

VISUAL DRAMA WITH GLASS





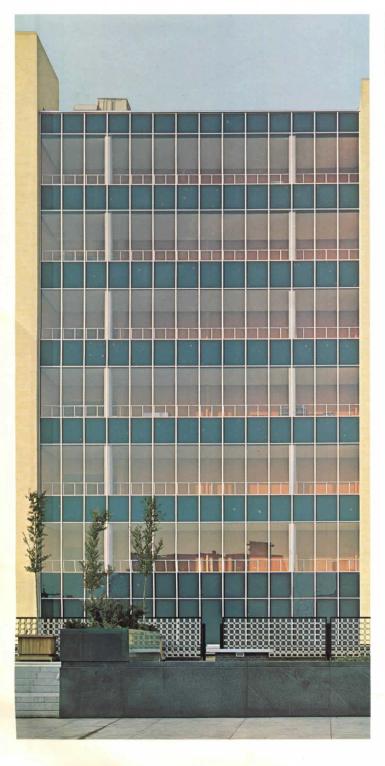


THE DRAMATIC IMPACT OF GLASS ...

as a basic architectural material is graphically demonstrated in the two illustrations below. The building <u>is</u> the same . . . it's part of the new facade of the Eastman Kodak Camera Works which overlooks a plaza adjoining the company's administrative headquarters in Rochester, New York. These "day" and "night" photographs clearly show how Glass sets the stage for expression of varied architectural moods . . . even in the <u>same</u> building. Here the <u>expansive</u> use of Glass, for spandrel panels as well as floor-to-ceiling vision areas, provides a uniquely reflective and colorful facade during the day. By night the contrast of transparency and opacity between vision and spandrel areas suggests an entirely different design effect. PPG products shown—Vision areas: PREMIUM PENNVERNON® Sheet Glass. Spandrels: Blue SPANDRELITE® Glass.

For detailed information on PPG Products described here, consult Sweets Architectural Catalog File, Sections 7a, 3a and 3e.

Eastman Kodak Company, Rochester, N. Y. Architect: Eastman Kodak Company





AN OUTDOOR FEELING WITH INDOOR PROTECTION...

is provided with Glass in this Fox Chapel Area High School recently completed in Allegheny County, Pa. Here again the extensive use of Glass results in distinctive contrasts of mood from day to night. In this building, however, Glass serves another purpose as well . . . that of insuring comfortable swimming no matter what the weather. To overcome the seasonal climatic changes of the school's northerly location, gray-tinted sheet glass and double-glazed insulating glass units were combined in the window walls to reduce sun-glare in the summer and minimize heat-loss in the winter. PPG products used here include—Vision areas: SOLARGRAY® Heat-Absorbing Plate Glass, PENNVERNON® GRAYLITE Glare-reducing Glass, TWINDOW® Insulating Glass. Other Glass: Opaque SPANDRELITE® Glass.

For detailed information on PPG Products described here, consult Sweets Architectural Catalog File, Sections 7a, 3a and 3e. Fox Chapel Area High School, Allegheny County, Pa. Architect: Hunter, Campbell & Rea, Altoona, Pa.







AN IMAGINATIVE SUN SCREEN DESIGN ...

employs PPG PENNVERNON® GRAYLITE™ "56" glare-reducing glass to effect a striking yet economical solution to environmental control in this Temple University dormitory. Used in conjunction with GRAYLITE Glass in all vision areas, the screen also serves as a strong architectural element. The cantilevered, 10-story screen projects 6 feet beyond the curtain wall proper to shield the entire western facade from the afternoon sun's direct rays. Since GRAYLITE "56" transmits only 56% of the visible light, interiors are virtually glare-free. The reflective qualities of GRAYLITE Glare-reducing Glass assure an unusual degree of privacy for the occupants while at the same time affording the psychological benefits of extension and space perception. GRAYLITE Tinted Glass is available in 5 densities providing a visible light transmittance range of from 14-61%.

For detailed information on Pennvernon Graylite "56" described here, consult Sweets Architectural Catalog File, Section 7a Temple University, Philadelphia, Pennsylvania Architect: Nolen, Swinburne & Associates, Philadelphia



NEW! LHR SOLARGRAY® TWINDOW®...

(Upper photo) In this new building for the Parke, Davis & Company Surgical Dressings Division, Greenwood, S. C., a special metallic LHR (Light and Heat Reflecting) Coating, fired onto SOLARGRAY Plate Glass, provides effective control of solar glare and heat gain. Here the LHR Coated SOLARGRAY Plate Glass has been combined with TWINDOW Insulating Glass to minimize winter heat-loss as well. From the exterior the LHR coating adds a distinctive yet subtle reflective quality to the facade.

SOLARGRAY® HEAT-ABSORBING PLATE GLASS...

in 45" x 272" panels adds an unusual mirror-like reflective quality to the design of the suburban bank shown in the lower illustration. Since $\frac{3}{8}$ " SOLARGRAY Plate Glass transmits only 28% of visible solar light, harsh glare from the sun is virtually eliminated. Other window areas are glazed with PPG GRAYLITE "14" Sheet Glass which has a light transmittance factor of 14%. Result: a comfortable, glare-free atmosphere throughout all areas of the structure. The Gold Textured SPANDRELITE Glass adds both tactile and visual interest. Other PPG Products shown below: PITTCO 82-X, 25-X and 900 Series Metal Framing.

Top photo: Parke, Davis & Company, Greenwood, S. C. Engineers and Architects: Lockwood Greene Engineers, Inc., New York, New York

Bottom photo: Bank of Aurora, Aurora, Colorado Architects: Ken White and Associates, Aurora







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For detailed information on PPG Products described here, consult Sweets Architectural Catalog File, Sections 7a, 16a, 16e and 19e. International Headquarters of the General Council of the Assemblies of God, Springfield, Missouri Architects: Eugene F. Johnson & Associates, Inc., Springfield



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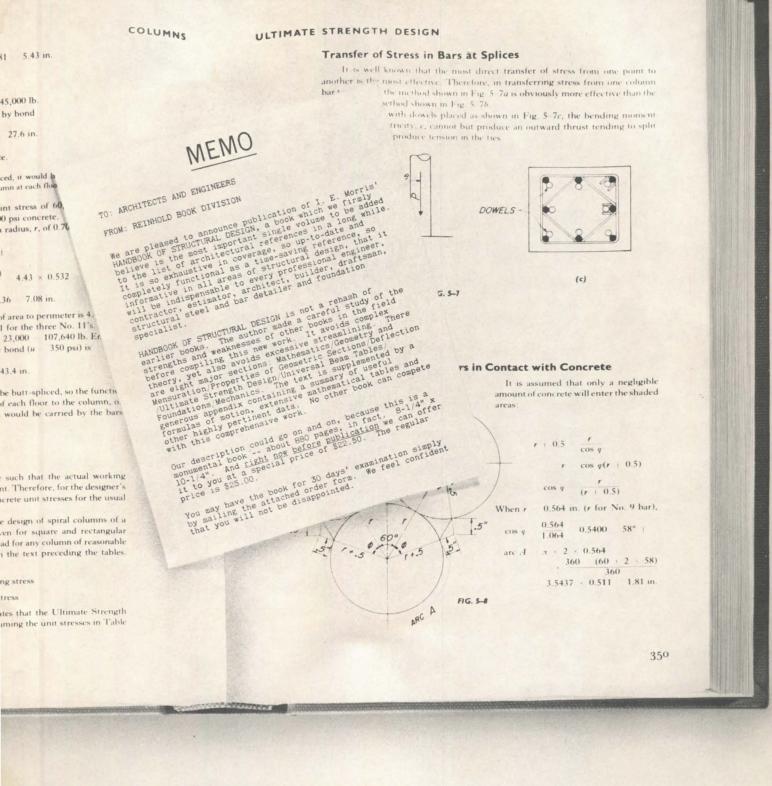


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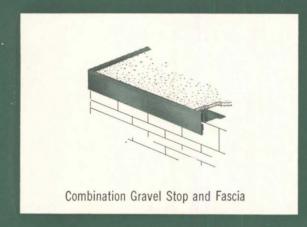
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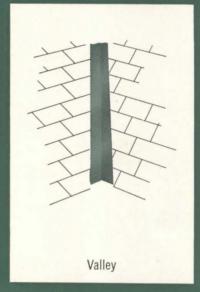
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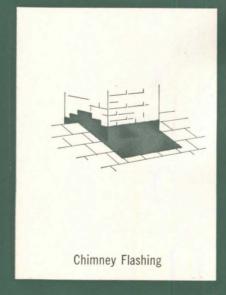
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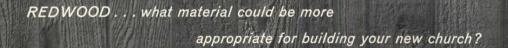






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Architects: Walton and Madden, A.I.A.
Mt. Rainier, Maryland



Vacation Village, island resort in Mission Bay, San Diego, is the work of Spencer and Lee, imaginative San Francisco architects. First view startles like a scene from ancient Xanadu: everywhere are long copper green poles, kiosks, bright colors and pennants flying. ★ The structural concept sprang from necessity: on filled land, driven poles offered the practical solution to foundation problems, and above ground became the load bearing supports. ★ J. H. Baxter & Co. supplied the BAXCO Chemonited poles, pressure treated for permanence. ★ BAXCO pressure treated wood was also used in three installations featured in this issue of P/A: about 100,000 b.f. of BAXCO fire retardant lumber and plywood went into the Cabrillo Community College; the Pole-Type Harang Residence was built with Chemonited poles, girders, subfloors; J. H. Baxter & Co. supplied all the Chemonited poles for the hillside homes in the Marin City Redevelopment Project. ★ Write for our brochures detailing many recent BAXCO Pole-Type and fire retardant wood installations.

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Mechanical Engineers: van Zelm, Haywood & Shadford West Hartford, Conn.

Mechanical Contractors: Buckingham-Routh, New Haven, Conn.



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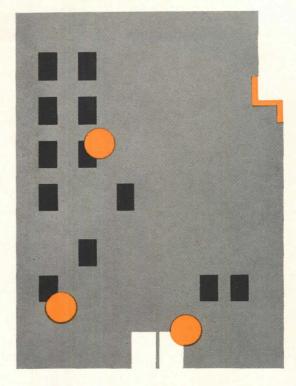
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3 LEHIGH CEMENTS USED

Acme Concrete Corp. used Lehigh Portland Cement in the ready mixed concrete. They used Lehigh Early Strength Cement for maximum production efficiency in the manufacture of the masonry units. And Cook & Pruitt, masonry contractor, used Lehigh Mortar Cement to lay up the masonry units. Lehigh Portland Cement Company, Allentown, Pa.



Owner—Robert A. Rautbord and Robert L. Blum, Chicago, Ill.

Architects—Fridstein & Fitch, Chicago, Ill., and Melvin Grossman,

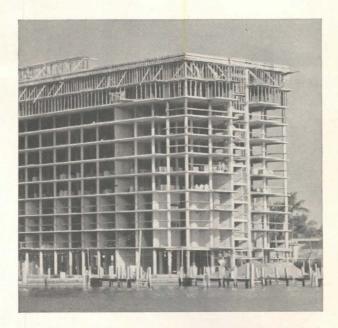
A.I.A., Miami Beach, Fla.

Contractor—Robert L. Turchin, Inc., Miami Beach, Fla.

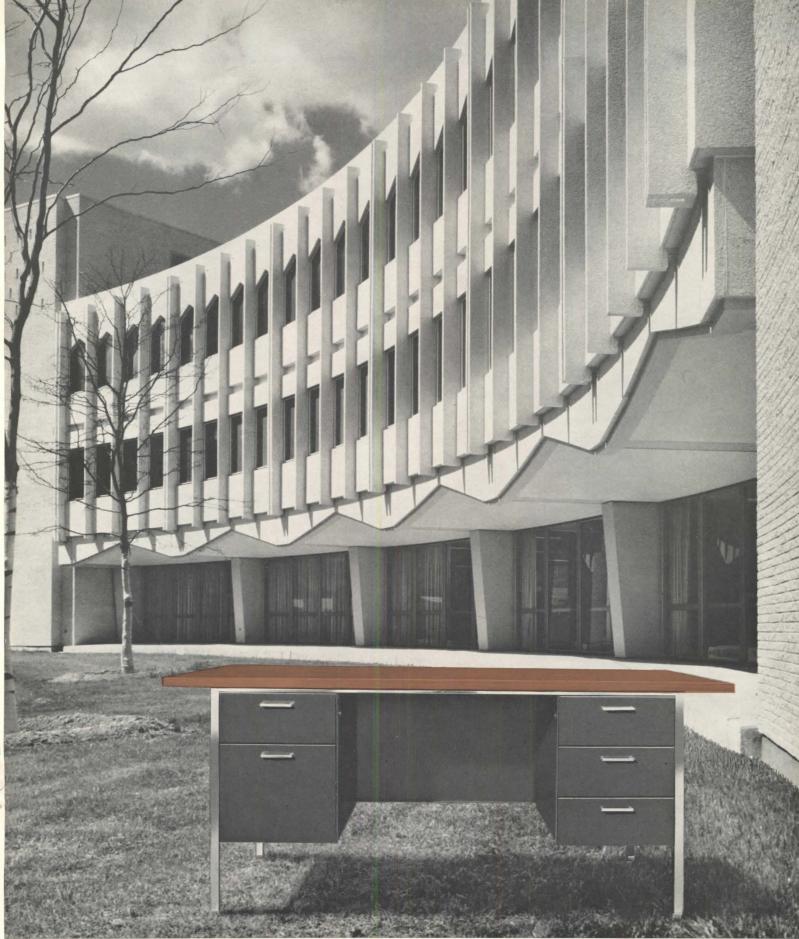
Masonry Contractor—Cook & Pruitt Masonry Contractors, Inc.,

Concrete Masonry Units and R/M Concrete—Acme Concrete Corp., Hialeah, Fla.

The King Cole was completed last fall. This photo clearly shows the variety of attractive architectural effects that have been accomplished with concrete.



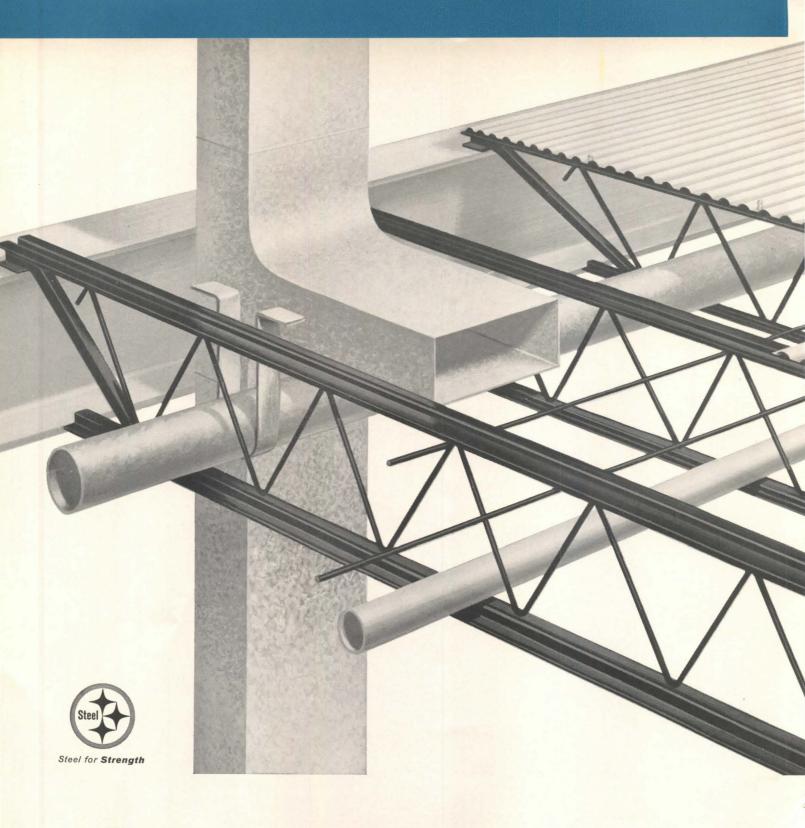
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U.S. Central Post Office, Houston, Texas. Architect: Wilson, Morris, Crain & Anderson. General Contractor: C. H. Leavell & Company,

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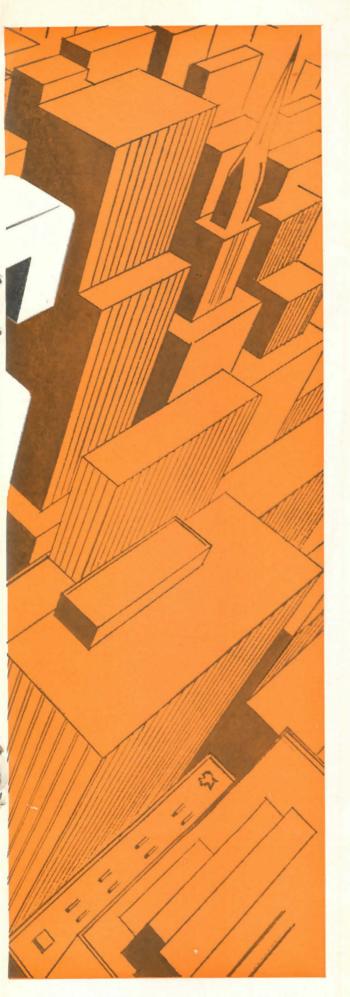
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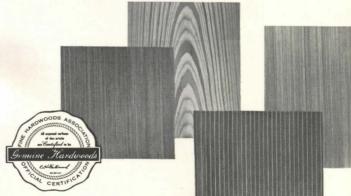




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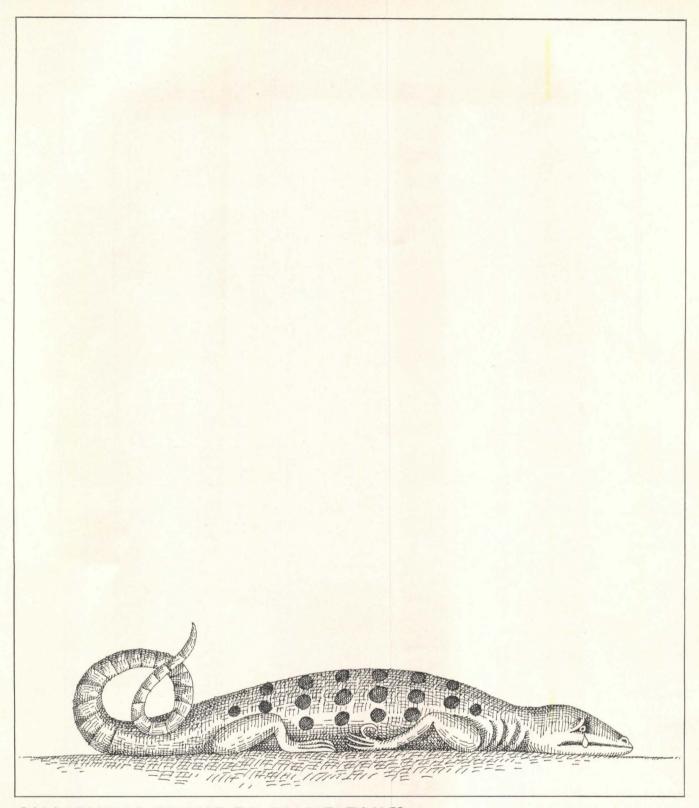
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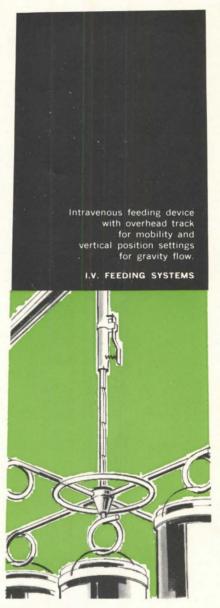


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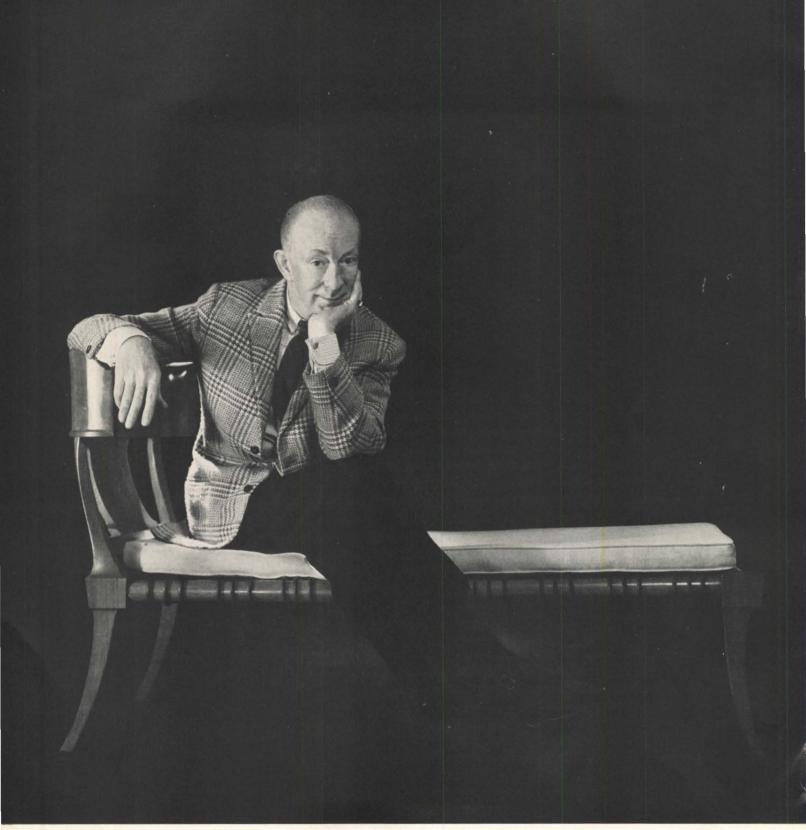




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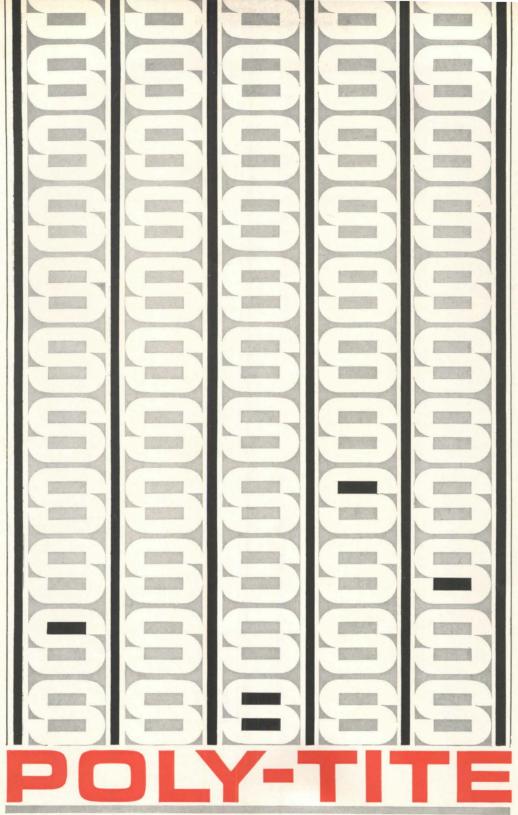
"WOOD...IS THERE ANYTHING ELSE," asks Robsjohn-Gibbings

A solicited testimonial from one of the Masters, Mr. Robsjohn-Gibbings, shown here seated on a couch he designed for Sardis of Athens. And if the truth be known, there is really nothing quite like the enduring charm of hardwood...warm, responsive, vital, timeless. From avodire to zebrawood, walnut to yew, nothing quite surpasses the natural beauty and infinite delight of fine hardwoods. And the touch of time never detracts, only enhances. This expression is echoed by most designers and specifiers. May we proffer a prediction? Your next project will be that much more successful with hardwood.

SPECIAL BULLETIN ON NEW YORK WORLD'S FAIR, 1964-65: Over 600 students from 59 schools and universities have already entered the Furniture Design Competition sponsored jointly by Fine Hardwoods Association and the Pavilion of American Interiors. Winning designs will be shown at the Fair in the Fine Hardwoods Association exhibit in the Pavilion of American Interiors. Inquiries from senior and graduate student designers are invited. Entries must be in by August 1, 1963.

FINE HARDWOODS ASSOCIATION / 666 LAKE SHORE DRIVE, CHICAGO

For more information, turn to Reader Service card, circle No. 326

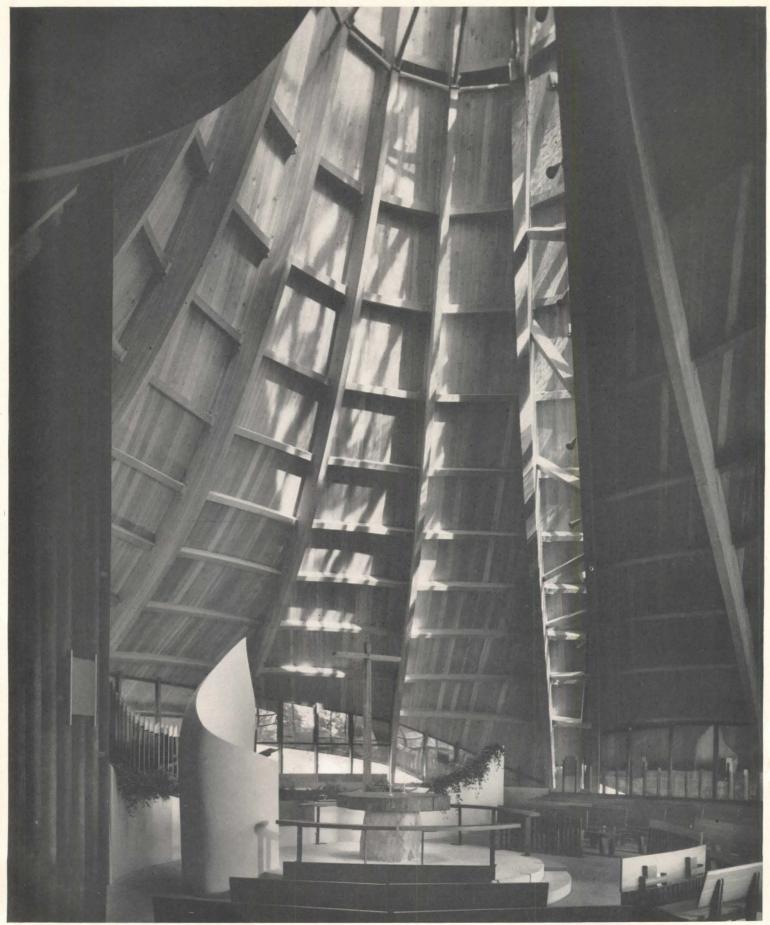


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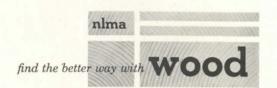


Wood creates a livable living room for a movie set with paneled walls, planked ceiling, posts, beams, and spindle-railing stairway. Note wood's warmth in both high and low ceiling areas. Decorator: Shirley Ritts.

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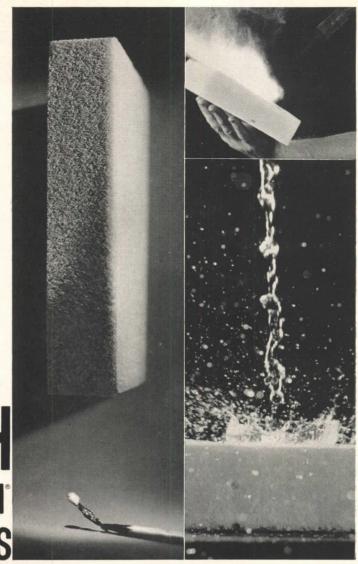




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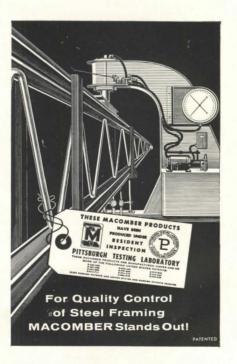
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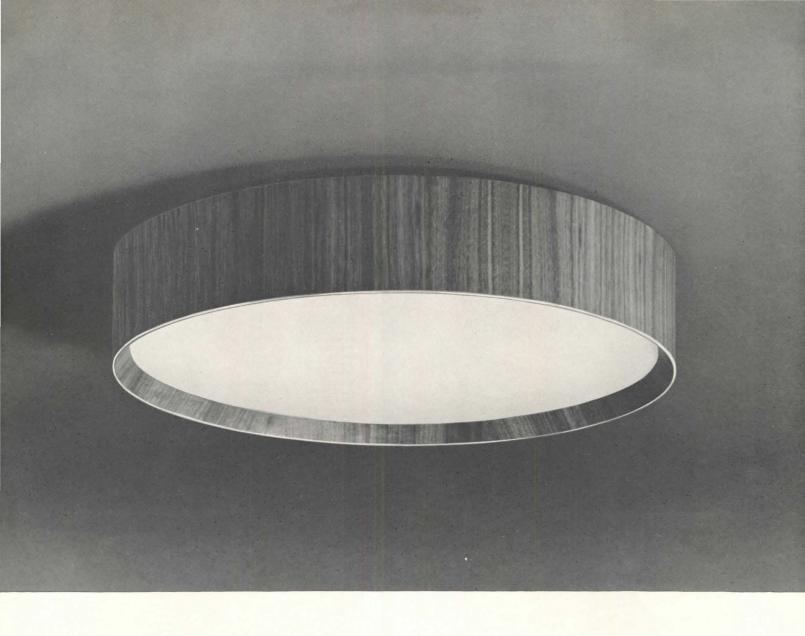
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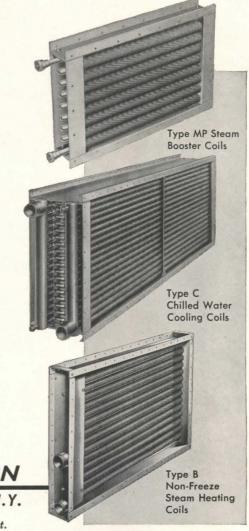
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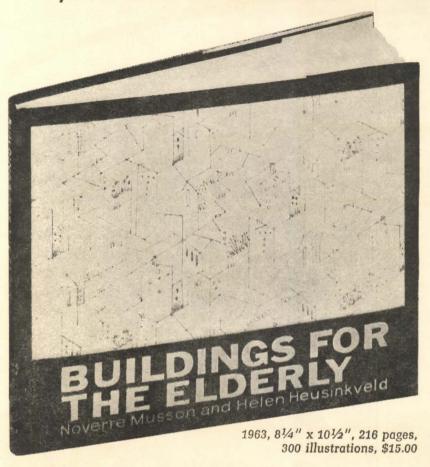
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A NEW AWARENESS of the increasing number of elderly people in this country has created the need for this authoritative survey of the housing requirements of a group which now constitutes almost 10% of the total U.S. Population. Buildings for the Elderly cuts across lines of economic status, and examines the many and varied shelter problems of the growing numbers of elderly people.

The book is designed to inform, and to stimulate fresh ideas among architects and builders. It shows how factors which are primarily architectural grow out of the financial, sociological, and philosophic problems which confront the potential builder of housing for advanced age groups. This study examines such questions as who should build, what should be built and where, and how much the proposed project will cost to build and run. Careful treatment is given such considerations as group size and size of the proposed unit, programs, integration with the community, inclusion and amount of nursing facilities, and the handling of psychiatric problems. About half the book is composed of photographs, plans and drawings of existing and projected homes in all parts of the country with complete data on each including costs, facilities and services provided, materials of construction, site development and other pertinent specific information. Buildings for the Elderly is the first major attempt to probe into the architectural aspect of a serious sociological problem which has become a matter for more than cursory concern.

BUILDINGS FOR THE **ELDERLY**

by Noverre Musson, A.I.A. and Helen Heusinkveld



ABOUT THE AUTHORS

NOVERRE MUSSON has practiced architecture for 17 years as a member of the firm Tibbals-Crumley-Musson in Columbus, Ohio. He is a one time member of the Frank Lloyd Wright Taliesin Fellowship. Mr. Musson has a unique background as a journalist as well. He has lectured and been author of many articles which have prompted the public to take greater interest in architectural projects of many kinds.

HELEN HEUSINKVELD is a member of The National Council on Aging, and was a participant in the 1960 White House Conference on Aging. She did extensive research for this book in Norway, Sweden, Denmark, Finland, Holland and England as well as in this country.

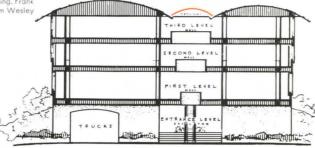
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A scaring arch of Plexiglas admits natural light into mall areas of the Marin County Civic Center building. Frank lloyd Wright, Architect; Taliesin Associated Architects of the Frank lloyd Wright Foundation: William Wesley Peters, Chief Architect; Aaron G. Green, AlA, Architect Associated.

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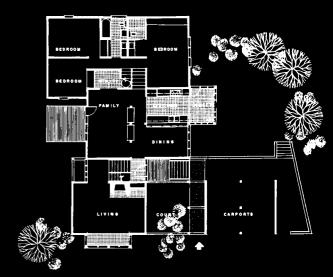




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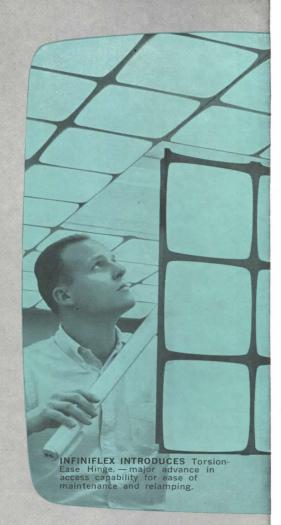
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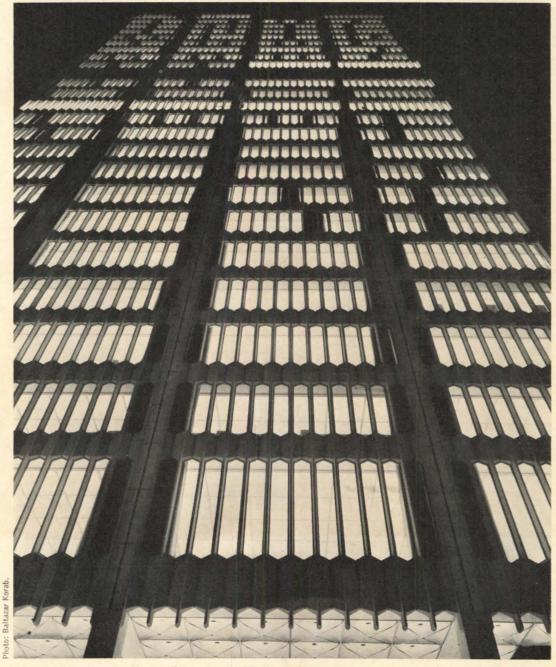
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PROGRESSIVE ARCHITECTURE JUNE 1963

NEWS REPORT

Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products



Night view of Yamasaki's gas building emphasizes its hexagonal window feature.

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YAMA'S HIGH-RISE OPENS IN DETROIT

DETROIT, MICHIGAN One of the most closely followed high-rise buildings since the Seagram Building, Yamasaki's Michigan Consolidated Gas Building, has opened here. Designed with Smith, Hinchman & Grylls Associates as Associate Architect, the building forms a delicate ornament amid the somewhat stodgy, unimaginative structures of Detroit's Civic Center. The façade is distinguished by the repetition of hexagonal, floorto-ceiling windows framed in a curtain-wall system of precast, prestressed, white concrete-white quartz aggregate panels. The units, prefabricated in a double-spandrel, doublemullion increment, are individually bolted to the steel frame, which, incidentally, is said to be the largest allelectrically-welded steel frame in the world. Notable in the technology of the building is the floor system (p. 103, SEPTEMBER 1961 P/A) which integrates electrical and telephone wiring, piping, luminous ceiling, and air circulation for peripheral heating and cooling into one remarkably thin structural floor-ceiling system. (Thinness was aided by the all-welded frame.) Atop Michigan Gas is the luxury restaurant that seems to be obligatory for major office structures these days. "Top of the Flame," as it is called, has interior decoration reputedly creating "an enchanting corner of Thailand."

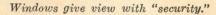
The building has the advantage, not shared by Pan Am and others, of being able to be perceived as a *whole*, rather than as a fragmented series of parts. The amenities, such as foreground pools, greenery, and sculpture, which should be requisite for such a city as Detroit (indeed, for any city) are provided here for pleasing effect.

After a visit to the building, P/A Editor Jan C. Rowan, while admiring many of its qualities, reported that the "delight" in the all-white marble and stainless-steel lobby seems somewhat overdone: contending for attention are a lacy metal and plastic ceiling, neo-Victorian mullions for the glass walls, heavily veined marble floor with intricate pattern lost among the veining, and a reception desk that looks "like a leftover from the Dharan airport." The space, he notes, leaves one with the feeling of an eccentric operating room.

Another point of curiosity: one wonders how the brilliant white panels of the building will stand up in the corrosive industrial atmosphere of Detroit (it had to be cleaned before its opening).









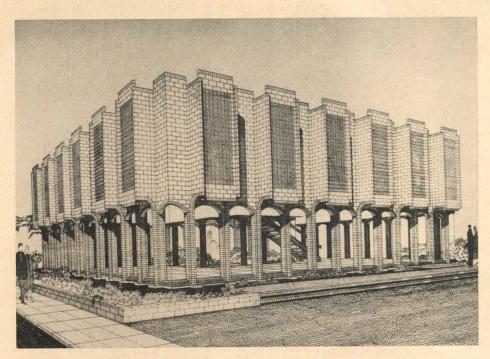
Lobby has many elements of "delight."



Brick Structure for Brick Company

SEATTLE, WASHINGTON The original proposal by Bystrom & Greco for the offices and warehouse of the Builders Brick Company here was a design making ingenious use of the client's product. Unfortunately, budgetary limitations have since dictated a less ambitious program.

The initial design provided for a building whose brick-arched and glazed first floor contained display areas, reception space, sales offices, and a lunchroom. The second floor, harboring business offices and a conference room, had an interesting exterior wall treatment consisting of brick arches behind brick sunscreens. A two-story-high courtyard brought light to the interior of the structure, and the warehouse was at the rear of the sales-office building. A system of prestressed brick girders was developed for the warehouse. Interior partitions of the office building were also of brick.



BELOW-GROUND EDUCATIONAL CONFERENCES

NEW YORK, N.Y. The new building for the School of Education on New York University's Washington Square campus, by Perkins & Will, will have a flexible conference center located on two below-grade levels and surrounded by an open area. The center will be divisible into a number of sizes, both horizontally and vertically. An operable floor will effect the horizontal division, and various space dividers will function vertically. The area will accommodate gatherings up to 300.

On the roof, there will be a lounge for formal and informal gatherings of faculty and alumni, plus landscaped terraces. Administrative offices will be split between the first and top floors, with the Dean's offices on the lower floor. Emphasis will be placed on close co-operation between the faculty and students, with areas being provided for meeting and exhibit rooms where the two groups can congregate. Research and services areas will include school-plant planning, school environment laboratories, new teaching methods, audio-visual aids, community education, and curriculum laboratory. There will be 11 seminar rooms, an Office of Graduate Studies, > and a headquarters for students involved in practice teaching. Plans include an Education Hall of Fame, for various areas of the building.





1963 AIA CONVENTION DIARY

Sunday, May 5. First portent of things to come architecturally was flying into Miami's immense, landlordgreen International Airport, a building that should satisfy Robert Kennedy's propensity for 50-mile hikes. En route to the Americana Hotel, the panorama of Miami Beach architecture unfolded in all its Disneyland glory. To the first-time viewer-such as this writer —the effect was stunning (in the same way an ox is stunned at a Chicago slaughterhouse). After check-in and a quick Martini to calm the nerves, a pilgrimage was made to that Valhalla of resort design, the Fontainebleau (or Fountain-blue). A convention of orthodontists, bedecked in Harry Truman shirts, was having a luau there, and they looked right at home.

Monday, May 6. Convention officially opened by President Henry Wright. R. S. Reynolds Memorial Award was presented to Hans Maurer of Munich (p. 68, May 1963 P/A), and the Library Buildings and Homes for Better Living awards were distributed. Social highlight was the President's Reception in the Starlight Patio, an event accomplished, as far as is known, without a single overexuberant conventioneer falling into the swimming pool.

