INDUSTRIAL DESIGN

August 1958 $1.50 per copy

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EXPO'58, Part II: Architectural, Display and Design details

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UST, 1958 VOLUME 5 NUMBER 8

INDUSTRIAL DESIGN

monthly review of form and technique in igning for industry. Published for active in- trial designers and the executives throughout dustry who are concerned with product plan- g, design, development and marketing.

CONTENTS

Coming

EPTEMBER—The designer and the client: how they ogether and how they work together.

CTOBER—ID presents a comprehensive research t on reinforced plastics in product design and facture—a review of the entire field.

COVER: A child plays with an Arnold Arnold toy. The figure at left w drawn with the aid of another toy: "Magic Designer"—made by the North Signal Company, Inc. of Saukville, Wisconsin. Report on Toys: pp. 62-73.

FRONTISPIECE: Marilyn Hoffner's photograph of a small section of "Hum scape"—designed by Brownjohn, Chermayeff and Geismar—in the Americ Pavilion at the Brussels Fair. Photographs and text on Expo '58 (Part I) are found on pp. 24-55.

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BOOKS

A Catalog for the Triennale

UNDICESIMA TRIENNALE. *PEM Sia Libreria Internazionale, Milan, Italy. American distributor: Marcello Maestro, 41 Charlton Street, N. Y. 14, N. Y. Illustrated.* $12.50.

This handsome catalog is the most complete record available of the Eleventh Triennale, which was held last summer in Milan. The long text has not been translated from the Italian, but the excellent photographs by themselves create a well-rounded impression of the exposition. The 368-page text is divided into two sections, the first describing the park where the Triennale is traditionally held and the architecture of the buildings in the park. The second section deals with the Palazzo dell' Arte, where the bulk of the exhibits were located, and describes each of the national exhibits. Both sections are accompanied by complete photographic supplements. Altogether there are 381 illustrations (with English captions) and 26 four-color plates. The text also includes architectural plans of many of the buildings and exhibits which made up the 1957 Triennale.—A.F.

Man's need for individual shelter

NATIVE GENIUS IN ANONYMOUS ARCHITECTURE. *By Sibyl Moholy-Nagy. Horizon Press, Inc., New York.* 220 *pp. Illustrated.* $7.50

Reviewed by Irma Weinig

Frank Lloyd Wright was one of the first to urge the student of architecture to study the "more humble buildings everywhere that are to architecture what folklore is to literature, folk songs to music," and his 1910 quotation to that effect is the jumping-off point for Mrs. Moholy-Nagy's pioneer exploration into indigenous architecture of the Western hemisphere. But no more than that. For she had a more urgent reason for undertaking the more than 15,000-mile journey with camera and pen to search out telling examples. As she explains it in her passionate introduction, her purpose was to remind architects that their major role is still the sheltering of man in individual dwellings which give spiritual as well as material sustenance, and this can be effectively discharged only when they—like these anonymous builders of the past—dedicate their work to the individual conditions of need and site.

This point needs reiterating, she believes, in this contradictory era when—although home building proceeds on a wholesale scale — few architects have a hand in it. Too many ignore the detached private house as a vanishing idiom or propose a mass-produced solution. Where a man used to select and build to his needs, he is now urged by architects to contort his existence to fit mass-produced shelter. Mrs. Moholy-Nagy insists that home ownership is an act of faith which will not be wiped out by statistics and which deserves to be bolstered by the architect.

In the tasks facing them, the architects of today have something in common with the builders whose work is photographed and dissected in the book: while the latter wrested a place for human habitation from the chaos of nature, contemporary architects must create a place of human dimensions in a world that is itself in an industrial straitjacket. "If architecture does not provide new environmental standards, the anonymous multitude will be unable to retain an at-homeness on this factory-strewn earth," is Mrs. Moholy-Nagy's prediction.

Although folk architecture has been a subject of inquiry for some time, this is the first book to attempt to catalog the structures in this hemisphere. Thanks for this pioneer work go not only to Mrs. Moholy-Nagy but to the Architectural League which awarded her a grant from the Arnold W. Brunner Fund for the trip. The buildings here are unclassified, the architects' names lost, and whatever has survived has done so only because it proved workable beyond the time of the builder. Amid such formidable obstacles, Mrs. Moholy-Nagy claims no more for her book than that it is a first sampling, far from inclusive. Her criteria of choice were two: a specific response to local environment and uniqueness of architectural solution. No national landmarks are included because they do not fulfill these requirements, and their absence makes this a book of discovery rather than an historical catalog. One may argue about what has been left out but not about what has been included, for the reasons are clearly pinpointed by Mrs. Moholy-Nagy's incisive comments, amplified by plan drawings in many cases. The photographs, however, could be clearer.

Previous neglect of American settler architecture was entirely unfair, for the best designs more nearly fulfilled the needs and aspirations of the times than did that of their European counterparts. Their success can be explained by the new freedom from the forms endorsed by church or nobility, and the necessity to prepare to live with site and climate conditions which they had neither the tools nor skills to transform. What they did bring with them was "brauch", says Mrs. Moholy-Nagy, a memory of best performance which they adapted to new conditions. The variety and ingeniousness of their solution and the beauty of honest design and craftsmanship, account for the fascination of this book.

Contemporary school construction

THE NEW SCHOOL. *By Alfred Roth. Frederick A. Praeger, New York:* 1957. 279 *pp.* $11.50.

This anthology of modern school buildings is preceded and concluded by earnest essays on the characteristics of an ideal school architecture, inspired by a no less earnest view of the goals of education: "To raise the cultural level of the generations to come, thereby enabling them to create the synthesis of life and environment in accordance with the laws of man and art." The author, a professor of architecture in Zurich and chairman of the school design commission of UNESCO, has published his book in three languages for wider diffusion. (The English, French, and German texts are arranged in parallel columns; the English translation is heavy and occasionally inaccurate.)

A number of introductory chapters deal with the requirements of modern school architecture in relation both to the community and to the various activities of the school day. This section is less a definition of the ideal than a survey of contemporary European and American opinion. The author has done a considerable amount of research to discover what is generally considered to be the best size of classes, the best size for schools, and the best area of school grounds per pupil. (As might be expected, American children are allotted considerably more elbow room than children of other countries.) A technical chapter treats such subjects as lighting, heating and acoustics.

The principal part of the book is a description of 31 schools in all parts of the world which, the author feels, have come close to meeting the architectural requirements of contemporary education. Each school is described as to type, site, layout, and construction, and the text is supplemented with a generous number of photographs. As a survey of what is being done in a very important field of architecture, this is a useful book.—U. McH.

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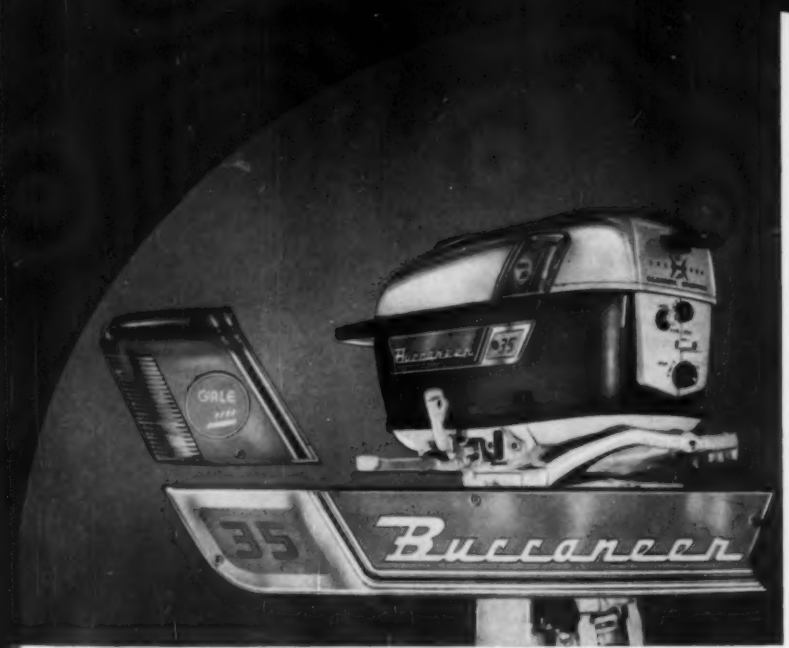


MOTORS—Silver, turquoise, red and gold are combined in this handsome medallion for the Gale "Buccaneer" 35 H. P. deluxe outboard motor. LUCITE is one of the most weather-resistant plastics known. (Molded for Gale Products, a Division of Outboard Marine Corp., Galesburg, Ill., by Electric Auto-Lite Co., Toledo, Ohio.)

APPLIANCES—Brilliant ruby jewel, through which a lamp shines indicating completion of brewing cycle, creates bright spot in design of this automatic coffee maker. LUCITE was selected for excellent light transmission and economies in manufacture. (Universal "Coffeematic" by Landers, Frary and Clark, New Britain, Conn.)

VACUUM CLEANERS—Gold design and lettering dominate in this medallion for the Eureka "Golden Crown" Super-Rotomatic cleaner. Medallion of LUCITE looks like polished metal, but will never oxidize or need cleaning. (Molded for Eureka Williams Corp., Bloomington, Illinois, by Mimosa Corp., Belton, S. C.)

INTERNATIONAL DIGEST

Summaries of articles from leading foreign publications that reflect the current design climate abroad

INDIA

DESIGN, Bombay
March, 1958, page 7
Ratna Fabri reporting on **"Impressions of Design in America,"** says that there has been a tremendous advancement in arts and development of crafts and industrial design in the United States within the last ten years. The writer believes that Japan, Italy and Scandinavia have been the major foreign influences on American design.

Current design is less rigid, more outspoken in emotion, more immediate and eclectic. There is less insistence upon geometric forms, more acceptance of bold color harmonies. A curious paradox is that Japanese artists and architects are busy absorbing influences from the West while American artists are fast adopting Japanese traditional styles as modern.

ENGLAND

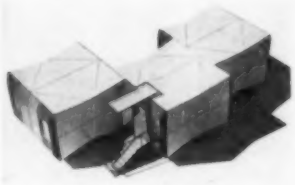
ARCHITECTURAL DESIGN, London
February, 1958, page 84
Every person who works for the public in a creative manner is face to face with the problem of a mass society, says Lawrence Alloway in a discussion of the arts and the mass media. In contemporary society, the "elite", accustomed to setting aesthetic standards, has found that it no longer possesses the power to dominate all aspects of art.

The definition of culture is changing as a result of the pressure of the great audience, which is no longer new but experienced in the consumption of its arts (and may even demand hats fashioned after diving helmets, (below, left). Culture is no longer what the minority guards for the few. The definition of culture is being stretched beyond the fine art limits imposed on it by Renaissance theory. Within this new definition, rejection of the mass-produced arts is not, as critics think, a defence of culture but an attack on it.

DESIGN, London
April, 1958, page 27
"Training Product Designers" is a survey of industrial design education now available in Britain, its problems and its prospects. Only three art schools had industrial design departments large enough to merit study: the London County Council Central School of Arts and Crafts, the Birmingham College of Arts and Crafts, and the Royal College of Art. The report covers the courses these schools offer, their faculties, their students (where they come from, where they go, and how much they are paid), examples of their year's work, and a general policy statement.

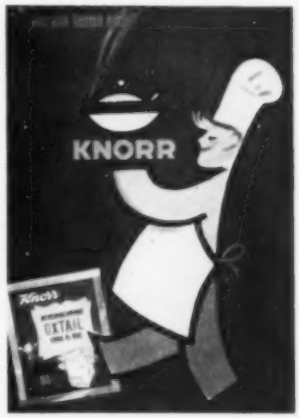
Industrial design is the youngest of the art school subjects in Britain, but it is growing the most rapidly, and the demand for designers is beginning to outstrip the supply. However, to judge from the comments from industry, young designers are being improperly trained; most particularly, they are lacking in technical background. One reason for the deficiencies in design education seems to be the wide gulf between industry and the schools. If design education is unrealistic, it is because the Ministry of Education has no professional guidance in approving courses and setting examinations for the National Diploma in Design. There is a real need, the article concludes, for a program of research and reappraisal to assure an adequate supply of properly trained industrial designers.

ITALY



STILE INDUSTRIA, Milan
February, 1958, page 18
Pre-cast plastic sections for building are now being used in Italy in a number of experiments in prefabrication and mass-production. The plastics industry there encourages architects to try plastic as a new medium of expression. Efforts have been directed toward showing that plastics have a practical application in architecture rather than toward more bizarre aims. Cesare Pea's plastic cottage (above), shown at last year's Samples Fair in Milan, aims at meeting the needs of the Italian market. It was not planned as a "dream home." Basic unit of the cottage is a room consisting of four stamped plastic dihedrals measuring 15 by 15 by 8 feet.

GERMANY



GRAPHIK (Advertising Art and Industrial Design), Munich
April, 1958, page 18
Knorr International, famous European food manufacturer, modifies its advertising to fit the taste of the various countries to which it sends its products. Graphic designer J. Binder was given the task of modifying poster motifs which he himself had orginally designed to suit the countries where they would be used. The new designs (as in the Italian and German examples above), carry the Knorr script in each poster, giving a sense of unity to the whole advertising program.

ALUMINUM IS COLOR . . .

Anodize it: Perhaps the most intriguing of the multiferous techniques for coloring aluminum is the wonderful process of *anodizing*. Colors introduced in the anodizing process become part of the metal itself. Anodizing converts the surface of aluminum to a sapphire-hard layer that is integral with the metal. This coating has a cellular structure that makes it receptive to an unlimited range of dyes and pigments. Color molecules actually penetrate the oxide layer, seating themselves in the parts of the oxide coating. The coating is then sealed, and the color becomes a permanent part of the metal. These colors cannot chip, peel or flake off. They share the anodized coating's extraordinary resistance to wear and abrasion. If transparent colors are used, they display a unique metallic luster resulting from the sheen of the underlying metal. Some anodic colors—blue, yellow, gold and gray, for example —show high resistance to fading from sunlight and are recommended for outdoor use. Alcoa has also developed a complete spectrum of anodic colors for interior applications.

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Paint, lacquer or enamel it: Any durable paint, lacquer or enamel can be applied to aluminum if the surface is properly prepared. For decorative painting only, a simple solvent cleaning is adequate. Where more severe service conditions are anticipated, treatment with a phosphoric acid solution is recommended. For maximum protection, primers are generally used. In all cases, tests have shown that organic coatings have an unusually long life on aluminum. The oxide film is relatively inert (compared with active films that form on some other metals) and provides a tightly adherent base for the coating. Fewer finishing coats are required; often a primer and one coat of finish are sufficient. Coatings can be dipped, brushed, sprayed or rolled on. Unlike steel and galvanized, aluminum never carries mill scale which can loosen and delaminate paint coatings.

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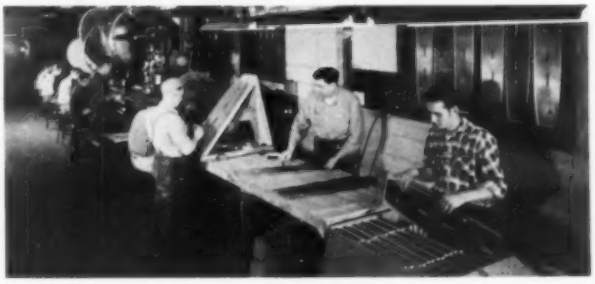

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LETTERS

But industrial design was missing

Sirs:

As far as I am concerned, our building at Brussels, not only the main pavilion but the theatre, was exquisite. Particularly at night, Ed Stone achieved an effect of glamour and of a kind of opulent hospitality, which I found thrilling. I wish I could say as much about the interior.

I believe it would go too far to attempt to give an analysis of what, if anything, went wrong inside our pavilion. Let me, therefore, limit my observations strictly to industrial design.

In spite of the very considerable efforts, not only of myself as adviser on industrial design to the U. S. Commissioner General, but also of a working committee of ASID, IDI, and AID, we might just as well have saved ourselves the trouble of trying to select a representative cross section of American-made products. Industrial design, as such, simply did not exist in our pavilion. You cannot criticize it because it wasn't there. I cannot quite escape the feeling that the organizers and designers of the interior of the U. S. Pavilion bypassed the recommendations of the industrial design profession, and were either antagonistic to or were unaware of the significance of industrial design as a force in American industry and life. This is not denying the many interesting and ingenious displays and display techniques which were represented in our pavilion.

Canada had a section on industrial design and so did Belgium. The U.S.A., the acknowledged leader and originator of the profession, did not. Too bad.

Peter Muller-Munk
Pittsburgh

Trainee program in design?

Sirs:

The Package Designers Council has made a good start into investigating the problems of the young design aspirant with their symposium at Silvermine. It seems to me that, by and large, the industrial design field has sadly neglected this important and vital matter of developing new talent. The present attitude is short-sighted, immature, and unrealistic. Whether this attitude is satisfactorily challenged will decide ultimately whether industrial design is a contemporary and passing fad or a beneficial industrial and commercial necessity.

That the schools are failing to adequately train new talent is apparent. This should come as a surprise to no one. Certainly no school or college can be expected to attempt a job industry is obviously better equipped to do, nor should they be. The professional schools do produce skilful technicians but at a horrible sacrifice to the basic foundation the liberal schools provide which in the long run is essential to the full development of the individual as a creative person. The liberal colleges graduate people who are lacking in the craft of their profession, which puts them at a disadvantage in the short term.

What is needed is an industry-wide, officially sponsored design trainee program for college graduates; a combination on an on-the-job "apprenticeship" and classroom training in marketing, advertising, fabrication methods and materials designed to produce a professionally oriented designer. Parallels in other industries are obvious if you compare the trainee programs of many of the major producers. Admittedly the cost is high, but the alternative is extinction.

John Vise
Berkeley, Michigan

Holy mackerel!

Sirs:

I recently viewed "Rain," "Nude Ascending Staircase," and some similar bits of Americana, strewn around the inside of Stone's very orderly structure at Brussels. It just occurred to me that the characters charged with presenting our culture to the world missed a coup de maitre.

Over the central pool they should have hung a huge 30 by 80 foot woven screen covered with several thousand assorted fish skeletons of various sizes. The State Department then would have wheedled $7.65 out of Congress to have a typewritten card attached to the lower right hand corner. It would read: "Mackerel (formerly)".

What an impact on the Europeans!

What soft sell!

Ted Clement
Eastman Kodak Company
Rochester

Concern for ID education

Sirs:

It is with pleasure that I send you my heartiest thanks for your splendid editorial on ID education in the June issue. It's the best thing I've seen on the subject. You will have many in agreement as an increasing number of us are as concerned as you.

Hunt Lewis
Pasadena

Underwood reviewed

Sirs:

When you published the Underwood story (ID, May) you created considerable pleasure in my bosom. However, before thanking you I decided that it would be worthwhile to await reactions from other less interested parties. You will be glad to know that we had excellent reports on the writer's and editor's approach to the subject. It was considered interesting, factual without dullness and not too critical in areas that might have been beaten rather soundly. Therefore, permit me to extend my sincere congratulations for an article that meant a diversified but wide reader approval.

I would also like to congratulate you on the general reorientation of the magazine. I feel that the new approach reflects greater editorial maturity and a considerably higher standard of readability. This indicates a publishing and editorial understanding of the greater responsibility and position that *Industrial Design* magazine is assuming in the field of design and the relationship of design to the social forces of our time.

Raymond Spilman
New York

Correction

Sirs:

The articles on Norman Bel Geddes were fine. For clarification, it would be useful to note that the date of the IBM typewriter model was about 1947, not 1941.

Eliot Noyes
New Canaan, Conn.

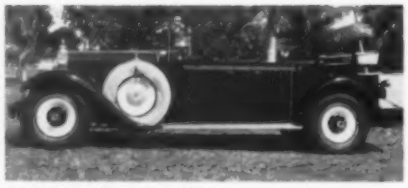
Erratum

Several words were omitted from a statement by Robert G. Neubauer at the Package Designers Council symposium at Silvermine, as reported in ID, June, page 86. Mr. Neubauer's statement should have read: "But the designer should be careful *not* to let research overpower his belief in intuitive rightness." (Italics ours.—Ed.)

A turn-of-the-century advertisement

The 1912 *Landaulet*

The 1915 *Twin Six*



The 1928 *Touring Car*

Demise of Packard recalls days of its classic design

The 1934 *Limousine*

All photos except ad: Long Island Automotive Museum

Packard—one of the oldest and most respected names in American automotive history—will cease production at the end of the 1958 model year. Long known for its adherence to classic and conservative automotive styling, Packard includes among its "firsts" the steering wheel, the H-slot transmission, hypoid gears, and, in 1940, air conditioning.

An indication of Packard's demise came at press and stockholders' meetings earlier this year when Studebaker-Packard President Harold E. Churchill declined to answer questions about the car's future. Last year Packard abandoned its Detroit plants and consolidated operations at the Studebaker plant in South Bend. But only 1,588 cars were built at the South Bend plant in the first half of this year compared with 6,101 for the same period in 1957. For next year Studebaker-Packard will concentrate all its energy on a newly designed economy car. The company says its destiny is tied to smaller cars, and that it will emphasize smaller-wheelbase cars with no fins, little chrome, less horsepower and lower top speeds. The Studebaker Hawk sports car and the imported Mercedes-Benz will round out the company line for next year.

The very first Packard, produced 59 years ago in Warren, Ohio, was a single-seat, buggy-type of vehicle with wire wheels, similar to the one-cylinder Packard roadster featured in early ads (left). As early as 1903 Packard had introduced its famous slogan—"Ask the Man Who Owns One"—and its 90 per cent customer repeat gave it a high prestige rating (and maximum dealer profits). The company was started by J. W. and W. D. Packard, and the first car was originaly called the Ohio. The characteristic Packard hood line (which was to be carried up through models of the '30's) was first introduced in the 1904 model. Price of this daring, four-cylinder car was $2,000. Packard built its first Six in 1912, a large, luxurious car selling for $5,000. Its first Twin-Six came out in 1915 and by 1921 sold for as much as $6,000. As a luxury car Packard's best year was 1928 when 50,000 were sold, one-third of them abroad. The depression of the 30's brought a sharp decline in the luxury car market and, with its 1935 model, Packard entered the medium-priced field. It recorded its best sales year in 1937 when it sold 109,518 cars, but after that it

(*Continued on page* 14)

CYANAMID

PLASTICS NEWSFRONT

Plastic Drink Dispensers Take Rugged Fountain Use

These attractive over-counter soft drink dispensers must resist impact, denting, corrosion, staining and scratching. So the Cornelius Company molds base, front and back panels of tough CYMEL® 1077 melamine plastic, which also provides the advantage of light weight—important in shipping and installing. Dispensers can be kept sanitary simply by washing with hot water and soap or detergent. Ordinary care will keep them bright and gleaming for a fountain's lifetime.

Lightweight and Portable— New Idea in Business Machines

This midget Underwood Add-Mate electric adding machine weighs just 7½ pounds. It can be toted easily from desk to desk or office to home, and slipped out of sight in a drawer when not needed. Contributing to its light weight, handy size, and durability is the attractive two-toned, two-piece housing molded of CYMAC® 201 methylstyrene-acrylonitrile copolymer. This plastic is tough, hard, and resistant to heat, staining and denting. Unharmed by the diester lubricant applied to the mechanical assembly, the CYMAC housing has the extra advantage of chip-proof molded-in color. This elimination of finishing simplifies manufacture.

Plastic Pipettes, Break-resistant and Boilable

Break-resistant, glass-clear droppers that can be boil-sterilized are among the growing number of products being made of versatile CYMAC 201 methylstyrene-acrylonitrile copolymer. Plastic Assembled Products, Inc. produces pipettes in sizes from 1½ inches to 3½ inches on high-speed injection molding machines, twenty-four units at a time. Dropper closures, in every color for quick product identification, are molded of Cyanamid's BEETLE® urea molding compound.

(*Continued from page* 12)

declined in popularity, and even the buying splurge following World War II brought it out of the doldrums only temporarily (1948 and 1949 were both 100,000-unit years). To help solve its financial problems it merged with Studebaker in 1954, but by 1956 its long-running Detroit plant was put up for sale, and production facilities were moved to Studebaker's South Bend plant.

Last year two other famous cars—Hudson and Nash, both American Motors' products—went out of business. With Packard also out of the field, only sixteen automotive names will be left from the more than 2,700 that have existed since the industry first sputtered to a start in 1893, more than 60 years ago.

Trademark design show opens

An exhibition of trademark design (right) as exemplified in the work of four industrial design firms and now on display at the Donnell Branch of the New York Public Library, shows the way trademarks are used by industry. Called "Graphic Symbols," the exhibition illustrates the "power of the simple, distinctive visual statement, and shows the ability of a good designer to embody in a strong form a simultaneously strong idea appropriate to the company personality," according to the show's introductory panel.

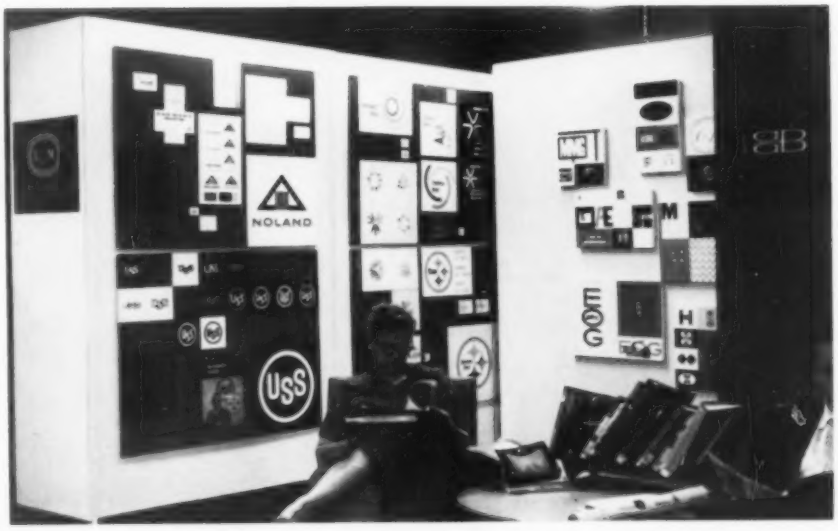
The exhibits for each of the four companies represented were developed by Don Ervin for the George Nelson Company, Robert J. Harper for Walter Dorwin Teague Associates, Norman A. Schoelles for Lippincott and Margulies, and Alan Berni for Alan Berni and Associates.

Mrs. Patricia Spindler, Art Librarian, who arranged the exhibition, reports that it has been one of the most popular shows in the library's one-year history. In the past the library has limited its shows to the fine arts and crafts, but hopes to develop in its exhibitions an emphasis on the industrial arts as well.

Fulbright fellowships available in ID

More than forty countries will be included in the International Educational Exchange Program of the Department of State for 1959-1960. The awards will provide approximately 1,000 opportunities for Americans to study abroad in any number of fields, including industrial design.

General eligibility requirements are U.S. citizenship, a Bachelor's degree or the equivalent of four years of professional training, language ability sufficient to carry on the proposed study, and good health. Preference is given to applicants under 35 years of age. Competitions for the 1959-1960 academic year close November 1, 1958. Persons interested in further information and application forms should write to the Institute of International Education, 1 East 67 Street, New York 21.



Museum School honors Teague

The Philadelphia Museum School of Art last month gave Walter Dorwin Teague its highest honor, the Annual Design Award "for his outstanding contribution to industrial design." Following the presentation Mr. Teague delivered the commencement address to the graduating class.

In conjunction with the award the school held a retrospective exhibit, covering a 30 year period, of photographs of Teague-designed projects. Among the famous projects shown was the Marmon Town Car designed for Queen Maud of Norway in 1929, and the New Haven railway train of 1934, which introduced many features of modern railway equipment to America. Also shown were the Super Kodak (first camera with built-in automatic range finder) designed for Eastman Kodak in 1935, and a number of buildings for the New York World's Fair. More recent projects included a cash register for National Cash Register in 1953, Ritter dental equipment in 1953 and 1954, and interiors of the new Air Force academy.

Mr. Teague, with Raymond Loewy and Henry Dreyfuss, founded the ASID and became its first president. He is a fellow of the Royal Society of Arts of Great Britain, and a former president of the American Society of Graphic Arts. Having five successful books to his credit, Mr. Teague also collaborated with his wife on "You Can't Ignore Murder," a popular mystery novel published in 1942.

Hebert leads Canadian designers

The Association of Canadian Industrial Designers has elected Julien Hebert of Julien Hebert Associates president for the coming year.

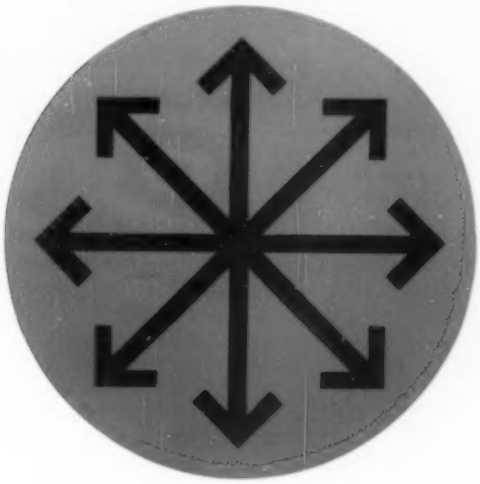
At the same meeting, held in Toronto on June 20, the association elected Robin Bush vice president and Jacques Guillon secretary-treasurer. Elected to the board of directors were Sid Bersudsky, John Ensor, Henry Finkel, Lawrie McIntosh, Don McCormack, Ernest Orr, James Warren.

In addition to having his own design firm, Mr. Hebert teaches the history of art at the Ecole des Beaux-Arts, and furniture design at the Institute of Applied Arts in Montreal.

NSID adds two new chapters

The National Society of Interior Designers last month added two new chapters to its roster—the Northern California Chapter and the Arizona Chapter—according to Michael Greer, President of NSID. Anthony Hail has been elected president of the new California chapter, and Fred Harvey president of the Arizona group. Headquarters for NSID are at 50 East 57 Street, New York City.

REINFORCED PLASTICS



A major report on the influence of reinforced plastics on design and industry

In October, INDUSTRIAL DESIGN will focus its editorial sights on the wide and continuously expanding field of reinforced plastics. The result will be a truly comprehensive coverage of what has been and is being done with reinforced plastics and what might be expected in the future. Briefly the issue will discuss:

. . . **Materials** — recently developed and experimental materials and ingredients that are used or will be used to make reinforced plastic products

. . . **Fabrication Methods**—techniques and equipment for the production of reinforced plastic products

. . . **Products** — what is being made from reinforced plastics and what are the design considerations for this versatile family of materials.

The October issue of INDUSTRIAL DESIGN will be a permanent reference on reinforced plastics for design and business executives. Everyone concerned with product planning and design will want to read and keep it.

Coming in the October issue of

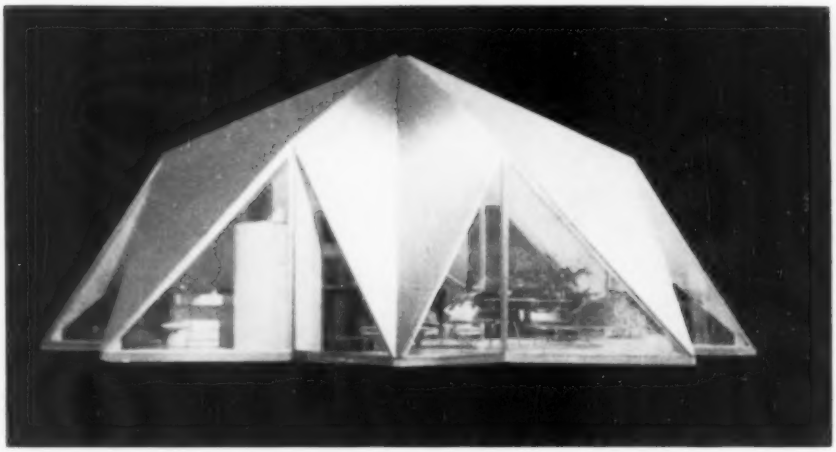
INDUSTRIAL DESIGN

Loewy has Chicago, Montreal project
Raymond Loewy and Associates have been retained by the International Trade Fair in Chicago and the Sir Georges-Etienne Cartier Corporation of Montreal. The Loewy office will create the setting at the Chicago Navy Pier for the International Trade Fair which will take place there July 2 to 19, 1959 and they will direct planning for a new cultural center in Montreal (bottom of page).

Besides designing the symbol for the fair (below), the Loewy office will also direct some of the promotion related to it. The fair will be held in conjunction with the opening of the St. Lawrence Seaway and will be the nation's first all-import fair. It will emphasize that Chicago must import if she wishes to export, according to Thomas Coulter, chief executive officer of the Chicago Association of Commerce and Industry, sponsors of the fair.

Plans for a new cultural center for the city of Montreal will be under the direction of William T. Snaith, president of the Raymond Loewy Corporation. The architectural style of the center will be neither contemporary nor traditional according to the Loewy office. Architects have worked toward a timeless classicism by contrasting rigid vertical and horizontal forms in counterpoint to a series of graceful, multiple arches. The arches, which appear in all buildings, but in varying scale, act as a unifying motif for the building ensemble. In the classical tradition the three buildings—a combined opera house and concert hall, a theatre, and a restaurant—group themselves around a central plaza. According to Mr. Snaith, "Landscaping, lighting, all the devices available to create a park-like atmosphere will be exploited. The central plaza has been created in anticipation of the many beautiful *al fresco* events which both music and drama can provide."

The proposed center will be used for the presentation of a minimum of 850 performances a year with an estimated attendance of 830,000. Construction will probably start during the summer of 1959 and the whole project will cost approximately $13,500,000 when fully completed.



Alcoa's beach house in production
An aluminum beach house (above) by Robert Fitzpatrick of Harrison and Abramovitz and part of the Alcoa Forecast collection (ID, July, 1957), has now gone into production. Although originally planned simply to stimulate design of other aluminum products in the years ahead, the beach house has aroused such immediate public interest that Alcoa has arranged for Aluminum Structures, Inc., of Bridgeville, Pennsylvania, to fabricate it. Builders price the 700-square-foot structure in the $25,000-and-up range, including complete installation on the owner's lot.

Exterior walls of the star-shaped beach house are made up of eight matching triangular sections of aluminum and glass, designed around a central aluminum column. A living-dining-cooking-area, three bedrooms, and a dressing room and bath make up the circular floor plan. Those interested in the house may make inquiries through local Alcoa sales offices or by writing to the Aluminum Company of America, 746 Alcoa Building, Pittsburgh 19, Pennsylvania.

Design protection group formed
At an organizational meeting in New York June 18, the National Committee for Effective Design Legislation was established on a functioning basis. The Committee defined as an initial goal passage of the Willis Bill (HR 8873), the design protection bill introduced by Representative Edwin Willis, Democrat from Louisiana, last summer.

