## PROGRESSIVE ARCHITECTURE

A Reinhold Publication/December 1970

Theaters for the Seventies



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This crisp, modern facade belongs to the Education Center for the Charlotte-Mecklenburg Schools in Charlotte, North Carolina.

ARCHITECTS: Charles Morrison Grier & Associates, Inc., 904 South King's Drive, Charlotte, North Carolina. INTERIOR DESIGNER: Mrs. Sue Goodman of the Grier firm.

TITM. CONTRACTOR: James E. Cox Construction Inc., P.O. Box 11528, Charlotte, North Carolina. FLOORING CONTRACTOR: Carter Floors, 189 Trade Street, Matthews, North Carolina.



The Imperial Modern Excelon used here is  $\frac{1}{8}$ " gauge. Depending on service and budget requirements,  $\frac{3}{32}$ " gauge is available as an alternate. In both cases, the contemporary, mottled pattern goes all the way through the tile's thickness, so the look lasts the life of the floor.



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Cover: The Assembly Hall, Phillips Exeter Academy, Exeter, New Hampshire. Photo: Norman McGrath

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The "Maison de la Culture" by architect André Wogenschy in Grenoble, France, is a technological whirligig of perhaps dizzying proportions.

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Landscape architects Royston, Hanomoto, Beck & Abey have provided a simple, naturalistic "Greek" theater for the Santa Cruz campus of the University of California.











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Progressive Architecture, published monthly by Reinhold Publishing Corporation, 600 Summer Street, Stamford, Conn., 06904. A subsidiary of Litton Publications. Philip H. Hubbard, Jr., President; Harry I. Martin, Group Vice-President; Charles O. Bennewitz, Treasurer; Kathleen A. Starke, Secretary; Robert W. Roose, Vice-President, Executive and editorial offices, 600 Summer Street. Stamford, Conn. 06904.

Subscriptions payable in advance. Publisher reserves right to refuse unqualified subscriptions. Subscription prices to those who, by title, are architects, engineers, specifications writers, estimators, designers, or draftsmen, and to government departments, trade associations, above title groups on temporary military service, architectural schools, architectural students, advertisers and their employees: \$5 for one year; \$8 for two years; \$10 for three years. All others: \$10 a year. Above prices are applicable in U.S., U.S. Possessions, and Canada. All practicing architects and engineers outside these areas: \$10 for one year; \$16 for two years; \$20 for three years. All others: \$20 a year. Single copy \$2, payable in advance. Indexed in Art Index, Architectural Index. Second-class postage paid at Stamford, Conn., and at additional office. Volume LI, No. 12, Printed in U.S.A.



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#### An indoor thrust stage has been added to

New Setting for Shakespeare

Gilded Light Bridges as Chandeliers

Oregon's pioneering reconstruction of an Elizabethan theater. Kirk, Wallace, McKinley & Associates are the architects of the addition.

Exposed gilded bronze catwalks for front-ofhouse lighting will also be the chandeliers in Southern Illinois University's Communications Building by Hellmuth, Obata & Kassabaum.

#### 62 New Places in Old Spaces

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Three new theaters have been created by architects Hardy, Holzmann, Pfeiffer through restoring three old spaces. This is a new direction for theater in an inflationary time.

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Two innovative theaters for California Institute of the Arts, by architects Ladd & Kelsey with designer Jules Fisher, show both the fixed simplicity and the elaborate mechanization of the two opposing directions in current theater design.

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The controversial work of theater engineer George Izenour shows that he is still striving for new means to achieve economies in multipurpose halls.

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'S



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#### YOUR POINT OF VIEW

#### **Pollution of the Profession**

Dear Editor: The editorial in the October 1970 issue of Progressive Architecture reveals a lack of understanding in regard to the practice of architecture.

No practicing architect has to lean on an auxiliary title such as "environmental professional." The term has been used by sanitary engineers and office designers, but more often denotes the unqualified practitioner. A majority of the "socially responsible" architecture graduates working in the field of environmental deare actually doing sign space planning and interior design because it is more lucrative for the architecturally trained and carries little or no responsibility to the public.

The fact that an industrialized society can produce a good architect is some kind of miracle. Educational guidance counselors continue to separate curriculum into art or science courses and discourage students from taking both. This concept of limiting education toward a particular field limits knowledge and qualified leadership.

When compared with large numbers of professionals in law, medicine and engineering, architects are unique. They are those rare people whose minds can bridge the gap that has been created between the arts and the sciences. With a wider scope of understanding and special training in organizing solutions where only disorder seems to exist, architects are perhaps the only leaders able to solve the problems now facing this nation.

The future quality of life in our communities will depend largely on the availability of qualified architects. It is no accident that fervent vocal concern for the environment is of little value to the candidate for architectural registration. He is expected to have the experience and technical competence to take full responsibility for design and proper construction of a building project, as an individual architect in his own practice.

Your editorial advocates a policy of "quantity over quality" as beneficial in regard to the registration of architects. Environmental professionals inform us that "quantity over quality" is the main cause of environmental pollution. That policy would be equally destructive to our profession.

As men of vision, the AIA should set a proper goal for architectural education. We must educate those with special talent and ability, without regard to race, religion, sex or economic status. As a respected editor, you are in the best position to direct our profession to that goal.

Victor L. De Nigris, AIA

(We agree with most of these points. However those architecturally trained are not confining their efforts to the Interior Design field and we appear to hold a higher regard for interior designers than Mr. De Nigris. Men with architectural degrees are working in law, real estate, finance, building products, building industrialization, in short, almost every aspect of the built environment. Professional commitment to quality of the environment needs to be increased rather than diminished. If we demand such commitment we must be willing to award professional recognition for its attainment. Ed.)

#### P/A Taped?

Dear Editor: I have recently joined the "untolled" millions of Americans who devote half an hour or so of their time every morning and every evening seated in their air conditioned automobiles driving back and forth to work. I have my tape recorder into which I dictate letters which I haven't been able to get to during the day, and assorted thoughts on the events of the day.

Wouldn't it be marvelous if PRO-GRESSIVE ARCHITECTURE published an audio tape edition of its magazine. This is done in the medical profession: my doctor's driving time is spent listening to research papers and keeping up with latest developments. I do not know if my magazine reading patterns are at all typical, but: when I first get the mail I open the letter from the State Police to see whether my new driver's license has arrived or whether my old one is being revoked. Then, I dutifully read the letter from my mother. Meanwhile, my wife wants me to come to dinner. I tear the brown wrapper off the latest PROGRESSIVE ARCHITECTURE and thumb though it, perhaps even reading a caption. Then I must open the wine, then dinner, and so it goes. PROGRESSIVE AR-(Continued on page 10)

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#### (Continued from page 6)

CHITECTURE then becomes bedtime reading: a better look at the pictures, a few more captions, a little bit of real reading here and there usually with the idea of coming back to really read it when I get some extra time, which never happens.

A tape edition of the more interesting and provocative written portions of your magazine might be very helpful. Not only could articles and editorials be read, perhaps by the writer, but other things could be taped which could not be done in the written magazine form: excerpts of speeches, or recordings of actual discussions. I suppose it would be more like a radio production except that with the tape, one can stop it, reverse it, discuss it, come back to it again. A quiet and thoughtful time has come into modern life as a byproduct of automobile travel. Perhaps this time could be utilized to make us better informed and more thoughtful professionals and human beings.

> John D. Hilberry Birmingham, Mich.

(Any subscribers? Let us know. Ed.)



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Dear Editor: After the article on Metals, you have put up another aesthetic, realistic, practical and informative article about *Plastics* (P/A, Oct. 70). Congratulations.

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#### Frank Lloyd Wright House For Sale

Dear Editor: The owner of the Warren Hickox House in Kankakee, Illinois, is looking for a sympathetic purchaser. This is an original Frank Lloyd Wright house, built in September, 1900.

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Mrs. Terry B. Morton National Trust for Historic Preservation Washington, D.C.

#### Registration

Dear Editor: Re your October Editorial (p. 63), registration is the recognized mark of professionalism.

The years of training are a vital ingredient in the making of a professional. Registration laws are just and fair. To relax these laws in order to accommodate a group of individuals without the capacity and the perseverence necessary to pass State Board Examinations would be to lower, dilute and degrade the standards of our profession.

The architectural profession deserves a more sympathetic, concerned and responsible point of view than that expressed in your editorial. J.J. Claret, Architect Sarasota, Fla.

(We could not agree with you more concerning the importance of registration for the architectural profession. However, we believe that you misinterpreted the editorial. In our opinion, there are many men who have architectural degrees who perform important environmental tasks. Ed.)

#### Errata

In the item "Criminal Prevention Instead of Detention" (P/A Sept. p. 38), the name of associate architect Walfredo Toscanini was misprinted as Walter Toscanini.

In "Three-Way Tie in Student Competion" (P/A Sept. p. 31), the names of the student team shown in the photo were omitted. They are from the left, Linda Ann Searl, Grant Vito Genova, and Richard Glenn Moore.

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## **P/A** NEWS REPORT



#### New Theater for Landmark Building

For the last five years Joseph Papp's New York Shakespeare Festival has been in the process of turning the old Astor Library building into the Public Theater. The building will eventually house not only two 300-seat theaters but a number of smaller ones, workshops and rehearsal halls. The first theater to be completed had an open-thrust stage. Now the second theater, with an end stage, has just been finished.

The second theater presented a problem to architects Giorgio Cavaglieri and Ming Cho Lee in that two rows of structural piers ran up the middle of the area designated for the auditorium. The architects gutted the basement and ground floors, ran steel beams across the ceiling on either side of the piers, and then removed piers. The theater has been kept purposefully simple and contemporary: the stage has no frame or proscenium, so that lighting, backstage functions are visible. For added flexibility, the first three rows of the continental seating arrangement may be pulled under rest of seating leaving an orchestra pit.

### First Groundbreaking for Breakthrough

The first groundbreaking for Operation Breakthrough prototype construction took place on October 22 at Sacramento, Calif. Sacramento is one of the 11 sites selected by the Department of Housing and Urban Development for prototype construction. Wurster Bernardi & Emmons, Inc., of San Francisco are the planners.



Jerzy Glowczewski







Robert Schofield

#### Warning About Certificates

The AIA has recently warned architects about signing "Architects Certificates" with private financing sources. It seems that this growing practice can often hold architects responsible for the contractor's work, or make the architect accountable for contractor's failure to properly disburse funds paid to him. It is suggested that any architect who is asked to sign such document consult with his attorney and, if certificate goes beyond legally and professionally accepted practice, refuse to sign it.

#### Round Glass Tower Added to Regency Hyatt

A glass 20-story tower has just been added to Atlanta's flamboyant Regency Hyatt Hotel (P/A July 1967, p. 160). The tower, clad in bronze-tinted reflective glass, was designed by architect-developer of the hotel John Portman. Two hundred wedge-shaped guest rooms and a restaurant will be housed in the \$3 million tower with an elevator core at the center.

#### National Photo Archive in D.C.

The National Gallery of Art in Washington has announced plans to build a photo archive for art historians, architects and environmentalists. It will contain about 2.5 million pictures documenting architecture, urban development and the visual environment. A grant from the Samuel H. Kress foundation has made the archive's establishment possible, and work has begun on its development by Kress Foundation curator Dr. Contini-Bonacossi.

#### P/A Has Urban Design Jury

Breaking precedent, P/A invited a special jury to judge urban and land planning submissions for the Eighteenth Annual Design Awards. On October 23 Jerzy E. Glowczewski, urban designer, A.E. Bye, landscape architect and Robert H. Schofield, architect, looked at over twenty submissions before deciding to premiate two. These will be published along with the other Design Awards in the January issue.

#### **NEWS REPORT**

#### Plastic City Hall Erected in 14 Hours



Wall panel is picked up . .



lowered into place . .



fastened to foundation with others.



Roof panels follow.

Everybody has been talking about building with plastics, and finally someone has gone and done it. The South Bend architectural firm of Korbuly and Graf have designed a plastic city hall for the little town of Bronson, Michigan, and the Bronson city fathers have backed their architects by building it.

It's a simple little building, 1920 sq ft in a 32'x60' rectangle. Wall and roof panels are sandwiches of fiberglass reinforced plastic and urethane foam. There is no frame: the wall panels, up to 32 ft long and 12 ft high, are load bearing.

Five workmen erected the building in 14 hours on a foundation and footings that had been poured earlier. Wiring outlets, telephone cables, plumbing and fasteners for the panels were already in place. The predrilled panels were simply lifted into place by crane and bolted down. The panels, manufactured by Lynema Enterprises, Inc. of Bronson (it holds the panel design patent as well), include 2 in of urethane foam insulation. Exterior surfaces are white plastic, while interior walls are either the same white plastic or an aggregate finish. Some interior surfaces were left unfinished for the owner to decorate.

Carl Walker and Associates of Kalamazoo, Michigan were the structural engineers, and Roussey Construction Co., a Bronson firm, put up the building.



Plastic panels provide interior . . .



and exterior finish.

Gruen to Master Plan Oakland City Center

The firm of Gruen Associates has been selected to develop a master plan for the first stage of the \$100 million Oakland City Center project. The first stage consists of a six-block area that includes two office towers designed by Skidmore Owings & Merrill, (800,000 sq ft) a 400-room hotel, two department stores (250,000 sq ft) and retail facilities (300,000 sq ft). Parking for more than 3700 cars will be located within the project.

#### Lapidus to Design Onassis Building

In the quickening disintegration of Fifth Avenue as a sophisticated shopping route, the news of Best & Co.'s closing, and the sale of its property next to St. Patrick's comes as no surprise. Replacing the 12story department store will be a 45story office tower to be built by Onassis and Aristotle Arlen Properties. Claiming that they want to lease substantial space in the tower to specialty stores, the partnership has retained Morris Lapidus of shopping center and Miami hotel fame to design the tower, plus an arcade for shops that will cut across north to south at mid-block, and a plaza around the adjacent Cartier landmark building. The developers seem to have no objection to being limited in expansion by landmarks on either side — although it is rumored that they even tried to buy air rights to St. Patrick's Cathedral.

#### Protest March over Skyline

One of the largest marches ever held on architectural issues took place last October in San Francisco. There, more than 5000 city dwellers marched along the waterfront protesting what they termed 'Manhattanization" of their the once European-like city. This term signifies the development of large high-rise buildings, a trend that has been particularly noticeable in the past decade when 21 high-rise buildings (over 25 stories) have sprung up in downtown, including the giant (52 stories) Bank of America building.

The current protest was touched off by the City Planning Commission's approval of a zoning variance for U.S. Steel's proposed 40-story (Continued on page 24) NO RECESS

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#### **NEWS REPORT**

#### (Continued from page 22)

office tower and multipurpose complex sited for the waterfront. The city is attracted by the possible tax revenues from such a complex. But one opponent, arguing that buildings usually just increase city service costs, disagreed: "If this were true," he said, "New York City residents would by now be paying no taxes at all."



#### Washington's New Town May be Revived

Fort Lincoln, a new town slated several years ago to be built in Washington, D.C. may yet be partially realized. The plan, conceived by Lyndon Johnson, was to take government owned land and build a town of mixed races and incomes — and types of architecture (P/A Jan. 1970, p. 80).

The scheme as designed by Keyes Lethbridge & Condon and David Crane under the supervision of Edward Logue lost backing after Nixon's election. But now HUD has permitted the local renewal group, the Redevelopment Land Agency, to invite private developers (such as Rouse and Levitt) to submit proposals in accordance with the original scheme. But as Wolf von Eckhardt recently pointed out in a Washington Post critique, in order for the new town to be mixed and have first-rate facilities (streets, parks) federal government input will still be needed. And this the private developer will now have to obtain from a fragmented array of government agencies.

#### New Developments in D.C.

#### By E.E. Halmos

#### Civil Rights Legislation Far-Reaching

Architects will be affected by the proposed regulations on civil rights that the Department of Transportation will promulgate early in 1971. Professional offices will be more under the compulsion of equalemployment regulations on any work involving DOT money than at present. And other departments (notably Housing and Urban Development) are reportedly working on similar rules.

At first glance, DOT's proposed regulations, issued for industry comment in mid-October, seem simple enough: merely an extension of existing equal-employment regulations that are already established. But the specific intent is, in the words of a top DOT official, "to go as far back into the pipeline as possible — to cover activities involved in the production or furnishing of anything that is incorporated into a construction project."

Thus suppliers such as ready-mix operators, asphalt plants or lumber yards are covered, as are those (like architects and engineers) whose services are "incorporated" into projects. Quite literally, even those who supply pencils and drafting paper can also be included.

Any such suppliers may be required (as long as any federal money is involved) to supply sworn affidavits and evidence that their employment practices conform with various equal-employment regulations. The independent Equal Employment Opportunities Commission can order any such firm barred from a contract if it feels that proper assurances have not been given or that the firm does not comply.

#### Latest on D-D Pre-Bidding

The abrupt ending of that Defense Department "experiment" in attempting to get A-E's to "bid" on construction projects military doesn't end the whole battle over proper methods of procuring professional services. But it is a big move in favor of professional goals. A little unexpectedly, Congress inserted a brief paragraph into the annual Military Construction Authorizations bill, declaring that "traditional practices and procedures" in obtaining A-E services must be continued.

Though chances for passage seemed dim when Congress returned to Washington after the elections, professional societies continued to push for a bill (HR 16443) which would nail negotiation procedures into law. They remained concerned because the Congressional action specifically affects only military construction — leaving the vast field of civil work technically still subject to changes.

#### Metric System Proposed Here

The construction industry - including architects - is at best lukewarm to the idea of changing U.S. measurements from the traditional "English" system to metrics, and foresees enormous problems in such a changeover. That was the best reading of a sparsely-attended, twoday session on the subject at the National Bureau of Standards' headquarters, as NBS pursued a Congressional mandate to assess the impact of such a change on U.S. industry in general.

#### **HEW Agency for Design Standards**

Newest A–E agency in government is the Facilities Engineering and Construction Agency — which consolidates architectural, engineering and planning staffs of the Health-Education-Welfare department. Objective, among other things, is to develop standards for hospital and school design; a system of standardized specifications that can be produced by computers. Chief is G.D. Fremouw, a licensed professional engineer (N.Y.); staff includes some 200 registered A–Es in field offices.

#### **Construction Business Trends**

Despite the rather spectacular rise in housing starts (running at an annual rate of 1.4 million in August), HUD Secretary George Romney sees no prospect of any drop in homemortgage interest rates any time soon (average is 8½ percent or more). Overall construction business continued to hold fairly steady as summer ended — rate was \$91.5 billion at the end of August, slightly up from July, slightly below a year ago.

