have additional reinforcement in that area. Room air conditioners with electric heating elements are used to maintain thermal comfort—thus, the furred area for the air-cooled condensers. Because of the long spans and design of corridor planks, considerable lengths of dry-wall partitions were possible, making it easy to run flexible electrical cable.

Wind resistance had to be thought carefully to minimize stresses and cost. Shear wall action had to be dependent upon to resist wind loads because it was not possible to create a moment-resisting frame by tying bearing walls together across corridors with dropped beams—a condition the architect wanted to avoid. (The connection could not be worked out with the 8-in. depth of the slabs. In any event, it would have been difficult and expensive to develop moment resistance.)

Wind stress analysis was made by the engineers—Severud, Perrone, Sturm, Band, using a computer program.

Because of the L-shaped plan, shear walls had to be carefully located to avoid an eccentric condition with respect to the center of "stiffness" of the building. Eccentricity would have greatly increased the wind moment which would have overstressed the shear walls. The structural engineer avoided this condition by judicious placing shear walls along the corridors and by utilizing a long shear wall at the elevator core.

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Another “plus factor” is the great reflectivity of the Units. They present a mirrorlike facade that changes as often and dramatically as the sky tones and clouds. “It takes the building away from being a piece of static architecture. And... we’re greatly pleased that it is so colorful.”

See PPG about Glass Conditioning* for your next building. Early in the design stages. There’s a PPG Glass that you can use as an active design medium to meet esthetic considerations, help solve environmental control problems, and contribute to a significant cost savings for your client. Write PPG Industries, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

PPG: a Concern for the Future

For more data, circle 124 on inquiry card

*Glass Conditioning is a service mark of PPG Industries, Inc.
EMERGENCY EYE/FACE WASH / Designed for first-aid treatment in the event of industrial accidents, unit features newly designed shields to assure greater precision of flow from the aerated water projectors. □ Speakman Co., Wilmington, Del.

Circle 305 on inquiry card

HONEYCOMB-CORE STEEL DOORS / Features include sound insulation and exceptional rigidity. Phenolic resin-impregnated core provides a door surface strong enough to support up to 35 lbs pressure per square inch. Rigidity is comparable to that of a door constructed with l-beams placed at narrow-spaced intervals. □ Pioneer Industries, Carlstadt, N.J.

Circle 306 on inquiry card

ROLL-IN REFRIGERATORS / Cabinets feature vinyl plastic exterior and interior surfaces. Cabinet walls are insulated with at least three-inch-thick fiberglass. Other features include automatic interior lighting and oversized refrigeration. □ Pioneer Industries, Carlstadt, N.J.

Circle 307 on inquiry card

INSTITUTIONAL SEATING / Fiberglass sculpture shell is available in a range of colors. Nylon fabric or vinyl upholstery is optional. Shells can be mounted on free-standing legs or pedestal bases. □ Clarion Corp., Chicago.

Circle 308 on inquiry card

ROTATING SUNDECK / The unit rotates slowly and can be occupied or vacated while moving. Two chaise longues and a central cocktail table are offered with the deck. Unit is designed for both commercial and residential use. Fiberglass deck is available in a range of colors. □ HM International, Spring Valley, Calif.

Circle 309 on inquiry card

VINYL ASBESTOS TILE / The company's complete line of commercial tile now features adhesive backs. After old tile is taken up, the subfloor cleaned and scraped, protective paper is stripped from the backing and tile laid down. □ GAF Corp., New York City.

Circle 310 on inquiry card

PLASTIC FIRE-RETARDANT BUILDING FITTINGS / Williams-Bermuda Corporation manufactures the fittings which, us Koppers Company's ester resins, are competitively priced vs metal counterparts, can produce substantial savings in installation costs due to one-piece designs. □ Koppers Co. Inc., Los Angeles.

Circle 311 on inquiry card

For more data, circle 74 on inquiry card

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Compare the Soss look of invisibility with any strap or butt when closed to blend with any decor. With The Soss Invisible you can create room, closet, or cabinet openings which are by hinges or gaps...the perfect look for doors, doorways, bars, stereos, or T.V.'s. The Invisibles are extra strong, 180 degrees, and are reversible for right or left hand operation. For catalog: Soss Manufacturing Company, Division of SOS Consolidated, Inc., P.O. Box 8200, Detroit, Michigan 48213.