The Committee further agreed on the need for a broader membership, drawn from all parts of the country and from all segments of industry. As temporary officers, the group approved Arthur M. Klurfeld, chairman; and O. E. Cumings, Jr., secretary. A target of $50,000 was set to cover expenses for the next two years. Temporary headquarters of the Committee is at the offices of its Executive Secretary, Alan Latman, 122 East 42 Street, N. Y.

Plastics exposition to be held
"Plastics for Profits" will be the theme of the Eighth National Plastics Exposition. Sponsored by the Society of the Plastics Industry, the exposition will be held November 17-21 at the International Amphitheater in Chicago. The SPI Annual Conference will be held concurrently with the Exposition and will stress a similar theme —how new plastics materials, methods, and machines can effectively stem mounting production costs and add to manufacturing profits.

In addition to stressing the technical and competitive advantages of plastics, most of the 200 exhibitors at the exposition will demonstrate the progress of industry research during the past two years.

Dutch to hold packaging exhibition
The Fifth Netherlands Packaging Exhibition will be held in Amsterdam on April 21-28, 1959. Since this will be the largest packaging exhibition in Europe, planners have named it "Europak 1959." Europak will show the newest in packaging machines as well as materials from all over the world.

2 VITAL FORCES IN INDUSTRIAL DESIGN

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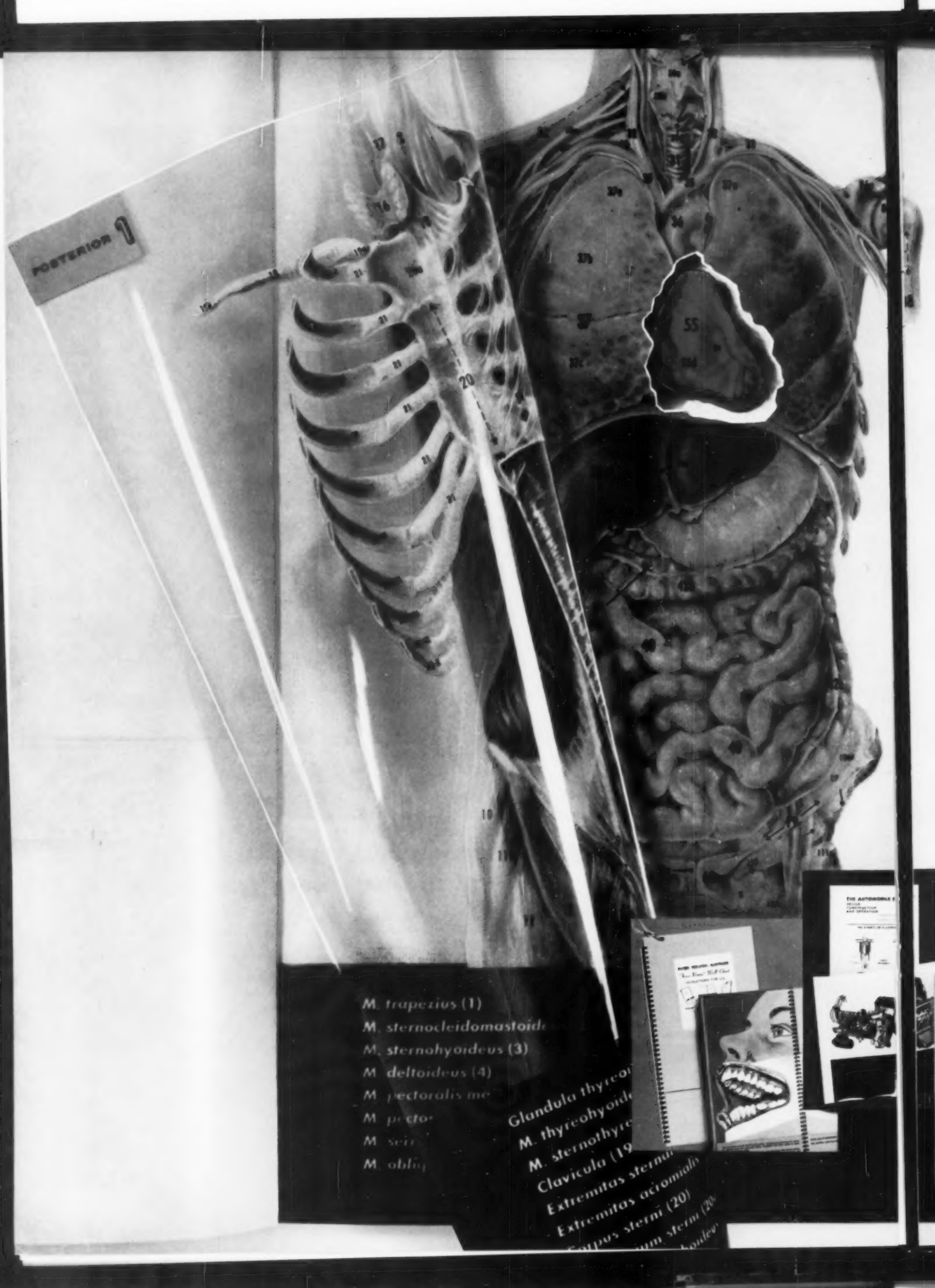
POSTERIOR
M. trapezius (1)
M. sternocleidomastoid
M. sternohyoideus (3)
M. deltoideus (4)
M. pectoralis me
M. pecto
M. ser
M. obli
Glandula thyreo
M. thyreohyoide
M. sternothyre
Clavicula (19
Extremitas sterna
Extremitas acromialis
Corpus sterni (20)

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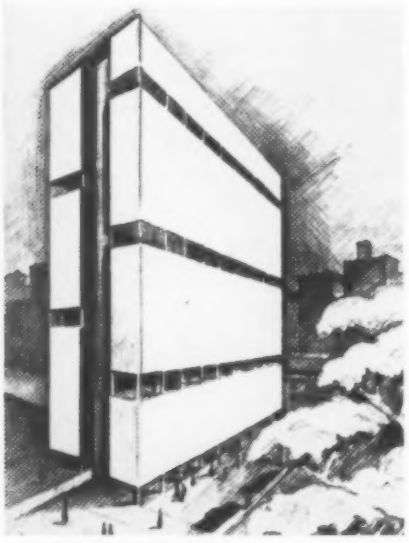
Competitions and awards

The National Institute for Architectural Education has announced the winners of the New York State Division of Housing's student competition for low-cost housing projects. First prize of $200 went to **Eliezer Frenkel** of Pratt Institute for "A High Rise Apartment House in a Development", and the $100 second prize to **David Basch** of Cooper Union for "A Basic Unit in a Housing Development of Row Houses."

The Society of the Plastics Industry has announced the opening of its **Fourth Annual Informative Labeling Contest.** All companies and individuals manufacturing plastics products available to the public are eligible to compete for awards in nine major consumer product categories and for a Grand Award for "Best in Show." Entry blanks, which should be returned before October 26, may be obtained from the SPI, 250 Park Avenue, New York 17.

Entries for the **22nd Annual Variety Store Packaging Awards Competition,** sponsored by *Variety Store Merchandiser*, 419 Fourth Avenue, New York 16, should be submitted by August 31.



Prize-winning project by Eliezer Frenkel

Company news

Jim Nash Associates announces the addition of an Institutional Planning Unit, Office Planning Unit, and Furniture Planning Unit under the direction of **Erno F. Fabry** (right, above) formerly of Fabry Associates and Design International.

The **Benson-Lehner Corporation,** Los Angeles, has formed a military products division. Initially, the new unit will undertake subcontracted development programs as part of major weapons systems developments. Technically, it will deal with digital circuits and techniques, servomechanisms, analog computers, displays, and electromechanical and optical-mechanical design. **Joseph M. Cahn** (above) will be chief engineer of the division.

Papercraft Corporation, Pittsburgh, has retained **Lane-Bender, Inc.,** New York, to design its 1959 line of gift wrap items. Construction is to start immediately on **Container Corporation of America's** plant in the new Dallas-Ft. Worth Industrial District, a 5,000-acre area being developed by the Great Southwest Corporation midway between Dallas and Ft. Worth.

Corning Glass has made available a new movie: *Nature of Glass*, a semi-technical film dealing with glass as an engineering material. The film is intended for designers, engineers, technical societies, and graduate students, and may be obtained from Associated Films, Inc., Ridgefield, New Jersey.

The **Magnavox Company** has announced the formation of a new subsidiary: Magnavox Astro-Physics Laboratories, Inc., formed to meet defense needs in the fields of missile and space technology.

Jack Collins and Associates, Milwaukee, has been retained by the Le Roi Division of **Westinghouse Air Brake Company** to design a new line of road equipment compressors.

The **Ford Motor Company** has opened a new glass plant—the world's largest glass-producing facility under one roof — at Nashville, Tenn. Approximately one-half mile long and 470 feet wide, the building covers an area of 30 acres.

Allegheny Ludlum Steel Corporation has available 20 films, all 16mm color prints, with sound, dealing with fabrication processes and uses of stainless steel. Requests for films should be addressed to Syndicated Films, 1022 Forbes Street, Pittsburgh 19.

The **Wayne Kerr Company, Ltd.,** British designer and manufacturer of instruments for the electronic and chemical industries, has organized its first American subsidiary: Wayne Kerr Corporation, 2920 N. Fourth St., Philadelphia.

Tupper

Fabry

Smith

Cahn

People

Raymond Spilman, during his annual visit to Georgia Institute of Technology, took part in a two-day seminar with students in the Department of Industrial Design. Mr. Spilman has been Chairman on the Advisory Committee of the Department for the last five years.

Archie Kaplan will teach a new course in "Human Engineering" next semester in the Industrial Design Department of the Parsons School of Design, New York.

APPOINTED: **Charles Fulcher** as products designer and **Mel Klapholz** as director of graphics for Schnur-Appel, Union, N.J. . . . **Goddard Binkley** to the staff of the Center for Research in Marketing, Inc., Peekskill, N.Y. . . . **Malcolm N. Smith** (above) as vice president of product planning for Ekco Products Company, Chicago, succeeding **Henry C. Forster** . . . **John M. Power** as designer for Pacific Mercury Television Manufacturing Company, Thomas Organ Division . . . **Richard B. Tupper** (above) as vice president of Design Associates, Ltd., New York . . . **John Watson Winter** and **Roger Lewis Kelly** to the staff of Jack Collins and Associates, Milwaukee . . . **Harry D. Huskey** as head of Bendix Computer Division's new Advanced Programming Development Group . . . **Lawrence H. Zahn** as chairman of the production and engineering section of the Pharmaceutical Manufacturers Association . . . **David Dunay** as director of display for Neiman-Marcus . . . To new positions at Convair, San Diego: **A. P. Higgins** as assistant to the division manager-military relations, **J. H. Famme** as works manager of Plant Two, **W. W. Fox** assistant chief engineer, and **W C. Keller** as a member of the general office military relations staff . . . **Robert N. Nielsen** as Manager of the West Coast Contracts office of the Grand Rapids Division of Lear, Inc. . . . **Charles W. Kleiderer** as president of Penn-Plastics Corp., Glenside, Pa. . . . **Thomas C. Fetterman** as manager of technical service in the Coatings Department of H. B. Fuller Company, St. Paul.

ELECTED: **Kettner Gadebusch** as president of the Upholstery and Decorative Fabrics Association . . . **Charles H. Topping** and **Harold L. Humes** as president and vice-president of the Building Research Institute . . . **George H. Gustat** as president of the American Institute of Industrial Engineers.

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Signs and symbols of the times

The Marines have landed again, and the world's response parrots Macbeth: "There would have been a time for such a word." In the past there always had been. We are a people who set great store in slogans, and one of the best of them was "The Marines have landed," with the implicit corollary that "the situation is well in hand." It always came as a presumably self-evident assurance that everything was going to be all right — and (give or take a few hundred casualties) everything was. Ever since Richard Harding Davis cabled it from Panama in 1885, the sentence has functioned as a sort of semantic Miltown. In its day it banished more worry than the Reverend Norman Vincent Peale.

Now its day seems to be over. When the Lebanon landing was announced, it was not a signal to stop worrying but a signal to shift the worry to a new set of circumstances. This was not the fault of the Marines; it's just that world situations don't lend themselves to being taken well in hand the way they used to. Never in Marine Corps history had a beachhead been established so smoothly, and never had one been received with so much handwringing, both foreign and domestic.

There is a design principle in all this — an old one, but worthy of occasional resurrection. It is simply that the meaning of the symbols we use changes with the circumstances under which we use them. Good designers have always understood this, and that may be one reason Moholy-Nagy thought (or at least said) that a designer should be president. If taken literally, it is an apalling thought. It reminds us of Shelley's assertion that poets should be legislators, an argument that is still persuasively advanced as evidence of his derangement. And yet . . .

And yet the best designers share with poets a faculty too often missing in contemporary statesmanship: they know how volatile symbols are, and how to use them. Would a designer acquainted with our Latin American policy of recent years have been surprised by the hostility shown Symbol Nixon in Venezuela? Would a designer acquainted with our Latin American policy of less recent years have sent Symbol USMC (the one most likely to make Latin Americans see red) to the vice-president's unnecessary rescue in San Juan? Wouldn't any designer perceive that symbolic honesty is the best foreign policy?

Of course the answer is that some would, some would not. For if heads of state are often badly advised in their own use of symbols, so are many clients. The ubiquitous Cadillac-V is usually singled out as an example of an abused symbol, and it is a good one. Originally used to denote a prestige product, it has been exploited to confer prestige on the humblest products imaginable, until all meaning has been drained from it. The result is a terrible confusion for the consumer. This kind of thing is not only unmeaning, it is anti-meaning; for it destroys faith in what symbols stand for. But the V is by no means the only symbol thus violated, nor is it the most important one. The story is old; only the characters change.

No one expects designers to be statesmen, but designers are charged with using symbols imaginatively and intelligently and responsibly, and the decisions they make in so doing are extremely important. In helping to keep our symbols straight, the industrial designer can contribute to the creation of an environment in which the *meaning* of things is respected. Industrial design will not save the world — or even the Middle East — but it can save the things of the world, and this is a world where things count. People who can trust their artifacts may one day become people who can trust each other. — *R. S. C.*

MORE IMPRESSIONS OF EXPO '58

Brussels World Exposition Part II

by Jane Fiske McCullough

Pages designed by Roberto Mango

What does a world's fair exhibitor have in common with any other kind of exhibitor —or designer? Whether the audience is to be reached in a showroom, sales booth, exhibition hall or international park, everyone in the business of display and persuasion needs a firm command of plastic and graphic media of communication.

This second report on the '58 Universal Exposition looks mostly at the techniques *of showmanship that are at work in Brussels this summer—at how major exhibitors create their effects, write their punch lines, show off their cakes and ale.*

We have culled the examples of the next 30 pages from over 500 acres of display activity, each inch of it yelling for attention as loud as its designer could make it yell. Since we don't have similar acreage for this report, we have had to set the arbitrary limits of the following parts:

1. Architecture as display—how the building itself is used as an audience-catching device and image.

2. Handling the space within—a sample of special display devices for presenting objects, photos, and ideas.

3. Outstanding pavilions — detailed descriptions of five national exhibits that seemed to unite architecture and display and achieve a distinctive personality.

1 ARCHITECTURE: style or experiment in 1958?

One factor makes a world's fair a very special display problem: most exhibitors have a whole building to design as well as objects and ideas to present. There's no question that architecture is the foremost display device at Expo '58 — the first face of an exhibit to be seen, and often the only image retained by hurried fairgoers without time to step inside.

There is plenty of room for experiment in fair architecture. To start with, design requirements are usually vivid (not to say bizarre); the building is temporary, thus escaping numerous practical demands that often dull a designer's imagination; since fairs are normally ostentatious, even the most extreme design seems normal in context.

World's fairs have always tended to bring to light a batch of new talent, and to push to eminence other designers whose originality is too heady for daily consumption. The fantasy of Flushing Meadows in 1939 was credited to, among others, the then little known names of Skidmore, Owings and Merrill, Costa and Niemeyer, Alvar Aalto, Sven Markelius, William Lescaze, Harrison and Fouilloux, Pomerance and Breines. Designs and displays could be found by Herbert Bayer, Gilbert Rohde, Henry Dreyfuss, Russel Wright, Herbert Matter, Walter Dorwin Teague, and Norman Bel Geddes. Some of these were selected for prominence, but many others for promise: all emerged more eminent for having contributed to a major architectural event. Some observers feel that Flushing Meadows had a tremendous influence on future building and design in the U.S.A.—that it was, in fact, a turning point in the nation's acceptance of a new architecture.

How about Brussels? Is it the doorway to another architectural era?

What are the architects up to?

If you look for a sensible answer in the panorama of Heysel Park, you find what appears to be an esthetic free-for-all. Googie sits side by side with serious experiments; bare and baroque, quaint and queer pop up in fantastic mixtures. Yet the dominant impression — more so than in 1939 — is one of unity. Most architects have built for the 20th century as they and their countrymen see it. There are, to be sure, some sharp contrasts in their interpretations, but to a remarkably large degree their work falls within the loose framework of the "international" vocabulary. Cubes and planes of glass, steel and concrete are used confidently by Yugoslavia and Austria, Venezuela and Israel. Clearly these are the common building blocks of the builders of today — men who are not on the brink of a new revolution but are instead in the process of learning to use the existing techniques more meaningfully. Still, their work is far from identical. When they put these blocks together with individuality and a sense of national or traditional character, they create distinctive and atmospheric displays.

Perhaps this explains, too, why we have little sense of new talent discovery in '58. Every exhibitor had to put his best foot forward. None

Architecture at Brussels: one man's experiment

could afford any risks in this costly entrance on the crucial world scene. So we find a great deal of work by established architects (Edward Stone, U.S.A.; BBPR, Italy; Howard Lobb, England; Le Corbusier, for the Philips Co.). These men were expected to design with imagination — but were probably hired for their proven base of skill and experience.

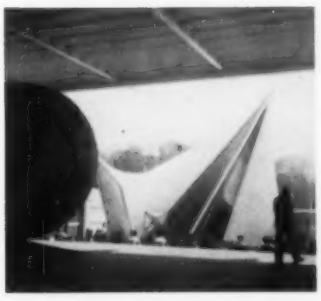
Perhaps the most ominous pitfall for an architect working in this period and this genre is empty monumentality. Failing to find a genuinely new horizon to conquer, the architect is tempted to simulate one with flashy forms and muscle flexing. Brussels has its share of architectural acrobats, many of them of Belgian origin — carnival struts at ports of entry, beaks and domes and weird tension structures that produce little besides impossible interior space. The other extreme turns up in some national pavilions, where the story line or display has dragged the building limply behind it. Happily, between the two, there are a few buildings that have a good deal of architectural interest and integrity — like those on the next four pages.

Le Corbusier: fantasy or artistry?

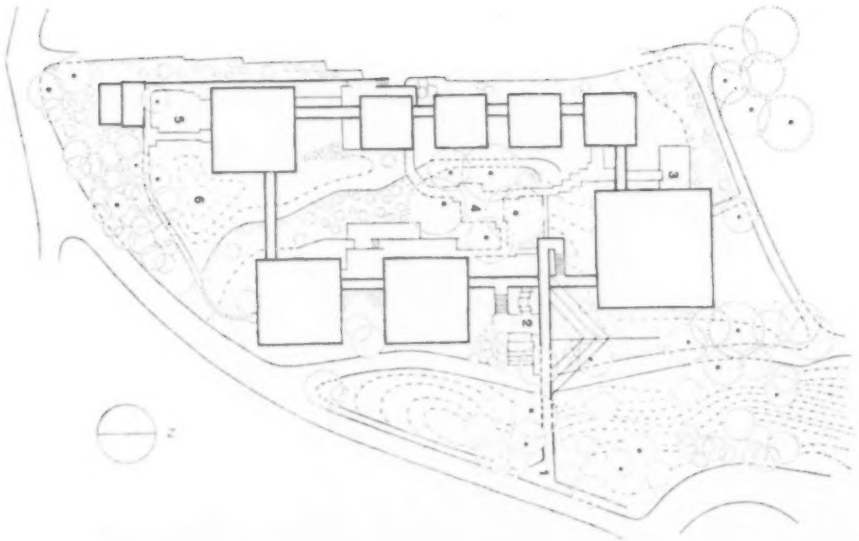
One of the talked about examples of experiment is Le Corbusier's silver swirl for the Philips Company. Its shape, almost impossible to describe, is a sort of uninhibited twist that seems, at first glance, to suggest fair architecture at its most frivolous. But, as it becomes apparent on second reflection, Le Corbusier was more interested in the design problem than in high jinks: he saw a chance to make fantasy communicate. Philips' management decided only a year ago to put on a display of light and sound at the Fair. They wanted a leading artist to build a home for the show, and the foremost contender, Le Corbusier, accepted on the condition that performance would also be under his direction. As months went by and ideas were brought up and tabled, the architect and Philips' technicans decided that, whatever the final realization, the core of the pavilion would be a reception hall, round for the most flexible sound effects, and flanked by an entrance and exit. From this ground plan, M. Xenakis of Le Corbusier's staff designed an enclosure based on two parabolas and one hyperbola interwoven continuously over the circle-with-projections. This was built as a thin-shell concrete structure, sprayed with aluminum paint.

Austrian pavilion detail

Because of the sculptural complexity of the exterior (whose form, although never clear, is provocative from all sides), visitors are usually amazed at the blandness of the interior. The only visible thing is the concrete ceiling, devoid of decoration except for 400 diamond-shaped loudspeakers. But this is, in the final analysis, proof of the architect's intent, for it was designed not as a showplace of architecture but as the enveloping background for the "poem" of light and sound produced by Le Corbusier and composer Edgar Varese. The actual impact of this performance we cannot report first hand, due to the fact that the architect missed his opening deadline by several weeks and this reporter could not do the same to a closing deadline. Those who have attended since the pavilion's late May opening report reactions that extend from boundless enthusiasm to unbounded dismay, with the most pointed criticism directed not at its unconventionality but at the sometimes unprofessional use of cinematic technique. But whatever the artistic merit of the "poem," it represents a unique venture at Expo '58 — a serious experiment in which architecture and display, fantasy and artistry, were allowed to grow from a single mind into a single entity.

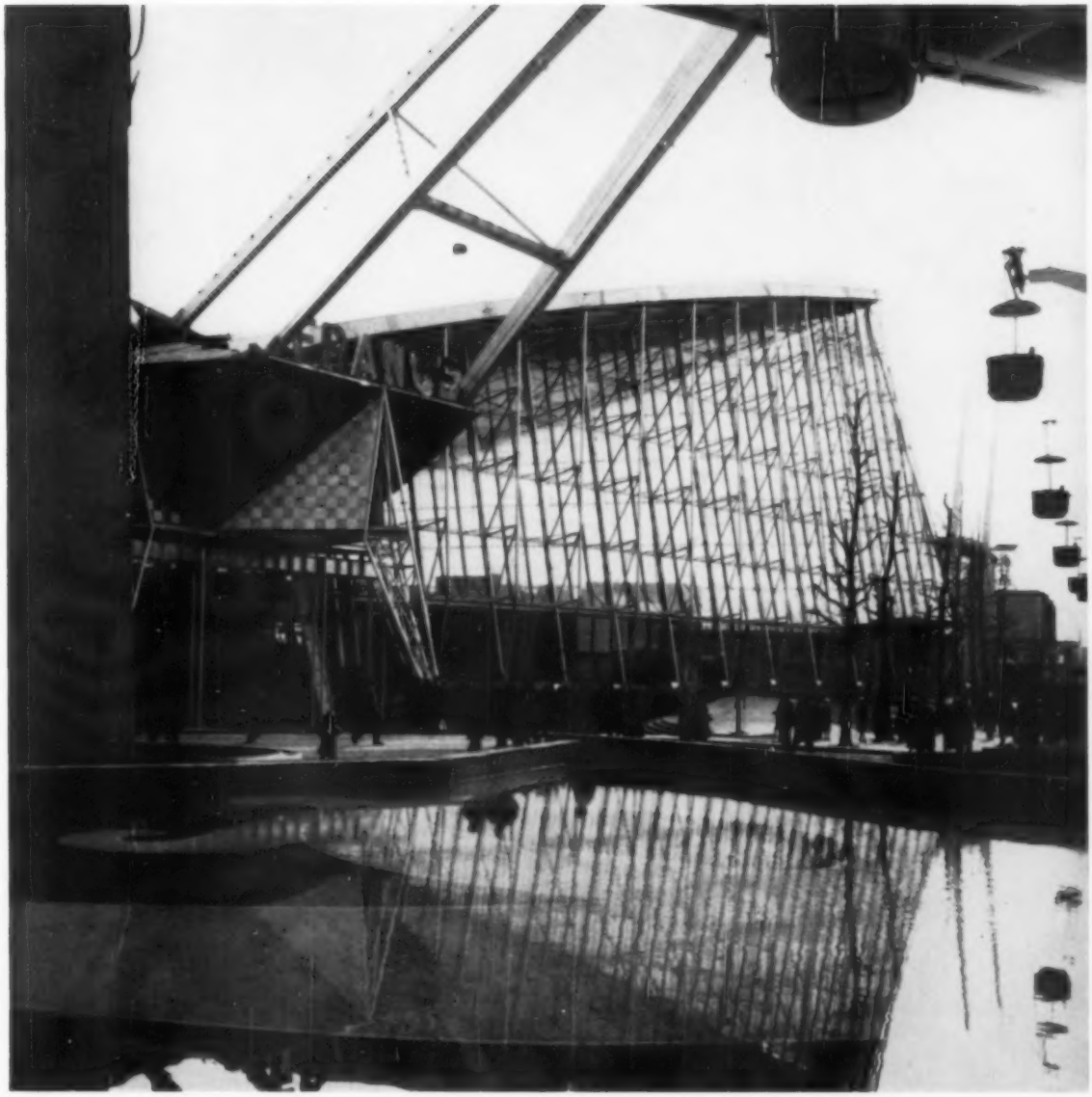


Home of the "electronic poem," pavilion for Philips Company of the Netherlands by Le Corbusier, is a thin-shell concrete structure in dissimilar hyperbolas sprayed with aluminum paint, a sculptural fantasy in rather sharp contrast to the strict linear forms of neighboring Austrian pavilion (far left). Every 20 minutes, 500 fairgoers enter the shell to witness an 8-minute séance of sound and image produced by the architect.



GERMANY'S JEWEL

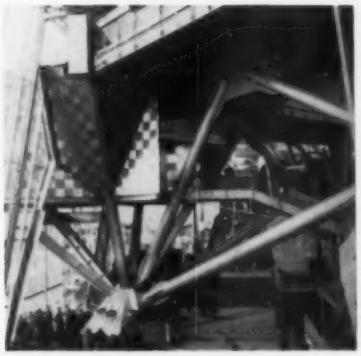
Eight elevated glass boxes, all square but of varying sizes on two and three floors, are threaded together by open causeways around West Germany's landscaped plaza. As the visitor travels through the airy galleries, his vista across the quad changes constantly, his image of the complex builds up into a full picture of the elegant village that the pavilion really is.
Architects: Egon Eiermann, Sep Ruf



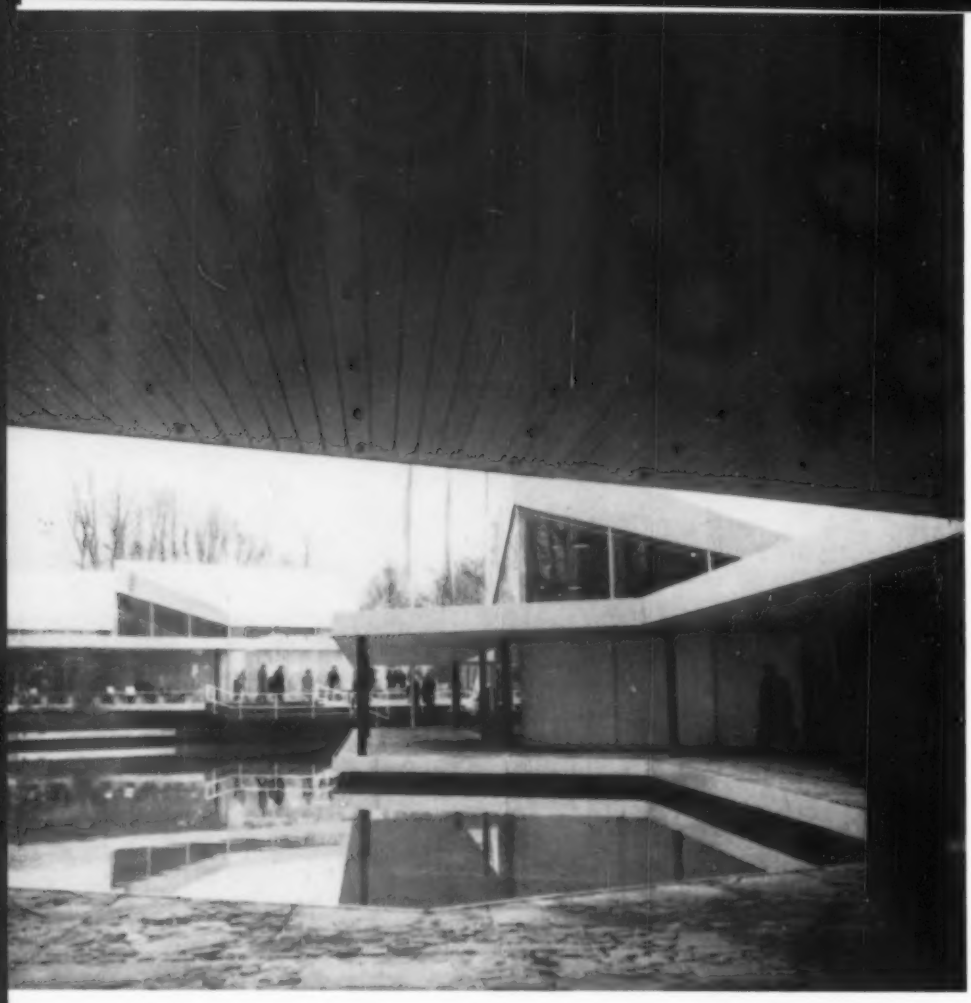
Mauge

FRANCE'S FIASCO

Guillaume Gillet's pavilion for France attracts attention by being bold but not beautiful. The entire structure was designed to be lifted into the air by a single shaft (right). After many crises, the contractor channeled over half the weight of the skeleton onto the shaft, and it hovers like a grounded butterfly over the whole site. However dramatic this attempt for an umbrella span, it accomplishes nothing that conventional techniques might not have done more economically.



McCullough



Mango

SWITZERLAND'S MOUNTAIN MICROCOSM

Switzerland has composed an appealing little world with hexagon-shaped boxes that ramble around a small lake. All white, the geometric forms also sit well on a sloping site, chosen to represent the geographic ups and downs of Swiss life. The intimate scale and angular rooflines of the 32 cabins go far toward capturing the spirit of Swiss architecture without a trace of literalness.
Architect: Werner Gantenbein

NORWAY'S SPARSE SHOWCASE

With broad laminated white pine beams, Norway has built a horizontal room that opens on the world like a large display window. The flow of space is controlled by small enclosed courts, a few partitions, and gentle subdivisions of display material. Pleasant overhead light enters through roof sections covered in a parchment-like skin made of nylon sprayed-over filaments by a technique similar to American "cocooning." The tan light blends well with the dominant color of natural wood, the contrasting roof sections of reinforced plastic, and clear plastic walls.
Architect: Sverre Fehn

Norwegian perspective

2 DISPLAY: WAYS TO PLY THE SPACE WITHIN

As much as a fair pavilion resembles a trade show in its technical particulars, all sorts of special obstacles pop up during its creation:

—Such displays have to be non-commercial, which means for all practical purposes that they must be evaluative, reflective, devoted to a review of a nation's (or company's) accomplishments and culture. Cultural evaluation is pretty abstract, especially for a designer seeking the broad appeal that a world's fair exhibit must have. America wants to convey "diversity, struggle," Russia is out to show "accomplishment," Great Britain expresses "the meaning of tradition." These ideas cannot be summed up in one object, one photo, one building. It takes mood, continuity, and cumulative impact to put them across.

—Often the display designer is hard put for lively eye-catching material. The viewer, for his part, is soon wearied by the miles of photos and objects he must look at. As he goes from exhibit to exhibit, he is often lulled into a passive state in which it is hard to arouse even normal curiosity about the inanimate or unexplained. Because his attention has to be actively pursued, the appeal of animation becomes quite exaggerated for the designer — and poor and pointless use of animation in the long run drives the viewer even farther into his shell of passivity. The designer, whether he has to work with flat photos or with material that moves and squawks and performs minor miracles, needs to make this display so *meaningful* that it produces a live and lasting impression.

—A remarkable amount of material shown by nations and industries has a similar hue. Most nations have agriculture to show, and machinery, and typical towns and typical people; many have fabrics, and ceramics, and small appliances and beautiful tablewares. Of course there are national colorations. Yet it is amazing how fast the prized products of Portugal and Israel, Mexico and Iran can begin to look suspicously alike. It is the designer's miracle to make them appear as distinctive to the fair-worn eye as they really are.

—Fitting a display to predetermined architecture appears to be an all too common fair problem. Many buildings are conceived as independent pieces of design, in forms that are justifiable as exteriors but opposed to good display practice. The dome or circular form, for instance, is clear and dramatic in itself, but consistently proves to be one of the hardest spaces to organize in its interior. Yet it is one of the favorite shapes of Fair architects.