#### Calendar

The Society of Architectural Historians annual business meeting, Conrad Hilton Hotel, Chicago, Jan. 28, 1971 . . . American Concrete Institute's 67th Annual Convention, Denver Hilton Hotel, Denver, March 6–12 . . . The Interior Designers' Institute of Manitoba Trade Exhibi-(Continued on page 26)

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> There's an evolution in the kitchen



#### **NEWS REPORT**

#### (Continued from page 24)

tion '71, The Winnipeg Inn, Winnipeg, Canada, March 31-April 2... The Fifth St. Louis Symposium on Advanced Composites, part of the Monsanto Co./Washington University Association program on High Performance Composites, Colony Motor Hotel, St. Louis, April 6-7.

#### Competitions

The Washington Center for Metropolitan Studies in Cooperation with the U.S. Department of Housing and Urban Development has announced a furniture design competition to develop furniture specifically for families residing in low-income housing. Deadline for drawings, Jan. 1, 1971. Details from The Washington Center for Metropolitan Studies, 1717 Massachusetts Ave., N.W., Washington, D.C. 20036 . . . The 1971 R.S. Reynolds Memorial Award for distinguished architecture using aluminum, administered by the AIA. is accepting nominations: deadline Feb. 1, 1971; jury review Feb. 24-25. Nominations to be submitted to the R.S. Reynolds Memorial Award, The American Institute of Architects, 1735 New York Ave., N.W., Washington, D.C. 20006.

#### Awards

Winning entries in the first design awards program for nonprofit sponsored low and moderate income housing are on display at the Octagon this month. Receiving Awards of Merit are: Collins and Kronstadt, Leahy, Hogan, Collins, Silver Spring, Md. (Columbia Interfaith Housing Corp., Columbia, Md.); Carl Maston and Edward R. Niles, Los Angeles (Episcopal Development Corp., Altadena, Calif.); Daniel, Mann, Johnson and Mendenhall, Hawaii and Los Angeles (Kukui Gardens, Inc., Honolulu); Hartford Design Group (Martin Luther King, Jr., Community, Hartford, Conn.); Smith Barker Hannssen, San Francisco (Sacramento Collegetown); Marquis and Stoller, San Francisco (St. Francis Square): Hugh Stubbins and Associates, Inc. and Ashley, Myer and Associates, Inc., Cambridge, Mass. (Warren Gardens, Inc., Roxbury, Mass.); Stanley Tigerman, Ltd., Chicago (Woodlawn Gardens); Richard Meier, New York City (Westbeth Artists Housing Project). The awards program was sponsored by AIA. National Center for Low and Moderate Income Housing, National Urban Coalition and Urban Design and Development Corp.



**Bold Graphics for Grand Scale** 

One interesting example to prove that supergraphics alone can enliven a bland interior is illustrated in this industrial building. When International Paper Company was having architect Albert C. Martin Company design its manufacturing plant for the Facelle Division in Oxnard, Calif., it decided colorful wall graphics would humanize the scale and feeling of the steel and glass 975,000 sq ft structure.

Colors are kept cool in the manufacturing area where the wall graphics measure 50' x 200', and warm in social places such as the cafeteria. A large mural spelling the company name extends 300 ft down a corridor connecting offices to the plant. Even exit signs are given the large-scale treatment: on vertical patches of red orange 20' x 30' is painted "EXIT" in 5 ft high letters.



Wall Painting at Lever Brothers

For a long time New Yorkers have been wondering why something wasn't done to the blank side wall of a building framed by the Lever Building's tower-on-slab-form. Finally something has: Lever Brothers commissioned Robert Wiegand to paint a 37 ft high by 52 ft wide mural for the wall. The wall painting is the first company-sponsored project of City Walls, Inc., a group of artists who have been livening up dead wall space around the city for several years. The painting is entitled "Leverage," which is something City Walls may not have had enough of with the powers that be: the painting covers only one-third of the white wall and is mounted instead of painted on brick (for easy dismantling?). Counsel to Lever Brothers was provided by the Museum of Modern Art.

#### **Rooftops and Circuses**

The roof of a former New York department store will soon be transformed into a pre-Renaissance fair. According to its planner, David Mal-



ina, the fair is reviving the combination entertainment and marketing phenomenon popular in 12th century Athens and Florence. Of the roof's 90,000 sq ft approximately 35,000 sq ft will be subdivided into store and stall spaces for over 100 enterprises including plant nurseries, organic food vendors, souvlakia stands, satanist reading rooms, aphrodisiac shops and puppet theaters. About half of the roof will be enclosed and include a theater. Display space for booths uses a tetrahedronal lightweight truss frame hung from the ceiling to provide horizontal bracing for a panel system that will separate the various booths. The panel system is based on a triangulated grid and has basically seven components two different lengths of member extenders and five different-sized panels. Store shapes may vary but will typically encompass 50 sq ft. The architect for the project is designer John Styork.









# Have high bids stalled a building that you planned and urgently need?

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#### **NEWS REPORT/BUILDINGS ON THE WAY UP**



#### New Campus for Bryant College

#### Smithfield, Rhode Island J. Robert Hillier, Architect

After 100 years in downtown Providence, Bryant College is building a new campus from scratch on 280 acres of countryside to the north. The new campus accommodates 1000 resident students and 1000 commuting students on a budget of \$13 million. Designed to straddle a saddleshaped ridge, most of the campus is contained in a "unistructure" to condense space and protect students from severe winters. In this building are grouped social, administrative



#### Library, Lincoln University

Oxford, Pennsylvania Vincent G. Kling, Architect

A \$2.7 million four-story brick and reinforced concrete structure is under construction at Lincoln University. The building for the oldest black college in the U.S. (founded 1854) will house a valuable black literature collection plus normal li-brary facilities. The black literature collection includes the personal library of poet Langston Hughes, an alumnus of the university. The 250,000-volume building is organized so that the main library level with circulation desks, card catalogs, a book browsing area and Hughes' collection are on the second floor, while a round-the-clock study center that can operate when the library is closed is on the ground level. Third and fourth floors contain stacks, study areas and other service facilities.

and academic facilities. Flanking one side of the building are dormitories, and on the other a gymnasium and playing fields.

At the heart of the unistructure is a central domed core: a glass covered garden space for meeting and socializing; an auditorium, library and snack bar immediately adjacent. Stairway towers punctuate corners of the three level building. The structural system was chosen for speed of erection as well as economy, since the campus has to be ready in 16 months. Precast floor slabs rest on block bearing walls with exterior walls of dark brown brick and bronze glass.



Herbert F. Johnson Art Center Cornell University, Ithaca, N.Y. I.M. Pei and Associates, Architects

Now under construction on the Cornell campus is a 60,000 sq ft art exhibition, storage and teaching facility. Sited for a slope overlooking nearby Cayuga Lake, the Center comprises a series of levels, six above grade, two half-levels and a service level below. A tower incised by elevator and stairway slot contains exhibition galleries on lower floors, then administration offices, print galleries, and finally, meeting rooms on the top floor. Additional exhibition space (galleries total one-fourth of the building's square footage) occupies the open side. The open portion in fact includes a mid-air sculpture terrace. Cantilevered over this terrace is a lounge area and behind it a study and storage center. The \$3.575 million structure is board-formed concrete with welsh quarry tile in lobby and terrace floors; other floors will have wood strip surfaces.



Nissan Motor Co. Headquarters

Carson City, California Kajima Associates, Architects

Combination office building and showroom for Datsun sports cars is a trapezoidal structure on a triangular site. The diagonal side walls, containing utilities and service facilities, are parallel to the streets on either side. Reflective glass curtain walls, (plain glass treated with a plastic film) connect these metal panels on steel frame core walls. Originally the interior space was to be clear-span; budget considerations, however, prompted use of a grid of columns. The tenstory building will contain 100,000 sq ft and cost about \$4 million.



C & I Bank Memphis, Tennessee Gassner Nathan Browne, Architects

In projecting a design for a bank that seeks a progressive corporate image, the architects decided on a right angle triangular shape with the hypotenuse forming the front elevation. This sloping plane of glass protects a garden-plaza entrance to the facilities. Trusses of painted metal tubes support the glass shed. The rest of the structure is poured-in-place sand-blasted concrete with a metal roof. The 40,-500 sq ft building contains five office floors, a basement, and a mechanical system storage floor in the apex of the triangle.

Twelve of more than 150 Rixson concealed floor closers: L'Enfant Plaza, Washington, D. C.

Architect: I. M. Pei and Partners, New York City Hardware: Rudolph and West Co., Washington, D. C.

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#### **NEWS REPORT/BUILDINGS ON THE WAY UP**



Phoenix Civic Plaza Phoenix, Arizona Charles Luckman Associates, Architects

Designed for downtown Phoenix by Charles Luckman Associates in collaboration with architect John Schotanus, Jr., the Phoenix Civic Plaza contains both concert and convention facilities. A theater will be added later.

The 2563-seat concert hall will feature a conventional proscenium stage fronted by an orchestra pit, with a continental (side aisles) seating arrangement. The archi-tects claim the concert hall is flexible enough to serve as an auditorium or theater. It is approached from a plaza elevated four to five feet above the street level, and connects with the convention hall via a 100-feet-wide pedestrian bridge. Exterior materials for the project are vertical-grooved and textured concrete block, with aluminum mullions and bronze-tinted glass. Benches, planters and drinking fountains will be precast concrete.



New York City Mission Society Cadet Corps Headquarters

#### The Bronx, New York Edgar Tafel, Architect

The City Mission, an organization that has been working with disadvantaged groups in New York City since 1812, will replace its Cadet Corps headquarters during 1971. Not only will there be a gym, swimming pool, dance and music rehearsal spaces, but an auditorium, language laboratory, fine arts studio and two large playroofs as well.

The 40,000 sq ft building is steel frame with masonry cavity walls, and will cost about \$1 million.



Adult Learning Research Laboratory American College of Life Underwriters

Bryn Mawr, Pennsylvania Mitchell/Guirgola, Associates Architects

In the master plan of a campus for the American College of Life Underwriters, the research laboratory was conceived to be a technologically up-to-date center for continuing education in insurance industry. Television and audio studios are located in basement and on ground floors, a library equipped with dial access audio-visual carrels and classrooms occupy the ground floor, while conference rooms and offices are on the second level and executive offices and conference rooms on the third and fourth floors. The U-shaped building is organized around a courtyard that provides vehicular and pedestrian access. The structure itself is tile-faced reinforced concrete with reflective coated glazing.



**Princeton Theological Seminary** 

Princeton, New Jersey Alexander Ewing and Associates Emilio Ambasz, Designer Consultant; Alexander Ewing and Associates, Architect

The design of this project was partly determined by the site in that the building will act as a connector between residential and campus areas.



Embassy of the Republic of China

Tokyo, Japan Y. H. Peng, Architect

An embassy building planned for a residential section overlooking Tokyo combines horizontal flat planes and vertical circular elements, glazed and solid portions, in a composition of singular clarity. The model does not indicate the materials to be used: dark brown cast aluminum panels on the vertical shafts, and dark brown painted steel trusses. The six sets of trusses are carried on the four pairs of 13-ft wide circular shafts; across the trusses steel girders span about 46 ft to provide column-free office space. Office spaces are walled by tinted glass panels and the cantilevered arrangement of terraces provides outdoor areas for entertaining. The five-story building includes a ground floor Consulate office easily accessible to the public, administrative offices on the second and third floors, a public lounge on the fourth level for conferences and gatherings, and the Ambassador's and Minister's offices on the top floor. Elevators are contained within the towers as are mechanical equipment, stairs and utilities.

The result is a bipartite scheme with triangular commons building hinged to a rectangular dormitory. In the common-use building, three descending levels project out into a shared open space and reflect a hierarchy of public uses. An exhibition area is at ground level, conference rooms above, and study alcoves on the top. The dormitory presents a varied organization of increasingly private areas with half-level stairs feeding from the ambulatory into semi-recessed coves and then into isolated "cells." On the other side of the ambulatory, window-seat niches overlook the court, and on the ground level grottoes under the 'cells" open onto a below-grade garden. The dormitory houses 50 residents and there are duplexes for married seminarians. The highly budgeted building (\$43 per sq ft) uses load-bearing masonry and glass walls, with reinforced concrete floors.





# **Daylight on Nebraska Interchange**

Where Interstate Highway 80 intersects Highway US-83 at North Platte, Nebraska, 100-foot Meyer Poly-12 lighting poles are helping turn night into day.

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Thirteen Poly-12 poles with five luminaires each replace an equivalent forest of 80 smaller structures required for the same roadbed illumination. And, should a vehicle become out-of-control under slippery highway conditions, the 13 poles mounted far off the roadbed are almost impossible to hit

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GARDEN STATE ARTS CENTER

■ ARCHITECT: Edward Durell Stone, New York ■ ENGINEER: T. Y. Lin & Assoc., New York ■ CONTRACTOR: Sovereign Construction Co., Ft. Lee, New Jersey

Esthetic design with concrete is beautifully demonstrated by the new Garden State Arts Center designed by Edward Durell Stone for the New Jersey Highway Authority. ChemComp shrinkage compensating cement was specified for the seating area where crack resistance was considered an absolute necessity, and in other areas in the complex where its superior qualities make possible a significantly better, more attractive structure. ChemComp is produced by a group of leading manufacturers of superior quality cements, and is available nationwide.

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#### **PRODUCTS & LITERATURE**

#### **Tan Cement**

There is an alternative to the standard white or gray cement that has been around for so long. Said to be the first true tan colored cement developed in the industry, the new cement gives a warm tan color without any tinge of gray and, according to the manufacturer, does so without any color pigments or other additives. It costs a little more than standard gray cement, but the makers maintain that when costs of paint, aggregates, pigment and other cosmetics for gray concrete are added in, cost of the new tan concrete compares favorably. Trinity Division, The General Portland Cement Co.

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#### **Computerized Drafting**

A small computer controls a four-pen drafting head as it is propelled over a 5' x 8' drawing board. A drive principle centered around the Sawyer linear motor design provides fast drawing speeds, up to 40 ips, with repeatability of  $\pm$  0.001". Designed for the generation of floor plans, elevations, perspectives and construction detail drawings, Xynetics 1000 was an award winner at the 12th Annual WESCON Industrial Design Award program. Xynetics, Inc. Circle 102 on Reader Service Card

#### **Colorful Compartments**

Toilet compartments, urinal screens and dressing enclosures are featured in Formica's new catalog, which includes full-color renderings plus materials, work scope and installation data. Formica Corp. Circle 103 on Reader Service Card

#### Louvered Aluminum Ventilator

For inlet, relief or penthouse applications, the RLX ventilator of heavy duty aluminum in 240 standard sizes up to 8' x 12'. ExitAire Co. Circle 104 on Reader Service Card



**Versatile Stock Windows** 

A method of on-site curtain wall construction from stock window components has been used successfully in the Washington County Office Building in Stillwater, Minnesota. The system involved the combined efforts of the Andersen Windowall Corp. and the architectural firm of Cerny Associates, Inc. who designed the building and detailed the curtain wall assembly techniques. Three stocksize Andersen Vinyl-clad Perma Shield windows were bolted to each other to form large curtain wall sections - joined to T-bars fitted with steel clips. Curtain walls were assembled by placement of sash type and size, with all glazing at the factory. Catalog from Andersen Windowalls. Circle 105 on Reader Service Card



#### **Play Systems**

Component playground modules can be used in a variety of combinations. Included are Playtank, of heavygage, laminated fiberglass; Cityscape, modular buildings and interconnecting tunnels; Saturn, a round climbing structure circled by external slide; Roller-slide, a people conveyor; Rocking Rods, a one-child teeter-totter. Play Systems, Inc. Circle 106 on Reader Service Card

#### **New Light On Learning**

A precision-molded lens which distributes light in a twin-beam pattern, Percepta should eliminate reflected glare from reading materials: the distribution pattern of the lighting system minimizes downward directed light. Percepta is a one-lamp luminaire, with an injection-molded acrylic plastic lens that has a prismatic pattern, both interior and exterior. The Holophane Co., Inc. Circle 107 on Reader Service Card

#### **Expansion Joint Cover**

Metalastic Mark II is one-piece roof deck expansion joint cover, made of both metal and Geon vinvl to give the resiliency of flexible vinyl and the positive fastening of a rigid metal flange. In 50' and 100' rolls, with transition members. overlapping Grefco, Inc.

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#### **Grilled for Security**

The Centurion is a maximum security sliding grille that comes in a variety of color, pattern and track combinations. May be used where a rolling grille is suitable, but offers tight stacking, ability to turn in a 10" radius or any radius above 10" such as a complete circle or any other free form. Dynaflair. Circle 109 on Reader Service Card

#### Germ-Proof Walls

Disease- and odor-carrying bacteria cannot penetrate the nonporous surface of these porcelain-on-steel panels. Laminated to inexpensive fireproof gypsum board, they are sponged clean, require no painting or other upkeep, and can be installed over almost any type of existing walls. 107 colors. AllianceWall Corp. Circle 110 on Reader Service Card

(Continued on page 63)


## Sanspray. The Great Stone Facing.

Imagine an exterior wall cladding with all the beauty and durability of stone. Plus the low cost, easy installation and maintenance freedom of plywood. And you're into Sanspray.<sup>®</sup> A natural stone aggregate bonded to plywood. The most exciting thing to happen to exteriors in a long, long time.

That's Sanspray's large aggregate pictured above. There's also a small aggregate (equally distinctive). And a range of colors you have to see to appreciate; like Tangerine, Pearl Gray, Gaelic Green, Monterey Sand . . . and others.

But the hidden beauty of Sanspray lies in its low cost – far less than most stone and masonry wall claddings. Far lighter, too, and much easier to install. Saw it. Drill it. Glue it. Nail it directly to framing members. Then forget it. Because Sanspray is virtually maintenance-free,

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in all climates. Sanspray. The beauty treatment for all residential, light commercial and industrial buildings. Find out more about it at your local U.S. Plywood Branch Office.