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Like more information? Contact your Republic distributor. He's listed in the Yellow Pages under "Doors-Metal." Or, send for a free copy of our Architectural Products Manual. Write Republic Steel Corporation, Manufacturing Division, Youngstown OH 44505.

For more data, circle 97 on inquiry card.
Design out water hammer. Specify Wade Shokstops.

Water hammer is the shock caused by the sudden build-up of energy when a quick closing valve suddenly stops the flow of water in a piping system.

Specify Wade Shokstops to solve the problem.

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For piping systems larger than 2 inches (such as laundry machines), Wade offers prepressurized units in seven sizes and capacities, all designed to absorb large amounts of energy. Upon request, Wade Engineering will size and locate the units for large piping systems or for special equipment applications.

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It's also the one that's solid vinyl—superior to laminated vinyls and filled urethanes. It won't fade, change color, shrink, absorb stains or show undue wear patterns under normal use. Over one million square feet have been sold coast to coast. Architects, coaches, players and school and club officials praise its appearance, playability, versatility, durability. Court markings are applied with special compounded paints that stay on without scuffing or smearing.

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Delta's computer is a peripheral option. An add-on... same as any other standardized Delta module.
Our Delta 2000 automates building operation with or without our computer. We'll recommend the computer only if you really need it... then program it to slash operating costs!

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For instance, what does your client really require in an automation system? One-man environmental control? Fail-safe equipment status reporting? Automatic start-stop scheduling? Fire and security monitoring? Those basic functions don't really use a computer's high-speed calculating talents. Nor justify a computer's extra cost. Delta 2000 handles all that (and a lot more!) without a computer. It was designed that way right from the start.

Management by objective.
But what are your client's other objectives? Maximized energy savings? Predictive electrical demands? Maintenance scheduling? Daily efficiency reports, and other decision-making information? Here our minicomputer can really help... now, or later on. It can join forces with our basic Delta system to move up from automated building control to automated building management. When needed, as needed.

Cost-shared software programs ready to go.
Just select what you need from Honeywell's growing library of fully-documented software routines. Modular programmed solutions that eliminate costly start-from-scratch, trial-and-error programming... proven, risk-free.

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By giving you the choice, Honeywell takes the risk out of choosing your next building automation system... with, or without a computer.

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PRODUCT REPORTS
continued from page 174

WOOD FLOORING / Tile's backing is made of closed cell foam that deadens sound, and meets New York City's apartment building code standards for impact sound control. Seven finishes are available. • Tibbals Flooring Co., Oneida, Tenn.

Circle 318 on inquiry card

VERTICAL ICE STORAGE BINS / Two new models feature stainless steel lining, foamed-in-place polyethylene insulation, drip-proof, heavy-duty door design, and large doors for easy ice removal in small or large quantities. • Crystal Tips Ice Equipment, McQuay Perfex Inc., Minneapolis.

Circle 319 on inquiry card

NON-WOVEN FABRICS / A thermoplastic bonding system results in a series of materials with controlled ranges of liquid and air permeability, selected chemical resistance properties, and a high level of mechanical behavior. They can be sewn, dyed, printed and embossed, and are compatible with water-repellent and fire-retardant finishes. Applications include air and liquid filtration, backing for carpet underlays and coating substrates. • J. P. Stevens & Co., Inc., New York City.

Circle 320 on inquiry card

LIGHTING FIXTURE SHIELDS / Polycarbonate product is available with the company's line of prismatic mercury vapor fixtures, and is available in three sizes. Shields are said to be vandal-proof, and will not yellow. • Stonco Lighting, Union, N.J.

Circle 321 on inquiry card

ONE-STEP WALL SYSTEM / Concrete is poured into strong, lightweight aluminum forms fitted with patterned fiberboard, steel reinforcing rods and 4-ft boards of the manufacturer's 1½-in. thick plastic foam, laminated to ¾-in. gypsum wallboard. End product is a complete, insulated, finished wall in one step. • Amspec Inc., Columbus, Ohio.