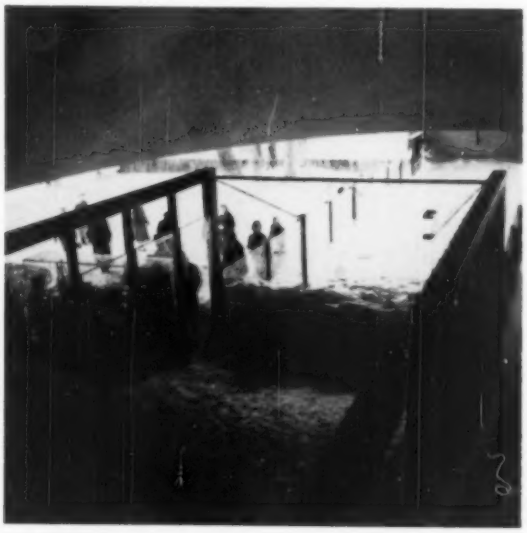
—Finally, among all other problems, is the one of overriding demand for originality. Being original does not necessarily mean being merely

SUCCESSFUL DISPLAY DEVICES COMMUNICATE

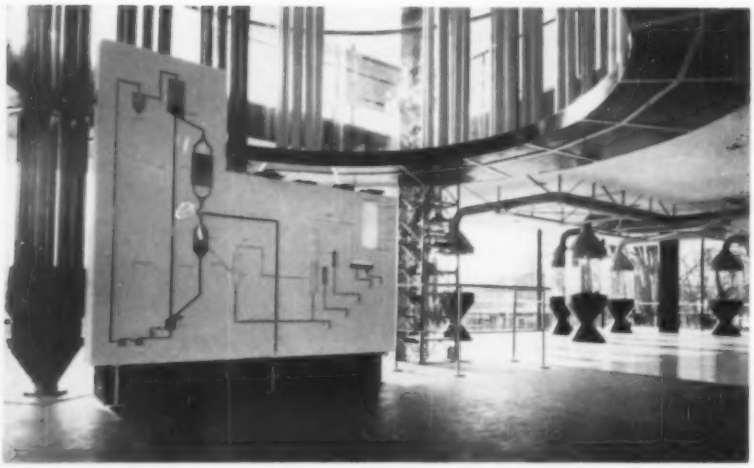
Perforated umbrellas *on steel stems form simple open shed for France's Ponts et Chaussées.*

Book titles *are played up in clear globes strung like blossoms on black poles (Hachette).*

Eggcrate *platforms at knee level dramatize backlighted photo inserts in color (Germany).*

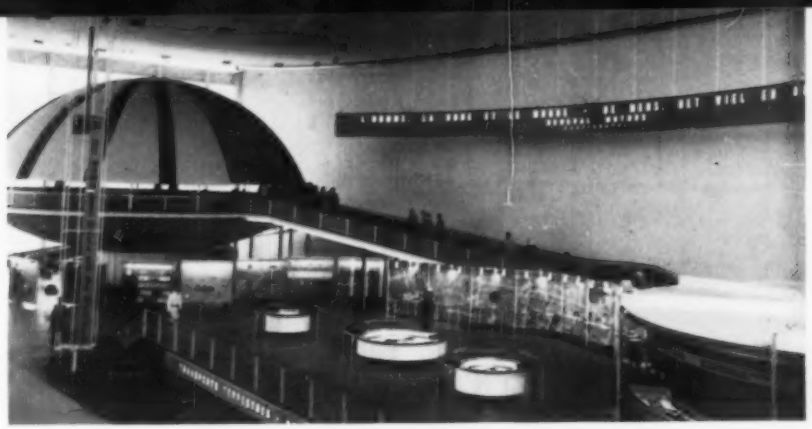


Water water everywhere *is Netherlands' motif. Hydraulic action in large tank demonstrates how land reclamation is studied.*



Chemical processes *are dramatized in German display of plastic production (l.) with pipe motif terminating in showcase cylinders; and in Belgian exhibit of oil refining in sphere, reached by a pipe decorated ramp (r.).*

EMOTIONALLY AND VISUALLY



Futurama *in miniature is General Motors' feature in Transportation Bldg. In center of circular gallery, typical U. S. town is transformed by transportation dreams of the future—culminating in an electronically guided tri-level monorail system.*

bizarre (a certain number of designers always stand on their heads for attention and then wonder why nobody looks), but it does mean building up a personality that makes the exhibit as alive and memorable as a happy experience. This is invariably an emotional as much as an esthetic matter, as Mr. Wirkkala demonstrates in the intriguing mood of the display shown on pages 48-49.

Most common failures

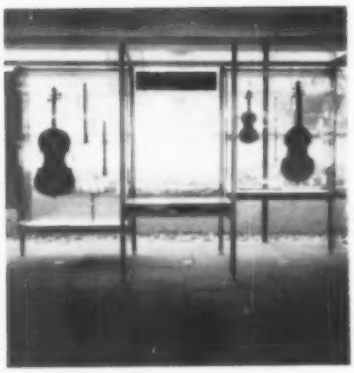
Since many Brussels exhibitors have failed to hurdle these obstacles, it may be useful to sort out the most common technical ailments that seem to crop up on the fairgrounds this year:

—Lack of a clear viewpoint to carry the personality of the exhibit
—Poor communication: lack of clear labeling, layout, verbal expression
—Over-emphasis on 2-dimensional material
—Over-emphasis on objects per se, without legends to relate them to a central theme
—Lack of verbal support for visual ideas (a failure that may be congenital with designers, who are more sensitive to visual expression than most viewers)
—Poor use of light, particularly failure to control daylight in order to create contrasts and focal points
—Too much content, i.e. failure to differentiate, isolate and highlight ideas and objects for easy comprehension
—Overdesign: making display devices more important than content

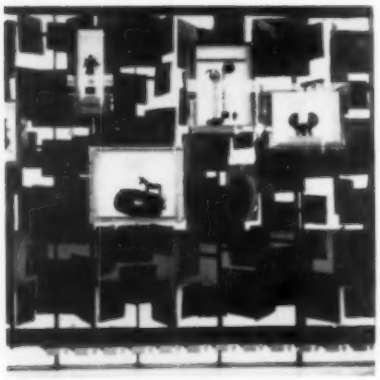
Most frequent successes

If the foregoing list pinpoints common shortcomings, it also suggests the success of those exhibits that do come off well. Some of these successes are scored by a skillful combination of architectural form and display ideas. This can be seen in the Netherlands pavilion (pages 46-47), where there is a happy union between lively and animated exhibits and the relatively informal buildings which follow but never dominate them. Other exhibits come across with the help of individual display devices, shown here and overleaf: they are as different as the material they set off, but they all clarify it, dramatize it, and help it to communicate at an emotional as well as visual level.

Details like these help the exhibition designer solve his problems, help him make his exhibit sing. Yet we mustn't forget that the average viewer sees (and should see) the content and not the device, the total picture and not the carefully conceived frame.

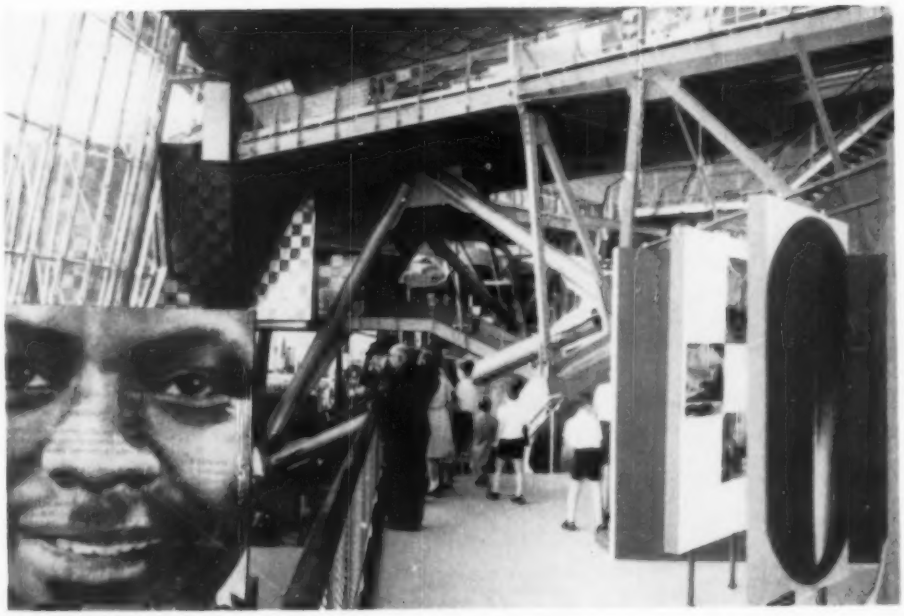


Transparent *showcases, delicately framed close to glass walls, silhouette objects. (Germany).*

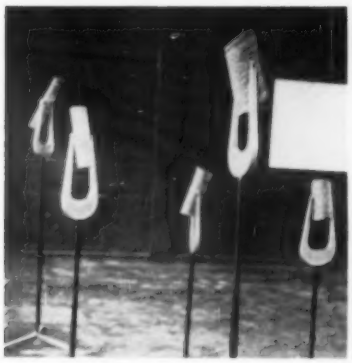


Treasury *of small Austrian art objects is roomsized sculpture of steel and bronze Rudolf Hoflehner.*

Ramp *lifts exhibits in space to highest point in French pavilion.*



Shapely objects *float in open space of Norwegian pavilion. Children's section (r.) is composed without walls or display devices, using only objects to be shown.*



Pedestals *of black iron and muted brass set off special rock specimens. (Petroleum Ind.).*

Pendant light *bulbs in clear plastic fins give star-like sparkle (chapel of the Vatican pavilion).*

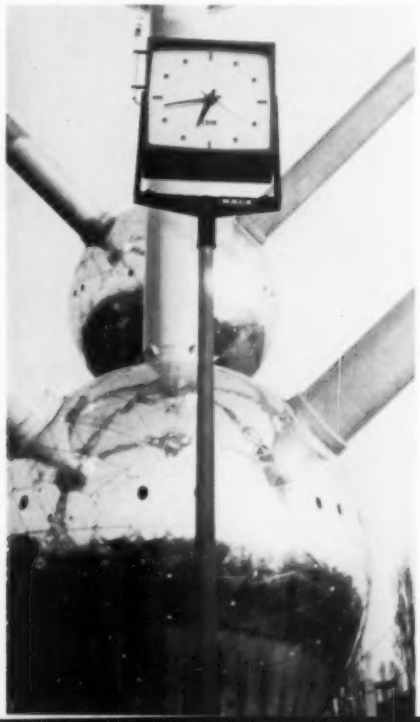
Glassblowing *art is summed up by gay overhead array of colored glass balloons. (Netherlands).*

ON DISPLAY: A FEW OF THE PRODUCTS AND FITTINGS THAT CAUGHT OUR EYE AT BRUSSELS

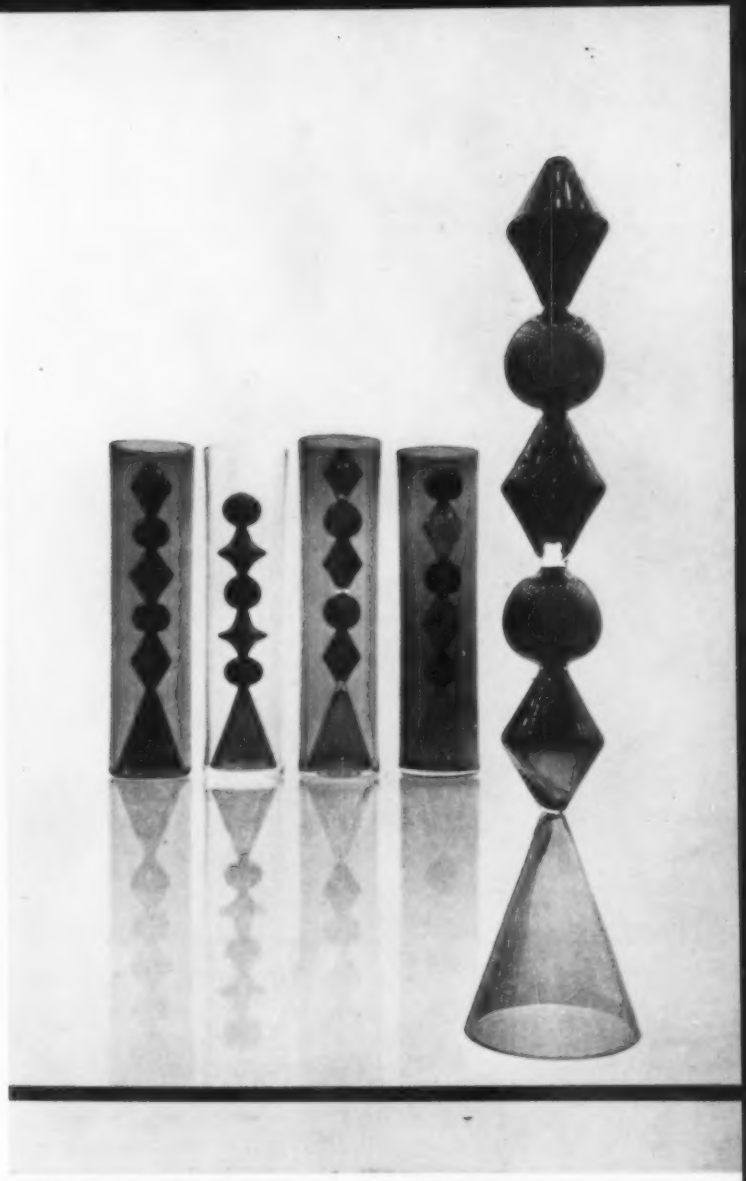
Elegant *music stand, designed for musicians using Austria's special studio, has rack of formed Plexiglas, telescoping base of aluminum and black steel.*

Patterned *tabletop (Wirkkala, Finland) is cut from laminated wood block.*

Double-dialed *time clock (IBM) tells time to the split second by radio signals.*

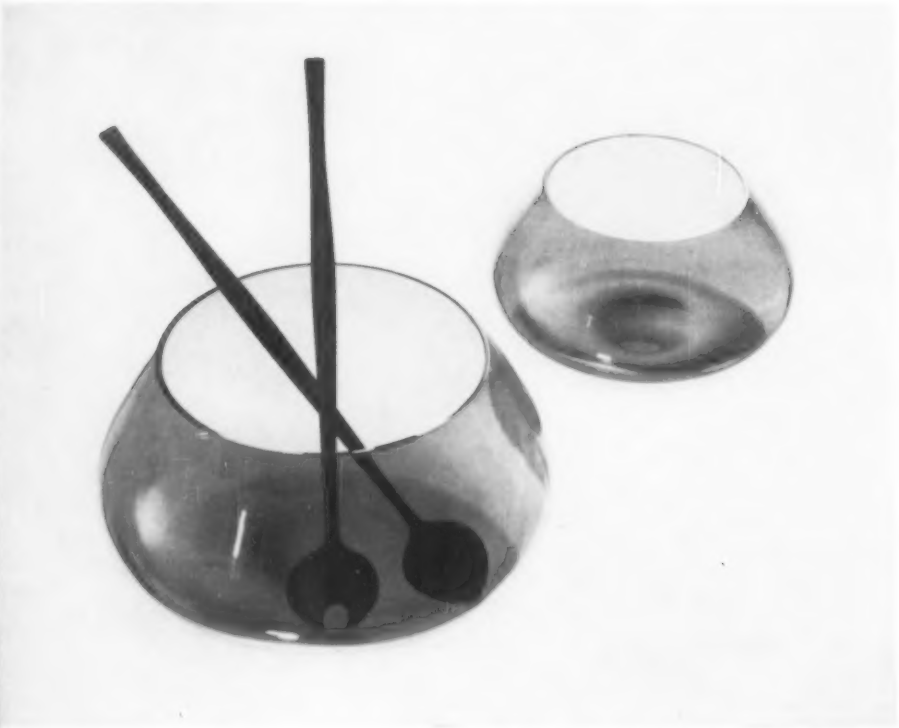


Custom-designed *reading stands (Germany) have sleek projecting lights.*



"Midsummer Poles" *by Nanny Still (Finland).*

Electronic *bathroom (Jules Weydts, Belgium) replaces valves with simple pushbuttons mounted in recessed stainless frame with snap-up front. One button controls temperature of water, which flows into bowl from slits under rim. System operates bathtub by remote control if desired.*



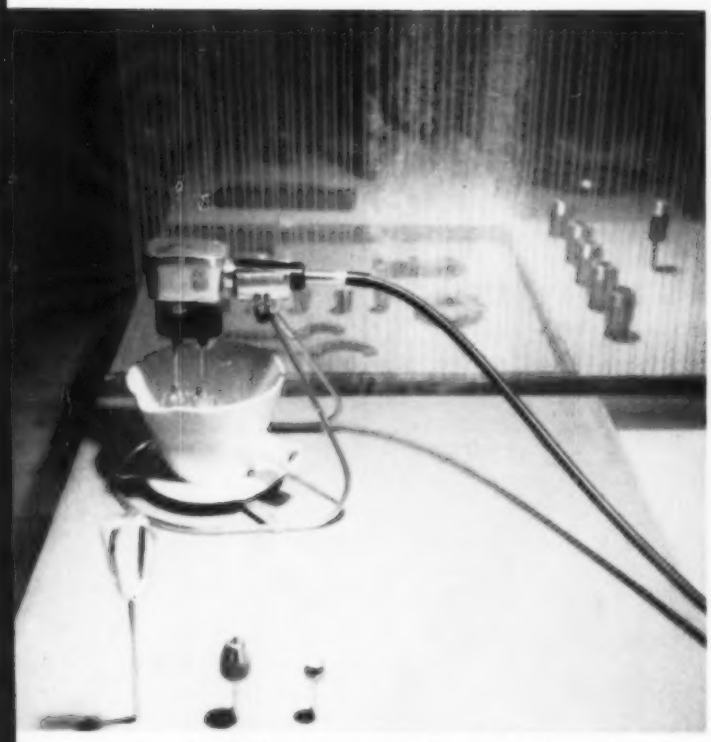
Glass *salad bowls by Nanny Still (Finland).*

Shapely fixtures *with assymetrical form stand out (Belgium).*

Revolving radio *(U.S.S.R.) is mounted in glass case to show mechanism, 3 speaker systems.*

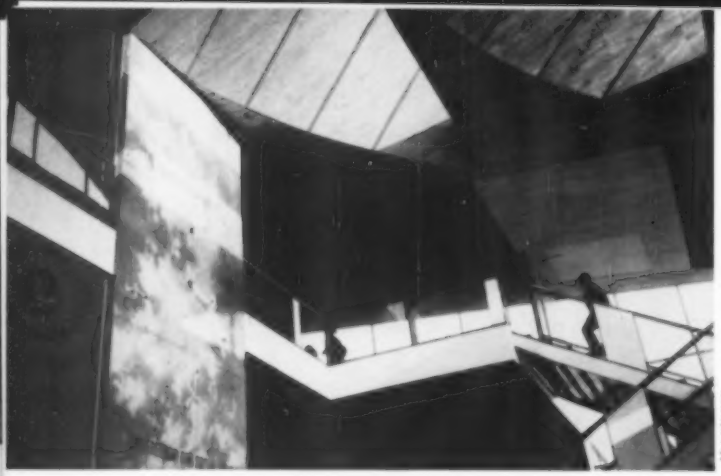
Small appliances *from Germany including blender and grinder, show consistent purity and nicety of form.*

Intercom phones *(Hungary), have circular bases, dial flat on top, 2 pairs of recesses to receive handset.*



Versatile *power unit (Finland) fits mixer blades and stand, takes other heads as power tool.*

Candleholders *in glass, by Tapio Wirkkala (Finland).*



3 FIVE MAJOR PAVILIONS AND HOW THEY GREW

On the next ten pages we present five pavilions whose architecture and display add up to a special kind of appeal. (There are others equally worth mentioning—Austria and Mexico particularly, if space permitted.) The five are by no means confined to a single style, yet show a consistency in the way they create that valuable impression—individuality. The sixth, U.S.S.R., is included as an important contrast of approach.

How a nation mobilizes its talent to create such exhibits often has a visible effect on the result. Most pavilions required the collaboration of several artistic originators, often chosen because they represented different views rather than sympathetic ones. With national policies and budgets to consider, each country arrived at these decisions by its own machinations. Here are a few comparisons, based on interviews with 10 national exhibitors, on how their pavilions grew:

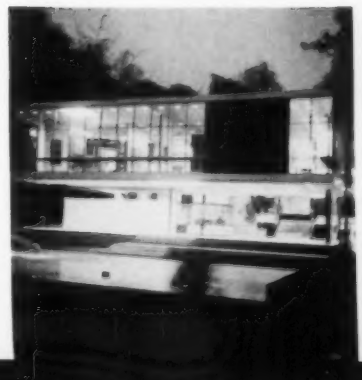
Finance: Majority avoided financial help from private industry, reporting no difficulty obtaining government appropriations (except one-year delays for Austria, U.S.A.). France and Switzerland accepted some industrial support for specific displays.

Organization: Britain turned problem over in 1954 to existing government exhibition staff, which spent 2½ years on planning and design. Germany devoted 12 months to organizing, 15 to design planning. U.S.A. organized in 2 months, designed in 6. Israel, also starting in 1956, planned and designed in 2 months.

Architecture and display: Austria and Switzerland chose architects by competition, others left choice to commissioner or exhibition director. Sharp line divides nations that designed displays along with architecture (Britain, Germany, Mexico, Austria), and those who brought in designers when building was complete (France, Israel, U.S.A.). Most designers selected content of displays; Germany had a jury.

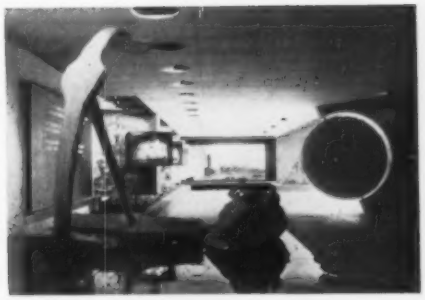
One of the most inviting and youthful uses of the strict architectonic style is Yugoslavia's pavilion, imaginative in its use of three levels suspended like balconies and connected by exposed staircases over a marble paved court (l.). The display focuses on the diverse people, life and landscape of Yugoslavia; it is straightforwardly propagandistic, but bold, clear and humane in effect: mural size blow-ups and choice national products and treasures, carefully placed and spaced, are explained with single lines of large type. Tito is not mentioned or shown. Modern art is notably fresh. V. Rihter, architect.

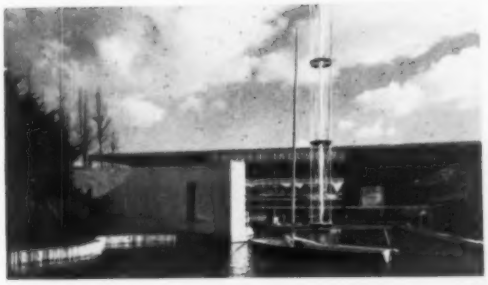
YUGOSLAVIA'S YOUTHFULNESS

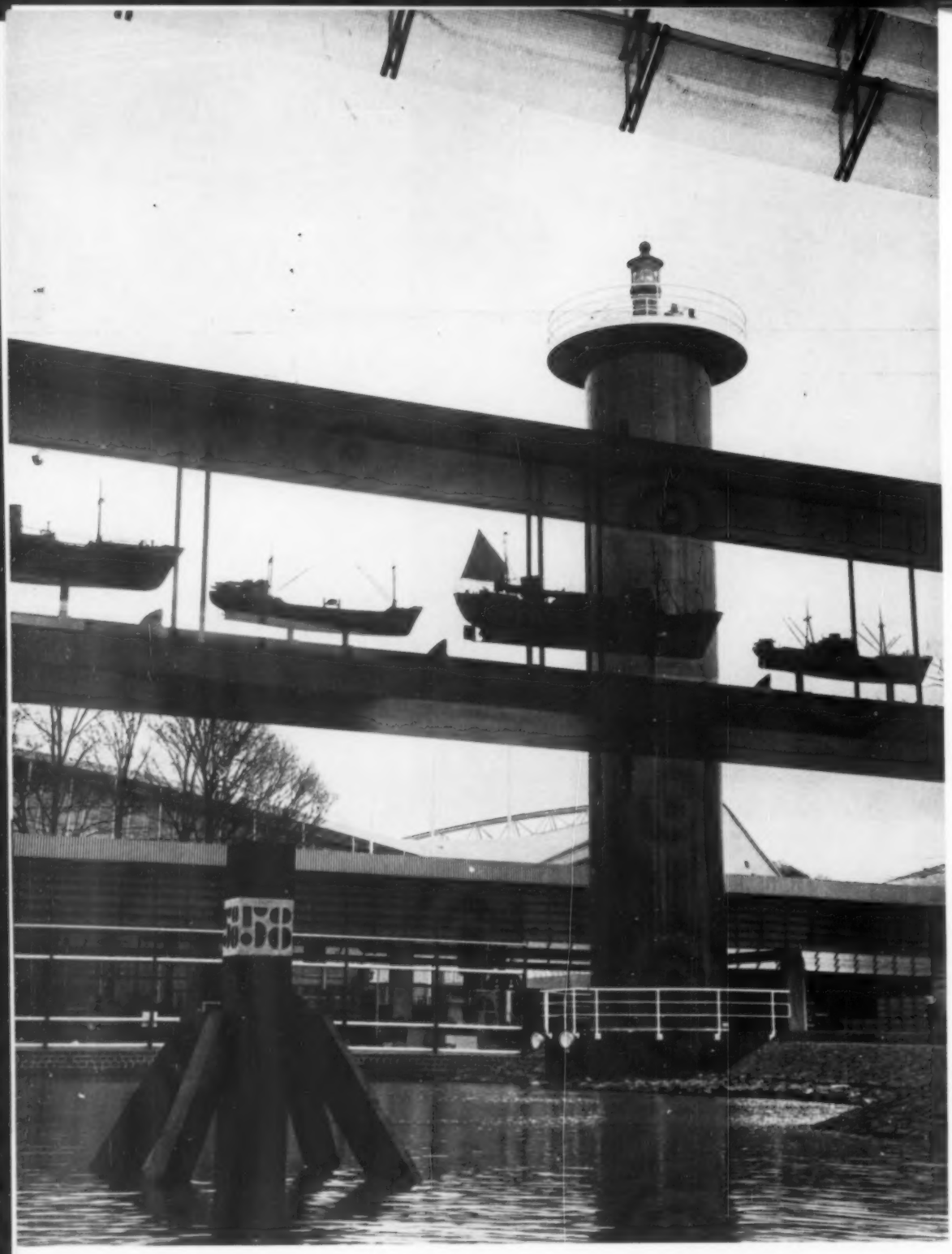


GREAT BRITAIN'S THREE-ACT DRAMA

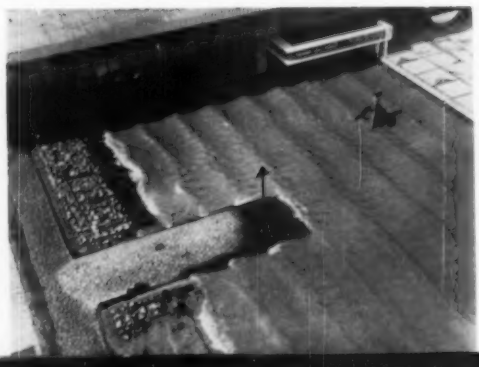
Great Britain tells her story in three acts, well-rehearsed and professionally staged: The first is set in the Hall of Tradition, beneath three crystal-shaped spires, where flags, regalia, ceremonial dress and objects illustrate some of the meaningful pomp of the past and present. Next comes the Hall of Technology, illustrating the scientific frontiers Britain is pioneering—medicine, radar, aircraft, biology, outer space, the first model of ZETA. Emerging from the drama of darkness that these two sections are, the visitor finds himself pleasantly adrift in open courtyards, learning about the Empire and its culture and inventions—once over lightly. Across a bridge is the large glass-walled pavilion privately financed by British industry (enabling government exhibition designer James Gardner and architects Howard Lobb & Partners to concern themselves with a purely evaluative display). In it a large stall sponsored by the Council of Industrial Design (below, right) shows useful objects of which Britain is proud.



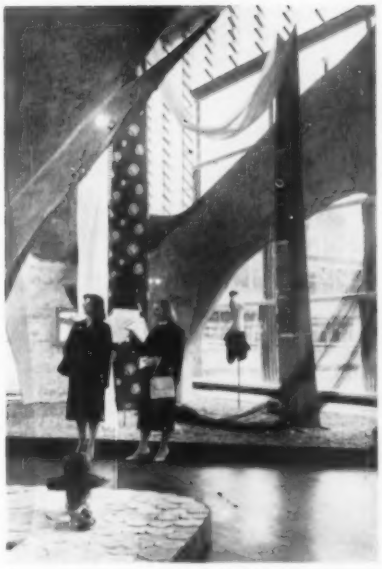




1

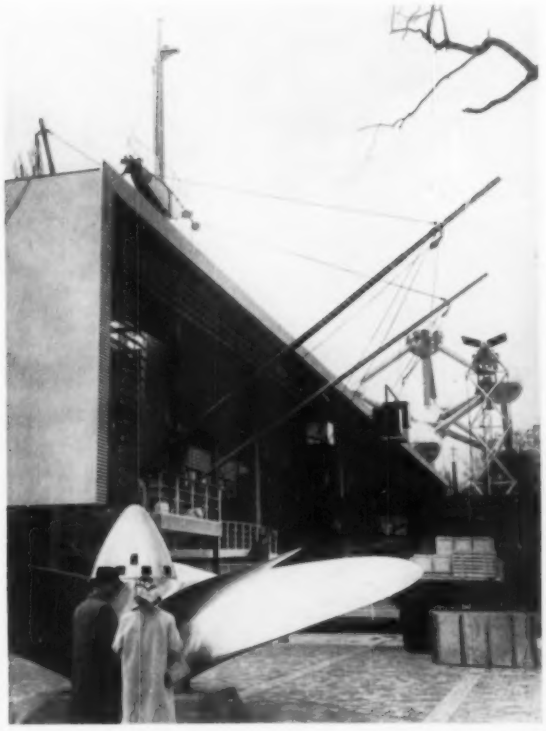


DUTCH DIKES AND DELTAS



2

Perhaps the most appealing experience at the fair may be found in the Netherland's split-level site, transformed into a live demonstration of culture and agriculture in the lowlands. Water, instead of just making a splash, is used to make a point; a full scale dike is endlessly lapped by a miniature sea (1), *and below it, on a delta crosscut with canals, it a fullscale section of a Dutch transport* (3), *complete with deckchair.*



3

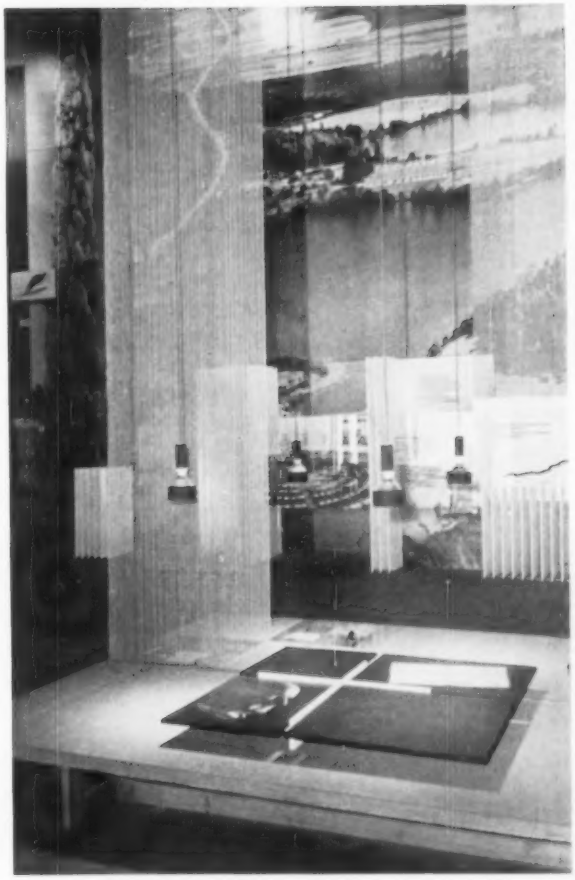
In the six structures that informally embrace this animated landscape, Dutch industries and specialties are dramatized: machinery and equipment (4), *glass, chemicals, textiles, draped in large swathes on metal lathe shapes* (2), *one shed is devoted to an operating farm of cows, sheep and poultry tended by a real farmer in colorful garb.*

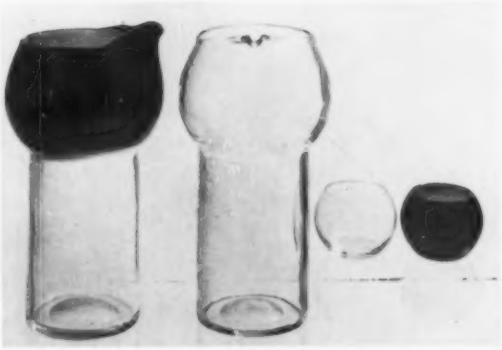
Boks, Vanden Brock, Bakema & Rietveld, architects.

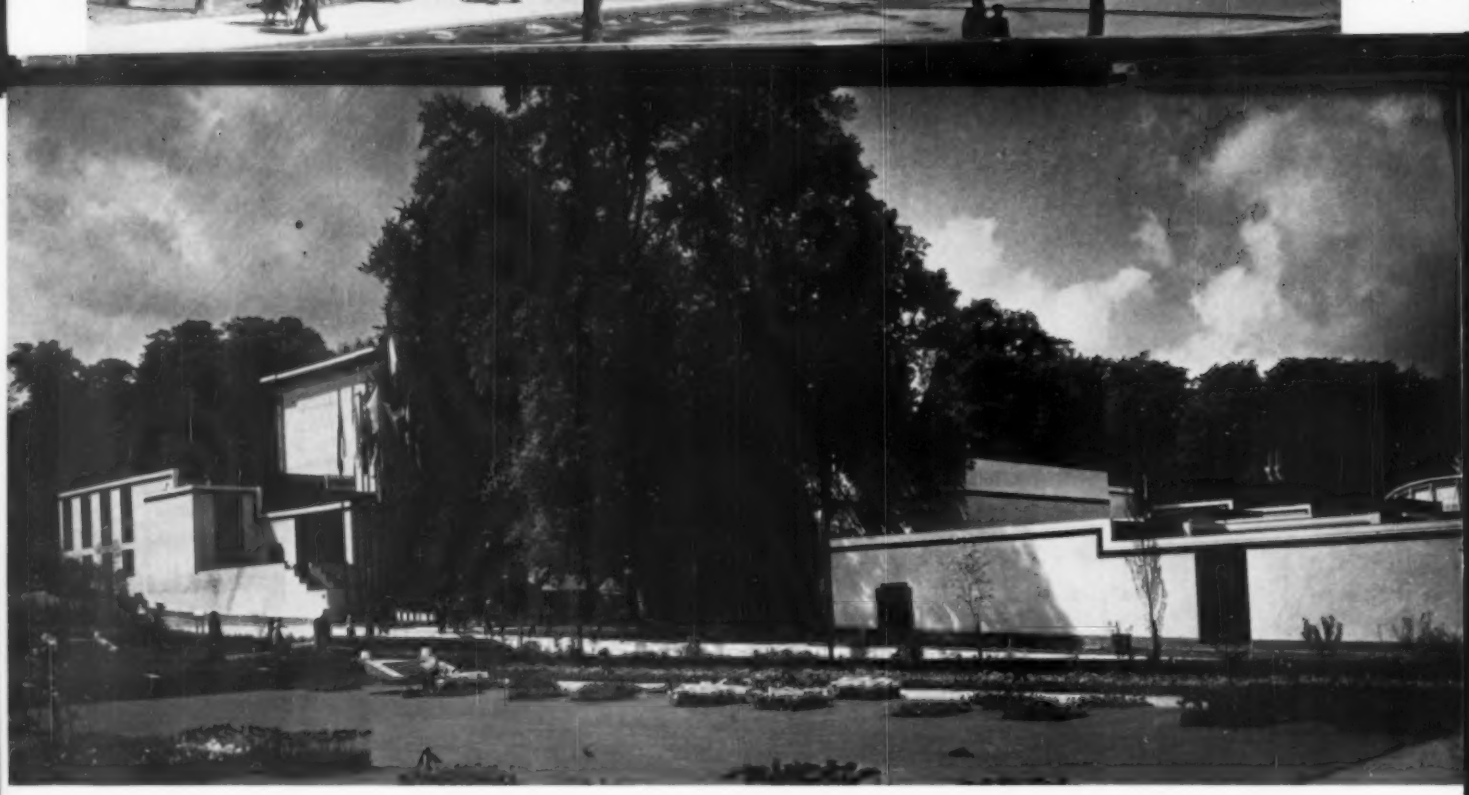
4

FINLAND'S FOREST GLADE

The deep solitude of the forest sets the mood of Tapio Wirkkala's installation for Finland. Echoing the linear masses of architect Reima Pietila's slatted building, are many thin vertical strips of fabric as dividers to draw the eye from low display tables up through lighted high overhead space, where large photomurals of the Finnish countryside adds to the illusion that this is a Scandinavian glade in the dim light of a summer night. Exhibits include lumber products, outdoor life, an impressive section on furnishings and decorative arts.