#### **PRODUCTS & LITERATURE**

(Continued from page 34)

#### **Roof Coating Follows any Contour**

An elastomeric, thermoplastic coating called Neolon offers complete weather protection for all types of roof construction regardless of pitch or contour. Can be applied to portland cement, concrete, plywood, asbestos board, insulation board, and metal surfaces. Covers minor cracks, resists chemicals and fumes, and will not chip or crack under stress. Available in a wide range of colors; fade resistant. Interior and exterior use. Desco International Association. Circle 111 on Reader Service Card



**Cubes Hide Office Clutter** 

The elegant, minimal boxes used for desks and storage designed by Davis Allen of Skidmore, Owings & Merrill, N.Y. and formerly custom-made for them, continue to look custom built. Desk is steel with removable panels and desk top; concealed wiring runs into a power panel inside the desk. Teak, walnut and oak woods; 28 metal colors. Console and cube storage units. The General Fireproofing Co. Circle 112 on Reader Service Card

#### Easy Does It

Specially designed for grid ceiling installation, recessed luminaires are available in a line of frameless, flushframed, and regressed-framed diffusing panels, in 2' x 2' and 2' x 4' units. Also available, quick wire devices that allow flex connections from 79200 Sunbeam the top. Series Lighting Co., Inc.

Circle 113 on Reader Service Card

#### Park It

A 16-page brochure describes modular parking facilities — a precast concrete construction system. Although permanent, a structure can be disassembled and re-erected on another site if necessary. Unicorn Parking Structures.

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**Faced with Sun Controls** 

Fixed sun controls can be used to cover the entire facade of an old or new structure, or they can be combined with adjustable controls to keep out all direct solar radiation catalog tells both stories. Brown Manufacturing Co. Circle 115 on Reader Service Card

#### **Glare Less Lenses**

Polrized lenses are incorporated in fluorescent light fixtures, providing natural lighting and reducing reflected and direct glare. Lenses can be used for new fixtures or as replacements in existing fixtures. Booklet. Polrized Corp. of America. Circle 116 on Reader Service Card

#### New Modular Construction System

A precast-concrete system, Mod-U-Cast, incorporates modular prestressed/precast-concrete beams, columns, wall, and roof members to provide quick, economical, low maintenance structures. Offered in two packages, Mod-U-Cast Commercial is for multistory offices, hotels, and apartments; Mod-U-Cast Industrial is primarily a one-story building system for warehouse and factory application. Two-hour fire resistant. Variety of exterior design finishes. American Precast Concrete, Inc. Circle 117 on Reader Service Card



#### **Circuit Control**

Low voltage switching systems for control of individual circuits, or centers for remote control of multiple circuits can be used in such varied ways as visual aids in schools, nursecall or fail-safe alarm systems, and for industrial, commercial and residential zone control. Booklet from Touch-Plate Electro-Systems, Inc. Circle 118 on Reader Service Card

#### Fire-Retardant Wall Panels

Suggested application, specifications and installation procedures for three types of Micarta-clad, fire-retardant wall liner panels are described for use where strict building code flamespread requirements must be met. Westinghouse Electric Corp. Circle 119 on Reader Service Card

#### Single Panel Room Divider

The Acousti-Seal 301 offers individual panels to be combined in varied configurations. The panels slide along a ceiling-mounted track, make right angle turns. Variety of finishes. Bulletin, Modernfold. Circle 120 on Reader Service Card



#### **Cellular Neoprene**

Detailed reports are offered on three types of cellular Neoprene - each suited for a specific construction application - closed- and open-cell neoprene and neoprene foam. Elastomer Chemicals Dept., DuPont. Circle 121 on Reader Service Card

## Whiteprint-Blueprint Duo

Literature is available describing the Rotolite Duet Whiteprint (Blueprint) machine, which requires no venting; handles prints up to 42" wide by any length. Teledyne Rotolite. Circle 122 on Reader Service Card

#### **Dry Basements**

Ways and means of dealing with the four main causes of excess water in and around the home are described in a color brochure "Foundation Drainage with Orangeburg Solid & Perforated Pipe." The Flintkote Co. Circle 123 on Reader Service Card

#### **Sound Control Ceiling Patterns**

Acoustical ceiling and wall materials can be custom designed to individual patterns, from company symbol to product image. Color illustrated brochure describes how to do it. United States Gypsum Co.



## Heugatile carpet squares appeal to the Japanese

You owe it to the Expo '70 in Osaka that you have heard and read so much about Japan during recent months. Media such as the press and television have succeeded in bringing the Far East right into your home. We visited Expo for two very good reasons. The first reason is that blue Heugaflor was installed in the blue interior of the Dutch Pavilion. The second reason is that this year Van Heugten has established a branch in this often amazing country - Japan.

## The year 2000

Max Clos, an internationally known writer, headlined one of his articles of a series published in the Dutch newspaper "De Volkskrant"

...''Japan is already living in the year 2000", and he then proceeds to fully justify this statement with a number of examples of the technological development, the mentality and the way of life of today's Japan. In fact, the modern Japanese people are very eager to accept Heugatile carpet squares. Does that say anything about our product? To answer this question, let's again quote Max Clos who, writing about the futuristic aspects of the Expo, says: "It is by no means a coincidence that the Japanese have so enthusiastically welcomed these creations. To them they are more than a daily necessity: they are a must."

"Their outlook and mentality make them automatically accept the era of collective living. Their predilection for things technical and things modern - they even beat the Americans at their own game - makes them feel at ease in a world of robots".

On the fear of the old-generation Japanese that the typical Japanese culture will disappear in the process, Max Clos has this to say: "But it has struck me that the younger-generation Japanese do not seem to share this fear. The contrary is true: they enthusiastically welcome the era of concrete, plastic and neon that is knocking on their country's door. It is plain to see that the past, in fact practically everything bound up with "the old Japan", weighs heavily upon them and is hard to digest."

A participant to a congress of European and Japanese town planners and architects told us that the Europeans go into raptures on seeing the splendour of Japanese temples and the charming cherry-blossoms, whereas the impatient Japanese exclaimed: "All this is the past. You yourselves, in Europe, are also things of the past. We will have to build new cities, prepare for the enlightened man to tomorrow. And, we, the Japanese, will be the first to do that."

This is, of course, a controversial statement, but we must agree that the young, modern Japanese who have their eyes on the future, are readily accepting new concepts in all facets of their lives. This atmosphere of progress has prompted us to move into Japan with Heugatile carpet squares.



### Japan, on its way to the future

Japan, a country with an eventful past, is faced with a future abounding with great problems. But there is no doubt that Japan will find ways to surmount them.

With the universal appeal of Heugatile, they fit equally well in Nippon, a country where people still live according to two entirely different cultural patterns: a very ancient Eastern and a modern Western way of life that is even a step ahead of other progressive parts of the world.











## Contrasts in architecture







Street scenes in Tokyo and Kyoto.





Two pedestrian crossings.



That the Western way of life has considerably affected the ancient Japanese living pattern becomes clear when we look at architectural trends. "Now a splended town like Kyoto finds its beautiful temples isolated and distorted in an ocean of concrete", Max Clos wrote. And Rein Blijstra, writing in the "Amersfoortse Courant" of 4 March, 1970, discusses "Japan's chaotic town-building schemes" and states "If you go to Japan to learn what modern town planning and building are like and if you expect something "out of this world", you are in for a bitter disappointment. Town building in Japan is far from impressive and one cannot escape the feeling that not enough attention is, or has been, paid to it. This does not apply to the past."

This may be so, but we were nevertheless often deeply impressed by structures from the past as well as by the products of contemporary architecture. Probably the most striking aspect is the huge contrast between the two. If anywhere in the world, you can find here a relatively peaceful revolution taking place, where within a few decades' time a change-over was experienced from completely ''Eastern'' to completely ''Western'' concepts and ideas. The one hundred million Japanese are still in the middle of this revolution and this means that stepping over a threshold may give you the same sensation and experience as making a trip around the world. And very often we find the old world of the East and the new world of the West together in one and the same place. Obviously, these conditions call for a considerable measure of adaptability and a high degree of flexibility. And this may well be one of the reasons why versatile Heugatile carpet squares, which have proven to match any interior decorating scheme, have become so popular with the Japanese. After all, they can do anything they please with our carpet squares!



## Heugatile carpet squares and Expo '70



There is no doubt about is: we went to Japan to show our products at the Expo. But we were so fascinated by everything we saw in the land of the rising sun that we were tempted to allow matters to rest there and not bother about the Dutch Pavilions at all. After all we do know quite a bit about Holland and about Heugaflor. The very moment, however, we saw the unique cubic construction of the Dutch Pavilion, our indifference turned into enthusiasm about the overwhelming way this small country presents itself here.

The floors, walls and ceilings of the exhibition areas are dark blue. Fortunately, we were in a position to supply this particular shade of blue Heugaflor carpet squares from stock. These squares, by the way, take just about the heaviest beating any floor covering material can be subjected to.

As early as the 29th of April, 1970, the one millionth visitor (a 14-year old boy who took shelter from the rain) stepped on to the Heugaflor which at that time had some 5 more months of wear and tear ahead, including the holiday season...







Yet to survive the onslaught of some 60.000 shuffling feet per day for a period of six months was only one of the requirements the floor covering had to meet. It also had to be a prestige floor covering, and to stay like that! Obviously, the very object of a country's presence in a world fair is to make the very best impression on the rest of the world.

Another requirement of the architects was that the floor covering should be in perfect harmony with the polished aluminum floor sections designed by artist Peter Struyken. It was also imperative that the floor such as this one must be capable of being cleaned quickly and thoroughly.

Practically all of the Dutch Pavilion is one larg cinema. A line-up of some 15 film and 10 slide projectors is continuously showing film and slides. The thousands of visitors cause an uninterrupted flow of dust that is tracked in from the outside during the hot dry Japanese summer. Just imagine what it would be like if all that dust would actually be swept up into the air. The result would be a very misty looking Pavilion! The Heugaflor carpet squares retain this dust until the vacuum cleaner removes is.

An interesting problem is caused by the way so many Japanese people walk. The so-called getas, a sort of sandal with a thin strap between the toes, are still very popular and it may be due to this type of shoe that so many Japanese appear to drag their feet instead of picking them up. A floor covering that cannot take this scuffing will start shifting and we have seen the consequences of this problem in several pavilions. The Heugatile vacuum set carpet squares, however, do not give way at all; they anchor themselves to the floor so that even millions of getas do not move them a fraction of an inch.



Heugaflor: floor and wall covering in the Dutch Pavilion... a rhapsody in blue.



#### Camera in hand, we have extensively toured this futuristic funfair and we brought back so much material that sorting and selecting alone took us several days. Here we are presenting just a handful of impressions, concentrating on the Australian and Swiss Pavilions. We do this because the Australian Pavilion looks like a huge floor lamp whereas the Swiss have come out with a stylized tree made up of 32,000 lamps; but also because the Australian Heugatile managers run the Japanese branch and because the main office of Van Heugten Export A.G. is located in Luzern, Switzerland.

This worlds fair has again proven the fantastic performance attributes of Heugatile carpet squares, which are succesfully used all over the world. We would never have succeeded in building a world-wide concern on the basis of these fine products if they had not performed up to our specifications.

Heugafelt, the first loose laid carpet square, led to the three other fine products now offered by our company, Heugaflor, Heugalux and Heugalaine. Each product, designed for specific application in most commercial places of business, carries a full Heugatile performance guarantee. And the proof of performance has again been demonstrated by the rugged beautiful Heugaflor installed in Osaka.

#### Now let us say goodbye to this dream-world and make our exit by using the rolling sidewalks (total capacity 9,000 persons/ hour) and one of the six monorail trains. On the following pages we would like to take you to Tokyo for a visit to the main office of our Japanese Heugatile organization.

The Australian and Swiss

pavilions at Expo '70















"Heuga", a world-wide concern, feels perfectly at home at the expo.

## 300 miles to Tokyo in two hours







"Heuga" Home in Tokyo...

The "Bullet Train" covering the 320 miles between Osaka and Tokyo made this trip short and comfortable and we are pleased to reproduce a picture here of this outstanding train.

The taxi ride from the station to the Heuga offices was guite a contrast with the safe trip we enjoyed on the train. We do not know whether there are any driving schools in Japan, but if there are, we cannot help wondering what their instructors teach their pupils. Switching gears is certainly not one of the subjects taught and neither are traffic rules and regulations ... We were constantly under the impression of being on our way to one of the local hospitals and we were extremely glad when we finally reached our destination safe and sound.

As you will see from the photograph, the Heugatile building is a brand-new structure that looks completely Western inside and out, apart from the Japanese characters a skillful painter was applying on a glass panel. We plan to set up a network of dealers all over the 142,688 sq. mi. of these island from this Japanese head-office.

We already have established a branchoffice at Osaka and more of these will follow in due course.





"Heuga" showroom draws admiring glances of modern Japan.



Heugatile carpet squares in Japanese department store. More attractive and more functional than Tatami mats.







We would very much like to show you a lot more pictures of this Heuga dealer, including the charming and helpful Japanese girls at the escalators who never get tired helping tiny tots and old people to get on and off. They never stop warning users of the danger of the escalator, and they never cease cleaning the banisters with a cloth containing a disinfectant. The elevators are also "manned" by a crew of girls who have been specially trained to help people and give service.

Another thing that impresses the visitor is the way the Japanese display their articles in shops and department stores. Reproduced below is a photograph of an umbrella display to show their simple but spectacular methods.









This is a huge department store and its cleanliness, efficiency, and service are fantastic. And here they are: our Heuga carpet squares on sale to the Japanese. And wheter they like their home or place of business to be arranged in a Japanese or a Western style, or maybe a combination of the two to make it something entirely different, Heugatile carpet squares are the answer. Here is one example of such a combination of styles: chairs without legs at a low table. These pieces of furniture are still placed on Tatami mats, a very popular and so widely used floor covering in Japan that room sizes are adapted to the sizes of these mats instead of the other way round. That is why in Japan people do not speak of a room of x sq. ft. but of a room of x mats. More and more Japanese are dropping the habit of sitting on the floor which means that they are making the change-over to using carpets now. It won't be long before they will be talking about the size of their rooms in terms of Heugatile carpet squares... We can just hear them say: "Here is an 80-carpet square room!"

Our visit to Japan was all too brief, but the memories of the country, the people and Expo '70 linger on. We hope that you enjoyed sharing our visit and that this publication has aroused your interest in Heugatile carpet squares.









Japan in beautiful details







and the Heugatile carpet square matches the scene as well...

as the geisha on the Japanese stage.



注意

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A publication of Heugatile Corporation 185 Sumner Avenue Kenilworth, N. J., 07033 Phone (201) 245-3480

August, 1970

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## the landscaped office

next from Heugatile

## PROGRESSIVE ARCHITECTURE

DECEMBER 1970

#### EDITORIAL

Those that see the theater only through the proscenium arch stand in the same position to the theater as those that can only see architecture in the façade of a building. The theater and architecture are passing through a period of unprecedented infiltration of ideas and experiment. The historic continuum of both seems disconnected.

Everywhere in the arts, in the drug culture and art culture, we find, if not a complete revulsion against society, at least a yearning for an exit from the prevailing values and pressures of society as it is now constituted.

The concept of an elite, and high art has always been elitist, even if it is only an elite of sensibility rather than wealth or social position, is under attack, High art requires exceptional talent, exceptional vision, exceptional discipline, training and dedication. For the theater this has meant exceptional buildings to house its ritualistic function.

The attack upon elitist high art under the banner of freedom threatens to destroy the very things that make art possible. The dilemma was expressed clearly by Professor of Architecture, Richard Bender. "Apprenticeship is too often looked at as the opposite of freedom, as a distasteful subordination. But those who reject it, reject along with it the whole tradition of craftsmanship, mastery, diligence in learning, excellence of performance. You cannot vote yourself into the company of great poets, heart surgeons or architects.

"Freedom is an abstract and terribly elusive word. The question is not really one of authority, though it is usually argued in that form . . . Freedom is not motion in a vacuum, it is motion in a continuum. If we want to know what freedom is, we must discover what the continuum, the framework, is. Freedom is another name for the fullness and final shape of activities. We experience the activities, not the freedom." It is interesting in this context that the Living Theater with its dramatic emphatic portrayal of freedom could only be portrayed by a highly disciplined cast. The same holds true for the forms of modern architecture.

We find that new types of residences, commercial buildings and institutional structures and their interrelated effects display a preoccupation with the uses of space and communication. Furnishings, computers, prefabrication, flexibility, airborne and waterborne structures are the present preoccupation of architects. The only permanent profile to be found in major cities today is the silhouette of cranes.

The theatrical counterpart has been in theater technology. Flying systems, adjustable stages, even kinetic walls and ceilings are the stuff of the theater. Technology has become part of the theatrical performance. Such a use of technology and the spatial effects designed to arouse definite emotional response in the theater are an excellent laboratory



Clark Arts Center, Rockford College; The Perkins & Will Partnership, architects; Hedrich-Blessing photo.

for the theatrical space of architecture in its present experimental stage.

As population increases and building material resources diminish and pollution levels rise due to the consumption of energy in manufacture, we are driven toward engineering optimization. As the oblique takes the place of the materially luxurious sculptured box that has been the characteristic of architecture, we must be prepared to live in spaces that we would only have experienced in the theater.

The theater is the forerunner of kinetic architecture of the future when the moving adjustable building will become everyday reality. We can work out the problems of insecurity, vertigo and subconscious readjustment of our familiar reliance on the horizontal and the vertical here. But our search for new forms, for freedom from the tyranny of the proscenium arch and monumental building requires as much discipline in design as that required by actors who characterize it on the stage.

The theater can be the laboratory for experiencing such space as it is the place where we can act out our social and political allegories without bloodshed. As McLuhan reminds us, we cannot see the whole until we are outside of it. Architects can learn about their profession by looking at the world of the theater and we invite our theatrical friends to look at architecture for the same reason.

Forest Wilson



Fragmentation of the theater envelope as at architect John Johansen's Mummers Theater in Oklahoma City, expresses the current fragmentation of "environmental" settings, such as for director Richard Schechner's "The Commune".

he Seventies will bring an entirely new direction to theater building in our country and a change in volume of activity. The decade of the Sixties saw an enormous swell in the design and construction of performing arts facilities all over the world, and especially here where there had been a nearly 30-year hiatus in theater building — with the exception only of educational facilities. Throughout the Sixties, construction reached an estimated total of from a conservative 400 new theaters to an impressive 3000. Some estimates indicate that on design and construction and on performance production, this country spent approximately \$100 million per year for the past decade.

In the Seventies, all that will change. Theater professionals and architects alike have seen the decrease in construction starts for performing arts facilities. And agreement is general on the fact that the decade of basic desire for monumental civic "cultural centers" has passed. Several reasons are offered. Most allow that the recession, or "troubled economy" as it is euphemistically referred to, has a substantial bearing on the matter, but more basic are factors such as the increased awareness of and concurrence in the greater social significance of mass housing, urban cores and ghettos. Still, the performing arts are not being neglected. More money in fact may be presently donated to these arts than ever before, but the moneys are going toward performances themselves rather than toward providing environments for the performing arts, toward housing the performance.