Circle 322 on inquiry card

MANUAL BALANCED DOORS / Features include a 1¾-in.-wide entrance framing. The balanced pivoting mechanism features self-aligning pivots at all points of rotation and a spring-cushion backstop. Closers are concealed and have adjustable closing and latching speeds. The doors have adjustable pile weathering on all four sides for maximum resistance to air and water infiltration. • Kawneer Co., Niles, Mich.

Circle 323 on inquiry card

For more products on page 195

For more data, circle 102 on inquiry card

For more data, circle 103 on inquiry card

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Or with Archbold Seating. Strong. Lightweight. Laminated Danish beech wood finish or select from vinyls and fabrics for cushions. Easy to stack. Optional interlocking hardware available.

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For more data, circle 104 on inquiry card

182 ARCHITECTURAL RECORD April 1972
Square D introduces an entirely new concept in circuit breakers. It is the first practical and economical device that significantly reduces the hazards of line-to-ground faults to both people and equipment.

The new Qwik-Gard™ circuit breaker combines branch circuit overload and short circuit protection with ground fault protection in one compact unit that occupies the same space as a standard QQ circuit breaker. In addition to the QQ protection for overloads and short circuits, ground faults are detected and interrupted by sensing an imbalance between line and neutral current in the individual branch circuit. A current imbalance as low as 0.005 amperes (5 milliamperes) will cause the Qwik-Gard to trip.

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Qwik-Gard circuit breakers are designed to protect circuits, people and equipment in homes, offices, factories and swimming pool areas and on construction sites. They are UL listed and meet the requirements of the 1971 National Electrical Code. Qwik-Gard breakers also have the exclusive Visi-Trip® indicator you find on Qwik-Open® breakers. It's a highly reflective red flag that springs into view through a window when the breaker trips. For further information, contact your nearby Square D field office or write Square D Company, Dept. SA, Lexington, Kentucky 40505.

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G-P has the answer to economical fire and sound control in high-rise construction.

Party Wall. With G-P's party wall system, you get an STC of 50 and a one-hour incombustible fire rating. First erect 2 1/2" steel studs and then install 2 1/2" fiber glass insulation. Then, on both sides of the studs, G-P's 1/4" (U.L. labeled) Gypsum Sound-Deadening Board is attached. Applied to the Sound-Deadening Board, G-P's 1/2" FIRESTOP gypsumboard. Easy! Fast! Inexpensive!

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Shaft Liner. G-P's new Shaft Liner system weighs only 10.5 lbs. p.s.f. compared to 34 lbs. p.s.f. or more for masonry shaft walls. Prelaminated panels are easily installed in top and bottom runners with a T spline placed between panels. This system installs from the shaft exterior so construction is speeded up. In addition, temporary shaft enclosures are eliminated. G-P's shaft wall gives you a 2-hour fire rating. And saves you money and space in building core construction.

Georgia-Pacific
Gypsum Division
Portland, Oregon 97204

For more data, circle 111 on inquiry card
In 1958 they sealed the old Atlantic Richfield headquarters with LP® polysulfide polymer.

In 1971 they demanded that the new Atlantic Richfield headquarters be sealed with LP® polysulfide polymer.

It always makes sense to ride a winner.

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The reason for their decision? A polysulfide-based sealant has proven to be a winner. In fact, it has been doing just that for the past 14 years at Atlantic Richfield’s former headquarters building nearby in downtown Los Angeles.

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But, at Thiokol we don’t rest on past accomplishments alone. Granted, sealants based on our polymer have performed flawlessly for more than 20 years. Yet that doesn’t stop us from continuing a Seal of Security Program which aims to see that they’ll last even longer in the future.

So ride with a winner. Specify a sealant based on Thiokol’s polysulfide polymer. It won’t let you down over the long haul.

For more information, including detailed comparisons between sealants based on Thiokol’s LP® polysulfide and eight other kinds of sealants, write: Dan Petrino, Thiokol Chemical Corporation, P.O. Box 1286, Trenton, N.J. 08607.
IE AGGREGATE SIDING PANELS / Exterior grade plywood, fireproof asbestos board, or Homasote structural insulation board are used as substrates. Panels can be ordered pre-cut in shapes made to specific dimensions. Aggregate Materials, various sizes and colors. Inc., South Plainfield, N.J.