Tuesday, May 7. Annual business sessions occupied most of the day. A group of architects-mainly from California-were discouraged when their proposal to allow membership to foreign architects practicing in the United States was tabled. Nominations for 1964 AIA offices were announced, the only two contested offices being Second Vice-President (Wayne S. Hertzka and William J. Bachman) and Treasurer (Raymond S. Kastendieck and Robert F. Hastings). In the evening, local architects entertained visitors at cocktail parties in their homes. Those lucky enough to draw the Morris Lapidus party (including this writer) saw what the designer of the Fontainebleau and the Americana could do in the absence of the restraining hand of the client. During a tour of the apartment, Mrs. Lapidus indicated two Picasso drawings on the bedroom wall. "He's the only other artist Mr. Lapidus will allow in the house," she said.

Wednesday, May 8. Professional

program of the convention, "The Quest for Quality in Architecture" (in cart-before-the-horse fashion, last year's topic was "Expanded Services"), opened with Robert Anshen, Paul Rudolph, Sir Basil Spence, and anthropologist Dr. Edward T. Hall examining the question, "What is Quality?" The emphasis of the architect panelists was generally on what quality isn't, and why. Rudolph described the "expanded" architect, with "multitudinous expanded services, expanded office force, expanded office space, and expanded waistline," and suggested that a return to original design work with the pencil may pay off. Dr. Hall viewed the problem from the point of view of his discipline, noting that architects and anthropologists "share a common interest and commitment—the creation and use of spaces." His talk was one of the most appreciated at the convention. The inevitable happened during the question-and-answer period, when Miami Beach architecture came in for its first knocks. Describing the Americana, Anshen said, "This hotel is built of thin, cheap, improbable materials. It is incompetent, uncomfortable, and a monument to vulgarity." Most other panelists concurred, though in softer terms. Replying from the floor, Morris Lapidus said that the hotel was designed for people who come here for fun. "Yes, it is a cheap hotel," he said, ". . . but there is also the quality of human emotion. People want architecture to give them pleasure. They want human comfort, satisfaction, and warmth." Tempers were soothed in the evening by a splendid party given for everyone by the host chapter at Hialeah Park. Many architects agreed that the space on the great lawn of the Park created by royal palms and topped by a tropical night sky made the most delightful "architectural statement" of the week.

Thursday, May 9. "What (and Who) Influences Quality?" was the question confronting Niklaus Pevsner, George McCue, and Karel Yasko in the morning session. Pevsner bemoaned the division, or lack of creative communication, between architect and client. McCue, art critic of the St. Louis Post Dispatch, pinned the responsibility for good or bad design and planning

squarely on the architect. "If the architect does not educate the public in architecture, through every means at his disposal, then who else is available and qualified to do it?" he asked. Yasko, new Assistant Commissioner of Design and Construction for GSA. also emphasized the architect's basic responsibility, and said that his department will throw the ball to the profession whenever possible. (It is to be hoped that this does not presage a lack of thoughtful leadership on the part of GSA.) In the final panel session, Ada Louise Huxtable, John Johansen, and Wallace K. Harrison examined "The Attainment of Quality." Mrs. Huxtable found very little to indicate an attainment of quality in today's architecture. We have been betrayed by technology and economics, she said-two forces that were supposed to aid us. Shoddy products and processes and careless architects have produced "trick-ortreat architecture." "In this hideous evolution, the art of architecture has died," she said. "It lives only in the hands of its few most talented, dedicated, persuasive, and sometimes belligerent practitioners—for those are the qualities required of the architect of principle today." It was interesting to note that the most popular and interesting papers of the convention were given by the non-architects: Huxtable, McCue, Hall, and Pevsner. Cornell's Burnham Kelly made an urbane and knowledgeable moderator.

Thursday evening's annual dinner marked the end of the 95th convention. Alvar Aalto was presented with the Gold Medal and made a graceful, modest little speech. The new Fellows were invested, each to the accompaniment of a theatrical drum roll that caused Paolo Soleri to remark, "Look, they do it all without nets!" The gavel was turned over by Wright to incoming president J. Roy Carroll, and his cabinet was revealed. The only surprise was the election of Robert F. Hastings as treasurer instead of the official candidate.

It was a good convention; one only hopes, as usual, that some of the high ideals espoused will be followed by some of the espousers.

Oh yes, everyone had a little fun in the sun, too.

Tallest Yet for City of London

LONDON, ENGLAND London's burgeoning family of high-rise buildings will have another member when plans go through for the 35-story building for The British Petroleum Company, Ltd., by Joseph, Milton, Cashmore & Partners. According to the developers, the site at present is "a sad area of gaping, weed-grown cellars and rubble where only the birds seem at home, surprised, perhaps to find shelter in the city." The proposed petroleum building here will be joined, eventually, by a new building of the Mercantile and General Re-Insurance Company, and an 11-story building "known so far as RU17."

Public park and plaza facilities will occupy more than an acre of the B.P. site. The building will be of reinforced concrete, with projecting columns sheathed in stainless steel. Spandrels will be solar glass painted on the back.

Releases say the building will contain "all the elements necessary for the headquarters of an international oil company, but not extravagantly finished." No mention of what will happen to the birds.



Municipal Development for Space-Center Town

HUNTSVILLE, ALA. In a region noted in the past for its eclectic-Grecian civic architecture, this city has come forward with a strong design for its municipal buildings. A state not notable recently for progress on all fronts, Alabama does have one of the pioneering NASA installations at the Redstone Arsenal in Huntsville. Perhaps as a result of this forward-looking facility, the city's civic buildings will be among the most interesting for their size in the U.S.

The complex, designed by Huntsville architect W. R. Dickson & Associates, will include an 8-story administrative building, city council hall, public safety building, and city recorder court. The whole design will be tied together by a civic plaza adjacent to the central business district. Big Spring, a local ornament, forms a lagoon under a bluff on which the public plaza will sit.

Emphasis will be given the columnar structural system of the main buildings through exterior expression of the structural elements plus vertically-lined native marbles.



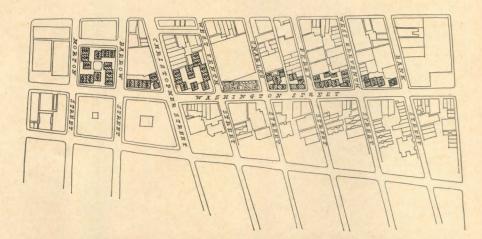
"Not a Single Sparrow ..."

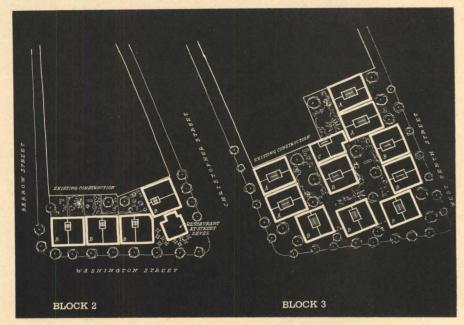
NEW YORK, N.Y. According to the housing proposal of the West Village Committee: "Not a single person—not a single sparrow—shall be displaced." By contrast, the city's redevelopment plan (dropped 15 months ago) would have displaced not only most of the sparrow population but many of the area's non-feathered residents as well. "Excellent structures would have been leveled. Most businesses would have been wiped out. A neighborhood would have been destroyed."

Many will recall the struggle waged early last year by the Committee to Save the West Village, then under the leadership of Jane Jacobs. Their protest was a success, and the 14-block area was taken off the renewal list. The group then proceeded to shorten its name, hired Perkins & Will, and began making good on its promise to Mayor Wagner "to devise, as a public example, a practical means of adding harmonious planned housing *into* an existing community without any sacrifice of the people already there."

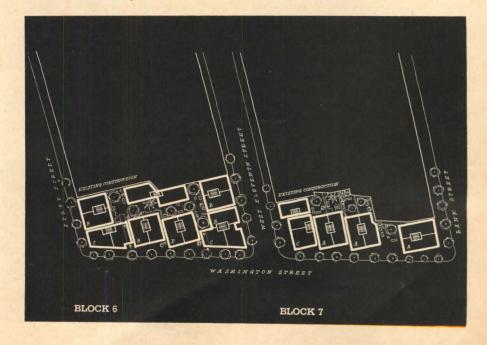
Under the new proposal, no residential demolition or relocation would be necessary: the land is presently vacant, with its former railroad tracks now dismantled. For an estimated \$8.5 million, 475 dwelling units would be added to the community. (The city's plan would have added only 300 units, for \$30 million!) Three factors are cited as responsible for the economy of the West Village plan: (1) virtually all square footage is used for living space, with little spent on circulation; (2) all land is used, either for buildings or for pleasantly scaled gardens and courts; and (3) construction is relatively inexpensive, since there are no high-rise buildings. There are three variations of the 5story walk-ups, which can be combined on plots of varied size and shape. Mixed land usage is planned, since it is "fundamental to the vitality, interest, safety, and convenience" of the area. The new housing, in short, would be integrated into the scale and texture of its surroundings, "enhancing, instead of disrupting, a highly successful and beloved neighborhood.'

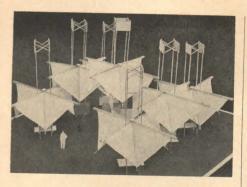
Many aspects of the proposal are refreshing—not the least of these is the determination of a neighborhood to have a say in its own future; and the care with which the plan balances the appropriate with the feasible. The plan is being considered by a private sponsor who would provide 10% of the costs to the state's 90%.





Three apartment types, each a 5-story walk-up, are combined in various ways on different blocks. Project was directed by Raymond Matz of Perkins & Will.





Artsy-Crafty Pavilion

Display pavilion of seven steel scaffolding towers supporting wood beam and sheet polyethylene roofs was a project of architectural students at the University of Washington. Designer for the 2400' pavilion was student James J. Sanders. The towers, ranging from 35' to 45', provide backdrops for student paintings, drawings, and small crafts; an open court invites large sculpture.

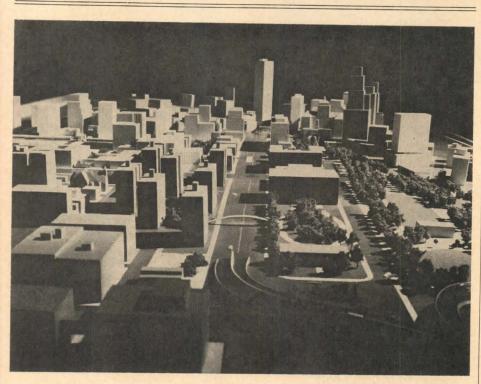
New ACTION Group

Organizational meeting of the newlyformed Urban Redevelopment Division of ACTION, Inc., was held May 2 in Chicago. Objective of the group is "to facilitate effective public and private participation in redevelopment programs." Details can be obtained from ACTION, 2 W. 46 St., New York 36, N.Y.



Boston High Rise

The tallest private office building in downtown Boston has been proposed for a site between the new City Hall and the old State House. The 35-story, Cabot, Cabot & Forbes Tower will be a masonry-sheathed steel frame structure, and will have a 35-ft plaza facing the old State House. It will have its own subway entrance to the State and Devonshire Streets station. Architect is Edward Larrabee Barnes of New York.



A Civic Center Grows in Brooklyn

A proposal for the development of a Downtown Brooklyn Civic Center has been submitted to the City Planning Commission by Olindo Grossi, Dean of the School of Architecture at Pratt Institute, who served as consultant to the City on the project. According to Grossi, Brooklyn needs a town center to act as the focal point for the entire Borough. Recommendations therefore made for the creation of "Borough Hall Square" (in front of the 1849 Borough Hall), to be landscaped with trees, gardens, plazas, and possibly a "Brooklyn Progress Pavilion.'

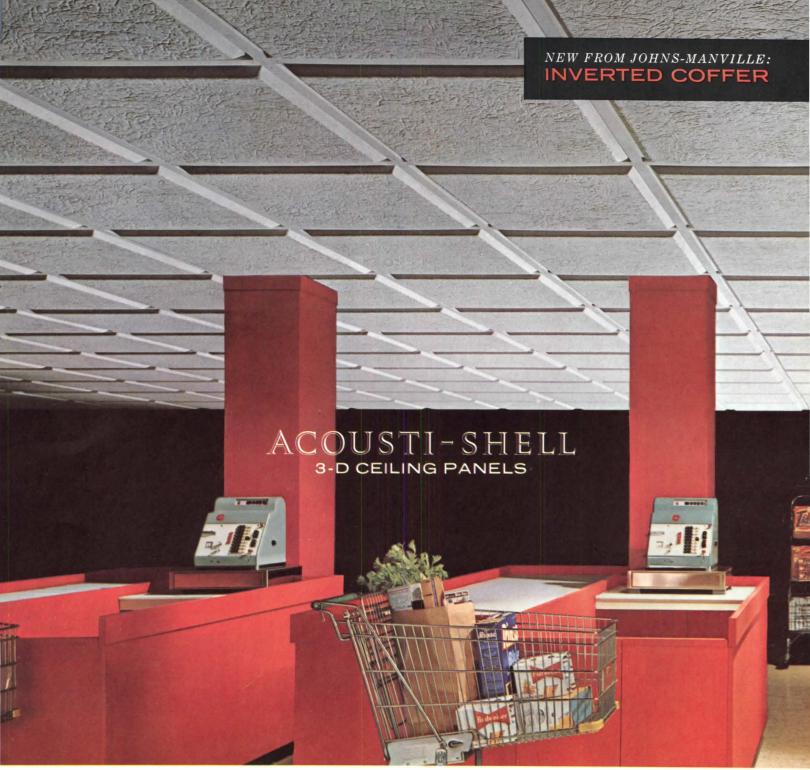
This study succeeds earlier studies and recommendations made in 1914, 1945, and 1952, which have been completed to a large extent (even though many of the buildings are now obsolete), thereby creating opportunities for further development. Grossi's principal findings can be summarized as follows: (1) Now is the ideal time to redevelop downtown Brooklyn within the framework of a realistic and economically feasible plan. (2) Devising modern vehicular traffic patterns should be secondary to creating pedestrian mobility in this "primarily pedestrian-oriented" area. (3) Incorporated in recommendations for the Civic Center are proposals for the development of major new structures and various planning innovations.

Generally, the plan seems a modest, workable one (with the possible exception of such gimcrackery as the "Progress Pavilion"). Architecturally, the area has already suffered the demolition of several interesting older buildings and the erection of a number of quite plain structures.



Fumes at the Top

A portion of Chicago's railroad tracks will be veiled by the first building in Gateway Center. The 20-story office building by Skidmore, Owings & Merrill will be supported over tracks, between Monroe and Madison Streets, by 60' reinforced-concrete belled caissons. Diesel fumes previously dispersed at street level will be drawn through a high-efficiency ventilating continued on page 68



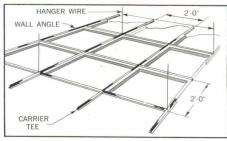
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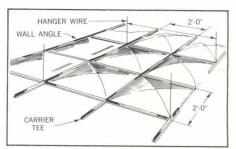
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ANNUAL DESIGN AWARDS PROGRAM

Be sure to look for your copy of PROGRESSIVE ARCHITEC-TURE for July as it will carry the formal announcement of the upcoming Eleventh Annual Design Awards Program for projects now in the design stage to be built in the U.S.A. in 1964.

The July issue will announce the selection of our new jury, the building categories, the date of judgement, and conditions governing the competition.

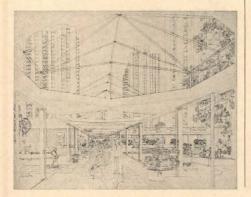
The Editors of P/A hope you will take advantage of the opportunity of presenting the best of your current work with the possibility of having it premiated, with the national publicity this entails.

PROGRESSIVE ARCHITECTURE 430 Park Avenue New York 22, N. Y. continued from page 64

system to the rooftop. Design includes a shopping arcade on the ground floor, and a service core that creates 18' x 45' bays on each office floor. Steel floor beams, 36" deep, will free the bays of columns and permit installation of air-conditioning and mechanical systems between floors. As conventional storage space has been pre-empted by the railroad, a "basement in the attic" places service equipment on the top floor.

Reynolds Redevelopment

Design by Keyes, Lethbridge & Condon, of Washington, D.C., for Presidential Plaza redevelopment in Syracuse, N.Y., provides a variety of dwelling units: 870 in three 30-story towers; 60 in three 10-story towers; and 27 in townhouses. The development, which is a project of Reynolds





Aluminum Service Corp., a subsidiary of Reynolds Metals Company, and Eagan Real Estate, Inc., will also include an office building, recreation center, and supporting commercial facilities. Central feature of Presidential Plaza will be an enclosed, skylighted mall that will link all major areas.

Two-Use Seattle Garage

Proposed parking garage designed by John Graham & Company for the





Weese Redevelopment in Wisconsin

Sampson Plaza is a 5³/₄-acre redevelopment project in Madison, Wisconsin, designed by Harry Weese & Associates of Chicago. Situated on a site overlooking a local park and Monona Bay, almost all units in the project will have views of park and water. Double buildings will be connected by bridges to an entrance tower containing elevator, electrical distribution, waste disposal facilities, and storage areas.

The central, landscaped area of Sampson Plaza will act as an extension of the public park. Parking for 90 per cent of tenant cars will be under cover of buildings; all will be screened by 4-ft retaining walls and terraces. Structure will be concrete-filled steel piles, steel frame, bar joists with metal deck, and concrete fireproofing on columns; exterior will be load-bearing masonry and stuccoed concrete block.

Olympic Western Hotel in Seattle will perform two functions. In addition to accommodating 716 automobiles on 11 levels (two underground), the building will act as the terminal for bus service to the Seattle-Tacoma International Airport. A raised and enclosed bridge will connect the garage with the lobby of the hotel.

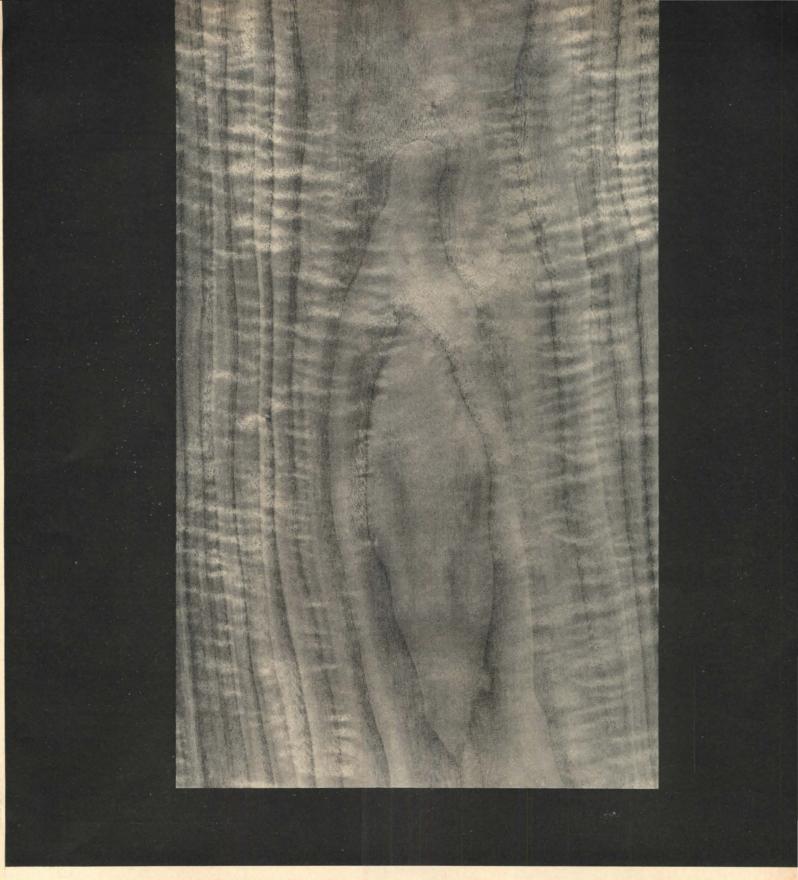


High-Rise Folded Plate

The proposed 20-story United Founders Life Insurance Company Building in Oklahoma City will sport a folded-plate roof design that will be repeated on an adjacent cafeteria. The steel-frame, gray-glass-walled building will have a balcony for each set of offices, and a club on the top floor, featuring views of Lake Hefner and the Oklahoma City skyline. Architect is Hudgins, Thompson, Ball & Associates, Inc.

PERSONALITIES

EDWARD J. ROMIENIEC, formerly Professor of Architecture at Columbia University, will return to Texas A&M, where he once taught, as head of the Division of Architecture . . . Recently elected to the Akademie der Kuenste, Berlin, was LUDWIG K. HILBERSEIMER; the Art Academy's membership includes Ludwig Mies van der Rohe and Walter Gropius . . . During a luncheon given at Harvard on May 18 to commemorate his 80th birthday, WAL-TER GROPIUS, design consultant for the Pan Am Building, labeled criticisms of that structure as "sentimentality and blindness . . . to the changing order of scale and magnitudes in cities" . . . Portland Cement Association scholarships for residential area design utilizing concrete as the principal building material go to students NATHAN S. LEBLANG, Carnegie Institute of Technology; STANLEY L. AN-DERSON, University of Illinois; How-



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ARD R. GARRISS, North Carolina State College; JOE W. JOHNSON, University of Nebraska; and LARRY J. HOSKINS, University of Oklahoma . . . Dean ROBERT BRUCE LINDSAY of Brown University received the Gold Medal of the Acoustical Society of America . . . MITCHEL STERN was re-elected President of the National Association of Architectural Metal Manufacturers . . Winner of the Paris Prize of the National Institute for Architectural Education is THOMAS JON ROSEN-GREN for his design for a "Library in the University for Diplomatic Study"; Rosengren is a University of Illinois architectural student . . . Former President DWIGHT D. EISENHOWER has been named the first recipient of the Benjamin F. Fairless Memorial Medal of American Iron and Steel Institute; the medal has been established to honor "service generally related to preserving economic freedom, human liberty and the strengthening of individual enterprise . . . New dean of the Cooper Union School of Art and Architecture will be ESMOND SHAW . . . The 1963 Copper and Brass Architectural Achievement Award goes to EDWARD DURELL STONE for his use of copper and its alloys in interior and exterior design of the North Carolina State Legislative Building at Raleigh . . . 1963 winner of the Arnold W. Brunner Memorial Prize, awarded by the National Institute of Arts and Letters for promise of contributing to architecture as an art, is EDWARD C. BASSETT, S.O.M. partner.

Sic Transit Gloria Nervi

Reactions of California architects to Nervi's proposals to Kaiser Steel for elevated freeways (p. 70, MAY 1963 P/A) were generally less than enthusiastic. One San Francisco architect reportedly commented, "You used to have to be Wright, but now you only have to be Nervi."

NO BARD AWARD

Searching for civic architecture in New York City that is "functionally sound, aesthetically pleasing, and urbanistically correct," the jury for the first annual Bard Awards Program of the City Club of New York found nothing in the 24 projects submitted to meet the criteria. Vote of the Jury (P/A Editor Jan Rowan; Architects Gordon Bunshaft and Charles Colbert; National Municipal League executive committee chairman Richard S. Childs) was 3-1, with Colbert dissenting. City Club President I.D. Robbins, commenting on the jury decision, said, "There seems little doubt that what we have been getting for our money is not distinguished buildings. What we have is deadly mediocrity. What we want is exalted achievement." In his foreword to the jury report, he wrote, "It is just possible that out of this sad situation great good can derive." Next year, the program, named in honor of the recently deceased civic leader Albert

S. Bard, will examine privately-financed buildings; the year after, civic buildings will again be judged.

COMPETITION

Architects who belong to "a recognized architectural institute or society" have been invited to enter a design competition for the planning of new college buildings and the design of a block containing the Faculty of Arts, Administrative Offices, and Examinations Halls for a new 200acre college near Dublin for University College. Prizes will be £3500, £2000, £1000, and £500. Conditions will be available as of August 1 from the Competition Registrar, University College, Dublin 2, Ireland, for a deposit of £5 (about \$14.00). Last date for returning registration form is October 17; last date for questions is November 1; and last date for receipt of entries is June 1, 1964. Competition has approval of UIA and RIAI.

Design Review for San Francisco

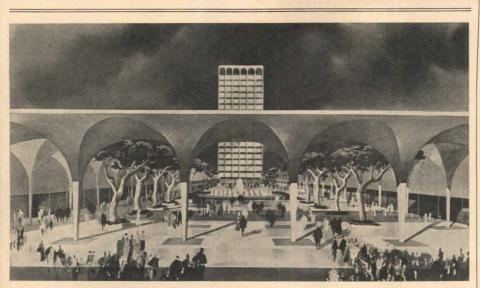
The San Francisco Redevelopment Agency, concerned as always with superior design for its redevelopment areas, has appointed an advisory panel for the architecture, landscaping, and siting of the proposed new St. Mary's Cathedral in the Western Addition. Since it is the agency's policy only to sell land subject to design review, the panel will presumably exert a good deal of influence on the ultimate product. Panelists are Thomas H. Creighton, Editorial Director of P/A and Partner of John Carl Warnecke & Associates; Landscape Architect Thomas Church; and Richard O'Hanlon, professor of art and sculpture at the University of California, Berkeley. Architects announced for the cathedral are Angus McSweeney, Paul A. Ryan, and John Michael Lee.

It Had to Happen

Interior designer Daren Pierce is writing a book on his field entitled, Who's Afraid of Elsie de Wolfe?

Calendar

Architect Kenneth M. Nishimoto's annual architectural tour of Japan will leave from Los Angeles for a 25-day journey on October 6; details from Nishimoto at 263 S. Los Robles Ave. Pasadena, Calif.



Mall by Stone to Revitalize Sacramento

A mall-centered commercial complex by architect Edward D. Stone and painter Millard Sheets is planned for downtown Sacramento. Renewal plan for the six-block site to be developed by Reynolds Metals includes retail stores, an office building, and structures to vary according to leasees' needs. The mall, "in the classic tradition of the great market places," will foster such commercial and civic functions as exhibits, concerts, merchant's displays, and flower and auto shows. There will be underground parking.

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PLANNING PROBLEMS



By E. E. Halmos, Jr.

City planners were getting a lot of advice from Washington as May began. And there was evidence that some of this help was welcomed — and some was no pleasure at all.

On the debit side were two developments: a recommendation from the White

House that various planning agencies in the capital be reduced virtually to advisory committees, and that real control of city planning be placed in the hands of the three-man Board of Commissioners, which constitutes the city's government. The recommendation would seem to make sense from an administrative viewpoint, but the Redevelopment Land Agency (which runs most urban renewal work in the city) and the architect-dominated Planning Commission, weren't happy at all.

A second development was a lengthy House debate (led off by Representative Alger of Texas) which started with heavy criticism of the whole concept of urban renewal. Interesting because of its hint of the line of future attacks on the concept were the reasons cited for opposing renewal: taking of property for resale to private developers; inequity of Federal guidelines and criteria; use of urban renewal to change sociological patterns; increase of crime in housing projects.

On the credit side, however, were the first of a series of "informational memoranda" sent out by the Bureau of Public Roads to implement provisions of the 1962 Highway Act.

BPR notes that the 1962 legislation calls for real co-ordination of transit and highway planning—with the idea that freeways should not overbalance the transportation picture in any of the 214 "metropolitan areas" set up by the Census Bureau.

The Roads Bureau will therefore require the states and cities to set up co-operative procedures to insure comprehensive planning, and insure reevaluation of such plans at least every five years. Population trends, zoning, and character of the communities involved must be taken into consideration.

Penalty for failure to make proper plans (after 1965) could mean a cutoff of Federal-aid road funds. Incidentally, Interior Secretary Udall's long-time battle with Washington's acres of memorial statuary got an unexpected boost from Wisconsin's Senator Proxmire. Said Proxmire: "If we don't do something (like establishing a commission to study proposed memorials), Washington is going to become a jumbled and endless sea of statuary."

On planning, note two other developments, one local (to Washington), the other national.

The latter involved a preliminary set of statistics from the Census Bureau, which noted that in the 40 largest metropolitan areas, suburban communities accounted for 65 per cent of all new housing units authorized in 1962. The pattern was almost an exact repeat of the situation Census found in 1961.

Only six of the metropolitan areas, including New York, showed more new housing units in the central city than in the suburbs. The remaining 34 areas (including Chicago, Los Angeles and Philadelphia) showed the heavy trend to suburban building.

(Home building, by the way, was showing no signs that builders' fears about nondiscrimination orders from the President were justified). In March, for example, new-home starts hit an adjusted annual rate of 1.49 million units—up 17 per cent over February and up 4 per cent over that a year ago. Builders have been afraid that nondiscrimination in housing developments would cut sales and prices. However, the President' nearly year-old order actually has been invoked only three times—twice in Washington, once in Chicago.)

And in Washington, the planners weren't happy with each other, it seemed. Architect Nathaniel C. Curtis, Jr., of New Orleans, presented the General Services Administration with plans for an enormous, 780-ft long, 6-story building (Federal Office Building No. 5), which would straddle one of Washington's wide streets (10th Street) along Independence Avenue, and would contain some 1.2 million sq ft of office space.

A key feature would be sculptured pillars supporting the first "floor" of the building, some 65 ft above ground, to permit views for passers-by.

Washington's Fine Arts Commission, which advises on such matters, delivered itself of some startled praise (words like "remarkable," "stupendous," "very ingenious"), but wasn't sure that the structure wouldn't clash with the more conventional architecture surrounding the site. The com-

mission took the matter "under advisement" — to the obvious annoyance of the architect.

GSA Projects

Both House and Senate public works committees have approved a program of 115 buildings to be built, nationwide, by General Services Administration. A total of \$194 million is involved —if Congress now appropriates the needed money.

Lighting Highways

Adding to its list of research contracts to aid highway design, the Highway Research Board has now let a number of contracts for study of the effects of lighting on freeways, and whether such lighting can be justified on the basis of benefits gained.

FINANCIAL

Although construction seemed to be well in the van of a generally improving business picture, there were still strong indications that increasing costs might be a corollary of the rise.

A key indicator (the Bureau of Public Roads' average of bid prices) dropped 1.6 per cent in the first quarter of 1963—under the near-record high registered in the final quarter of 1962. But at 99.6 (1957–59 is taken as 100), the index was still well above the first three quarters of 1962, and all four quarters of 1961.

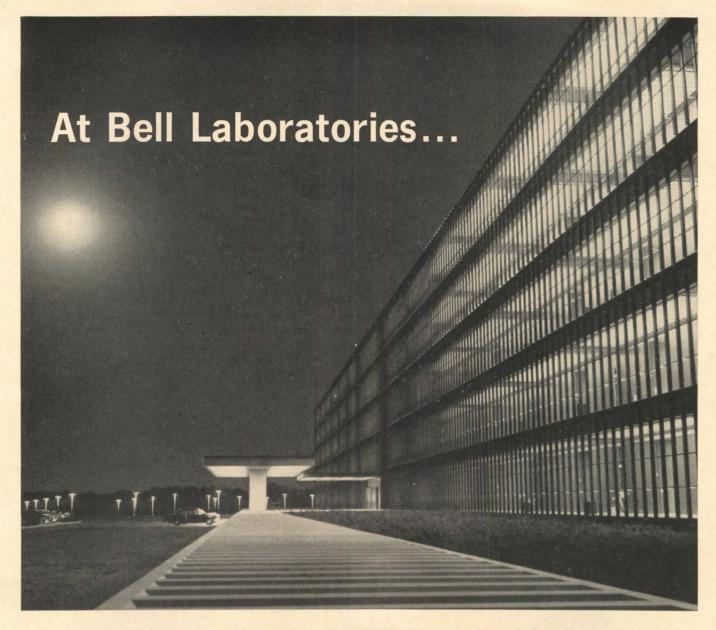
And the California state highway bid price index seemed to confirm this trend: it was up 7.6 per cent for the first quarter of 1963.

At the same time, secondary market prices for FHA-insured new-home mortgages continued an upward trend in March, reaching \$98.3 per \$100 of outstanding amount, and indicating a continuing caution in money markets.

Nevertheless, other signs pointed to good business. In March, for example, voters approved 71.5 per cent, by value, of more than \$260 million worth of construction bond issues presented to them (the biggest proportion of these was for elementary and secondary schools).

Private industry, in various surveys, reported plans for spending perhaps \$40 billion for new plant and equipment this year.

And in March, the Commerce Department reported that the value of new construction put in place topped \$4.3 billion—up about 5 per cent over March a year ago.



NEOPRENE GASKETS PROVIDE GROUND-TO-ROOF RELIABILITY...WITH MINIMUM MAINTENANCE

Science under glass was Eero Saarinen's design approach to the Bell Telephone Laboratories research and development building at Holmdel, New Jersey. And to give its glass walls the structural reliability and weathersealing they require, Neoprene curtain wall gaskets were specified.

The 3 x 6 ft. glass panes are set in black anodized aluminum mullions and muntins. With compression seals of resilient Du Pont Neoprene, the building's 100,000 sq. ft. of window walls are assured of years of protection against wind and rain virtually without

maintenance. Reliability like this does not mean high cost, however. Since no special skills are required for installation and job-site labor is kept to a minimum, costs are competitive with other materials. And, no other material can match Neoprene's 25-year reliability record.

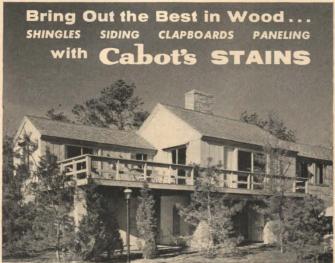
For further details and a list of qualified gasket manufacturers, write E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Department PA-6-NB, Wilmington 98, Delaware. In Canada, write Du Pont of Canada Ltd., 85 Eglinton Ave., E., Toronto 12, Ont.

NEOPRENE-ANOTHER RELIABLE



ELASTOMER

Better Things for Better Living . . . through Chemistry



Architect: Royal Barry Wills & Associates, Boston, Mass.; Developer: Hanslin Associates, Melrose, Mass.; Cabot's Stains inside and out

Cabot's Stains, in 35 unique colors, preserve the wood, enhance the beauty of the grain. Stains grow old gracefully . . . never crack, peel, or blister . . . cost only half as much as paint.

The above is a model home in the Cape Cod community of New Seabury. In planning this home, the architect was striving for beauty, quality, and economy. In the selection of exterior and interior finishes, stains were used instead of paints. Thus the architect realized his conception of beauty, kept costs at a reasonable level, and reduced future maintenance while preserving and protecting the wood for a long, trouble-free life, Today the trend is toward stains.

For the home ... inside and outside



STAIN WAX

Stains, waxes and seals in one operation. Brings out the best in wood, enhancing the grain and providing a soft satin finish in any one of ten colors plus black, white, or natural.



HOUSE & TRIM PAINTS

Outside paints of lasting, beautiful gloss in 24 authentic American colors, among them Haddam Barn Red and Hickory Yellow



SAMUEL CABOT INC.

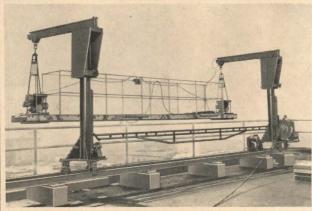
628 South Terminal Trust Bldg., Boston 10. Mass.

Please send color cards and information on Cabot's Stains and Cabot's Paints.

For more information, turn to Reader Service card, circle No. 317



POWERED WINDOW WASHING SYSTEMS



FEATURES: Carriage — Swing Platform runs on narrow gauge continuous track around perimeter. Track switches for roof storage.

WRITE FOR POWER SCAFFOLDING and ROOF CARRIAGES brochures, engineering data and installations.

2100 N. Albing Ave., Portland, 17 Oregon

For more information, turn to Reader Service card, circle No. 306



General Utility Shelf SL 100 U matching all-purpose shelf

Write for catalog SL-510 UTILITY CH HOOK STRIP

mountings for vertical adjust-

ment. Finish in choice of Mist Green, Desert Sand or Medium

Gray, baked on enamel. They

come with hanger rail or double pronged nylon hooks in Black

or Red. Matching overshoe

racks are also available.

VOGEL-PETERSON COMPANY

"The Coat Rack People" ELMHURST, ILLINOIS For more information, turn to Reader Service card, circle No. 374



THE ADVANTAGES OF 0.00 PERM COPPER AT 12¢ PER SQ. FT.

Copper Armored Sisalkraft® is a low cost yet quality building material that provides protection against water and moisture for the life of the structure.

Used for concealed flashing and waterproofing, this product is extremely flexible, conforms easily to contours, can be cut with shears, and bonds with mortar.

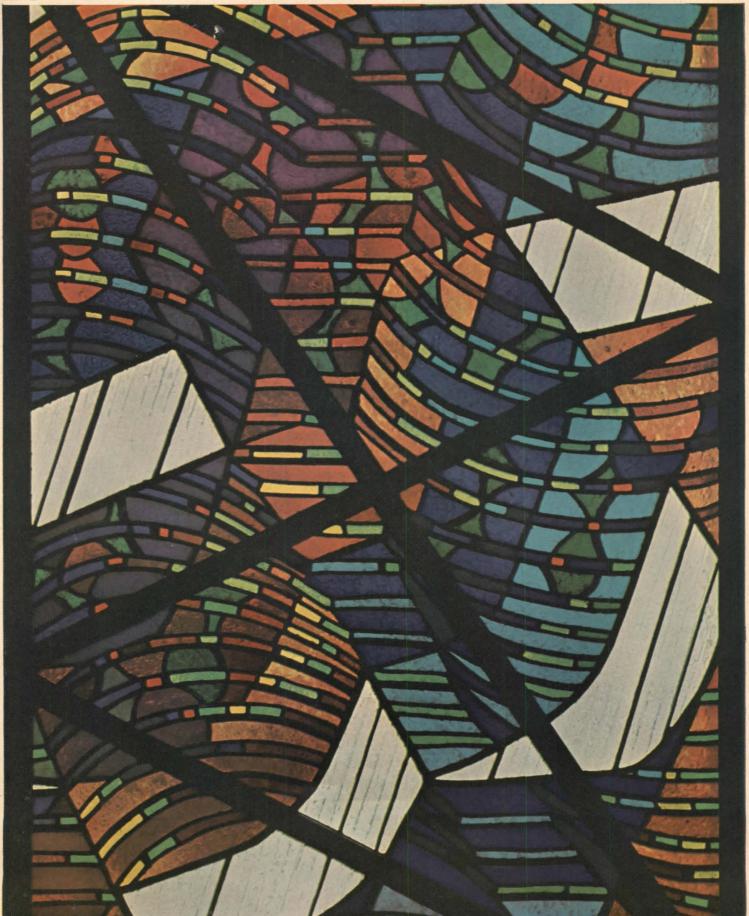
Copper Armored Sisalkraft is made of pure electrosheet copper bonded to reinforced paper with high melting point asphalt. It is available in standard rolls up to 60" wide in weights of 1, 2 and 3 oz. of copper per square foot.

Suggested specifications will be found in Sweet's File 8h/Am. For additional information and actual samples, write American Sisalkraft, 56 Starkey Ave., Attleboro, Massachusetts.

COPPER ARMORED SISALKRAFT

American Sisalkraft Company · Attleboro, Mass., Cary, Ill., Tracy, Calif. Division of St. Regis Paper Company

LO-TONE ACOUSTICAL CEILINGS



Section of stained glass window entitled "The Orchard" from executive offices of Svenska Handelsbanken—Stockholm, Sweden.

BEAUTY THAT ENDURES

All Lo-Tone products have excellent resistance to noise transfer; Lo-Tone AF (high attenuation factor) tile and ceiling board are now also available.

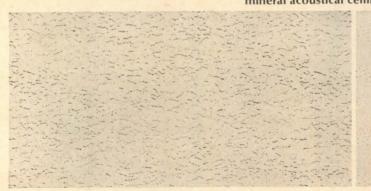
The increased use of ceiling-height partitions (movable and stationary) has created a problem of noise transmission over the partitions — this noise being reflected into adjoining areas. The problem is simply one of keeping private offices private and preventing outside noise from disturbing other areas. In many installations, this unwanted sound transmission can be most objectionable — if not intolerable.

Lo-Tone ceiling tile and board reduces this room-to-room sound transfer. A special sound barrier is built into the products which resist sound waves.