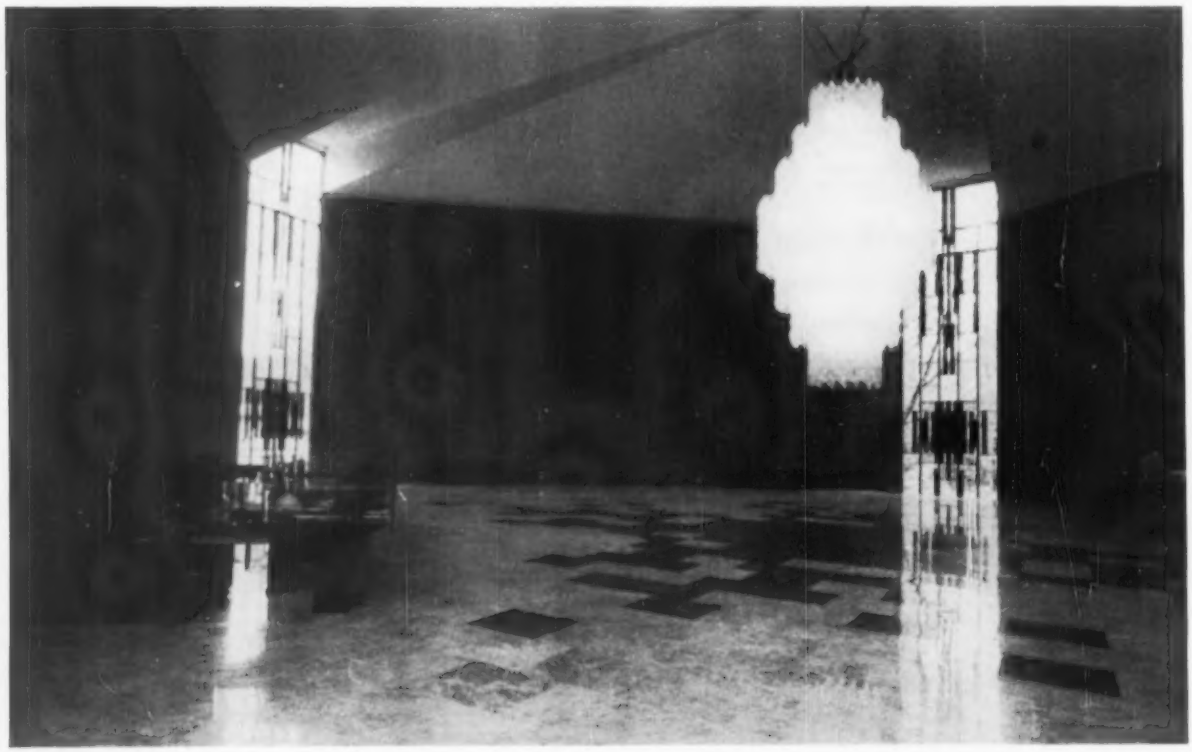




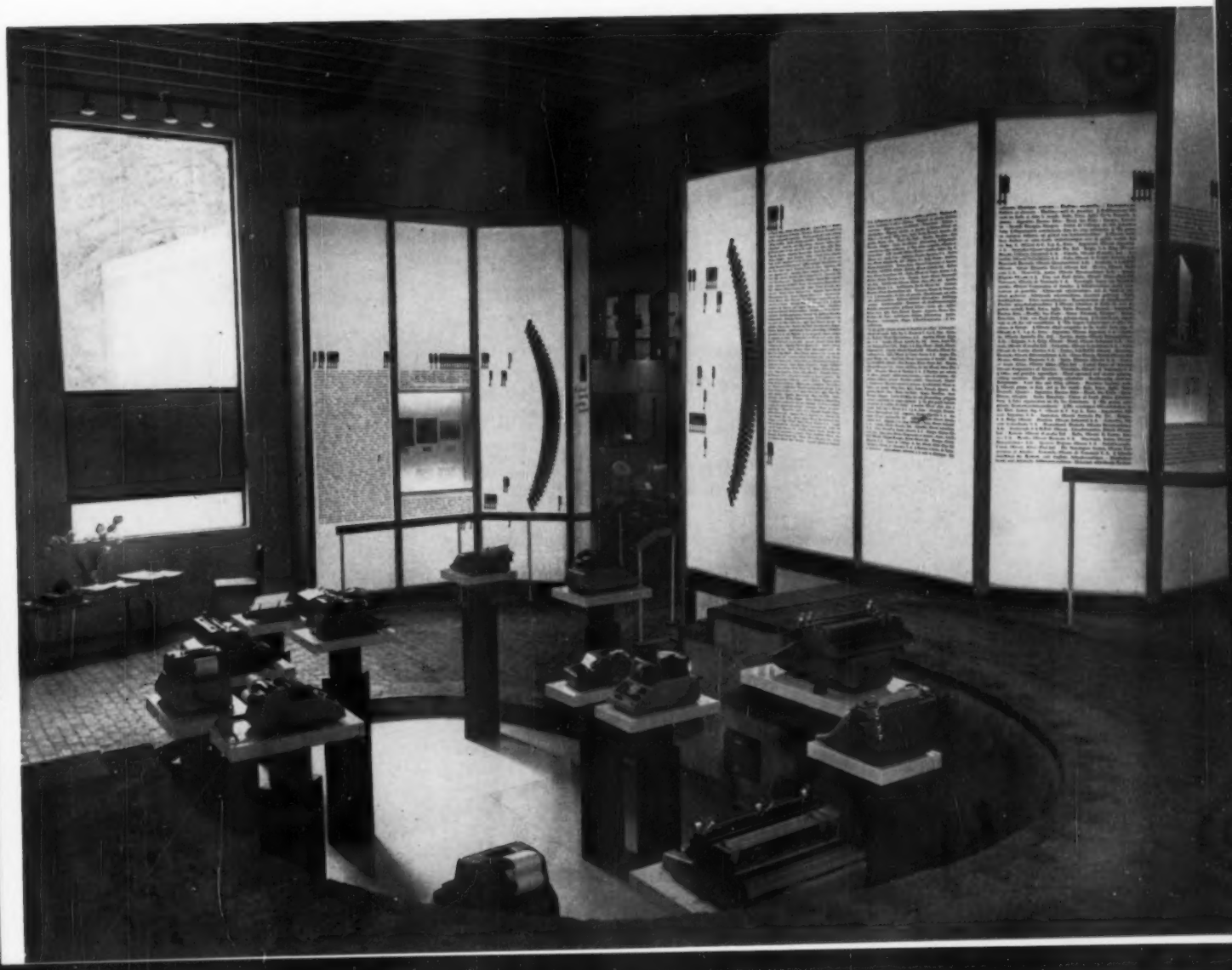


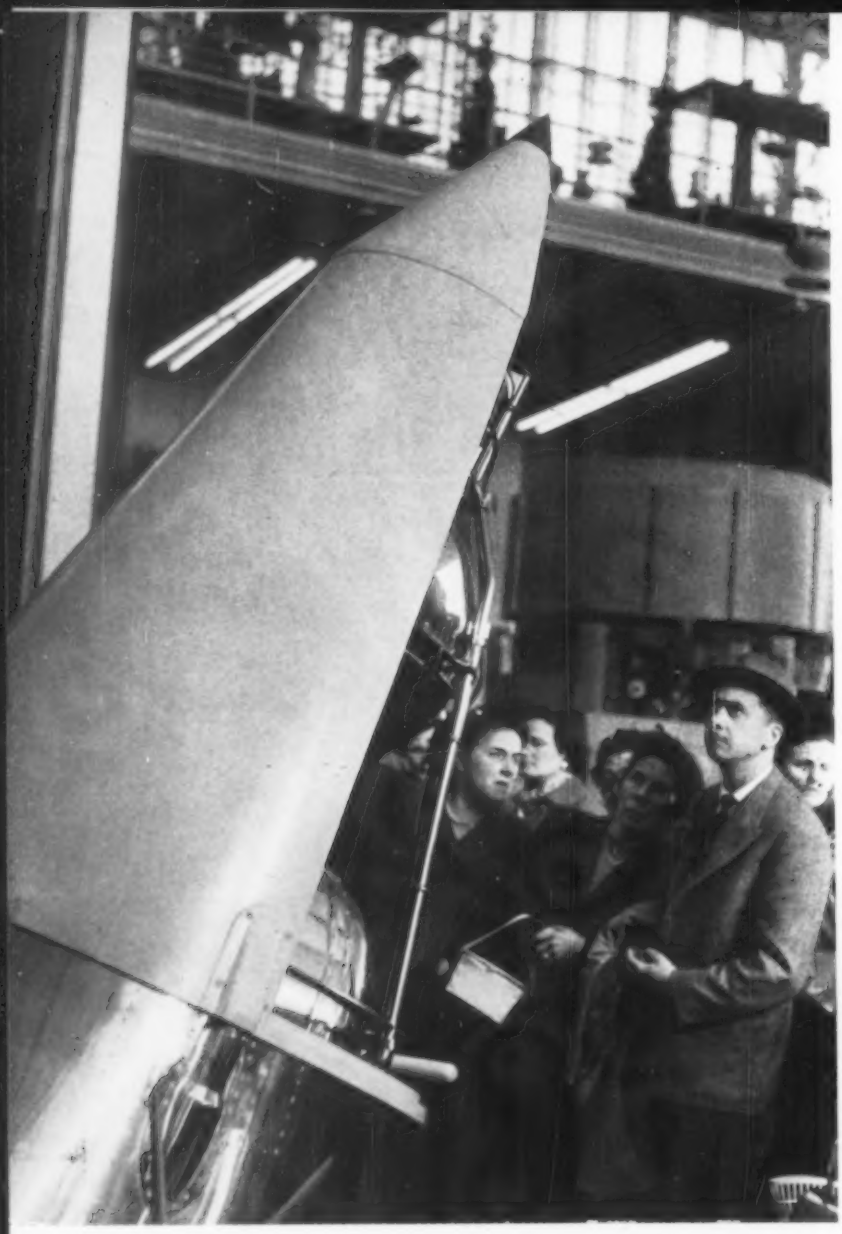
ITALY'S INTIMATE VILLAGE

With its "village" of white windowless concrete cubes, stepping up a hillside toward a single vertical building, Italy looks back to a native tradition of modest architecture. Only in that crowning hall, containing nothing but polished marble underfoot, an oversized chandelier overhead, and a few elegant showcases, is there any effort at monumentality.



In plan the pavilion (by Belgiojoso, Peressuti & Rogers; De Carlo, Gardella, Perugini, & Quaroni) traces out small courts, as one exhibit room after another follows an informal path around the central garden. Individual exhibits of art, history, culture, resouces were prepared by various Italian architects, with marked diversity of style but uniformity of flair. One section shows the products of industrial firms (Olivetti, below) coordinated, like all of the displays, by the central group of architects to maintain the standards of the entire pavilion.



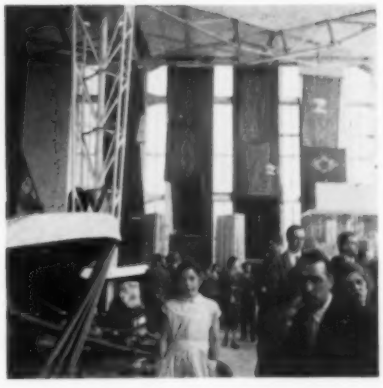


Marilyn Hoffner

THE CASE OF THE USSR:

Heavily-visited USSR pavilion is big, crammed, impressive, and in eyes of many visitors, the least skilfully done: display techniques (such as mounting of rugs, below) are crude, typography inconsistent, legends and sequence hard to follow. But overall message is clear: in the style of a Before-and-After ad, Russia measures its accomplishments—economic, social or artistic—by numerical yardsticks. Radios, tv sets, electronic and medical equipment all seem to perform as well as western counterparts, but are patterned after models 20 years obsolete. *(See facing page.)*

Marilyn Hoffner



DEFYING OUR NOTIONS OF GOOD DISPLAY, DO THEY COMMUNICATE AND PERSUADE?

Facts on how Russia organized its pavilion were not to be had for the asking, other than the report that 18 separate Ministries were authorized to choose and display material in their respective areas. The results, shown here, baffle many a western eye and perhaps (to judge by the pavilions of satellites nearby) even an eastern-oriented eye.

Some Americans have been impressed by the strong-arm quality of the Russian exhibit, assuming it is more effective than our own soft-sell. Many others, more significant to us, tend to dismiss Russia as an artistic fiasco. This is a tempting conclusion, but it is hardly sound to dismiss the mighty Soviet because her visual skill is nil, her showmanship pompous and her taste sour by our lights. The Russians clearly don't give a hang about niceties of display, about creating a work of art or even just an eye-appealing exhibit. So to evaluate their efforts by our esthetic yardstick doesn't tell us they are not actually succeeding.

But in buying a multi-million dollar ticket to the Brussels Fair, USSR officials aren't out just for the ride. They obviously expect their exhibit to pay off by maintaining Russian prestige where it exists, and attracting new sympathies. Their object, more than most nations at Brussels, is *persuasion*. It seems valid, then, to look past the confused, heavy-handed first impression and ask, in good dialectic fashion, do their ends justify their means?

A glimpse behind the lines

Puffing up the hundred-some steps that put the Russian pavilion above the rest of the Fair world, we couldn't help anticipating what would be, for us and millions of visitors, the first free glimpse at life behind enemy lines. (Our first real glimpse turned out to be a busy souvenir stand, one of many around the pavilion and grounds that suggest Russia is financing the whole frosty affair from the sale of 10¢ samovars.) Once we had passed a gaint statue of a worker polished to a high shine, these are the feelings that answered our anticipation:

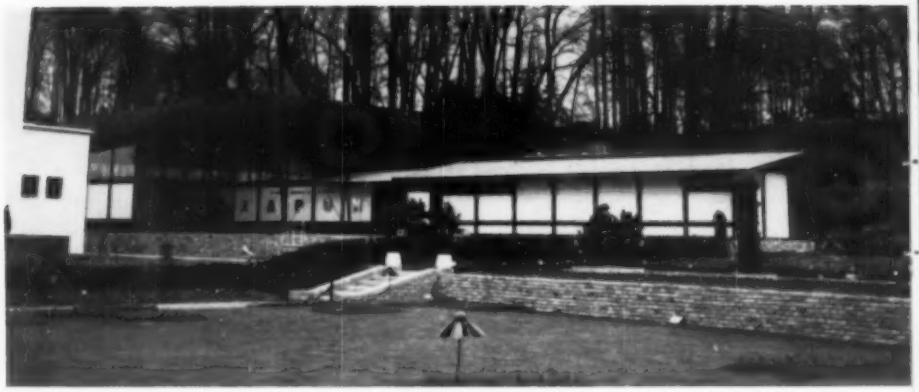
Marilyn Heffner

— The Soviets, with all eyes still on filling requirements, measure accomplishments only in terms of units. Percentages of increase in health, education, production, are impressive when readable. Statistics on number of artists and musicians, number of engagements and prizes won, number of teeth pulled and operations performed, are interesting. Boldly stated goals are admirable: "Our aim is for every family to own its own apartment."

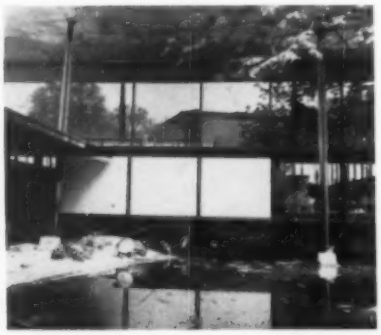
But is the evidence persuasive? Model apartments in golden-oak and khaki-carpet style, reproduced by the million, are filled to bursting with bulbous wood furnishings that seem to have neither traditional roots nor contemporary justification. Models of vast housing projects show poorly planned, barren, regimented barracks towns, unenlightened by the most basic principles of community planning. These are units for the Minister's record, not homes for human habitation.

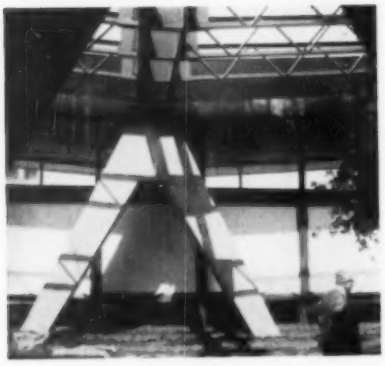
— Achievement is equated to size: Russia shows off the world's largest hydroelectric station, an enormous gear cutter, automatic lathe, earthmovers of dynosaurean proportions. Everywhere the scale of ex-

JAPAN'S PERSUASION



Popularity of Japan's exhibit springs from calculated simplicity of design and story line, without any sacrifice of emotional content. One device carries the theme: "The Japanese Hand," symbolizing in large photomurals (below, right) the skill of her people, their intelligence and love of beauty, their mechanical and artistic talent. Delicate wall panels are used as poster-like backdrops to carry this legend around the perimeter, separate from the objects on display but easy to read and relate to them. The building itself, a charming combination of modern techniques and traditional spirit, by Kunio Maikawa has a trussed steel roof floating on two concrete pillars (below), which are anchored in the intimate courtyard around which the exhibition space revolves.





hibits, ideas and space is inhuman, the proportion uncomfortable.

— Products show the current state of technical achievement: Russia can make radios, tv, instruments just like ours. Copies, in fact. They make no claim to originality — no need to, because the copies work. But ironically, they have copied the worst models of 20 years ago (their esthetic apparently appeals to Russians now) and have adopted all the old crudeness of function and operation as well.

— The pavilion itself, a physical and psychological imposition on people, is also a copy, this time where a copy *doesn't* work. It tries to be monumental, but without artistic control of proportion, scale and elegance, it is just too big. It emulates a kind of western modernism that it doesn't understand. It conveys the same qualities about the Soviet that pervade the interior—it is institutional, dehumanized, lacking creative traditions of its own, it has taken on, instead, the least appealing habits of its opponents. It stands in ironic contrast to the authenticity of the Japanese (opposite page) — normally stereotyped as copiers.

Persuasion or a play on fear?

This, at least, is what the Soviet display conveyed to us. The significant point is this: the underlying and overlying message is not at odds with the insensitive means of presentation; conceivably it is the spirit as much as the design that makes the pavilion distasteful to many viewers, while those who already sympathize with the message should find the technique no deterrent. Because Russia plays on fears of power and strength, other viewers may be struck by it, but not necessarily won. Because it plays on images of size, they may be impressed — but not necessarily convinced. In short, communication is not equal to persuasion.

We suspect that the Russians are so used to *telling* people what's what that by now they have lost the knack of persuading. We have an image of 18 Ministers, each putting together his super-statistical report for the others, each so busy proving his own worth to the Premier that he forgot that the world was looking on too — and judging as people back home never judge. The Minister-designers have no captive audience at Brussels, a small fact that they overlooked in the way they put together their displays. While half a dozen exhibitors around them tell their stories with means that are at once artistic and popular, the Russians stand almost alone in their indifference to design.

At home this is their own business, but it seems to us that they can ill afford to reveal this indifference to a watching World's Fair: it reveals, quietly but directly, a government that has no use for human sensibilities. In the free world, reaching those sensibilities is the crux of any communications — be it propaganda or pure display.

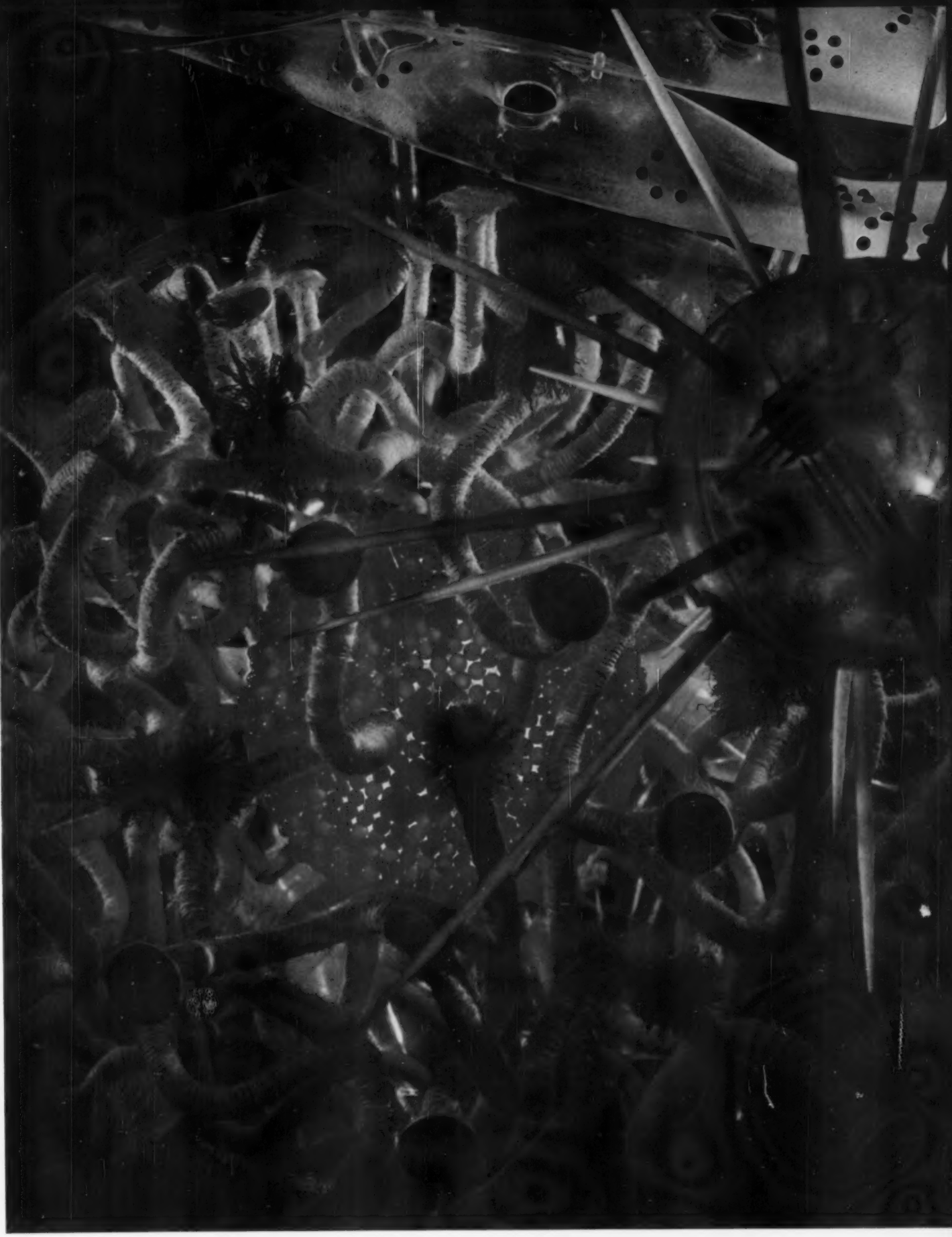
The design of

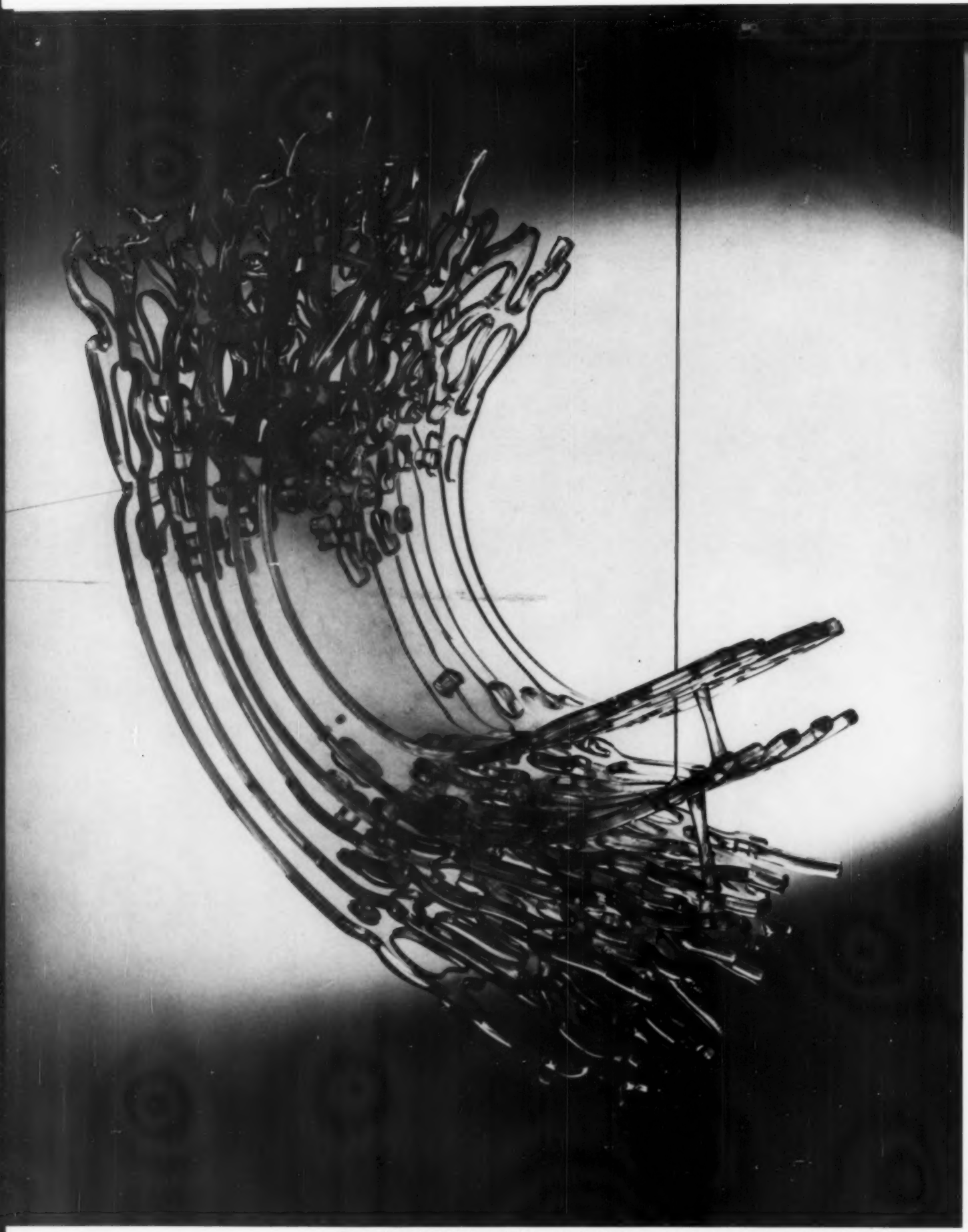
The Cell

The cell, a complex entity of microscopic size, is the basic unit of all life. All cells are not alike—they differ with their functions—but their essential structure is similar. In the past decade or so, much data on the complex relationships in the chemistry of the cell has been gained through the intensive use of the electron microscope. But until now, visual representation has been limited to two-dimensional photographs of thin slices of the actual three-dimensional structure.

Shown in these pages is a model of a "generalized" cell. Designed by Will Burtin for the Upjohn Company of Kalamazoo, Michigan as an educational tool for physicians, cytologists, and students to help visualize more clearly the lower processes of life, this cell model, strikingly conceived and ingeniously devised, required a year for its research, its collation of fact and surmise, and for its construction. Representative of no particular part of the human body, it is an abstraction of the cell—but a controlled abstraction, as technically accurate as the knowledge and conjecture of cytologists could make it.

Magnified more than 1,000,000 times the size of a human red blood cell, the model is 24 feet in diameter and 11½ feet high. It sits on a metal mirror, so that as a viewer walks through and around, he has the impression of being inside the organism, at the center of it. The model is constructed of acrylic plastic tubing for the cytoplasm, or the outer material. There are some 2200 pieces in this cytoplasmic structure, measuring 3700 lineal feet, their 7500 joints connected by hand. This outer structure is built on a five-piece irregular module regularly repeated, with the pieces fitted together at an angle of 78 degrees. Along the interior of this "wall" are displayed scale models of all the elements of the cell. Because nothing of its kind had been attempted before, new problems of conception required novel solutions in construction: for example, the chromosomes (the long curly forms in the nucleus) are made of vacuum cleaner



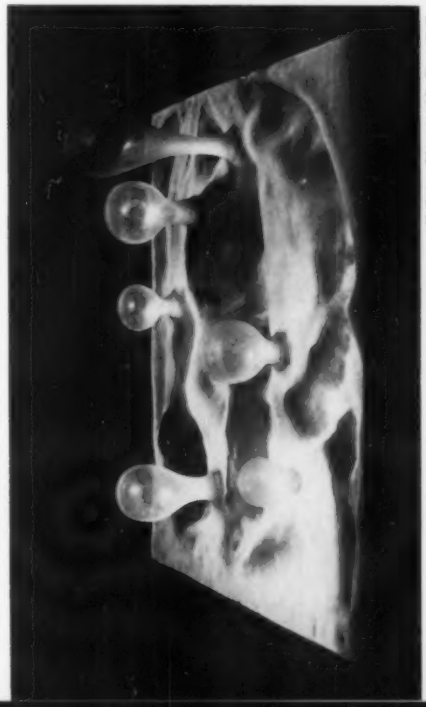


The cell model includes exhibits of individual elements in its structure. Above, a golgi complex. Exact function of these surrealistic-looking joined layers is not known.

tubes covered by fibrous material. The effect of pulsating movement, creating the illusion of a living organism, is achieved by controlled blue light traveling around the base of the structure at 15 rotations per minute, and to perform this, as well as to light the model in general, a mile of electric wiring is used. Since the plastic acts as a light-gatherer, the interior of the cell appears luminously alive and glows against its black surrounding space.

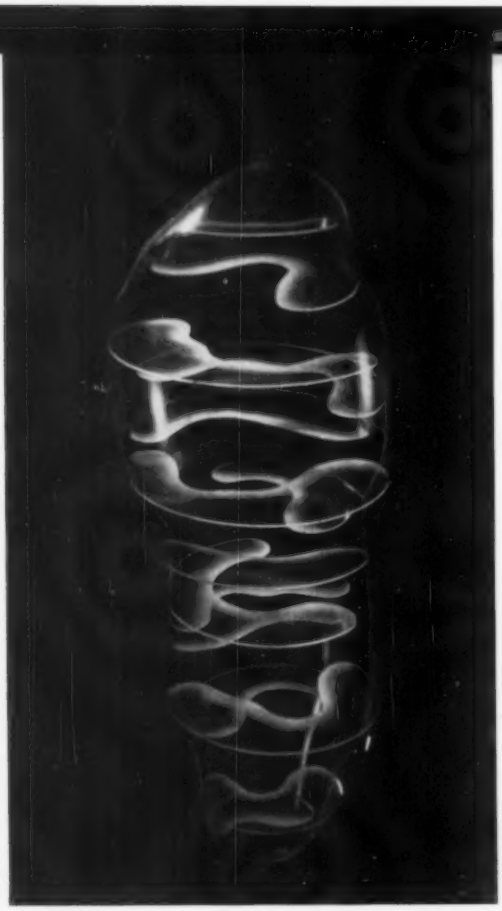
The poet William Blake, proclaiming the primacy of inventiveness and inspired design over hypostatized fact, said: "What is now proved was once only imagined." The model does not "prove" anything, but it does imagine with great graphic inventiveness: the plastic shapes and forms evoke a surrealist world. In fact, because it was difficult conceiving in the round what no one yet has ever seen, Burtin found in surrealism a kind of unconscious, or prescient, visualization of some of the elements he needed for constructing the cell. So that although his model is based chiefly on medical slides and photomicrographs, it relates itself to (and visually corroborates) the weird and fantastic vocabulary of surrealism's imaginary shapes, making those once far-fetched and "unreal" images now appear tame, "real", and surprisingly natural—seeming demonstration, once again, that nature imitates art.

A section of the outer "skin" of the cell—the membrane that covers the cytoplasmic structure. (Not used in magnified model.)



All photos this spread by Ezra Stoller

The mitochondria, which appear to be transparent, ridged ovals, chemically transform food into energy.

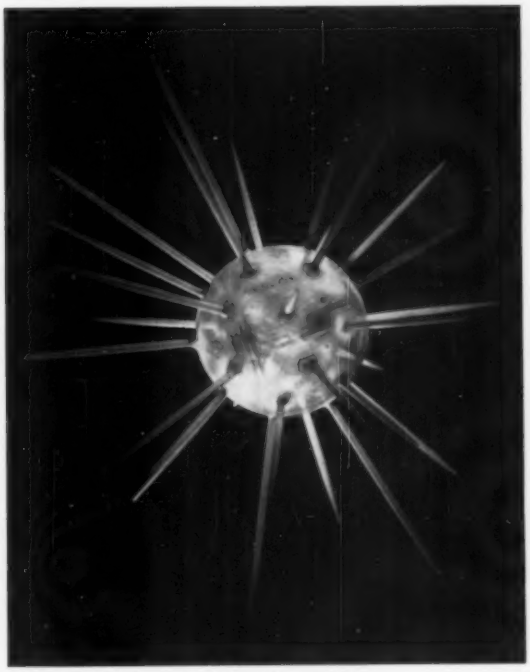


Keturah Blakely

Flat sack-like endoplasmic reticula—believed to be responsible for the formation of protein in the cell.