Circle 324 on inquiry card

HIGH-INTENSITY DISCHARGE LUMINAIRE / Air handling capacity is a new feature, permitting ceiling design flexibility in commercial areas. • Holophane Co., Inc., New York City. Circle 331 on inquiry card

WASTE COMPACTOR / This electromechanical unit is said to cost significantly less than other comparable commercial compactors on the market. No installation is required; unit plugs into any 115 volt outlet ready for use. Unit features 25-second operating cycle, eye-level controls, safety interlocks, a mobile bag holder with a full 6-cu.-ft.-capacity, one-year warranty on parts and labor, and compaction ratio ranging from 5:1 to 8:1 depending on type of refuse. • ARS, St. Clair Shores, Mich. Circle 330 on inquiry card

COUPLING / Steel outer collar holds a rubber pressurized to 150 psi, and a ring of steel teeth at the end of the coupler. Hydraulic pressure is combined with the steel teeth to couple the ends of each pipe. • Canron Ltd., Montreal 113, Quebec, Canada. Circle 325 on inquiry card

JMATIC COLLECTION UNIT / Designed for removal, unit converts a waste and garbage depository to an automatic system that lifts waste and garbage from the bottom of each chute to a central collection terminal. System provides for linking each chute to a matic tube line leading directly to a discharger terminal. It is particularly designed for high-rise apartment houses and office buildings. • ECI Air-Flyte Corp., Fairfield, N.J. Circle 326 on inquiry card

ER SOCKET EQUIPMENT ASSEMBLY / Unit is particularly well-suited for apartment complexes where minimum floor space is available. Each assembly is 20 in. wide by 40 in. long and will accept four 8-gang meter stacks in recessed two front and two back for a total of eight meters. Additional free-standing assemblies be added. • Federal Pacific Electric Co., Inc., Paramus, N.J. Circle 327 on inquiry card

OR DOOR / Designed to provide access to finished floors, door is provided with a 3-1/2-in. molding to receive carpeting. Each installation is accomplished through connected hinges which allow close tolerances on sides between door leaf and frame. • Theo Co., New Haven, Conn. Circle 328 on inquiry card

ER COMMUNICATION SYSTEM / In addition to two-way voice communication, unit is capable of distributing background music and special programs from a record player, radio, or tape deck. Utilizing add-on modules, central station's capacity can be increased to serve remote stations. An all-call for emergency has automatic priority over all program material being distributed. • Bogen Div., Lear Jet, Inc., Paramus, N.J. Circle 329 on inquiry card

DISCOVER CRAMER

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Your choice of 10 designer colors in sofas, club chairs, round chairs, benches, end tables, cocktail tables, planters.

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Chicago Merchandise Mart Showroom 1197 Sweets Interior Design File – Section F3a

For more data, circle 115 on inquiry card
You can if it's protected with the All-weather Crete Insul-top system! This insulation applied over the waterproof membrane will protect it from normal accidental puncture (also from freezing and from extreme temperature cycling). It reduces expansion and shrinkage to a minimum. All-weather Crete can be sloped to drains and contoured around and over projections to provide positive water drainage.

In short, this system protects the membrane keeping it “alive” and waterproof for years! A different system? Certainly.

Consider this concept in your next project. Write for the 16 page technical booklet “Designing a Leak Proof Roof”. Silbrico Corporation, 6300 River Road, Hodgkins, Illinois 60525, (312) 735-3322.

You may change your entire thinking about roof decks!

All-weather Crete® Insul-top System

For more data, circle 116 on inquiry card

SILBRICO
OFFICE LITERATURE

more information circle selected item numbers on Reader Service Inquiry Card, pages 215-216.