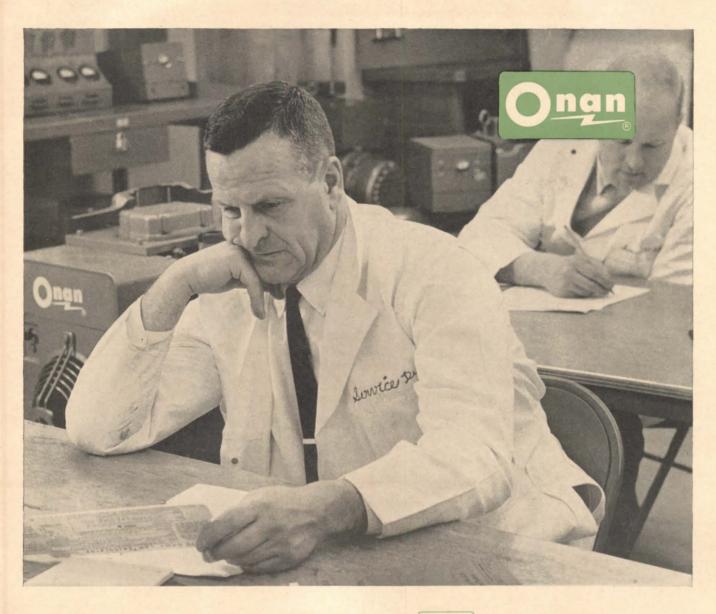
For those areas where sound transmission is a real problem, specify Lo-Tone AF ceiling tile and board. AF products match standard Lo-Tone patterns.

See AIA File No. 39-B in Sweet's Catalog. For samples, literature, or technical data — find your local Lo-Tone Acoustical Contractor in the Yellow Pages, or write us: Wood Conversion Co., St. Paul 1, Minnesota.





Fissura AF board (Also available in tile)



NOBODY EVER "GRADUATES" FROM AN ONAN SERVICE SCHOOL

Learning the best way to service Onan engines and generators is a continuing job

This man is one of the most capable engine-generator servicemen in the business. He's competent to perform routine maintenance or major overhaul on any kind of electric plant of any size.

Yet he returned to the Onan factory service school this year for the *fifth* time.

Why? Because products are constantly being changed and improved, and so are maintenance and repair techniques. He knows it makes more sense to spend a week in the classroom every couple of years than to spend an extra hour or so every day in "on the job" training... doing it the hard way... at your expense.

Practically all of the servicemen in hundreds of Onan distributor/dealer organizations attend Onan training schools. For those who can't get away for a

week at the factory, Onan's new service school van goes to them.

So when you buy any Onan engine or electric plant, anywhere, you can always be sure that expert service will be available.

Before you buy your next electric plant, why don't you drop in on your Onan distributor and see how well he's geared for parts and service. He's in the Yellow Pages, Sweet's, Thomas' Register. Or write: ONAN, 2515 University Ave. S.E., Minneapolis 14, Minnesota.





PRODUCTS FOR WOOD CONSTRUCTION

Philippine Mahogany

Philippine mahogany is utilized for pre-cut and packaged homes. This non-resinous hardwood is cellular in structure with strong, tiny longitudinal pores that make the lumber durable and impervious to rain, wind, and extreme temperature changes. The porous structure serves to hold paint, keeping it from flaking or blistering. Cost is comparable to other fine hardwoods. Insular Lumber Sales Corp., 1405 Locust St., Philadelphia, Pa.

On Free Data Card, Circle 100





Versatile Veneers

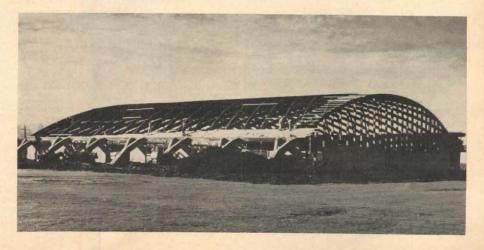
Wood veneer paneling has been utilized to enhance many areas of a major branch of one of Chicago's leading department stores. Veneers give subtle, elegant appearance to various departments within the store. Veneers are available in teak, butternut, satinwood, avodire, limba, ebony, pecan, and many others. Chester B. Stem, Inc., New Albany, Ind.

On Free Data Card, Circle 101

Longest Lamella Span

Architects Lutes & Amundson have designed longest-span wood lamella roof structure that spans 173 ft. It forms swimming-pool roof cover for Williamalane Park and Recreation District in Springfield, Ore. Peak of span is 33 ft from pool deck floor and offers 26,469 sq ft of unobstructed post-free cover. Roof is covered with 67,000 bd ft of West Coast Hemlock Construction grade, Center Match and V-Joint Decking. Individual lamellas are 4" x 20" x 22'. Rosboro Lumber Co., Springfield, Ore.

On Free Data Card, Circle 102



PRODUCTS OF WOOD

Hanging Chests

Wall-hung cabinets, made of handrubbed walnut and designed by George Nelson Associates, are now available



in sizes up to 30" x 20" x 6". Lacquers are combined one with another, or with ebony on exterior design, or in interior fittings of the cabinets. All pieces are equipped with standard, horizontal wall cleats for hanging. Howard Miller Clock Co., Zeeland, Mich.

On Free Data Card, Circle 103

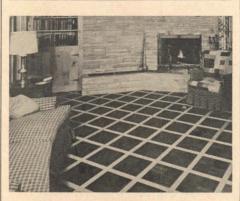


Primed Siding

Siding made of selected wood fibers, called "Duraboard," is available in clapboard and paneled styles. Lacking grain and knots, Duraboard will not split, splinter, crack, warp, or buckle. All surfaces are prime-coated to provide resistance to blistering, checking, and crazing. Clapboard siding is available in 8", 10", and 12" widths, 16' lengths, and ½" thicknesses. Vertical panels have deep grooves spaced at 8" intervals across the panels. Panels are shiplapped on long edges to make tight, hidden joints. Entire panel width is 48¾" to give complete 4'

coverage. These panels are available in 8', 9', and 10' lengths and $\frac{1}{2}$ " thicknesses. Plain vertical panels suited for board-and-batten construction have square edges for tight fit. They are available in $4' \times 8'$, $4' \times 9'$, $4' \times 10'$, and $\frac{1}{2}$ " thicknesses. Johns-Manville, 22 E. 40 St., New York 16, N.Y.

On Free Data Card, Circle 104



Hardwood Flooring

A new hardwood flooring that is laid like resilient tiles is now available. Flooring consits of solid (not veneer or plywood) Appalachian hardwood strips that are wired together to make up tiles. They are available from the factory, prefinished in oak, hard maple, white ash, or black walnut. Finish includes three coats, all infrared baked-on, so that it is impervious to common household stains such as grease and alcohol. Tiles, which are tongue-and-grooved, are available in standard size of 6" x 6" x 5/16". American Lumber Corp., Church and Bermuda Sts., Philadelphia 24, Pa.

On Free Data Card, Circle 105

Durable Wood Finish

"Madera," a smooth, dense, and impervious wood finish, resists normal wear and stains. Lipstick, crayons, and cigarette burns will easily wipe off this thermosetting polyester finish with soap and water. Madera can be used for paneling of all types. Simpson Timber Co., 2042M, Washington Bldg., Seattle 1, Wash.

On Free Data Card, Circle 106

Wood Fasteners

"Line-A-Joist" connector is the latest in a series of developments of structural wood fasteners. Consisting of 16gage galvanized sheet steel, the connectors transmit shear loads from one member to another when joining two floor joists together in an "in-line" assembly. The connectors are available



in three sizes to accommodate 2 x 6, 2 x 8, 2 x 10, and 2 x 12 members. Manufacturer states that the connectors will save up to \$30 or more per house by utilizing more effectively wood floor joist materials. Timber Engineering Co., 1619 Massachusetts Ave., N.W., Washington 6, D.C.

On Free Data Card, Circle 107



Lighting with Wood

Fluorescent lighting fixtures utilize oil-finished woods and prismatic lens diffusers. Fixture can be surface or stem mounted, individually or in rows. Silhouette is only 31/2" deep, 12" or 16" wide. Unit is available in birch or walnut, as well as metal finishes and other materials on request. Walnut and birch are permanently bonded to the sides and end plates. Chassis and sides are die-formed of one rigid section. End plates are aluminum die castings for perfect alignment. Raceway cover snaps out for easy access to ballasts and wiring. Lens, in either acrylic or styrene, uses female prism pattern. Silvray Lighting, Inc., 100 West Main St., Bound Brook, N.J.

On Free Data Card, Circle 108

Dormitory Furniture

Modular furniture system incorporates all requisite furnishings in a wall arrangement that is adaptable to any dormitory plan. This flexible system is supported vertically by two adjacent walls and ceiling, and horizontally by specially designed steel framing and support members. Units include seven wardrobe sizes ranging from 24" to 60" in width, 24" in depth, and 96" in standard height. Also included are student's desks, chests, drawers, beds, chairs, and lounge seating, and study/ library furniture. The system is constructed with "Fiber-x," a solid, molded board composed of wood fibers and thermosetting plastic resins. Fiber-x



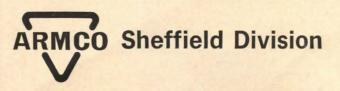
OWNER:
Sisters of St. Benedict, St. Martin's Academy, Rapid City, South Dakota.
GENERAL CONTRACTOR:
COrner, Howe & Lee, Rapid City, South Dakota.
ARCHITECT:
Mark F. Pfaller Associates, Milwaukee, Wisconsin.
PRESTRESS DESIGN AND ERECTION:
Hufschmidt Engineering Company, Menomonee Falls, Wisconsin.

New St. Martin's Academy... Showplace for Prestress Concrete Construction

Dedicated in May, 1963, St. Martin's Academy, Rapid City, South Dakota, features approximately 140,000 square feet of structural precast concrete.

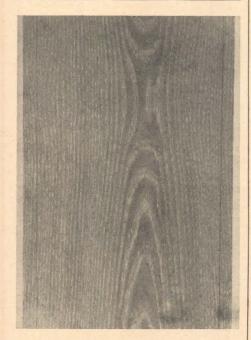
Both pre-tensioning and post-tensioning were used in the complex. Floor and roof slabs were of pre-tensioned design —and were produced off the construction site using ½" Union Tufwire Strand. Two-stage post-tensioning was employed in certain structures with beams continuous over three spans. Post-tensioning during Stage One was sufficient for handling stresses and dead weight. Stage Two post-tensioning incorporated the live load requirements. Four different sizes of Tufwire were used in post-tensioning.

Prestressing and erection of structural frame, walls, roof and floors was by Hufschmidt Engineering Company. Send for helpful literature on Union Tufwire Products for prestressed concrete. Tufwire and Union Wire Rope Products are made by Sheffield Division, Armco Steel Corporation, Department S-703, 7100 Roberts Street, Kansas City 25, Missouri.



is impervious to dents, scratches, chipping, or staining. Finishes are available in fruitwood, walnut, frosty walnut, cherry, teak, and birch. Royalmetal Corp., 1 Park Ave., New York 16, N.Y.

On Free Data Card, Circle 109



Removable Panel System

Perimeter wall system consists of balanced (or semibalanced) 1/4" panels of laminated wood, factory fabricated in high-pressure presses. If walls warp, they will warp concave to the face, so that the face will exert a backward pressure against the wall whenever edges are contained. Panels are held against sub-wall of any material in any condition with special steel and aluminum moldings. They are held entirely mechanically, nonadhesively, and with proper allowance for expansion and contraction. Each panel may be removed from the wall for purposes of redecoration, injury to panel, or access to area behind panel. Panels are available only in 3 x 8 and 4 x 8 sizes, and 8' lengths. System costs about \$2.50 per sq. ft. System offers greater cleanability, less susceptibility to cracking or crazing, and less direct sound reflectivity than tile. Parkwood Laminates, Inc., 134 Water St., Wakefield, Mass.

On Free Data Card, Circle 110

Prefab Laminated Doors

Factory-prefinished interior door consisting of high-pressure "Laminex" skin in "Poly-Clad" Adirondack birch finish has been announced. Edge-toned door is factory-presized, beveled, and machined for hinges and lockset to exacting specifications. They are available in 6'8" heights and 13/8" and 13/4" thicknesses. Doors also provide hollow, solid, or institutional type cores in 1-6, 1-8, 1-10, 2-0, 2-4, 2-6, 2-8, 2-10, and 3-0 widths. Plywall Products Co., Inc., P.O. Box 837, Corona, Calif.

On Free Data Card, Circle 111

Free-Standing Cabinets

Free-standing vertical arrangement of walnut cabinets has been announced. This flexible-component wall system includes over 100 types of cabinets finished in hand-rubbed oil or satin lacquer. Plaster laminates are also used for surfaces. Drawer and door fronts are available in many colors. Hardwood House, Inc., Division of Rochester Capital Leasing Corp., 10 St. James St., Rochester 6, N.Y. On Free Data Card, Circle 112



Acid-Proof Plywood Paneling

Factory-finished plywood paneling, which is available in variety of woods and in several price ranges, has been announced. Finished surface eliminates smudges, stains, and grease marks. They can be used for floor-toceiling walls, dividers, accents, and wainscoating. Patterns include grains, swirls, and knots. Roseburg Lumber Co., Roseburg, Ore.

On Free Data Card, Circle 113

Predetermined Veneers

Natural wood veneers, whose color and pattern can be predetermined and controlled, are now available. Patterns



consist of "fine line" stripes running through veneers. Stripes can be precisely placed. Other veneers have stripes arranged in random widths and colors or in linear stripes. Patterns are also produced with loops and swirls; they are made by building up a man-made log or laminated block of different colors or species of wood, which are arranged in layers to produce the desired contrasts. The log is then cut at right angles to the layers, producing prearranged stripes. Arched or swirl patterns are cut from the log at various diagonals and slanting angles. Fineline can be sanded, and takes stains, lacquers, and oil finishes. It can also be bonded to metal. William L. Marshall Ltd., 450 Park Ave., New York 16, N. Y.

On Free Data Card, Circle 114

Low-Cost Plywood Paneling

Three wood products have been developed to decrease building and remodeling costs. (1) Hypalon-syntheticrubber overlaid plywood is a permanently colored sheet of DuPont's synthetic rubber bonded to waterproof plywood. The mar-resistant finish is called "Acryglas." (2) "Ranch Panel" is an exterior wood siding in vinylacrylic factory-applied colors, which waterproofs exterior standards. (3) Mahogany interior paneling, called "Econoply," is plywood having imported, faced veneers and durable factory finish. It can be attached to any wall including bare studs. Georgia-Pacific, Equitable Bldg., Portland 4, Ore.

On Free Data Card, Circle 115

End of Wood Products Listing

Information on technical literature dealing with wood begins on page 86. Thanks to modern, malleable lead, a pool's place is practically anywhere these days. Take the pool below for instance—one of many unique touches at the new Blue Cross building recently completed in St. Louis. This man-made pond and its tangent planters form an eye-catching replica of the Blue Cross insignia, highlighting an open-deck promenade fronting the new structure. Beneath this promenade and pool lies a 90-car, sub-grade parking area. In between: the invincible protector—lightweight, leakproof lead.

Keeping pools like this in their place—at a practical price—is a snap for modern lead sheeting. No other material can even approach its combination of watertightness, corrosion-resistance, workability, and economy of installation. Concerned about maintenance? Lead never needs any. Replacement? Never needs that, either. When the building it betters is but a memory, the lead will still be serviceable.

Pools and planters like those below are adding dramatic flair to more and more of the nation's new structures. Thanks to low-cost, sheet-lead waterproofing, they can be added practically anywhere.

How about you—do pools have a place in your plans? Detailed technical data on pool-and-planter applications of lead may help you to decide.

Ask us for it. Lead Industries Association, Inc., Department N6,

292 Madison Avenue, New York 17, New York.



LEAD INDUSTRIES ASSOCIATION, INC.

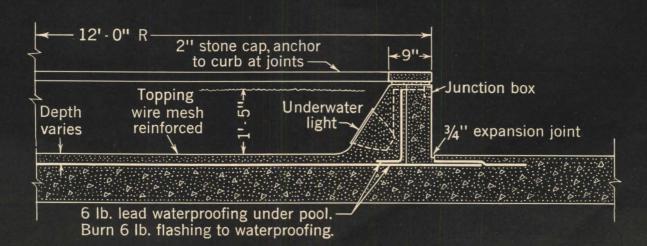
292 Madison Avenue, New York 17, New York

Look Ahead with Lead

For more information, circle No. 343

HOW TO PUT A POOL IN ITS PLACE

AND KEEP IT THERE



DATA ON WOOD

Cedar Siding

Western Red Cedar siding, described in a brochure entitled "Bevel Siding," is lightweight, economical, and easily adaptable to paints, stains, and other finishes. It does not split, shrink or warp, and contains qualities of insula-



tion and durability. One side of cedar bevel siding is smooth-surfaced and the reverse side is saw-textured. Brochure also includes grades, sizes, application and finishing procedures. Western Red Cedar Lumber Assn., 4403 White-Henry-Stuart Bldg., Seattle 1, Wash.

On Free Data Card, Circle 200

Hardwood Veneers

Hardwood veneers are the subject of this 8-page folder. Color range, visual and physical texture, and types of veneer cuts are discussed. Folder contains illustrations, photographs, specifications, and chart listing some typical hardwood veneer species, which includes commercial name, origin, color and type of figure (natural pattern or design seen on surface of wood). Glossary of terms and matching effects of veneers are also included. Fine Hardwoods Assn., 666 Lake Shore Drive, Chicago 11, Ill.

On Free Data Card, Circle 201

Hardwood Plywood Manuals

Two manuals discuss (1) hardwood plywood, and (2) design procedure for eliminating "guesswork" in selecting plywood panels to fulfill acoustical absorption requirements. First manual, 48-pages, includes plywood construction, hardwood veneers, glues, types and sizes, properties of hard-

wood, color, dimensional stability, fasteners, acoustical properties, thermal conductivity, selection and installation. The second, a 38-page acoustical paneling manual, developed by Bolt, Beranek & Newman, Inc., gives five-step procedure for selection of acoustical paneling plus explanatory illustrations. Plywood and acoustical manuals are available at cost of \$2.50 and 25¢ respectively from Hardwood Plywood Institute, 2310 South Walter Reed Drive, Arlington 6, Va.

Plywood Products

Booklet, 46-pages, describes plywood and its uses. Included in booklet are sections on decorative plywood, doors,



overlay surfaced and fir plywood, siding, sheathing, and hardwood. Color illustrations, details, and specifications are also given. Georgia-Pacific, Equitable Building, Portland 4, Ore. On Free Data Card, Circle 202

Species of Western Pine

Ten western pine species are the subject of a 28-page booklet. The species discussed are Engelmann Spruce, Lodgepole Pine, Western Red Cedar, Incense Cedar, Larch, Ponderosa Pine, White Fir, Sugar Pine, Idaho White Pine, and Douglas Fir. Booklet contains selector guide giving appearance, weight, strength, shrinkage, nailability, finishing, and gluing properties of the types of pine. Also included are charts on sizes, stresses, spans, roof decking, siding, and illustrations. Western Pine Assn., 510 Yeon Bldg., Portland 4, Ore.

On Free Data Card, Circle 203

Strength Tests for Built-Up Wood Beams

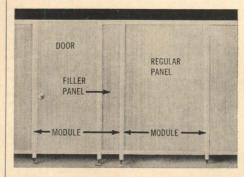
"Built-Up Beams for Light Frame and Pole Construction" is the title of an 18-page report that studies the means of increasing the strength and stiffness of the horizontal interior and exterior nailing members or girts in conventional pole-frame construction. Included in the discussion are factors such as thickness of plywood, size and type of nails, and gluing. Chart showing results of bending tests of built-up plywood beams plus details and illustrations are also included. Forest Products Laboratory, Madison 5, Wis.

On Free Data Card, Circle 204

Wood Trusses

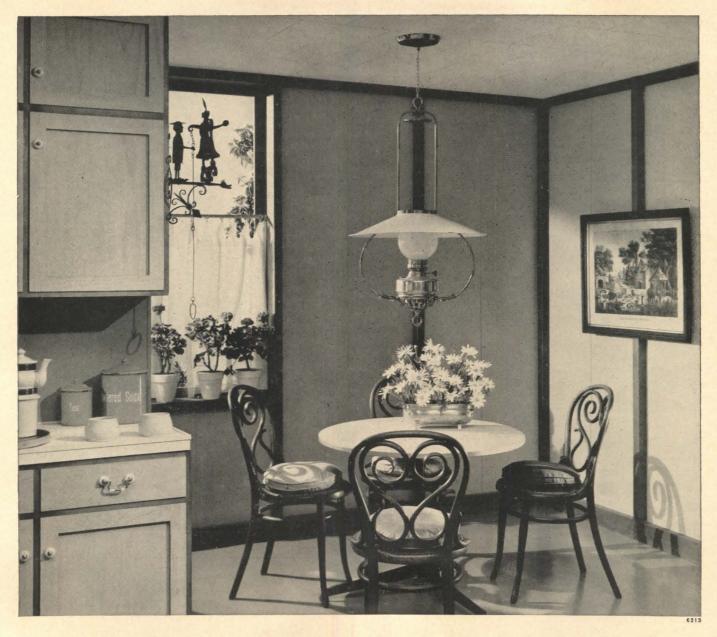
"Versatility in Wood Roof Trusses" is subject of an 8-page brochure. Types discussed are pitched, bowstring, flat, land, scissors, and trussed rafters. Special utility structures such as arch frames, umbrella sheds, and pole-frame trusses are also described. Brochure also contains charts concerned with types of trusses, spans, depths, spacing, and live and dead load. Timber Engineering Co., 1619 Massachusetts Ave., N.W., Washington 6, D.C.

On Free Data Card, Circle 205



Wood Doors, Panels, and Partitions

Series of five pamphlets on wood products has been published that discusses doors, industrial plywood, movable partitions, "easy-wall" partitions, and paneling. The first examines doors, including sash, louver, panel, French, ceiling height, entrance, and bifold. Color illustrations, sizes, thicknesses, and cutaway drawings are given. Second contains information on various types of plywood, including high- and medium-density overlaid plywood, concrete forms, hardboard faced plywood, boat panels, acrylic overlaid plywood, and others. Specifications and color illustrations are given. Third shows movable partitions,



Create home interiors that stay in style for years with beautiful wash-and-wear Marlite Paneling

With versatile Marlite paneling, you can create modern interiors in any room in the home that take. years of wear with just minutes of care. Marlite's soilproof plastic finish is baked on at high temperatures most materials can't stand. Unlike many other wall coverings, Marlite shrugs off grease, stains, mars—even heat.

And the selection of Marlite colors and patterns is almost endless. You can choose from a complete array

of beautiful colors, authentic Trendwood reproductions, distinctive marble and decorator patterns . . . all created exclusively for Marlite by American Color Trends to stay in style for years.

Get complete details from your building materials dealer, consult Sweet's File, or write Marlite Division of Masonite Corporation, Dept. 614, Dover, Ohio.

Marlite® plastic-finished paneling
ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

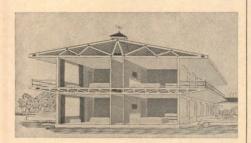
MARLITE BRANCH OFFICES AND WAREHOUSES: 204 Permalume Place N.W., Atlanta 18, Georgia • 18 Moulton Street, Cambridge 38, Mass. • 4545 James Place, Melrose Park, Illinois (Chicago) • 8908 Chancellor Row, Dallas 7, Texas • 1657 Powell Street, Emeryville, California (Oakland) • 3050 Leonis Blvd., Los Angeles 58, California • 39 Windsor Avenue, Mineola, L. I. (New York) • 2440 Sixth Avenue So., Seattle 4, Washington

including ceiling, railing, bank, and cornice type. The fourth gives schematic drawings of erection details and components of finishes concerning partitions, matching doors, and matching panels. The fifth presents different finishes and textures of various paneling materials; included are color illustrations and details of panel types. Simpson Timber Co., 2000S Washington Bldg., Seattle 1, Wash.

On Free Data Card, Circle 206

Precision Trusses

Trusses that avoid ridge sagging and outward thrust are described in 24page booklet. Because trusses are self-



supporting, interior bearing partitions are not needed. No double floor joists are required under interior partitions. Structures are closed in fast, which reduces weather hazards and protects interiors and equipment. Booklet discusses many types of trusses by showing vertical sections through homes, churches, attic rooms, space frames, motels, and plants. Details and specifications are also included. Sanford Truss Inc., P.O. Box 1177 Pompano Beach, Fla.

On Free Data Card, Circle 207



Glu-Lam Larch

Standard specifications and designs for glued laminated larch are described in 14-page booklet. Discussed are working stresses, vertical laminations, adhesives, end joints, and fabrication. Charts on working stresses and properties of glu-lam structural lumber as well as bibliography on larch are also given. Western Pine Assn., 510 Yeon Bldg., Portland 4, Ore.

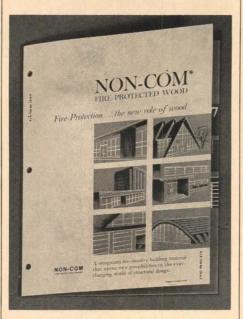
On Free Data Card, Circle 208



Western Red Cedar

Grades and uses of Western Red Cedar are described in 36-page brochure. Subjects covered are bevel siding, boards, casing and base, ceilings, floors, dimensions, finish, roof decking; charts are also included. West Coast Lumbermen's Assn., 1410 S.W. Morrison St., Portland 5, Ore.

On Free Data Card, Circle 209



Fire Protected Wood

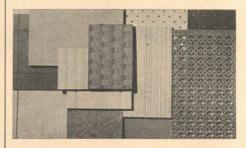
"Non-Com" fire protected wood is described in 4-page folder. Wood provides protection for cornices, roof battens, gusset framing, sheathing, beams, etc., and has a fire rating of 15 or less, which is equivalent to gypsum wall board in its resistance to flame spread, fuel contribution, and

smoke density. Non-Com is pressure-impregnated with mineral salts that react chemically at a temperature below ignition point of wood. These salts emit noncombustible gases and water vapor that replace flammable gases, and a dry carbon develops rather than tar—forming a protective, insulating char on the surface. The wood also resists decay, termites, and wood-destroying insects. Koppers Co., Wood Preserving Division, 750 Koppers Bldg., Pittsburg 19, Pa.

On Free Data Card, Circle 210

Hardboard

A 16-page booklet on hardwood discusses its history, composition, and manufacture, as well as types of hard-



wood, textures available, and uses. Included are illustrations, photographs, and glossary of terms. American Hardboard Assn., 205 W. Wacker Drive, Chicago 6, Ill.

On Free Data Card, Circle 211

Wood Preserving Fundamentals

Wood preservation is the subject of a 12-page booklet. Among the topics discussed are agents that destroy wood, steps to treat wood, conditioning of wood for treatment, preservatives and retentions, and inspection. Illustrations and specifications are also included. Pioneer Products Division, Witco Chemical Co., Inc., 122 E. 42 St., New York 17, N.Y.

On Free Data Card, Circle 212

Southern Pine Grading Rules

Standard grading rules for Southern Pine lumber have recently been published in 162-page manual. The 1963 publication is divided into four sections. Topics covered include use and size classifications, moisture content, rough and dressed sizes, general grading provisions; finish flooring, mouldings, OG Batts and beveling siding; structural lumber; and factory grades. Details, charts, and illustrations are

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Fritz Dreier, a personable young Swiss, spent many hours training in St. Joseph. After his schooling, Fritz went to Germany for further work with the Hillyard Representatives there. He will serve Hillyard customers in France, Italy, and Spain. All overseas "Maintaineers" have attended this floor treatment school under the direction of A. A. McNeiley (left), Director Special Service Division. H. F. Bayer, Hillyard Sales Manager is at the right.



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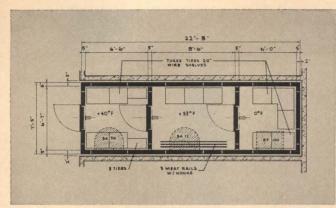
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Specifications prepared by Scarlett & Mitchell, Architects, 673 Washington Road, Pittsburgh, Pa.

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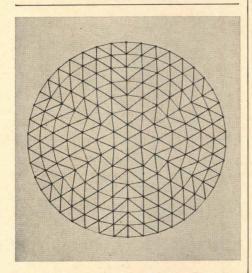
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TIMBER ENGINEERING COMPANY 1619 Massachusetts Avenue, N.W., Washington 6, D. C. For more information, turn to Reader Service card, circle No. 366

also included. Southern Pine Inspection Bureau, National Bank of Commerce, New Orleans, La.

On Free Data Card, Circle 213



Glu-Lam Structures

"Engineering in Wood," a 24-page booklet, discusses various glu-lam structures, including arches, structural members, rigid frames, trusses and domes. Charts contain information on typical haunch sections, foundation arches, tied and buttressed arches, section properties of glu-lam members, typical sizes of beams and purlins, specifications, and installation procedures. Timber Structures, Inc., P.O. Box 3782, Portland 8, Ore.

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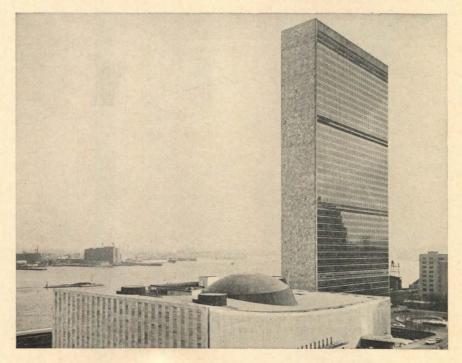
Walnut Veneers

Booklet, 20-pages, pictures seven types of walnut veneer cuts, their grain and figure patterns, and their finishes. Cuts shown are flat sliced, half round, quartered, rotary, burl, crotch, and stumpwood. Also given are definitions and illustrations of these cuts and ways to specify them. Booklet is available at a cost of 50ϕ per copy. American Walnut Manufacturers' Assn., 666 Lake Shore Drive, Chicago 11, Ill.

Folding Wood Doors

Three types of folding doors are described in 8-page folder. (1) Wood panels, $3\frac{1}{2}$ " wide, for openings up to 30' wide and 10'-1" high include specially designed aluminum track that can be bent on custom radii with minimum radius of 18". Stainless, springsteel clamp-connectors support intermediate panels. Vinyl extrusion hinge is silent, lightweight, and will not cause door to creep when left in inter-

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Irving Mencher, Consulting Electrical Engineer



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mediate position. Plated stressed-steel caps give head strength. (2) Wood panels, 5½" wide, for openings up to 50'-4" wide and 14'-1" high. Clamp-on hanger of 14-gage steel has angle-stop that eliminates any possible strain on vinyl hinge and wood panels. Ball bearings in double steel races minimize friction. No pendent pulls are required. (3) Wood panels, $3\frac{1}{2}$ " wide, for openings up to 12' wide and 8'-1" high. Extruded aluminum track can be bent on curtain radii with minimum 12" radius. Specifications and details are included for all types. Wood Specialty Products, Inc., 24300 West 60th St., Mountlake Terrace, Wash.

On Free Data Card, Circle 216

Office Furniture

Booklet, 28-pages, discusses wood office furniture. Many different styles of tables and desks, as well as chairs and



sofas using wood components, are presented in variety of veneers. Specifications and illustrations are given. Costa Mesa Furniture Co., 1040-P North Olive St., Anaheim, Calif.

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Fir Plywood Components

Several types of plywood construction elements are announced in a 12-page booklet entitled "Fir Plywood Components." Booklet discusses box beams, curved and flat stressed-skin panels, trusses, folded plates, delta structures, and components in combination. All these types of construction express the following characteristics: design freedom and aesthetic appeal, high strength and stiffness to weight ratios, smooth, easy-to-finish surfaces, uniform manufacture, efficient use of material, reduced transportation rates, rapid delivery, ease of handling and

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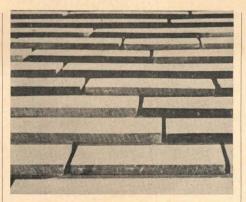


installation, reduced on-site labor costs, and resistance to rust and corrosion. Plywood Fabricator Service Inc., P.O. Box 7, Riverdale Station, Chicago 27, Ill.

On Free Data Card, Circle 218

Cedar Shingles/Shakes

Red cedar shingles and sidewall shakes are described in 4-page manual.



Grades of shingles, shipping weights, roof coverage, application procedures, and specifications for both shingles and sidewall shakes are given. Charts for estimating proper exposure of shingles in relationship to roof pitch and for determining number of squares required for proper roof coverage are also included. Red Cedar Shingle News Bureau, 5510 White Bldg., Seattle 1, Wash.

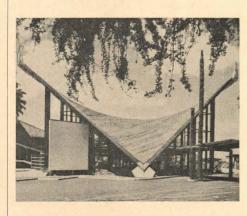
On Free Data Card, Circle 219

Standard for Glu-Lam Construction

Commercial Standard CS253-63, effec-

tive April 1, 1963, on structural glued laminated timber, has been introduced. The 24-page booklet contains information on purpose, scope, requirements, lumber types, adhesives, laminating, testing and inspection, quality control system, marking and certification, method of ordering, and definitions. (For additional discussion, see p. 162.) American Institute of Timber Construction, 1757 K St., N.W., Washington 6, D.C.

On Free Data Card, Circle 220



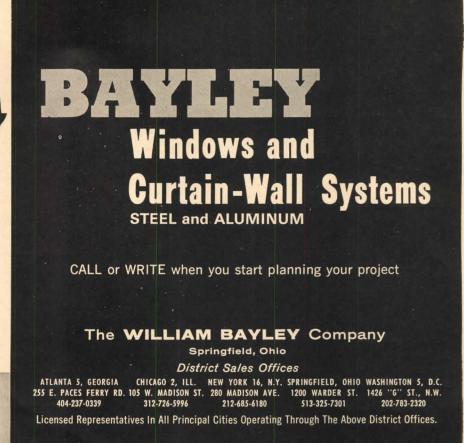
Redwood File

Architectural file on the uses and the



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applications of California redwood has been announced. File includes booklets that discuss redwood for residential, school, church, and commercial architecture. Other brochures show uses of redwood for siding, board-and-batten walls, tongue-andgroove walls, doors, paneling, ceilings, grillework, and acoustical paneling. Fastenings, finishes, and specifications, together with illustrations and details, are presented. California Redwood Assn., 576 Sacramento St., San Francisco 11, Calif.

On Free Data Card, Circle 221

(End of Wood Data Listing)

AIR/TEMPERATURE

Vertical Pump

Vertical centrifugal pump that mounts directly in piping system and requires no special baseplate or foundation is described in 8-page booklet. "V-Line" pump saves floor space, reduces installation costs, affords easy maintenance, and offers pull-from-casting design. It is available in a variety of materials for all types of service, such as in general industry, air conditioning, chemical, petroleum, petro-chemical, and other process industries. Charts show coverage of pumps at 50 and 60 cycles respectively, dimensions, weights, design, and construction features. Ingersoll-Rand, 11 Broadway, New York 4, N. Y.

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Hydronic/Electric Heating System

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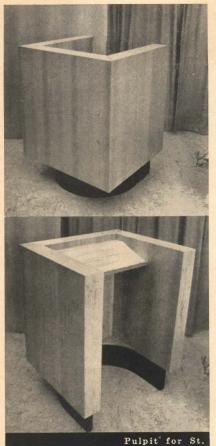
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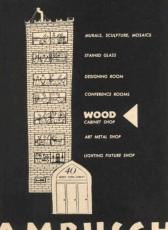
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CONSTRUCTION



Designing with Glass

Various designs utilizing "Huewhite" glare-reducing glass are discussed and illustrated in 12-page booklet. Huewhite is a translucent white alabaster glass "giving the greatest possible diffusion consistent with a high degree of light transmission." It delivers light that is almost uniform in distribution to incidence of 15°, as well as scattering light to an incident of 5°. Booklet discusses several designs. American-Saint Gobain Corp., Box 929, Kingsport, Tenn.

On Free Data Card, Circle 224

INSULATION

Adhesive/Coating Chart

Simplified adhesive and coating selection is the subject of 4-page folder. Coatings and lagging adhesives, adhesives for insulation, asphalt mastics, joint sealers, and finishes are charted as to color, permeability, fire resistance, chemical resistance, and specifications. Insul-Coustic Corp., 42-23 54 Rd., Maspeth 78, N. Y.

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Tectum roof deck met all requirements for appearance, handling and erection economies, noncombustibility, insulating and acoustical properties. Almost half of the 500,000,000 bd. ft. of Tectum now in service has been used in school educational facilities.

Top. Laminated wood beams with exposed Tectum roof deck make an impressive and functional ceiling design for the dome-topped field house. Bottom. The library is light, airy, comfortable. Tectum roof deck soaks up extraneous noise in all study areas.



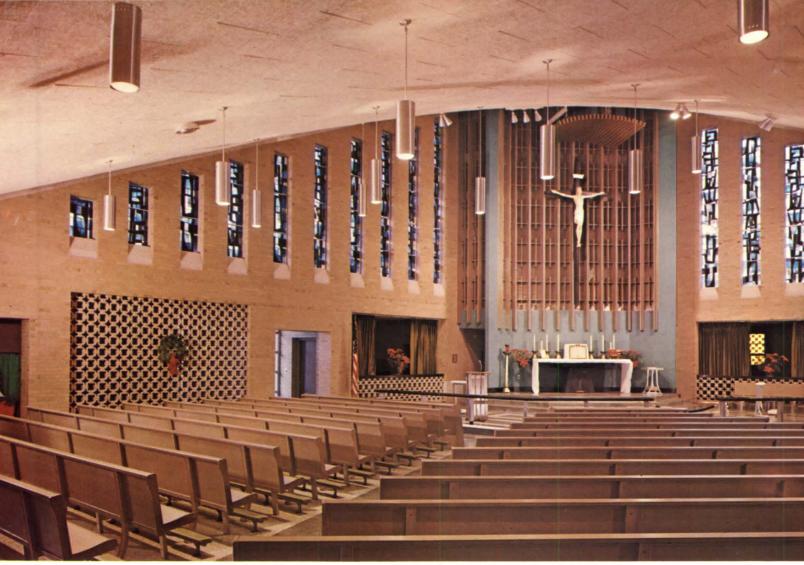
Arthur Read, Building Consultant. "Savings realized from the design permitted added features of educational value that could not have otherwise been incorporated. Tectum was selected from an economy standpoint, good acoustical properties, and with incombustible qualities that gave favorable insurance rates."

Walter W. Scott, Superintendent. "We are extremely proud of our new school and have delighted in showing it to literally thousands of visitors. The Tectum ceilings provide beautiful textured surfaces with excellent acoustical values. Our own personnel highly approve."

W. D. Revelli, Conductor, University of Michigan Bands. "I was favorably impressed with the balanced acoustics during our recent concert in the Holland High Field House. This was my first concert in a building with an exposed Tectum roof deck. I was particularly pleased with the dynamic receptivity of the building."

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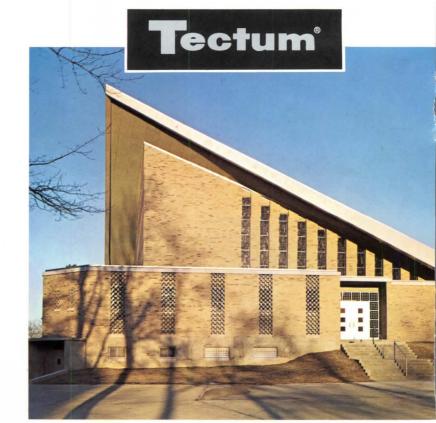
Building: St. Robert Bellarmine Chapel; Xavier University, Cincinnati, Ohio. Very Reverend Paul L. O'Connor, President. Architect: Albert V. Walters, A.I.A. Contractor: Universal Contracting Corp.

Hyperbolic paraboloid finished two months ahead of schedule

Architects and contractors are learning that a Tectum Form Plank roof structure saves time in erecting either conventional or unusual roof shapes. The new St. Robert Bellarmine Chapel at Xavier University is an excellent example. The paraboloid was formed with Tectum over adjustable height shoring. Reinforced concrete was poured varying in thickness from 3½" to 6". Tectum remained in place as a decorative, acoustical ceiling after shoring was removed - saved stripping of forms, grinding and finishing. Forms were leveled in only five hours time. The Chapel roof was poured in one day (8500 sq. ft.). Curing period was 3-4 weeks less than expected. Project completed in about ten months beating anticipated schedule by two months.