Also there is a not entirely guiltless admission by some theater consultants that communities have, in many cases, built theaters they did not need, merely to satisfy civic pride. For the inflated number of performing arts centers and theaters built in the Sixties has been followed by a corresponding inflation in operational and maintenance costs that is already

## **Theater Inflation**

Are buildings killing the theater?



Photo: Courtesy Mummers Theater

killing off these brand new facilities, or at least their occupant performing companies. Because of theater inflation, theaters are dying. Since any number of theaters are standing empty while still creating operational and maintenance costs, communities are now asking whether or not they have the management talent and the performing companies to fill buildings before they build new ones. They are also asking if audiences with sufficient interest have been built before the spaces to house those audiences are provided.

Theater consultant Thomas DeGaetani, recently appointed to the new post of Executive Director of the U.S. Institute for Theatre Technology (the service organization that answers questions on performing arts, architecture, engineering, administration and presentation), has observed, "If a center was not commercially oriented, that is, oriented toward booking touring attractions, then it naturally had to be oriented toward repertory. And repertory simply precludes the ability of the institution to make at the box office what a company has to spend in guaranteed annual wages."

According to theater consultant Robert Brannigan, now Director of Productions at New York's City Center, "The cost of operation and commitment to personnel is for 52 weeks of the year. Personnel that includes a person to sell a ticket for an attraction that may happen six weeks from now; the manager that will be there a year in advance to sign the contracts. Whether the theater is empty or full, that cost is constant. Suddenly a performing company is slapped into a new building and it must absorb x number of 52nds of the total cost of the building, unless the building is funded another way."

What this means is that we have built buildings often before we have found means to fill or operate them. We have found over the past five years that although there are sufficient numbers of good and interesting companies to fill all the new buildings, the cost of touring them is prohibitive. Besides, many of the facilities have been built too large for their respective communities, with the result that in one night the entire theater-going community has seen the performance and the theater will thereafter remain dark.

On the other hand, as the Twentieth Century Fund's recent book Bricks, Mortar and the Performing Arts states, "Just as performing groups should not be burdened with the deficits of inefficient buildings, arts centers should not have to carry the deficits of performers whom the ticket-buying and contributing public is unwilling to support."

If we accept the fact that performing companies cannot be expected to support real estate ventures, architects and planners in their preprogramming activities have a responsibility to investigate with their clients if a proposed theater will be a liability to a company — or if another means of funding and support can be found. This will not mean that the only alternative is not to build the proposed theater, instead architects can attempt to institute such incentive zoning as is described later in this issue (p. 76).

#### **Grandeur Inflation**

Some theater people maintain that a decrease in theater construction will be a good thing. Some performing arts groups have been observed to falter or become intimidated after they move into a brand new theater building. It seems difficult for most companies to survive or overcome even adequate much less excellent or sumptuous new facilities.

Audiences often say only that the company was better when it was down the alley, in the basement or in the old loft. Theater professionals and occasional theater architects blame directors for being unable to adjust to new buildings. Often it is only a matter of time before the company does adjust, but one basic fault of today's theaters seems to be the disparity between the audience's expectations of approximating the close-up of movies and television, on the one hand and the large size of auditoriums, on the other.

According to architect Hugh Hardy, "The new theaters are always bigger in capacity, bigger in possibility, bigger in stage space and off-stage space.

and interpreted theater architecture in a

February 1962 and October 1965 — which

have become standard literature on theater

comments from some of the most active

discussed the financial and psychological

health of the theaters built in the sixties,

the status of current construction in light

developments and backstage equipment.

and what kinds of theaters will be built in

the seventies. New legislative machinery

and theater designers is discussed on p.

U.S. Institute for Theatre Technology.

that will broaden possibilities for architects

76. Editor in charge of this issue is C. Ray

Smith, who also serves as president of the

of current economics, technical

and best recognized consultants. They

For this special issue, the editors sought

series of articles and special issues -

design and construction.

They become formal, demanding places. The company has somehow to learn to look even bigger and be even bigger."

Mammoth theaters, consultant Jules Fisher notes, "miss one element that is really involved in theater — the size of the human being. They miss the fact that the most important element of the actor is the communication that he can make with his face and his eyes as well as his body."

The enormity of the widths of American proscenium openings has been commented by European theater people as a specific detriment to theater scale, so Jo Mielziner determined from a seminar he conducted in Salzburg this summer.

Size, however, is not the only factor, as the New York City Ballet proved when it moved so successfully and happily into the New York State Theater. What may be as important a factor as scale in determining whether an auditorium seems intimidating to a performance is the visual design of the interior. Currently the common answer is that an auditorium should be "anonymous," that is, dark, unobtrusive and nearly invisible. The history of theater as primarily an outdoor, daylit festival, however, raises serious questions about the abstractness of our airless, sequestered theaters. But as USITT's DeGaetani points out, "The important thing is whether or not the architect in his attempts for design integrity in the auditorium has kept in mind the prime function of the auditorium, which is to provide a comfortable place for an audience to look at a performer and not a comfortable place for an audience to look at architecture."

#### What Kinds of Theaters for the Seventies?

If the large size of auditoriums and theaters, combined with unbuilt audiences, is killing the theater operationally and psychologically, what corrections and improvements can we expect in the Seventies?

Some theater professionals foresee five more years of design and ten years of construction for performing arts facilities in urban centers. Now that the larger cities have built their monuments, smaller communities will be building correspondingly smaller facilities. "We're going to finish out the wave of 2500-seat theaters and 1400-seat theaters," predicts Robert Brannigan, "Then there will be a second wave of building: We're going to drop down 1000 in each category, down to the 1400-seat large theater and to the 400- or 500-seat small theater."

Another prediction on this new wave of theaters comes from Thomas DeGaetani, "We usually overlook the ubiquitous building type called the educational institution, which represents that area in which a phenomenal amount of performing arts facilities building is going to take place in this country. Community after community is finding that it can accommodate facilities that are required for other purposes to serve a full spectrum arts program. The increasing numbers of community colleges, secondary

P/A, during the Sixties, followed, chronicled | schools, institutions of higher learning, the fact that these educational institutions are being located right smack downtown, axiomatically makes them convenient to the greater number of the population as far as the arts are concerned. State guidelines are needed which would guarantee the ability of any secondary school in this country to accommodate touring performances. They do not presently exist."

#### **Interior Forms**

If these insights into sociological and urban constitution expand our vision of theater facilities of the Seventies, developments in thinking about the basic shapes of stage-audience relationships also are suggesting a new direction for the interior architecture of those facilities. Again, as has been true throughout the course of history, theater forms reflect or respond to social conditions of their times.

How the second wave of theater architecture will relate to the next generation is fairly predictable also the consultants feel. "They will be smaller theaters because we are breeding a more intimate society by way of television," Robert Brannigan observes. "When children watch TV's Sesame Street,' there's a one-toone relationship, and they're not going to be satisfied sitting in the fifth ring and watching."

"The theater is changing," Jules Fisher states, "and to allow it to change we have to change the place in which it is going to happen — the space itself. The architecture must have a grandness about it that allows the theater to go its own direction. Directors and performance people want to do theater in a different way — so that it moves people in ways that they've never been moved before. Some of them don't even want the imposition of a theater building."

This clearly reflects the recent architecture direction towards antiarchitecture or nonarchitecture. What a discussion of performing arts facilities needs at this time, then, may well be a new definition of what a performing arts facility is. If it no longer is thought of as a mammoth civic monument to culture, nor as an auditorium facing performers, what might it be?

"If there is anything new in the theater," Hugh Hardy observes, "it's the word 'participation'. People want to be part of it even if it is only making the costumes; they want to know how it happens, to get involved directly — but they have no place to rehearse, no place to make their fantasies. So more people are building workshop places where you can do dramatic things — then go perform them somewhere else."

The core of this participatory, permissive breakdown in the auditorium interior is the line between the audience and the performer. "That sacred line of demarcation is a thing of the past," says Jo Mielziner. "We no longer feel the necessity of saying that that side of the curtain is scenery and this side is architecture."

We have moved away from the separation of the audience into different rooms across the wall of the proscenium arch. We have seen an increasing tendency toward putting the audience in the same room with the performer - as in arena and in open-thrust stage forms. What some theater directors and designers are asking is, did we put them in the right room? We seem to have put the stage in the auditorium; should we have put the audience backstage instead? In fact, this kind of participatory environment that accepts, includes all of the operating theater for the benefit of the audience, is the intention of a growing list of directors today. Among them are the environments of Polish Laboratory Theater director Jerzy Grotowski, of English director Peter Brook (whose production of Marat-Sade has become world renowned), of our own Living Theater company, of designer Eugene Lee (whose double decker setting for Slave Ship was literally engulfing), of our own Living Theater company, of New York director Richard Schechner (whose Commune is shown on p. 481), and of André Gregory (whose Alice in Wonderland sends the audi-

ence into a rabbit warren through a tiny door).

To those who have been interested in these audienceperformer spatial relationships, this idea may sound like the familiar "anonymous black box" of a playing space — usually a nonmechanized multiform theater that can be rearranged at will by the company. This newer idea, however, goes beyond the accepted limitations of all the previous traditional forms and offers instead a wider flexibility that is established directly by the audience itself—like a happening.

#### **Permissive Environments**

As architect Hardy explains, "The most startling planning change in theater forms is the thought that the audience does not have to be any place at all; that the audience isn't necessarily anywhere, in any fixed place; that the audience is free to move, free to sit anywhere, to be anywhere and watch. Unlike even when the stage was all around the audience versus the audience all around the stage — now — nowhere. If you had architecture that was permanent and the audience was free to choose how they wanted to relate to a performance, that would be the most startling innovation in theaters."

The idea is an extension of the "random" seating arrangements that architects Hardy Holzmann Pfeiffer have been working on for several years. Now that idea is expressed as "different architectural zones." Director Richard Schechner strongly demonstrates his version of this approach this year in a production of *Commune*. Within that permissive framework the audience sat, draped and perched itself, changing at every performance.

Schechner himself, as early as the spring of 1967 when he was then editor of *Tulane Drama Review* (now TDR) explained the social background of this direction in the theater, "Youngsters . . . are a potential audience for the new theatre because they see themselves theatrically, and program their daily experience along histrionic lines. Taught to watch 'the day's events' on TV, they become part of those events on streets, or costume themselves, or stage parties and 'love-fests'. The day-to-day experience of many young people (and some not so young) prepares them perceptually for theatrical experiences, aesthetic experiences . . . Theatre space is seeking the flexibility of electronic maneuver, the montage ability of film, the audience mobility of an accident on the street."

This is the new direction of today's participatory, audience-involving theater. When American architects break through the veil of theater history's accretions — the conglomerate of literature, painting, sculpture, dance, lighting, that have made us think of theater as the supreme status-oriented achievement then, and only then, will we see a truly new and vital theater architecture. Only then will theater escape its competitive bondage to film and TV - a bondage imposed by Renaissance imagery which it can never surpass. Then architects may not only see, but begin to express in theater design and construction the raw, naked, almost mythic power of that single, elemental life force of the performing arts - the surge, mix and thrill of live group interaction, of direct emotional confrontation and communion of mankind. This liberated programmatic element is foremost in what the theater of the Seventies "wants to be."





#### New Thrust for Arena Stage

KREEGER THEATER (ARENA STAGE II), Washington, D.C. Architects: Harry Weese & Associates. Consultants: S.R. Lewis Associates, Mechanical; The Engineers Collaborative, Structural; Kerekes & Kerekes, Electrical. Photos: Norman McGrath

In the aftermath of the cultural explosion, only a few theaters and a handful of repertory companies have proved able to withstand rising costs and a fickle public. One such example is the Arena Stage theater in Washington and its occupants, the Washington Drama Society. Formed in 1952 by Zelda Fichandler, the repertory company has proved so successful that they have just expanded their quarters by the addition of a second theater.

The Kreeger Theater (also called Arena Stage II), designed by architects Harry Weese & Associates, who designed the adjacent Arena Stage I in 1961, is conceived as an intimate theater where plays by new American playwrights can be performed. Although the older Arena Stage was





Auditorium walls, ceiling and carpeting are deep bronze color; the side walls are plaster while the rear wall has fabric-covered acoustical paneling. A gold color paint and light reflective gold are used for trim. Front of the house lighting, exposed on suspended catwalks, is by carbon filament lamps, like those used in architect Weese's renovation of Sullivan's Chicago Auditorium.

a theater in the round (actually a square, P/A Feb. 1962, p. 125), Mrs. Fichandler felt that the new theater need be only a partially open stage. The resulting plan of the auditorium is similar to the shape of a broad pie wedge: 500 seats wrap around a



REHEARSAL ROOM NAMAGER MAIN FLOOR COFFICE CO





"one-point focus corner stage." A bowed perimeter wall encloses the seating (ten rows on the ground level and five on the balcony) following its sweep around the thrust stage.

The three-story structure also includes a rehearsal room for 299 persons on the ground level, office space on the second level, and studios, storage areas, and a club room on the basement level.

Departing from the axial plan of the older theater, the new addition wraps around one end of the existing rectangular office wing. The architects have related the two structures through the use of a strong diagonal



Entrance to Kreeger Theater (above) is separate from Arena Stage and terminates the curve of the auditorium wall. Entrance to upper level offices (left) is at the corner where the diagonal rear wall meets the auditorium wall.



The rehearsal room has an irregular shape with a square central space that duplicates the size, movable floor paneling and pit depth of the Arena's earlier stage.

rear wall and the semicircular auditorium wall that inflects toward the other building. Basically, however, the building takes its form from the contingencies of the limited site, the desired connection with the existing building yet the need for a separate lobby and the shape of the auditorium itself.

In keeping with the straightforward program and solution, the stage design itself is rather simple, and emphasizes a unity and openness between stage and seating. A sprinkler system above the curved edge of the stage (permitted by new codes) obviated the need for a rigid asbestos fire curtain and slight proscenium drop originally planned there. For additional flexibility in productions, the stage is composed of removable 3' x 6' platforms and the front two rows of seating are detachable. Stage sets on the thrust section may go as high as the auditorium ceiling: they are then flown on retractable grids to the sides of the stage via a counterweight system. Over the rear stage, 43 ft high, a stage house projects 161/2 ft above the ceiling (and the main cornice line, since it is set back from the roof's edge to lessen its importance). Suspended over the thrust stage and seating are three catwalks 2 ft wide placed in semicircular concentric rings 7 ft apart where front of the house lights will be mounted and left exposed.

If the stage design is less complex than other theaters, the adjacent rehearsal room is more detailed than its counterparts. The polygonallysided room has a square central space that duplicates in size the open stage of the Arena theater next door; furthermore it has a trap room of the same depth underneath. This "stage" is also composed of adjustable floor panels so that the machinery used for actual play productions may be tested in the rehearsal space. Even the angles of the entrance-exit vomitories are duplicated by the positions of the oddly shaped walls enclosing the room.

Total square footage of the masonry bearing wall, reinforced concrete and steel framed structure is 40,400 sq ft at a cost of \$1.5 million. Dark gray painted sheet metal roofing covers steel roof beams and concrete roof decks, and, like the exterior gray buff-face brick and exposed concrete, matches exactly the materials and color of the original Arena Stage building.





PLAN

JUILLIARD DRAMA WORKSHOP, The Juilliard School, New York, N. Y. Architects: Pietro Belluschi, architect; Eduardo Catalano and Helge Westermann, associated architects. Consultants: Jean Rosenthal, Theatre Production Services, theater; Heinrich Keilholz, acoustical. Photos: Norman McGrath



## A Drama School's **Moated Bearpit**

The Juilliard Drama Workshop in Lincoln Center's Juilliard School is a highly personal and ambiguous theater for the school's newly formed Drama Department. Basically a thrust stage in plan, the theater feels like a proscenium arrangement in which the stage has been built up almost to the balcony level cutting off the orchestra.

The section shows this to be untrue, however. Behind the thrust, the stage is steel and concrete, (and fully trapped); the thrust area, though built up on a system of removable steel scaffolding (small photo), cannot accommodate seating because of the high sightlines of the permanent rear stage.

Between the audience and the stage is a narrow open "moat" that provides the separation that directors Michel St. Denis and John Houseman wanted for a semblance of "aesthetic distance" within the close bear pit of the thrust stage plan.





#### **Books as Acoustical Reflectors**

RECITAL HALL, Longy School of Music, Cambridge, Mass. Architects: Huygens & Tappé Inc. Consultants: Souza & True, structural; William R. Ginns, mechanical; Lottero & Mason Associates, electrical. Bolt, Beranek & Newman, acoustical. Photos: Phokion Karas

Winner of a P/A Design Awards Citation in 1966, the completed addition of a combined recital hall and library for the Longy School of Music in Cambridge, Massachusetts, realizes the expectations of the jury for a responsible, sympathetic and sensitive addition executed in a simple way. Architects are Huygens & Tappé.

Books and shelves are a novel means of providing the broken surfaces for good sound distribution as well as adding life and color to the interior. The end stage is enclosed with birch paneling; seating is not fixed; carpeting is used underneath. The exterior harmonizes in materials and detailing with the original Richardsonian school building.





#### **Background Stage with Sightline Frame**

FINE ARTS CENTER, Lake Forest College, Lake Forest, Illinois. Architect: Edward Larrabee Barnes

Architect Edward L. Barnes' fine arts center project for Lake Forest College in Illinois is to contain lecture spaces and two performance facilities — a 900-seat drama concert hall and a 300-seat drama theater with similar strong configurations.

The drama theater is the more innovative design: it has a thrust stage of unusual length and behind it an end wall of wood panels that can be opened up to reveal a full width rear projection screen or a backstage of considerable depth. The end wall frame is shaped by sightline factors. On the rear stage are permanent, raised acting levels that are also governed by sightlines. Explaining the "extreme length of the tongue of the thrust," architect Barnes says that it produces "a stadium situation" where there is a center line along which the action can be distributed, as opposed to the strong one-point centers of radical schemes. "The stadium situation changes the focus," he points out, "and you get a processional feeling further out along the stage."