LABORATORY FURNITURE / A complete line including console desks, elevated consoles, work stations, and tub files is presented in a catalog. The elevated console features a working wall providing flexible storage and privacy. ■ Kwir-File, Minneapolis.
Circle 401 on inquiry card

GLASS / Extensive lines for 1972 are presented in a brochure. Product categories include clear, heat-absorbing drawn sheet glass, figured glass, float glass, and non-reflective and mirrored glass. ■ Glaverbel, Inc., Manhasset, N.Y.*
Circle 402 on inquiry card

LABORATORY FURNITURE / Steel modules are discussed in an 18-page bulletin. A variety of units, worktop materials, and fixtures is included. ■ Fisher Scientific Co., Pittsburgh.*
Circle 403 on inquiry card

LABORATORY EMERGENCY SERVICE / Designed primarily for buildings with unattended elevators, the system is initiated by a key switch or heat- or x-ray-sensing device. Operation automatically returns elevators back to a previously designated floor where passengers may leave safely. ■ Otis Elevator Co., New York City.*
Circle 404 on inquiry card

SLAB CONSTRUCTION / An 8-page brochure explains how slabs are cast and lifted. The system is possible with a structural ceiling building or a bearing wall structure. ■ Star Construction Corp., San Antonio, Tex.
Circle 405 on inquiry card

PVC WALLBOARD / Designed for the faciltiy-built housing industry, panels are available in four textured colors. Features include a Class X flame spread rating of 20, crack-resistance, and low maintenance. ■ Georgia-Pacific Corp., Portland, Ore.*
Circle 406 on inquiry card

POLLUTION CONTROL / Compilation of most current terms and guidelines for air pollution control are given in a 17-page manual. Several pages are devoted to definitions of air pollution control standards, technical terms and equipment. ■ Varis-Systems, Inc., Cleveland.
Circle 407 on inquiry card

STORAGE SURFACING COMPOSITIONS / Floor- and wall-covering compositions provide protection against erosive chemicals, solvents, food-processing and meat fats. Wall compositions are designed for hospital operating suites, bathrooms, and shower rooms. ■ Crossfield Products Co., Compton, Calif.*
Circle 408 on inquiry card

STANDING LAMINAR FLOW CLEAN AIR SYSTEM / Hardware consists of a main unit and separate mask aspirator. Especially designed for operating room use, system removes virtually all airborne particles 0.3 microns or larger, including dust and pathogenic organisms. System was designed and manufactured by Agnew-Arkins, Inc. ■ DePUY, Warsaw, Ind.
Circle 409 on inquiry card

Circle 410 on inquiry card

SWIMMING POOL DESIGN / The use of ceramic mosaic and glazed ceramic tile in swimming pools is discussed in a 12-page booklet. Text includes pool planning, design, and maintenance considerations. ■ Weiss, NCAA, YMCA, and AUIU standards covering dimensions, markings, ladders and overflow systems are given. ■ American Olean Tile Co., Lansdale, Pa.*
Circle 411 on inquiry card

ANIMAL DETERRENT BARRIERS / A complete line of stainless steel bird, climbing animal and intruder deterrent barriers is described in a 4-page brochure. Barriers can be used on buildings, fences, transformers, walls, utility poles and all projections. ■ Nixalite Company of America, Rock Island, Ill.
Circle 412 on inquiry card

WALL FABRIC / Features include unobstructed passage of sound or sound dampening when used with standard sound-absorption materials, flame-resistance, and easy maintenance. ■ Meltex, Div. of Wendell Fabrics, New City, N.Y.
Circle 413 on inquiry card

* Additional product information in Sweet's Architectural File

more literature on page 200
It's time to think about total carpet performance.

By now you're familiar with all the various man-made carpet pile fibers and the advantages they offer. When you specify carpet for man-made fiber performance, do you get it all the way from the carpet surface to the backing?

As an important producer of man-made carpet fiber, Phillips Fibers knows the value of total carpet performance. To help you get total man-made fiber performance, Phillips Fibers has engineered Loktuft® carpet backing with many of the same important features you look for in the face fiber.

Like stain resistance. So when stains are cleaned out of the carpet, they do not wick back later from the backing to the face of the carpet.

Like light weight for less load and easier handling while maintaining maximum durability.

Like resistance to moisture, mildew, rot and insect damage. Greater stability. Shrink resistance.