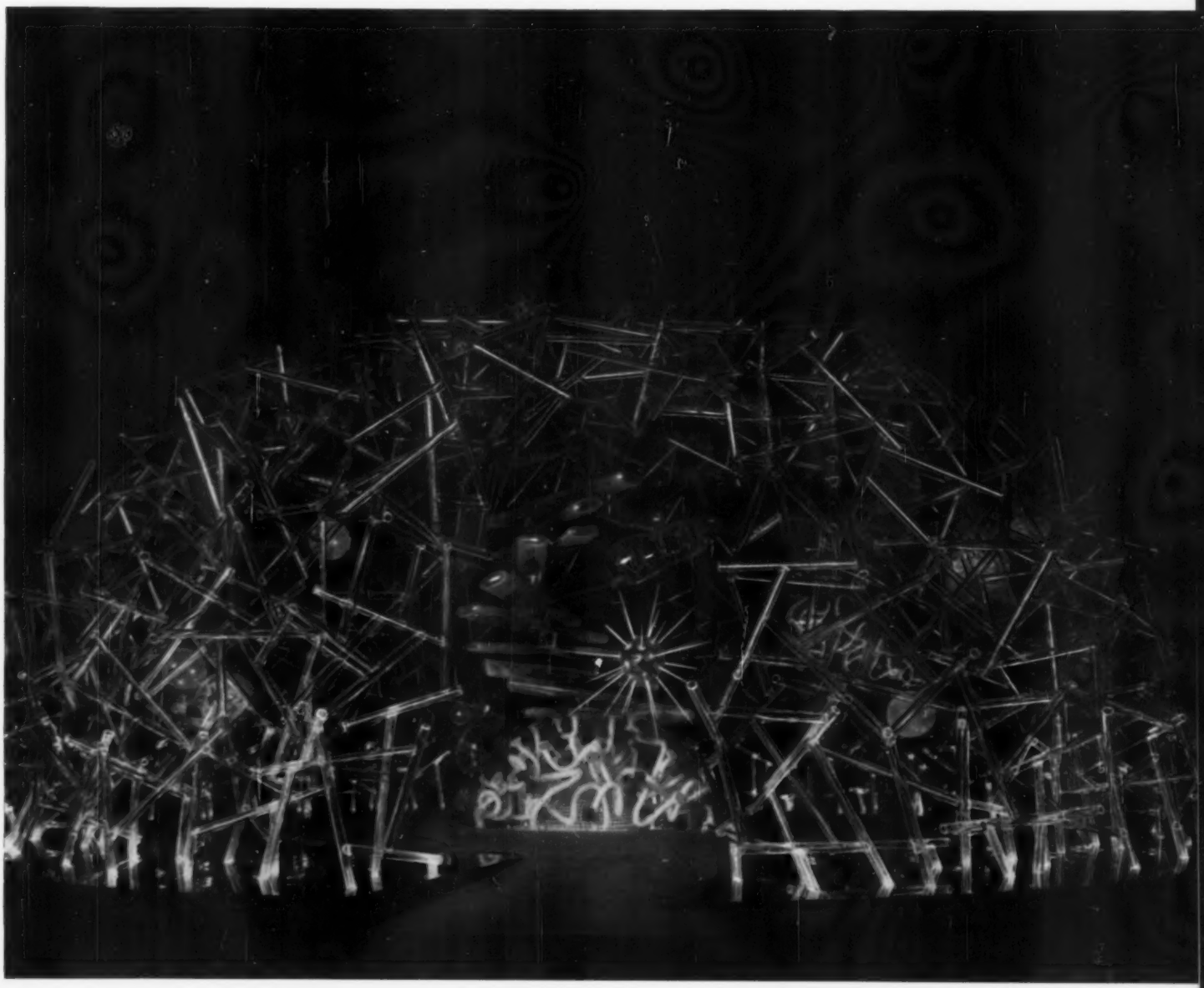
Ezra Stoller

Keturah Blakely

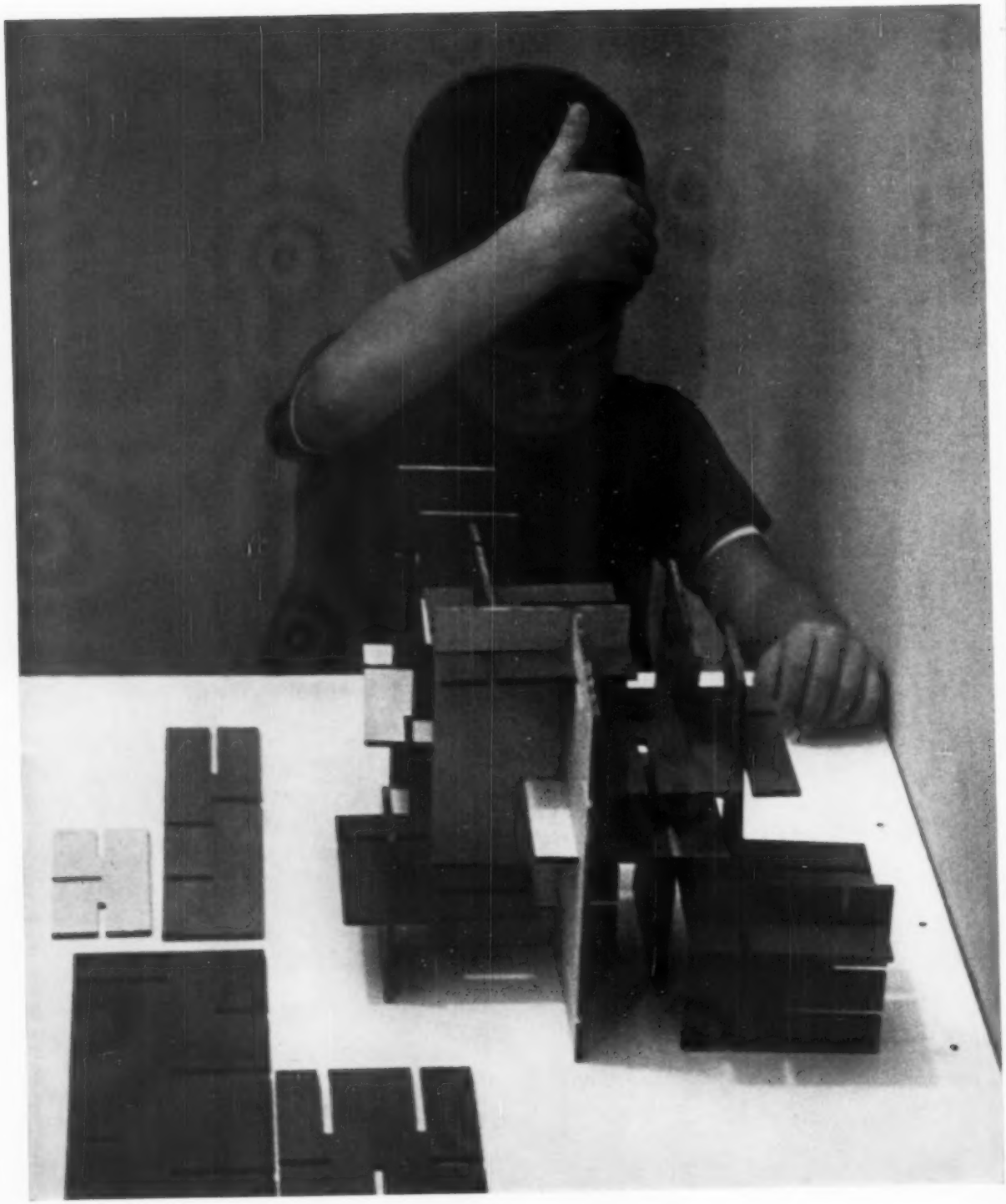


This modified sputnik is the centrosome, showing centrioles inside. Centrosome is responsible for cell division.

The complete cell: the simple elements combine to form a complex organic whole



TOYS



A review of what the market offers, some suggestions of what the market can bear

by NINA KLIPPEL

The very young man pictured here in a moment of intense concentration, looks as if he's hard at work—and in fact he is. He's also, quite obviously, at play, but this is no contradiction. For a child's play, say the experts, is his work, and toys are his tools.

What is a child's work? It is the challenging and fascinating task of developing himself—from learning to reach for and grasp a simple object, to building a radio that really works. But he is also building a world — one that approximates, ever more closely as he grows older, the "real" one

And since toys are designed for children by grown-ups, the kinds of development they encourage reflect the attitudes of the grown-ups' world—in terms of the things that are constant in children's play. (The Normans, for instance, provided their young lordlings with equipment for miniature jousts.)

This is apparent in obvious ways: the year that saw the launching of Sputnik also saw the launching of a galaxy of miniature rockets, missiles, even sputnik-shaped radios; now the latest headlines restore status to conventional ship and plane models: "Follow the Middle East crisis, with your own fleet of actual models," a sign in a toy store window urges. Science toys have gained a new significance: they "develop future scientists."

All this is more than opportunistic merchandising. When play with wooden boats and crane trucks is said to bring about "insight into inter-community dependence," and almost every toy is labeled "educational," one may well wonder to what anxieties of the consumer the toy business is, consciously or not, catering.

Now, toys have always been educational (as any object is to a child). What is new is this conscious—even self-conscious — formulation of their purpose. Also new is the fact that this purpose for which the toy is designed is not mere "fun": learning is part of the play. If this seems obvious, it was not always thus. The moralistic Victorians, for instance, could take pleasure in the fascination of the thing in itself (the mechanical toy, for instance). When they had a "message" it was superimposed: magic lantern slides may have depicted biblical subjects, but the fun was in the "magic."

But toys reflect more than surface values. It has taken, it seems, a society noted for its passiveness to produce a kind of toy *designed specifically for the child's active participation*: the construction toy. Moreover, an age which has seen increasing regimentation (whether *via* mass media or control of "the masses") has seen the development of another special kind of toy, *designed specifically to stimulate the child's imagination.*

However, as the books of Robert Paul Smith attest, a child's imagination needs little prodding to discover that anything can be a plaything. Indeed, perhaps the best and most real train of all was a line-up of dining room chairs; perhaps the best playhouse was by the same chairs, roofed over with a sheet.

Today, we offer playhouses which consist simply of masonite panels complete with holes to crawl through. But a hole is something to discover, as well as to crawl through, and suggests access to a secret place, a hideaway. When all this is so openly given, isn't the essential part of the experience taken away? Play is exploration of things, discovery of relationships, then manipulation of these things to turn a discovery (that, for instance, chairs can be a train) into a working reality. By an odd coincidence, this is what the designer often does, too.

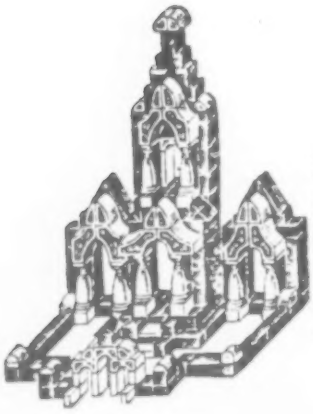
Since a toy is simply a thing that is played with, things designed for other purposes, like clocks and locks and electric plugs, may make admirable toys (at least from a child's point of view). Now a curious switch is bringing the improvised toy full circle. Taking their cue from the children, manufacturers offer take-apart clocks, plastic plugs and outlet panels, lock boards consisting of little doors fastened with different types of standard hardware.

"The toy plays with the child," one toymaker has observed. Implicit here are some of the challenges to the designer — and a hint of why children need things *designed to be toys.* The toy says, "Play with me." It even says, "Come, I'll show you how." If the improvised toy represents discovery, the actual toy represents a stimulus toward certain given activities. (Infinite possibility is too much for even the adult mind.)

So, one problem confronting the designer is how many play possibilities a toy should allow. Sometimes a single action gets a result that is satisfying in itself; bang a peg and a bell rings, pull a rubber band and a disk spins into space. Sometimes a toy goes through the years with a child: what changes is the way he plays with it.

Related to this is the question of realism. Sometimes it is suggestive of kinds of play, sometimes merely stultifying. One kindergarten supplier offers, among other things, two sets of dolls: one is a highly abstract family, carved in wood; another, a set of rubber figures, garbed according to their social roles (policeman, nurse, etc.). To the first set, many children objected that they belonged in a museum! But the second group is equally—if differently—limited, since it represents not people but functions of people.

The toy is, *par excellence,* a designed product. But it reverses the usual design procedure, which starts with a given function; here the function (that is—the activity) is likely to be invented before, during and (by the child) *after* the toy is designed. Indeed, whatever the design elements—sight, sound, motion—the child's imaginaiton is one of them and one which the *designer's* imagination must match.



Courtesy Sears Roebuck & Co.

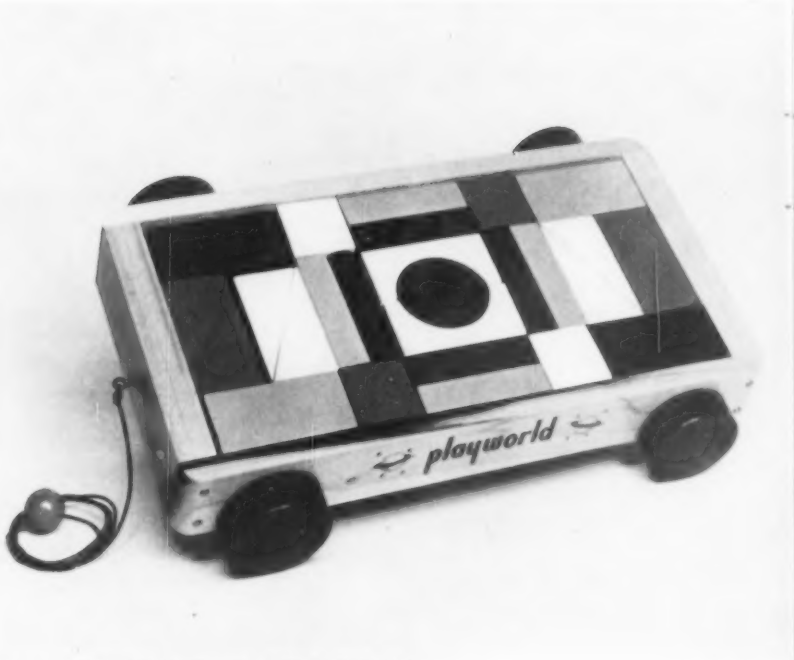
SIGHT, SOUND AND MOTION

At the basis of a child's play is the manipulation of shapes. As he grows older, the shapes become more complex, do more things, look more like real things. Blocks are classic because their shapes can be all things to all children, from mere objects to grasp, to elements of elaborate cities where cars and people come and go.

If the shape, square or rounded, is the theme, its variations are the things that can be done with it. It can be stacked on dowels to make a pegboard town, or a train, or an amiable giraffe. A single rectangle can be a camera; a line of them, mounted on wheels (and the wheel is as important in the nursery as in the history of the race) becomes a train. A single block disintegrates, and in its place stand a group of chairs, stools and a table.

Toys sanction the thrill of "making a big noise." Click the shutter of the camera and a bell rings. (By a curious simile, the plate turns out to be a blackboard, the lens dial an eraser.) With the workbench, there is the reward of noise, and something more: the discovery that a whole world of mysterious but authentic shapes will respond obediently to proper handling. Even on the simplest level, variety of shape, rightness of size, and thoughtful use of material become *design*, as in the polyethylene poppit beads.

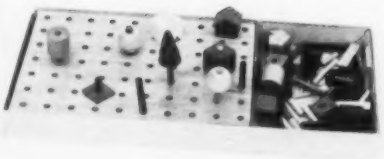
Those areas where a child's imagination most freely plays can offer the same freedom to the designer. The nursery may, for instance, be the last outpost of whimsy. The gay little train is in the tradition of the fancifully-decorated folk toy; but as the face on the engine woefully attests, whimsy requires a sure hand.



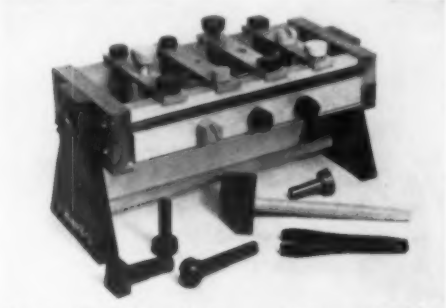
Wagon of blocks. Playworld Toys, Inc., $4.00

Giant snap-lock beads. Fisher-Price, $1.00

Japanese block puzzle, 39 cents



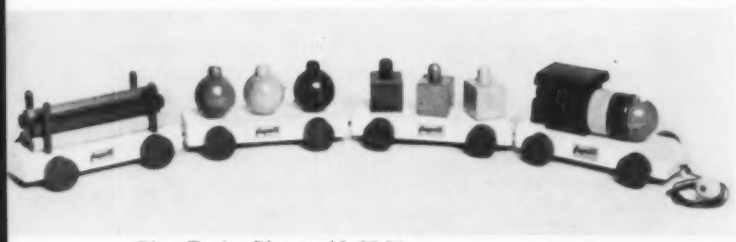
Toy Town Peg Board. Creative Playthings, $2.00



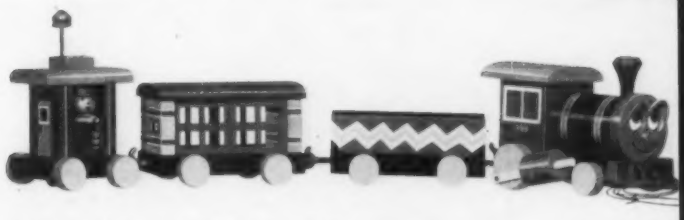
Carrier Work Bench. Playworld Toys, Inc., $6.00

Stacking Giraffe and Bird. Playworld, $1.50 *and* $1.25

Camera Bag. Playskool, $2.50



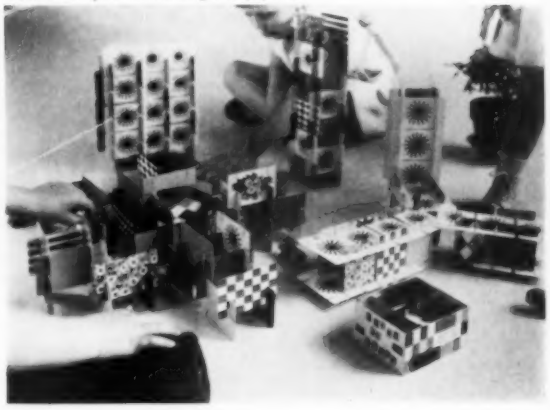
Play Train, Playworld, $5.00



"Huffy Puffy" train. Fisher-Price, $4.95

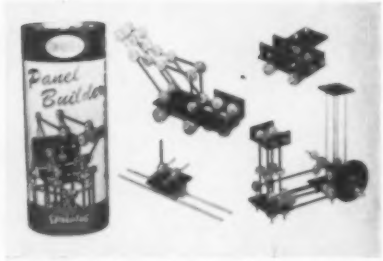
The Bettmann Archive

House of Cards. Tigrett, $1.00



CONSTRUCTION TOYS

Erector set. A. C. Gilbert Co., $17.98.



Panel Builder. The Toy Tinkers, $7.95.

Children have always put things together, to make something else or just for the fun of "building." What is new is the presence—and the range—of sets of shapes designed for the purpose of being put together. The shapes the designer chooses (or invents) can lead the child — in one direction or another — toward making definite objects, or toward building for its own sake.

For instance, Rig-a-jig, with its seven shapes and seven colors (more than most kits provide) tends toward fantasy structures. So, in a different way, do the dowels from Creative Playthings: the asymetric placing of the holes suggest —or perhaps determine—abstract arrangements. The classic Tinker Toy with just two basic shapes (the spool and the dowel) can be made into a whimsical "anything" or a definite "something." Tinker Toy has been around since 1914; this year saw its first new addition: the perforated panel. Seemingly, the toy didn't require it—but merchandising did: the panels made possible stepping up from a $5 top price to an $8 set.

Basic design of the Erector set hasn't changed much over the years, either; but, as photo of rocket launcher shows, it has kept pace with the times. Addition of parts makes the difference, and also permits a price ladder that starts at $1.98 and moves skyward to $69.98 and probably beyond.

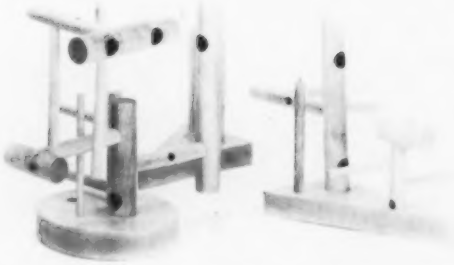
Abstract parts can make up "real" things; their virtue is that they can make a variety of them. On the other hand, sets like Kenner's bridge-and-turnpike builder, produce just one thing, and use realistic parts. (Kenner also has a girder-and-panel set, which imitates curtain-wall construction.) Such sets are just a few steps away from model-making; their point, as distinguished not only from models but from some other construction kits, is that the fun doesn't end with the building.

Eames' House of Cards and Little Toy, like Arnold Arnold's Builder (shown on page 62) combine the fun of building with that of further play. The secret is in the kind of shape used, (which is the natural equivalent of a wall, a roof, etc.) and the kind of assembly, which is tempting in itself. (Eames' toys, however, raise a question: how much decoration is desirable in a toy—especially one designed as a prop for dramatic play, i.e., a house or a garage? There may be a danger of the toy's becoming an esthetic object — that is, a thing in itself. The moment it becomes that, it stops being a toy.)

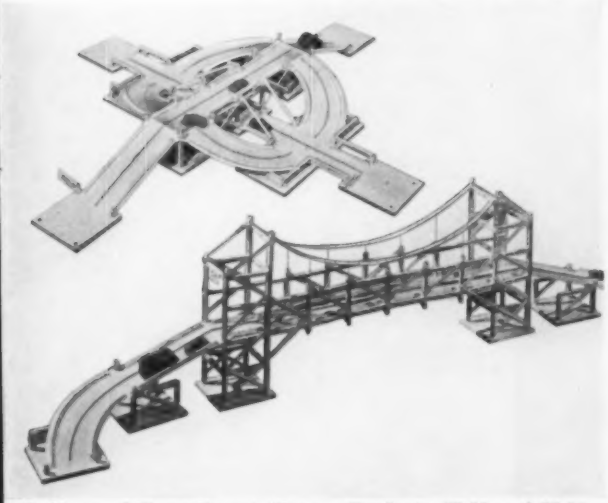
The Uni-Blocks show an interesting approach. Here the designer seems to have been concerned with a problem in joining, and the shape that results has an inevitable logic. However, such a shape has little relation to the objects that are made with it, and give them an artificial look which is quite different from the suggestiveness of, say, the Tinker Toy. The set won an award from Koppers', and quite properly so: it is not often that a material is so intrinsic to a design as the polyethlene is here.

Rig-a-Jig. Landfield Co., $1.00 up.

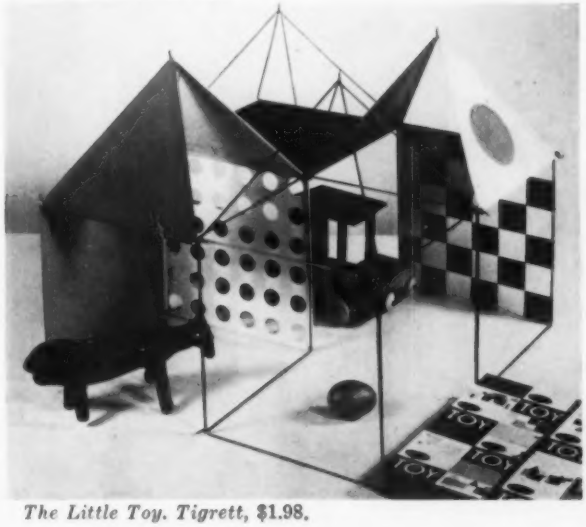
Uni-Blocks. Vanguard Toy Co., $1.00 and up.



Asymetric Space Construction. Creative Playthings, $9.95



Bridge and Turnpike set. Kenner Products, $3.00 and $5.00



The Little Toy. Tigrett, $1.98.

THE WORLD OF HOME

Why do little girls love sick dolls?

As immutable, it seems, as the laws of nature is the law that makes little girls want to be like little mothers. A doll is to cherish (or to punish when she's bad) and it doesn't matter if she's made of china, plastic or an old stocking —this intimate relationship is the same.

But why do little girls love *sick* dolls? One answer—and one that might help a designer gain an insight into the use of a great many toys—is that they "demand" so much attention: they stimulate a whole chain of activity that is as imaginative as it is logical. (A *chronically* ill doll, with a factory-built malady, would be neither logical nor stimulating, but merely depressing.)

The dolls shown here present two possible answers to the problem of how much, and what kind, of realism is desirable. But the answers are framed in terms of the question, desirable for what?—since they represent two kinds of play (and, of course, very different age groups.)

Kin to Raggedy Ann and Andy, the family of stuffed dolls from Creative Playthings have not lost charm with their gain in respectability; but they have added, or at least enhanced, a function. With the life-size figures (there's a father and brother, too) children can play out real life situations. Miss Pony Tail alone might be a sister, as much as a plaything, to a little girl.

Dollikin may represent an excessive notion of "glamour," but to the preteenage fashion designer (whose numbers are legion) she could make an admirable model—and a stimulus—for

sewing experiments. The fact that she is jointed is helpful here; but it is not new. Dolls similarly jointed (though not at the waist) were the rage about fifty years ago, when Edison designed a phonograph for one of them.

Realism—in the form of miniaturization—has its place, and nowhere more so than in housekeeping equipment. In fact, makers like Revere and Bissell are only following a long tradition with their miniature wares; so are the makers of stoves that really work (the little cast-iron ones of another age did, too) and of tiny washing machines (whose counterpart was a not-so-tiny wooden tub and scrubbing board.)

In doll furniture, replicas have always been out of the question (if only because their cost would be prohibitive), but traditional styles continue to dominate the scene. Taking exception to this, Belle Kogan has designed a line of metal-framed furniture for Watko, in an attempt to capture a contemporary flavor. Early Americana finds its way into the doll house too, via Dave Kaufman's design for Colorforms. This, of course, uses a familiar construction toy technique to provide added fun: even lamps and candelabra must be fitted into the appropriate surfaces.

Designing for little girls raises the question: what things does she want that are "just like mother's" and what things does she want that project her fantasies? In a world of mothers, babies and friends, not only sick dolls and cuddly ones, but magnificently impressive ones—less to love than to admire as "princesses"—are important personages.

Doll Furniture. From $2.00 Colorforms

Doll's Swing in chrome. Watko, $4.00

Family of Dolls. $7.75-$17.75. Designed by Jean McIntyre for Creative Playthings.

Dollikin. Uneeda Doll Company, $11.95

Revere Miniatures. Sets of 6, $1.50-$2.50

Russel Wright tea set. Ideal Toy, $3.00

Electric mixer with tilt-back head, flashlight battery. Mirro, $2.95

Photo courtesy of Design Analysis

THE WORLD BEYOND

Every era has its appropriate toy weapons, transportation toys, and miscellaneous zooming objects. Seen in the F. A. O. Schwartz window above is the most recent: the paraphernalia of space exploration. It is clear that, to the toy industry, the boom of missiles and the beep of satellites sound like nothing so much as the jingling of cash registers.

Some of the best designers in the business (though not the toy business) have had a hand in the new toys. The space station, made from a design executed by Wernher von Braun for Disney; the atomic cannon, made to army blueprints; and models of Kraffte Ehricke designs for space vehicles (not shown) are typical offerings.

The toys on this page show some of the effects of the widespread use of plastics. Now, for the first time, literal realism is possible, and things as complex as a space station can be put together by a child with ease and dispatch. A child is provided with more models, faster—but he may accordingly value them less. Assembling-by-numbers, he may not know that there is a satisfaction in the long and exacting art of *making* a model (and he will have to hunt to find the old type of kit). Having *things* whose value may be dubious, not knowing that there is a value in *making* something (however short of "realism" his efforts may fall), he may turn out to be a poor little rich boy.

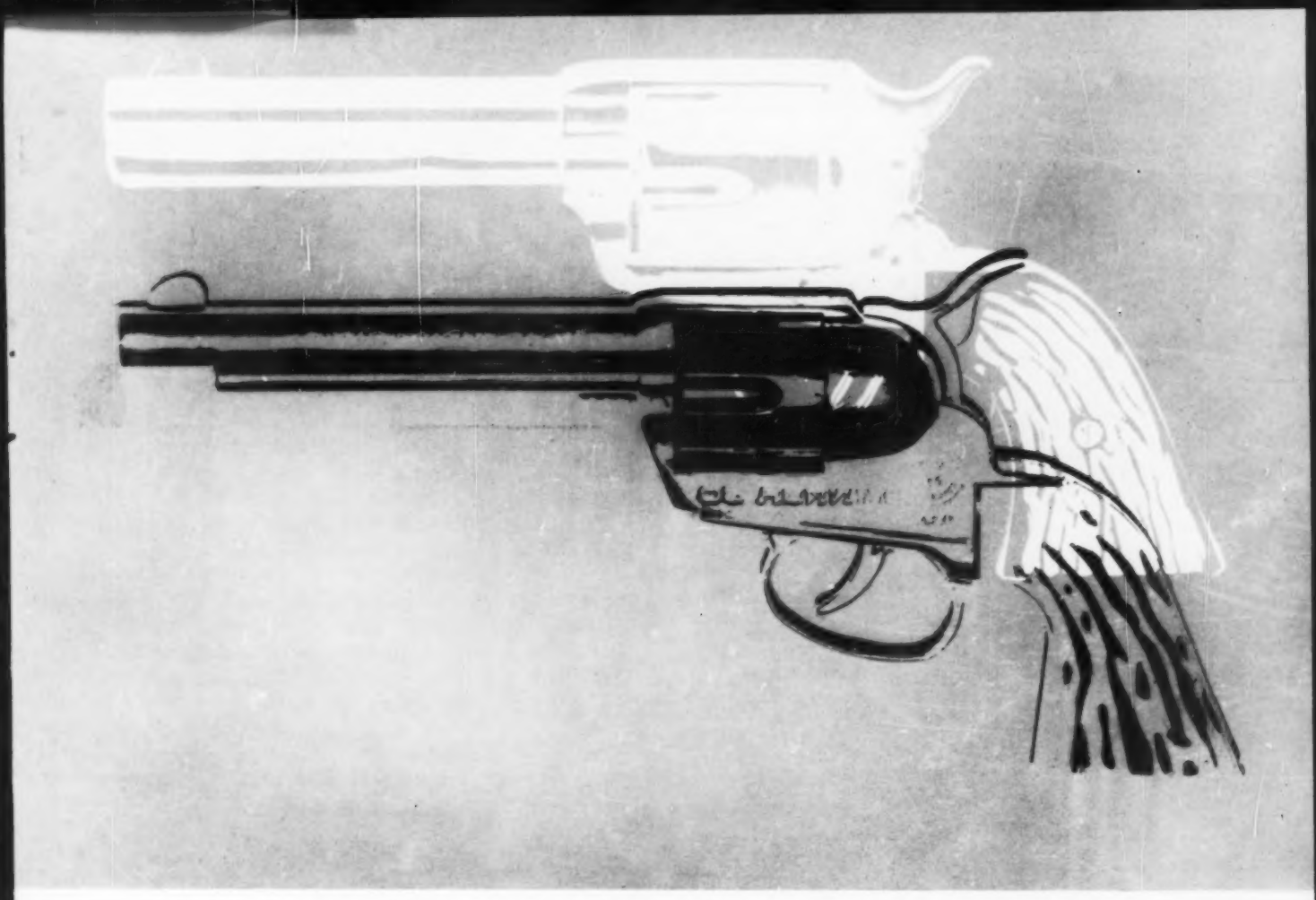
The toy designer working in this area will be concerned largely with problems of safety, or of imitating kinds of things or processes—the satellite train is an example of the first, a sonically-controlled train (not shown), an example of the second; or he may adapt an authentic object to a toy's function —as in the Colt opposite.

Alpha-1 Ballistic Missile. Scientific Products Company, $4.98

Disney Space Station. Strombeck-Becker, $1.00

Atomic Cannon. Ideal Toy Corporation, $8.00

Satellite Train. Kusan-Auburn, $49.50



For modern Westerners (j.g.), an authentic toy: the Colt .45

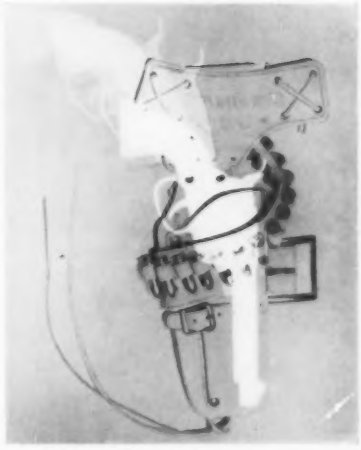
A problem which may be unique in the toy industry is the design of objects that look like authentic ones, but work differently. A case in point is Mattel's Fanner 50 cap pistol, shown above alongside its famous original, the Colt .45.

Here the usual product design situation was reversed: the appearance was rigidly fixed, but the function had to be changed: a gun that looked—and acted—like the Colt had to shoot caps instead of bullets. Two basic problems were involved. First, the workings of the cap pistol had to be accommodated in the logical sections. This meant re-shaping certain parts of the gun, but whenever a design variation was introduced, its basis was another "Western-type" pistol, usually another Colt.

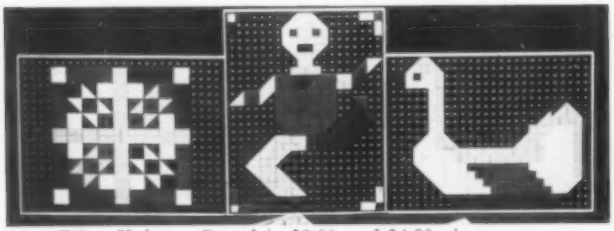
The second problem grew out of the special merchandising feature of the gun which recognizes the new type of Western hero and provides the weapon appropriate to this rugged, realistic image. This was to make a cap pistol which could fan off volleys of shots. "Fanning" was developed by the old-time gunfighters as a way of getting off a barrage of shots from the single-action Colt .45. They did this by holding down the trigger and running the heel of the hand back and forth over the hammer, to make it slap against the cylinder; this was faster than cocking.

Transposing this action to a single-action cap pistol would have been no problem. But a single-action pistol means death today—from a merchandising standpoint. Toy pistols now have a double action (what youngster wants to cock a hammer each time he shoots his quarry dead?). So, a new firing mechanism had to be devised, which had a double action but still could be fanned.

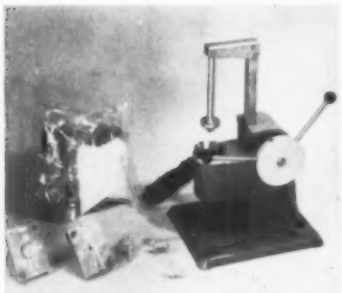
With all this, designers Carson-Roberts spent over 2000 man hours on research and experimentation. They even designed an appropriate holster, made of unadorned, real saddle leather, and cut away at the neck for a fast draw and complete with rawhide legtie.



Paint-a-puppet kit. Topstone Rubber Toys, about $2.50

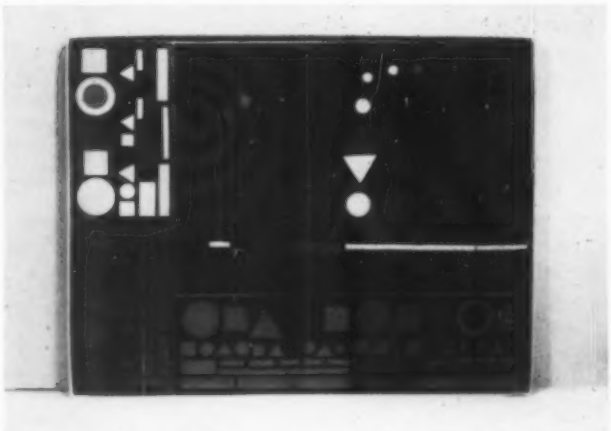


Play Tiles. Halsam. Boxed in $2.00 *and* $4.00 *sizes*



"Plasti-Play." Metal Ware Corp., $9.95

Drill Kit. Mirro, $3.95



Board and elements of Colorforms set. Colorforms, $2.00

QUIET SKILLS . . . . . .