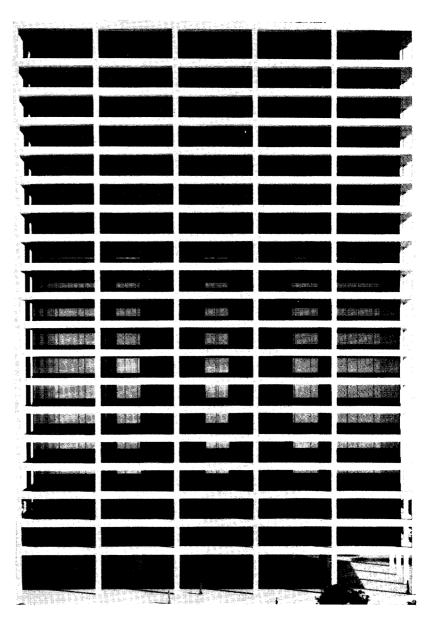
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SLENDER COLUMNS, WIDER BAYS, WELDED CONSTRUCTION

The 19-story BMA Tower, Home Office of Business Men's Assurance Company, Kansas City, is a bold building—clean lined, sturdy, structurally distinctive.

The new BMA building is also an expression of its owner's needs. Structurally, these needs were: wide bays and floors that would carry extremely heavy office machine loads. Wind loading was double that of New York or Chicago.

For the frame, designers selected two stronger steels. USS TRI-TEN (A441) Steel for columns through the fourteenth floor, A36 rolled wide flange structurals for all girders, beams and upper columns — cover plates were eliminated. Entire frame was welded to obtain 100% moment connections, and beam webs were pierced for ducts and utility lines.

By taking full advantage of weldability and extra muscle of USS TRI-TEN and A36 Steels, the architect was able to reduce the columns in size and number, creating greater usable floor space, 36' x 36' wide bays and a slender uniform column size for aesthetic considerations.

To emphasize the structure, the exterior wall was set back to form a 5-foot gallery that serves as a sunscreen and a working area for window washing and maintenance. Columns and spandrels are covered with white marble. Floors are built with cellular steel decking which houses electrical and communications systems.

The BMA Tower is 180 feet wide by 108 feet deep and has a total floor area of 330.302 square feet. It required 6000 tons of A36 Steel, 600 tons of USS TRI-TEN (A441) Steel.

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JUNE 1963 P/A 103







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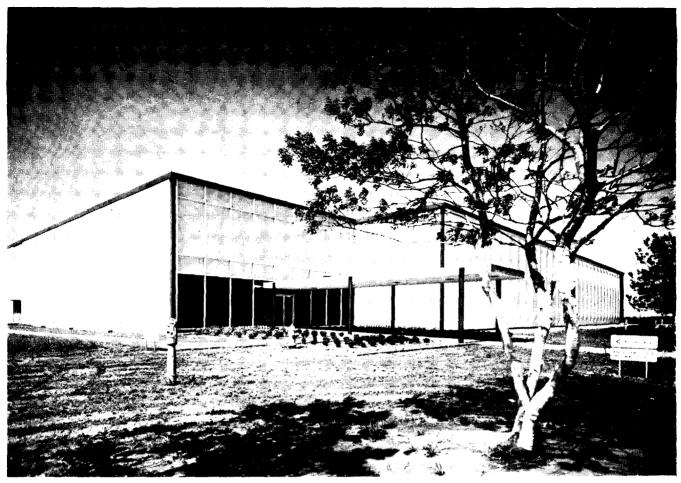
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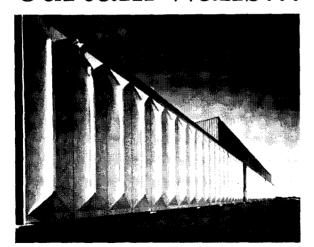
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June 1963 PROGRESSIVE ARCHITECTURE®

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RUMINITE OF THE POTENTIAL CONTROL OF THE OFFICE AND PARK AVENUE, NEW YORK 22, NEW YORK



Quality in Architecture was the subject of the recent A.I.A. Convention in Miami. Of the different "qualities" that could have been discussed—quality of materials, workmanship, or service, for instance—quality of design was chosen as the theme. And since quality, as defined by the Oxford Dictionary, is the "degree of excellence," what the conventioneers were really talking about was the degree of excellence in architectural design.

The achievement of excellence in design is synonymous with the achievement of beauty and the achievement of beauty cannot be accomplished without a creative act of the highest order. Such an act involves the germination, nurturing, and fulfillment of an idea—a birth-giving that should be unsoiled from conception to maturity. Ideally, nothing should come between man and his work, between the creator and his creation. Since such an ideal situation is not possible in the practice of architecture, some architects give up trying to be artists. Others turn to different arts, like sculpture, and there find satisfaction; for, when nothing at all is in the way between the hand and the clay, there is a far better chance for much more ecstasy than agony. But most architect-artists stay with their job and suffer silently, constantly fighting for their designs and protecting them from undue mutilation.

The problem, then, in the practice of the art of architecture lies in what might be called the "buffer zone"—that vast middle ground dividing the creative act and the finished product. Since this buffer seems to be constantly widening, the Miami events took on a somewhat pessimistic note: there was an image of a more and more complex world in which the architect has less and less influence—a feeling of a hopeless situation.

That this complexity is here—and probably to stay—is true. It is especially true that the typical client has become a faceless committee of second-string bureaucrats, and the contractor, in many cases, an incompetent broker backed by shrewd lawyers. But it is also true that architects themselves live in a house that needs much cleaning.

It would be difficult to argue with the proposition that excellence in design can come only from excellent designers. But this truism, which I think is the crux of the problem, was skimmed over by the numerous speakers invited to participate in the discussion.

If architecture is to be a true art, then it is the artists who must have ultimate control of the work. The achievement of beauty requires a passionate devotion that has to operate on all levels, right up to the decision-making level. Otherwise, the efforts of those who create can easily be scuttled by those who merely negotiate. In far too many instances, the numerous excellent designers we have in the U.S. have to work for principals of firms whose devotion is more to accommodating clients than to fighting for design ideas incorporated in the projects bearing their names. In a situation like this, it does not really make much difference whether the creative designer—the artist-architect—works for a business-oriented man who runs a real estate office or a business-oriented architect who runs an architectural office. The results are pretty much the same. Obviously, no excellence in design can be achieved under such circumstances.

There are many problems facing architects. But the most important step toward achieving quality in architectural design would be made if the profession of architecture were to become dominated more by design-architects and less by business-architects. It would also be the greatest possible step forward toward achieving a truly high professional status so much desired by the profession.

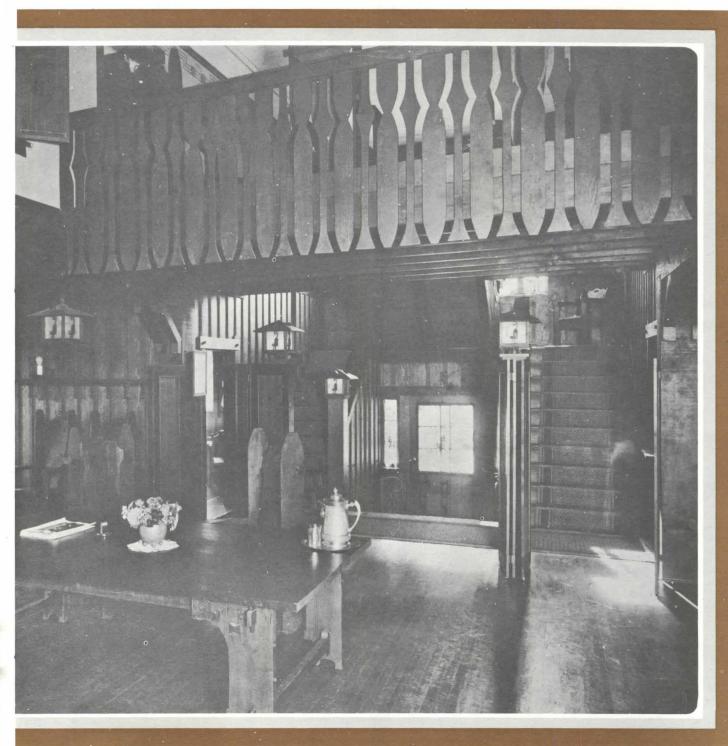
Jan C Rowan

WOOD IN ARCHITECTURE

From colonial times to the present, no construction material has more adequately fulfilled the diverse requirements of America's designers and builders than wood. Because of its desirable structural as well as aesthetic properties, and because of its abundance in nature, this versatile material was selected for the simple, rugged salt-box houses of the pioneers, the growing sophistication of Georgian houses and meeting places, the revivals and eclectic fantasies of the last century, and as a major material to express the renaissance of independent designs of our own period. Although the structural principles governing wood have long been understood, the search for technical innovations was not begun until fairly recently. Two noteworthy exceptions, however, have greatly extended the range of applications for this product, so that its maximum dimensions are no longer limited to the size of the tree itself. These are the invention of the ring connector, and the development of superior adhesives that have made possible permanent assemblies of structural glued laminated timber components. In this issue, the Editors have attempted to evaluate trends in today's installations of wood and to review interesting experimental work being performed by the architectural profession and groups within the wood industry. A survey of the activities of both the profession and industry, however, fails to reveal new, major technical breakthroughs of a purely architectural nature. Although many projects continue to use wide-span designs that rely on laminated beams and trusses, lamalla combinations, geodesic principles, and so on, their past familiarity requires no further documentation. It seems, then, that the most creative work in the use of wood today is in the structural experimentation for more conventional types and sizes of buildings. Therefore, the various fresh ways in which designers are combining familiar wood components -plywood, lumber, poles, standard laminations, and veneers-becomes our focus of discussion in this issue devoted to the subject of wood in architecture.



110 Wood in Architecture



Ellsworth Storey's wood demonstration building at the Alaska-Yukon-Pacific Exposition of 1909 (see following page).

Photo by F. H. Nowell: Courtesy of Victor Steinbrueck.



Timberland Pioneers

In the first decade of the 20th Century, several architectural influences combined in Seattle to produce a few buildings that stand as landmarks in the evolution of modern design and in the use of wood. Works of that period by two local architects, Andrew Willatsen (1876—) and Ellsworth Storey (1880–1960), have characteristics that mark them as forerunners of the later Northwest Style.

Willatsen was born in North Schleswig, then part of Denmark. He came to the United States in 1901 and worked for several years in Frank Lloyd Wright's studio at Oak Park. He moved to Seattle in 1907 and established his own practice. The Elmer Todd House (this and facing page) is the outstanding example of his adaptation of the Prairie Style to the conditions of the Northwest.

Storey, a native of Illinois, arrived in Seattle in 1903 (at the age of 23) and immediately hung out his shingle. After graduation from the University of Illinois, he had traveled in Europe, where the Swiss chalets and other anonymous buildings had impressed him most. The influences of the American Shingle Style and the English Arts and Crafts Movement, as well as Wright and the Chicago School, are evident in his work.

The Hoo Hoo, a lumbermen's fraternity, commissioned Storey to design a building demonstrating the use of forest products for the Alaska-Yukon-Pacific Exposition of 1909 (preceding page). (The fraternity, founded in 1892, is still active, with 12,000 members in 135 chapters throughout the country.) The "Hoo Hoo House" remained standing as the University of Washington Faculty Club until 1959, when it was razed to make way for a new club. In his cottages at Colman Park (following pages), Storey made his most noteworthy effort to develop a new design idiom out of the conditions and materials of the region.

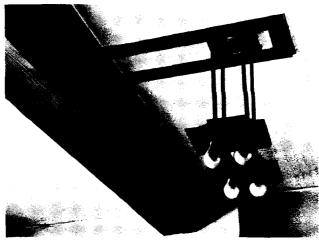
Frank Lloyd Wright's influence on Andrew Willatsen is evident in the Elmer Todd House of 1909. The front of the house (facing page, top) is reminiscent of the Prairie Style, but the rear (facing page, middle) has a simpler rectilinear composition akin to later Northwest architecture. Exterior details (left) exploit the decorative possibilities of natural wood. The interior (facing page, bottom) has architect-designed lighting fixtures.

PHOTOS, EXCEPT AS NOTED: ART HUPY

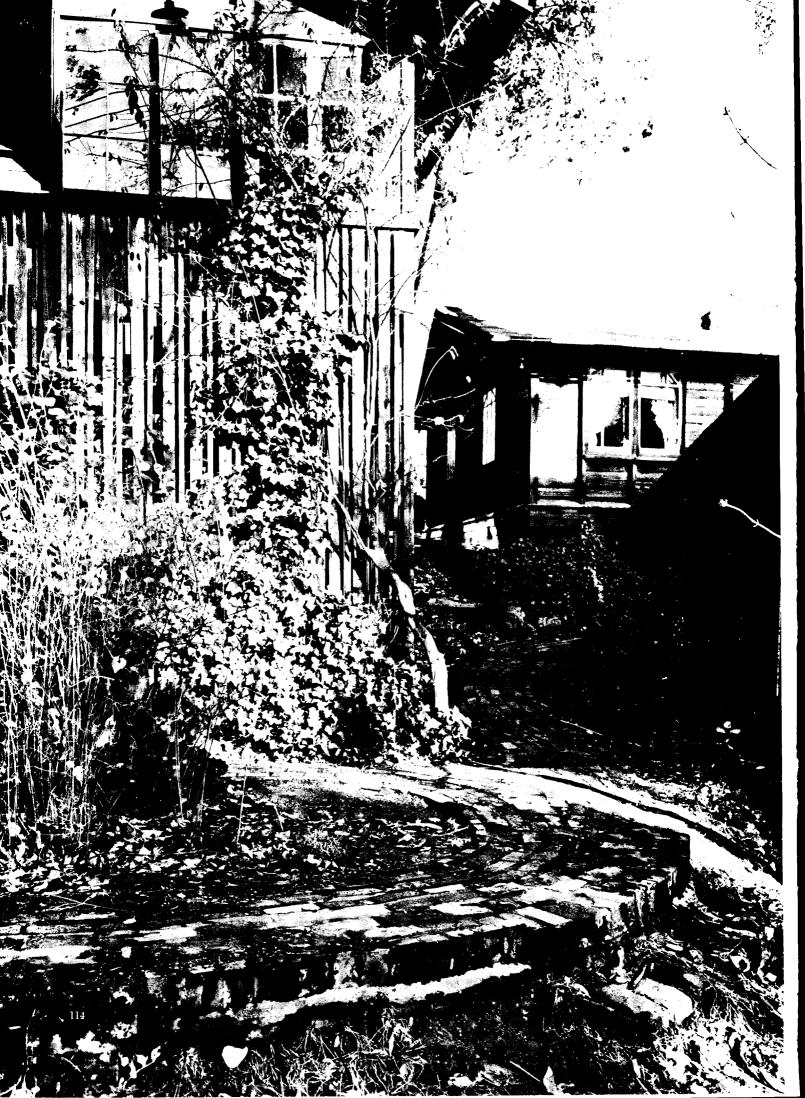








JUNE 1963 P/A Wood in Architecture 113







PHOTOS ABOVE AND RIGHT: COURTESY FRED BASSETTI

In 1908, Ellsworth Storey bought a few lots facing Colman Park in Seattle and constructed eight cottages "to provide low rental homes in a good neighborhood." Each of the cottages is a 20' x 32' rectangle in plan, with an 8' x 20' porch at one end. The exterior walls are framed with exposed 2 x 3 studs, 32 in. on center, a single thickness of T & G boards filling the spaces between them. This "single construction" is quite adequate for Seattle's mild winters. Windows and other details are made un of simple rectangular sections; screens and balustrades are constructed of wood slats.

Although the houses run up the slope in uniform rows (below), the meandering brick paths give the observer the impression of irregular, picturesque siting (facing page).

In 1910, Storey designed and built four additional houses adjacent to the original group. These later houses (above left) have flat roofs and stucco panels between the exposed structural members on the exterior.

Of the 12 cottages built, 11 survive today, and there is still a waiting list of prospective tenants.





CONTEMPORARY VERNACULAR

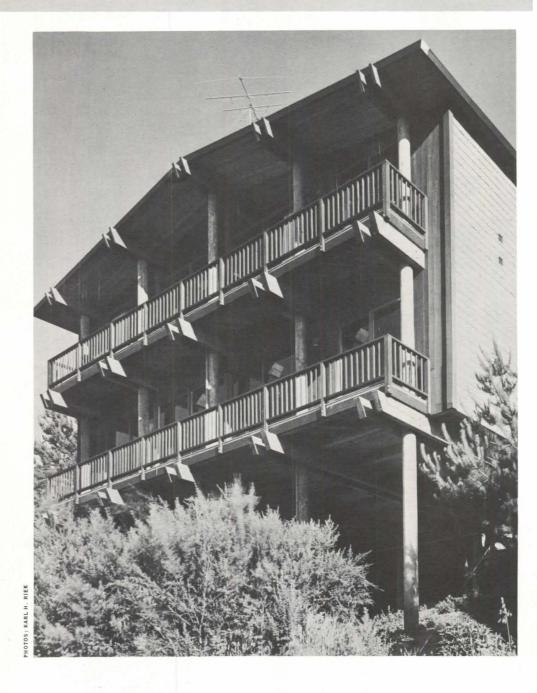
Diverse Practice of One Office







116 Wood in Architecture

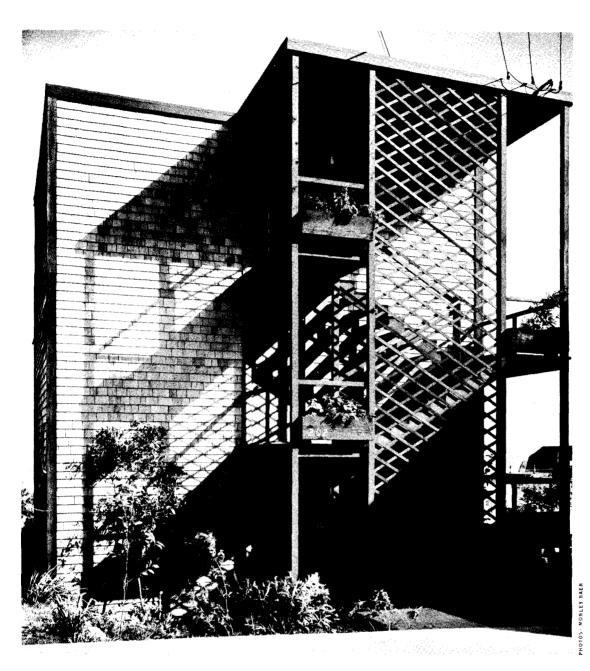


Poles for a Steep Site

Representative of the skilled detailing in wood that is the hallmark of work by Campbell & Wong & Associates is this pole house on a steep down-hill site in San Francisco. The structure is completely without concrete foundation except for the pads directly under the poles. The poles are sunk, back-filled with sand, and sandwiched by heavy-timber girts which support purlins and a T & G diagonal subfloor. All walls are strictly curtain walls.

The house was designed to open kitchen and living-dining areas to the immense view, a panorama that includes the Golden Gate Bridge and the hills of the East Bay. Behind these rooms are private courts, making enclosed "sun-traps" that are relatively wind-free, and at the same time providing a tranquil outlook for the two bedrooms. On the lower floor are a "party" room and a suite for guests, both open to the view

Interiors are a subdued study in wood—the poles, which are chemically treated, are olive-green in color; the walls are paneled with redwood in main living areas, with cedar or hemlock in other areas; roof decking is hemlock, T & G.







Minimal Apartments

Although this apartment house in Sausalito was planned as an "absolute minimum" building, there is, nevertheless, a refinement to the design that is usually lacking in low-cost rental units. Over-all dimensions of each unit are a compact 18' x 24' (which includes living, kitchen, bedroom, and bath), but a large deck adds considerably to the actual living space, and the sliding glass doors that open onto the deck encompass a wide view of San Francisco Bay.

For minimum upkeep, exterior siding is of cedar shingles, and dark-stained red-

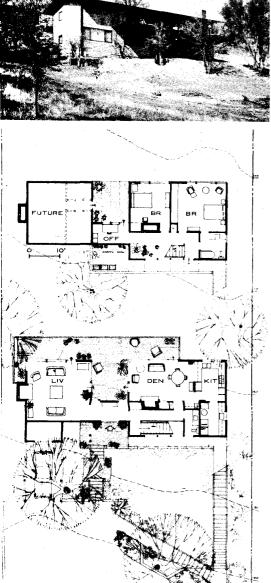
wood is used at the deck and at the entry stairway. Other economies in the woodframe building are an exposed plank-andbeam ceiling on the top floor, and rough plywood underlayment for finish walls and for structural bracing. Wood battens are applied to the walls to give scale to the large sheets of plywood.

The site, too, is minimal: apartments, parking area in front, and generous garden in the rear are on a lot that measures 30' x 100'. Total cost of the apartment house (exclusive of site, fees, equipment, and landscaping) was \$13,200.

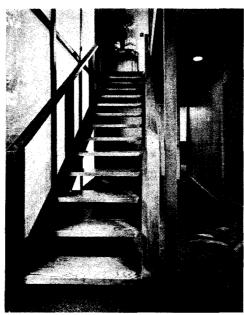


Contemporary Vernacular 117









Unconventional Site

This house, which is of conventional wood-frame construction, is typical of Campbell & Wong's work—it is simple, expressive, and utilizes the visual and structural properties of wood in a quiet and straightforward way. The only dramatic element is offered by the site itself, which slopes steeply toward the edge of an artificial lake created by Folsom Dam near Sacramento.

The 25-degree slope of the site suggested a three-story plan—carport at the first level, main living areas at mid-level, and bedrooms below. Walls are wood frame, and beams carry a T & G resawn-fir roof. The carport is of post-and-beam construction, with a T & G deck.

Cedar shingles are used on the exterior, where the only painted items are trim and millwork. (Posts and beams of the carport are also painted.) Interior paneling on most of the main floor is vertical-grain Douglas fir, lightly stained. The resawn-fir ceiling is also stained (with a thin white paint), and beams and trim are painted a deep charcoal color for contrast.

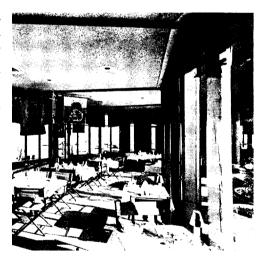


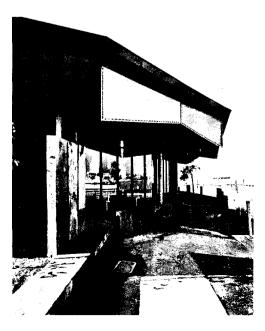
Drama of the Waterway

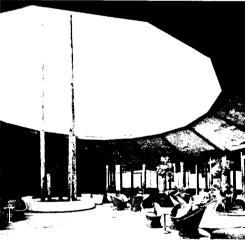
The Galleon Restaurant in Oakland puts the theatrical qualities of its site into a starring role. The concrete slab is so formed that floors and rooms step down much as in a theater, and the drama of the busy waterway is always center-stage.

The restaurant is one phase of the development of the Pacific Marina from an industrial area into one with facilities for rapidly expanding private boating as well as commercial shipping. Diners arrive both by car and by boat to enjoy this marina restaurant. A sheltered dining area is provided by the inner court area, while the perimeter deck is used on warm, windless days.

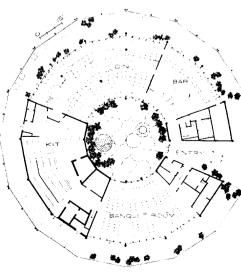
Vertical structural elements of the restaurant are exposed wood pilings, which are both practical in their function and nautical in their mood. The marine theme is repeated in a sculptural group in the landscaped inner court, and also throughout the interior—in such details as brass ship's hardware, pennants and banners in 16th-Century Spanish style, and heavy battens over paneling of redwood.



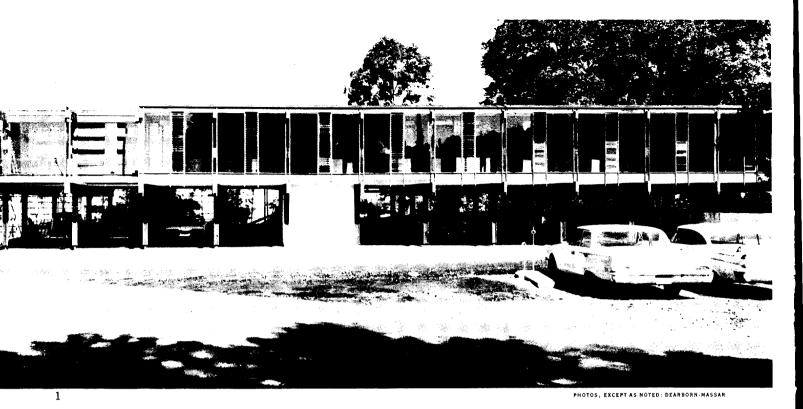




PHOTOS (EXCEPT AS NOTED): ROGER STURTEVANT



Contemporary Vernacular 119



Laminated Posts With Glazing

No survey of the architectural uses of number of parking places underneath the wood today would be complete without a mention of the work of Kirk, Wallace, McKinley & Associates. The neat, representative structure on these pages houses their own Seattle offices and a rental area. By elevating the single floor of office space, which is the maximum size permitted by the zoning regulations, the architects were able to provide a mandatory

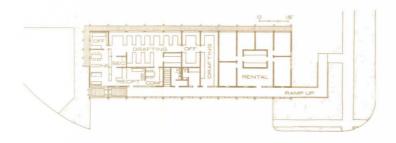
offices (1, 3). The sloping site was exploited by providing a split-level entrance over a ramp (2), which gives access to a glazed circulation corridor (4).

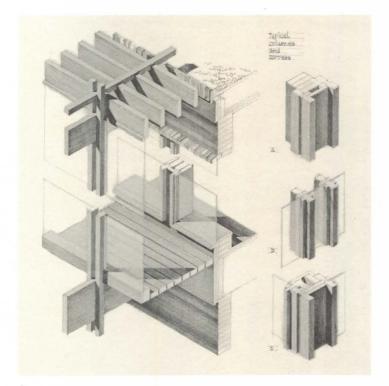
The building has a simple post-andbeam structural system that uses glued laminated beams and laminated Douglas fir posts. The latter were fabricated on site. Framed cedar lap siding and all other

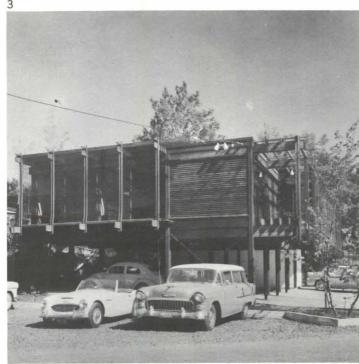
wood exterior surfaces are stained dark brown, which is carried through to the interior on the posts and beams (5, 6).

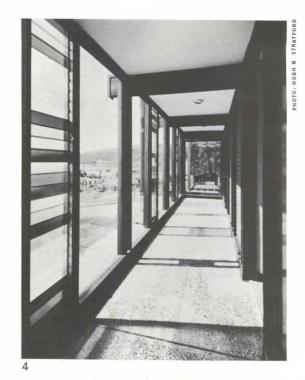
Since the building is air conditioned, all windows are non-operable, except for multi-colored jalousies, which are used in the corridor. Therefore, the glass has been deftly detailed into the posts (drawings, facing page). This type of detailing characterizes the firm's subtle use of wood.





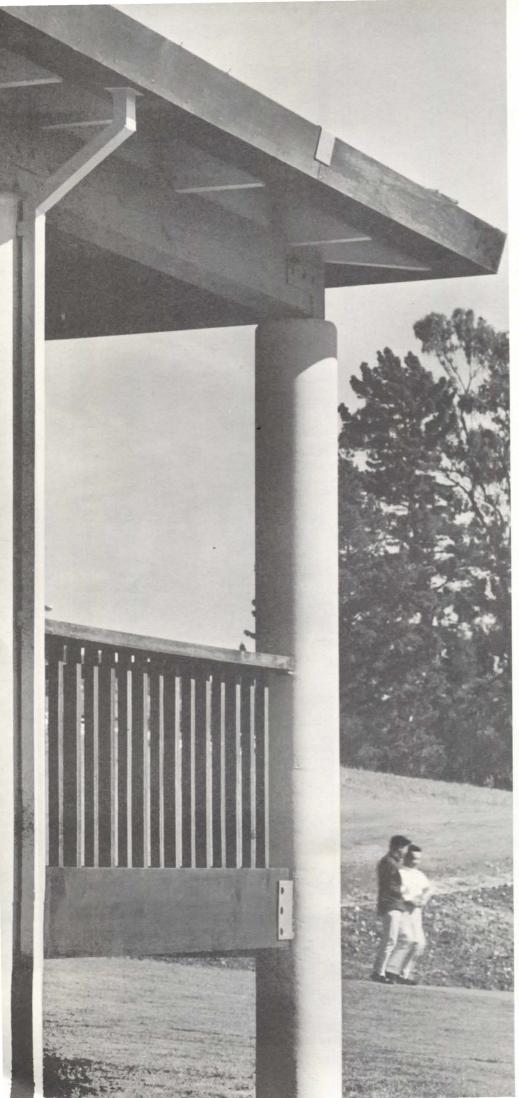












Detailing for a Campus

Ernest Kump writes that materials have "perhaps the greatest impact in their contribution to the emotional quality of buildings." At Cabrillo College, near Monterey Bay, balustraded balconies of wood are combined with walls of slumped block to recall the traditional Spanish hacienda of wood and adobe. In name, too, the college recalls the early California history—Juan Cabrillo, conquistador, discovered California in 1542.

The community college, most rapidly developing part of the state's public school system, strongly needs such roots. As a new institution in a community, it



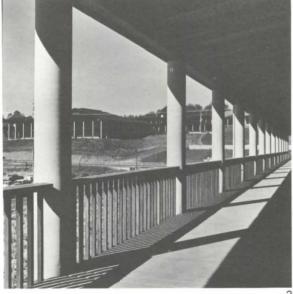
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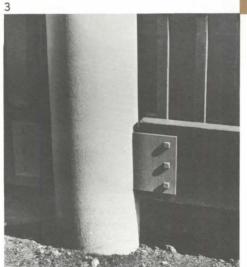
has no traditions of its own; it must create them out of the natural and cultural riches of the area. It must achieve a "contemporary expression of this heritage," and, looking to the future, must provide the optimum degree of flexibility that its complex purposes may require. (Cabrillo serves as community center for district residents, as well as two-year alma mater for an initial enrollment of 2000 commuting students.)

The "indigenous architectural identity" of the campus is the work of The Office of Ernest J. Kump and Masten, Hurd & Gwathmey, Architects Associated.



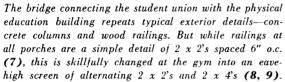


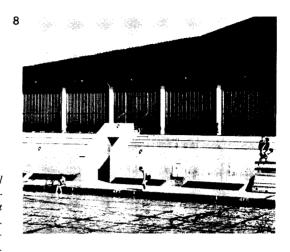




Seeking to combine dignity and maturity with a friendly informality, the architects tried to avoid extremes of both "ponderous monumentality and impermanent flimsiness." A major element giving the campus its simple unity and strong indigenous character are the arcaded balconies with wood railings and white concrete columns (1, 2, 3). These peripheral balconies serve as protected gathering places and as sun control. While some roof shapes and spans suggested steel trusses as the straightforward solution-auditorium and library (4, 5), for instance—the classroom pavilions are complete wood envelopes, including the roof framing and typical heavy redwood shakes (6).

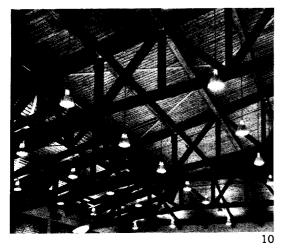




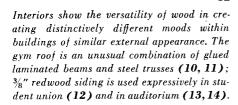


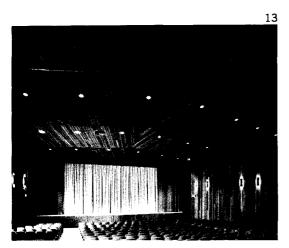


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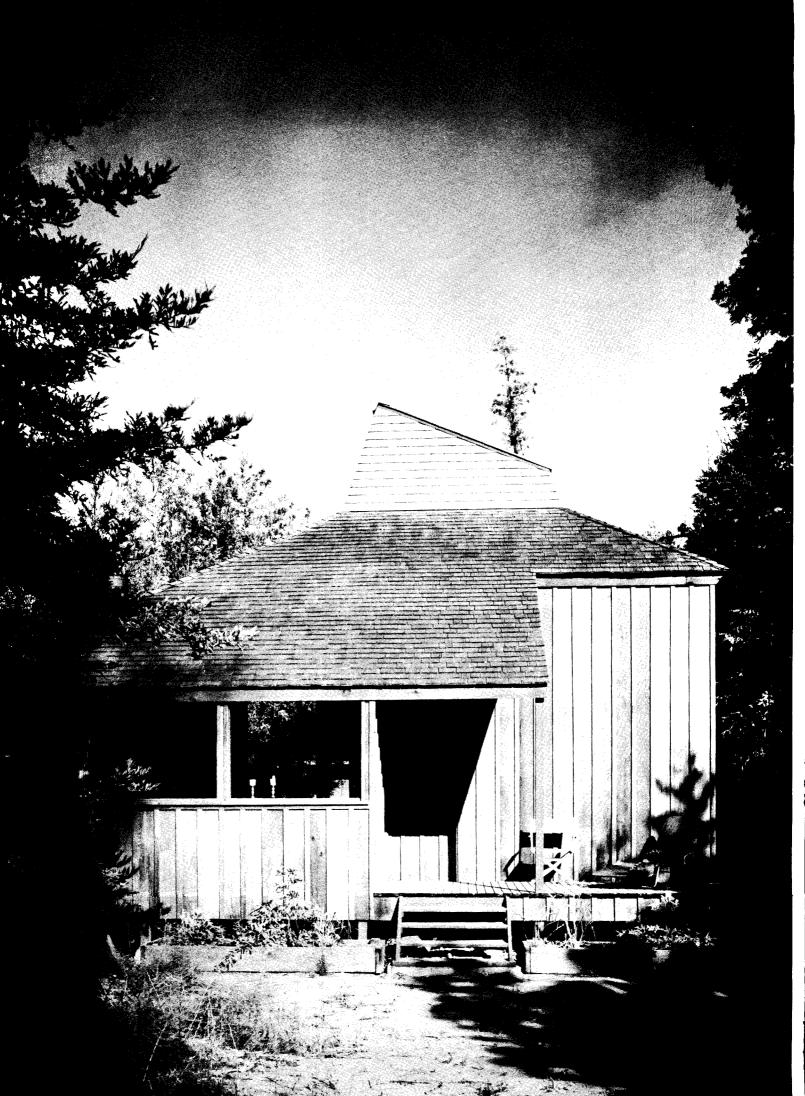














Redwood Walls in a Redwood Canyon

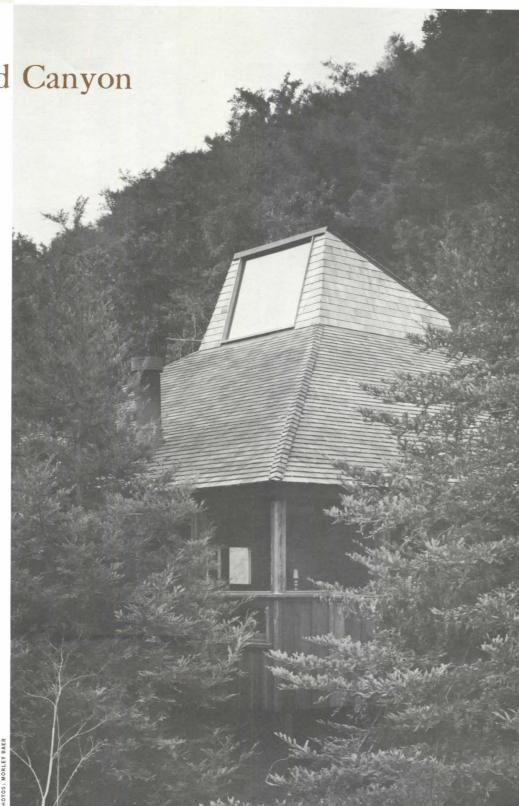
Charles Moore's weekend house for Mr. and Mrs. Cyril B. Jobson is located at the bottom of Palo Colorado Canyon, which opens onto the coast of California below Monterey. The house is one of a series this architect has designed, using the same basic form: a square plan with a pyramidal roof that is crowned by a square skylight at the apex. The Jobson house, however, shows considerable manipulation of this shape.

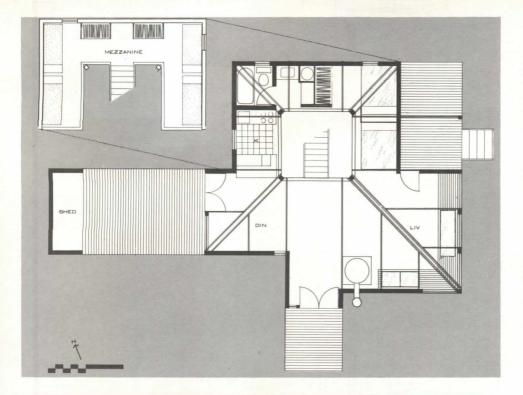
In one of the houses, as yet unfinished, a cluster of these forms is used to produce both exterior and interior variety. In Moore's own house (May 1963 P/A), only one of the forms is used; however, it is modified slightly on the exterior by making the skylight rectangular, and, on the interior, a mutable space is achieved by imaginative use of free-standing elements.

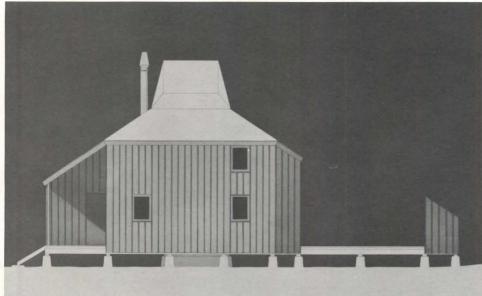
In the design for the Jobsons, the basic form, and therefore the interior, have been varied markedly. Most conspicuously, the skylight, while still square in plan, is asymmetrical in elevation. Its top is raked, and the light itself is placed on one of the raked sides, so that the unit is, technically speaking, a monitor.

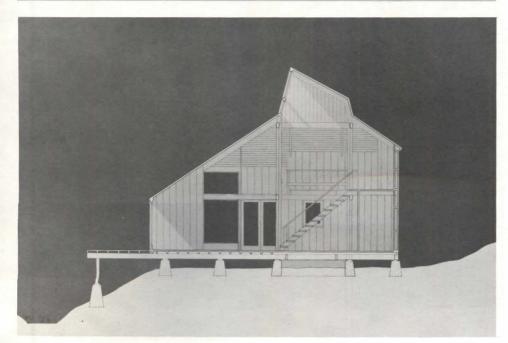
The derivation of the final plan from the basic square form is less apparent, but one can attempt to reconstruct the biography of the design. Reading the skylight as being over the center of the original square (plan, overleaf), one may assume the living-room corner as a fragment of that original square. It appears, then, that Moore has moved most of the other exterior walls in toward the central skylight in an irregular manner. The main corners of the building, however, are fragments of concentric squares within the original square; hence, they coincide with the hips of the pyramidal roof.

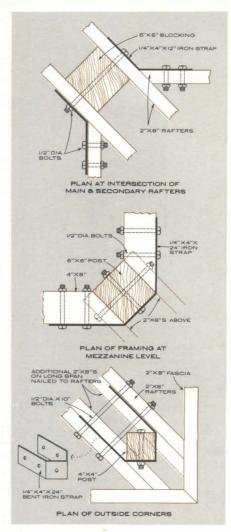
In most cases, where walls have been moved in toward the center, the roof and the floor platform have been cut away to correspond to the irregular plan. Inversely,











several decks project beyond the limits of the hypothetical, large square. A small shed at the end of one of these decks reads as a volume extracted from the original form.

The effect on the interior of moving the walls in toward the central skylight is to produce narrower spaces with high ceilings as well as wide spaces where the ceiling slopes down to door height. The high, narrow spaces at the rear of the house accommodate a mezzanine, which is devoted to sleeping alcoves. "Three children and grandparents who visit frequently made sleeping accommodations necessary," Moore says, "but a desire for minimum housework and maximum spaciousness suggested bed alcoves rather than bedrooms." The wide spaces on the front are used as the living and dining areas.