#### **Outdoor Thrust in a Steep Bowl**

THEATER AT TSA-LA-GI, Tahlequah, Oklahoma. Architects: Hudgins, Thompson, Ball & Associates. Project designer: Chief Boyd. Consultant: David W. Weiss. Photos: Courtesy Koppers Company

The Cherokee outdoor theater at Tahlequah, Oklahoma, on the site of the council grounds of the reorganized Cherokee Nation, is an 1800-seat open-thrust stage facility with a rain shelter of exposed wood poles. Architects Hudgins, Thompson, Ball & Associates worked with Cherokee designer Chief Boyd, who foresaw the significance of the facility to his people. The theater is sunk into the terrain, so that the rain shelter would provide a minimal yet expressive image of the preservation and its adjacent Cherokee Village. The exposed wood structure of the rain shelter and light gallery is treated against termits and weather.















#### **Futuristic French Mechanized Theater**

MOBILE THEATER, La Maison de la Culture, Grenoble, France. Architect: Andre Wogenscky. Photos: Atelier Gerard Ifert & Rudolf Meyer, Courtesy L'Architecture d'auhourd'hui

Architect André Wogenscky's "Maison de la Culture" at Grenoble, France, has the most remarkable recent theater facility in Europe. Besides a 1300-seat proscenium hall, Grenoble has a "Mobile Theater" with a "caliper" form stage and 525 seats. Derived from the Walter Gropius Total Theater scheme, and like the outdoor theater at Tampere, Finland, the small Grenoble theater has its audience seating on a dished turntable (20 meters in diameter) which the audience enters from below. Surrounding the audience is an annular ring that can rotate settings and actors in either direction as the audience is rotated in either direction and at variable speeds. One end of the ovate plan is a fixed scenic area surrounded by projection screens and backstage space. The control room for sound, light and turntables, is suspended, capsulelike above the audience so that projections can be spread completely around the interior to create a total environment, and the audience can be "enveloped by the spectacle." The architect envisions the scheme as achieving "spatial relativity."









#### Rugged Random in a Quarried Hollow

QUARRY THEATER, University of California, Santa Cruz, California. Landscape Architects: Royston, Hanamoto, Beck & Abey. Consultants: Lennert & Associates, Soils Engineers. Photos, except as noted: Robert Brandeis

In the early 1960's, University of California students and faculty at the new Santa Cruz campus formed an attachment to the dramatic ruggedness of an old quarry and staged commencement exercises in it. Now a theater has been built there to extend the quarry's function and to be a counterpart of the Greek Theater on the Berkeley Campus.

Landscape architects Royston, Hanomoto, Beck & Abey have preserved the drama of the gaping, angular quarry and have reflected it in asymmetrical wood-bench seating, which also echoes the textures and colors of the weathered rock and surrounding redwood forest.

The theater will seat from 3,400 to 5,500, depending on the degree of crowding for student meetings, draproductions, matic and commencement. The seating serves structurally as retaining walls for the ground, which is exposed so as to eliminate the need for a drainage system. This romantic setting, the opposite pole from highly mechanized theater technology, permits the abstracted present day theater to return, as landscape architect Thomas A. Brown observes, "to sensual pleasure of sun, heat, damp, wood, gravel, stone and trees."

## Gilded Light Bridges as Chandeliers

COMMUNICATIONS BUILDING-STAGE II, Southern Illinois University, Edwardsville, Illinois. Architects: Hellmuth, Obata & Kassabaum. Consultant: Jo Mielziner. Photos: Norman McGrath

The Communications Building-Stage II project for Southern Illinois University's Edwardsville Campus as designed by Hellmuth, Obata & Kassabaum, Architects, with consultant Jo Mielziner, has a modified thrust stage with a full proscenium flyloft behind it. Provisions have also been made to fly props and set pieces over the thrust and to change rear-stage scenery by rotating it on an "annular ring." The designers have planned functional light bridges for front-ofhouse stage lights to act as "chandeliers" above the audience. Exposed gilded bronze lighting equipment on the concentric bridges will illuminate both auditorium and stage.

## Another Setting for Shakespeare

ANGUS BOWMER THEATER, Ashland, Ore., Architects: Kirk, Wallace McKinley & Associates. Consultants: Richard L. Hay, Theatrical; Royston, Hanamoto, Beck & Abbey and C.E. Corry, Landscape; Robin M. Towne & Associates, Acoustical; Paul Landry & Associates, Equipment; George Howard, Lighting; George M. Schwarz & Associates, Interiors; Skilling, Helle, Christiansen, Structural; Valentine, Fisher & Tomlinson, Mechanical; Sparling & Associates, Inc., Electrical. Photo: Hugh N. Stratford

Built to supplement a 1200-seat outdoor Shakespearean playhouse, a 600-seat theater was designed to harmonize with the adjoining early English half-timber structure. Access to both buildings is via a common courtyard, and both theaters share facilities provided in the new structure, such as costuming shops, dressing rooms, green room and rehearsal spaces (all on basement level).

The auditorium is raised so that the grade-level lobby may be tucked underneath rear seating. Thus the lobby is able to wrap around the auditorium to connect to side foyers and stairways linking to seats. Seating is continental (sides aisles only) and follows the curve of the









open/thrust stage. A full proscenium arch sits back of the thrust, but has movable side walls for added space and flexibility. Ceiling panels are also removable and the grid or fly loft space projects over the thrust. In addition, the proscenium can be closed off for action that takes place on the thrust section only, with the cast entering and exiting through two vomitories angling off from the thrust stage to dressing rooms on the level below.

The structure of the building combines a reinforced concrete base with heavy-timber superstructure framing which is exposed in the lobby ceiling. The exterior is sheathed in concrete and stucco with bronze solar glass windows and metal roofing.





NEWARK COMMUNITY CENTER OF THE ARTS. Newark, New Jersey. Architect: Hardy Holzman Pfeiffer Associates. Photo: Norman McGrath







Exterior, unchanged





TAYLOR THEATER. Lockport, New York. Architect: Hardy Holzman Pfeiffer Associates. Photos: Norman McGrath



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#### **New Places in Old Spaces**

When the firm of Hardy Holzman Pfeiffer talks about "place" they mean a particular location with a definite sense of purpose and character. They have recently completed three theaters - all renovations which, according to Malcolm Holzman "would make you think they were existing things, places, but even though they were existing, they weren't anything before - even the rooms that were something, weren't anything." Now they are. They are performance places and, perhaps more important, they are work for people to places — places participate in and to use, rather than just rooms to accommodate passive audiences. Hugh Hardy, in fact, believes that the day of the passive audience is waning, that people want to participate in theater as much as they want to watch it.

In each of these three theaters the clients also recognized that change, and they wanted to do something about it. But, Hugh Hardy noted, "something strange happened in each case — they didn't know exactly what they wanted, and if you tried to write a program it was difficult; you couldn't tie anybody down who wanted something specific . . . they wanted a place they could do everything in." Part of the problem, Hardy says, was that none of them was a professional, "and when you deal with professionals that's their life, in knowing exactly what they're doing in the theater - with amateurs it's much more difficult."

Newark Community Center of the Arts was originally the carriage house for a home in a once-affluent



THE ASSEMBLY HALL. Phillips Exeter Academy, Exeter, New Hampshire. Architect: Hardy Holzman Pfeiffer Associates. Consultants: Goldreich Page & Thropp, Structural Engineer; Arthur B. Benjamin, Mechanical and Electrical Engineer; Robert A. Hansen Associates, Acoustical Engineer. Photos: Norman McGrath except as noted





Newark Community Center of the Arts Taylor Theater





Exeter Assembly Hall

neighborhood. The neighborhood has changed greatly over the years. New people have moved in, and because they are new, they have no traditions or associations with other institutions in the community - they have no place to participate in their own activities. But now the young people are learning how to play Haydn and do Giselle, but not in traditional ways of the past. "They are inventing traditions and coalescing in the process of creating their own institutions and beginning their own community which," Holzman thinks, "is what makes theater."

The center is a true community effort that started with absolutely nothing. A school teacher decided to start giving dancing lessons, and in the first month she had 300 students. Encouraged by this, a local department store bought the carriage house for her, then a foundation donated money to renovate and enlarge the building.

The architects divided the house into two levels. The lower level contains a large rehearsal room, entrance, rest rooms and storage space. The upper level, where the theater was to be, presented a problem. An adequate stage across the long side of the room would have left no room for the audience, and a stage across the short dimensions would not have given enough space for the movements required for dance. In an ingenious solution, the architects divided the long, narrow space diagonally making the stage and the 75-seat auditorium triangular.

Taylor Theater is in the old town of Lockport, New York, which grew up around the locks of the Erie Canal in the early 1800s. Unlike the new community in Newark, the town had a 200-year-old history of traditions. The people loved their beautiful old buildings and they wanted to keep them; it was natural for them to buy an old carriage house when they were looking for space for the new community theater. But they did not come to the architects with specific program requirements. In effect, they simply said "we want to make a community theater . . . here is a building . . . do it in here."

Halfway through construction someone asked where the movie screen was to go. Because the only thing that had ever been discussed was drama, seating had been arranged on three sides around the stage, and columns had been left in the middle of the room. But this did not disturb the clients — the building has such a special feeling for them, that they do not mind sitting in the corners during a film showing.

Within the old building much of the original structure has been retained. What has been added has been done with unique directness and simplicity. A cantilevered thrust stage extends into the 144-seat auditorium, and fluorescent lighting has simply attached to been the suspended air diffusers. The architects retrieved some old lanterns and installed them in the lobby. By their own admission they are out of scale with the room, but somehow they work; they add to that specific, special feeling the people have for their theater.

The Exeter Assembly Hall illustrates how school programs change with time, and Exeter's faculty realized that the 40-year-old, 400-seat hall was no longer fulfilling a vital function for the school. It was, according to Hugh Hardy "not particularly any place, it was nowhere . . . we made that room into something." With the addition of a balcony and some structural and decorative changes, they made it specifically into a recital hall that now seats 1100 people in the same space. The fact that one feels comfortable in it, that it is perhaps now more of an intimate space than it was before, is to the architects' credit. The room was purposely designed so that the audience would focus on only a few people on stage to reinforce the fact that it is not a dramatic theater.

The school had wanted a space that could be a theater, a concert/recital hall, and an assembly hall, and the architects had to explain that they could not have all three, that it was physically impossible because the school's requirement was that the renovation not extend beyond the existing walls. There was not enough stage space or backstage space, and the auditorium could not be restructured to attain adequate sidelines for an audience to watch actors moving in a theatrical performance - not, that is, and retain the other two functions. Consequently, a permanent, wooden backdrop/soundboard was added to the stage to discourage the hall's use as a theater. (A true drama theater building is planned for later.) The balcony was added, and the roof was slightly raised around the perimeter behind the newly chromed columns. The stage was restructured to become a smallfocus area, the orchestra was sloped forward, and the seats were arranged in a new configuration to make sense in relation to the stage.

Even though major changes have been made, many people hardly notice that anything has been done, and perhaps that is the most important thing to say for it. A cherished room has not only been restored and preserved, it has been made into a new place that has character, definition and purpose. Hugh Hardy commented "we preserved this room by taking half of it away . . . because the only way you can fit something into an old room that wasn't meant to do anything is to actually deal with it in some positive fashion."

All three of these theaters — Newark, Lockport and Exeter express architect Holzman's thought that "there is something terribly important about rooms where people gather . . . the place in which that happens has to give you some sense of purpose, of significance, of place."



Theater .echnology Technical and legislative developments of the past five years that will greatly affect future theater design and construction are reviewed.

New technical theater developments of most significance are in the areas of lighting, rigging and acoustics. Two new pieces of legislative machinery are the revised New York City Building Code and the "Broadway Theater District" zoning amendment (discussion on p. 76).

The revised New York City Building Code, to which

Sprinklers can replace the asbestos fire curtain

the USITT contributed basic research as well as exerting considerable influence with regard to its theater section, markedly affects the design of theaters in the New York area. This has countrywide significance because of the leadership and example that New York provides in all areas of the theater to the rest of the country. The revised code will permit theaters to be built of varying sizes in all the basic forms — arena, open/thrust, proscenium, as well as multiform, multipurpose and randomly variable — without prejudice for any form. The revised code also provides new freedom by permitting the absence of the asbestos fire-curtain and the substitution of a sprinkler system with adequate seating arrangements and exiting provisions.

Stage designer Jo Mielziner singles out "the ability to bring scenery out into the audience, to hang scenery in the auditorium. Now that is a big opening and may change the shape of the proscenium stage. It also makes for much easier solutions for thrust stages. So the code is progressive artistically as well as in dollars and cents."

#### **Automated Rigging**

Among the backstage innovations in the past five years are several readily available automated rigging systems that make it possible to move scenery up, down and sideways and, according to lighting designer Edward F. Kook, "to control it by a board that permits the director to call upon any of these movements in random order, to repeat them quickly, and to do so remotely from a place where one can watch what is happening as it happens."

First among these automated rigging systems were electric winch systems such as those developed by George Izenour some 10 years ago. Recently a hydraulic rigging system, versions of which have been known in Germany for some time, has been made available in this country. The hydraulic rigging is said to offer advantages of speed, safety and labor saving over the traditional hemp line counterweight system. It is said to offer speed and silence over electric winch systems. In addition, it saves space and permits side stages without going to double-purchase rigging systems.

According to stage inventor George Izenour, "It's a compact way to get fast acceleration that is difficult to do electro-mechanically. The drawback to any hydraulic system is that if you have trouble, you have wet trouble." A wet system, in other words, is potentially an actual physical deluge in the event of malfunction.

However, as designer Mielziner observes: "The hydraulic rigging system is going to strike a real blow at the overloading of expensive manpower to run a production backstage. Technically one man can handle it, although the unions say, in accepting this automation, they will put on two men. However, two versus 10 or 12 or 14 is a significant improvement." TILT

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#### Lighting and Controls

During the past five years, there has been an improvement in the light source through the introduction of the quartz-iodine or tungsten-halogen lamp by the major electrical companies. According to Edward F. Kook, who founded Century Lighting, "These new lamps have a longer life span and are much smaller in size; they retain their initial efficiency for 90 percent of their life span. The tungsten-halogen lamp is lighter in weight, is more portable, and expands positioning possibilities."

For theater architects, the smaller lamp housings will permit greater design options in the auditorium ceiling. The light portals can be correspondingly smaller, permit design variation and balance flexibility with acoustical requirements in acoustically reflective auditorium ceilings. This may be minor, however, as consultant Robert Brannigan of New York's City Center notes, since the constant factor remains the size of the man who must get up into that ceiling to reposition the lighting.

Edward Kook notes further: "We are down to 250 w, and if we get down to 150 w it is conceivable that this type of lamp will be used in architectural lighting as well." This will markedly affect the design of fixtures, the amount of wattage, the switching, the quality of light and every aspect of lighting in architecture. "It is important to remember," he concludes, "that these lamps were designed for theater, TV, and the performing arts, to give a compacted pin-source jacket." So the rest of lighting life may again follow the arts.

Automation has also come to the lighting field as a solid front. "Now we have a system that makes it possible to record and recall a light cue, to make an instant notation of a light cue, to recall light cues not only in

> Smaller lamp housings permit varied ceiling designs

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sequence but also at random, and to make changes to any and all in a matter of microseconds," lighting consultant Kook explains. "The value of this development is that it takes away from the time required to make technical changes in lighting. If you take less time and you need fewer people to make them, you have gained a great economic advantage for the theater. But you also have something that cannot be measured in dollars and cents. That is, turning over the stage to artists — the director and the scenic artists — and taking it back from the technical people during rehearsal."

Robert Brannigan continues: "It's not the manhours; it's the energy, creative energy. The director retains a continuity of thought, his creative continuity to reshape a scene, to instantly recall a transition. It's like videotape — he can reel back, he can cut back; things can flow faster and retain creative continuity."

Combined with the recent developments and interest in using projections in the theater, these automated devices will ultimately produce a new kind of live performing arts. "Now," as Jules Fisher envisions, "we have the ability not only to show how the actors are thinking at the moment by means of projections behind them, but also how they will think in three seconds from now and how they did think three seconds before." This is the kind of computer technology that is being used to run—single-handedly—a theater presentation on Abraham Lincoln at Ford's Theater in Washington.

#### **Acoustical Enhancement**

A recent technical development found in the design of the Birmingham-Southern College Theater (by Architects Warren, Knight & Davis) forecasts acoustical benefits for countless new theaters and auditoriums that will be built to accommodate 400 to 600 listeners. With the installation of special electronic equipment, this theater now has a means of regulating its acoustics — from the extreme dry-state of .95 seconds reverberation time, on through 6.0 seconds. (The Tanglewood Music Shed in Lenox, Mass., has a 3.5 seconds reverberation time.) Depending on the program or, in fact, each individual selection by orchestra, instrumentalist, etc., the acoustics can conform to any requirement simply by adjusting electronic dials in the control booth. Range of control is from complete dryness (for which the theater was designed) to the full resonant condition of a Gothic cathedral.

The basic equipment to accomplish this acoustical control makes use of a tape relay that is fed by microphones throughout the ceiling into an "electronic reverberation supplement" that produces the required delay that has been dialed, then plays the tape back through ceiling loudspeakers located over the source to support the natural sound by approximately 20 percent. This supplementary sound is a small percentage of the total, but it is of such quality that "it cannot be detected as a separate entity from the direct sound, either by the performers or the audience."

#### Practice

One statement about the practice of theater architecture has emerged recently that should be of assistance to all architects engaged in performing arts facilities. Thomas DeGaetani, Executive Director of USITT, explains: "Most architects who sign a theater design contract for the first time around know that they are expected to provide all consultations out of their 7 percent fees and think that this means structural, electrical and mechanical. Only when that architect starts to delve deeply into the complexities of the problem does he realize that those consultation areas are only the beginning. Then he recognizes some dimension of the amount of consultation above the three basics that he is responsible for. And then he is confronted with how he is to pay for it out of the same 7 percent fee. In many cases he can't afford to pay for it so the project doesn't get the consultation. Or he will turn the problem over to his three basic consultants and they in turn to manufacturers."

To ensure that this consultation will be adequately funded, then, DeGaetani recommends that "theater architects commit themselves only to the provision of the three basic consultations and provide for special consultation to be paid for by the client." Beside providing for the direct line of communication between the theater consultant and the client without the intervention of the architect (which has been a direct interest of all consultants for years), this explanation by DeGaetani shows the advantages of the client-consultant arrangement for architects. All these matters especially pertinent to theater design can benefit first-theater architects.—CRS, BHH

> Automation helps give the stage back to the creative artists

Basic structure consists of two main box trusses tied together by secondary box trusses. This box-truss system forms the self-braced structural support for all secondary framing, catwalks and ceiling panels. It is supported by four self-locking jackscrews and is held laterally by four guide columns, one near each jackscrew.