Some toys are things in themselves—the play is in the toy; some are instruments toward play, but not in themselves playthings; some combine attributes of both. Here are toys of all three types; what distinguishes them from those shown earlier in their emphasis on some form of creative activity.

John F. Dickinson's Paint-a-Puppet is a bold attempt to combine two kinds of creative play—painting and dramatizing. The puppet provides the kind of limitation that children need: it is a framework for the imagination without being a barrier.

Elements for pattern-making constitute the other two toys whose aim is "creativity." The Peg Board Play Tiles set, seeking the best of both worlds, includes door and window elements along with the geometric shapes of its pegged plastic tiles.

Colorforms offers more shapes and colors, and a fast and easy technique: the soft plastic pieces simply adhere to the plastic board. It seems to be a new edition of sets which used to be made with felt pieces, and which had larger parts and more variety in shapes. The felt pieces adhered to a fuzzy board in the same way the plastic ones adhere to the shiny one; handling the felt, which had weight and texture, was part of the fun. On today's market, Colorforms, designed by Harry Kislevitz, offers more design possibilities and greater freedom than most kits.

The tool-as-toy is Mirro's Electric Drill Kit. The problems of designing grown-up objects as toys (the drill is for 4 to 8 years olds) center around providing a maximum of realistic fun with a maximum of safety. Thus, all the attachments of the battery-powered drill "really go"—even if, like the rubber bits, they don't work. (Harmless ones, like buffer and paint mixer, do work.) Drill has pistol grip and trigger switch, "just like Dad's."

The plastic molding set, on the other hand, is not a toy, but a tool for toy-making. Descended from the outfit for making lead soldiers, this set has an important safety feature: the plastic, which is melted and then pressed through the hopper, is fed directly into the mold.

AND ENERGETIC ONES

The playground is a very special kind of place. Stripped of the things of nature, it must do more than simply replace them. For the designer, here is a special kind of challenge—and an opportunity. Because the equipment he provides exercises not only the child's body but also his imagination, it offers free play to the *designer's* imagination, and to his sensitivity to shapes. (And, since a playground sculpture may be all the decoration a planner's budget can include, it has an added role.

The Saddle Slide, from Playground Associates, is a case in point. Its shape is made to be climbed on or crawled under, to be slid on or straddled. But it is also designed to suggest a horse or a covered wagon, a mountain or a boat. (Current thinking regards playground equipment not as simple exercise devices but as props for imaginative play of which physical activity is one element.)

Ideally, a playground should provide for changes of pace—from group activities to those that can be enjoyed individually, and from big, versatile units to those which are both smaller and more limited in scope. Such objects as the Riders, from Creative Playthings, fill this kind of a need.

The Helical Slide, designed by Frank LaPrelle, gives the conventional one a couple of new twists, and supplies an important safety feature: a grille at the top of the spiral stair inside the cage makes the child get on the slide in a seated position. Fiberglass slide, with its colored balls providing a gay, festive note, is one of the rare pieces of outdoor equipment which use color.

Even "locomotion" toys have kept abreast of current thinking, in the different ways evidenced here. The Bimbo Ferrari has an Italian-made body, friction drive, and a $400 price tage; the $12.95 Tumble Tub, designed by Barbara Sigerson, whirls and spins and travels at breathtaking speeds. Our guess is that the kids in the status symbol would trade it for one ride in the tub—where you have to work to make it move. Tub can't tip, because of design of steel bottom, which has smaller diameter than sides; turned rims prevent pinched fingers. (This tub, which can be used anywhere, is not to be confused with snow-sliding disks.)

Riders, in colored reinforced concrete. Creative Playthings, $85 each

Helical Slide. Creative Playthings, $595

From Playground Assoc., $710

Racer. Gerald Colombi, $395.95

Tumble Tub. Allwork Manufacturing Company, $12.95

WORLD OF SCIENCE

The gyroscope is the science toy *par excellence*: the fun is in the doing and the looking; the learning is built-in.

The Atomotron, which comes with a kit to demonstrate the workings of static electricity, has been used in schools; but making and watching these reactions is fun by itself.

New equipment brings star-gazing down to earth. The Star Finder has constellations illuminated on plexiglas panels, and a built-in compass. Authentic telescopes are sold as kits, complete with tripod, carrying case, and astronomy manuals. Even a city youngster can glimpse the stars *via* his own planetarium.

Newest in chemistry sets is one designed especially for girls, from its pink box to the study it emphasizes: biology (live shrimp eggs are included) and the chemistry of home economics.

If paleontology is the rage, it's probably because plastic has made possible reconstruction of creatures like Tyrannosaurus Rex—and shown the fun of handling those lovely little bone shapes.

Atomotron. Atomic Labs., $19.95

Dinosaur kit. Ideal Toy, $1.98

Lab Technician. Gilbert, $9.98

Jr. Planetarium. Harmonic Reed, $9.95 *with battery*, $19.95 *electric.*

"Moonscope" telescope. Also from Harmonic Reed, $14.95

Magic Star Finder. Gilbert, $7.98

Today, if you ask someone in the industry about design, he will discuss safety and psychology—or merchandising. The toy may be a designed product, but the concept of it as such has yet to mature.

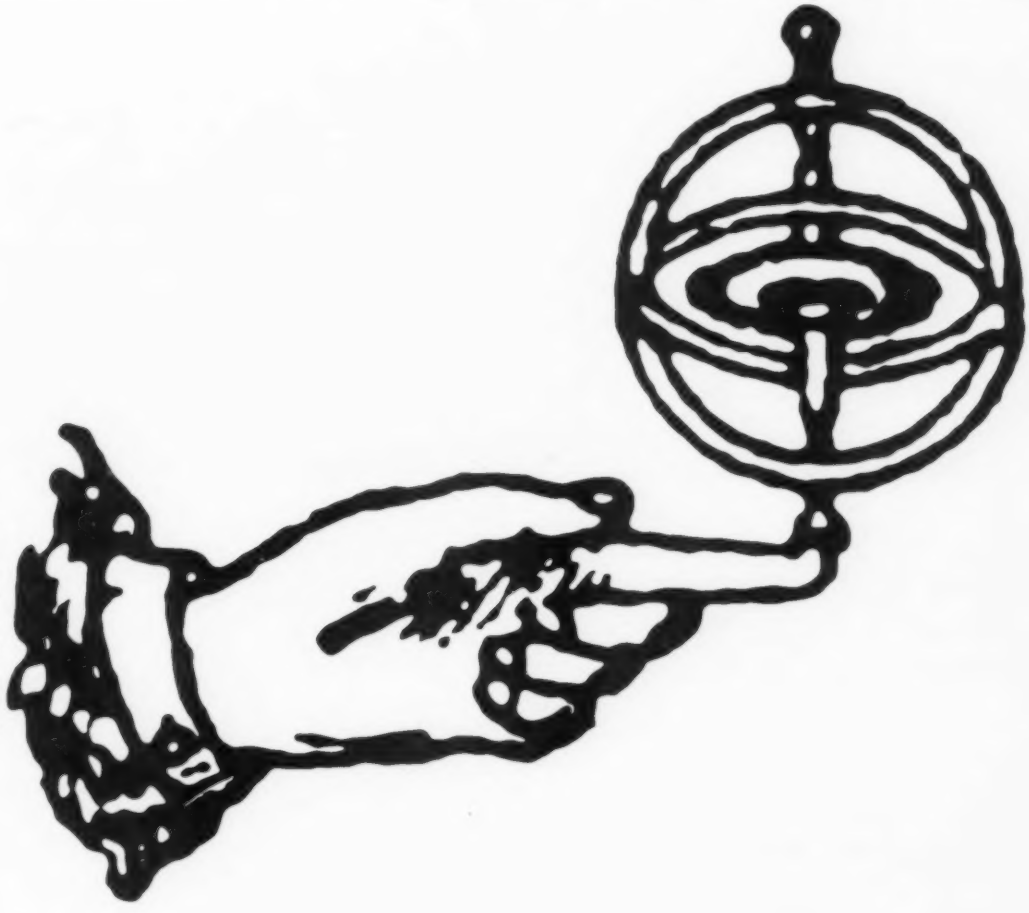
Perhaps its maturity will be hastened by such events as the Koppers Company's Design Competition. The very fact that this year Koppers inaugurated toys as a subject for its annual plastics design competition (to alternate, biennially, with housewares) is interesting. What is more important, perhaps, is the opportunity it affords for responsible criticism; this year, William Goldsmith (the sole designer on the judging panel) noted manufacturers' lack of creative design and reliance on miniature copies.

Meanwhile, the consumer is being educated—to the fact that *children need toys* (the title of an American Toy Institute pamphlet) and to the kinds of toys they need at each age. The Toy Guidance Council carries on such a program, too, and points out safety and construction features. (Design of guns, for instance, involves spring action that ensures a safe speed for projectiles, and barrels that will shoot only the projectile provided.) All this activity seems to have paid off: last year toy sales rose to over 1½ billion dollars.

Toys are "documents of life," as someone has said, and they reveal some of our characteristic preoccupations. Too often, where design is used consciously it aims at visual attraction—and mechanical ingenuity. Texture, weight, and tactile qualities in general are often neglected—or, where sought, the aim in negative: to keep the child from hurting himself. Significantly, while visual and mechanical elements can sometimes be analyzed, sensuous ones elude formulation—yet without them a child's world —or anyone's—is subtly impoverished. Moreover, inaptly used materials can offend a child's sense of logic; flimsy ones can make even a good toy seem trivial. The point is simply this: toys exist to be *handled*, but are often designed merely to be *manipulated*.

If this lack seems all the more curious in an age when educators have seen fit to provide nursery school children with "basic texture kits," it is not the only irony of the toy business. Here, the tendency toward ever-greater realism is countered by toys that are increasingly abstract. The purpose of one—if superrealism has a purpose, and is not merely the carefree application of manufacturing techniques—is to introduce the child to things as they really are; the purpose of the other is to stimulate his imagination. All this is well and good; but if the area in between seems virtually untouched, it may be because we have forgotten that true realism has little to do with replica reproduction, and that abstraction (which implies "from") is not the same as simplification. The recent Eames film on toy trains vividly demonstrates that the kind which seems most real—as "a train" and as "a toy"—is one in which authentic elements are heightened by being abstracted and formalized.

Whatever else a toy may be, it is something to be played with. Whatever its functions, its essential one is what it always was: to delight.



Courtesy Sears, Roebuck & Co.

Photo: Patrick Henry, Berko-Henry studio

The character of the geography . . .
grandeur of landscape, perhaps
even the rarity of mountain air . . .
contributes to freedom of outlook at **ASPEN**

by DON WALLANCE

The staggering range of material covered at the 8th annual International Design Conference, held at Aspen, Colorado, June 22nd to 29th, was related to one major theme: the total man-made environment, and the forces that shape it—for better or worse. As Dr. E. A. Gutkind, architect and planner, put it in his keynote address, the object was "to see things whole . . . to break down the barriers between the arts, between art and life, between individual disciplines," to "look at the world simultaneously through the microscope and the telescope. . . ."

For the industrial designer whose nose has been worn flat by the grindstone of annual model changes and the Big Sell, the conference provided a chance to look up and see, in a broader perspective, the world he is helping to create. If the result was more stimulus than comfort, more questions than answers, this is one of Aspen's uniquely useful functions. For this conference is virtually the only collective effort made by industrial designers, architects, landscape designers, engineers, business men, city planners, painters and sculptors to view their own fields within the total context of art and society. The very geographical location of Aspen and the grandeur of its landscape—perhaps even the rarity of its high-altitude air—contribute to breadth and freedom of outlook. At times the discussions may tend to become diffuse, academic, even—against the year-round background of the "practical" —utopian. Yet this is a risk worth taking for the sake of the stimulation, the insights, the cross-fertilization of ideas. For a designer, nothing is more practical.

The conference was guided by James M. Fitch, acting chairman of the conference executive committee; Garrett Eckbo, chairman of the program committee; and Herbert Pinzke, chairman of the arrangements committee and conference moderator. An active and full program was divided into three major "cycles": 1) Art and Science—the Tools, 2) Man and Nature—Physical Problems, 3) Individual and Community—Social Problems. These general sessions were followed by smaller seminars in which the conferees could question or take issue with the speakers. As might have been expected, it was in these smaller seminar sessions that some of the liveliest, most provocative discussions took place.

Although the speakers—coming from six countries—were strikingly diverse in professional background, outlook, and national origin, they were able to find common ground in several important areas. This common ground gave the rather amorphous subject matter such coherence and unity as it had. The conference was permeated by what might, in a loose and non-dogmatic sense, be termed humanism. For the main focus was not on formalist esthetics, precious hair splitting or commercial expediency, but on *people*, their needs and their aspirations. The importance of seeing things in context—*relationship-mindedness*, rather than *object-mindedness* — underlay all of the discussion. The much-bombarded target was the chaotic anarchy of the man-made outdoor and indoor landscape; the villains were the economic and social forces behind it; the heroes were Dr. Harvey Wheeler's "symbol-makers" and Dr. C. Wright Mills "cultural workmen"—the planners, designers, artists and technicians who are trying to bring order and beauty out of the contemporary banality and confusion. One of the conference high points was Mill's provocative analysis of the forces that frustrate the designer, and his perceptive view of what an unfrustrated designer might be like.

To this writer it seemed that among the most rewarding aspects of Aspen were the informal contacts and the personalities of the conferees. The imagination and affection of the entire conference was captured by 75-year-old Walter E. Packard, an economist and conservationist with the face of Mr. Every-American. Mr. Packard's approach had the democratic freshness, vigor and grass-roots quality of the American intellectual at his best, and the international outlook of a man who has worked all over the world in the interest of human welfare. Packard's discussion of the world's material, social and political problems contained not a word about "design," yet one felt that the basic design problems that *were* discussed might never be solved until the kind of world he envisioned was realized. On the last day of the conference everyone in the big tent rose to his feet in a gesture of tribute to a dedicated human being and youthful spirit.

After exploring ways in which the effectiveness of future conferences might be enhanced, the executive committee and some of the conferees found a strong feeling that subjects should be less generalized and diffuse, and that there should be some means of translating conference talk into action. The result was a decision to devote future conferences to subjects more specific and limited, and to explore them in depth. The 9th conference, to be held in Aspen next year, will deal with communication. It will be called "Between Man and Man." Graphic designer Morton Goldsholl is program chairman. As a means of implementing conference ideas, a proposal was drawn up and read to the conference by Dan Defenbacher, calling for the formation of an international congress of design to bring all design disciplines into one organization concerned with the broad problems common to them all and with promotion the many serious and complex objectives of the International Design Conference.

Don Wallance, shown attending the conference as both participant and reporter, is an industrial designer and the author of Shaping America's Products. *His most recent creation is a cooking and serving ware design for Alcoa's Forecast program.*

When ID originally asked Wallance to write a report on Aspen '58, he begged off on the grounds that he was too busy, though he did agree to jot down a few impressions. He is still too busy, but found so much excitement at Aspen that he wanted to communicate it.

1 All roads lead to City Planning

In a conference devoted to our total man-made environment a good many of the papers and much of the discussion inevitably revolved around the human, social and esthetic problems created by the changing nature of the city and its surrounding regions.

In discussing the future of the city, or, in his view, its lack of a future, Dr. E. A. Gutkind, who is now working at the University of Pennsylvania on an International History of City Development, first traced the evolution of our concepts of space from the static and "geocentric" outlook of ancient times to our present spatial vision derived from the concept of an unbounded expanding universe and the structure of its most elemental components. He then showed how these spatial concepts have affected our thinking in all the "arts."

E. A. Gutkind

A new idea and a new sense of space will emerge which reflect our present concept of the universe on earth: limited, that is the human scale; and unbounded —that is, life conscious of the oneness of the wide world that our planet offers. Out of this new scale, this new oneness and the new social purpose, out of a life within creative communities, a fertile cultural soil will develop and on this creative basis a new unity of the arts, of life and work, of the individual and the general will can grow. The antagonism between city and country will disappear. The whole country is our field of action and living. A new landscape is to be shaped covering the country like a continuous green carpet interrupted by small community units distinct in character, limited in size and each serving a different function.

Dominating the discussion of the current man-made landscape, both city and country, was the single factor most responsible for what it is and what is wrong with it—that most blessed and cursed of modern artifacts, the automobile, and with it its concomitant the highway. At last year's conference Detroit's tail fins became a symbol of esthetic subversion. At this year's conference there was much less preoccupation with the stylistic aberrations of the automobile and much more with its overall impact on human and social life and on the configuration of city and country.

Gordon Stephenson, whose work as a planner has taken him all over the world, in discussing the problems facing both city and country, said:

Gordon Stephenson

The suburbs of today are inanimate and spread thin. The gaudy cars, which a Canadian friend refers to as the "North American folk art", sit in front of each house, the mechanical masters of the suburbs, and the link with the outside world. A car has to be used by the husband to get to work, and as the most uneconomical means of propulsion yet devised it is destroying the center, or heart, of the city-region. It is required by the wife to go to the now standardized shopping center floating in acres of asphalt. It may be necessary to take the children to school by car, for they can easily be marooned on a suburban lot.

In an attempt to accommodate the ubiquitous car most city centers have been mutilated beyond all reason. Often the only spaces are where buildings have been torn down to provide car parks.

Edgardo Contini, Italian-trained engineer and planner, who is partner in charge of engineering design and land planning at Victor Gruen Associates, went on to discuss the impact of the automobile on the structure of the city:

Edgardo Contini

One single factor, more than any other, has been responsible for the physical changes that the American city has undergone in the last two generations. That, of course, is the automobile.

The significance of the automobile toward the development of the suburbs and the horizontal growth of the city into a thin spread of individual residences rather than into dense residential groupings, such as the earlier development of public transportation had encouraged, is generally well understood. By suddenly opening up new areas to a vigorously growing demand, the convenience of the automobile encouraged the speculative development of the suburbs with their capillary road pattern, their insensitivity to natural characteristics, their entity dictated by accident of land ownership.

The significance that the automobile has had on the stability and economic well-being of the urban cores has been much less understood than its influence toward the growth of suburbia. The congestion in the downtown areas, that began to become obvious after the first World War, was made more acute by a whole series of remedial actions which, intending to promote the well-being of the urban core, succeeded only in aggravating its problems. The mathematics of the demands of the automobile are elementary. Their significance has not, until very recently, been accepted as guidance for long-range planning. A passenger on a subway or bus would take approximately one-fifth of the space that he will eventually require as an employee in an office building. The same individual coming by automobile will require, while driving, six to ten times as much space (and his car, when parked, two to four times as much space) as he will require when actively productive.

Similarly, the pedestrian shopper required no more than six square feet to move comfortably about on a city sidewalk, but he requires six hundred square feet when moving about by automobile. Yet, the first remedy for improvement of downtown congestion that was cheerfully undertaken was the elimination of the old-fashioned street-car.

In assessing the American city at mid-century, it thus seems that, in terms of satisfying man's individual needs, its accomplishments have been consistent with the high standard of living that our society has reached. To the individual home dweller, the city provides adequate streets, excellent sewers, ample utilities and enough land to fulfill his primeval urge for a hut all his own (even though his dining room probably overlooks his neighbor's bathroom ten feet away). In terms of man's social potentials, however, the standards of our contemporary city have been indeed a failure. Its suburbs are barren of focal points of communal activity and force the individual to seek recreation either by insensitive viewing of canned entertainment, or by maddened collective rush to the country on weekends. The civic core is deteriorating and—except during working hours—"downtown", the city, is becoming dull and unattractive. Nobody walks downtown on Sundays, and nobody enjoys the potentials that the simple activities of community enjoyment have historically offered in the past, and which, if the opportunities were available, I believe we would still be able to enjoy. Enough symptoms can be detected to confirm this belief: Manhattan (an absolute exception to the typical American city's pattern) on a spring Sunday afternoon bursts with pedestrian activity in its parks, its shopping streets, its public places, and every year millions of Americans spend considerable sums of money to enjoy the privilege of walking on San Marco's square or sitting at a sidewalk cafe in Paris. Even more significant are some of the new suburban shopping centers, where attempts have been made to relate and organize the commercial elements into spaces free from congestion and properly scaled and dimensioned for the human being on foot.

The task of [urban] renewal is one of the great challenges of this country for the next half century. It is the counterpart of the challenge of physical expansion and the widening of frontiers that faced us in the nineteenth century, and the counterpart of the challenge of mass productivity that has characterized the first half of this century.

Continuing the discussion of the automobile as the dominant factor in shaping the new landscape, Christopher Tunnard, planning consultant and Director of the Graduate Program in City Planning at Yale, which is making a special study of the roadscape, addressed himself to the role of the highway and its design.

Christopher Tunnard

Let us try to put the highway into its context—the community of inhabited space. After that we can discuss improvements in the road itself—the "paved ribbon"—and the ways in which it can be used to create a better life.

Recent decades have witnessed the emergence of a radically new pattern of human settlement in America. Older, high-density urban places are being encircled by areas of low-density urban use, which cover vast amounts of space and merge into one another. At Yale, where we have been making a study of these new patterns, we call them "urban regions".

These rapidly growing areas differ from the old suburbs in many ways, one of them being that they are not compact in their physical form, but scattered. Another is that their economic and social activities are oriented toward several regional centers at once. This means that in teaching of city planning nowadays we make very little distinction between the city proper and outlying places. The former is merely a denser and more specialized area of the total complex.

This new way of living (urban-oriented dwellings in semi-rural landscapes) has been made possible by a number of technological and psychological factors. Among the technological factors the automobile is foremost. It provides a new freedom of movement, but requires space for storage at origin and destination, and space for movement at high speeds.

Moreover, the new scale of the urban landscape has posed countless unprecedented problems of design. Many new physical features have arisen: the limited access highway, the shopping center with its car deserts, the motel, the drive-in, the roadside eating place, the industrial "park", the bus or truck terminal, the heliport, the marina. Many of these fill a given demand in a rather makeshift and opportunistic way, and have failed to achieve sufficient form. Gravel pits, cinder-block walls, billboards, and junkyards litter the landscape, causing editors to cry "outrage!" and Senators to view with alarm.

You will notice that all these features of man-made America, acceptable or outrageous, depend upon the highway for their continued existence. However, recognition that the roadscape is a design element of great esthetic importance has not yet been accorded in America.

The millions of highway users and the inhabitants of communities through which the highways pass have not received anything more than a *facility*,—at best, a well-engineered and landscaped right-of-way; at worst, a wedge driven into the community fabric, disruptive of human occupations and wildlife, of all visual and aural pleasure.

There are several esthetic principles to consider here. Very few realize, for instance, that a road can have a life of its own. The visual impact of the ribbon on the driver (whose cone of vision and relatively high speed limits his view to the highway and only a little more, with a concentration on the farthest distance—) is likely to be constant and all-consuming. The ribbon is the strongest single element in the roadscape. Yet the coordination of vertical and horizontal alignment, the elimination of abrupt transition between curves and the tangents, or the effect of different types of curves on the continuity of the paved space has received very little attention here. Esthetic studies of this nature were made by German highway planners during the thirties and are just now being rediscovered and carried further.

If the esthetic impact of the ribbon itself has been neglected, its relationship to the landscape is usually unimaginative or hampered by economy factors.

This brings us to man-made objects in the roadscape. The visibility and design of bridge railings, guard rails, underpasses, pavement and markings and directional signs as they affect the motorist are most important and can interrupt the continuity of space disastrously. The set-back of a factory from the highway can make all the difference between viewing it with interest, or as an obstruction.

We need a new type of professional to introduce these elements into the American landscape. The highway engineers are aware of this and I have recently been approached by a group to find out if there is a possibility of training them with city and regional planners in order to "bridge the gap" in their knowledge of

large-scale planning design. But what we have to do is to establish *design principles* rather than create a new type of designer.

When we do, a region which is defined by large scale elements such as highways and state-parks will be a region of identity rather than of sprawl.

In this new landscape the highway will no longer be a snake image, but a river symbol, draining the land in its logical watershed areas of habitation and production. It will be freed of encumbrances to its proper functioning and in turn will not violate other human uses of the terrain.

The care and appreciation of man-made objects which characterized the age of the craftsman must have its counterpart in our own era of the machine, with its mass production of all useful things, including, for the first time, human habitation. We must demonstrate the limitless possibilities and satisfactions to be gained from treating the American roadscape with respect and imagination and educate public sensitivity to a man-made environment which is in harmony with the great American dream.

2 Esthetic Experience in the Affluent Society

Hin Bredendieck, head of industrial design at Georgia Institute of Technology, expressed the view that the modern designer's approach to esthetics is usually a confusion of subjective criteria which subvert and prevent the development of a scientific methodology of design.

Hin Bredendieck

The majority of us still continue the age-old striving toward, or longing after, "beauty" and "harmony" in our environment. For the most part, the goal is vaguely defined, with few individuals able to agree on its constituents. Most of us will agree that the area of "esthetics" today seems to be little more than an intellectual free-for-all, yet we continue to use the old terms and follow the old thought patterns, often with a vague, though sometimes acute, feeling of uneasiness regarding their appropriateness for our times.

There are those who assume that because the methodology of the past cannot be successfully applied to our present problems, therefore *all* methodology should be regarded with suspicion if not rejected altogether.

A pretentious concern with "beauty" and "harmony" is insufficient, nor is it enough to concentrate solely on the designing of "one more object." We must cultivate a more comprehensive outlook and work toward ways and means of bringing about the realization of an environment where beauty is more than "skin deep." Too often we have created beauty-spots, and, soon becoming weary of them, we have had them done over or have left them standing as a reminder of the transitory nature of "taste." In this haphazard manner we cannot hope to raise the level of the total environment.

If an historic analogy is in place, we might compare today's designer with the alchemist of the early stages of chemistry, for we too somewhat arbitrarily decide on the forms and shapes we give objects—put the ingredients together, and then wait to see what will happen. But our days of alchemistic behavior are near an end, and soon practitioners in the field will need more than a vague terminology and the bold strokes of a soft pencil.

Design today carries with it a social responsibility which was previously a minor factor. Such large-scale responsibility immediately takes designing off the "personalized" level and puts it on a new plane demanding an integrated approach. This new approach in no way implies a negation of the "individual," but rather suggests a change in emphasis, and will actually serve to free the creative potentialities of the individual to a degree never before thought possible.

The slow development in the design field can to some degree be accounted for by the fact that it is one of the most comprehensive professions which exists. Practitioners in the field deal with the complex problem of relating a wide variety of objects to the consumer, not only with regard to the development of a product for utilization, but with the adaptation of that object to a constantly changing, intangible group. Within this perpetually transforming sphere, the designer deals with materials, processes, problems of distribution, and the behavior of man in his changing environment. Perhaps in no other field is a comprehensive methodology so urgently needed and so clearly indispensable to further progress.

Aspen '58

The conference brought together designers representing countries of widely divergent economic wealth and living standards. It was a sobering experience for American designers to be confronted with some of the design problems of less highly developed countries. The difference in outlook between designers concerned with what James M. Fitch called the "esthetics of plenty" and those concerned with the esthetics of scarcity became increasingly apparent as the conference progressed. In summarizing the esthetic problems peculiar to our time in general, but to the special condition of America in particular, Fitch said:

James M. Fitch

The stylistic distance between the sterile geometry of the new Seagram Building in New York and the absurd vulgarity of this year's Buick is a measure of the crisis in American design today. It would be hard to find another period in all history which presented such esthetic antitheses. For these two objects do not even belong to the same spectrum of design.

And between these poles, with no more apparent relation to each other than the constellations of the Milky Way, lie all the other artistic phenomena with which our landscape is cluttered—Tiffany glass and abstract-expressionist painting, wagon-wheel chandeliers and molded plastic chairs, Italian shoes and Danish furniture, Japanese screens and African sculpture, push-button electronic ranges and open-pit charcoal braziers.

One increasingly popular explanation for this parlous state of affairs is simply that of our wealth: our design is flabby because we are too rich. The corollary of this thesis is that our design would improve if we were poorer: art thrives only in a garret; artistic creativity requires the astringency of poverty. All this has a fine, mellow ring, but history, unfortunately, gives it no support. High levels of artistic accomplishment occur only in wealthy cultures. Far from being the enemy of artistic productivity, social wealth seems to be its indispensable base. But this proposition cannot be read backwards; great social wealth is no *guarantee* of great art. If it were, we would not face our current dilemma.

Perhaps we should phrase the question this way: if great wealth produced great art in Fifth-Century Athens, among the Ninth-Century Mayans, or in Fifteenth-Century Florence, why not in Twentieth-Century Detroit? Could it be that our problem is not wealth but the *conditions under which it is applied* to artistic production? Only consider:

1. Industrial civilization, through mass production, has robbed all of us of first-hand knowledge of how any object is made or how it works. It has correspondingly crippled our ability to evaluate critically the object's practical or esthetic values. It has made the citizen into an ignorant consumer, the designer into a powerless, isolated specialist.
2. We have, at the same time, been given a more imperious command of tools for making things and more new materials out of which to make them than Pharaonic Egypt, Augustan Rome, or Victorian London ever dreamt of.
3. Pre-industrial limits of time and space have been destroyed. We are exposed to the stimuli of the art and artifacts of all times and places. Into our unready laps is hurled a torrent of dazzling images and objects, ranging the whole world and the whole product of human history and pre-history.

Any one of these developments, taken by itself, would have an unsettling effect on the esthetic equilibruim of a culture: together, their impact threatens disaster.

To diagnose the source of our present dilemma in design is, unfortunately, much easier than to prescribe the cure. The accomplishments of our industrial civilization are too real and too profound to relinquish. In the light of modern scientific knowledge, it is clear that the independent artisan cannot adequately feed and clothe and house the world: he cannot now and never could. We cannot very well outlaw new materials or proscribe new techniques: penicillin and space ships are not produced by peasants. Least of all can we license museums or censor art, since these are among the noblest accomplishments of our culture.

It is, apparently, ourselves that we must change. And to accomplish this, we must educate ourselves so much more profoundly than we presently do that the imagination boggles at the task. It is quite beyond the capacities of this writer to attempt the definition of what this new educational process might be: but where design is concerned a few things are already clear. In a world of increasing specialization, where working hours are more and more devoted to the narrow and special, the rest of life must be devoted to mastering the broad and general.

The deep but limited wisdom which comes from first-hand experience must be supplemented by first-rate theoretical understanding. And if industrialism has ruptured the traditional relationships between artist and audience, artisan and consumer, specialist and layman—then new relations must be evolved.

In discussing the materials of the designer, Don Wallance addressed himself to the problems of design posed by the wealth and diversity of materials and technical resources available to American designers:

Don Wallance

We have an unprecedented variety and abundance of materials and technical means with which to achieve the social and human ends of design. But this wealth and diversity of means has of itself created problems as well as possibilities for design. Diversity and abundance can mean freedom of choice and expression. But it can also mean "misery of choice" and chaos.

The great challenge to design today is to learn how to use the new synthetic materials which increasingly dominate our environment, in ways that are compatible with human needs. If we put the problem in its extreme form and ask ourselves whether a physical environment composed exclusively of synthetic materials—metal, concrete, plastics, glass——can provide a completely satisfactory setting for the human body and spirit, most of us would probably have a very mixed or possibly negative reaction. But this, of course, is a hypothetical and academic question. So far as I am aware, no one outside the pages of science fiction has ever lived in a totally synthetic environment. Moreover, wood, stone, clay and natural fibers are still around and will continue to be used, even in advanced industrial countries, for as far ahead as we can see. They continue to satisfy a deep human need for contact with materials or things that are of the earth. More than that they satisfy a need for something in our environment that has a dimension in *time*. Wood and stone, whose variations and subtleties of texture, pattern and color derive from eons of development satisfy this need. What then if we put the question in its other extreme? Would an environment composed exclusively of natural materials prove completely satisfactory? This alternative, at least so far as I am concerned, is just as disturbing. The newer artificial materials have already become a constituent part of our experience.

The real problem is the esthetic assimilation of a great diversity of materials within a total context. More than ever before varied and diverse materials are used in combination with each other and we must think of these materials in terms of their relationship to each other, to people and to the setting in which they are placed. As the synthetic materials increasingly dominate our environment, the natural setting in which they are placed will assume greater importance in the total scheme. The crispness, sparkle and regularity of the artificial intensifies the impact of the continually varying aspects of foliage, hill and sky. To me the essential character of an environment for modern man is a counterpoint of stimulus and serenity. I work with metals and plastics for machine production, but I find it important to do this work in the country.

The ways in which we join materials and thereby articulate and express structure whether in a coat, a chair or a bridge—or, conversely, form them to create continuity and jointlessness, are at the heart of the effective use of materials. As every designer, architect and engineer knows, it is in solving the problems of joinery and articulation that his resourcefulness is tested and the way these problems are solved largely determines the structural and esthetic integrity of the result.

In pre-industrial times, when wood was the predominant material, a woodworker was called a joiner. But joining as exemplified in the Windsor chair or the mortised and tenoned wood frame house evolved into a standardized procedure within an established tradition which placed a premium on the skill but not the inventiveness of the joiner. With today's diversity of materials and the fluid, heterogeneous nature of design each problem is a fresh one that must be solved from scratch. Such examples of modern joinery as the geodesic dome or the Eames chair represent an enormous amount of research and invention which are crucial to the total structural and formal concept. Paper design is of little help. Complete technical involvement by the designer is essential.

The use of texture in the surface treatment of materials, and of the tactile sense in design, offers new possibilities for a richer and more varied expression in the use of materials. We tend to be so visually directed in our outlook that design considerations which are not purely or even predominantly visual in nature tend to be overlooked or subordinated. Granting the primacy of the eye in our sensory experience we nevertheless react to our surroundings with all our senses. Next to vision the most important of the senses from the standpoint of the designer is the sense of touch.

While we recognize, at least in principle, the importance of tactile considerations in the choice, shaping and surface treatment of materials for products whose nature subjects them to handling and personal contact, in actual practice tactile considerations rarely receive more than cursory attention. It is easier to sell things on the basis of how they look than how they feel or work, though the latter may be more important for long term use and satisfaction. It has been my experience, however, that if an object not only feels right but also *looks* as though it feels right, people respond to it. This points up another aspect of texture. The tactile sense is not limited solely to cutaneous experience. We experience the "feel" of things vicariously through the eye as well as the hand, and all visual experience has a tactile component. Perhaps, the psychologists have a word for this. If not we can improvise a word like "tacthetic" to describe visually transferred tactile perception as a component of esthetic experience.

3 Technology and Tradition, a Problem in Values

The question of Regionalism versus Internationalism or Cosmopolitanism was much discussed and was the main concern of Mexican architect Alberto T. Arai.