All this manipulation of form is executed in wood: a post-and-beam structural system of fir; exterior walls of redwood board and batten; interior walls of redwood and plywood; fir decking; and cedar shingles on the roof. Using this seemingly unsophisticated idiom, the architect has achieved an effect on the exterior that is reminiscent of the forms associated with Brutalist architecture. On the interior, he has created a single space that has noteworthy variety.

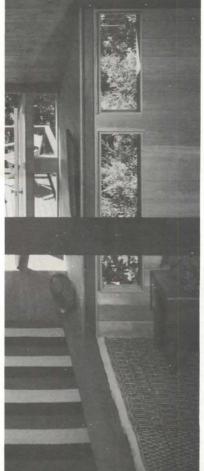




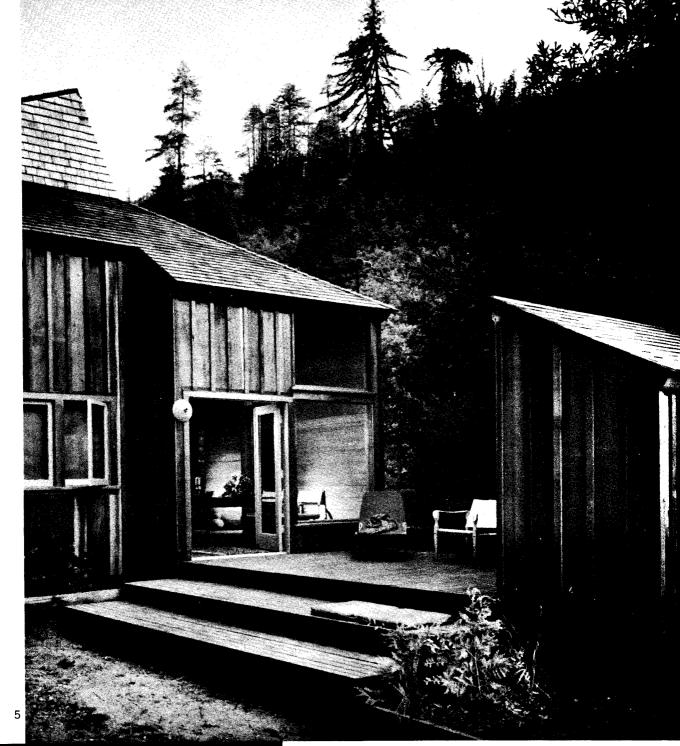


There is an interplay between the fenestration, the interior spaces, and the topography of the site. High, narrow windows in the dining area (2, 4, 6) look out onto spiky redwood trees (5) and the mountain tops across the canyon. Low, wide windows over the living room benches (3) expose views toward the distant, more gentle hills to the east. A low window beside one of the benches (3) provides a view down to a small creek that flows beside the house. The skylight (1), over the stair to the mezzanine (2), allows light to filter deep into the central portion of the single, open-plan space.





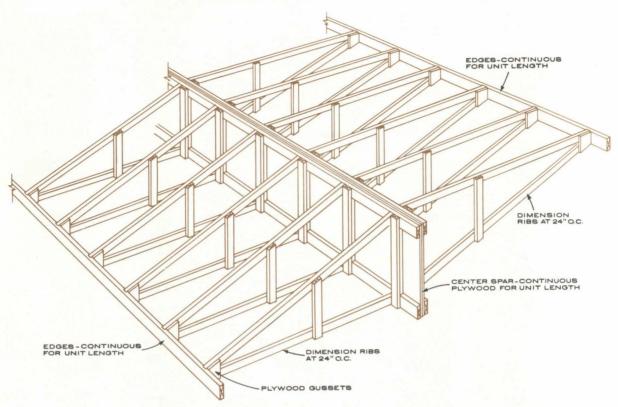
Moore's final evaluation is as follows: "I am particularly pleased with this house, and the Jobsons, who were ideal clients, apparently are too. I'd like to do another one like it, painted white on the inside to bounce around the light that streams in from above and from the high windows. The low window beside the stream ought to open, so the stream could be heard as well as seen."





6

NEW DIRECTIONS



Winglike Space-Frame Components

Plywood is on the wing—on both wings—at Oaklawn Junior High School in Wichita, Kansas. A new space-frame component of fir plywood and structural lumber makes up the roofs of both the low classroom wing and the arched gymnasium.

Architects Associated, the Wichita firm of John M. Hickman and Arthur T. Woodman, are enthusiastic about the possibilities of their component. (This is their second school that uses this system.) "The buildings went together much faster than we had expected and labor costs were cut considerably," says Woodman. (Total cost of this school, including all extras, was \$10.51 per sq ft of enclosed building space.) And there are extra dividends, according to the architects. "The open areas within the frames make wiring and

heating installation simple, and the acoustical qualities appear to be good. The ceiling shape definitely helps with light distribution, and the thin supports permit wider windows closer to the ceiling level."

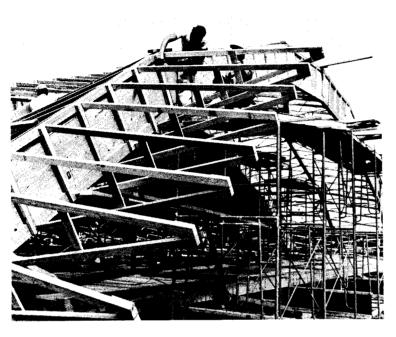
The space-frame combines fir plywood of various thicknesses with 2 x 3's, 2 x 4's, and 2 x 6's. The center spar of each space-frame unit consists of two layers of $\frac{5}{8}$ " plywood, with staggered joints, glued and nailed. Continuous lumber flanges—2 x 4's and 2 x 6's—run along the top and bottom of each spar, and lumber is also used for bracing and framing the fins. Originally the fins were to be of plywood, but difficulty in getting an economical number from a sheet changed these plans.

Each unit is 15'-10" wide, and with an edger added, it measures 16' from tip to

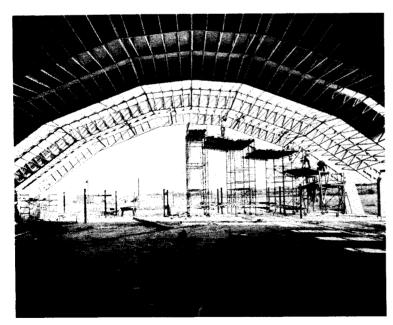
tip. In the classroom application, units are supported 16' o.c. at the spars by 4" steel posts. In the gymnasium wing, frames form a vault spanning 74' and resting on concrete piers spaced 16' o.c.

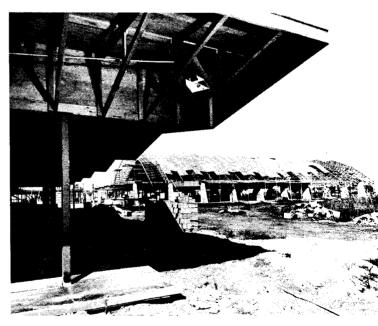
Roof surfaces are ½" plywood throughout. Where the plywood skins meet at peaks and valleys, a 6"-wide cover of metal is used under the built-up roofing. Bottom skins, too, follow the saw-tooth contour of the space-frame, with ceiling surfaces of ½6" plywood in the larger wing, and gypsum board or glass-fiber board in the classroom wing. For the exposed ends of the frames, medium-density overlaid plywood, ½6" thick, is used in the gym wing; and exterior-grade A-C plywood, also ½6" thick, is used in the classroom wing. All these surfaces are painted.

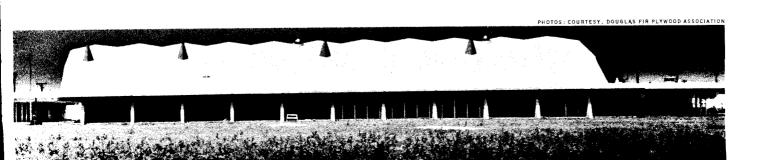










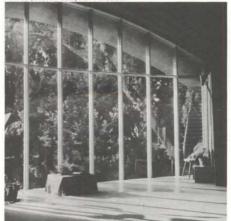


Roof Shell of Lapped Plywood

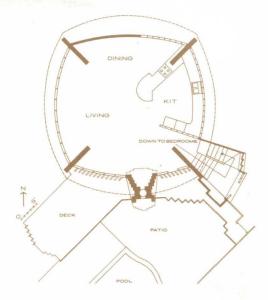
















"Growth should be direct, self-forming, continuous." Thus writes Walter Popenuck, an architect trained at MIT, who has embodied this idea in the roof of his own home in Berkeley, California.

The roof is "a special case of building with continuous repetitive increments." Summation of many parts develops a curved surface, much as the addition of mathematical increments in calculus develops a total. In this way, Popenuck believes, rigid materials can attain plasticity. A continuous form has an inherent beauty, he feels, plus great strength and diverse possibilities of form.

To simplify computation and facilitate official approval, the roof was calculated as an arch composed of 1'-wide segments, rather than as a compound curved shell. Consulting Engineer was Alan R. McKay, Oakland.

Formwork (in addition to the perimeter walls) consisted of diagonal arches between piers, and a curve between midpoints of east and west walls. After five plywood strips were placed, however, the shell began to rise above the forms, and remaining 1'-strips were set independent of the formwork. From similar behavior of the 1/6-scale model, Popenuck suspects that "with predetermined lateral displacement on consecutive increments, the shell is self-generating and formwork is unnecessary." Another conclusion: Building the roof supports and shell, then adding enclosing walls, could have avoided exact calculation of roof curvature at the walls.

The piers are also wood (plywood sheathing over Douglas fir framing), and textured plywood is used throughout exterior and interior, in main living areas and in bedrooms below.









Raising Prefab Umbrellas

The structural system of this summer cottage by Davis, Brody & Wisniewski (for a full presentation, see May 1963 P/A) was designed to be erected with a minimum of skilled labor and equipment at the site in Menemsha on Martha's Vineyard Island, Massachusetts. The roof panels and structural members were fabricated under Wisniewski's supervision in the

The structural system of this summer cottage by Davis, Brody & Wisniewski (for a in New York.

The principal framing members are made up of pairs of 2 x 4's, spaced \(^1\set2''\) apart. This gap allows for the insertion of steel bars at connections and leaves a groove on the sides of the columns for the setting of glass. The spider-shaped steel fitting (1) that connects all of these





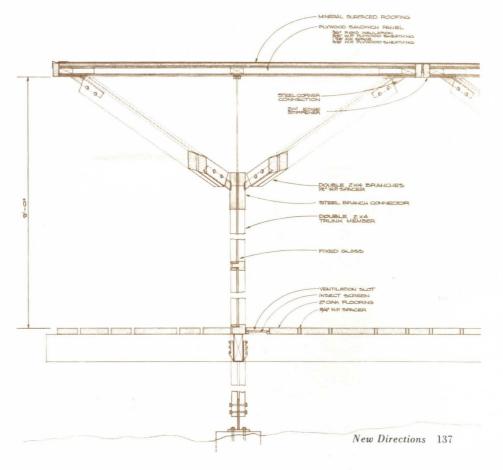
members is made up of four $\frac{1}{2}$ " bars welded to a pair of channels (or one channel and two angles, as shown for certain conditions), spaced $\frac{1}{2}$ " apart so that the glazing groove is not interrupted (7).

The umbrellas were assembled on the site (2, 3) by connecting these members to the prefabricated roof panels, which are 8'-3'4" square (the length of a sheet of plywood plus the width of two 2 x 4's).

The T-shaped steel base (4) fits into a slot in the column and is drilled to take the anchor bolts of the 12" cylindrical poured concrete piers (8), which are spaced $8'-3\frac{3}{4}$ " on center to allow $\frac{1}{2}$ " tolerance in erecting the umbrellas.

The 38 umbrellas were erected with a crane (5) in about $1\frac{1}{2}$ days by 5 men, including Wisniewski, who is shown (6) connecting the roof panels with steel angles.

Once the umbrellas were in place, the house was completed by constructing the floor, which is supported on the stems of the umbrellas, and the walls and partitions—which are of clear glass, fixed or sliding, with curtains for privacy.



Leaping Box Beams

This house is the result of an effort to find an economically efficient structural system for residential construction on hillside sites. Architect R. R. Zahm designed the house with the collaboration of engineers from the Douglas Fir Plywood Association, which sponsored it jointly with the West Coast Lumberman's Association.

The pressure to utilize hilly terrain for residential development is increasing in many suburban areas, such as Marin County, California, where this house is located. One common approach to hillside construction involves eliminating the hillside itself by extensive grading; another involves building a complicated substructure, which absorbs a disproportionate amount of the total budget. Either approach has aesthetic drawbacks, and either may impair the stability of the hillside.

The architects and engineers explored

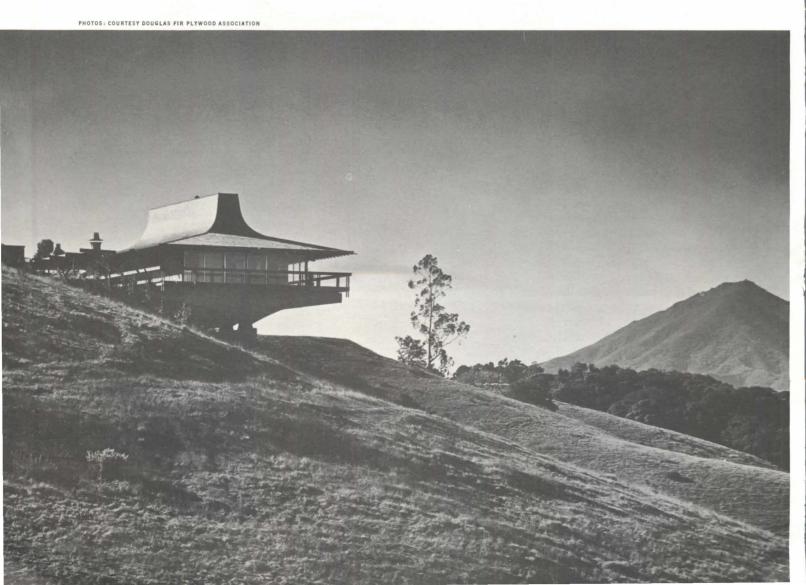
methods of supporting a house with a minimum of excavation, footings, and retaining walls. Various steel and wood systems were compared—some of them tested in actual construction—and it was determined that the most economical system for a structure of this scale was one based on plywood box beams. These beams are not only lighter and cheaper than the steel beams required for the same loading, but they are more rigid and can be connected to an economical wood superstructure without the use of special fasteners or equipment.

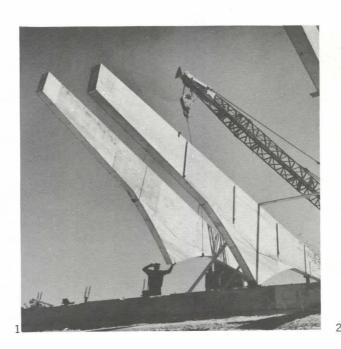
Site preparation costs for the house totaled \$37.50. The entire structure rests on a single reinforced-concrete foundation wall composed of only 30½ yds of concrete. Pipe columns at the uphill end, introduced to resist any unequal loading of the double cantilever, are embedded in

small pads of unreinforced concrete. Zahm is planning to further simplify the foundation in future houses based on this system by replacing the solid wall with a row of caissons connected by a surface beam.

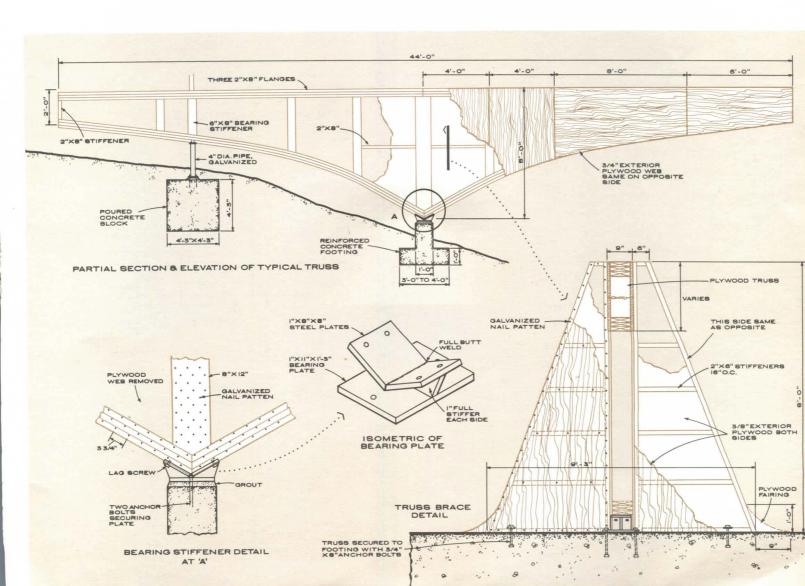
The box beams were designed to be nailed together on the site, but fabrication in a nearby plywood building component plant, using adhesives, proved to be more economical. The beams cost about \$430 each, and were set in place with a crane in less than two hours (1). The depth at the center of the beams, considerably greater than required for structural reasons, was determined by the difference in grade. The lateral bracing between the beams (2) resists forces tending to tip the beams.

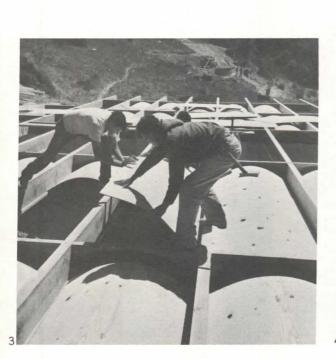
Once the beams were in place, the floor was built outward from the uphill side. The "vaulted" soffit between the beams



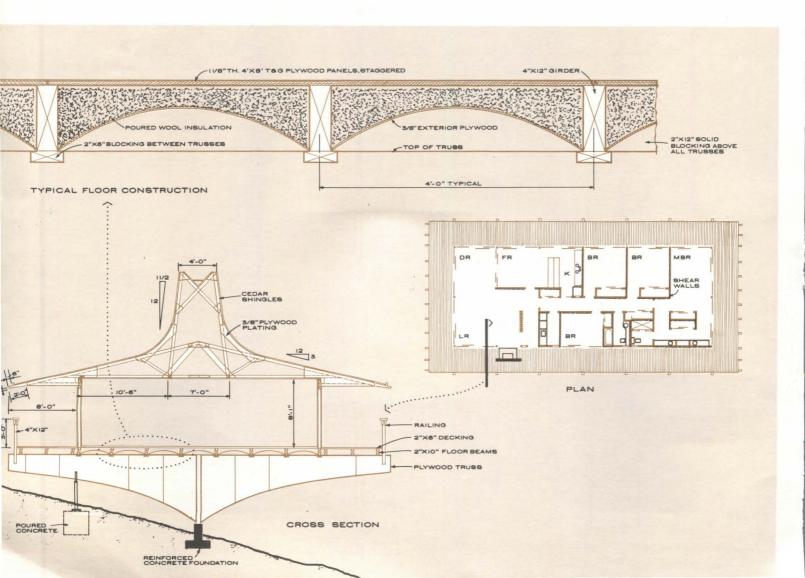


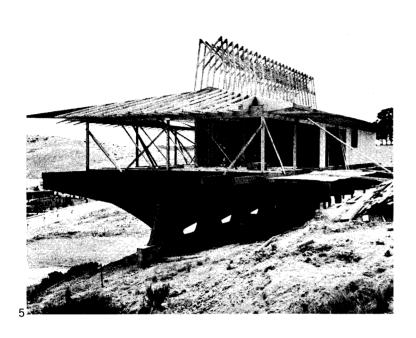








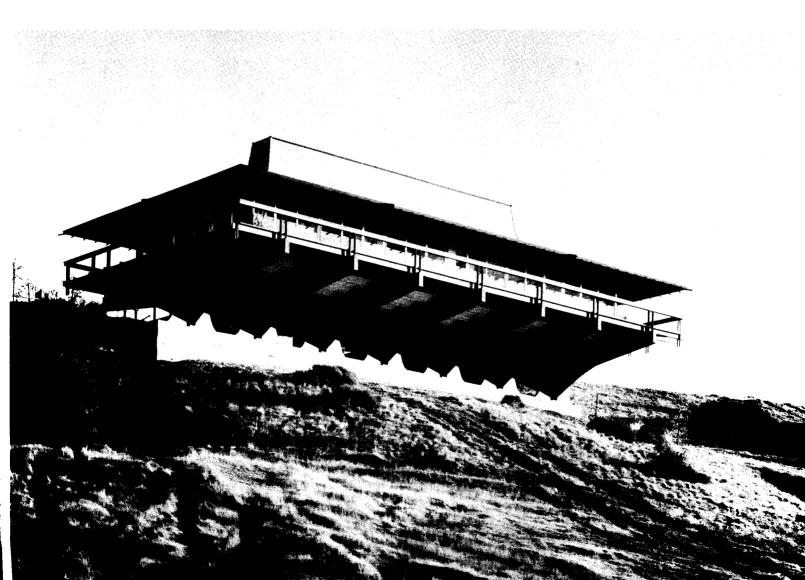




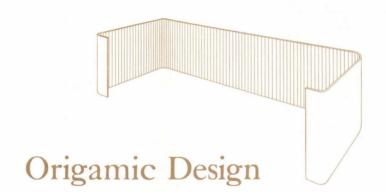
was created by springing pre-painted plywood panels between the blocking, allowing them to assume their natural curvature (3, 4). The resulting enclosed space contains utility runs as well as insulation. The floor is composed of $1\frac{1}{8}$ " tongue-andgroove plywood panels nailed on 6" centers along all edges to form a structural diaphragm. The construction of the 7'-wide redwood deck around the entire house eliminated the need for scaffolding.

The roof trusses (5) are of standard plywood-gusseted construction. Their unusual shape accommodates an attic heating plant and provides a trough at the peak of the roof for the concealment of vents and stacks. The ceiling registers around the perimeter of the house, which distribute the warm-air supply, are treated as architectural features. The underside of the deck overhang is covered with butt-jointed redwood boards.

Shear walls, composed of 3/8" plywood fastened to one side of 2 x 4 studs on 16" centers, connect the floor diaphragm to the 3/8" plywood ceiling diaphragm. By placing these walls within the interior of the house, the architect was able to use a maximum of glass on the exterior to take advantage of the panoramic views.



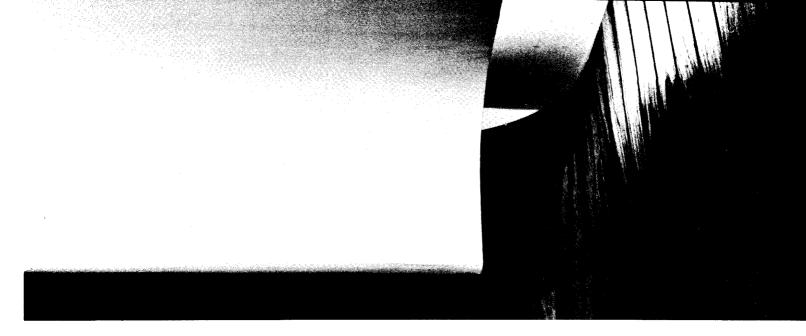




Wood has been used in a manner related to origami—the Japanese art of paper folding—in the offices designed by the young firm of Planned Office Interiors for Chlormetals, Inc., a patent management organization. "When taken as an overall form," says architect-trained designer Charles Winecoff, "the paneling is folded—as you might fold a sheet of paper to give it structural strength."

The paneling in the reception room is





teak-veneer plywood that has been grooved —¾16"-wide vertical grooves on 3" centers. The material is economical, and the grooving sufficiently interrupts the grain pattern to give an effect of more elaborate woodwork. At the corners, the plywood has been slashed on the back and folded as radius corners.

"The approach," says Winecoff, "is not sculptural; there are no compound curves, which are unnatural to paper. Plywood,

like paper, is a 'sheet' material." The "folding" is reiterated in the L-shaped teak reception desk.

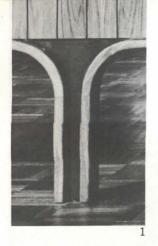
The high plaster vault of the reception room ceiling defines the entry. A slimline diffuser divides the room, leaving the ceiling otherwise free of air-conditioning elements. Over the waiting area and desk is a low, flat slab that curves down to meet the diffuser on one side and to form a dropped lighting cove adjacent to the

paneled wall on the other (above).

The doors at the ends of the vault follow its form with their semicircular tops. The door to the offices has a flat top, repeating the ceiling line there (facing page, top), but the glass panel relates to the other doors. Above this door, the plaster ceiling is cut away to allow the door to open fully, leaving the edge an exact section of the dropped cove.

In paneling the conference room, rose-

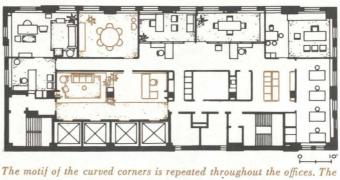












The motif of the curved corners is repeated throughout the offices. The bottom edge member of the reception desk is curved down to support the legs (1). The elevator buttons (2) are framed in a curved recess; a wood insert prevents finger smudges. Storage cabinets along the corridor (3) have white-lacquered wood doors on touch latches; push panels are painted as dark circles to resist marks. Throughout, the circular shapes add patches of color: the storage cabinet push-panels are bright blue; in the reception room, circular recesses frame a blue fire-alarm bell and a red alarm box. The reds, blues, and greens throughout the offices are combined in a Kazak rug in the waiting area.

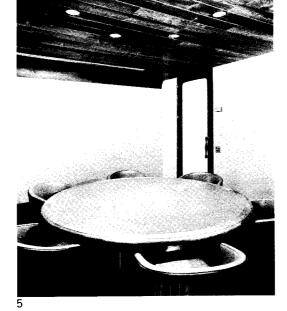
wood-veneer plywood was cut into $6\frac{1}{2}$ " strips, tongue-and-grooved, and used in random lengths. The effect is of a grooved continuous sheet that starts at a folded-down lighting cove (5), stretches across the ceiling, curves over the corner, and extends down the end wall to the floor (4). Projecting from the wall is a cabinet that seems integral with the paneling (6).

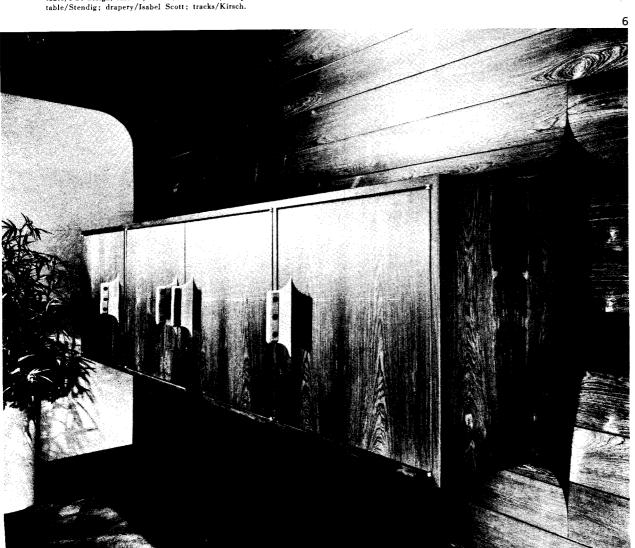
Winecoff admits that this woodwork is not all one sheet. "I could not get a single sheet of wood large enough," he continues, "or I would have used it. But the important thing is the form, and that can be thought about only as a whole."

"In a sense," Winecoff concludes, "all this is a play with forms—but serious play. That's why most architects like working, and, hopefully, why people enjoy being in an architect-designed space."

DATA: description and sources of the major materials and furnishings shown.

WOODWORK: plywood, vencer/supplied by J. H. Monteath; custom woodwork/Ebner Woodwork Corp. FLOORS: walnut/Harris Bondwood/Haywood Floor Co.; FLOORS: walnut/Harris Bondwood/Haywood Floor Co.; plaster beads/Inland Steel Products Co. LIGHT-ING: pendants/Altamira; downlights, coves/Omega Lighting Inc. AIR CONDITIONING: unit/Carrier; stripline diffuser/Air Devices Inc. DOORS: wood/custom: glass/American-Saint Gobain; knuckle butts/Soss; closer/LCN. FURNITURE, FABRICS: Reception: chrome and marble table/Stendig; chessman table/Herman Miller; desk chair/Knoll. Conference: table/POI-design/custom; chairs/Directional; telephone able/Stendig; drapery/Isabel Scott; tracks/Kirsch.





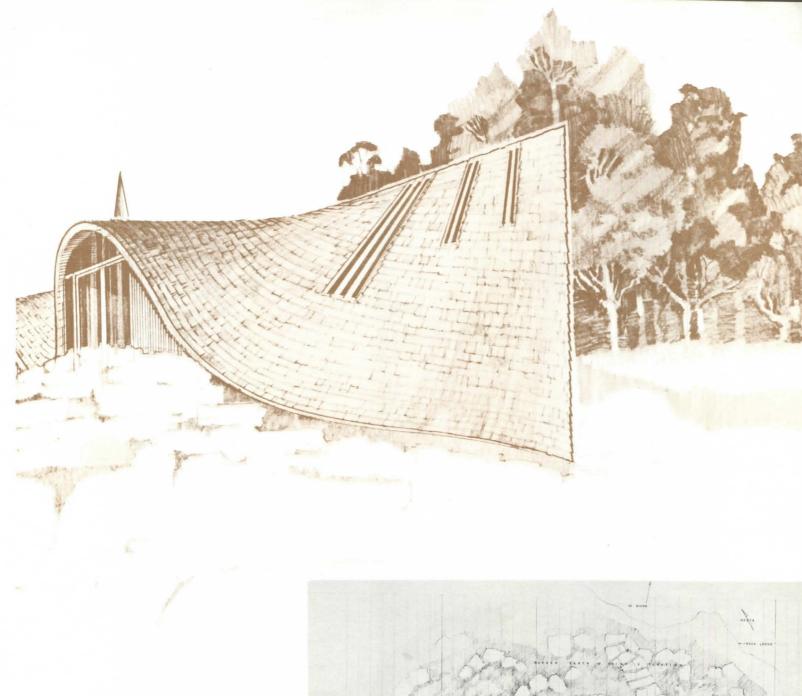
Rippling Rafters

Although this unusual form has sprung up in Joplin, Missouri, its roots go back at least to Oklahoma. The designer of the house, George K. Muennig, is a recent graduate of Oklahoma's school of architecture, and the influence of Associate Professor Herb Greene (see MAY and NOVEMBER 1962 P/A) is strongly evident.

The idea behind the form, as Muennig tells it, came largely from the site, which is dominated by the view of a meandering river and by the music of water rippling over the foundations of a former grinding mill. In his imaginative response to these sights and sounds, Muennig has created hyperbolic surfaces by repeating one basic unit-an 18'-long 2 x 6. Generated along an axis and undulating on the ends, these massed 2 x 6's have developed what Muennig calls "a continuous rolling musical pattern...a symphony of 2 x 6's." The heights of the stepped rafters are also a direct response to the interior space requirements and express on the exterior the three primary spaces of the interior.

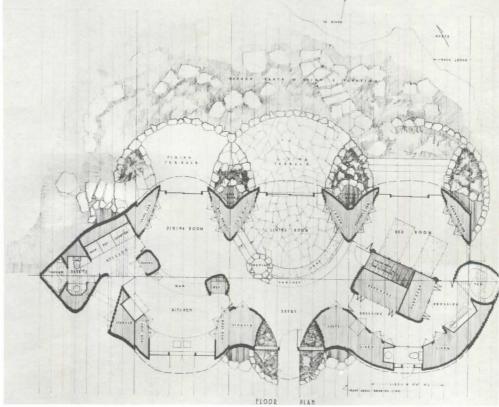




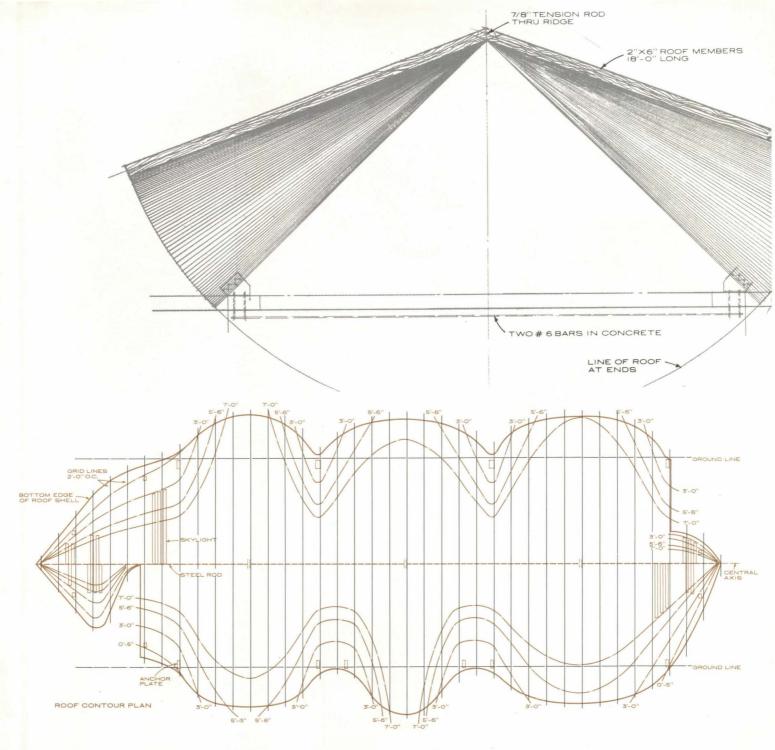


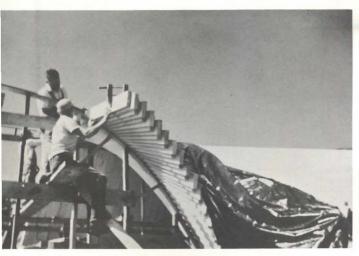




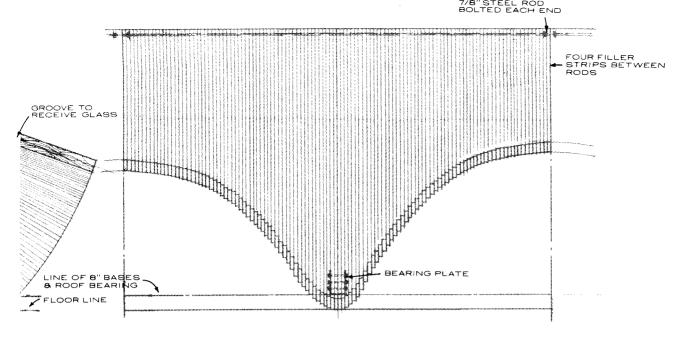


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ROOF SHELL CONSTRUCTION

Muennig designed the roof shell as a self-supporting structural unit. It was conceived as a "reinforced wood slab," half of each arch being cantilevered from the bearing points.

The tension side of the internal stress couple is resolved by a $\frac{7}{8}$ " steel tension rod through the ridge; compression is transmitted through the 2 x 6's. Shear between the rafters is taken by twisted shank nails, their quantity varying according to the shear stress at each point. No

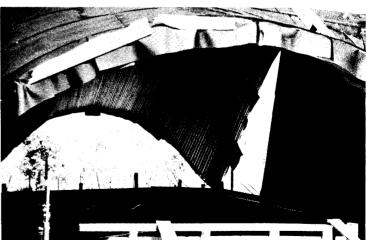
beams were required. The end rafters are secured to the foundation, giving lateral support to the structure.

The concrete bearing piers were formed first, and the roof shell constructed next, so as to give shelter for remaining work. Tension rods were shored in place, providing a means of aligning the rafters at the ridge. Temporary templates were constructed to form arches, and the rafters were fitted into place without further measurement. Rafters were installed out-

ward from each bearing point, with filler strips used at the center for proper meeting of each half of the arch. After the floor was poured, wall lines were determined by plumbing from the roof contour.

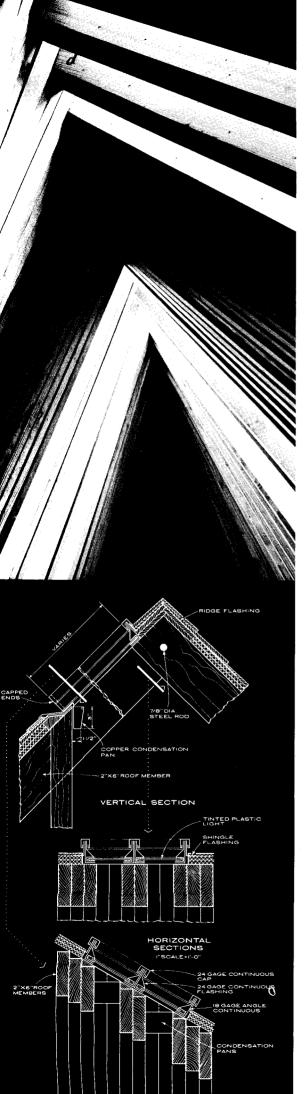
Number 1, dense structural yellow pine was chosen, as it is native to the region and has the required strength and durability. Special care was taken to select dry lumber and to protect it during storage and during construction of the shell.





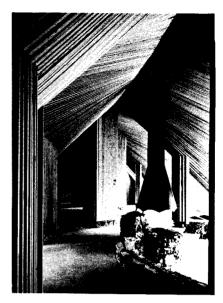
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Walls and roof branch out of each other as if part of the same living tree. All interior walls are constructed of 2" yellow pine members, aligning with rafters and repeating the patterns of the exposed underside of the roof. Even the skylights are a totally integrated part of Muennig's design.

To protect wood from moisture at the floor slab, 8"-high stone sills are used throughout. Plywood cabinets are treated as "slabs set into the walls," and are set off from the roof by light coves that provide both up and down lighting. Additional lighting (plus space for air-conditioning ducts and vents) is located at the island closets, elements which also operate as visual screens in the otherwise fluid space. Wood is to be finished natural, with cabinets stained a slightly darker color.









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PHOTOS: VINCENT LISANTI, COURTESY OF "BETTER HOMES AND GARDENS

"System" House

The "System," for which this house is the prototype, was developed by architects John Black Lee and Harrison DeSilver as an economical design and construction procedure for the custom-built wood house. It is adaptable to a variety of plans and exterior treatments and lends itself to the prefabrication of parts.

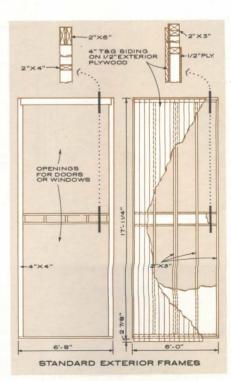
The plan is based on a 6'-module and simple fractions thereof—36", 24", 18", and 12". The "System" architects point out that these dimensions are more compatible with the elements of a domestic interior than the more common modular system based on the 16" spacing of conventional framing and the 4' width of sheet materials. An adequate hall or a doorway and its framing are 36" wide, for instance; a stair landing or a bathroom requires about 6'; a chair occupies about a square yard and a bed or sofa is about 6' long.