Ceiling is made of horizontal, overlapping, curved and tapered tiers of plywood supported by steel framing and box trusses. The structure includes platforms and light bridges for stage lighting and provides access to all other overhead services.







#### Juilliard's Movable Ceiling

At the Lincoln Center for the Performing Arts, New York, one of its most interesting engineering designs is for the movable ceiling found in "The Juilliard Theater" one of several in the Juilliard School. This ceiling, designed by architects Belluschi, Catalano and Westermann, with Olaf Sööt acting as engineering consultant, covers more than half of the auditorium and forms a sound reflective shell. It adjusts to three positions in a 7-ft range of vertical travel and was designed to change the acoustical characteristics of the room by increasing or decreasing its volume and by changing the angle of reflection of sound from the stage. In the following discussion, engineer Sööt discusses the various physical and design/philosophy factors that were considered in the development of this unusual theater component.

Requirements for the movable ceiling were established relatively late during the architect's design phase of the project. The architecture and the structural framing of the building were fairly well developed. Limiting space conditions for the ceiling had been established, but there was still freedom to evaluate several alternate design possibilities.

One of the first decisions was the establishment of a one-piece ceiling structure with integral catwalks, as opposed to the division of the ceiling into smaller independently operable elements with a separate catwalk system for stage lighting. A onepiece ceiling would necessitate heavier structural framing, but the heavier machinery required to move it could be far less complicated. Ultimate costs could be lowered because the number of mechanical components and electrical controls could be reduced. The slight increase in horsepower needed for heavier machinery was more than offset by the decrease in the number of drives.

The one-piece ceiling was additionally attractive since it was possible to support the one-piece frame directly on top of the auditorium walls instead of hanging the separate ceiling units from the structural ceiling. Thus, the loads on the long-span structural framing of the building could be reduced. The major advantage, however, was the simplification of the machinery and guiding. Separate ceiling elements would have required a greater number of hoisting units, each of which would have needed its own controls, guides, safety systems and maintenance. Our solution could be designed to work with four lifting supports and with two main drives. This was true no matter what type of structure was developed to span between the walls, and no matter what kind of machinery was designed to move the ceiling.

#### **Hoisting Machinery Considerations**

Three basic types of hoisting machinery were considered for the project. The initial thought of a mechanical cable-type hoist was discarded after a brief study. Because of the heavy loads to be lifted, this type of system would have required complicated safety devices. If the equipment were not properly maintained, cable and gear failures could be sudden. Furthermore, if counterweights had been used to overbalance the weight of the ceiling, loads on the auditorium walls would have been excessive.

The elimination of a cable system dictated a choice between hydraulic or jackscrew lifting units. Both could be effectively employed to move the heavy loads. The hydraulic system would have provided mechanically efficient and quiet operation. However, the long distances between the lifting points, and the geometry of the ceiling, would have required complicated mechanical synchronization of the cylinders.

A similar problem affected the jackscrew lifts. It would have been highly impractical to provide a 140-ft synchronizing shaft to connect the main drives on the opposing sides of the ceiling. However, this could be accomplished by the electrical synchronization of each pair of jackscrews.

After further study, jackscrew drives were selected for the project, even though they seemed mechanically less efficient than the hydraulic cylinders and required more power to move the ceiling. This seeming lack of efficiency provided the fail-safe feature which was the answer to our basic problem of spectator safety.

We understood that regardless of any mechanical failure in gears, shafts or drive units, the ceiling could not fall, move or drift. The screws are self-locking, not because of any mechanical gadgetry, but simply because of the friction which develops in the load. Friction also increases if the jackscrews are not properly maintained or lubricated.

Thus our needs for safety were secure. We now had to develop all the



details for the structure, for the accessibility to catwalks, for the drive machinery and for the electrical controls. These involved important design considerations which deserve discussion.

#### Selection of Shell Structure

First the shape of the structure, a half shell, could have allowed us to span the almost 100-ft gap between the lifting screws with a thin reinforced-plywood shell that would have also served as the finished ceiling. Such design would have provided a clean and elegant structure — and it would have been a challenging design problem for the architect and the engineer. In fact, such a design was partially developed, but the idea was discarded for reasons other than that of structural strength.

At present, while we have methods to examine the connection of steel framing members, the connection of plywood sheets has never been as thoroughly inspected or evaluated. Since our structure was to be movable and could experience unequal travel, some minor racking could be anticipated. There was simply no existing experience, nor were there accurate methods to analyze the longterm effects of this type of loading on a plywood shell structure. Furthermore, the use of the plywood shell would have established the final design too early in the project. It would have prevented us from making design changes in the shell that would have destroyed its continuity. Such design changes must always be anticipated and provided for, since there is never enough information in the early phases of any project to complete it to the extent that future modifications would require a major redesign. As a design develops, so does the information. This proved to be true for the movable ceiling, since prior to the completion of the ceiling design, long continuous slots had to be provided in the plywood finish for air circulation. If we had designed the ceiling originally as an integral Each pair of jackscrews is driven by one main drive assembly. Because of excessive distances, it was impractical to connect main drives by mechanical means. Therefore, electrical synchronization with self-compensating leveling at predetermined stops was employed.

plywood shell, our work would have gone for naught.

#### **Effect of Codes**

Another design consideration was the ever present limitations imposed by building codes. No one had ever built a movable ceiling over an auditorium in the city of New York, and there were no provisions in the New York City Building Code for this type of facility - no precedents. Since it is the duty of the building officials to ensure public safety, it might have been very difficult, if not impossible, to get approval for a movable ceiling made entirely of plywood. The design could have been considered so radical that proving its feasibility would not have been worth the time or expense. Therefore, it was decided to pursue a more conventional approach to the problem — a structural steel frame from which the plywood ceiling was hung.

This steel structure, however, required several considerations. The geometry of the ceiling was complex and so were the tolerances. The structure involved long spans and had to be erected within the interior space. It had to fit the existing building framework and could not be too heavy since it had to be movable.

Field erection or assembly of a large complex structure composed of small pieces is expensive. It is advantageous to design such a special structure so that field work is minimal. Shop fabrication of large structural subassemblies is less costly and more accurate. It is also advantageous to design the structure so that it requires no excessive temporary support bracing during construction.

For the Juilliard ceiling, a system of box trusses was developed. All were shop fabricated requiring only a few field connections. These trusses formed the lifted platform that supports the lighting catwalks and from which the secondary ceiling structure is hung. While this system may appear complicated, it proved to be the most economical solution for the particular application.

#### **Use of Jackscrews**

Economy, as well as reliability, determined the selection of the drives and controls. The ceiling is lifted by four jackscrews, a pair on each side. Each pair of jackscrews is tied together by shafting, but it would have been highly impractical to provide a mechanical linkage across the auditorium to synchronize both pairs. Thus, a choice had to be made between devising an electrical system that would keep both sides of the ceiling in precise synchronization at all times, or a system that would permit a minimal drift and provide means for its detection and compensation. The latter possibility was chosen because it filled our particular needs most economically.

The operating concept is very simple. Upon pressing either the "up" or "down" button, both synchronous motors start simultaneously. During this cycle there may be some gain or lag in either drive motor before it reaches full speed. Since the stopping at the automatic terminal positions is independent, each motor automatically compensates itself for possible starting errors. In a case where the ceiling is started and stopped a great number of times between its terminal positions, some leveling error may be accumulated. To solve this, a balanced potentiometer circuit indicates the outage on the control panel. Should such outage exceed 1 in., the control shuts off and prevents the operation of the main drives. The ceiling then is releveled by means of small secondary drives which are operated from the same control station. Switchover to the secondary drives is automatic.

The secondary drives were pro-


vided for convenience, for it is also quite simple to level the ceiling manually by cranking it through 1 in. of travel. In fact, during the construction, the ceiling was cranked manually through its entire 7 ft of travel by two construction workers. This feature makes it possible to reposition the ceiling at any time, even without power.

#### Conclusions

The above considerations are but a few highlights in the process of the design of the movable ceiling. These decisions were supported by much research. The decisions in this specific case are not intended to set design criteria for all movable ceilings or other stage facilities. Different circumstances require different solutions. One cannot generalize on the selection of components. This particular ceiling was lifted by jackscrews. A hydraulic system or other means may be preferable in other facilities to satisfy other functions. The Juilliard ceiling was made of steel, but the use of aluminum or other materials might be preferable for other structures.

The important part of the design process lies in the basic approach and the consideration of details. Mechanical, structural and control (electrical) engineering disciplines were closely joined to develop a working system. It is this approach which makes it possible to build working structures — an approach which can be applied to all the facilities we design — whether the design is for NASA or for the theater. We must know how to interrelate technologies. where to anticipate problems, where weaknesses may lie and where failures may occur before the project leaves the drawing boards.

The design and engineering considerations discussed here can become more complicated when the engineer is required to relate to the artistic needs of the theater. In designing for the specialized requirements presented by the performing arts, one must not only be fluent in the language of his particular discipline, but must also be able to translate the idioms of the theater man.

The design of a theater facility can come only from the close cooperation and dedication of all disciplines - architects, designers, engineers and builders. We have seen many creative ideas and many thoughts expressed by designers who want to provide the producer and director with unlimited freedom to shape the performing space, to change the acoustics or to create open scene changes or special effects. On the other hand, these devices can carry with them the specter of prohibitive budgets or the fear of the failure of complex mechanics, or the thought that providing unlimited flexibility will not truly help the creative mind of the director. The function of the designer, the architect and the engineer is to develop and refine the tools which the creative director must have at his disposal if he is to be able to exercise his creativity most effectively. Technology can be used to extend the grasp of man. It should not limit his reach.



Adjustable lighting canopy over thrust stage alters the visual ceiling according to needs of each production. Scenery can be flown through its openings. Caliper stages extend acting area behind audience. Curved walls serve as projection screens, eliminating need for painted backdrops.



#### **Training Tomorrow's Pros**

TWO THEATERS FOR CALIFORNIA INSTI-TUTE OF THE ARTS, Valencia, Calif. Architects: Thornton Ladd of Ladd and Kelsey Architects. Designer: Jules Fisher. Consulting Engineer: Olaf Sööt

An adjustable lighting canopy provides flexibility to the Thrust Theater at the California Institute of the Arts. It can be raised or lowered to alter the visual ceiling called for by each production. Lighting equipment, mounted on railings on all sides, can be attended to by technicians both before and during performances.

Because the canopy is open in the center, scenery can be flown from a





Mechanized modular theater can be rearranged for each production, with entrances at any level on any of the walls. Model photos show an early design where each platform was supported on four posts. Final design uses a single piston column (opposite page).



gridiron above to the stage. A number of independent, variable speed, remotely controlled winches make it possible to raise and lower scenic elements simultaneously.

The stage is fully trapped, including the first row of seats, so that its basic shape can be altered. Two "caliper" stages extend the acting area behind the audience at either side of the thrust stage. They are connected to it by hinges so that the far ends can be raised or lowered. Raised, they become dynamic playing areas; lowered, they are entrances and exits for either actors or audience.

Walls behind these caliper stages were designed as curved projection screens. A separate curved wall can be placed at the back of the thrust stage to complete a vast panoramic projection surface surrounding the audience. Permanent equipment includes 10,000-watt slide projectors for filling any or all screen.

#### **Neutral Space**

Designer Jules Fisher describes the mechanized multiform theater as a room that in no way restricts the activities within it, a room so neutral that it has no front or back, where vertical space is as important as horizontal space.

One of eight performing areas in the still-incomplete California Institute of the Arts at Valencia, the Modular Theater is a totally flexible cube within the architectural cube provided by architect Thornton Ladd. The entire floor consists of 4ft square modules that rise on airsupported piston columns; the walls are 4-ft square modules with snapoff hinges that allow openings to be placed anywhere. "Three dimensions includes up," says Fisher. "In making a space to perform we should not forget that people can move vertically. The audience could move vertically, the actors could move vertically, and the two could change positions vertically. Almost all our theaters at the moment are based on something very linear. We haven't yet gotten involved with hearing someone over our heads or underneath us, or looking up and down."

The modular design not only allows, but forces the student designer-director-playwright to redesign the entire theater space for each production. He must first assign stage and audience spaces, determine where and at what level the audience and actors will enter, what props (including projection screens) will be flown from the 38-ft-high grid ceiling. Yet it was important to Fisher that the students spend time designing, not building; therefore, all components fit together without tools.

The walls are five doors high with the modules mounted on columns 8 ft apart so that 4-ft or 8-ft openings can be created at any level. Two 4-ft openings, one above the other, provide entrances for either actors or audience, depending on the height of floor platforms. If the set designer chooses to have the actor enter at a point 12 ft high on the middle of the east wall, platforms (with step units on top) are raised to their full 10-ft height both in front and behind the wall opening.

The floor modules are 6-in-deep steel-reinforced, wood platforms that can be raised in 6-in increments to a height of 10 ft. Fitted with step units they become aisles; for seating they are equipped with units of two swivel seats secured by drop-in pins. Guardrails lock, onto the platforms and aisle lights plug into the floor. The stage can be any shape or any height, with combinations limited only by the 4-ft module.

The adjustable pistons are mechanically simple: a stainless steel seamless tubing within a casing is raised by compressed air but secured by a steel pin through it at floor level. Air holes are beneath a plug at one edge of each platform so that one can be raised without disturbing its neighbor. Each can be raised to full height in about one minute.

The doors are molded fiberglass with curved backs for acoustical purposes. They have eggcrate grille faces, painted a dark reddish brown, that serve as light traps. The backs have integral handles molded in, hinges much like those on a typewriter and locks so that several can be opened at the same time.

A perimeter balcony at the 20-ft level can be used for lighting, scenery or acting. Above that is a grid ceiling equipped with 20 synchronous winches so that a number of flats or three-dimensional objects can be raised and lowered simultaneously at varying speeds.



Plug at edge of platform covers air hole when unit is at floor level.



Platform rises as hose pumps com pressed air through floor.



Pin holds column at designated level.



Key and slot device prevents column from rotating.



Platform, seen from below, is steel frame topped by plywood. Surface is battleship linoleum.

Prototype of platform is shown at 6'-6". Slots at corners hold guardrails when platforms are used as stairs.



#### Izenour's Variable Volumes

George Izenour, theater designer and engineering innovator, has consulted on 120 performing-arts facilities in the last 10 years—80 of them are either built or being built.

A proponent of technology as the servant of the arts, designer Izenour passionately believes that theater machinery can save manpower, energy and time, and that these can be made available to creative artists and their endeavors. His work in electric rigging systems, and his computerized control systems for lighting and for manipulating architectural elements of theaters stages, seating, walls and ceilings — have been the pioneering efforts in this country toward mechanized theater.

Yet his work is controversial because the presence of theater machinery allegedly upstages or camouflages the human artistry on stage. This is the critical paradox of the machine age. Izenour disagrees, and he is vehement about the economies that are effected by his designs, especially in the recent works, which use new means.

His most renowned exploration is in the area of "variable volumes" those theaters that can be changed in size, seating capacity and con-



FINE ARTS COMPLEX, The College of St. Catherine, St. Paul, Minnesota. Architects: Hammel Green & Abrahamson. Curtis H. Green, partner in charge. Consultants: George Izenour, theater; Bolt, Beranek & Newman, Russell Johnson in charge, acoustical; Johnston & Sahlman, structural



SECTION THRU AUDITORIUM



sequent reverberation time to accommodate the change from opera to chamber music or drama. Initially, his architectural volumes were varied by means of movable, solid and acoustically reflective ceilings. Like Jesse Jones Hall in Houston, the recently opened Fine Arts Complex for the College of St. Catherine in St. Paul, Minnesota, (facing page) has a movable acoustical ceiling that can be lowered to close off balcony seating. At St. Catherine's, which was designed with Hammel, Green & Abrahamson, architects, audience capacities can be reduced from 1800 (when the balcony is used) to 700 (when only the orchestra level is used). The ceiling consists of approximately 25 tons of structural steel and sheet metal, which are operated on suspending cables and balancing counterweights. As the ceiling lowers, roller-guide mounted plastic panels roll by gravity to adjust sound reflection.

More economical than moving solid architecture is the acoustically transparent movable ceiling. For Washington State University at Pullman, one end of a 12,000-seat basketball arena designed by John Graham will Architects, be Company, screened off merely with scrim or theatrical gauze to enclose a 2500seat concert hall (plan). The darkness, behind this scrim barrier that can be rolled up into the architectural ceiling, will make the rest of the volume invisible and psychologically nonexistent (section). Acoustically, the enormous volume will be counteracted by a demountable orchestra shell and newly developed acoustical-enhancement system.

As an even further development of these economies, designer Izenour is planning a nonphysical wall of electric light as the means of changing the performing facility at Centre College, Kentucky from a capacity of 1800 seats to 350 seats. The volume is to be varied by manipulating a field of lights, merely by lowering the house lights physically and bringing in absorptive materials behind them. There will be no solid ceiling or scrim to move at all.

This change from movable architecture to nonarchitecture and electro-acoustics reveals the flexibility and nonfixed point of view of this theater designer. If, as Izenour says, "Inflation is killing these things," his recent work shows that he is economizing to make viable solutions of variable volume halls still possible.



MULTI-PURPOSE COLISEUM, Washington State University, Pullman, Washington. Architects: John Graham Company. Consultant: George Izenour

FINE ARTS CENTER, Centre College, Danville, Kentucky. Architects: William Wesley Peters, Taliesin Associated Architects. Consultant: George Izenour





One Astor Plaza, on the site of the former Astor Hotel on Times Square, is being built by Sam Minskoff & Sons and designed by Kahn & Jacobs, architects. The builders will provide the city a below-grade 1500-seat cinema (Walter Reade, client; John Mc-Namara, architect), which is not part of the bonus calculation, plus a 1650-seat proscenium theater (designed by Kahn & Jacobs with Ben Schlanger as consulting architect), and other amenities. The lot size of 65,764 sq ft will accommodate a 55-story tower of 1,420,508 sq ft for which the city set an F.A.R. of 21.6 or a bonus of 3.6—approximately  $5\frac{1}{2}$  floors of rentable space (indicated diagramatically by shaded area) in exchange for 76,900 sq ft of theater provided.

# Zoning Rebuilds the Theatre

Bonus floor area that induces developers to incorporate theaters into commercial structures could save New York's dwindling theater district — and might lead the way for other communities.



Prior to the filing of the City Planning Commission's "Theater District Amendment" in 1967, New York's Broadway theaters were threatened seriously by an office-building construction boom. The City Planning Commission, the Urban Design and everyone concerned Group agreed that something needed to be done to preserve New York's position as the national theater capital. They felt the city could not stand by while one theater after another was replaced by a glass-wall highrise, and producers and drama companies scrambled for the few remaining spaces.