Loktuft backing installs neatly, efficiently. It lays flat. Doesn’t pucker or bubble. Resists ravelling. Cuts cleanly. Seams can be butted almost invisibly.

Made with Marvess® olefin, a Philips 66 fiber, Loktuft serves equally well indoors and outdoors.

If you’re interested in total carpet performance, ask your carpet resources for Loktuft backing in the carpets you specify. It's available in types engineered specially for primary, secondary and unitary (single) carpet backing use.

For more data, circle 118 on inquiry card
Vicrtex, the pioneer, has developed unique manufacturing techniques that guarantee a quality product. Our impregnated colors won't "wear off." You get protection against mildew in our especially-treated fabric backings, our vinyls, our adhesives. Except in unusually high risk areas (acids, etc.), Vicrtex standard finishes make spot- and stain-removal easy fast.

In addition, you're sure of Class "A" (or better) Fire hazard classification, a broad one-year guarantee against manufacturing defects—and the Industry's widest range of original patterns, uncommonly decorative, in hundreds of colors.

Microzinc 70 gives the architect a new esthetic dimension in commercial and institutional roofing design. It's pre-weathered—the natural oxidation has been accelerated. The beautiful non-reflective grey patina complements wood or masonry.

You don't have to paint Microzinc 70. The natural, non-corrosive film makes it especially resistant to sea air and industrial atmospheres. It heals itself if scratched or marked. The coating is not artificial and therefore will not peel, crack, blister, chalk or fade.

Microzinc 70 cannot stain and therefore will not produce run-off blemishes as do many metal roofing materials.

This new zinc-titanium alloy can be used in direct contact with mortar or concrete without special protection. It is easily formed and soldered using standard sheet metal practices.

And to top it off, Microzinc 70 is less expensive than most of the other long-life quality, roofing metals.

Write for the new Microzinc 70 booklet which includes comparative properties plus design details for batten and standing seam roofs, valley flashing, gutters, fascias and gravel stops. We will also send you a sample of the pre-weathered metal so that you can examine the color and finish of Microzinc 70 for yourself.
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Thinking about a pneumatic waste collection system?
Think about:

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- **high-rise structures**
  - Ideal for high-rise structures such as hotels, motels, large office buildings, apartment complexes, dormitories and institutions.

- **large recreational developments**
  - Ideal for large recreational projects, amusement parks, sports complexes and stadiums.

Space saving TRANS-VAC Systems utilize idle wall and ceiling space for placement of chutes and conveyor pipes. Piping may also go above or below ground, over roof tops, along outside walls and into basement area. Separate collector hoppers located in laundry room and trash collection area automatically deposit loads of transported material on signal from central control panel.

TRANS-VAC Systems offer completely integrated systems for Pneumatic Transport, Shredding, and Waste Disposal — all fully automatic. Each system individually engineered and backed by 47 years experience in pneumatic conveying and waste disposal technology.

Write or phone Dept. AR for further information and/or design assistance. See our Catalog 10.28/1R in SWEET'S 1972 Architectural File.

Since 1925 — Solving Difficult Problems for Industry

**OFFICE LITERATURE**

**WINDOW COVERINGS**

- Louver drapes constructed of sound-absorbing extruded rigid polyvinyl chloride are described in a 4-page brochure. Specifications are included.

- Louver Drape, Inc., Santa Monica, Calif.

  Circle 413 on inquiry card

**ROOF PROTECTION SYSTEMS**

- Designed to restore asphalt built-up roofs and prevent costly replacements, systems employ high-performing, static, cold-applied emulsions with or without membranes to provide optimum results at minimum costs. Products to reinforce flashings, edgings and all components above the roof line are included.

  The Tremco Co., Cleveland*

  Circle 414 on inquiry card

**WATER-BASE COATINGS**

- According to the company, coatings can be applied to rusty steel and combine the latest developments in latex chemistry with the protective properties of lead pigmentation to form a heavy-duty rust-inhibitive system.

  Subox Coatings, BASF Wyandotte Corp., Carlstadt, N.J.