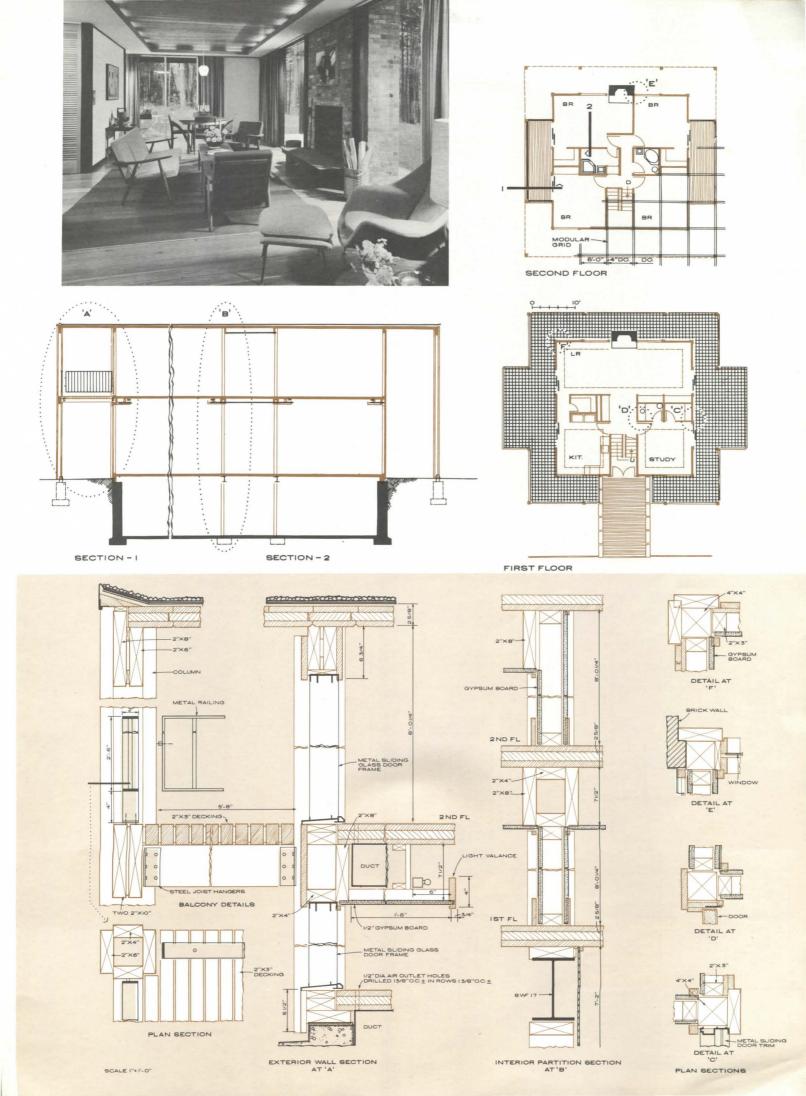
There is also a significant departure from the usual modular system in that the 6' is a clear measurement, not a center-to-center-one. A 4"-space is introduced be-

tween the major modules to accommodate columns and partitions (floor plans, facing page).

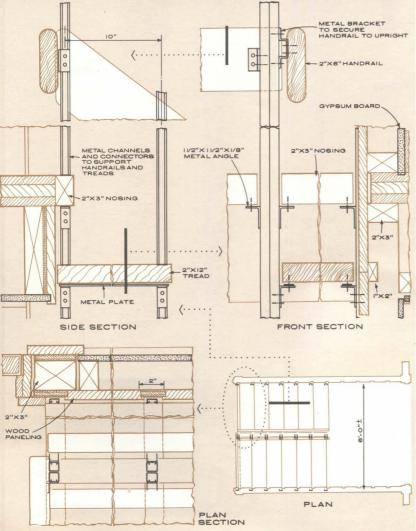
Working drawings are unconventionally organized as a step-by-step guide to the simplified construction procedures. Manufactured elements have been substituted for parts requiring intricate on-site labor; wherever possible, materials are used as supplied or with a minimum of reworking. Structural components are designed to serve as finished surfaces. Exterior walls are composed of two-story-high prefabricated wood panels of two types—one for solid walls and one for openings—which are used alternately (drawings at right).

Special consideration is given to mechanical equipment. Warm-air ducts supplying the second floor form a dropped soffit around the major first-floor spaces. Holes drilled in the second floor decking deliver air beneath all doors and windows (Section A, facing page). The prototype house, located in New Canaan, Connecticut, was constructed by Ernest R. Rau.









The stairs of the "System" house are assembled of wood planks supported on steel channels. They can be assembled, say the architects, "as easily as a child's toy."

Complete working drawings for this prototype house can be purchased from Better Homes For All America, 1700 West Hubbard Street, Chicago 22, Ill.

RESEARCH FOR THE FUTURE

Technical Progress by Industry

BY JOHN L. HILL

This report has been prepared by the Manager, Wood Technology Department, Technical Services Division, National Lumber Manufacturers Association.

Wood's unique combination of physical, mechanical, and aesthetic properties, as well as its easy adaptability, account for its strong competitive position in the construction market today. With this combination, wood has virtually promoted itself for many years. Although a tribute to its remarkable properties, this self-promoting characteristic created a degree of complacency that delayed application of technical developments.

Notable exceptions are the ring connector, which marked the beginning of true engineered timber construction, and glued laminated wood, which released timber dimensions from the size limitations imposed by the tree. The fact that these two technical improvements alone have held a large share of the building market for lumber, stresses the value of a strongly supported research and development program and stands as a guidepost to the future.

On the other hand, wood has dominated the single-family residential market without the benefit of significant technical developments or improvements. Although tradition has played an important role in maintaining wood as the primary material for house construction, the versatility, performance, and economy of lumber have also been strong factors.

In recent years, the \$30-billion annual housing market has become a prize plum for which almost every major building material group, including those of the research-oriented plastics industry, is competing. While this market may be a tender morsel for such massive industries as steel and aluminum, it is the bread and butter of the lumber industry. In this atmosphere of intense competition, lumber manufacturers have moved rapidly to protect their market. As a result, there is a new look of confidence and determination in the wood industries today—an attitude inspired by the National Wood Promotion Program.

Although much progress has been made in the program to improve attitudes toward wood as a building material, the industry realizes that platitudes and clichés will not keep lumber in today's housing market. This is particularly true in an age when new materials are assumed to be better, solely because they are new. Traditional use, and long, successful performance, are frequently set aside in favor of exaggerated claims.

Technical Studies Program

To fulfill the need for new and imimproved technical data and for more economical construction methods, the industry has undertaken a continuing program of technical studies as the basis for increasing acceptance of lumber and wood products.

Technical Data Development

This program consists of two parts, one of which involves gathering existing information, frequently scattered and uncoordinated, and organizing it for publication. Included in these technical publications are industry recommendations for using wood properly. A principal result of this effort is the Wood Construction Data series of six booklets. More are in preparation.

The second part is basically an educational program. The industry realizes that wood is frequently misunderstood and misrepresented due to a lack of test data to support experience records. There are two areas in which the industry believes the general public is not as well informed as it might befire safety and human comfort.

The first and most vital need was to demonstrate the fire-resistance of wood construction more effectively. Next, it was apparent that the insulation advantages of wood-frame construction had to be shown positively, to gain public understanding. Technical investigations were undertaken to provide convincing demonstrations in both of these areas.

Improved Wood Construction

This portion of the technical studies program, which has as its objective lower in-place cost for wood construction, recognizes that the competitive edge presently enjoyed by lumber in the housing and light-construction market can only be sustained through a vigorous program of service to the building industry. At present the program has three facets:

(A) To establish meaningful size and quality standards for lumber to assure product uniformity and to simplify specification and use. (B) To develop technical data on wood-frame house construction that will result in new and improved fabrication techniques and provide for the most efficient use of lumber. (C) To stimulate and support co-operative research programs with allied and related industries and institutions, which will improve wood properties and provide for better performance of lumber and wood products in service.

Grade Simplification and Standardization

This is perhaps the most difficult phase of the entire program, but, when implemented, it promises to remove a serious obstacle now blocking effective promotion of lumber. The difficulty arises from the fact that grade simplification and standardization tend to involve the competitive rivalry existing among species, lumber-producing regions, and manufacturers of green and dry lumber. Nevertheless, the industry, supported by members sincerely interested in improving the climate for promotion of all lumber and wood products, seems closer to a solution to this problem than at any time since American Lumber Standards were established in 1924.

Why did the lumber industry undertake to reach agreement on this problem, if its implementation threatened to divide the industry? The reasons are quite clear. Three consumer reactions to lumber grades and sizes indicate serious dissatisfaction with lumber marketing practices: (a) Architects, engineers, home builders, and lumber dealers frequently complain about the complexity of lumber grades as well as grade names, and have indicated that a simplification program would significantly improve consumer attitudes toward lumber specification and use. (b) The practice of surfacing lumber to final American Lumber Standard sizes at moisture contents that vary from green to 12 per cent results in a multiplicity of widths after seasoning to use conditions. In addition to consumer problems, this situation threatens the acceptability of lumber by regulatory agencies. (c) To be able to promote the use of lumber as a standard

building product, on a broad national scale apart from species differences and regional variations, is considered essential to the industry's advertising and promotion campaign.

Confusion in grade requirements and grade names arises from the fact that grading rules and standards were independently developed by Regional Grading Agencies. Although these rules have conformed to the general principles set forth in the American Lumber Standards for Softwood Lumber, Simplified Practice Recommendation 16-53, (a recorded recommendation of the trade developed in co-operation with the Commodity Standards Division of the Department of Commerce), the variations from one region to another have been substantial. This gradual evolution of lumber grades has produced a complex grade structure well understood by the manufacturer, but confusing to the designer and builder. As a result, they have found lumber difficult to specify and purchase.

Recognizing that this situation is a strong deterrent to the use of lumber, a committee of the NLMA was formed, composed of lumber industry principals, including sales personnel, technical and grading experts, and representatives of the Forest Products Laboratory acting as consultants. After two and one-half years of concentrated meetings and negotiations, this subcommittee developed a new system of lumber grades and size standards. There are six principal features of the proposed new system:

1. Standardized Grade Names. To simplify the specification of all softwood boards and dimension for such uses as sheathing, subflooring, studs, joists, rafters, and interior finish, the new grade program recommends that all softwood producing regions adopt a series of identical grade names as follows:

Finish	Board	Dimension
Grades	Grades	Grades
Supreme Prime	Premium Special ² Standard Utility	Premium (A) ¹ Standard (A) Utility (C)

¹ The letter designation following the grade name identifies the strength and stiffness class for the species and grade involved.

The "Special" grade of boards is for shelving and paneling, which will probably be produced only by the Western Pine region.

2. Uniform Grade Requirements. Under the proposed system, the requirements for a particular grade will be approximately the same for all species. This similarity will be achieved through a close co-ordination between the agencies responsible for developing the new grades. As a result, the specifier can be assured that grade characteristics will be as uniform as possible for any softwood species he selects.

3. General Grade Descriptions. Although each lumber region has developed grade-use literature, the grading rule book that has been specifically designed for the lumber grader is often used to describe the quality of the various grades to architects, builders, and specifying agencies. Far too many have received a poor impression of lumber after reading the detailed grade requirements appearing in the grading rule books because they are based upon the poorest quality piece permitted in the grade.

The NLMA Subcommittee developed general grade descriptions for the use of architects, specifications writers, and consumers, which are intended to offer a more practical explanation of the average appearance of a particular grade, as well as an indication of its intended use.

These descriptions, of course, are not intended to replace the detailed requirements that appear in grading rules developed for the lumber grader. They will, however, serve to describe the average quality of a given grade in affirmative terms, and thus be more truly descriptive of the material than a detailed description of the poorest quality permitted in the grade. Furthermore, one description would apply to all species.

4. Standard Lumber Sizes. In seeking a solution to the size problem that would be equitable to all producing regions and would at the same time eliminate the present undesirable multiplicity of widths, the NLMA Subcommittee recommended establishment of new dry sizes (see table).

The proposed dry lumber sizes have been presented to the American Lumber Standards Committee for consideration as new standard sizes for dry lumber. These sizes are based on equating the section properties (section modulus and moment of inertia) of the new size to those of present ALS sizes when surfaced green, and reduced by shrinkage to 15 per cent average moisture content.

The new sizes recognize the competitive handicap that dry lumber producers have sustained by manufacturing lumber to the same size standards as green lumber (allowance for shrinkage in drying must be provided in producing dry lumber to conform to present ALS sizes). They also recognize the impractibility of requiring manufacturers of unseasoned lumber to increase the present green surfaced sizes, because the structural adequacy of such lumber has been dem-

onstrated through successful use without restriction for many years.

The new size provides a more efficient section (thinner and wider-less wood but equivalent strength and stiffness) than a size based on the present ALS dimension reduced by shrinkage to 15 per cent average moisture content. This feature of the new size opens the door to a unilateral agreement among dry and green producers. Why? Because with the competitive advantage of producing green lumber removed, dry lumber is placed in a more equitable marketing position. Furthermore, green lumber producers can now see the advantage in surfacing oversize to allow for shrinkage to the new thickness and width, since it does not involve a significant change from their former milling practices. In fact, green surfaced sizes based on a recognized allowance for shrinkage to the proposed new dry size are being considered by some green producers. As a result, a resolution of this long-standing problem appears to be in sight. It will provide the following benefits to the consumer: (a) Since, for the first time, moisture content and size are tied together, all light framing lumber would reach the same dimensions in service. (b) The new size standards should stimulate greater production of dry lumber. (c) With specific sizes for green and dry lumber inspection and enforcement of size, standards would be facil-

5. New Sheathing and Paneling Thickness. Another major benefit of the proposed new sizes is the tailoring of board thicknesses, as nearly as possible, to end use requirements. The proposed nominal 3/4" boards will provide a new product that is amply strong and stiff and has better nail-holding properties than most sheathing products.

Tests conducted at the Western Pine Association Laboratory indicate that, for the lowest strength species, the $\frac{5}{8}$ " sheathing board is satisfactory. The thinner board has other advantages. It can be produced and shipped at lower cost, is considerably easier to handle and install, and lends itself to rapid nailing with power equipment.

For paneling, board-and-batten siding, and many other finish uses, a thinner board should prove entirely adequate.

6. Simplified Design Data. Another major provision in the new grade standardization program is the simplification of span tables for joists and rafters for use in light construction.

Current lumber industry span data for joists and rafters are presented in a 46-page booklet, with two pages for

each species. Since many species and grades have similar strength and stiffness properties and resulting similar spans, they can be classified into groups. This arrangement greatly simplifies the presentation of allowable span information.

The new span tables will segregate all grades and species of 2" dimension yard lumber into five groups designated A, B, C. D. and E. In addition, two higher groups will be provided for special stress-rated lumber.

The grade stamp for yard dimension lumber under the new system will include a letter designation following the grade name. (Example, Standard-A.) This will indicate the span table group for the species and grade. Stress-rated lumber in the higher groups probably will have the fiber stress and modulus of elasticity values stamped on each piece.

The proposed new grade system seeks to establish fair and equitable solutions to long-standing regional and species problems. After numerous meetings, a practical and workable grade standardization program has been developed for consideration by lumber distributors, specifiers, and consumers.

Because of long-standing differences in grading and manufacturing practices in the various regions, any attempt to standardize grade requirements and develop equitable size standards for both green and dry lumber can be expected to meet with opposition. However, many lumber manufacturers have become more aware of customer requirements and regard the new system as the most productive step that can be taken to simplify the use of lumber, and thus improve its competitive position with other construction materials.

Improvements in Wood-Frame Construction

Before any significant progress could be made toward improvements in design and construction of houses, it was necessary to develop a system of dimensional standards for modular house design as a basis for standardization of house construction. Such a basis was needed for several reasons: (a) To recognize the inevitable trend toward component construction generally agreed as essential to reduction in on-site costs for builders by providing a uniform basis for component fabrication. (b) To provide a degree of standardization in house construction that would permit a careful evaluation and study of house design, resulting in a more systematic application of engineering principles and thereby more efficient use of lumber. (c) To enable lumber

producers to make available to the building industry standard-size, structural elements and component parts on a nation-wide scale. Prominent leaders of the home building industry have urged NLMA to develop this program and are supporting its promotion.

The economies that can result from such a program are obvious. From a standardized base, comprehensive studies of the complete house structure can be made and significant problem areas accurately identified and subsequently subjected to intensive research. Engineering and construction research can be co-ordinated with product development and with existing accumulated design and test data.

To implement this program, NLMA contracted with R. B. Pollman, Architectural Consultant, and Home Planners, Inc., Detroit, to make an intensive study of house design and construction with the objective of establishing modular standards for design and fabrication that would reflect modern practices in home building. The result is the UNICOM Method of House Construction. Based on co-ordinated modular design, this system is applicable to the total house, including floors, walls, roof, partitions, and stairways. Its flexibility challenges the imagination of the architect who follows its simple principles.

Research on the Total House

The single-family house, with its multiplicity of members and its interconnect-

ing walls, floors, partitions, and roof, is a complex structure. In the absence of more specific information, it is customary practice to design each stud, joist, or rafter as an individual member without considering its relationship to adjoining members or elements of the building. The effect of wall and roof sheathing and subflooring in distributing the load is generally ignored, as is the strength and rigidity provided by the interconnection of walls, partitions, floors, and roof. It is the opinion of the NLMA that the singlefamily house, when constructed as a whole, has far more strength and rigidity than that indicated when each stud, joist, or rafter is designed as an individual

A program is presently underway at the Virginia Polytechnic Institute to build an entire house, subjecting the various structural elements to customary loads as they are incorporated into the building. The objective is to measure the performance of each part and to determine the contributory effects of the various elements as construction progresses. Finally the entire building will be subjected to load until failure. Results are expected to provide architects, engineers, and the home-building industry with information that will permit the design of a house as a unit, rather than design based on the performance of individual pieces as is now the practice. This procedure should result in a more efficient use of lumber in house construction.

PROPOSED	NEW	DRY	LUMBER	SIZES
Thickne	ess			w

	Thickness		Widths	
	Nominal	Minimum Dressed Dry Size ²	Nominal	Minimum Dressed Dry Size ²
	In.	In.	In.	Ín.
Boards ¹	1 ³ / ₄	³ / ₄ ⁵ / ₈	4 6 8 10 12 etc.	35/8 51/2 71/2 91/2 111/ ₂
Dimension ²	2	11/2	4 6 8 10 12 etc.	35/8 51/2 71/2 91/2 111/2

'At the present, the standardization and simplification program applies to yard lumber and certain grades of stress- rated lumber, which fall into the yard lumber classification. It does not apply to factory and shop lumber. It applies to boards and dimension lumber of 2" thickness. It does not as yet apply to lumber more than 2" through 4" in thickness and to timbers.

² At 19 per cent or 15 per cent average moisture content.

Strength and Stiffness Of Wood-Frame Floor Construction

In 1962, NLMA sponsored a review of literature on the strength and stiffness of wood-frame floor construction at Pennsylvania State University with the following objectives: (a) To what extent do subfloor, finish floor, and ceiling provide for distribution of load throughout the floor system? (b) Do exterior walls and center bearing partitions have a significant effect on the rigidity of floor joists? (c) Is the deflection limit of 1/360 of the span under uniform static loading the proper deflection criterion? (d) Is the vibration of floors from impact properly controlled by the deflection limit?

The purpose of this study was to review the existing literature and determine what research has been done in these areas and where further investigation was needed to improve design criteria for wood-floor systems. It was concluded that sufficient information existed in all areas except vibration control. Previous investigations had found no direct relationship between vibrational characteristics and deflection of floor panels. Since vibration is often the criterion used by homeowners to evaluate the quality of floor framing, it was considered important that funds be provided in the 1963 NLMA budget to study this problem.

Multiple Member Assemblies

Present systems of engineering analysis for wood-frame constructions are based on the assumption that each piece must carry its own load, and that each may be responsible for the safety of the structure. In light-frame construction, the wood industry has never taken advantage of the fact that in wood framing systems, where the members are repeated at a relatively close spacing, loads are shared by adjacent members. Currently, working stresses are assigned to lumber grades on the basis of the predicted strength of the weakest piece permitted in that grade, including a suitable factor of safety.

Because it is virtually impossible for a maximum strength-reducing characteristic to appear in every piece of a given grade, it is evident that many pieces are substantially stronger and stiffer than the assigned working stresses would indicate.

The principle of load-sharing assumes that the strength of any three members in combination will be greater than the strength of individual members whose working stresses are based on the weakest piece permitted in the grade.

This principle is recognized in ASTM Designation D2018-62T. Based on pres-frames fabricated of wood. A literature will evaluate modern instrumental tech-

ent information, a conservative interpretation of the load-sharing principle would permit a 15 per cent increase in working stresses for bending, tension parallel to the grain, and compression parallel to the grain in the case of closely spaced repetitive members. Furthermore, where a statistical strength survey to show the range and distribution of expected strength values in a grade is conducted in accordance with studies sponsored by the West Coast Lumbermen's Association, increases in design stress of 20 to 40 per cent or greater may be applied for loadsharing members. Application of this principle to present span tables for light framing lumber should result in more efficient use of present grades.

The lumber industry is supporting the findings of the study on "Bridging in Residential Floor Construction," recently completed by the National Association of Home Builders Research Institute Laboratory, which recommends the elimination of mid-span bridging. The benefits to be derived from bridging are not sufficient to justify the added cost.

Research in Roof Trusses

With the wide use of roof trusses in house construction, and the broad selection of metal gusset plates available to fabricate them, there is a need for reliable and uniform information on design and performance of such trusses. To provide this information, research is in progress at Michigan State University, cooperatively sponsored by the NLMA. In this program, trusses with various types of gusset plates will be tested under varying conditions of moisture exposure and loading. It is expected that the results will be of substantial benefit to architects, engineers, and the homebuilding industry.

New Wood-Floor Systems for Houses Without Basements

This study has as its objective the development of a more competitive framing system for this type of construction. Its goal is a dry, one-day combination floor framing and wood foundation system requiring a minimum of excavation.

The principal objective of the investigation being conducted at Washington State University is to develop means to place wood-frame floors closer to grade levels without creating hazardous enviromental conditions for wood in the resultant reduced underfloor space.

Space-Frame Studies

A study is presently being planned to examine the potentialities of space

survey is contemplated at the outset to give direction to a more intensive investigative program. Although such developments may be applicable to improvements in house design and construction, they are expected to contribute new design techniques for light commercial construction.

Co-operative and Related Research Programs

In an effort to stimulate research in specific problem areas, the NLMA Subcommittee on Technical Studies has cooperated with the Forest Products Laboratory in staging three symposiums during the past four years. The first dealt with the subject of "Dimensional Stabilization," the second with "Adhesives for the Wood industry," and the third with "Fastenings for Wood in House Construction." A fourth is planned for this fall on "Nondestructive Testing of Wood."

In each case, 50 or more top research and production men well qualified in the field of discussion are invited to share their ideas, the objective being to stimulate creative thinking that will lead to new and more productive research. In many cases, persons with experience in related areas outside the lumber industry are brought in to contribute fresh ideas to the subject. These symposiums are symbolic of the "new look" in the lumber industry.

Durable Exterior Finishes for Wood

A research program sponsored jointly by the National Paint, Varnish and Lacquer Association and the NLMA is underway, which is aimed at providing longer life for finishes on exterior woodwork. The development of high performance coatings of all types on competitive exterior finishing materials has stimulated this research activity. The program is the product of a Joint Paint-Lumber Industry Steering Committee composed of leading principals of the two industries. Although paint already has a record of lasting up to 10 years when properly applied to wood surfaces prepared in accordance with sound practices, the object of the new studies is to make it easier to achieve 10-year paint performance and to stretch the time-period even further. It is a two-part program, one phase of which, conducted at Armour Research Foundation, is directed toward developing an accelerated weathering test for evaluation of new coatings. It will attempt to correlate laboratory and outdoor test data on paint performance and niques that offer promise in predicting exterior durability of paints applied to wood. The second phase, in progress at the Forest Products Laboratory, will determine the effect of the wood surface on paint adhesion and performance. It will study the chemical changes at the wood surface during weathering, and will investigate physical and chemical methods of modifying wood surfaces to improve coating adhesion. These are comprehensive studies and should lead to a substantial improvement in paint life on wood siding and exterior trim.

Other Co-operative Studies

- 1. NLMA is providing co-operative support for a study being conducted at the Forest Products Laboratory on the fire performance of wood. It is part of a long-range program to determine how wood performs in burning structures and means of predicting this performance.
- 2. Plans to conduct a fire test that will demonstrate the *performance of fire-retardant treated wood* are being studied co-operatively with related industries.
- 3. A study of the performance of timber bridge stringers is being supported co-operatively with the Association of American Railroads and the American Institute of Timber Construction. This study has been undertaken to develop design information on the behavior of timber railroad bridges under repeated loading.
- 4. A study of *timber highway bridge* design is being conducted co-operatively with the Forest Service and the Forest Products Laboratory.
- 5. A study of the effect of fire-retardant treatment on the strength of wood is being conducted co-operatively with the American Institute of Timber Construction, the American Wood Preservers' Institute, and the Forest Products Laboratory.
- 6. To stimulate research in timber design and construction, NLMA has sponsored three graduate fellowships in Timber Engineering.

Current Industry Developments

Stress Rating of Lumber by Machine. Extensive research in the laboratories of the Western Pine Association and by Potlatch Forests, Inc., has resulted in the development of nondestructive mechanical stress grading systems for structural lumber. These machines have been perfected to evaluate the strength and stiffness of the lumber on a 100 per cent sampling basis, stamping each member as it leaves the machine with the proper strength and stiffness values. It is a rapid production-line operation in which

a system of rolls flexes the lumber within the elastic limit as it passes through the machine, automatically evaluating and recording its strength and stiffness. The machines are designed for use under the supervision of lumber grading associations and agencies.

Under this system, lumber stress grades need no longer be established on the basis of the weakest piece, but each piece is evaluated on its own merits. The system permits the lumber manufacturer to take advantage of the significantly high proportion of lumber within a grade that is substantially above the minimum stress allowed for that grade. Lumber graded in this manner can achieve modulus of elasticity values up to 2.6 million psi, whereas under present visual stress grading methods the highest value permitted is 1.76 million psi. In addition, it provides the consumer with a precisely engineered product permitting more efficient structural design. Some machines are already in operation, and increasing quantities of this new stress-rated lumber will become available as more machines are added.

End-Joined Lumber. Prior to the development of the folded scarf of finger joint as a system for extending the length of lumber, all end-joints were made by a long sloping scarf. Such scarf joints are difficult to fabricate on a production-line basis. However, when properly made, they develop the highest end-joint strength possible.

Improvements in machining methods and joint designs have raised the efficiency of the folded scarf joint, which uses only a small percentage of the amount of wood required for the sloping scarf joint and is more easily fitted, lending itself to production-line fabrication.

The finger joint of today will develop well in excess of 50 per cent of clear wood strength. Such strength ratios are considered adequate for lumber containing strength-reducing characteristics such as knots and cross-grain. This means that it can be successfully used in many light framing grades as a structural endjoint, reducing the strength no more than other characteristics permitted in the grade. Although finger jointing is now limited to trim and wall studs, plates, cripples, and trimmers, it is only a matter of time until such material will be accepted for all wood-frame house construction. Of course, rigid quality control methods are essential to such acceptance. The judicious use of finger joints in the manufacture of light framing lumber could upgrade significant quantities of material now classified as

marginal-profit items.

The preceding résumé of technical progress establishes the wood industry as a major competitor for the building construction market. It is proving its ability to meet the challenge of the times and should stimulate architects to look to wood with confidence.

A Look to the Future

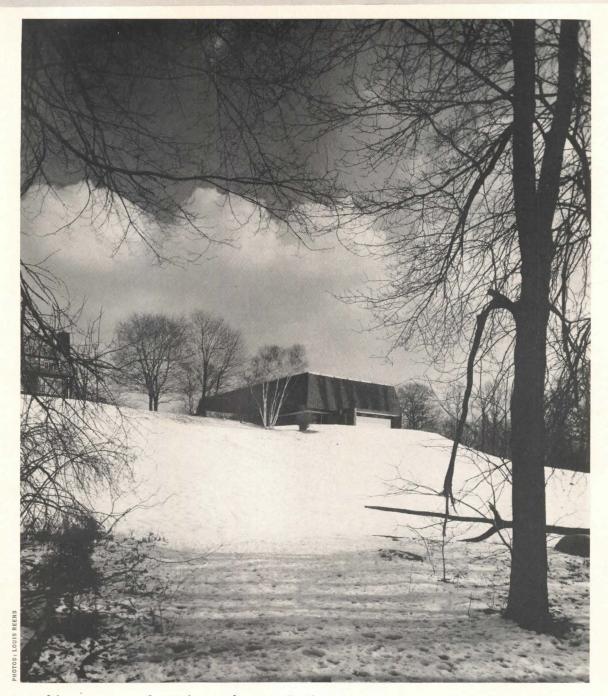
In conclusion, here are two promising developments indicative of future trends. The NLMA technical staff is working co-operatively with the Atomic Energy Commission and manufacturers of accelerators to study the improvement of wood and wood products through irradiation. The possibilities of radiation-grafting of certain chemical monomers in wood is being carefully watched. The use of radiation as a catalytic agent in triggering chemical reactions within wood and wood substance, appears to offer an opportunity to study chemical impregnants for wood not previously considered feasible. A list of possible contributions of radiation technology to the improvement of wood products is indicative of the potential of such research.

- 1. Rapid cold cure of factory-finished siding.
- 2. Rapid cold cure for waterproof glue lines (plywood, laminated wood, and joints).
- Clear, radiation-grafted, resin impregnated surface treatment for weatherand wear-proof siding, paneling, and furniture woods.
- 4. Densified ends for wood piling to prevent brooming.
- 5. Prevent leaching of fire-retardant chemical (wood shingles, siding, wet industry structural framing).
- 6. Split-resistant lumber, check-resistant railroad ties.

Another interesting, recent development is a report on some preliminary studies on machining wood with ruby lasers. Although hardly beyond the exploratory stage, and at present certainly not economically feasible, the laser did an effective job of penetrating a substantial depth of wood, producing a highquality surface. When the amount of sawdust produced in making lumber is considered, this technique, which permits wood to be cut almost without measurable loss, takes on added significance. These two developments alone, if fruitful, could virtually revolutionize the production of lumber and wood products.

The National Lumber Manufacturers Association believes that this report to the architectural profession explains in part why we are saying, "For new answers, look to wood."

TECHNICAL REFINEMENTS



Cantilevered Sloping Trusses

Designs for Temple Sinai, in Stamford, system, but also provide a buttress effect. Connecticut, by Architects Sherwood, Mills & Smith, call for a single-room, barnlike structure having fieldstone walls and a pitched slate roof supported by timber trusses, beams, and planking. Dominant element of the structure is a truncated pyramid elevated to protect a recessed curtain of glass. Its interior space, uninterrupted by columns or per-

Two such walls are located near the center of each side.

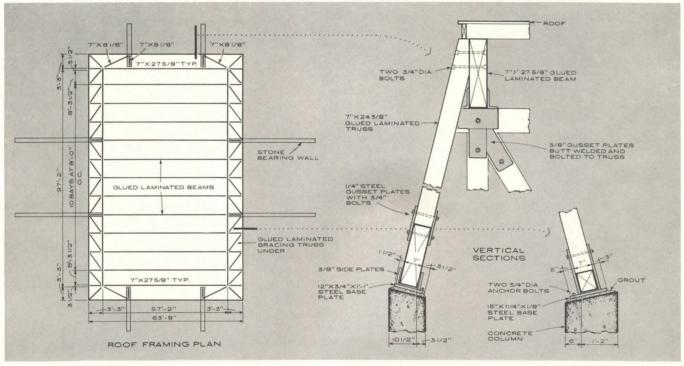
Pyramidal framing consists of eight trusses and one line of beams, all made of structural glued laminated wood, interlocking to form a hollow-grid system. Main bearing members are four cantilevered, sloping trusses, developing the full depth of the sides of the pyramid, manent partitions, is 56' x 96'. Stone each supported at two points on the bearing walls not only support the roof buttress stone walls. The flat roof is

composed of 13 simple laminated beams supported at the top chords of the longer sloping trusses, and simultaneously providing lateral support for the top chords. Roof sheathing both braces the beams and acts as a wind diaphragm.

Joining the four sloping trusses at the corners, according to Werner Jensen & Korst, consulting engineers for the temple, makes them statically indeterminate. In the calculations, however, this condition was treated with approxi-







mation, since the elastic design method cambered 11/2" at respective ends. would have to have been supplemented with inelastic contributions from un- provided for by a liberal slip joint at known slippage in the connections, as the head of the windows; however, a well as from shrinkage and expansion different approach was preferred. One with varying future moisture conditions. more structural multipurpose element These same considerations apply to was added: a system of horizontal trusses deflection calculations for the canti- with one chord supported at the lower levered corners of the structure over the chords of the main sloping trusses, and glass walls. Elastic deflection was com- the other resting on the mullions of the puted at less than 3/4". To provide for recessed glass wall. These 4'-8"-deep total deflection, however, trusses were trusses, the only structural members hid-

Corner deflections might have been

den by architectural finishes, provide the lateral bracing of the compression flanges of the cantilevered main trusses as required for their stability. They also serve as wind trusses, support for the top of the glass wall, framing for the soffit; furthermore, they form a hinged connection between main sloping trusses and glass wall, allowing the trusses to deflect freely without slip joints and without crushing the glass components located beneath.

Quality Standards for Structural Glu-Lam Timber

For many years, structural glued lami-timber. These requirements include architectural expression resulting in in- adhesives, manufacturing checks and teresting and economical new structures. controls, and testing and inspection re-Performance records on these structures prove conclusively that the material is durable. Through industry research and development, architects are now given even greater assurance of receiving quality products.

As with many construction materials, some problems were encountered with glued laminated products. No truly satisfactory means had been developed to assure the specifier that he would obtain the proper quality of glue line, and that the laminated product would be properly used in the structural framework.

Recognizing this problem, the American Institute of Timber Construction has been working for more than five years to develop minimum standards for product quality, and has inaugurated a system to assure architects that they will receive products conforming to these minimum requirements.

The basic instrument of this program is U.S. Commercial Standard CS 253-63 for Structural Glued Laminated Timber. Even though CS 253-63 became effective April 1, 1963 as an official Commercial Standard, it is not an untried new standard with questions about its workability. The industry has been using the proposed Standard for well over a year. To date, there have been no complaints regarding any product certified as conforming to this Standard.

CS 253-63

In the words of the Standard, its purposes are: "(a) to provide a common basis of understanding in the trade as to sound practices for the production, testing, inspection, identification, and certification of structural glued laminated timber; (b) to effect economies through a wider utilization of such standards; and (c) to encourage production of dependable products that will be adequate for the principal needs of the trade."

Briefly summarized, the Standard establishes minimum requirements for the production of structural glued laminated

nated timber has permitted freedom of standard sizes, tolerances, lumber grades, quirements. In addition, the Standard establishes minimum requirements for: plant qualification; quality control system of the laminator; inspection organization; identification and certification of the production. The Standard requires continuous quality control by the laminator, and also periodic inspection and surveillance of that quality control as well as of the product, by a qualified central inspection organization not subject to the laminator's control.

The Standard includes, by reference, specifications of regional lumber manufacturing associations for grades of lumber; Federal and military specifications for adhesives; and other basic information published by the U.S. Forest Products Laboratory. In addition, AITC has developed an Inspection Manual to parallel the Commercial Standard, and also has completely revised the AITC Timber Construction Standards. Both of these new documents are incorporated by reference in the Standard.

Inspection Manual

The Inspection Manual contains two sections. The first, "Laminators Quality Control System," covers personnel qualifications, equipment and facilities, quality control of production operations, test and inspection requirements, and test procedures. The second section, "Inspection of Laminator's Quality Control by the AITC Inspection Bureau," gives the details of operation of the Bureau.

Timber Construction Standards

The revised Timber Construction Standards is a compilation of 14 different standards, 4 advisory appendices, and the National Design Specifications for Stress Grade Lumber and Its Fastenings. It is issued in a binder that provides for future addition of new standards. A complete listing of the contents follows:

AITC 101-62 Standard, Definitions, Abbreviations, and References. 102-62 Standards for the Design of Structural Timber Framing.

National Design Specifications for Stress Grade Lumber and Its Fastenings. AITC 103-62 Standard Structural for Glued Laminated Timber. 104-62 Typical Construction Details. Recommended Practice for 105 - 62the Erection of Structural Timber Framing. Code of Standard Practice. 106-62 107-62 Guide Specifications Structural Timber Framing. 108-62 Standard for Heavy Timber Construction. 109-62 Treating Standard for Structural Timber Framing. 110-62 Standard Appearance Grades for Structural Glued Laminated Timber. 111-62 Protection Standard for Structural Timber Framing. 112-61 Standard for Heavy Timber Decking. Standard for Dimensions of 113-61 Glued Laminated Structural Members. Guide Specification-Struc-114-61 tural Glued Laminated Cross

(This new edition is available from AITC at \$3.50 per copy plus postage.)

Inspection Bureau

The Institute established an Inspection Bureau in 1960. It now has offices in Portland, Oregon; Chicago, Illinois; and in the San Francisco area. An additional office is anticipated in the South sometime in 1963.

Inspection operates in the following manner. First, a member must apply to AITC for a license agreement to use its quality marks and certificates of conformance. The Inspection Bureau then visits the applicant's plant and makes a qualification inspection. This inspection includes examination of the plant's personnel, facilities and equipment, and a series of physical-qualification tests on steps in the production procedure and on the product to determine compliance with the minimum requirements of the Commercial Standard. The plant must also submit its Production Check Point Procedures Manual and its Quality Control Manual, which are examined to determine if they comply with the requirements of the Commercial Standard. Generally, two or more of these qualifications are required before the plant meets the minimum requirements of CS 253-63.

After qualifying, AITC licenses the plant to use the quality marks and certificates of conformance under strict regulation to assure that the plant maintains the specified quality control system in continuous operation, and performs the required tests and inspections at various stages of production. Inspectors periodically make unannounced inspections to verify the adequacy of the laminator's quality control system.

Should questions on interpretation and application of the Standard arise. AITC provides a Technical Review Board to hear and decide such cases. This board, which is required by the Standard, is composed of an independent, recognized authority in the field of engineered timber construction serving as Chairman, the Director of the AITC Inspection Bureau serving as secretary, and three industry members plus one alternate, at least one of whom must be a registered engineer. Currently, the Chairman of the AITC Technical Review Board is L. J. Markwardt, formerly president of ASTM and Assistant Director of the U.S. Forest Products Laboratory. Five of the six members of the Technical Review Board are registered professional engineers.

Quality Marks and Certificates

The Commercial Standard provides: "In order to assure the specifier that he is getting structural glued laminated timber of the grade and quality specified, the manufacturer may stamp members with the identification mark of a Qualified Central Inspection Organization which is evidence that the members are in conformance with this standard and the applicable job specifications."

AITC (a qualified central inspection organization) owns the marks and certificates. It licenses qualified laminators to use the marks and certificates on products that conform to CS 253-63 and the applicable job specifications. The terms of the license agreement provide for suspension or termination of the right to use these marks, when satisfactory levels of quality are not maintained as provided in the Standard.

Guide Specifications

The Institute cannot require any manufacturer to mark or certify any of his products as conforming to CS 253-63. When such conformance is claimed, however, it can and does require marking

or certification of the product. Thus, if the architect or engineer specifies AITC Quality Marks or Certificates of Conformance in the job specifications, manufacturers are obligated to provide them. Therefore, the following specifications for structural glued laminated timber are recommended. These specifications are applicable to all structural glued laminated members; words in parentheses are explanatory and should not appear in the finished specifications.

Scope. All structural glued laminated timber shall be furnished as shown in detail on the plans and specified herein.

Shop Details. Shop details shall be furnished by the fabricator and approval obtained from the architect before work is commenced.

Manufacturer. Materials, manufacture, and quality control shall be in conformance with Commercial Standard CS 253-63, "Structural Glued Laminated Timber."

Lumber. Lumber shall be Douglas Fir, Southern Pine, West Coast Hemlock, Western Larch, or other species which meet structural requirements and laminating specifications of the species. Lumber used shall be of such stress grade to provide glued laminated members with normal working stress values of ____ psi in blending, ____ psi in tension, and ____ psi in compression parallel to grain for (check one):

—Dry conditions of service. (When the moisture content of the number will be at or below 16 per cent in service.)

—Wet condition of service. (When the moisture content of the member will be above 16 per cent in service.)

Adhesives. Adhesives shall meet the requirements for (check one):

——Dry condition of service. —Wet condition of service.

(See explanation of service conditions under *Lumber* above.)

Appearance. Appearance of members shall be (check one):

- ---Industrial Appearance Grade.
- ----Architectural Appearance Grade.
- ----Premium Appearance Grade.

Protection. Unless otherwise specified, a coat of end sealer shall be applied to the ends of all members as soon as practicable after end trimming.

Surfaces of members shall be (check one):

- -Not Sealed.
- —Sealed with Penetrating Sealer.

- -Sealed with Sealer Coat.
- —Other Type of Finish (specify)

Members shall be (check one):

- -Not Wrapped.
- -Bundle Wrapped.
- —Individually Wrapped.

Quality Marks and Certificates. (Check appropriate items):

- —Principal members shall be marked with an AITC Quality Mark indicating conformance with Commercial Standard CS 253-63 "Structural Glued Laminated Timber."
- ——Principal members shall be marked with an AITC Quality Mark, and, in addition, an AITC Certificate of Conformance shall be provided to indicate conformance with Commercial Standard CS 253-63, "Structural Glued Laminated Timber."

Optional Considerations. The following specifications are sometimes desired. They are covered here briefly for the architect's consideration and convenience.