#### **Incentive Zoning**

Instead, the city adopted an unusual approach to zoning. When the first zoning ordinances in this country were introduced by the Fifth Avenue Association in New York City, they were inhibitive measures designed to keep undesirable elements off that elegant street. In general, zoning continues to be used as an inhibitive force; and if the city had taken this customary approach, it would have been forced to inhibit the construction of office buildings in the Times Square area (see map). Since highrise office buildings yield far more tax revenue than old two- and threestory theaters, the city was not anxious to do anything that might slow down the boom.

Fortunately, New York already had set a precedent for incentive zoning in 1961 as part of its comprehensive amendment to the Zoning Resolution, which allowed developers up to 20 percent additional square footage in return for providing plazas and arcades at street level.

In November 1967, the Urban Design Group, then under the direction of Richard Weinstein, negotiated the "Theater District Amendment" (CP-2000 Cal. No. 12) which authorized the Commission to grant special permits for a further increase in floor area (to ground area) ratio to any building or development that would contain a legitimate theater or theaters. The increase or bonus floor area is at the discretion of the Commission, but it may not exceed an additional 20 percent. In this case, as Richard Weinstein explains, "The city waived precise requirements to make an overall judgment on the impact of the building, its density handling, and amenities."

As a help in this judgment and as a control in negotiating an agreement between the city and the developer, the "Theater Projects Committee" (appointed by the mayor, funded by the Ford Foundation and directed by Robert Hale) evaluates each proposed theater design. Theater consultants in various specialties are called in to discuss the plans with both the prospective theater users and the builder.

#### **The First Results**

Three new buildings that take advantage of this zoning bonus are in construction (see map, black squares). They will provide the theater four new theaters (see illustrations and captions).

Other realty companies have since applied for bonus square footage in exchange for including theaters in their buildings (see map, hatched squares). Bernard Spitzer with Shubert Enterprises as theater owners have negotiated for a bonus at a site on 53rd Street and Broadway (Shreve, Lamb & Harmon, architects; Ben Schlanger, consulting architect). Peter Jay Sharp has ap-Roth & plied (Emery Sons, architects), and early discussions are underway with the architect combination of Emery Roth & Sons with Venturi & Rauch.

#### "Broadway Refashioned"

To review the amendment and its proposed theaters, the U.S. Institute for Theatre Technology's committee on theater architecture, chaired by tyro-architect Barbara Leslie Cortesi, organized a seminar last year called "Broadway Refashioned." Assembled to discuss the subject were representatives of the mayor's office, the planning commission, the Theater Projects Committee, and the builders, clients, architects and consultants of the several theaters planned. Surprisingly, not all com-

The J.P. Stevens Building on Sixth Avenue at 46th St., owned by Fisher Brothers and designed by Emery Roth & Sons, architects, will provide the district a 120-seat cabaret theater and a below-grade 350-seat space for the "American Place Theater" company (Richard D. Kaplan, architect; Frank Trotta, project coordinator). The lot size of 42,049 sq ft will accommodate a 46-story tower of 840,980 sq ft for which an F.A.R. of 20.5 or a bonus of 2.5 was set-approximately 3 floors of rentable space (indicated diagramatically by shaded area) excluding the 24,070 sq ft of theater space provided.















SECTION B.E

ments were entirely favorable to this seemingly altruistic method of improving both our cities and our theaters.

There could be no doubt that the amendment's promise of higher profits for builders has worked to provide the city with several good and needed theaters. What was not so clear is whether the city is demanding enough for the favors it is dispensing to the developers.

Several speakers agreed with the dissenting vote on the amendment by Commissioner Beverly Moss Spatt, who had written, "This same tool which is being used to encourage the construction of theaters should also be used to encourage a renewal of the whole area in terms of pedestrian and vehicular circulation, parking, and relocation." She went on to point out that the theaters will bring in a financial return that will not be passed on to the theater industry but will remain with the builder. Producer Joel Schenker explained at the USITT seminar, "Some of the subsidy should be channeled into the purchase of theater tickets and be passed down to selected audiences at reduced rates."

Other observers feel that the bonus is excessive, and that the profits to the builder are too great. The extent of that profit is indicated by the investment that builders have been willing to make in theater construction. According to Jo Mielziner, who was consultant to the lessee of the large theater at One Astor Plaza, the enormous truss over the proscenium, which holds up the east face of the 55-story tower, is "a clear example of what expense a builder is willing to go to get that extra rentable space." As Commissioner Spatt had written, "In fact, the bonus is so great that it will be profitable to build theaters that can remain empty."

The Uris-Capitol Building on the site of the former Capitol movie theater is owned by Uris-Capitol Corporation and designed by Emery Roth & Sons, architects. It will contain an 1800-seat proscenium theater (designed by Ralph Alswang with William Cruse) and a below-grade 636-seat thrust space for the "Circle in the Square" company (Alan Sayles, architect; Jules Fisher, consultant). The lot size of 89,476 sq ft will accommodate a 44-story tower of 1,861,100 sq ft for which an F.A.R. of 20.8 or a bonus of 2.8 was setapproximately 31/2 floors of rentable space (indicated diagramatically by shading) excluding the 107,900 sq ft of theater space provided.

So far, this has not proved to be the case. Several proposed theateroffice building projects have either been held up for months or have been cancelled - or both. Several builders involved in the schemes underway feel that they have been unfairly caught in an escalation of costs that will make it difficult, if not impossible, ever to recover their theater construction investments from the rentable bonus floors.

What seems to be the problem, according to Barbara Leslie Cortesi, a co-designer of the American Place Theater in the new Fisher Brothers' building, is that "The formula for determining what the builder must provide in return for the bonus granted must somehow be made more exact. With construction costs rising at the rate of 3 percent per month in the city, a developer cannot afford to spend the time to negotiate a lengthy agreement in the way the city now requires."

Concurring, architect Der Scutt of Kahn & Jacobs, who designed One Astor Plaza, says, "If the Urban Design Group can put as much specific effort into determining the actual F.A.R. incentive as they have into envisioning the broad scope of the idea — that is, into implementing the process, into uncovering the hidden complexities of incentive zoning and making it fair and equitablethis will prove the most brilliant urban planning idea of the decade."

Architect Ben Schlanger, who was consulting architect on the large theater at One Astor Plaza, suggests that the city might consider offering some other kinds of bonus for providing theaters (or other cultural amenities) in their buildings. For example, work could proceed on a (Continued on page 118)



PARTIAL FLOOR PLAN



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### Solid Waste Disposal Systems For Hospitals

This is the second article in a series on hospital systems by an associate of Syska & Hennessy, Inc., Consulting Engineers, New York City.

The problem of solid waste, for years ignored or underplayed, is now demanding attention due to the growing quantities of wastes being generated and the concurrent rising costs of handling them. These factors complicate the engineer's problem of determining the best method of collection, transportation, processing and final disposition of these wastes.

As waste loads have grown, many hospital administrators have found themselves short on certain necessary space. This leads to costly additional labor as well as to unsightly and unhealthy working conditions.

Space for waste equipment and its maintenance is always given prime consideration, but equally important are the spaces for whatever manual collection is required, as well as for temporary waste storage. Early planning in new facilities and recognition of these space needs in existing operations are the first steps toward design of the best possible system.

#### Types of Wastes

Almost every available type of material ends up as part of a hospital's waste. A recent survey by Syska & Hennessy for a major metropolitan area teaching hospital produced the following figures: paper, including everything from cardboard cartons to mail, accounted for 64 percent of the total waste; food service wastes, 16 percent; glass, 7 percent; plastics, 5 percent; metal, 2 percent; and rubber, 1 percent.

Pathological and operating room wastes, animals and their bedding and care wastes, radioactive and chemical wastes, and furniture and construction wastes accounted for the remainder. The latter group are usually handled separately by special procedures.

Surveys of recent waste loads indicated a range of generation of 20 to 30 lbs per bed per day. These surveys involved teaching hospitals and the figures represent a broad rule of thumb. In actuality the waste loads for such a complex would not be entirely related to bed count but would be broken down in relation to the functions of the different areas, i.e., teaching labs, food services, hospital bed facilities, administrative functions. In addition, allowances have to be made for a possible future increase of single use items.

#### Types of Systems

Starting at the point of generation, most common solid wastes in hospitals are collected in plastic or heavy duty paper bags. The bags, in many cases, have acted as liners for waste containers; they are tied shut and thus the containers remain fairly clean. The next step is transportation. This may be manual by cart and freight elevator, by the common gravity chute with manual carting at lower levels and by automated cart systems. The pneumatic transport chute system moves the wastes, bagged or not, both vertically and horizontally to the central collection point. With this equipment, after waste is inserted into the chute it need not be touched again if there is automated processing at the collection end.

At the central collection point, waste processing or treatment equipment may be used. Some of the possibilities are as follows: compactors compress waste to save space and reduce haulage trips to local municipal disposition centers. Most waste is reduced in volume by a 4:1 ratio. The equipment is basically a hydraulic ram; its plunger pushes wastes into containers.

Pulpers chop waste and mix it with water for piping to a central collection point or, where permitted, directly into sewage systems. Water extractors at the central collection point then reduce water content to about 70 percent of the total mass. Because of this the weight of the waste has been increased and in some areas where trucking from the site is governed by weight there may not be a savings in hauling costs despite the reduction in volume.

Incinerators for general waste obviously provide the greatest volume and weight reduction. Where they are permitted, they must be provided with the necessary emission cleaning equipment to satisfy air pollution control requirements. Compared to other equipment, they produce the "cleanest" residue for hauling.

Chopping machines may be used prior to compacting or incineration. As a prelude to compaction an extensive daily waste load would be required to justify their use. However, choppers have a special advantage when used with incinerators. Chopping and subsequent mixing produces material which is more homogeneous and more burnable. Balers may be useful in some cases but the problem of sorting wastes and the question of an available market for baled waste must be carefully considered.

#### Choosing the Right System

On the surface, one system may appear to be better than another because of superior reduction of volume and/or weight, low labor costs and other similar advantages. There are, however, more factors involved in the selection of the best system for a particular institution than may be immediately apparent. Local conditions vary widely from hospital to hospital. Labor rates and haulage costs are key factors in system selection, as are availability and cost of space for equipment, and local ordinances establishing limitations on air, land and water pollution, gross vehicle weights, and ultimate disposal of the wastes.

In addition to these considerations, a system to be incorporated into an existing hospital will be analyzed by different criteria from one designed for a new institution. An in-depth study for each institution is essential to insure that the best system for present requirements is installed and that it will not soon become outdated. (For a more complete discussion of solid waste handling for hospitals, we invite interested readers to request Syska & Hennessy's Technical Letter on the subject.)

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## Water Vapor and Vapor Barriers

Building problems relating to water vapor are defined and recommendations offered by the Chief Specifications Writer of Skidmore, Owings & Merrill, New York City.

Depending primarily on temperature, water exists in three distinct states: in the solid state as ice; in the liquid state as water; and in the gaseous state as water vapor. In the design of structures, water vapor control is essential to prevent its condensation into the liquid state with consequent damage to wood, plaster and paint finishes and resultant mustiness.

Condensation occurs when water vapor cools and reverts to the liquid state. This takes place when air laden with water vapor cools or touches a cool surface. A new saturation temperature is reached and excess water vapor condenses in the form of moisture. This temperature is also known as the dew point temperature. Condensation can be controlled by controlling the amount of water vapor entering a structure, and by controlling the dew point temperatures.

Water vapor enters a structure from two major sources: (1) from the ground beneath if not covered by an impervious material, and (2) from indoor sources such as industrial processes, mechanical humidifiers, human respiration and perspiration, baths, showers, cooking, laundering and similar functions.

Water vapor exerts a vapor pressure and its movement is from areas of high vapor pressure to areas of low vapor pressure. For example, at a temperature of 75 F the vapor pressure at 50 percent relative humidity is 0.214 psi. At 25 F and 50 percent relative humidity the vapor pressure is 0.032 psi. The water vapor in a building during the winter under the above conditions tends to migrate outward toward the area of lower vapor pressure.

The largest source of water vapor migration is from the ground into the structure. The soil temperature under a structure is relatively constant and its water content is such that the relative humidity is 100 percent. The amount of water entering a structure from the soil can be as much as 100 lbs of water per 24 hours per 1000 sq ft of enclosed space. By introducing an impervious membrane below the slab, this moisture migration is reduced markedly or almost eliminated.

Vapor barriers are used to reduce vapor migration. However vapor barriers differ in their perm ratings just as concrete mixes vary in their compressive strength. The term vapor barrier is a misnomer since it implies that it is a barrier to the migration of vapor. Some authorities state that a vapor barrier is a material that has a water vapor transmission rate of less than one perm. A perm is equal to one grain of water transmitted through one square foot per hour per inch of mercury vapor pressure difference. Some materials and their water vapor transmission rates are as follows:

Material	Perm Rating
Coated base sleet	0.25
4 mil polyethylene	0.08
6 mil polyethylene	0.06
15 lb tar felt	4.0
Built-up membrane	0.0
Aluminum foil, 1 mil	0.0

Water vapor transmission rates which are used to determine the perm ratings of various materials are determined by ASTM E96 for materials in sheet form and by ASTM C355 for thick materials.

To prevent condensation within a structure, interior surfaces should be kept warm or vapor laden air must be away from cool surfaces. By introducing vapor barriers, moist air is kept from migrating to cold surfaces. By introducing insulation, the dew point temperature is not reached on cold surfaces. The general rule to follow is to provide a vapor barrier of known perm rating on the warm side of construction. Where water vapor is generated within a structure, provide mechanical venting to eliminate the moisture.

One of the biggest controversies concerning vapor barriers revolves around their use under roof deck insulations. At one time they were in favor to prevent moisture migration into insulation which may reduce the insulating capacity, and into roofing felts which can cause wrinkles, blisters and membrane splitting. Those opposed to a roof vapor barrier are concerned with entrapping construction moisture between two impervious membranes, the roofing and the vapor barrier; and with permitting accumulation of water through roof leaks to saturate insulation before it is discovered. I belong to the school that favors vapor barriers for roof decks.

In cold temperature, structures such as refrigerators and freezers, vapor barriers of low perm ratings, 0.02 or less, should be placed on the warm side of insulation as a complete blanket. The interior surfaces should be vapor permeable so that the insulation can breathe when reverse flow of vapor occurs if the system closes down.

The following sources of information are suggested for more comprehensive data:

Thermal Design of Buildings by Tyler Stewart Rogers, published by John Wiley & Sons.

Manual of Built-Up Roof Systems by C.W. Griffin, published by McGraw-Hill for the AIA.

Cold Storage Facilities, Publication 1098 by National Academy of Sciences.

Design Techniques for Controlling Moisture and Condensation by W.R. Meadows, Inc., Elgin, Illinois. ANOTHER PLUS FEATURE OF SLOAN FLUSH VALVES...

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## **Aesthetic Zoning Rationale, II**

This is the second of two articles in which aesthetic objectives have influenced zoning regulations.

In last month's column we pointed out that in recent years aesthetic objectives have played an increasingly significant role in the development of zoning regulations and that the courts have been more favorably disposed to uphold the validity of zoning laws based upon aesthetic considerations. This trend was spurred by a decision of the United States Supreme Court in 1954 (*Berman* v. *Parker*) in which the Supreme Court indicated that the beauty of a community was a valid consideration in the exercise of legislative power.

Typical of the influence of this decision upon the courts of the various states was a Wisconsin case (State ex rel. Saveland Park Holding Corp. v. Wieland) in which the validity of a village zoning ordinance was under consideration. This ordinance prohibited the issuance of building permits unless certain aesthetic requirements were satisfied. An applicant for a building permit was required to secure the approval of a Building Board that was to determine whether the exterior architectural design and functional plan of the proposed structure would not be so at variance with those of other structures as to cause a depreciation of neighborhood property values. The court, in upholding this statute, indicated that the traditional rule that zoning ordinances may not be adopted for purely aesthetic objectives was changing and that in view of the United States Supreme Court decision in Berman v. Parker, it was doubtful whether the legal authorities which had established the older rule were any longer appropriate precedents.

In New York there has also been a complete turnabout in its judicial decisions on this subject. The older cases held that a zoning ordinance based solely or predominantly on aesthetic objectives was invalid. In recent years, however, there have been a series of decisions taking the contrary point of view. In 1963, for example, New York's highest court held valid a local ordinance which prohibited the erection of clotheslines in certain areas of residential districts. The objective of this ordinance was exclusively aesthetic, but the court took the position that aesthetics was an appropriate subject of legislative concern. In 1967 the New York courts upheld the validity of a comprehensive zoning ordinance which prohibited the erection of "nonaccessory" signs - that is, signs unrelated to a structure located on the same lot as the sign. In order to reach this conclusion the court was required to reverse an earlier decision directly to the contrary and did so on the rationale that aesthetic factors relate to the general, economic and cultural welfare of a community and are therefore appropriately a consideration of the local legislative body. The court pointed out that advertising signs and billboards, if misplaced, are "egregious" examples of ugliness, distraction and deterioration." Also, "they are just as much subject to reasonable controls, including prohibition, as enterprises which emit offensive noises, odors or debris." In 1970 the courts of New York considered the validity of a zoning regulation which prohibited the open storage of inoperable vehicles within a particular town (*People* v. *Scott*, 309 N.Y.S. 2d 919). The statute in describing its objective stated that its purpose was to secure a "clean, wholesome and attractive environment." The court in considering the validity of the statute stated that "an ordinance promulgated for a rational preservation of the aesthetic senses may be a proper exercise of the police power."

However, recognition by the courts that the eye is entitled to as much recognition as the other senses has not afforded legislative bodies carte blanche to regulate for aesthetic objectives without restriction. The prevailing rule of law still requires that the zoning ordinance be reasonable and unambiguous. Thus, in the case of People v. Scott referred to above, the court stated that a statute whose effect "is to curtail the liberty of individuals to live their lives as they would and whose justification is claimed to lie in the exercise of the police power of the state" must bear a reasonable relationship to the objective sought and the proscribed conduct "should be clearly enunciated so that all those who may be affected may gage their actions accordingly."

The court concluded that the statute in question could be construed as prohibiting the storage of one inoperable vehicle and thereby prevent a landowner from maintaining a single antique for his own reasons. Such a restriction would be unreasonable. The court therefore ruled that the zoning ordinance was invalid not because it sought to achieve an aesthetic objective but because it was so vague as to make its application uncertain or unreasonable.