Alberto T. Arai

In primitive regions, human groups are distinguished by their environment, their anthropological characteristics, and their cultural and spiritual creations. A generalized cultural pattern occurs where different peoples come into contact with one another. This principle of uniformity governs our modern large cities, which are mostly cosmopolitan, but what can we expect from the future?

At the moment when this generalizing principle threatens to destroy the intimate personality of a community and of the individuals which form it, the process ceases to be beneficent and becomes negative, because it attacks the individual liberty and dignity of everyone. Since the highest attributes of man are individual and collective liberty, and self-determination in both an outward and an inward sense, we must in future balance the standardizing tendency of humanity with the principle which keeps alive regional characteristics, both inward and outward. There should be neither primitive regional isolation nor deadly cosmopolitan standardization, but rather different degrees of integration, one with the other, according to the peculiar character of each people, and of each way of life. And this inter-regionalism is, after all, true internationalism.

While American designers at the conference spoke from the vantage point of an affluent society whose problems are in some ways the problems of uncontrolled wealth, those from countries like Japan, Mexico and Poland, which lack our fabulous technology and high living standard, were primarily concerned with the problems arising out of the transition from a traditional and local culture to that of a modern industrial society. Their concern was with the esthetics of scarcity rather than the esthetics of plenty. Designers and planners from these countries are obsessed with the problems of utilizing modern technology to raise the living standards of their people without destroying their heritage of cultural and human values in the process. This problem was the main concern of Ken Ichiura, Japanese architect who is on a world-wide tour of inquiry which will take him through the U. S., Mexico, and the Soviet Union.

Ken Ichiura

The living style of the average Japanese has undergone great and rapid changes in recent years, and has tended to acquire more and more of an international character. This tendency has been further accelerated by the great progress made in engineering. Because democracy did not exist in old Japan, there was no collective living pattern. Consequently, understanding of the problems of com-

munity living, where common facilities are jointly used, was at a very low level.

In Japan today, architects design on the one hand costly, traditionally Japanese buildings, such as houses and restaurants, either to show them off to visitors from abroad, or in order to create luxurious atmospheres. On the other hand, they also design tasteless apartment houses. In spite of the fact that the large houses and restaurants are located near the centers of cities, success has been attained in blending the buildings with nature through the use of artificial methods in landscaping. These buildings are made of wood, and are one or two stories high. Engineering techniques, such as air-conditioning, are also cleverly and inconspicuously incorporated into these buildings. Most of the apartment houses for the general working class are being built on level terrain acquired by the purchase of farm land in suburban districts. These locations are generally over an hour's ride on high-speed transit lines from the more costly city centers. Saplings are planted at these locations on graded or level land, but children, in playing among them, do not let the young trees live for very long. The apartment houses are constructed of reinforced concrete and are four stories high. In large cities, modern office buildings go up one after another. Schools, hospitals, and other public buildings are being modernized. But in newly developed districts, the pavement of roads has not kept pace with building construction, and shopping facilities, as well as educational facilities, are inadequate. It would seem that our city planning and our rural development indicate a new trend, the trend being the sacrifice and destruction of our natural surroundings. The reason for this is the pressure of our excessively high population. In the architecture of individual dwellings, it can be said that in dealing with new architectural styles we are still at a loss as to how to attain the intimacy, attained by our ancestors, between architecture and the other arts.

As the conference progressed the gulf between the desirable and the realizable, between problems and solutions, questions and answers, ideal and practice, remained wide and unbridged. The conflicts and frustrations of the designer who seeks meaningful and intrinsic solutions in his daily work, the problem of compromise and the extent to which the designer must accept social and economic limitations or attempt to transcend them, came up again and again and caused some of the sharpest discussion of the conference. In the final talk of the general panel sessions Dr. C. Wright Mills of White Collar *and* The Power Elite, *brought the discussion to a highly provocative climax in a brilliantly presented analysis of the social and economic forces that underly the frustrations of the designer.*

● *Editor's note: Mr. Mills' speech proved so pertinent to design problems today that ID will publish in November a longer excerpt from it than would be possible in the abbreviated format of this report.*

ASPEN PANELISTS

E. A. Gutkind, *urbanist, University of Pennsylvania*
Hin Bredendieck, *designer, Georgia Institute of Technology*
Claire Falkenstein, *sculptor, France and Italy*
Romaldo Giurgola, *architect, University of Pennsylvania*
Alberto Arai, *architect, Mexico City*
Henry Hill, *architect, San Francisco*
Edward Williams, *landscape architect, San Francisco*
Robert Gwathmey, *painter, New York City*
Walter Packard, *conservationist, Berkeley*
Gordon Stephenson *architect, University of Toronto*
Edgardo Contini, *engineer, Los Angeles*
Christopher Tunnard, *planner, Yale University*
C. Wright Mills, *sociologist, Columbia University*
Harvey Wheeler, *sociologist, Washington and Lee University*
Tadeusz P. Szafer, *architect, Warsaw*
Ken Ichiura, *architect, Tokyo*
Don Wallance, *industrial designer, New York*
Garrett Eckbo, *landscape architect, San Francisco*
Morton Goldsholl, *designer, Chicago*

ELECTROLUMINESCENCE

From the physicists' research laboratories a new lighting technology is now emerging that may, in time, take its place along with light sources now in use. At the moment, it has created a new product group: thin materials that glow.

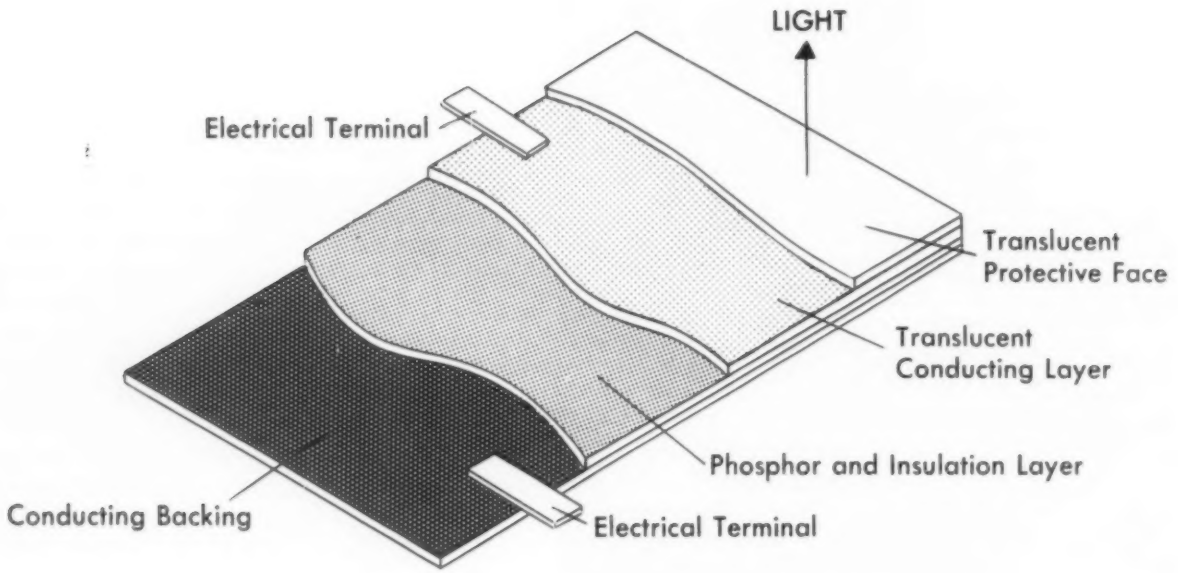
by ARTHUR GREGOR

About two years ago, scientists of the Westinghouse Research Laboratory rigged up a series of flat glass panels 1/8" thick, and threw a switch. The result was a *greenish, glareless* glow. The light that illuminated the room differed radically from the conventional: *no shadows were cast; the entire surface of the panels glowed evenly;* there were no filaments like those in incandescent bulbs; no gas as in fluorescent lights. The reason for this presentation was to demonstrate the scientists' findings in a new lighting technology in which they and physicists of other companies (Sylvania, RCA, GE) had conducted experiments for some years. Sylvania, in fact, gave a similar presentation as early as 1951. Since the theory upon which the new light effect is based combines phosphor luminescence with electrical excitation, the technology is called *electroluminescence.*

When this new light source is sufficiently developed to provide office and home illumination at reasonable costs, it will revolutionize the entire field of artificial lighting. The glowing panels have a life-span unmatched by conventional lighting; they can be made not only on glass but on a metal or plastic base, and as such are virtually unbreakable; they can be made in any size or shape and can glow in a variety of colors; the light intensity can be adjusted by turning a knob similar to any volume control. While all these features have been demonstrated in laboratories, it will take a period of years to make the new light source competitive with the now existing lighting methods. Then why discuss it today? Because the theory has reached a stage of evolution at which it is coming out of the laboratory: low brightness panels are in use to illuminate signs, dials.

Economy and comfort are the two factors that must obviously be weighed when a new light source is evaluated against methods now in use. Putting the economy factor aside for the moment, the advantages the new light source contribute to comfort were summarized by Mr. O. Howard Biggs, vice president, engineering, Sylvania's lighting products division:

"The glareless, uniform diffusion of the new light is one of its most appealing features. Evenly distributed illumination has always been a goal of the lighting industry. Both the incandescent bulb and the fluorescent tube need shades, louvers and other fixtures to cut the glare and spread the light. With either type, we burn much more light than we need, wasting a lot of it for the sake of comfort and appearance. Now for the first time we have an *area* lamp, with light spread out like



The electroluminescent lamp is not a lamp in the ordinary sense. It is a panel usually less than 1/50" thick, and can be made in any size or shape. The elements needed to make the panel glow are shown above. For light emission, materials on top of glowing phosphors must be translucent or transparent.

the light from the sky."

The uniformity of light distribution which makes the effect of this new light so different from the familiar glow of incandescent and fluorescent sources, lies in the construction of the electroluminescent lamp—unlike the bulb and the tube now in use, the electroluminescent "lamp" is a panel, a very thin sheet of electrically conductive surfaces in which a very thin layer of phosphor is embedded (see above). When the two conductive plates are put in an ac electric field, the phosphor particles are excited and a glow shines evenly across the total surface of the panel.

The application of the new light in its present state of development is limited by one major factor: brightness. Companies that have set up production lines to turn the even light into a marketable product are able to produce panels that can operate at a light intensity of 30 footlamberts (1 footlambert equals a light strength of 1 lumen per square foot) but most panels produced so far operate at just a few footlamberts. This is very low considering that the light intensity of a white 40 watt fluorescent lamp is 1900 footlamberts. It is clear from this that the practical side of this new technology is not nearly advanced enough to regard it as a replacement for conventional lighting methods. But—as indicated by the Westinghouse experiment in which the light strength was equivalent to five 40 watt fluorescent lamps—the new light *can* be operated at a brightness sufficient for room illumination.

The lighting industry regarded the new development with caution for some time, but is gradually becoming convinced of its potential. The industry is aware that big things are in the future for electroluminescence; such revolutionary innovations as luminous drapery, changing patterns that glow, a panel as thin as paper and as flexible as cloth, have been predicted. In the meantime some very practical applications have been found that make use of the glareless light in its present low-brightness limitation. For the past five years, Sylvania has been manufacturing and marketing the lamp for section lighting on consumer, industrial and transportation products (page 91). RCA has applied the principle of electroluminescence to a new fluoroscopic screen and has achieved good results (page 90), and, on an experimental basis, Sylvania has used the principle for the development of an image-producing panel (page 93), a forerunner of a flat screen for tv. For the designer, the new panel as it is now marketed means a new component for product design (page 91); for the architect and decorator it will mean reorienting his concept about lighting, for—whatever its limitations at the moment—electroluminescence is a new lighting theory. Because it is a theory of enormous potential, and because it has by now created a new product category, we are discussing its operation, panel make-up, current and future uses on the following pages.

What is electroluminescence?

The glareless light of electroluminescent lighting is achieved by applying electricity to excite phosphors to luminescence—a process in which a material gives off light or radiation. A number of different outside sources can be used to effect phosphor excitation. In a fluorescent lamp phosphor is excited to luminescence by ultraviolet rays produced in the tube by a gas discharge; in a fluoroscopic screen it is excited by X-rays; in a cathode-ray tube by a beam of high speed electrons. Far simpler than any of these activations is the excitation by which the electroluminescent panel glows.

The first successful electrical "firing" of phosphors was made in France by M. Georges Destriau in 1936. The "Destriau effect" consisted of phosphor particles embedded in an electrical insulator to which an intense alternating electric field was applied. Under this excitation, the particles became luminescent. The light intensity was very low, but an even, green glow was discernible in a darkened room, and the effect, as well as the structure, became the forerunner of the electroluminescent panel now on the market.

A solid-state device

Ruggedness and long life are characteristics of the new panel since its action takes place not in moving parts —filaments for example—but in a solid. The action ability of all solid-state devices (transistors, diodes, crystal filters, etc.) depends upon the reaction of solids to external influences, and the action occurs within the solid itself. This accounts for the remarkable durability of the transistor as compared to the electron tube which it replaces. The transistor consists of a tiny wafer of solid silicon or germanium; this does away with the installed parts of the tube (plates, grids) exposed to wear and breakdown. Similarly, the electroluminescent panel obsoletes the moving parts of the conventional light sources (filaments, sockets, etc.) ; all essential elements are combined in a compact, solid panel, generally less than 1/50 of an inch thick.

The panel structure

Four basic elements make up the new lamp (opposite) : conducting backing; phosphor and insulation layer; translucent conducting layer and protective face (these can be transparent). The first electrical conducting layer to which the input power is fed is applied to a base to give the lamp mechanical strength and physical rigidity. The material used for the base varies. Currently marketed lamps have a glass base (Westinghouse products), or an enameling steel plate (on Sylvania products). A ceramic mixture is used to insulate the phosphor from the conductive layers. The protective layer as well as the second conductive layer must be translucent or transparent to allow the glow to be emitted. Electrical terminals are attached to both conductive layers for supply input. Most panels now in use

Aim of continued experimentation is to improve level of brightness by finding the proper materials and best cell structure. At GE an ultra-dry box (below) is used to conduct life tests on cells.

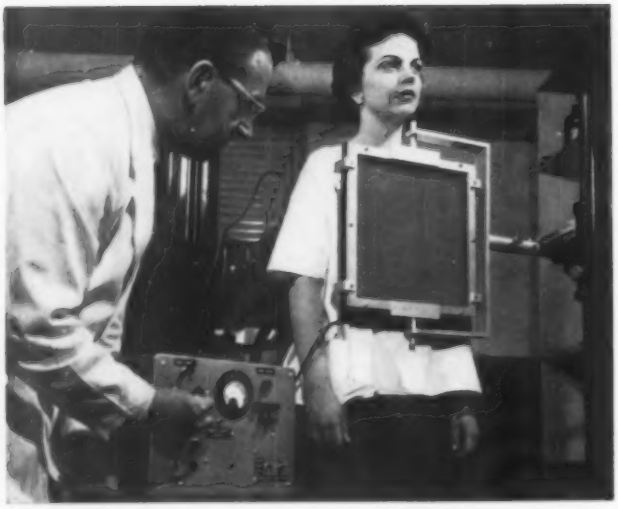
operate from a 115v 60 cps source, and can be plugged into the supply outlet directly. It is advisable, however, to protect the lamp with a current limiting device—a resistor—to damp out any transients that may occur.

Brightness and electrical power supply

The brightness of the electroluminescent panel is determined by the two "ingredients" that make the lamp glow: the chemical combination of the phosphors and the strength (voltage and/or frequency) of the power supply. Most experiments in this new lighting technology aim for the chemical combination that will give the highest luminosity per a given power input. When Sylvania marketed the first products in electroluminescence a few years ago, the brightness of the panels was many times below the intensity now obtainable with the same power input (ordinary ac line voltage). The increased light output is primarily the result of adjustments in the combination of phosphors.

The color in which light is given off from the panels also depends upon the chemical substances in the phosphor. The panels can be designed to glow in either green, blue, yellow, red or white. With the proper ingredients, zinc sulfides will produce green, blue or yellow; selenites yield red, and for white a mixture of both is necessary. But the luminescent strength for the different colors varies according to the phosphor combination. A change of electrical supply frequency will affect the color of the light; an increase in brightness is obtained when the input voltage and/or the frequency are boosted. For example, a green-light Sylvania panel operated at line voltage and a light intensity of .5 footlambert, will give 8 footlamberts with a 600 volt, 60 cps supply, and 25 footlamberts with a 600 volt, 400 cps supply. Although it is possible to increase the power input without damage to the lamp, certain precautions must be built into the lamp to prevent breakdown should such a wide operating range be desirable.

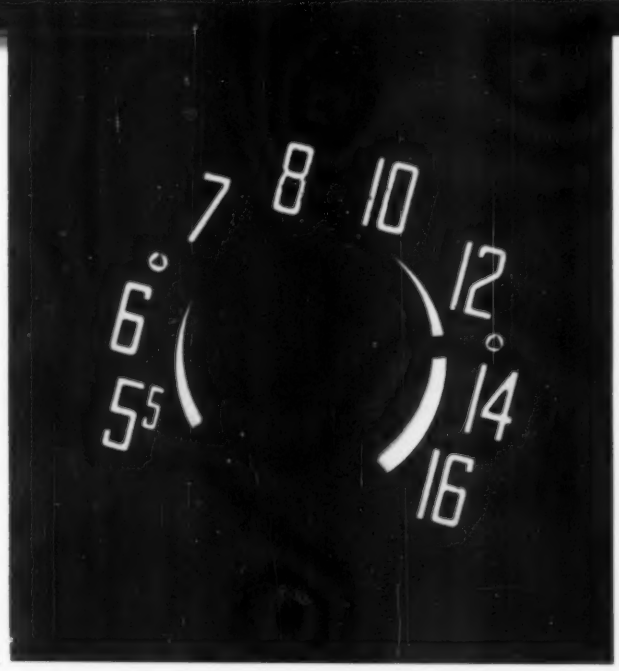
The application of the new panels to a large scope of lighting purposes is, consequently, curtailed at this point by the types of available phosphors and the standard ac home supply. It is, of course, possible to increase the available voltage by using a transformer and to get a higher frequency output by using a frequency generator. But, as it stands now, a high brightness is only possible for such special applications where the expense of this additional equipment would be justified.



Electroluminescence applied to fluoroscopy results in increased light amplification of image, which means patients are exposed to less radiation. The new amplifier for X-ray viewing (above) is being developed by Radio Corporation of America.

Current product applications

Product engineers and the sales force of some of the companies active in electroluminescent research have taken the marketable aspects of the new science out of the laboratory, and have turned them into a new product category. Sylvania has marketed the lamp as a new design component (the Sylvania tradename for them is Panelescent lamps) that can add both decorative and



1

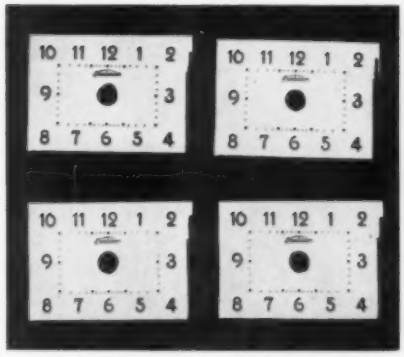
1 Numerals of car-radio dial give off greenish glow generated by electroluminescent panel. Sylvania product is now used in cars.

2 The new light panels are used to demonstrate illumination of street sign at Sylvania's Salem, Mass. plant. Note even glow of light compared with concentric effect of car headlights.

3 Sylvania's electroluminescent clock-dials (for Sunbeam) under test after production. Entire panel glows, numbers are mat.

4 Electroluminescent panels are now in use as safelights in darkroom. Glow is bright enough for viewing newly developed prints. Panel shown here is Sylvania product.

2



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4

functional appeal to new models of a variety of appliances. The flat lamps give off a glow bright enough to illuminate indicator dials of aircraft and automotive instruments, clocks, radios, thermometers. The lamps can be used to illuminate the numbers only (car-radio dial on top of page), or as lit areas on which numbers or letters are printed (clock dials, center picture above). The panels are also in use to illuminate house numbers, wall switch plates, street signs, exit signs, and safelights (a glowing panel in the wall of a darkroom is seen at right, above.) About a half million Panelescent lamps are now actually in use with these and similar products. General Telephone Corp. has ordered Panelescent lamps to light up telephone dials, and on the basis of current orders, the industry predicts that some of the 1960 car models will have electroluminescent panels on their dashboards. Westinghouse has also begun to market its product, the Rayescent lamp, for similar applications.

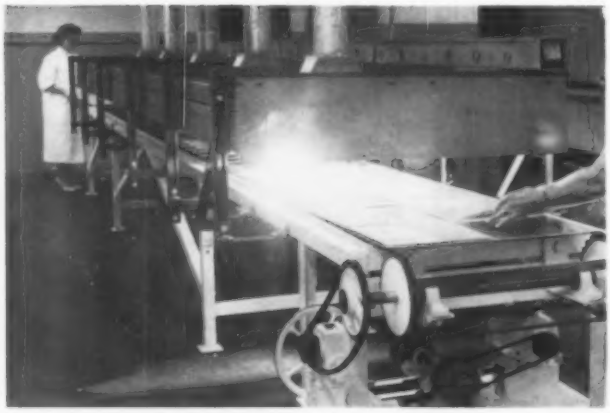
All lamps used in this low brightness category are fed power from an ordinary ac outlet. But in those uses where ac is not available—on cars, for example—a transistorized converter, small and inexpensive, is installed between the dc battery supply and the lamp.

The manufacturing method for the new light product indicates that the market for them can be increased vastly within their light-output limits. The shape of the lamp can be formed according to customer specifications (in the case of the Panelescent lamp the enameling steel plate is punched out according to the desired shape), and although there are some size limits at the moment (7 x 14 in. for Panelescent and 24 x 24 in. for Rayescent lamps) these could be extended easily should larger sizes be requested. "Building up" the lamp itself is a very simple process (see following page) and consists largely of spraying and baking the coating and masking out those areas of the lamp that are to be lit up. Electroluminescent panels can be turned out on a mass production basis even at this early stage; Sylvania is handling a few thousand per day.

Electroluminescence in future

The future of the new light source will be determined by the development of suitable materials that will give high brightness at standard light costs. When these are found, application of electroluminescence for home and office lighting will have two unique characteristics: a light approximating daylight in uniformity, with adjustable brightness; and a considerable saving in wall space. A depth of 14" is required for recessed fluorescent lamps; this would be thinned down to less than 1" for electroluminescent panels. It will be possible to have glowing walls and ceiling in sections, corners, strips, circles, etc. (see picture, page 93), and there will be virtually no limit to the lighting effects possible.

Crux of electroluminescent lamp — phosphor layer — is no knotty problem in production process. At Sylvania's "Panelescent" lamps production line, layer is applied with spray gun before baking.



Following application of lamp construction layers, materials are baked to adhere to lamp. At Westinghouse's "Rayescent" lamps production line, lamps are passed through automatic drying oven (above) and are baked after having been coated with a mixture of phosphor and lacquer.

Since it is not necessary to cut the glare, louvers, shades and other fixtures will be eliminated, and practically no maintenance will be required. Where there is no danger of shattering (on ships, for example) metal panels can be used, and the unbreakability, coupled with the very long life-span of the lamps, will make the need for lamp replacement very rare if not altogether obsolete. Under those conditions, lighting will become as integral a part of architecture as walls and ceilings are now.

The product potential of the new light source will also increase when panel bases other than the metal and glass now in use are developed for commercial applications. Westinghouse has been experimenting with a steel-mesh base which would permit shaping the lamps into such forms as cones and cylinders (page 87). This would mean that shapes looking like lamp shades would themselves be lamps. Westinghouse has also developed a flexible lamp using a nylon base (opposite, upper left) which could be used for decorative purposes much as any material is used now: drapery, wall hangings, even wallpaper that will glow in patterns.

Other developments coming from the electroluminescence laboratory include the use of thin panels for industrial applications where direct lighting (on a part being machined, for example) enhances workability (opposite, lower left), and the electroluminescent digital indicator (opposite, upper right.) This device is actually ready for commercial production. With the proper switching arrangement the device can flash digits and letters which are formed by energizing those phosphor strips needed for a desired number or letters.

Work has also been done to make use of the electroluminescent principle for light amplification, and image projection. In RCA's new fluoroscopic screen (page 90) a dim image thrown on the back of an electroluminescent panel is converted into a much brighter picture on the screen; this means that much less radiation is needed for the image brightness now used in fluoroscopy, a situation less harmful to the patient. Sylvania's Sylvatron (opposite, lower right) is also an electroluminescent image-reproducing panel that may be the long-hoped-for cathode-ray tube replacement for a flat screen tv. Now able to convert electric data into dots of light, the Sylvatron may eventually be capable of receiving televised images which the phosphors—changing with electrical impulses — would reproduce.

Judging from the varied uses of the new panels produced by now, and from the commercial possibilities of electroluminescent applications already operative in the laboratories, it appears certain that electroluminescence is a term designers have reason to remember.

Westinghouse has developed this flexible electroluminescent lamp, made with a flexible plastic base. Bent into different shapes as if it were cloth, lighted "Rayescent" lamp is demonstrated above.

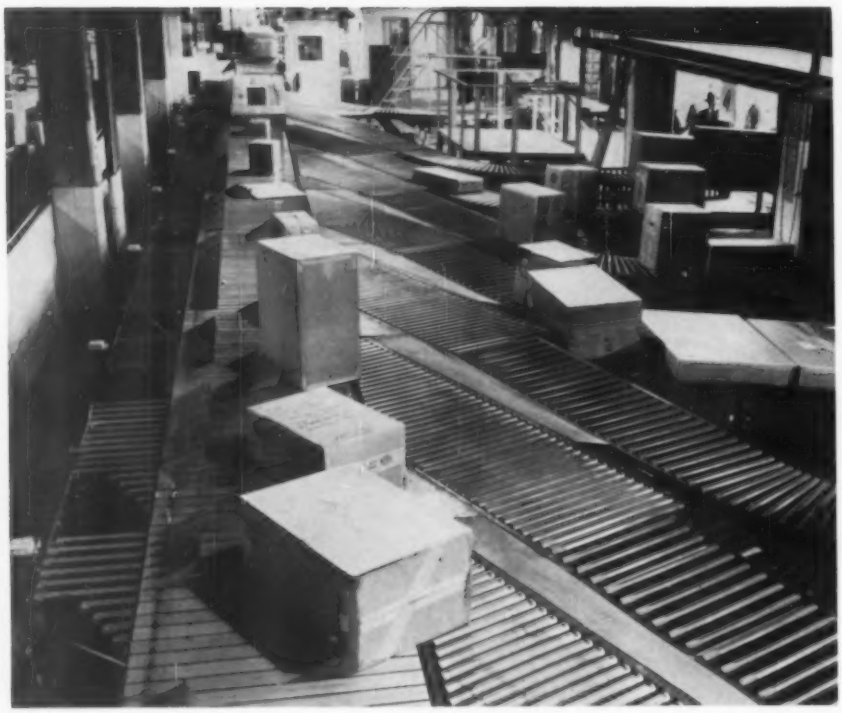
Promise of electroluminescence is seen in this room at Westinghouse Research Labs; parts of walls and ceiling consist of the new glowing panels no thicker than window glass. Home installation of new light is not yet economically feasible.

System by which new light source functions lends itself to automatic digital indicator. Above is shown the Westinghouse display system for flashing numbers and/or letters.

General Electric suggests this application of the new light source for industrial use: to put light directly on the work, as on the rotary spindle shown here. Similar uses will mean new market.

Principle of electroluminescence is used by Sylvania in their Sylvatron (above), an image-producing panel that converts electric data into dots of light; may be forerunner of a flat tv.

a catalog of new products, materials, processes and finishes



Packages are marked with symbol of one of 15 distribution points (top), electronically measured and forwarded (bottom), and guided (left) to the appropriate distribution line for package delivery.

New high speed assorter-conveyor facilitates package distribution for Railway Express

A new high speed electro-automated assorter-conveyor which can separate packages of all sizes and shapes and assign them to fifteen different distribution points is now in operation at Railway Express terminal facilities in Long Island City, N. Y. This unique machine is 180 feet long and 3 feet wide and is powered by a fifteen horsepower parallel drive, variable speed gear head motor and sixteen 1/3 horsepower right angle gear head motors. It has been integrated into the terminal's main powered conveyor line to help further speed up the handling and distribution of express shipments. Equipped with electro-mechanical controls, the semi-automatic machine can be operated at speeds of 100 to 300 feet per minute and can handle packages at the rate of 3,000 per hour. Custom built to the agency's specifications, the assorter-conveyor must daily be prepared to service 111 rail cars on 32 in-and outbound trains as well as several hundred tractor-trailer loads of transfer traffic moving between the terminal and other Railway Express facilities in the New York metropolitan area.

The system operates in the following manner. Packages going to various destinations are placed on a powered belt conveyor and move into a marking area where employees mark each piece for a specific separation point according to its ultimate destination. Marked shipments then enter the electro-automated assorter-conveyor area and move past a viewing booth which houses an operator and an electronic control box with a lettered keyboard similar to that of a typewriter. As packages move by the booth, the operator presses an appropriate key on the control box which corresponds to the mark on the package. Photo-electric eyes which flank the assorter-conveyor just beyond the booth then measure the length of the package and relay a signal to a memory wheel in a synchrotimer device. At a synchronized time, the memory wheel activates the exact number of triangular-shaped steel fingers (or "boots") that will be needed to guide the package down the assigned distribution line. Each steel finger is fastened to the end of a slat slide which moves continuously with the conveyor. The shipments are propelled down auxiliary powered and gravity rollers to the platform edge and loaded into trailers for transport to other terminals for delivery and transfer.

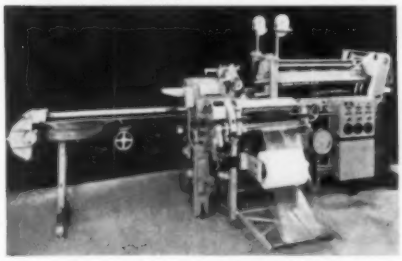
To help insure a smooth continuous flow of traffic, the machine is equipped with automatic signals which sound an alarm when malfunction threatens stoppage. A recirculating arrangement then automatically re-routes the packages. The machine was specially developed by Nelson Laboratories, Hyattsville, Md. and agency engineers.

Wrapping machine for plastics

A wide-range wrapping machine that "weldseals" unsupported polyethylene and other soft plastic films in speeds up to seventy-five packages per minute has been developed by Battle Creek Packaging Machines, Inc. The new machine is the result of a three year research and development program in which Battle Creek Packaging engineers tried and discarded scores of methods of feeding, cutting, sealing and handling soft plastic films. The result, according to company officials, is the first major development in the packaging and wrapping machinery field . . . more than a quarter of a century.

The new wrapper will overwrap packages within the following range: 4¾" to 12½" long; 3" to 8" wide, and ½" to 4½" wide. The machine can be furnished with either end or underneath fold. Not only can the Model 475 handle the usual overwrapping films such as cellophane, waxed paper, and laminated foils, but also the new plastic films including polyethylene of all densities, heat sealing Mylar, cellulose acetate, Polymer coated cellophane, and a variety of other films.

Plastic films represent new and quite



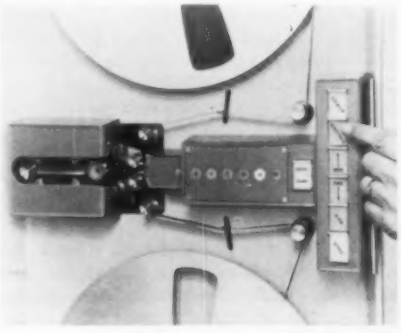
different problems for the machine manufacturer. Because they crumble easily, they cannot be pushed through the wrapping sequence. Special devices on the new model's paper-feed mechanism carry the films past static-eliminators to the wrapping area and accurately position them there as the product to be wrapped is raised into position via an elevator. Paper stops had to be eliminated because the soft films crumble when stopped abruptly. Correct amounts of heat and pressure, as well as cooling time, are accurately controlled to secure "weld-tite" sealing. Manufacturer: Battle Creek Packaging Machines, Inc., Battle Creek, Mich.

Instrumentation tape recorder

Mincom Division of Minnesota Mining & Manufacturing Company has developed what it calls the ultimate in instrumentation recording—the 14-channel C-100.

Among the features of the C-100 which Mincom says are not to be found on other instrumentation recorders now on the market is its complete remote control of tape speed with a unique electronic pushbutton system that selects any preset group of ten speeds. An "isoloop" differential capstan drive system isolates the portion of tape at the record and playback heads from the effects of variations in tension occasioned by take-up and supply reels. Twenty-four minutes of high-fidelity, wideband recording or playback can be accomplished using a tape speed of 60 inches per second. An electro-magnetic braking system stops the tape gently without employing any sort of mechanical friction. Optimum tension is on the tape at all times, resulting in better storage conditions.

Completely transistorized in all its recording and playback circuits, the new tape recording machine is essentially noise free. Its low power consumption (500 watts for fourteen channels of data) is made possible by solid state electronic developments. The compact recording system can accept input power at any frequency from 45 to 1000 cycles per second. For telemetering applications, the basic tape transport equipment with its unitized record and playback wideband amplifiers can be furnished with electronic modules to accept either direct recording, frequency modulated, or PWM type systems. Manufacturer: Minnesota Mining & Manufacturing Co., Los Angeles, California.

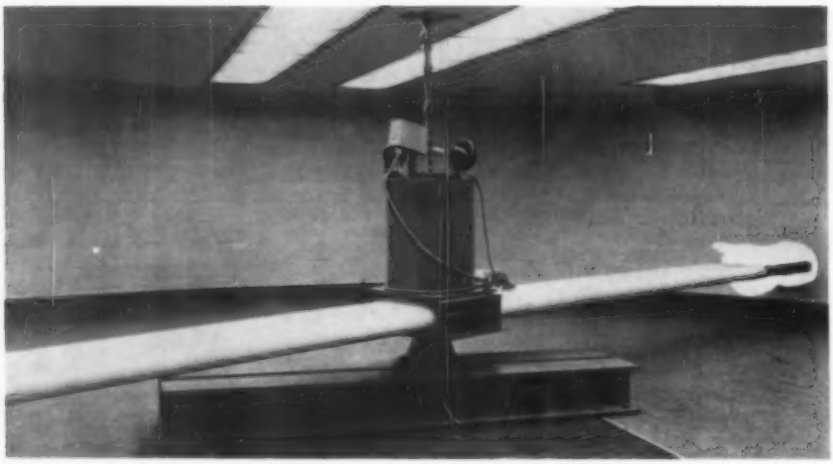


Stainless steel wire inserts

A high speed, lightweight electric metal shear manufactured by the Millers Falls Company, Greenfield, Mass. has been improved by the installation of stainless steel wire thread insert at a critical assembly connection. Normal insertion and removal of the cap screws in the die cast aluminum case has produced occasional cases of excessive thread wear and damage to the body of the shear. The stainless steel inserts, made by the Heli-Coil Corporation of Danbury, Conn., minimizes thread wear, and protects the shears against thread stripping caused by accidental use of too much force in tightening the bolts. The inserts provide higher thread strength because they are flexible. They adapt themselves to the female receiving threads tapped into the part and to the male threads on the screw. This adaptability compensates for lead error on the screw or in the part. As a result, wire thread inserts provide approximately 25 per cent greater tensile strength than unprotected threads tapped in the same material.