  Circle 415 on inquiry card

**WATER COOLERS/FOUNTAINS**

- A recent catalog features a complete line of water coolers, drinking fountains and emergency safety equipment models. Included are polyester and stone drinking fountains available in five colors; a stainless steel fountain available with extended base for wheelchair patients; and an eye-face wash model designed for research and development labs.

  Sumroc Corp., Glen Riddle, Pa.*

  Circle 416 on inquiry card

**HEATING/VENTILATING EQUIPMENT**

- A recent 40-page publication describes a line of heating, air tempering and energy recovery systems. Included topics include door, and space heating, fresh air systems, and the latest advances in air-to-air energy exchange equipment.

  The Wing Co., Linden, N.J.

  Circle 417 on inquiry card

**MOVABLE CABINETRY SYSTEMS**

- A line of cabinets, dividers and accessories designed for open plan schools is described in a catalog. Features include flexibility, interchangeability, and multi-functional use.

  Grade-Aid, Nashua, N.H.*

  Circle 418 on inquiry card

**CERAMIC TILE**

- Features of a new wall tile with a wispy, billowing design on a white matte glazed background are described in literature. Six colors are available.

  United States Ceramic Tile Co., Canton, Ohio.*

  Circle 419 on inquiry card

**FABRIC WALL COVERING**

- Five designs imported from Sweden are illustrated in a 4-page brochure. All designs are washable, and dyed before weaving to produce woven effects.

  Van Arden Products Corp., Hicksville, N.Y.

  Circle 420 on inquiry card

* Additional product information in Sweet's Architectural File

For more data, circle 121 on inquiry card

advertisement

**FOR THE RECO**

**CHARLES A. LINDE**

comments on special assistance for specific writers.

The biggest problem facing the specifier of institutional casework is knowledge of what products are available. He knows a specification can be upheld unless he can properly answer any and all questions to complete satisfaction of the owner or contractor. Where can he turn for most reliable information?

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In addition to thorough knowledge of materials and construction, specifications are required in this document to virtually protect the specifier from accepting an unqualified manufacturer or inferior workmanship. For example: specifications concerning warranty experience; proof of financial ability to fulfill the contract; written language regarding materials and workmanship; and the submission of competed samples.

Approved by the AIA, these specifications may also be obtained by sending your request to James Products Division of AVM Corporation, 178 Blackstone Avenue, Providence, R.I. 02901.
Here is CUBO, designed and manufactured by Harvey Prober. The look is loungy — soft, squishy, casual, comfortable — ideal for composing imaginative seating clusters in lounges, lobbies and living rooms. CUBO is based on a square seat module with floating back and arm elements locked securely in place with concealed steel connections. Dust-trap pockets between seat and back are entirely eliminated. If ever necessary, CUBO's covers can be changed in a matter of minutes. CUBO is made of steel reinforced 'self-skinned' urethane foam, clad in a puffy coat of dacron. The Prober formulated urethane is inherently fire retardant and self-extinguishing (ASTM-1692 test method). Design and construction patents are pending. CUBO's legs are deeply recessed to avoid scuffing and for easy floor maintenance. For slippery floors, we have rubber couplers that prevent the units from separating. Or, CUBO clusters can be bolted to ebonized wood bases. CUBO tables come in seven sizes and two heights to align with either seats or backs, and in a broad range of durable finishes. We will be pleased to send you literature. Why not drop us a note on your professional letterhead.

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Introducing the new Andersen Perma-Shield Gliding Window
**is the window that has everything?**

It's a fair question. After all, this new line of Andersen Perma-Shield Gliding Windows incorporates all our accumulated experience in window design and construction. We gave it a lot of thought, improved and refined it through many stages, and gave it thorough field tests before we were satisfied.

So we think that architects, builders and users will all be more than pleased with this, our latest window.

But does it have everything? Before you answer, glance down the summary of features below; send for more detailed information—ask for a demonstration, if you like. We think we've come close. See if you agree.

1. **Perma-Shield!** No painting inside or out. Both frame and sash are stable wood completely covered with a rigid vinyl sheath. No corner joints in frame. Sash corners are welded to form leak-proof joints.