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## The Shapes of Our Theatres

The Shapes of Our Theatres By Jo Mielziner. Clarkson N. Potter, Inc., 1970. \$6.95.

Reviewed by Harry Weese FAIA: Mr. Weese is head of Harry Weese & Associates, architects and engineers of Chicago. He designed the Arena Stage (p. 52) and the new Time-Life Building in Chicago. C. Ray Smith, Features Editor of P/A, edited The Shapes of Our Theatres.

Mr. Mielziner's useful and handsome book is not a technical treatise, but a collection of observations from his rich experience in theater design and

#### Year-End Book Round-Up

(Reviews of some of the following books may appear in future issues of P/A.)

#### Art

**Op Art. By Cyril Barrett.** New York: The Viking Press, 1970. 192 pp. \$10.95.

Northwest Coast Indian Art: An Analysis of Form. By Bill Holm. Seattle: University of Washington Press, 1970. 115 pp. \$4.95 (paper only).

Art and Confrontation. The Arts in an Age of Change. Nine essays translated from the French by Nigel Foxell. Greenwich, Conn.: New York Graphic Society Ltd. 201 pp. \$7.50.

Bricks, Mortar and the Performing Arts. Report of the Twentieth Century Fund Task Force on Performing Arts Centers, New York 1970. \$1.

Federal Support for the Visual Arts: The New Deal and Now. By Francis V. O'Connor. Greenwich, Conn.: New York Graphic Society Ltd. 1969. 226 pp.

Optics, Painting & Photography. By M.H. Pirenne. Cambridge: University Press, 1970. 183 pp. \$13.50.

Wrought Iron. By Fritz Kuhn. New York: Architectural Book Publishing Co., 1969. 120 pp. \$10.

The Arts on Campus: The Necessity for Change. Edited by Margaret Mahoney. Greenwich, Conn.: production. It presents theater forms, dimensions, and their historic derivations for the benefit of layman and architect alike. He also points to the future of theater, the impact of rising costs, the uses of new technology, and outlines parameters for sight lines and stage configuration for ideal theaters.

Not afraid to let his convictions show, Mr. Mielziner opts against second balconies, multiple-use, and overly large audiences. His work at the Fourth Street ANTA Theater and its culmination with Eero Saarinen in the handsome Beaumont Theater is testimony to the thrust of this book — that theater's past, present and future are part of a continuum in which art and life must interact in our presence and according to certain immutable rules. Sight lines are unchanging, distance is not negotiable, intimacy is not a mystery. *The Shapes of our Theatres* can help keep these realities alive.

New York Graphic Society Ltd. 143 pp. \$6.50.

An American Palace of Culture. The Carnegie Institute and Carnegie Library of Pittsburgh. By James D. Van Trump. Pittsburgh: Carnegie Institute and Pittsburgh History & Landmarks Foundation, 1970. 54 pp. \$1.95.

#### Education

Complete Guide for Planning New Schools. By Nickolaus L. Engelhardt. West Nyack, New York: Parker Publishing Co., Inc., 1970. 287 pp.

Educational Facilities Evaluation Guide. By Jerome J. Resnick. La Mirada, Calif.: Educational Facility Planning Consultants, 1969. 82 pp.

Housing for Early Childhood Education. Bulletin No. 22-A, Washington, D.C.: Association for Childhood Education International. 84 pp. \$1.50.

University of Ife: Physical Development Plan, Ife, Nigeria. A Design for the Hot-Humid Tropics. The University of Wisconsin, College of Agricultural and Life Sciences, 1969. 125 pp.

#### Engineering

The Analysis of Intermediate Structures. By Alan Williams. New York: Hart Publishing Co., Inc., 1968. 320 pp. \$12.

Essentials of the Theory of Struc-

tures. By J.H. Joiner. New York: Hart Publishing Co., 1968. 256 pp. \$12.50.

Composite Engineering Laminates. Edited by Albert G. H. Dietz. Cambridge: The MIT Press, 1969. 328 pp. \$25.

Plastics for Architects and Builders. By Albert G. H. Dietz. Cambridge: The MIT Press, 1969. 129 pp. \$7.95.

Sound, Noise and Vibration Control. By Lyle F. Yerges. New York: Van Nostrand Reinhold Co., 1969.

Air Conditioning System Design for Buildings. Edited by A.F.C. Sherratt. New York: Elsevier Publishing Co., Inc., 1969. 249 pp. \$15.50.

Architectural Acoustics. By Anita B. Lawrence. New York: Elsevier Publishing Co., Inc., 1970. 219 pp. \$11.75.

Principles of Natural Lighting. By J.A. Lynes. New York: Elsevier Publishing Co., Inc., 1968. 212 pp.

Contrast Rendition in School Lighting. A Report from Educational Facilities Laboratories, New York. By Foster K. Sampson. 104 pp.

Construction: Principles, Materials and Methods. By John L. Schmidt, Walter H. Lewis and Harold B. Olin. Danville, Illinois: The Interstate Printers and Publishers, Inc., 1970. 778 pp. \$18.75.

(Book Reviews continued on page 92)



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#### **BOOK REVIEWS**

(Continued from page 86)

The Appearance of Bridges. By The Ministry of Transport, Her Majesty's Stationery Office, London: \$1.20 (includes mailing).

Design of Foam-Filled Structures. By John A. Hartsock. Stamford, Conn.: Technomic Publishing Co., Inc., 1969. 54 pp. \$20.

Construction, Sealants and Adhesives. By John P. Cook. New York: John Wiley & Sons, Inc., 1970. 251 pp. \$13.50.

Fireproofing. By Pierre Thiery. New York: American Elsevier Publishing Co., Inc., 1970. 128 pp. \$11.

Building on Springs. By R.A. Waller. New York: Pergamon Press Inc., 1969. 84 pp. \$5.

Manual of Built-up Roof Systems. By C.W. Griffin, Jr. New York: McGraw-Hill Book Co. 203 pp. \$14.50.

Building with Wood. By Kurt Hoffmann and Helga Griese. New York: Frederick A. Praeger, 1969. 169 pp. \$15.

Systems Approach to Architecture. By A. Benjamin Handler. New York: American Elsevier Publishing Co., Inc., 1970. 173 pp.

Vertical Transportation for Buildings. By Rodney R. Adler. New York: American Elsevier Publishing Co., Inc., 222 pp. \$18.50.

#### History

The American Association of Architectural Bibliographers. Papers, Vol. VI, 1969 (Thos. Jefferson as an Architect). Edited by William B. O'Neal. Charlottesville: The University Press of Virginia, 132 pp. \$7.50.

Brunelleschi. Studies of his Technology and Inventions. By Frank D. Prager and Gustina Scaglia. Cambridge: The MIT Press, 1970. 152 pp. \$10.

Canals and Their Architecture. By Robert Harris. New York: Frederick A. Praeger, 1969. 223 pp. \$12.50.

The Mansions of England in the Olden Time. By Joseph Nash. New York: Crown Publishers, 1970. 25 Plates.

Nineteenth Century Modern. The

Functional Tradition in Victorian Design. By Herwin Schaefer. New York: Praeger Publishers, 1970. 206 pp. \$17.50.

The Architecture of Minard Lafever. By Jacob Landy. New York: Columbia University Press, 1970. 296 pp. \$17.50.

Rugs and Carpets of Europe and the Western World. By Jeanne G. Weeks and Donald Treganowan. Philadelphia: Chilton Book Co., 1969. 251 pp. \$17.50.

Walter Burley Griffin: Selected Designs. Edited by David T. Van Zanten. Palos Park, Illinois: The Prairie School Press. 113 pp. \$25.

The Royal Palaces. By Philip Howard. Boston: Gambit Inc., 1970. 276 pp. \$10.

An Organic Architecture: The Architecture of Democracy. By Frank Lloyd Wright. Cambridge: The MIT Press, 1970. 56+ pages. \$6.95.

The Architecture of Charles Bulfinch. By Harold Kirker. Cambridge: Harvard University Press, 1969. 384 pp. \$11.95.

**Boston Architecture.** The Boston Society of Architects (a chapter of the American Institute of Architects). **Produced and Edited by Donald Freeman.** Cambridge: The MIT Press, 1970. \$2.95.

The Architecture of Paul Rudolph. Introduction by Sibyl Moholy-Nagy. New York: Praeger Publishers, 1970. \$20.

Harry Bertoia, Sculptor. By June Kompass Nelson. Detroit: Wayne State University Press, 1970. 121 pp. \$11.50.

**Decorative Wrought Ironwork in Great Britian. By Raymond Lister.** *Rutland, Vermont: Charles E. Tuttle, 1970. 221 pp. \$7.50.* 

The Earth, the Temple and the Gods. Greek Sacred Architecture. By Vincent Scully. (Revised Edition). New York: Frederick A. Praeger, 1969. 271 pp., 456 fig. \$16.

Modern American Cities. By The New York Times Co. Edited with an Introduction by Ray Ginger. Chicago: Quadrangle Books, 1969. 235 pp. (Paperback.)

(Continued on page 98)

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For the full, complete story about the wood doors that hold up under fire, just write Weyerhaeuser Company, Box B-7513, Tacoma, Washington 98401.



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Learn more about these fine walk-ins. Circle number on reader service card.



C. Schmidt equipment also meets NSF and the Wholesome Meat Act for Federal Requirements.



#### (Continued from page 92)

City Fathers: Town Planning in Britain from Roman Times to 1900. By Colin and Rose Bell. New York: Frederick A. Praeger, 1969. 213 pp. \$15.

Frank Stella. By William S. Rubin. New York: Museum of Modern Art, 1970. 176 pp. \$12.95.

Stone Shelters. By Edward Allen. Cambridge: The MIT Press, 1969. 189 pp.

Victorian Architecture: four studies in evaluation. By John Summerson. New York: Columbia University Press, 1970. 117 pp. \$7.50.

Varieties of Human Habitation. By R. Martin Helick. Pittsburgh: Regent Graphic Services Co., 1970. 177 two-dimensional abstracts.

Man The Builder. By Gosta E. Sandstrom. New York: McGraw-Hill Book Co., 1970. 270 pp. \$16.

The Legacy of Albert Kahn. Detroit: The Detroit Institute of Arts, 1970. 184 pp.

#### Miscellaneous

Exterior Design in Architecture. By Yoshinobu Ashihara. New York: Van Nostrand Reinhold Co., 1970. 139 pp. \$12.50.

Metalwork. By Hanns-Ulrich Haedeke. New York: Universe Books, 1970. 227 pp. \$17.50.

The Principles of Pattern. By Richard M. Proctor. New York: Van Nostrand Reinhold Co., 1970. 135 pp. \$7.95.

Interiors. Second Book of Offices. Edited by John Pile. New York: Whitney Library of Design, 1969. 271 pp. \$19.95.

Architectural and Interior Models: Design and Construction. By Sanford Hohauser. New York: Van Nostrand Reinhold Co., 1970. 211 pp. \$20.

Final Report: AIA Barrier Free Architecture Workshop Program. 1970. 15 pp.

A Different Kind of Country. By Raymond F. Dasmann. New York: Collier Books, 1970. Paperback. \$1.95.

Light, Color and Environment. By Faber Birren. New York: Van Nostrand Reinhold Co., 1969. 127 pp.

(Continued on page 104)

On Reader Service Card, Circle No. 363



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is preparing a series of booklets entitled Light in the Human Environment, written by authorities of various disciplines...art psychology, anthropology, behavioral science, human engineering and the social sciences. The second in this series, ...as the Psychologist sees it, is available free of charge or obligation merely by writing David T. Traitel, President, Sunbeam Lighting, 777 East 14th Place, Los Angeles, California 90021. On your letterhead, please.



#### (Continued from page 98)

Legal Forms for the Designer. By Lee Epstein. Croton-on-Hudson, New York: Contract Books, Inc., 1969.134 pp.

Landscapes. Selected Writings of J.B. Jackson. Edited by Ervin H. Zube. Amherst: University of Massachusetts Press, 1970. 168 pp. \$6.

Order in Space. By Keith Critchlow. New York: The Viking Press, 1970. 120 pp.

Elements of Urban Form. By George Banz. New York: McGraw-Hill Book Co., 1970. 197 pp. \$16.50.

Architecture in Greece. Annual Review, vol. 4/1970. White Plains, New York: Albert J. Phiebig (agent). 231 pp. \$16.45.

Architecture in Northern Ghana. By LaBelle Prussin. Berkeley, California: University of California Press, 1970. 118 pp. \$8.95.

Building Code of the City of New York. Frederick S. Merritt, Consultant. New York: Van Nostrand Reinhold Co., 1970. 860 pp. \$14.95. Jobs and Housing. A Study of Employment and Housing Opportunities for Racial Minorities in Suburban Areas of the New York Metropolitan Region. Interim Report. New York: National Committee Against Discrimination in Housing, Inc. 1970.

Furnishing the City. By Harold Lewis Malt. New York: McGraw-Hill Inc., 1970. 242 pp. \$16.50.

Man and His Environment. By Don R. Arthur. New York: American Elsevier Publishing Co., Inc. 214 pp. \$8.50.

The Lighting of Buildings. By R.G. Hopkinson and J.D. Kay. New York: Frederick A. Praeger, 1969. 313 pp. \$10.

People Space. By Melita Rodeck and Mary-Averett Seeley. Washington D.C.: American Association of University Women, 1969. 43 pp. 75 cents (pamphlet).

Playgrounds for City Children. By M. Paul Friedberg. Washington, D.C.: Association for Childhood Education International. 56 pp. \$1.50. Room Outside. A New Approach to Garden Design. By John Brookes New York: The Viking Press Inc., 1970. 449 pp. \$6.95.

#### Practice

A Handbook for Measurement & Evaluation in Design Education. By the Educational Testing Service for The American Institute of Architects, Washington, D.C., 1969.

Modus Operandi. Architect's Comprehensive Services. Dept. of Architecture, Texas A&M University, 1970.38 pp.

**Network Analysis.** Applications to the Building Industry. By Peter A. Lomax. London: The English Universities Press Ltd., 1969.

What is a Designer: Education and Practice. By Norman Potter. New York: Van Nostrand Reinhold Co., 1969. 95 pp.

Opportunities in Industrial Design. By Arthur J. Pulos. New York: Universal Publishing and Distributing Corp., 1970. 160 pp. (paperback).

(Round-up continued next month)

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Robert Tolkan is a fictitious name, but it's a fact that almost half the women today prefer tampons. And half still use napkins. That's why it's a good deal for the gals when you specify built-in *dual-vend* dispensers. Bobrick Dispensers, Inc. makes some beauties. We'll be happy to send you a free catalogue. Or see Bobrick, in Sweet's.



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## "Details from the Industry"





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## In February 1971...

PROGRESSIVE ARCHITECTURE initiates a new architecturally informative section — "Details from the Industry." Four times a year, this section will feature details of buildings featured in a select group of advertisements in the issue. These pages will be designed for easy removal for filing under the Uniform Filing System adopted by the AIA, CSI and Producers' Council.

Continuing research among readers attests to their high regard and use of P/A's 'Selected Details' that are staff selected, edited, and drafted. The new 'Details from the Industry' section is designed to further satisfy your need for this type of presentation.

Look for "Details from the Industry" in the February issue of **PROGRESSIVE ARCHITECTURE** 

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**LOWER INITIAL COST** — less than identical carpet plus separate underlayment, or foam or rubber backed carpet with equal pile specifications.

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EASY WHEEL AND CASTER MOBILITY — with standard contract pile construction, no mushiness to bog down carts, mobile equipment, secretarial chairs.

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Write for Architectural Guide Specification Prepared by William E. Lunt, Jr., C. S. I.

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### ZONING REBUILDS THE THEATER

#### (Continued from page 78)

theater plan, and a tax rebate could be determined during the construction phase. Whatever the uncertainties in this suggestion, it would expedite initial construction.

Richard Weinstein believes that "There should be an agency of the city that is staffed with professional lawyers, financiers and others who are conversant with the theater's complicated world of legal and financial relationships. We need professionals who are sophisticated enough to deal with the problems that inevitably arise between developers. owners, technicians and so on. We should ensure that the continuity of this professional agency's gained experience is not lost every four years so that the public can get the maximum benefit.

#### What Happens Elsewhere

Although there are major theater projects in the works throughout the country, nowhere else is such incentive zoning being applied. However, some thought is being given to its possibilities by San Diego, Rochester, Chicago and Boston, all of which have made inquiries about New York's amendment.

In San Francisco where three projects are under study — Embarcadero, Yerba Buena and the Civic Center — and in Miami, Chicago and Los Angeles, incentive zoning opportunities should be considered now. Nor should incentive zoning practices to achieve cultural and environmental pluses be confined to cities only. Many suburban communities, not possessing enough money for cultural centers, could also tie them into down-zoning deals with developers.

As planner Weinstein states, "This program may ultimately result in the building of 30 theaters in the next few years, or a sum of between 150 and 250 million dollars. That is a big subsidy for theater in New York City. The lesson is that when the economy is heathy, the city can benefit enormously merely by damming the flow of money a little bit. By hardly turning around, New York City produced a sum of about \$15 million for the arts in about a year and a half. We must look at that procedure and see if it can be used for the public benefit more generally by a cooperative act of zoning by the city and the private sector."

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# Just say Grace.

Plywood design collection:



Usdan Center for the Arts, Huntington, New York.

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Structural engineers: Lev Zetlin & Associates.

Contractor: Reema Construction Co.



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#### SITUATIONS WANTED

ARCHITECT—Age 30, happily married, California registration, six years diversified experience all phases commercial, residential, and educational buildings; intense interests in design, delineation, and graphics desires employment with conscientious productive architectural office in Europe or Great Britain, beginning or after February, 1971. Resume and slides on request. Box #1361-168, PROGRESSIVE ARCHITECTURE.

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ARCHITECT—Specializing in specifications. Registered. Prefer medium size office, California. Competent in all phases, types of specifications; commercial federal, military; maintenance of standard specifications. Possible collateral areas; office administration, contract administration, on-the-board. Reply Box #1361-172, PROGRESSIVE ARCHI-TECTURE.

ARCHITECT-DESIGNER—NCARB, 40, fam-ily, Illinois graduate. Fourteen years diversified, comprehensive experience, all phases of practice. Organizational ability. Desire position (with partnership potential) directing design and production in ethical, progressive, medium to small firm interested in producing best contemporary architec-ture. Prefer Rock Mountain area, will consider others. Box #1361-171, PROGRESSIVE ARCHITECTURE.

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