Preservative Treatment. When the conditions of service are such that pressure preservative treatment to prevent attack of fungi or insects is required, information such as the following should be given in your specification:

The preservative shall be ——
The retention shall be ——

Note: Refer to AITC 109, "Treating Standard for Structural Timber Framing," for complete data.

Hardware. The fabricator shall furnish connection steel and hardware for joining timber members to each other and to their supports exclusive of anchorage embedded in masonry, setting plates, and items field-welded to structural steel. Metal shapes to have one coat of shopapplied paint containing rust inhibitor.

In the Future

Recognizing that any standards must be kept up to date and improved to be of value, AITC is currently investigating methods of improving these standards. Several research projects are in progress and several more are pending. It is expected that these will result in even better products and standards.

The Institute is also presently preparing a Timber Construction Manual. This will incorporate in two volumes all the necessary charts, tables, design examples, and specifications for practicing architects and engineers to design any type of engineered timber structure. Now in its second draft, it is expected to be published in approximately one year. When ready, it will be an invaluable aid.

Pole/Stress-Skin Construction

Marin City Redevelopment Project, located on a sloping site overlooking San Francisco Bay, required housing for families of low or moderate incomes. To meet low-cost and sloping site requirements, the Architects, DeMars & Reay Associated, developed a design utilizing a combination of pole-frame and girders, shop-fabricated stress-skin plywood floor components, and preassembled plywood wall sections. Construction of the houses requires only an 18-man crew plus subcontracting for the post hole digging and the drywall work. House sizes range from 1092 to 1248 sq ft.

Basic construction comprises Douglas fir pole framing with a minimum circumference of 21", and lengths varying from 12' to 45'. These poles, pressure-treated with a preservative, are placed in 20"

TYPICAL CLEARANCE
BETWEEN PANEL ENDS
8 INSIDE FACE OF POSTS

WOOD POLE
STRESS SKIN FLOOR PANEL
5/8" PLYWOOD TOP

3'X12" SPACED BEAMS
BOLTED TO WOOD POLES

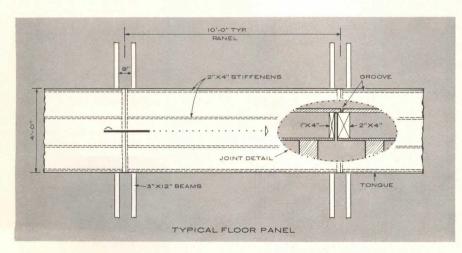
FRAMING DETAIL

holes with a 12" concrete pad at the bottom. Poles are spaced at intervals of 10' in one direction and 13' in the other. After poles are properly spaced, they are bolted to 3 x 12 beams, one to each side of the poles. To take the shear off the bolts, galvanized spike grids are set in poles and beams with a hydraulic jack.

Once the framing is up, stress-skin floor panels developed by Weldwood Structures Division, United States Plywood Corporation, are spiked into the girders with 7" and 9" ring-shank case hardened nails. Panels consist of a $\frac{5}{8}$ " top skin and a $\frac{3}{8}$ " bottom skin glued over 2 x 4's 16" on center. Floor panels span 10' and are tongue and grooved at both ends. Prestressed-plywood panels create a floor at least 20 per cent stronger than diagonal flooring.

Structural shell consists of non-load bearing walls. This unusual departure from conventional wall construction is accomplished by bolting the poles at the roof line to a 3 x 12 ledger-beam to support the trusses, thereby producing a "self-contained rigid pole frame." Preassembled wall panels have window and door openings already cut out. Plywood siding is shortened so that panel framing rests directly against the ledger-beam using 2 x 4 studs 16" on center.

Builder states that pole framing is easier to employ than concrete and has fewer variables to estimate. System saves \$1 per sq ft, and probably double or more by using it instead of conventional concrete footings on slopes.











Low-Cost Warehouse Roof Framing



roof system is rapidly gaining acceptance on the West Coast, particularly for industrial-type applications. One of these, Southern California's largest laminated and panelized wood roof design, was recently completed for Lucky Stores, Inc., at Buena Park. This structural assembly, which covers a giant new food distribution center and warehouse sited on a 32-acre property, was chosen by Novikoff Engineers, the building's designers, not only for economy and speed of construction, but also for resistance to fire.

Although the spacing of some columns provides 40' x 60' unobstructed bays, the normal module is 40' x 40'. The largest laminated girders measure 60' x 39" x 7", while those in the typical bays are 40' x 223/4" x 51/4". Over 12,000 individual

An inexpensive and easily erected wood 4' x 8' plywood panels, stiffened by 2 x 4's, and 30 railroad cars of lumber were required for the 385,000-sq-ft roof assembly. Each of the more than 500 laminated girders was factory-fabricated of structurally graded, kiln-dried lumber permanently bonded with adhesives to produce structural components stronger than the original timber.

> Average installation time was about 10 days per 100,000 sq ft of construction. Erection sequence was as follows:

- (1) Primary laminated girders were placed in position.
- (2) Laminated purlins were next hung 8' on centers on hangers between
- (3) Prefab-plywood panels, having been assembled with the aid of automatic nailing machines at ground level, the Weyerhaeuser Company.

were then raised to roof framing 12 at a time by means of special 30-ft high-rise fork lifts.

(4) Roof assemblers installed the panels, which were then ready for roof-

It has been reported that the cost of placing this roof in the Southern California area was about 50 per cent of the cost of a comparable system utilizing steel beams and steel decking. Its fire rating is said to be equal or better than that of exposed steel. If desired, the interior wood finish can be stained.

General contractors Ernest W. Hahn, Inc., chose Beven-Herron, Inc., as roof structure subcontractor. Laminated components were fabricated by the Rilco Engineered Wood Products Division of

Maintenance-Free Finishes

BY E. M. WILLISTON

Recently developed finishes can eliminate the expense of refinishing exterior as well as interior surfaces every few years. These are discussed by the Technical Director, Softwood Lumber, Weyerhaeuser Company.

Considerable interest has been shown recently by architects and their clients, especially homeowners, in maintenance-free finishes for both exterior and interior applications. This is due, in part, to the rise in labor costs, which has imposed an undue financial burden on the homeowner faced with periodic paint maintenance. In addition, increased recreational possibilities take greater amounts of his leisure time. As a result, he is becoming increasingly unwilling to pay for periodic paint maintenance or do the necessary work himself.

Fortunately, there are now available several different kinds of exterior finishes that are virtually maintenance-free. These include heavily pigmented stains for use on rough lumber exteriors, alkydresin blister-resistant paints, and acrylic latex paints. Each of these will be discussed in turn.

Heavily-pigmented stains in a sizable range of colors from white and silver gray, sand and buff, to dark browns and deep charcoals are now available. The dark colors and gray tones are particularly satisfactory. Blues, yellows, and light greens are less desirable since they fade and weather faster. These are primarily applied to rough surfaces. Recent studies in the Pacific Northwest have shown that heavily-pigmented stain, when applied as a two-coat system, will give durability of from 7 to 14 years. These studies have established that there are three requisites to attaining this excellent performance. First, the stain must contain durable oils, resins, and pigments; second, it must be of the heavily pigmented rather than the penetrating type; and third, it must be applied as a two-coat application. Such stains should contain at least 35 per cent pigment by weight. When a wellformulated, heavily pigmented stain is properly applied as a two-coat system, a long, maintenance-free life can be anticipated. It is also noteworthy that, since this type of finish does not form a tight film, blistering and peeling are entirely absent. Where such finishes are further protected by wide overhangs, heavy-bodied stains will last almost indefinitely. Homeowners are therefore advised to consider such stains for use on rough exteriors.

Where a conventional exterior paint is needed for use on smooth-bevel or vertical siding, the end user is well advised to investigate alkyd-resin blisterresistant paints. This type of paint is usually formulated with an alkyd-type resin, titanium-dioxide pigments, and an appropriate filler pigment such as magnesium or calcium silicate. Appropriate amounts of mildewcides and fungicides are used to prevent fungus staining. Since these opaque paints obtain a high degree of bond to the wood and form a tight film, they are highly blisterresistant. Tests conducted by many different laboratories verify these claims.

A third-type of opaque paint for use on both rough and smooth surfaces, but primarily the latter, has recently been put on the market. These are the latex paints, the most popular of which are made from acrylic latices. These exterior finishes are also blisterproof by virtue of the fact that the film breathes, thereby readily permitting the passage of moisture vapor. Thus, vapor and water pressure cannot build up beneath them to form the conventional blisters which plague so many property owners. A word of caution: these paints must be applied over a good quality oil-base primer. Although such a warning is ordinarily carried on the label, each paint manufacturer recommends the use of his own primer. However, equally good results can be obtained over baked-on factory primed lumber. This also has been proven in tests conducted by several large primed siding manufacturers. The acrylics are available in a wide range of colors, including the popular pastels. They are particularly noted for good color retention and fade-resistance. When two coats of a latex exterior paint are applied to a good oil-base primer, a durability range from 6 to 10 years can be anticipated. In fact, some test-fence exposures have retained excellent appearance for 14 years.

Several primed siding manufacturers are investigating the possibility of marketing completely prefinished siding utilizing either alkyd-resin blisterproof paints, acrylic latices, or plastic films. Since the thickness of the paint film can be controlled in factory application, and since the finish can be factory-baked, these systems show great promise for

insuring finishes that will last 10 years or longer.

While the paint, lumber, and basic chemical industries have come a long way in the past few years toward providing trouble- and maintenance-free exterior opaque finishes, much less progress has been made toward solving the clear exterior finish problem. A few clear finishes of improved durability are now on the market. However, even under favorable conditions, these cannot be expected to give more than three years of service. Unfortunately, after such a short life, clear finishes fail by cracking, flaking, and peeling. This makes it necessary to completely remove them prior to refinishing. This is an expensive and difficult task.

With regard to protective and decorative interior finishes, the picture is bright. There are available many relatively inexpensive, highly durable, scrubbable, maintenance-free paints in an infinite variety of colors. Excellent interior clear finishes in liquid and film form are also on the market. Many of these are being factory-applied on both native and exotic hardwood and softwood lumber and plywood. The architect or owner can choose literally anything that suits his tastes. These include many "maintenance-free" varieties. They are rough, mar-resistant, washable plastic coatings that protect and enhance the natural beauty of the wood. Such finishes are particularly suitable for use in children's rooms and family rooms, since crayons, water paints, and most other surface soilants can readily be removed without there being any danger of damaging the appearance of the finish.

To summarize, new exterior white and colored paints are available that are blisterproof, peelproof, and highly durable, thus providing low-cost, maintenance-free performance. Factory-primed lumber with the same high quality paint is available, and completely prefinished siding and other exterior wood products will soon be on the market. On the other hand, long-life, clear exterior finishes are not yet available.

With regard to interior finishes, a large number of clear and colored, field-and factory-applied coatings are being provided in rough durable mar-resistant varieties. Consequently, through proper selection of paints and finishes, the homeowner can enjoy the many previous advantages of wood while looking forward to a long maintenance-free future.



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Bushhammering Concrete

BY HAROLD J. ROSEN

One method of finishing concrete, for which authoritative information is generally lacking, is discussed by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

With the increased use of concrete to create various shapes in buildings, there has at the same time developed the need to explore the various types of concrete finishes that will be aesthetically satisfying to the designer.

There is probably more information available on the technological and structural qualities of concrete than on most other building materials. However, the amount of authoritative information on the finishing of concrete is exceedingly limited.

Methods of finishing concrete to obtain different surface textures can be grouped under two major headings, depending on how it is molded in the plastic state or how its surface is treated in the hardened state.

Finishes Imparted from Formwork
Board-marked finishes
Smooth finishes
Special form linings
Rubber matting
Plastic liners

Mechanical Finishes
Retarders
Bushhammering
Sandblasting
Aggregate transfer
Prepacked concrete

This article is devoted to the bushhammering of concrete, while subsequent columns will take up ways of achieving the other finishes.

Bushhammering is a process in which mechanically- or hand-operated hammers remove the skin of hardened cement paste from the surface of the concrete, and fracture the aggregates at the face of the concrete to reveal an attractive, varicolored, and textured surface.

There are two kinds of bushhammers available: (1) a disc- or circular-type head with approximately 21 pyramid-type cutting points; (2) a roller-type head with about 90 cutting points. The power hammers can be driven electrically or by compressed air. Hand hammers

are used for small areas as well as for restricted locations. By using this technique, the normal thickness of material removed from the face of the concrete is about \(^{1}\/s''\); however, by going over the surface more than once, a greater thickness of material can be removed.

Concrete should not be bushhammered until it has attained a strength of at least 3500 psi. Since it is economically unfeasible to do bushhammering until all forms have been removed, it generally cannot be started until three weeks or longer after casting, by which time the desired strength has been achieved.

Since bushhammering reveals the aggregate, the selection of the coarse and fine aggregate is of paramount importance. As a general rule, crushed-stone coarse aggregate is more suitable for bushhammering than uncrushed gravel. Natural gravels are inclined to shatter under the blows of the hammer. This can lead to bond failure between the aggregate and the matrix, which may cause some of the aggregate particles to become loose and fall out. The aggregates that behave best under bushhammering are those that can be cut or bruised without fracturing. Most of the igneous rocks, including granites, are well suited for this purpose. So are the hard limestones.

In order to obtain the best results from bushhammering, it is essential to keep in mind the following limitations of concrete and formwork. It is of utmost importance that all ingredients of the concrete come from the same source. This includes the cement, fine aggregate, and coarse aggregate. Otherwise, any change in materials will be markedly visible in the tooled concrete. Another aspect of tooling is that poor concrete is not enhanced by revealing the aggregate. Imperfections in the concrete, such as honeycomb, poorly made construction joints, or loss of mortar between individual formwork boards or panels will generally become more noticeable when the aggregate is exposed. In addition, if the formwork is made up in panels corresponding to the size of sheet that is normally available, the pattern of these panels will invariably be reproduced on the face of the concrete after it has been tooled. This occurs regardless of whether there has been an escape of mortar between the panels. This dark line at the junction between panels is caused in two ways: (1) by an escape of mortar or grout at this junction; (2) by the opening up of the joint, even slightly, so that air can reach the face of the concrete and permit evaporation of moisture to take place on the line of the joint. In either case, this loss of moisture or uneven drying out will cause a local darkening of the concrete on the line of the joint, because the physical characteristics of the concrete are made permanently different from that of the rest of the concrete. This darkening extends well below the surface, so that even after tooling these joint lines remain visible. This can be prevented by taping the joints, or by introducing wood insert strips to produce rustications.

The treatment of arrises also requires careful design. Although one can use hand bushhammers right up to the arris, one should recognize the possibility of inadvertently damaging the sharp corner, thereby requiring repair which will be visible in the completed work. This problem can be dealt with in two ways: (1) by providing chamfered or rounded corners of at least 1½" radius; (2) by attaching a ¼" wood fillet at least 2" wide to form a plain margin up to which the tooling can be carried.

For additional information on bushhammering and concrete finishes, there is available an excellent textbook by J. Gilchrist Wilson, Exposed Concrete Finishes (John Wiley & Sons, Inc.). A pamphlet on bushhammering, published by the Portland Cement Association, is also recommended.



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Condensation on Glass Spandrels

BY WILLIAM J. McGUINNESS

One of the problems encountered with glass-faced spandrels is that moisture-laden air can penetrate to the inner surface of the glass. This is discussed by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

When glass is specified as the facing in front of spandrels in modern fireproof buildings, detailing and the use of appropriate materials become highly important. Of the three major problems involved in such construction, two have been successfully dealt with, while the third suggests varied solutions that are subject to debate.

The first problem involves the cracking of glass due to the heat concentration caused by direct sunlight. In this case, the principal corrective measure is the use of heat-strengthened glass, which is now universally offered by the best manufacturers.

The second problem involves leakage of water into the structure when high winds blow rain up into and through the weep holes as it blasts against the façades of tall buildings. The introduction of baffled weep holes solved this problem. The vertical section (shown) indicates clearly the "blister-type" baffle within the hollow horizontal member.

The third problem relates to moistureladen air which, emerging from the building's interior, can penetrate to the inner surface of the glass, where its condensation can diminish the value of insulation, and, in some cases, cause its deterioration.

Libby Owens Ford Glass Company has made a thorough review of this subject by employing a joint committee of company experts and highly qualified independent specialists. The committee favors a space between the insulation and the back of the glass; this would allow a small, controlled amount of outdoor air to carry away, by ventilation, the moisture that might collect at this location where it is often subject to condensation and even freezing.

The LOF Committee does not approve of insulation bonded directly to the inner facing of the glass, which appears to be a recurring technique. This judgment may be disputed. Those who favor the direct adhesion of the insulation feel that if the unit is tightly sealed by utilizing an impervious type of insulative material and a vapor barrier, no ill effects can occur.

LOF, however, makes a strong case for its findings. Even by using a vapor barrier, which would be placed on the building side of the insulation, and by using the new impervious types of plastic insulation, such as expanded polystyrene and polyurethane, moisture can inevitably seep through to the exterior of the insulation.

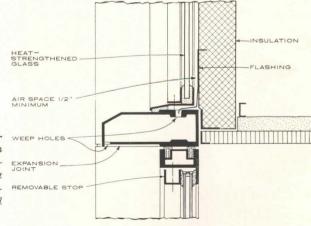
Otto Wenzler, manager of the LOF technical division, points out that, for fibrous or open-cell types of insulation attached to glass, moisture and frost will collect on the back of the glass unless the insulation and spandrel panel combination is hermetically sealed, and the space containing the insulation dessicated. This type of assembly, in which even a pin hole may destroy its effective-

ness, is difficult to attain economically.

Condensation on the spandrel glass, he feels, may produce deterioration of the adhesive and insulation, which may not become apparent from the exterior of the building for a number of years. A reduction in insulating efficiency may also result.

Some closed-cell types of insulation are known to deteriorate when exposed to cyclic freezing and thawing. Moisture can enter the cells on the surface and, upon freezing and thawing, may burst and expose the next layer of cells. Successive cycles of this nature may cause a virtual "crumbling" of the insulation. Some types of closed-cell insulation may not have this characteristic. However, insufficient data is available regarding their weathering and other performance characteristics when adhered to spandrel glass to warrant an unqualified recommendation.

In addition, Wenzler points out, "We should not overlook the fact that the air space behind the glass spandrel panel has real insulation value. This is true even though the space is vented. The insulation value of the air space will vary somewhat depending on conditions, but mechanical engineers recognize its presence and use it in calculating the insulation value of a wall's construction."



One of 10 suggested assemblies developed in 1960 for Libby-Owens-Ford by independent architects John Hancock Callender and Warren E. Bendixen.



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BY JUDGE BERNARD TOMSON AND NORMAN COPLAN

Nassau County District Judge and a New York attorney discuss a recent case that stresses the importance of complying with statutory requirements in public works projects.

The Standard General Conditions of the construction contract issued by the American Institute of Architects provides, in substance, that the architect shall make decisions on all claims of the owner or contractor and in all matters relating to the execution and progress of the work and interpretation of the contract documents, and that arbitration may be had either upon the architect's decision or upon his failure to make a decision, within 10 days after the parties have presented their evidence. In public works, however, claims of the contractor against the owner are often governed by special statutory provisions specifying the manner in which claims may be asserted. The relationship between these statutory requirements and the provisions of the construction contract relating to claims, may engender serious legal problems for all of the parties concerned. This is illustrated by the case of Board of Education, Union Free School District No. 7, Town of North Hempstead v. Heckler Electric Co. (7 N. Y. 2d 476), determined by the highest court of the State of New York.

an electrical contractor for the electrical unless a written, verified claim upon of a junior and senior high school. The founded had been presented to the electrical contractor was one of four Board of Education within three months that all contractors are required to "coordinate their work with adjacent work claimant is free to institute any legal and co-ordinate with other trades so as to facilitate general progress of work." It was further provided that the Board no verified claim pursuant to this statute,

Statutory Requirements in Public Works

progress toward timely completion through the exercise of a termination clause against any contractor who fails to prosecute the work diligently.

The electrical contractor, in a letter to the Board of Education, claimed that he had been delayed in the performance of his contract by the slow and sporadic work of the general contractor, and claimed that this delay was the result of "the failure of the Board to coordinate the work of the several contractors," and asserted that it had been damaged as the result of this delay in a sum in excess of \$300,000. The electrical contractor further demanded that the architect determine this claim against the Board of Education pursuant to the provisions of the General Conditions, which provided that "the architect shall, within a reasonable time, make decisions on all claims of the owner or contractor."

The architect made no decision and eventually the electrical contractor demanded arbitration, asserting in this demand his claim for damages against the Board of Education in the sum of approximately \$312,000. The Board of Education took legal action to stay the arbitration on the ground that the electrical contractor had not complied with the law of the State of New York in respect to the assertion of a claim against a school district. The Education Law of the State of New York provided. in substance, that no action or special As reported in this case, a Board of proceeding could be maintained against Education entered into a contract with a school district or Board of Education work in connection with the construction which such action or proceeding was prime contractors employed by the after the accrual of such claim. Under Board of Education for this project. this statute, the Board of Education must Each of the prime contracts stipulated decide within 30 days whether the claim will be paid, and thereafter the action or proceeding to support his claim. The electrical contractor had filed of Education was empowered to compel contending that under the construction

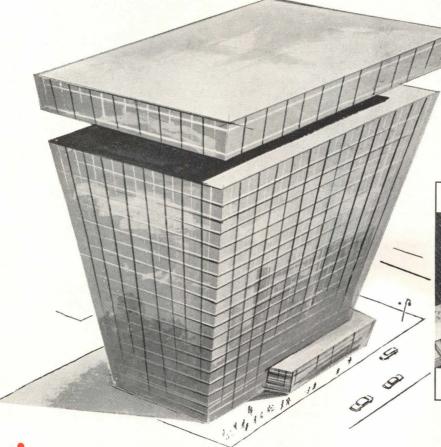
contract he was required first to submit his claim for determination by the architect. The New York Court of Appeals, in a sharply divided opinion, ruled in favor of the Board of Education, holding that statutory compliance was required of the contractor prior to his submission of the claim for a determination by the architect. The opinion of the majority of the Court stated:

"Under the statute, the contractor must present his claim to the Board of Education within three months after its accrual, and the board is given 30 days in which to arrive at a decision. Under the contract, it the decision of the board is adverse to the contractor, he may submit the dispute to the architect (art. 39). And, if he is dissatisified with the architect's decision, he is privileged to seek arbitration, but 'the demand therefor shall be made within ten days' of the receipt of the decision (art. 40). As is manifest, neither the provision of the contract for the architect's decision of disputes nor the provision for an 'appeal' therefrom to arbitration comes into effect until the contractor first presents his basic claim to the board pursuant to section 3813. This being so, Heckler is mistaken in urging that it is impossible to comply with the contractual requirement that arbitration be demanded within 10 days after the architect's decision as well as with the statutory demand that the board have 30 days in which to consider any claim. The 30-day period afforded the board for consideration of the claim occurs before the matter is presented to the architect for decision, while the 10-day period within which arbitration must be demanded begins to run only after the architect's decision. Thus, the supposed conflict between the provisions of the statute and the provisions of the contract simply does not exist.'

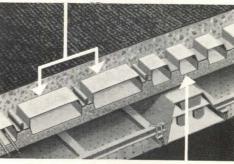
The dissenting opinion, on the other hand, asserted that there was no requirement in the statute that the claim be filed with the Board of Education and denied by it before the claim could be submitted for the architect's deci-

The foregoing case illustrates the important principle that in public works strict compliance with statutory requirement is usually a "must," even if such requirement is technical rather than substantive in nature.

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The New Boston City Hall

Dear Editor: Your presentation of the New Boston City Hall (APRIL 1963 P/A) is in the highest order of journalism. Not only did you publish the drawings in readable and dramatic fashion, but you also described the proposals fully, offered criticism, and developed forceful questions in Peter Collins' critique. One could wish that your example were followed often.

As to the two proposals, I agree with P/A's assessment of merits and defects. The jury, I believe, chose rightly, but in spite of shortcomings in the Philadelphia proposal, it is likely to be a greater source of ideas than the winner itself.

ALBERT BUSH-BROWN President, Rhode Island School of Design Providence, R.I.

Dear Editor: As a juror for the competition, I can only reaffirm your excellent foreword as to the requirements for a successful competition. The response to reality need not be stultifying, as the two entrants' drawings reveal. And isn't it good to see fine drawings again.

I would like to extend my personal thanks to Professor Anderson for his devotion to the program, to the method of jurying, to the preservation of anonymity, and to the insurance that each entry was properly reviewed.

I believe Boston will be excited and proud of the result.

WALTER A. NETSCH, JR. Skidmore, Owings & Merrill Chicago, Ill.

Dear Editor: I very much admired the splendid article on the New Boston City Hall. I have rarely seen buildings so completely and so fairly presented in a magazine. I was able, for the first time, to completely understand and form a fair evaluation of the winning scheme. It is a remarkable building. I was also able, for the first time, to see our own project with detachment, and I believe both buildings benefited from and could be better understood through a comparison of the two projects. Your article made clear that, despite some superficial similarities, each project was derived from quite a different set of principles and approaches.

THOMAS R. VREELAND, JR. Philadelphia, Pa.

The Pan Am Building

Dear Editor: Congratulations on your article on the Pan Am Building (NEWS REPORT, APRIL 1963 P/A).

responsible for drawing up zoning regunetwork of mass transportation facilias totalities, rather than as individual pieces of property. The present approach permits an owner to erect a building that puts an undue load of vehicular and pedestrian traffic on streets unable to support it. The Pan Am Building certainly exemplifies the incorrectness of this approach. To my mind, the only way our cities can be protected from such abuses in the future lies in comprehensive, over-all planning.

PAUL HAYDEN KIRK Seattle, Wash

Dear Editor: The Pan Am Building deserves all that P/A said about it-and more. What was said sufficiently provokes the further moral questions, to be addressed most of all to the architects.

ALBERT BUSH-BROWN President, Rhode Island School of Design Providence, R.I.

Dear Editor: Howard Roark, hero of The Fountainhead, was right-blow it up. What can we say that has not been said already? Long ago, George Howe warned that this should never happen. EARL P. CARLIN New Haven, Conn.

Dear Editor: I am somewhat surprised to find myself in disagreement with you. I feel that the Pan Am Building is a distinguished addition to the design structure of New York and is remarkably successful in giving a visual background to both of the great historic vistas of Park Avenue. From the south, the magnificent sculpture around the clock is even more impressive than it was before. I think the architecture of the building is very sympathetic as a background. From the north, the silhouette of the old New York General Building tower was splendid, but even now I think it adapts well to the new scale behind it. From the cross street. I think the Pan Am Building looks very fine on its narrow dimension and becomes a valuable point of orientation in the structure of the city as it relates to the new scale that has grown up since the older monuments of Park Avenue were

I personally feel that the building fits in remarkably well as part of the Grand Central group and causes virtually no disruption of it. From the point of view of traffic circulation, the fact that the building can be reached directly from

It is my opinion that the individuals Grand Central Station and the whole lations must begin to think of our cities ties that fan out from it, makes the project highly rational. Much of the complaint about surface congestion is, in my view, misplaced. The basic principle of building intensely on areas served directly by mass transportation facilities is certainly preferable to providing the same total square footage of office space spread out over an area so large that walking becomes impractical and cars or taxis must be used.

EDMUND N. BACON Executive Director, City Planning Commission Philadelphia, Pa.

Dear Editor: After visiting the building and its surroundings, I find that the views you expressed in your article are most eloquently confirmed. I am in complete agreement with you.

> ROLF MYLLER New York, N.Y.

Dear Editor: The Pan Am Building is an excellent example of overjamming an already overjammed and complicated complex.

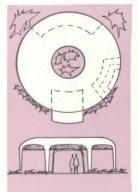
EDGAR A. TAFEL New York, N.Y.

Dear Editor: I've seen the Pan Am Building in pictures only, but a recurring impression is that the building represents a moral lapse on the parts of Dr. Gropius and Dean Belluschi. That the building would have been done anyway -and worse-if they had not participated, is the sentiment of any architect serving Mammon. Relegated to stylists, the architects are unable to cope with the aesthetic problem of a huge structure.

Assuming that so much office space had to be erected on the site, the architects could have incorporated important open spaces through the center of the building so disposed as to avoid the dam-like impediment of Pan Am. This would have resulted in taller, thinner structures. Of course, the dispersion of the building vertically and horizontally would not fit the economic equation set by the financiers, yet imagination might have found a way. The Marina City Towers is a recent example of direct thinking about a tall building with evident visual and financial success.

Le Corbusier's tall buildings for Algiers provide examples of solutions to particular site conditions, involving views through a great structure. All his recent large works demonstrate the articulation of parts expressive of diverse func-

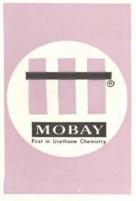




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tions so valuable in establishing the contrasts by which we focus our minds. The presupposition of the uniform envelope is oblivious to this requirement. The solid profile and uniform set of Pan Am utterly lacks sympathetic relationship to the environment of forms and circumstances it is placed in.

HERB GREENE Norman, Okla.

Dear Editor: Lest you suggest some form of "socialistic" control, remember that one of our inalienable rights (Number 13½, to be exact) is that each man has a God-given right to make his own uglies—if he can afford to pay for them.

C. J. WISNIEWSKI New York, N.Y.

Dear Editor: It is time that someone blew the whistle on horrors of this kind, There is far more admiration expended on the new and the huge without any questions being asked from the point of view of architecture, social policy, or human needs. These new structures are not thoughtful efforts to contribute to the greatness of cities or the richness of their human life; they seek, instead, to exploit the greatness that others have built. The tenants of such a building do not live better or work more efficiently for it, nor do their neighbors. Such hulks put an unreasonable-if not insupportable-burden on public services and the engineering of the city. They are contrary-or should be-to public policy.

Although recent tendencies to incorporate non-architectural works of art into the newer structures are, in the abstract, to be commended, it is questionable whether they express any deep aesthetic impulse or concern, or whether they are merely a form of face-saving or apology. Thornton Wilder, in The Cabala, describes women who dress badly, but can't quite locate the fault, and seek to remedy what they vaguely feel to be an ill success with a display of assorted jewelry. To judge from your criticisms, I think the same attitude is displayed here. Certainly works of art installed in a new building must meet more rigorous tests than that of simply being museum pieces. They are forced upon the public, as is architecture, and they must be judged not only for their individual interest, but for their success and appropriateness as elements of public ensembles.

The time has not yet arrived, I hope, for public controls on architecture in regard either to aesthetic design or social planning, yet the present record of official art is not one to inspire enthusiasm. But in this as in other matters, if private enterprise does not meet the needs of society, society will have its say.

THOMAS STAUFFER
President, Chicago Heritage Committee
Chicago, Ill.

Dear Editor: Eight years ago, the N.I.A.E. held a symposium at the Architectural League at which I presented many objections to the then-anticipated Pan Am Building. This was debated against the hope of those who expected a grand design with new architectural effects and solutions.

My skeptical views were then reported in part by the press. I still believe that the Pan Am Building should simply not be there and I share your criticism of it. Perhaps the lack of success of its design is proof of the subconscious feelings of its creators.

GIORGIO CAVAGLIERI New York, N.Y.

Dear Editor: The Pan Am Building is not much to write home about. I would also say that it is a social faux pas.

But why? Is it conceivable that the consultants don't know the rudiments of design? Certainly not; as leaders of good taste in matters of architecture and as educators of our young, they are expected to set an example of high professional standards.

I conjecture that one or both of the following factors may have been responsible for their failure: either the terms of employment were such that the architectural giants could not give the project the required attention, or the client was unreasonable in his demands and the consultants did not have the intestinal fortitude either to educate the client or to quit.

Too many architects are willing to do anything for a buck and have not learned that if you patiently take the client by the hand, as you would a child. and explain the implications of his demands, he will go along with you. Few architects dare to presume to "talk back" to the client and many are too willing to say, "Yes, boss, will do."

One of the failures of the design is its sheer grossness. It is like a huge sack

hung between the Grand Central Office Building and the Grand Central Station. It may be conjectured that it was the necessity to realize a reasonable return on the investment that determined the proportions of the building, or that a lower income and a correspondingly lower building would have provided a reasonably satisfactory return, but the client, oblivious of social responsibility, was avaricious.

If it was a case of economic necessity, then a feasibility study could have shown that the building is economically impossible unless it reached anti-social proportions. If it was a question of love of money, then we can be sorry not only for ourselves but also for the client, one of whom has already joined his ancestors and could not take "it" with him.

And now people may refer to the building as a monster, whereas, had the client and the architects done their duty, the Pan Am Building could have been a noble monument to the departed and a joy to those who are still here.

In a sense, even if we all felt the same indignation about this building, it is questionable whether good taste and good manners could prevail in the future. No one is tearing down buildings around the Grand Central group to give it a setting. On the contrary, only last week we saw the publicized perspective of a new, nervously angular monster with an irrelevant spike that is to replace the old Grand Central Palace. I predict that unless we have a cultural revolution, the Grand Central group will in ten years be surrounded by various and sundry monsters in the midst of which the Pan Am Building will appear as chaste and proper as the Parthenon. ISADORE ROSENFIELD

Dear Editor: The criticism you leveled at the new Pan Am Building was certainly warranted. Any stone pile that is dedicated to providing vertical stacking space for office workers deserves such comment.

One day, due to a final miscalculation on the part of a large group of "knowledgeable" architects, engineers, and construction men, the whole overloaded mid-city area is going to sink 700 ft into the bay, and all of us pygmies are going to become giants again.

L. A. SINGER Mamaroneck, N.Y.





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Wealth of Technical Information

BY WAYNE F. KOPPES

Curtain Walls: Design Manual by Rolf Schaal. Translated by Thomas E. Burton. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. (1962, 248 pp., illus. \$16.50). Reviewer is an architectural consultant, and Technical Director of the Metal Curtain Wall Division, National Association of Architectural Metal Manufacturers.

One might expect that a book on curtainwall construction written by a young German architect-engineer and professor at Stuttgart's Technical University would have limited interest for an American audience. But this is certainly not the case with Rolf Schaal's Curtain Walls: Design Manual. On the contrary, Dr. Schaal has provided in this volume a wealth of technical information that is in no sense regional or limited in its appeal to an architecturally-minded audience. Except for occasional tell-tale evidences of the European viewpoint and practices, the book might in fact be assumed to be the work of an American author with extensive knowledge of contemporary European building. It provides ample evidence, if that is needed, of the broad international significance of modern curtain-wall construction, and the universal language in which this new architectural idiom is expressed. Its considerable interest and value to American architects has undoubtedly been greatly enhanced by the excellent job of translating and editing done by Thomas E. Burton, Structural Engineer.

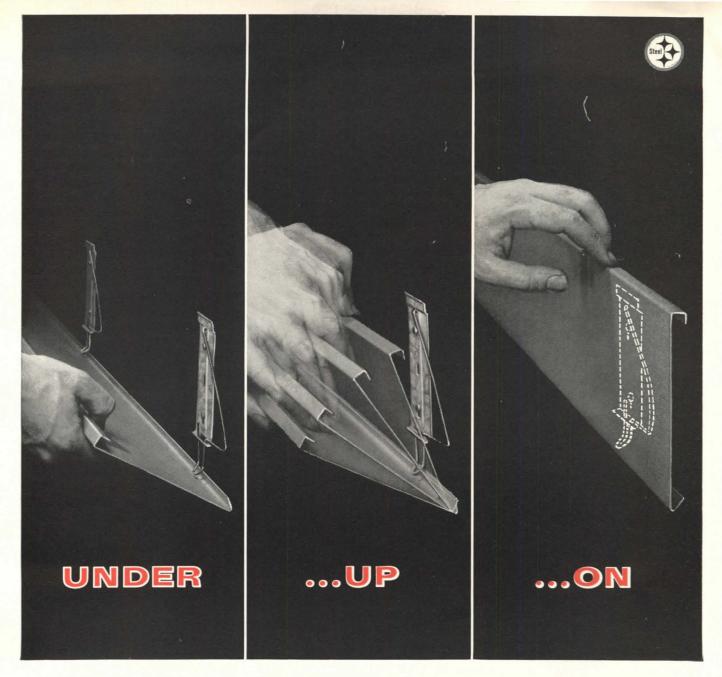
The title of the book might imply an impartial concern with curtain walls of all materials, but for the most part the interest centers on walls either built of metal or framed with metal. Interestingly, the relatively few exceptions include more curtain walls of wood than of concrete, but this may be explained by the fact that the manuscript was assembled just prior to the current popular interest in precast components.

The discussion of general design principles, with which the first quarter of the book is concerned, presents a scholarly classification and analysis of wall types and reflects a competent understanding of the natural laws governing good de-

sign. In a few instances it reflects European, rather than American, practice and philosophies, and consequently some of its observations may be a little confusing to the uninformed American reader. For example, the distinction made between "curtain walls," which are suspended in front of the structural frame, and "infilling walls," which are erected between the framing members, is not generally recognized in American practice, where the latter term is seldom used and both constructions are referred to as curtain walls. The use of metric terms, particularly in expressing thermal conductivity, may be a little disconcerting, too, to American architects and students.

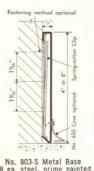
A discussion of design principles can scarcely be expected to present new information; these matters have frequently been dealt with before in the technical literature, and sometimes more fully than Dr. Schaal discusses them. Seldom, though, have all of them been treated as capably within a single volume. Some of the topics under this heading are not explored here as thoroughly as they deserve, but on the other hand, certain facts too often neglected or ignored are brought to mind, and the author presents a refreshing new look at some familiar problems. The matter of soundproofing, for example, is fortunately given more attention than usual, and the techniques of anchoring the wall (with "fasteners") are explained with the aid of some unusually interesting close-up photos. The illustrative sketches and photographs are excellently chosen and effectively used throughout this section.

The outstanding value and interest of the book, however, lies in its unique collection of informative details of significant curtain-wall installations, to which fully half of the book is devoted. These represent the best practice not only in Western Europe, but also in England and the United States, and are carefully categorized as to type of construction. Standardized systems as well as custom designs are included among the 60-odd examples, which are presented in largescale isometric and orthographic details, supplemented by interesting photographs to illustrate the design principles and erection procedures employed. In a most informative and impartial fashion, Schaal has provided here the typical details of many of our own "pace-setters," from



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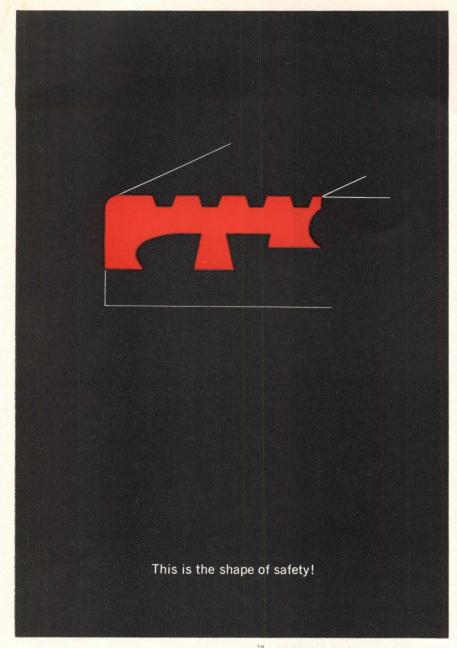
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Alcoa to Seagram, along with those of such notable European buildings as Copenhagen's SAS Building and the Vereinigte Leben Building in Munstera wealth of technical information not to be found within the covers of any other single volume known to this reviewer.

A wholly objective evaluation of the book must recognize, though, that perhaps it has a few weaknesses, too. The brief chapter on "The Influence of Materials on Curtain-Wall Design" is disappointingly weak in comparison with the more comprehensive handling of other parts, and the concluding discussion of "Future Trends," while offering some very pertinent observations, seems to be more concerned with the problems and shortcomings of current design practice than with providing the inspirational look ahead that its title promises.

But any deficiencies the book may have are insignificant in comparison with its merits. Because of its unique store of technical information, Curtain Walls: Design Manual will be valued by architectural students as well as architects, and will certainly be recognized as an important and valuable addition to our literature in this field.

A Respect for Wood

WOOD IN ARCHITECTURE by Finn Monies. Published by F. W. Dodge Corp., 119 W. 40 St., New York 18, N. Y. (1961, 111 pp., illus. \$6.95)

Delightful and instructive indeed is this new book, Wood in Architecture. Written by a Danish author and just translated into English, it contains little technical information about wood, being primarily an architect's opinion of the value of wood and its aesthetic possibilities in different uses.