2. **Sill tank.** For added weathertightness under severe conditions of exposure, an integral vinyl dual sill has been built in to drain any moisture to the exterior.

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4. **Weatherstripping is rigid vinyl for maximum weathertightness...factory applied.**

5. **Weathertight, vinyl-sheathed sash.** Wood core factory treated with preservative for stability and insulation. Adjustable, chrome-plated steel glides in bottom rail for smooth, easy operation.

- Neat, trim frame is compatible with traditional, colonial or contemporary design. And it matches other Andersen Perma-Shield Windows and Gliding Doors.

- Screen is easy to install and remove from inside. White Perma-Clean® aluminum frame needs no painting. Screen strikes are part of exterior frame—no hardware to apply or lose.

- Weatherstripping of wedgeshaped rigid vinyl and neoprene on meeting stile reduces dust, air, noise, heat and cold leakage to minimum.

- Removable sash. Both stationary and operating sash can be removed for cleaning from inside by releasing securing screws. This safety feature prevents accidental release of either sash.

- Attractive handle operates spring-loaded rods for positive locking of windows at top and bottom. All factory installed.

Perma-Shield Gliding Windows are available in eleven basic sizes suitable for commercial and residential applications.

Like more information on Andersen's new Perma-Shield Gliding Windows? There are five ways to get it: from your Sweet's File (Section 8.16 An), from your Andersen dealer or distributor, by using the Reader Service Card in this publication, or by mailing the coupon.

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Span-Deck is a hollow-cored, prestressed concrete, dimensionally precise "plank"; ideally suited for modern techniques of off-site material fabrication and fast on-site erection.

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How Span-Deck stacks up in Dallas

for more data, circle 128 on inquiry card
1972 will be another boom year for the housing market. F. W. Dodge predicts that nearly 2.5 million housing units will be built at a cost of $32 billion.

In mid-May Architectural Record's Record Houses and Apartments of 1972 offers a timely opportunity for manufacturers of quality building products to exert year-long influence on those architects and builders who are at the forefront of the housing boom. It will reach all major groups of specifiers and buyers in this market:

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YL PLASTICS, INC. new catalog presents a complete line of solid floor products in new-trend colors for total design coordination. Originally Featured Micro-Squared tile ensures a practically seamless joint and is ideal for both contract residential installations. Wall tile, with beautiful appearance and superior workability that guaranteed not to shrink when installed with VPI #300 adhesive. See Sweet's Architectural File 9.23 or mail card.

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Eastern Community College is seeking dynamic architectural instructor, dedicated to innovative teaching techniques with community college student uppermost in mind. Course offerings range from architectural graphics, construction methods and materials analysis, to basic design process and environmental planning concepts. Professional degree and practical experience required. Teaching experience preferred. Please respond in confidence with salary requirements to P-7409, Architectural Record.

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A Bold Corporate Look

Exposed steel, mirror glass and a park-like setting are the distinctive and highly visible elements of Burlington Industries' bold new Corporate Offices at Greensboro, North Carolina.

The requirements for a structure which would project the owner's corporate identity and provide maximum flexibility were handsomely met by steel—used both structurally and aesthetically.

The complex is comprised of two distinct structural systems. The dominant six-story tower of exposed painted steel trusses and reflective glass, houses executive and staff functions. The tower 152' square with a welded, steel-framed central core housing its services. The top four floors are suspended by hangers from the roof grid while the lower two floors are supported by columns on a caisson foundation. Surrounding the tower on
three sides and connected to it by three pedestrian bridges is a bolted, steel-framed, three-story structure which houses corporate, departmental and divisional offices and auxiliary functions.

Exposed steel in the trusses and in the 5/16-inch plate facia around the low-rise structure were painted a dark earthen hue.

Studies to determine the materials to be used indicated that steel would be the most economical system to satisfy high functional needs and the strict timetable that was set for completion of the structure.

For more detailed information, we'll be happy to send you a copy of our new Structural Report titled Burlington Industries Corporate Offices (ADUSS 27-5084-01). Contact a USS Construction Marketing Representative through your nearest USS Sales Office or write: U. S. Steel, 600 Grant St. (USS 7451), Pittsburgh, Pa. 15230.
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