Chapter titles are "Wood and House," "Interiors," "The Detail," "Textures and Finishes," and "Wood in Large Structures"; in addition, there is an historical foreword. All are keyed to the proclaimed purpose that anyone who plans to work with wood must understand it, must love it, must care for it.

The respect for wood in past generations is illustrated by the bold functional structure of Roman and Gothic barn roofing, the half-timbered houses, and windmills. Most examples are Danish: the Danes have made good use of wood and appreciate its warmth, its color, its texture more than many of us in countries where it is more abundant. However, the early residences of Frank Lloyd Wright are given their just posi-

Continued on page 185

tion as pioneering examples of wood in contemporary dwellings.

Most strikingly illustrated is the simplicity of each wood installation and its forthright quality. Many are in keeping with the modern desire to use wood in its natural state. The pictures show in detail the textures and qualities to be expected from various species. They show how they look in profiles, in boards, in shingles, in shutters, in posts, in walls, in ceilings, in flooring—indoors and outdoors.

The pictures are the book, but the text is interesting if one can read it. Most text material is in captions and it is regrettable that the type is so small. This seems to be a trend in many foreign-authored publications nowadays—a particular pity since the comments are much to the point. But with or without the text, the book is a good buy for anyone who specifies wood. It will indeed help him to understand wood, to love wood, and to care for wood.

JEFFREY ELLIS ARONIN
Architect
New York, N. Y.

Wright on the Bias

ARCHITECTURE: MAN IN POSSESSION OF HIS EARTH by Frank Lloyd Wright. With a biography by Iovanna Lloyd Wright. Edited and designed by Patricia Coyle Nicholson. Published by Doubleday & Co., Inc., 575 Madison Ave., New York 22, N. Y. (1962, 128 pp., illus. \$10)

This addition to the FLLW literature is admirable in its intent: that is, to provide for the layman a brief biography of Wright and an introduction to his architectural philosophy. Certainly such a book is needed. There has been no concise one-volume work suitable for the layman, and only interested members of the profession and the most intense architectural zealot can be expected to read the 15 or 20 volumes by and about Wright and his prodigious work.

The question, then, is how well this book achieves its aim. Does it, as the dust jacket promises, "serve as a beautiful and understandable introduction to architecture for the young and old alike"? Unfortunately, this promise fails to be fulfilled.

The book breaks down essentially into two parts: the biography of Wright by his daughter Iovanna; and a series of essays, presumably by Wright, which set forth his philosophy through discussions of the nature of materials. In the biography, "My Father—Frank Lloyd

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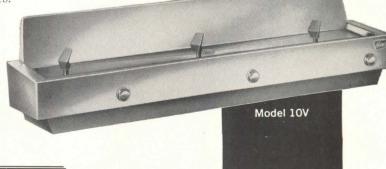
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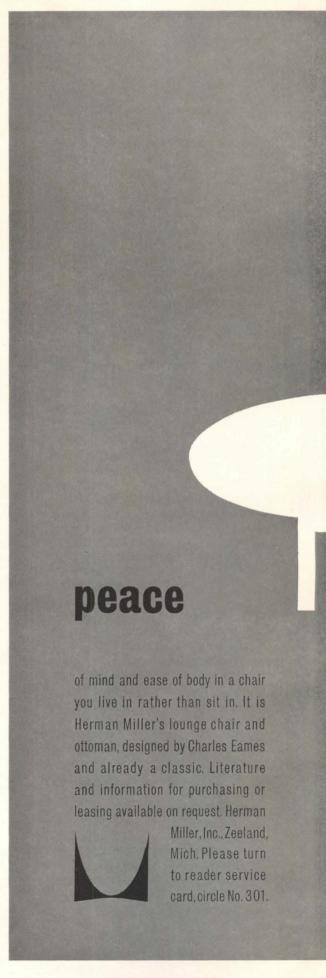
Wright," Wright's daughter has followed the same outline he used in his autobiography. Indeed, it is almost a condensation of An Autobiography, and, in many respects, a suitable work. But it is hard to overlook the not-so-subtle way Miss Wright glamorizes her mother's introduction into the Master's life and her contribution to design. Wright's early influence in Europe is well known, but claiming that his work inspired cubism and the abstract movement in European art will impress only the most credulous reader. Perhaps because she is Frank Lloyd Wright's daughter, it is difficult for her to write with complete objectivity; Wright's own An Autobiography tells the story of his life vividly.

If his daughter's bias were the only criticism of this book, it would still be a commendable effort. However, other weaknesses are obvious. The book's jacket informs us that, "In this profusely and handsomely illustrated work Mr. Wright, characteristically original, explains architecture in terms of its basic, common materials." Anyone who has read his works will attest that his was a characteristically original style. Thus it is disturbing to read the essays attributed to him and find so many sentences foreign to this manner. A glance through the recent book, Frank Lloyd Wright on Architecture, reveals that much is not as it came from his pen. This work, edited by Frederick Gutheim, appears to be the source for most of the material used by Miss Nicholson, the editor of this new volume. In his preface, Gutheim gives an admirable explanation of how he made his selections, working in the most part from original manuscripts authenticated by Wright. Since Miss Nicholson's method of editing and her qualifications for the task are not mentioned, we can only assume that she has paraphrased, rewritten, and condensed the material she used. Assuming also that the book is directed at the layman, there is validity to this approach. Certain parts of the writing are easier to read than the original, although this is often accomplished at the expense of Wright's sometimes Whitmanesque flavor. Regardless of the results, the lack of honesty in explaining the role and intent of the editor is appalling, and more surprising since the book appears to have the approval of the Taliesin Fellowship.

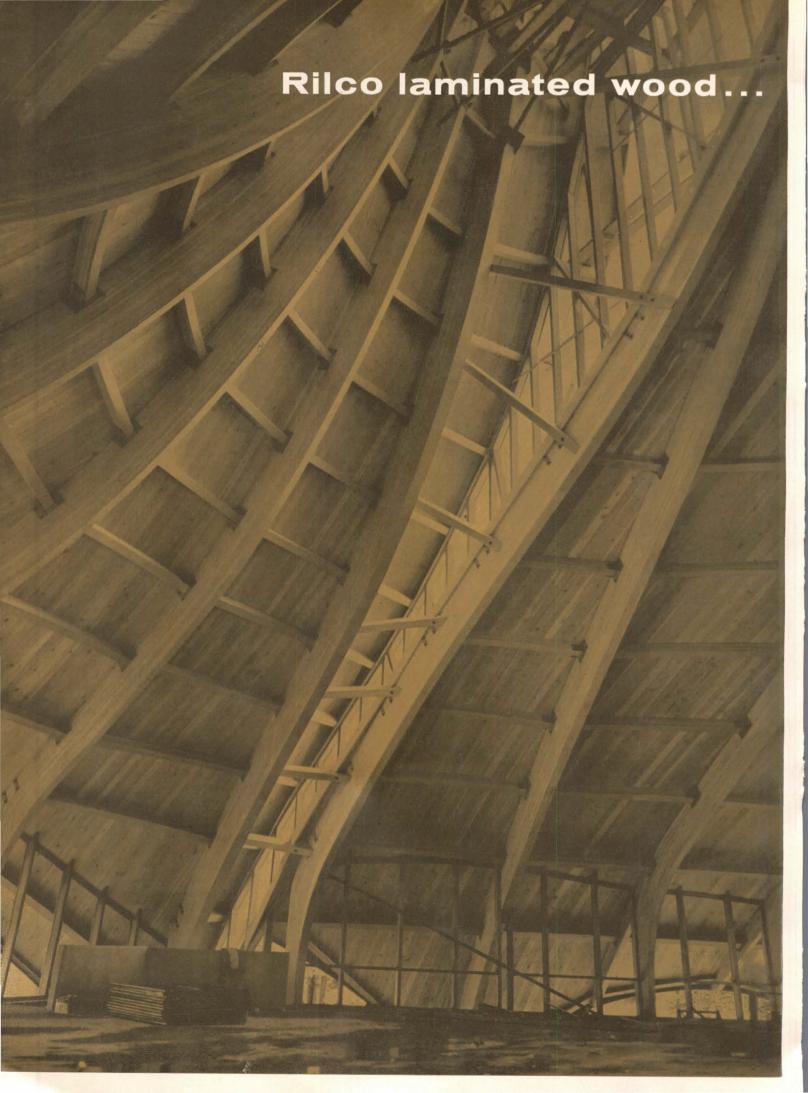
Frank Lloyd Wright was concerned with the smallest details of design; the graphics of a book were as important to him as the written content. Graphically, there is question of even partial success of Miss Nicholson's efforts as "designer." It is inconceivable that Wright would have allowed this book to be published with such a mediocre format. As the dust jacket proclaims, the book is "profusely" illustrated, and many of the photographs are undeniably "handsome" (this cannot be said for most of the painterly illustrations), but their composition and relation to text is not even equal to a hastily prepared "Sunday Supplement" to a newspaper of 30 years ago. The photograph of the dome of the Madrasa Mader-i-Shah on pages 56 and 57 is excellent, and the composition of these pages good. But this is an exception; more typical is the confused arrangement of pages 64 and 65, with four photographs of insensitive selection and arrangement, and an inappropriate painting of the Mosque of Sultan Ahmet. The most obvious short-coming of this work, as an introduction to design and to the work of one of our greatest architects, is its ill-conceived design and layout.

To return to the initial observation of this review: such a book is certainly needed. It should be prepared by someone at Taliesin or by one of the many architects and scholars

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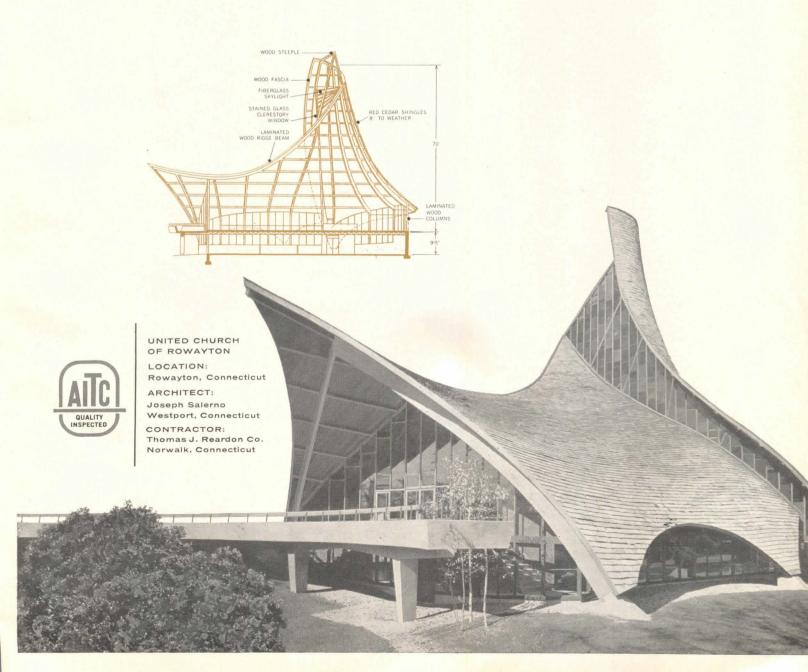
the span between imaginative design and economical construction Here are form, function and

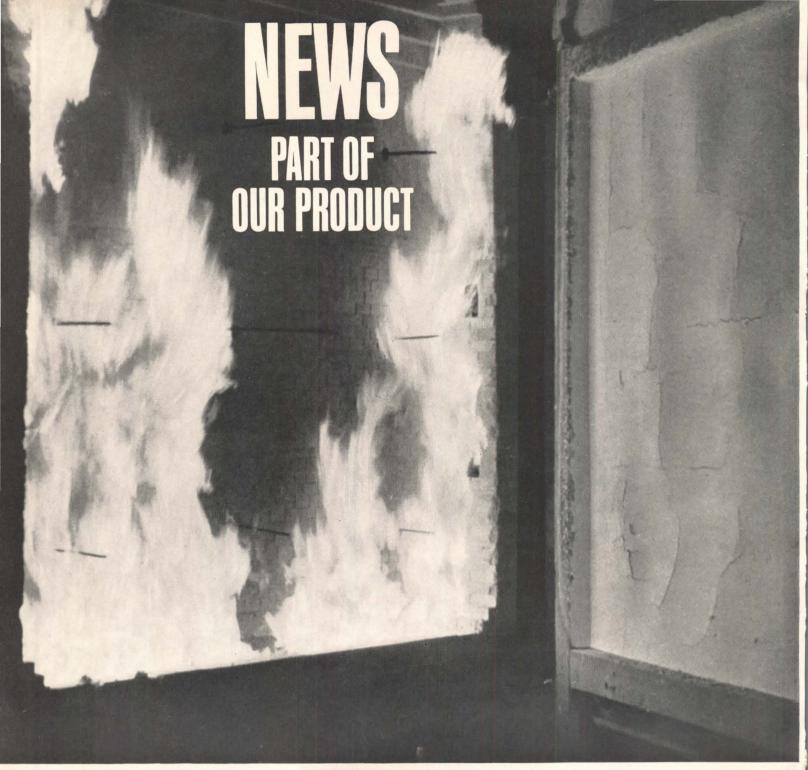
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Continued from page 186

who respect Wright and his architecture and who are capable of a work of this kind. It would be unfortunate if the publication of Architecture: Man in Possession of His Earth serves to thwart such an attempt.

BRADLEY RAY STORRER Schmiedeke & Storrer, Architects Dearborn, Mich.

Apples and Oranges

Mexican Interiors by Verna Cook Shipway and Warren Shipway. Published by Architectural Book Publishing Co., Inc., New York, 1963. Distributed by Hastings House Publishers, Inc., 151 E. 50 St., New York 22, N.Y. (257 pp., illus. \$12.95)

The Shipways, authors of *The Mexican House*, *Old and New* (1960), have brought together in their new book a detailed collection, in pictures and captions of furnishings and accessories to be found in Mexican interiors: *corredores*, fireplaces, *conchas*, ceilings, tiles and frescoes, lattices, doors, chests and their hardware, beds, tables, mirrors, *bijoux*, ceramics, masks, ironwork, etc.

Taken individually, these various elements are intriguing. But like the apples and oranges in first-grade arithmetic, they can never be added together. The reader is never shown an entire house, even though many details from the same house are scattered throughout the book. There are no plans; the emphasis is on the individual elements, not on the spaces in which they function. There is no sense of regional identity, no sense of stylistic development.

More serious, however, is that the book lacks any sustained point of view. For instance, from an introductory paragraph:

"This is a book about houses. It contains decorative motifs and livable elements from homes in Mexico, things that adapt themselves well to tasteful surroundings in many parts of the world. . . Even in centuries past, it seems, people wanted something different, some unusual touches to express their individual tastes."

A decorator's catalog? But then further on, the book is more scholarly, as the Shipways describe the materials and motifs of some well-selected pieces:

"From small, remote towns of 17th-Century Spain came a method of surface enrichment made by grooving and gouging with chisels. Today, in the vicinity of Lake Pátzcuaro in Michoacán, this unique style of shallow carving continues to be highly regarded. The straight-armed chair pictured below, an example of the native craft of this area, has this characteristic carving spread over vertical members where, unfortunately, it has to compete, at times, with the coarse grain of the local pine."

Toward the end of the book, however, this apple falls from the skies:

"Forlorn and alone in the old Ex-Convento de los Once Patios in Pátzcuaro (now being slowly and thoughtfully restored) stands this perplexing console table. Its form is one of sophistication, but its legs of opposing Scurves are crudely made and primitively held together.

"Such delightful incongruities continually bob up, to one's puzzlement. We leave, wondering about these S-curves. Are they traceable to Europe or to the wormlike designs found on some pre-Conquest flat stamps?"

At this point, we decided to leave (the sun was sinking slowly in the west), and suddenly it all added up, apples and oranges notwithstanding. There is a radio program hereabouts called "Nights in Latin America," which has native music plus a brief commentary on the customs of the people. The sponsor, as it happens, is an airline that would be delighted to take you to these same magical lands. It is not always clear as to when the program leaves off and the commercial begins, but it is all very pleasant.

So, too, with this book, whose foreword staggers the reader with:

"... the strong strain from old Spain both in custom and in unconscious adaptation, the unadulterated pre-Conquest designs still used as motifs, the uninhibited vigor which found an affinity in the impulsive Baroque, the indelible impress of Indian heritage."

It all sounds not unlike "Nights in Latin America" and/or its commercial, but with photos instead of music as the accompaniment.

E.P.

Selecting Timber

Timber Identification for the Builder and Architect by N. C. E. Clifford. Published by Taplinger Publishing Co., Inc., 119 W. 57th St., New York 19, N. Y. (1963, 141 pp., illus. \$9)

Two world wars and overexploitation have created a scarcity of common traditional woods. As a result, botanists and wood technologists began to search for lesser-known woods to aid architects and builders. Timber Identification for the Builder and Architect was written to explain the properties of both common and lesser-known timbers.

The book is divided into four sections. Section 1, called "Timber Identification," defines the various properties and identification procedures for timber. Clifford states that identification is made by name and gross characteristics, which include weight, color, smell, and so on. In reference to names of the timber, the



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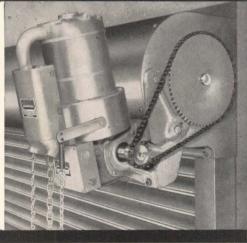
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author points out that there are many geographical identities for one type of wood; and in order to alleviate confusion, timber technologists and botanists adopt a two-part Latin name for each timber: the first part of the name indicates the genus to which the tree or wood belongs; the second part shows the particular variety. Although these names are impracticable for timber and building trades, specifications writers could use them to assist in choosing correct timber. There is only one reliable method of timber identification, and that is by determining the anatomical structure of wood under a lens. Such inspection gives some knowledge of wood structure as a whole and a more specialized knowledge of the structure of particular timbers. Softwoods and hardwoods, growth rings, color and resin ducts, and the weight factor are also discussed here.

The second section, entitled "Identification of Some Common Softwoods and Hardwoods," gives geographical name, Latin name, alternative names, description, identification features, and properties.

Sections 3 and 4, "Commercial Timbers" and "Some Additional Timbers of Commercial Importance," are discussed with the aid of both color and black-and-white photographs. Also included is an index divided into alternative and botanical names.

Clifford's book serves as a comprehensive study of timber for those who desire a better understanding of the properties and procedures of identification for both common and lesser-known timber.

J.B.S.

Understanding Past and Present

The Shape of Time: Remarks on the History of Things by George Kubler. Published by Yale University Press, New Haven, Conn. (1962, 136 pp. \$3.75)

Professor George Kubler, well known for his scholarly research in the field of Central and South American archeology and art history, turns to the philospohy of history in his most recent work. Like Meyer Schapiro, he is not satisfied with the traditional identification of styles; it is too narrow and at the same time too ambiguous.

In his research, Kubler tries to find support for his concept of the development of forms by reference to linguistic changes. In what he calls his "history of things," he includes both works of art and craft—actually, the whole range of man-made things. For the usual se-

Continued on page 198







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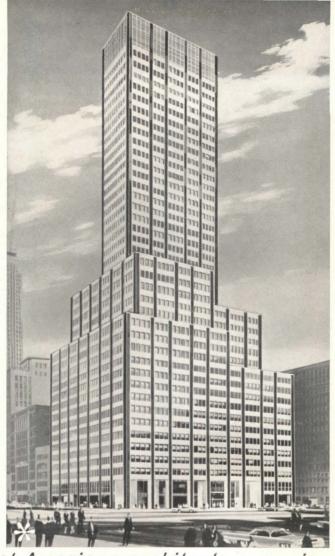
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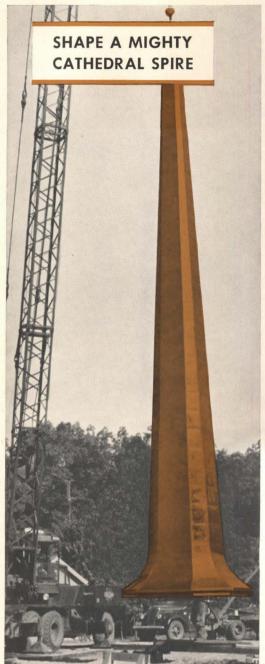
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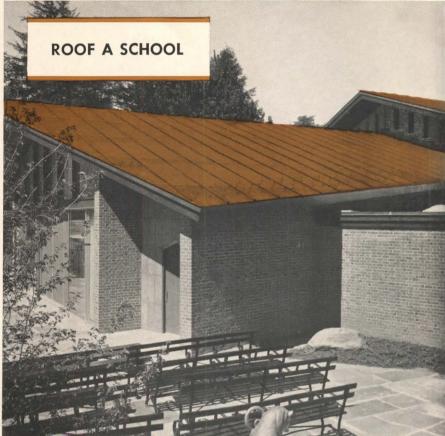
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Continued from page 192

quence of styles, he substitutes more subtle differentiations, thus going far beyond the categories of Heinrich Woelfflin and those concepts that explain iconographic types as symbolic expression of historical changes.

Kubler is equally unsatisfied with the traditional comparisons between the development of a style and biological evolution. "Purpose has no place in biology, but history has no meaning without it." T. S. Eliot's ideas on the relationship between tradition and the individual are preparation for Kubler's notion of the contrast between invention—in the artistic sense—and tradition. "Every important work of art can be regarded both as an historical event and as a hard-won solution to some problem,"

More interesting to the architect than an enumeration of highly abstract definitions, however, will be some of Kubler's architectural discussions—his analysis of the façade of Nantes Cathedral; or his remarks that the abstractions of the International Style were anticipated in the 18th Century geometry of Ledoux; or his comments on Joseph Paxton, who prophetically envisioned the spaces of glass and steel that became the most characteristic architectural features of the first half of the 20th Century. Also of interest: puristic generations for Kubler are, for instance, the Cistercian architects of the High Middle Ages, the New England craftsmen of the 17th Century, and the pioneers of functionalism in our own century. All of them rejected history in the form of tradition.

This reviewer is fully aware that a few words cannot convey the inner meaning and the subtlety of George Kubler's unique differentiations and his new analytical categories. However, the author's perspectives should stimulate the historians of art and architecture—and not only these—to find new approaches to an understanding of the past and a clearer view of our position today.

PAUL ZUCKER
Professor of Art, Cooper Union
New York. N. Y.

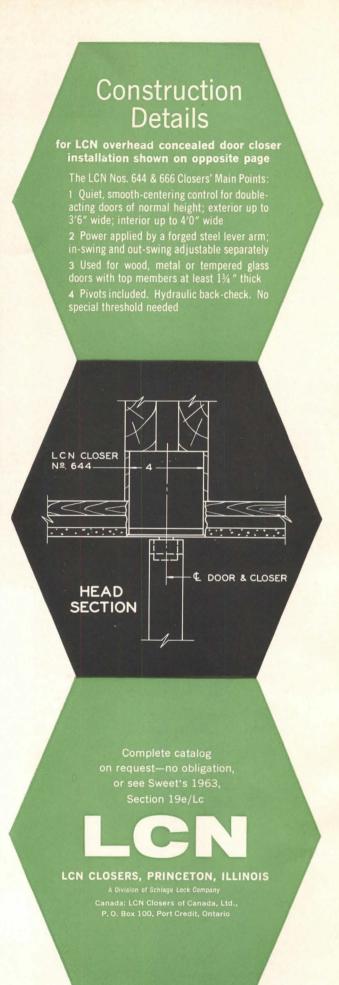
A Welcome Volume

The Court-Garden House by Norbert Schoenauer and Stanley Seeman. Published by McGill University Press, 3458 Redpath St., Montreal, Que. (1962, 204 pp., illus. \$8)

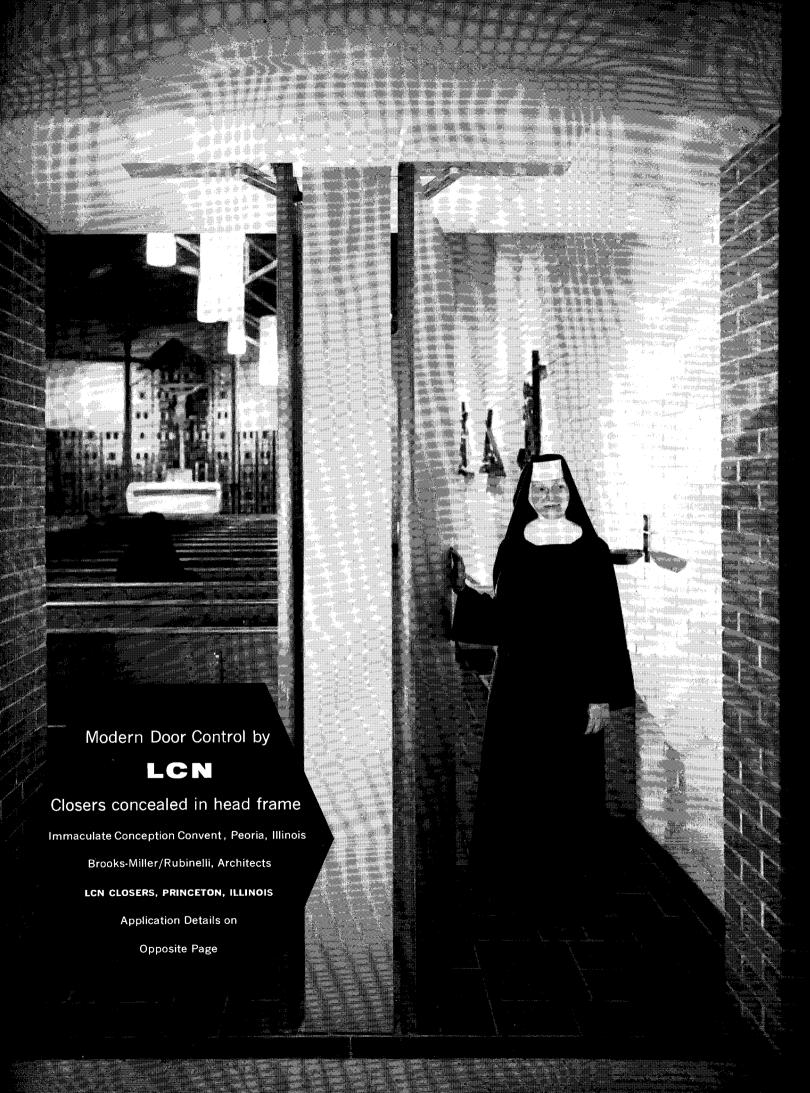
In recent years, the shortage of urban building sites has caused many architects to pay increasing attention to the possibilities of the court house because of its potential for good utilization of available land. The present volume is a welcome addition to the rather scanty literature on this type of dwelling. The authors, both of whom are graduates of McGill University with extensive experience in Europe, are teaching and practicing architecture and town planning in Montreal.

The book is divided into four main sections: "The Genesis of the Vernacular Court House"; "The Court House in Contemporary Design"; "The Physical and Conceptual Aspects of the Court House"; and "The Adaptability of the Court House in Canada." The first section surveys the history of the form with particular reference to its development in non-Western cultures. Court houses were apparently built in most quarters of the globe, perhaps most frequently in tropical and semi-tropical climates. Although it is most familiar in a Mediterranean or Latin American setting, it also reached a high state of development in China and Japan. In view of the tradition of its use in mild climates in the Western World, it is interesting to note that some of the most successful modern examples are located in Scan-

Continued on page 202



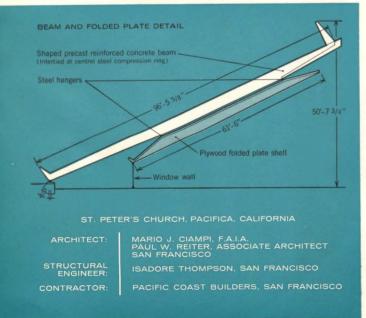
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Continued from page 198

dinavia. Visitors to Utzon's excellent Kingo housing development at Elsinore, Denmark, will testify to its adaptability in a climate with little sunlight and a really wretched winter. The authors are undoubtedly right in arguing strongly for its use in Canada.

A survey of the history of the court house during the last generation is provocative. Among the great modern architects, it is Mies van der Rohe who has given most attention to the development of this building type. Probably inspired

court in the Barcelona Pavilion of 1929, Mies has worked on a series of projects that invariably reveal intense study of the practical problems and complete mastery of design. Despite Le Corbusier's fascination with Mediterranean forms, it is difficult to recall any court houses by him; and the type was, of course, antithetical to the aims of Frank Lloyd Wright. Most of Wright's great houses are country houses, located in situations where an inward orientation would be nonsensical. In addition to the excellent coverage of the Miesian projects, the by the success of the famous walled book also illustrates several other important court house designs built in the United States during the last few years. The well-known houses of José Luis Sert and Eliot Noves are shown here, as is the recent very successful group done by Y. C. Wong in Chicago.

Since this reviewer has just finished building a court house for himself, the sections on orientation, climatology, and cost were naturally of particular interest. In general, the author's conclusions are sound and well-informed, although a few points might have been amplified. It would have been a good idea, for example, to extend the section on landscaping and to stress the importance of weather-resistant materials for freestanding court walls. (In most court houses, these are made of brick, and since they are unheated, the material must be hard burned and of high density if they are not to crack and discolor. This requirement may preclude the use of a clay product with a desirable color and texture, or increase cost to a certain extent). In addition, a word should be said about the interesting proclivity of the court house for painting and sculpture. As the houses of Noyes and Sert demonstrate, this type of dwelling seems to do exceptionally well as a backdrop for works of art. The courts almost demand free-standing sculpture for their completion.

Finally a word should be said about the problem of illustrations for a book of this sort. The authors have exclusively used their own drawings, which are almost invariably clear and forceful. Many readers will regret the absence of photographs, but to have included any number of these would have boosted the book's price substantially. The proper conclusion to be drawn, therefore, is that there is room for another book that would assemble the relevant photographic material.

> LEONARD K. EATON Associate Professor of Architecture
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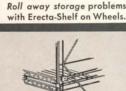
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OTHER BOOKS TO BE NOTED

Architectural Supervision of Modern Buildings. Martin D. Dubin. Reinhold Publishing Corporation, 430 Park Ave., New York 22, N.Y., 1963. 304 pp. \$10 To be reviewed.

A College Health Center. Bernard Bard and Don R. Stewart. Educational Facilities Laboratories, 477 Madison Ave., New York 22, NY., 1963. 32 pp., illus. no charge (paperbound)

A two-part presentation and solution of the problem of health centers for small liberal arts and teachers' colleges. The cooperative study by Colorado College, Knox College, and Wittenberg University analyzes the faltering national attitudes of administrations and students toward medical facilities. Neglect due to lack of funds is exemplified by descriptions of facilities at the three participating colleges. The master solution, by Caudill, Rowlett & Scott, is an infirmary consisting of three concentric circles: a central nurses' station, a study area, and an outer patients' area. Numerous sketches and simplified plans clarify the design and suggest adaptations.

Concepts of Structure. William Zuk. Reinhold Publishing Corporation, 430 Park Ave., New York 22, N.Y., 1963. 80 pp., illus. \$5.95 To be reviewed.

Concise Guide to Plastics (2nd Edition). Herbert R. Simonds and James M. Church. Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y., 1963. 392 pp., illus. \$12

Extensive practical information on the cost, properties, uses, processing, and manufacturers of plastics.

Exotic Plants Illustrated (6th Edition). A. B. Graf. Roehrs Co., Rutherford, N.J., 1962. 92 pp., illus. \$2.50 (paperbound)

Illustrations of 1300 plants, with key to care, insect control, habitat, and climatic background.

Exotica 3: Pictorial Cyclopedia of Exotic Plants (3rd Edition). A. B. Graf. Roehrs Co., Rutherford, N.J., 1962. 1170 pp., illus, Single volume, \$38; Two volumes, \$45

This guide to use of tropical plants as home and office decorations contains 12,000 illustrations, mostly photographs. Text in English, Spanish, French, German, and Russian briefly describes each plant's origin and care.

Foundation Engineering. Edited by G. A. Leonards. McGraw-Hill Book Co., Inc., 330 West 42 St., New York 36, N.Y., 1963. 1136 pp., illus. \$25

Comprehensive handbook of physical proptries of soils and theories of earth action applied to design and construction methods. Foundation problems are illuminated by historical summaries, detailed studies of fullscale structures, and suggested solutions. The final section deals with legal aspects.

Grammar of Architectural Design with Special Reference to the Tropics. Miles Danby. Oxford University Press, 417 Fifth Ave., New York 16, N.Y., 1963. 256 pp., illus. \$6.75

For architectural students in the tropics. Text has chapters on basic concepts of architecture as well as on special factors (climatic, social, economic) of importance in the tropics. Author is Lecturer at Kwame Nkrumah University, Ghana.

The Great Ages of World Architecture: Western Islamic Architecture. John D. Hoag. Chinese and Indian Architecture. Nelson I. Wu. Japanese Architecture. William Alex. Pre-Columbian Architecture. Donald Robertson. George Braziller, Inc., 215 Park Avenue South, New York 3, N.Y., 1963. 128 pp. each, illus. \$4.95 each To be reviewed.

The Highway and the City. Lewis Mumford. A Harvest Book. Harcourt, Brace & World, Inc., 750 Third Ave., New York 17, N.Y., 1963. 246 pp., \$1.65 (paperbound)

A series of essays not previously published in book form—critiques on Coventry Cathedral, Penn Station, Guggenheim Museum, UNESCO buildings, historic Philadelphia, etc. Many were first published in The New Yorker.

Interiors Book of Hotels and Motor Hotels, Henry End. Whitney Library of Design, 18 E. 50th St., New York 22, N.Y., 1963, 252 pp., illus. \$16.50

To be reviewed.

An Outline of European Architecture. (7th Edition). Nikolaus Pevsner, A Pelican Original. Penguin Books, Inc., 3300 Clipper Mill Rd., Baltimore 11, Md., 1963. 496 pp., illus. \$2.25 (paperbound)

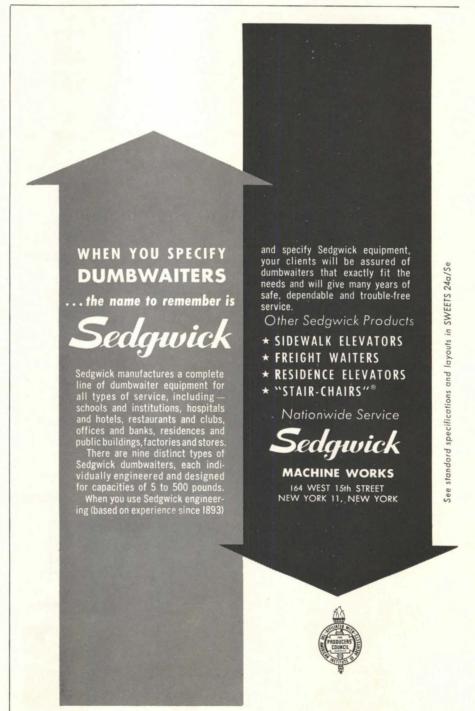
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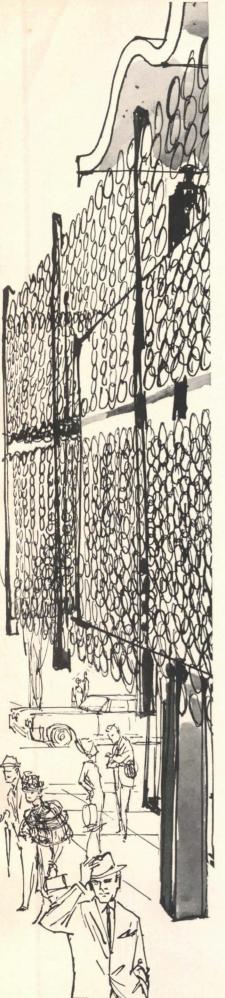
The Poster: Its History and Its Art. Ervine Metzl. Introduction by Fairfax M. Cone. Watson-Guptill Publications, Inc., 1564 Broadway, New York 36, N.Y., 1963. 148 pp., illus. \$15

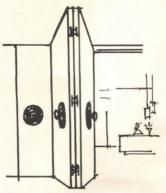
A richly illustrated survey of posters from the Renaissance, through the advent of the lithograph, to Impressionist fine art, American and German magazine covers, war propaganda and product advertising. Metzl, former president of the Society of Illustrators, analyzes the poster's technical and artistic development within its social, political, and economic framework.

SOM: Architecture of Skidmore, Ow-



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ings & Merrill, 1950-1962. Introduction by H. R. Hitchcock. Frederick A. Praeger, 64 University Place, New York 3, N.Y., 1963. 220 pp., illus. and plans. \$18.75

To be reviewed.

Study Carrels: Designs for Independent Study Space. Western Regional Center of Educational Facilities Laboratories, Inc., Stanford School of Education, Stanford University, Stanford, Calif., 1963. 16 pp., illus. no charge (paperbound)

Drawings of 11 suggested designs of furniture units for student carrels in colleges, and elementary and secondary schools. The basic design has desk top, visual barriers, and shelf space. Variations include clustered carrels, make-shift carrels, and carrels with specialized equipment and storage space. A short introduction presents criteria for successful study areas.

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MARTIN STERN, JR., AIA, ARCHITECT AND ASSOCIATES, 9348 Santa Monica Blvd., Beverly Hills, Calif.

ERNEST P. WARD, Architect, 1525 East Cherry, Springfield, Mo.

New Firms

ARCHITECTS AND ASSOCIATES, INC., 13315 Watertown Plank Road, Elm Grove, Wis., has been formed by George W. Gunn, ALVIN P. WENZEL and WALTER E. ZOLLER.

KENT ATTRIDGE AND ASSOCIATES, 7421 Beverly Blvd., Los Angeles 36, Calif.

Behringer & Secon, Designers, 231 East 50th Street, New York 22, N.Y.

JOHN B. FERGUSON AND ASSOCIATES, Architects and Engineers, 14606 Victory Blvd., Suite 200, Van Nuys, Calif.

ROBERT A. KRIDER, Architect, 2598 West Eighth Street, Erie, Pa.

I.S.D. Inc. (Division of Perkins & WILL), 485 Lexington Avenue, New York, N.Y.

ITALO J. MILANI, Architect, 403 Cleaveland Bldg., Rock Island, Ill.

MST ARCHITECTS AND PLANNERS ASSOCI-ATES, 200 East 37th Street, New York, N.Y. has been formed by ROLF MYLLER, RICHARD W. SNIBBE, and EDGAR TAFEL.

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TER named associates of FRED S. DUBIN ASSOCIATES, Consulting Engineers, Hartford, Conn.

HOWARD H. JUSTER, named partner of PERKINS AND WILL, Architects, White Plains, N.Y.

Elections, Appointments

ROBERT J. CARLIN named Project Manager and ROBERT S. SLEECE named Field Manager in firm of JOSEPH S. WARD AND ASSOCIATES, Consulting Engineers, Caldwell, N.J.

DAVID W. MUELLER appointed Chief Specifications Writer in the firm of HARLEY, ELLINGTON, COWIN AND STIR-TON, INC., Architects-Engineers, Detroit, Mich.

JOHN O'KEEFE appointed Chief Mechanical and Electrical Engineer in firm of PRAEGER - KAVANAGH - WATERBURY, Engineers and Architects, New York, N.Y.

KENNETH A. ROE named president of BURNS AND ROE, INC., New York: T. Y. MULLEN AND DR. S. BARON named vicepresidents.

J. C. WILLIAMS, JR., appointed Project Administrator for Sanders & Thomas, Inc., Consulting Engineers, Philadelphia, Pa.

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CLARK, CLARK, MILLIS & GILSON, Architects-Engineers, 625 James Street, P.O. Box 900, Syracuse 3, N.Y. Formerly CARL W. AND ROBERT T. CLARK.

HOWARD R. LANE AND ASSOCIATES, Architects, Van Nuys, Calif. Formerly LANE AND SCHLICK.

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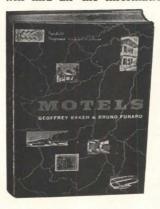
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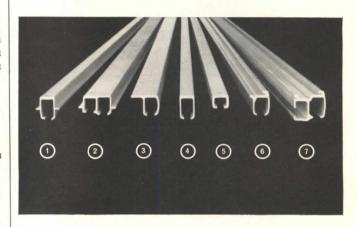
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