The shear itself is capable of cutting

16 gage steel and galvanized sheet. It features an offset foot which provides excellent operator visibility at the point of cut along the work line on either outside or inside work. The cutting blades are made of heat treated alloy steel and ground precisely to critical angles. Adjustments for depth of cut and clearance to produce the fastest result in various kinds of metal are quickly and easily made. To facilitate the sharpening or replacement of the blades, the foot can be quickly removed with three ¼-20 socket head cap screws threaded into the case of the shear. Manufacturers: Millers Falls Company, Greenfield, Massachusetts, Heli Coil Corporation, Danbury, Conn.



Simulated flight tests

Complex missile-guidance systems are subjected to conditions of actual flight at the Western Electric Company Environmental Test Laboratories, Winston-Salem, N. C. The intricate guidance mechanisms and components are tested to determine their ability to withstand extremes of temperature, altitude, and sustained acceleration. Baldwin-Lima-Hamilton SR-4 strain gages and pressure cells are used by Western Electric for control and safety.

Ten SR-4 pressure cells are used to control pressure in climatic exposure test chambers that are capable of providing pressures equivalent to altitudes of up to 90,000 feet, temperatures from minus 100° to plus 250°F, and humidities from 10 to 95 per cent. Four SR-4 strain gages act as safeguards against strains in the base supports of a large centrifuge that simulates forces imposed on missile parts and components during actual flight. The forces which the centrifuge duplicates are those of sustained axial acceleration during take-off and climb, and pitch and yaw during direction changes.

Basically SR-4 devices are transducers which measure a force, torque, or pressure and convert it to an electrical quantity. Any structure which undergoes elastic deformation, in response to a condition to be measured, generally will serve as the sensitive element to which the SR-4 strain gage may be affixed.

The basic element of all SR-4 devices is a bonded-wire strain gage which employs a fine wire filament formed into a grid pattern. The grid is bonded to, while insulated from, the surface where strain is to be measured. Physical distortions due to strain change the grid resistance, and, therefore, the current flowing through it.

In photo above, two SR-4 strain gages can be seen on sides of I-beam supports. The assembly undergoing test has been blanked out because of its classified nature. Manufacturer: Baldwin - Lima - Hamilton Corporation, Philadelphia, Pa.

Wire-Wrap Machine

An automatic wiring machine that will electronically wire sections of airborne computer systems has been specially developed for the Hughes Aircraft Corporation by Gardner-Denver Co. of Quincy, Illinois. The $40,000 "Wire-Wrap" machine will be used by Hughes for automatically wiring a communications system for the Wright Air Development Center. Gardner-Denver officials state that this special unit can be modified for other applications.

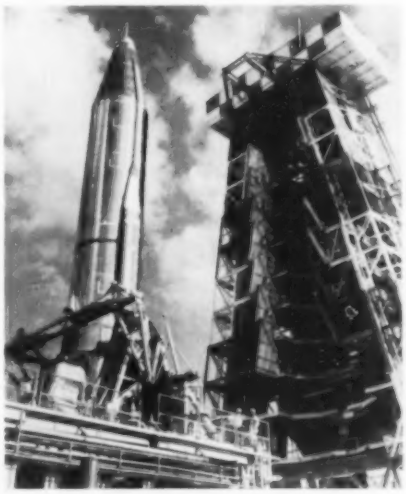
A technician, who programs the machine manually, operates the unit from a keyboard or punched tape. He works from a coded wiring list that specifies the operating sequence of the two wrapping heads, attaching the wires to small rectangular or square-shaped terminals by

solderless wrapped connections. Two connections can be put on each terminal, where diffusion forces cause intimate contact to remain even under high temperatures. The machine lays the wires in straight-lined or L-shaped patterns and uses commonly available wire sizes. It can place 10,000 wires on a 20 x 20-inch board having a modular terminal spacing of 0.20".

Gardner-Denver executives claim that the automatic wiring operations will reduce production costs by 50 per cent over conventional wiring techniques by simplifying assembly, reducing inspection time, and eliminating error. Manufacturer: Gardner-Denver Co., Quincy, Illinois.

De-Ionized Bath

The U. S. Air Force Missile Test Center at Cape Canaveral, Fla. has found it necessary to bathe the outer skins of all its space missiles with de-ionized water to remove foreign particles from their surfaces. The de-ionized water, which is free from all ionic impurities, prevents local hot spot corrosion while the ships are speeding through the atmosphere, and eliminates the unwanted weight of possible residues. Water is de-ionized when it has been treated to remove all its mineral salts, such as those which cause mineral hardness. No scums or residues are left when de-ionized water evaporates. Six ion exchange units, containing nearly 100 cubic feet of Rohm & Haas' Amberlite ion exchange resins, are located near the launching pads. As water



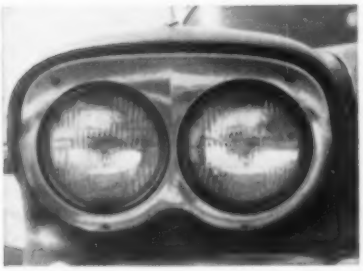
passes through the tanks, its mineral salts are removed by the action of the resins, and replaced by hydrogen and hydroxyl ions which unite to form more water. The resulting de-ionized water demonstrates a greater electrical resistance and higher quality than triple distilled water. Source: Rohm & Haas Co., Philadelphia, Pa.

High temperature alloy

A nickel base, titanium-aluminum hardened alloy has been developed by General Electric for use in applications near the present thermal barrier. Trademarked René 41, the new alloy will make possible higher jet engine and airframe Mach numbers at lower specific weight because of its high temperature capability. Despite its fairly high content of aluminum and titanium, René 41 can be formed, welded, and machined with relative ease in comparison with other materials designed to operate in this temperature range. Because it is one of the strongest materials that can be formed and welded, the new alloy is well suited for turbine casting and combustion liners. Its mechanical properties make it an excellent fastener material. Manufacturer: GE, Schenectady 5, N. Y.

THIS IS GLASS

a bulletin of practical new ideas  *from Corning*



On the beam

It looks as if the four-eyed automobile is here to stay. The reason?

The old style 7-inch lamp had two filaments and was a *compromise* design since *neither* high nor low beam operated at peak efficiency.

New style lamps are smaller ($5\frac{3}{4}$") and are mounted two-to-the-fender. The outer light is a passing (low) beam, aimed just below and to the right of dead ahead. It also has an auxiliary high beam which is used with the high beam of the inner lamp. Net result: *More light* where you can use it . . . on the road and free of glare.

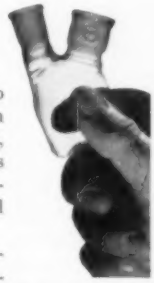
Though the lenses used in these lamps don't look complex, each is precision-made from heat-resistant glass. Pressed into the surface of every lens are some 100 prisms, each *held to* ±.1° in production.

There's also a glass parabolic reflector for each lens—the combination being a neat example of *mass* production of *precision* glass products. Also involved: Hermetic sealing of glass and metal parts.

Corning currently produces components for some 250 different sealed beam assemblies, with sizes ranging from 2 to 8 inches in diameter.

You may not need headlights, but if you have a problem involving light control, Corning may have the answer. And don't overlook the savings you can realize from mass production of precision parts. We'd like a chance to solve some of your problems.

Wee

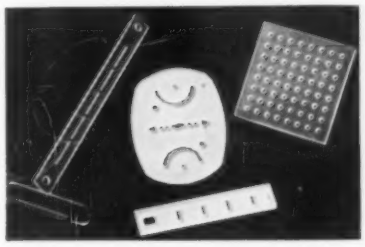


This 25 ml conical micro flask measures 75mm. in height. It has two necks, both ground to what is called a "standard taper," very accurate and smooth.

Such petite and precise PYREX brand glassware is fashioned from Corning's glass No. 7740. This glass is eminently practical in labs (and in many tough industrial applications) because it stands up to most acids and alkalies, doesn't cloud, even with distilled water. And it's bothered not a bit by high temperatures or thermal changes.

This microware flask is one of the more than 9,000 items (standard and custom) we make for labs. Much of it is highly intricate stuff that is hand-made by skilled lampworkers. The whole line is neatly detailed in a new, 358 page catalog, LG-1. If you're in a lab and haven't received your copy, send for one.

Also ask for Bulletin B-83, "Properties of Selected Commercial Glasses." All about 7740 and many other glasses; very good to have on file.



360,000 holes per square inch!

No problem at all, putting that many holes in that space, when we use FOTOFORM®, a glass that's "machined" by chemistry.

We start with a photosensitive glass (one of a number of very *special* types from Corning). Using a photographic negative of the pattern you want and an ultraviolet source, we make a contact print on the glass. Then heat to convert exposed areas into etchable glass. Next, treat with acid to dissolve out the etchable image, leaving the pattern you want. Further processing converts to the form of FOTOFORM best suited to your final application.

What's FOTOFORM good for? Making *ultra*-precise mechanical and electrical parts.

Such as? Fine mesh (600 line) screens, brush holders for digital converters, various kinds of substrates, printed circuits, attenuator plates, dielectric spacers . . . and lots more.

Experience so far indicates that FOTOFORM makes feasible patterns and parts that would be *impossible* or *impractical* by other methods.

Added incentive: There's *no* need for costly dies and jigs and you *eliminate* grinding, cutting, and drilling.

FOTOFORM is non-porous, dimensionally stable, free from internal flaws and voids, able to operate continuously at 500°C, and has zero moisture absorption.

Easily applied to small runs or mass production and well-suited to automation, it looks like a real contribution to many fields, especially electronics.

For more facts and figures ask for "New Developments in Corning FOTOFORM Glass." Check the coupon.

Attention photon counters

Now available from Corning is a new, high-lead-content glass for use in Cerenkov counters. A crystal clear glass with a specific gravity of 4.63, it permits better energy resolution than any glass currently used with this type of spectrometer.

Designated code 9766, it has an index of refraction of 1.724 and a transmittance of 82.8% at 400 Å for 10 radiation lengths. Send for detailed fact sheets or other data you desire. ***Corning can do almost anything with glass.***

Corning means research in Glass

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Please send me: ☐ Bulletin on FOTOFORM; ☐ Lab Glassware Catalog, LG-1; ☐ Bulletin B-83, "Properties of Selected Commercial Glasses"; ☐ Data on high lead glass.

Name ..... Title .....

Company .....

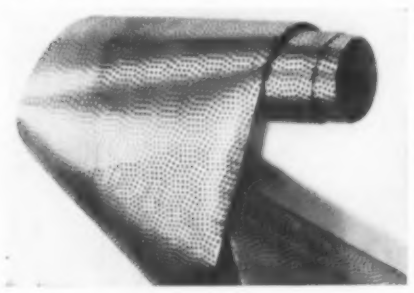
Street .....

City ..... Zone ..... State .....

Improved loom increases production
A timing-belt drive supplied by T. B. Wood's Sons Company for the New York Wire Cloth Company's new looms has helped to increase the production of insect wire screening per loom by fifty per cent. Previously, a V-belt slippage when the loom stopped caused imperfections in the screening. The new belt is run tight on both sides to remove slack and resulting backlash, and its neoprene teeth engage grooved, gearlike pulleys. An accurately maintained belt speed eliminates slippage, while stretching is reduced by reinforcing the neoprene-backed belt with helically wound steel cables.

The drive on which the belt is used is installed inside the loom. Because of its relative inaccessibility, it is important that maintenance be infrequent. Since the belt does not depend on friction for the transmission of power, and since there is no metal-to-metal contact, no lubrication is required. As its construction eliminates heat build-up, the attention of maintenance personnel is reduced. Manufacturer: T. B. Wood's Sons Company, Chambersburg, Pa.

Dragon skin
A flexible, all-steel sandpaper has been made available for industrial use by Red Devil Tools, Union, N. J. Called Dragon-Skin, the sandpaper comes in rolls 4¼" wide and up to 1600 feet in length. Dragon-Skin is produced by punching .036" diameter holes in sheets of steel .004" thick. There are 150 holes per square inch. The punching process produces a five-sides burr in a uniform wave pattern. Each side simulates a wood scraper blade providing a total of 750 cutting sides per square inch. The cutting edges are so tiny that the scrapings that they produce are indistinguishable from ordinary sanding or saw dust. It is claimed that Dragon-Skin will outcut and outlast conventional medium grade sandpaper, while rasping, sanding, and smoothing hard and soft woods, plaster, plastics and soft metals. Manufacturer: Red Devil Tools, Union, N. J.

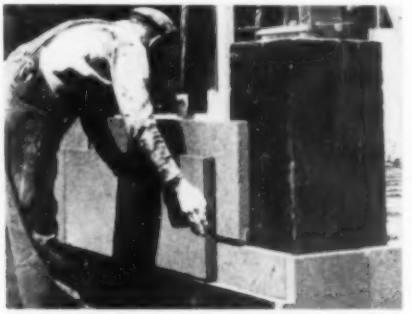


Plastic molder
The Unex Jet Plastic molder has been designed so that users can easily produce experimental or short runs of small parts in their own shops without tying up larger production machines. The molder seemingly provides an ideal method for testing new designs prior to ordering costly dies. It is a compact, portable unit featuring quick set-up and rapid production of parts. Die sets can be exchanged in less than a minute, and interchangeable low cost injection cylinders can be quickly installed to permit rapid change of plastics and colors. The molder has a maximum shot capacity of approximately ½ ounce or ¾ cubic inch. Operation of the injection lever actuates a mechanical toggle linkage which exerts a molding pressure of up to 20,000 psi.

The molder can mold all thermoplastics including nylon. Normal production is one to three cycles per minute depending on the type of material used. The heating power is 600 watts at 110 volts AC/DC; a thermoswitch control maintains operating temperature within plus or minus 5° over the molding range of 200° to 600°F. A removable dial indicator thermometer provides a constant reference for settings.

The molder is 30" x 18" x 8" and weighs just under 100 pounds. It may be installed on a bench or a special floor stand is available from the manufacturer. Valuable floor space will not be taken up on the production line, causing bottlenecks. The mold clamp lever operates a toggle link for closure of the molds; the clamping pressure is adjustable. Manufacturer: Unex Laboratories, Hathorne, Mass.

New cold storage concept
The Plymouth Cold Storage Company of Plymouth, Wisconsin recently completed new cold storage facilities to hold 6,000,000 pounds of perishable goods. By using a new concept of cold storage warehouse design, they built the $75,000 structure in three months, thus saving $50,000 and three additional months' construction time over conventional steel-framed masonry-walled warehouses. A Milwaukee construction company recommended to Plymouth that they utilize a pre-fabricated "Butler Building" frame and a strong, moisture-proof insulating material that would double as a wall and roof structural component. Foamglas cellular glass insulation, a product of Pittsburgh Corning Corporation, was selected to fulfill these requirements. If a conventional building had been constructed, two structures, in effect, would have had to be built—the outer brick shell and the inner wall of insulation. According to Plymouth officials, the new design concept embodied in the building enabled them to increase storage facilities by twenty per cent while permitting a high degree of control over the merchandise stored.



To construct this building, a six inch thick concrete floor was laid. The prefabricated building framework was then erected. Since the building would not be used as a freezer, the floor was not insulated. A double layer of 2" x 18" x 24" blocks of cellular glass was then built, using hot asphalt as an adhesive. The unsupported wall of insulation became the wall of the building. In erecting the second layer of insulation, all joints were staggered and wood sleepers were imbedded to provide support for the final exterior sheeting. The entire double layer of insulation is outside the steel framework so that there is "thermal short circuit." The roof is also composed of two layers of Foamglas insulation. For weather protection, galvanized sheeting was used on the sidewalls and aluminum sheeting on the roof.

The perishables are held to constant temperatures of 30 to 32°F and a relative humidity of 70 per cent to prevent mold formation. The Foamglas is impervious to moisture which often lowers the efficiency of insulation. Manufacturer: Pittsburgh Corning Corporation, Pittsburgh, Pa.

Manufacturers and Designers are invited

to submit entries for

INDUSTRIAL DESIGN's 5th

ANNUAL DESIGN REVIEW

which will appear in the December 1958 *issue*

A major feature in each December issue of INDUSTRIAL DESIGN, the fifth Annual Design Review will be a portfolio of the year's major innovations in industrial design. It will also help forecast the effect of these advances and developments in the designs of the coming year.

What Will Be Included?
The Review will cover every facet of industrial design: new and redesigned products, packaging, materials, professional and industrial equipment, as well as appliances, housewares, and other consumer products. A comprehensive review of this scope, highlighting the ideas and accomplishments of an entire year, provides a valuable permanent reference for designers and manufacturers alike. Last year's review served as a check list for the Committee on Selection and Procurement for the U. S. Pavilion at the Brussels Fair.

Who Is Eligible To Submit Material?
We invite contributions from designers (independent and staff), engineers, and manufacturers of finished products or of the materials used in these end products. We would like to make our selections from the largest group of designers possible, so feel free to submit as many entries as you wish.

How Do You Participate?
From designs placed on the market since September, 1957, choose those which you would like included in this annual review. These designs should represent the most significant work of your firm or design office. Perhaps a design has made a particular contribution in its field, has overcome special practical problems, offered unusual features or merchandising ideas.

How To Prepare Entries
Send us one or more reproduction photos of each product (unretouched "salon" type), labeling each photograph clearly with the names of the product, the designer, staff member, or department in charge, and the manufacturer. *On the same label please include a brief note stating what you consider is unique and distinguished about the product you have selected, and in what respects the use of materials, components and manufacturing techniques was unusual.*

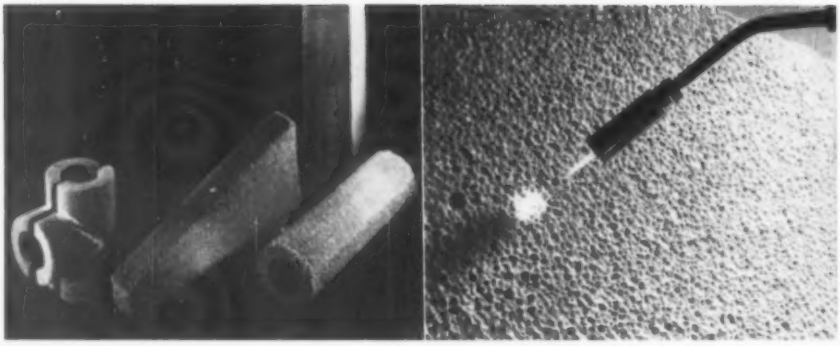
The following categories, though not in any way definitive, may give you some ideas for evaluating your products:

1. inventive designs: solutions based on new practical improvements in function and operation
2. notable solutions to familiar problems and established product types
3. designs without prototypes; that is, designs for objects never manufactured before, which embody new approaches to unfamiliar problems
4. engineering developments
5. apt and unusual use of materials, components, finishes
6. packaging design
7. new ideas for merchandising products
8. designs that had unexpected or outstanding consumer acceptance (with brief sales story)

There is no restriction on the number of photographs or designs submitted. *Closing date for contributions is September 5th,* 1958.

INDUSTRIAL DESIGN

Whitney Publications, Inc. 18 East 50th Street, N.Y. 22, N.Y.



New refractory material

The Pittsburgh Corning Corporation has succeeded in causing pure silica to boil and foam, thus creating what is called an entirely new acid resistant insulating and refractory material. The new material, called Foamsil, is 99 per cent fused silica and can neither oxidize nor absorb moisture. It is unaffected by all acids, with the exception of hydrofluoric and hot phosphoric. Continuous insulating protection and safety from thermal shock is offered within the range of —450°F to +2200°F. The insulating value of one inch of Foamsil is said to be equivalent to that of 18 inches of acid brick at an operating temperature of 250°F. Pittsburgh Corning predicts a wide variety of applications in the chemical and chemical process industries, as well as in many areas of the electrical industry.

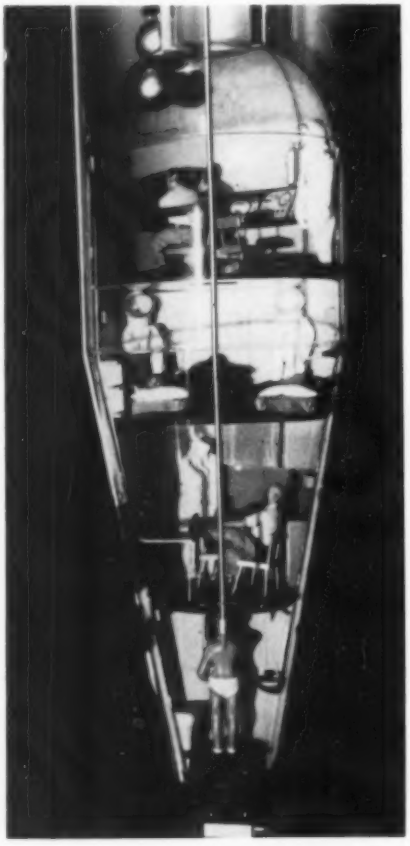
The pure silica, activated by a foaming agent, foams into millions of tiny, non-interconnecting bubbles. When cooled, a lightweight, rigid, inorganic block with a closed cell structure results. The dimensional stability of the material is exceptional. It does not warp, shrink, or slump during rapid temperature changes. When subjected to intense heat (such as that of a steel cutting oxyacetylene torch) and then water-quenched, it does not crack or spall. Light in weight (10-12 lbs. per cubic foot) and having a compressive strength of 130 to 210 lbs. psi, Foamsil can be used as a load-bearing surface to eliminate some of the supporting and reinforcing structure required with conventional material. Manufacturer: Pittsburgh Corning Corporation, Pittsburgh, Pa.

Space station model

Possible answers to the intriguing question of how man will live in outer space have been illustrated by a space station model fabricated by Blaine Electronics for the Convair Division of General Dynamics. The nine foot long, clear acrylic plastic model was constructed on a scale of approximately 1:10 for $10,000. All functional equipment within the four passenger ship, as well as such personal possessions as razors and entertainment facilities as the kitchen wall dart board were built with precise adherence to detail. Environmental equipment carried by the model includes a de-odorizer, water distilling and purification machine, and air conditioning system.

The model may be rotated exactly as a space vehicle would turn in flight. Wooden escape gliders complete to the most minute detail are fastened to the back of the station for return to earth, and the directional antenna is operable. A model atomic reactor located aft shows the power source. Colors within the model were selected to provide maximum comfort.

Convair officials report that the orbital system flying 400 miles above the earth could be a reality within five years. Manufacturer: Blaine Electronics, Inc., Van Nuys, California.



Thermionic converter

A working model of a thermionic converter —a device that produces electricity directly from heat—has been developed by scientists of the General Electric Research Laboratory. The new device, a combination of metal and ceramic disks surrounding a high vacuum, is approximately the same size as a quarter, and will produce electricity when the flame of a blowtorch is played upon it. The original converter which was announced by GE in 1957 was filled with gas. Engineers at the Schenectady laboratory state that in the relatively

short time that elapsed since the announcement of the original converter, great progress was made in exploring the capacities and limitations of such devices. They point out that further research and development will lead not only to more complete scientific understanding, but also to practical applications. Possible uses can be found wherever a high temperature source of heat—nuclear or conventional—is available and a supply of electricity is needed. It is estimated that the existing converters will be capable of operating in the one- to ten-watt range.

In the thermionic converter, two electrodes are held at high, but different, temperatures. Electrons are "boiled out" of the hotter cathode and collected by the relatively cool anode. They can then flow through an external circuit and produce electricity.

The new converter is constructed by techniques similar to those used for high temperature electronic tubes. This type of design has the advantage of working at a lower temperature than the gas-filled converter (1500°F vs. 3000°F) which makes material requirements easier to meet. Internal resistance in the new converter is reduced by placing the electrodes extremely close together. Efficiencies obtained with the high vacuum converter are still low, but further development of the design is expected to raise efficiencies to 30 per cent. Source: General Electric Company, Research Laboratory, Schenectady, N. Y.

A reminder to manufacturers and designers

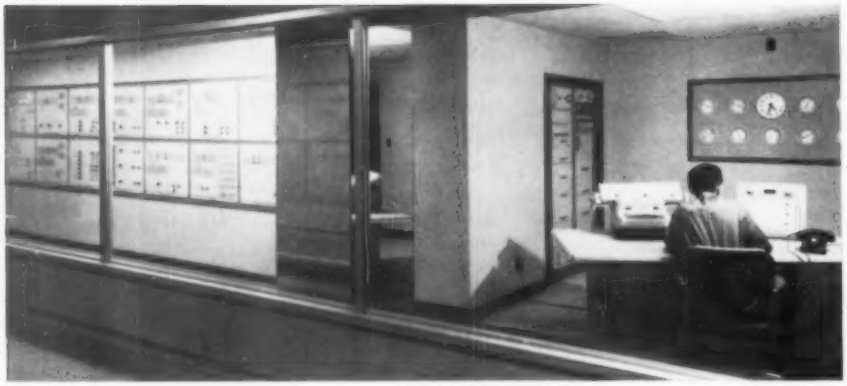
September 5th is the deadline for submissions to

INDUSTRIAL DESIGN's

Annual Design Review

Be sure to send unretouched photographs of outstanding products placed on the market since September, 1957. All photographs must be labeled with the following information: 1) name of the product and the manufacturer, the designer, staff member, or department in charge; 2) a brief note stating what you consider unique and distinguished about the product you have selected.

Your contribution is invited.



Electronic air conditioning

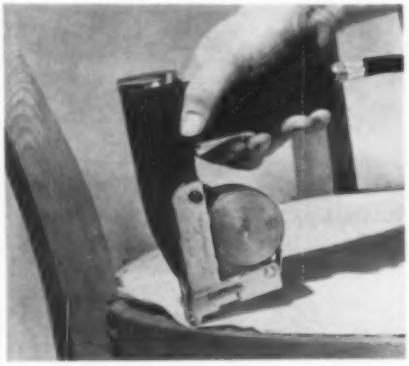
An electronic brain was recently introduced in Montreal by Minneapolis-Honeywell Regulator Company to supervise the operation of the Queen Elizabeth Hotel's air conditioning system. The brain is a walk-in control center located in a glass-fronted room on the hotel's concourse level. From it, a single operator can provide the entire building with perfect indoor climate. Essentially, the control center, known as the Supervisory Data Center, consists of a colorgraphic panel and a data handling system which makes it possible for the system to oversee four main functions: continual checking of key temperatures, adjustment of controls, investigation and handling of complaints, and the starting and stopping of heating and cooling equipment.

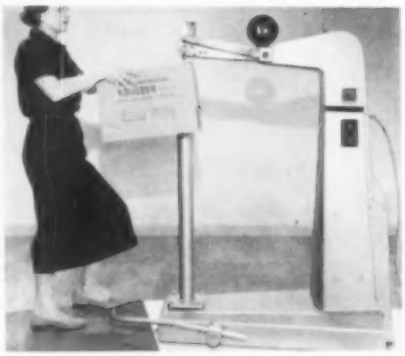
The colorgraphic panel is divided into separate modules, with each section providing graphic representation of each of the air-handling systems. Each module incorporates a complete schematic layout of the fan systems, showing dampers, fan motors, and heating and cooling coils.

The data handling system records temperature automatically on an electric typewriter. The typewriter records a total of 97 main temperatures and eight flows, and provides separate totalizers for each flow. An audio and visual alarm system functions automatically as temperatures go above or below predetermined limits. All public space in the hotel is completely controlled by the operating engineer, who has at all times a comprehensive picture of temperature conditions throughout the building. Manufacturer: Minneapolis-Honeywell Regulator Co., Minneapolis, Minnesota.

Two staplers

The Swingline Industrial Corporation and the Bostitch Company have both recently developed high volume stapling machines which greatly reduce both industrial fastening time and fastening costs. The Swingline Load-O-Matic (top picture) is a magazine loaded air tacker that forms and drives staples with machine gun speed. It can fire 5,000 staples without reloading, and is said to cut industrial fastening costs by as much as 80 per cent. The transparent plastic magazine case gives the operator a continuous view of the staple supply and may be thrown away after the load is exhausted. The stapler will operate between 70 and 100 psi, driving staples satisfactorily into most woods.





The Bostitch Golden Belt Bottomer (bottom photo) has a continuous belt of up to 4,000 partially formed and cohered staples in a single coil. Each push of the motor driven operating lever drives one staple. The deep throat design and the box flap lifter on the post head permits bottoming of boxes up to 24" long without stopping to reverse the box. Manufacturers: Swingline Industrial Corporation, Long Island City, N. Y., and Bostitch, East Greenwich, Rhode Island.

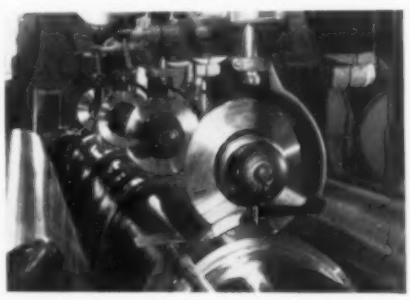
Aluminum flatbed trailer

The Williamsen Body and Equipment Company of Ogden, Utah, has built what has been called the world's lightest aluminum flatbed trailer. Constructed of high-strength aircraft alloys, the new trailer can support the combined weight of two D-8 caterpillar tractors, each weighing twenty-one tons.

Designed by Williamsen, in cooperation with Aluminum Company of America's development division, the new 40-foot rig can transport 50,000 lbs. of concentrated payload, from lumber to concrete. It weighs one to two tons less than similar steel rigs, and a half ton less than shorter competitive aluminum trailers. Besides utilizing aluminum structural components, the new flatbed trailer features aluminum in the flooring, fifth wheel plate, and eight forged disc wheels. Source: Aluminum Company of America, Pittsburgh, Pennsylvania.

Tungsten carbide paper slitter

The Lee Paper Company has materially improved its cutting dust problem by the use of Carboloy cemented carbide cutting slitters on its winding machines. Heretofore, foreign matter and dust, originating from cutting paper during manufacture, had presented such problems as ink smudging and spotting during the actual processing of Lee's variety of printing, photographic, and blueprint papers. Lee's three paper winding machines each contain six steel slitting knives on the upper side of the paper running through the machine, and six Carboloy slitters on the underside of the paper. Before 1956, steel slitters had been used in the winding machines; the shearing action had created excessive dust which not only spoiled the papers, but caused great maintenance problems. An immediate advantage resulting from the changeover to the carbide type was greater slitter life. The original steel slitters required regrinding every two months, while the Carboloy slitters have been in service for two years with no evidence of wear. This has resulted in a great reduction in machine downtime. An unexpected benefit of the tungsten carbide slitters has been the honing action they have performed on the steel upper knives, keeping them continually sharp and reducing chipping which was often a result of wear. Manufacturer: Lee Paper Company, Vicksburg, Michigan.



Manufacturers' Literature

Aluminum Windows and Screens. Ceco Steel Products Corp., 5601 West 26 Street, Chicago 50, Ill. 24 pp., ill. Bulletin describes Ceco aluminum windows and heavy awning styles. Specifications, construction drawings, and installation details are given for the company's three groups of window types.

Compressors. Roots-Connersville Blower, Division of Dresser Industries, Inc., 900 West Mount Street, Connersville, Indiana. 4 pp., ill. Folder covers medium-pressure line of Spiraxial® compressors; design and construction information are listed as an aid to proper selection and application of this equipment in process industries.

Fastener Application Hints. Russell, Burdsall & Ward Bolt and Nut Company, 101 Midland Avenue, Port Chester, N. Y. 16 pp., ill. Bulletin contains technical facts to help users of fasteners obtain maximum economy and performance in application of standard fasteners.

Radio Brochure. General Transistor Corporation, Jamaica, N. Y. Brochure G-120 provides circuit diagrams and technical specifications on transistors for radios as well as specifications and circuitry for drift transistors for very high frequency, small signal application.

Plastics For Lighting. Building Research Institute, National Academy of Sciences-National Research Council, 2101 Constitution Avenue, Washington 25, D.C. Comprehensive treatment in book form of the subject of plastics and their uses in building illumination, through daylight or electric sources. The subject is covered in reports by experts from the lighting and plastics industries, architects and engineers. The book is divided into three sections: objectives of building illumination; plastics applications in building illumination; the future application of plastics.

Portable DC High Potential Test Meters. Associated Research, Incorporated, 3777 West Belmont Ave., Chicago 18, Ill. Bulletin gives detail specifications and specific applications of a line of high potential test meters covering output ranges of 5, 10, 20 and 30 kv dc. Prices range from $400.00 to $1300.00.

Process Equipment. The Pfaudler Company, Division of Pfaudler Permutit Inc., Rochester, N.Y. 12 pp., ill. Guide to corrosion resistant process equipment includes information on all types of glassed-steel and alloy equipment, including reactors and a new electronic glass tester.

Small Industrial Die Cast and Molded Plastic Parts. Gries Reproducer Corporation, 400 Beechwood Avenue, New Rochelle, N. Y. 10 pp., ill. Small Parts For Industry bulletin covers variety of zinc alloy die cast and molded thermoplastic products. Bulletin is divided in two sections: 1) parts made to customers' specification; 2) standard products available from stock.

Titanium Tubing and Pipe. The Carpenter Steel Company, Alloy Tube Division, Union, N. J. 8 pp., ill. Brochure takes up physical and mechanical properties, fabrication characteristics, and corrosion resistance of titanium tubing and pipe. Listed data includes working instructions for machining, forming, welding, heat treating, and cleaning.

U. S. Industries, Inc. Facilities and Research. U. S. Industries, Inc., 6201 West 63 St., Chicago 38, Ill. 35 pp., ill. Booklet describes and illustrates facilities of U. S. Industries, manufacturers of products ranging from missile instrumentation to heavy metal-forming press equipment.

Classified Advertisements

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Miscellaneous

FRESH IDEAS IN TOY DESIGN NEEDED *by a leading manufacturer of educational toys. Large eastern firm, marketing a prestige line, interested in any new marketable toy idea. Excellent royalty and fixed fee arrangement along with necessary facilities to promote and advertise any item in production. All ideas will be given personal and prompt attention. If interested please write for submission forms. Box* 1D-186, INDUSTRIAL DESIGN, *18 East 50th Street, New York 22, New York.*

NEW BUSINESS VENTURE—*Production Engineer and Designer with new plastic products and processes seeks partner(s) with business experience and investment capital. Location N.Y.—N.J. metropolitan area. Send brief resume. Box* 1D-187, INDUSTRIAL DESIGN, *18 East 50th Street, New York 22, New York.*

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Index to Advertisers

For Your Calendar

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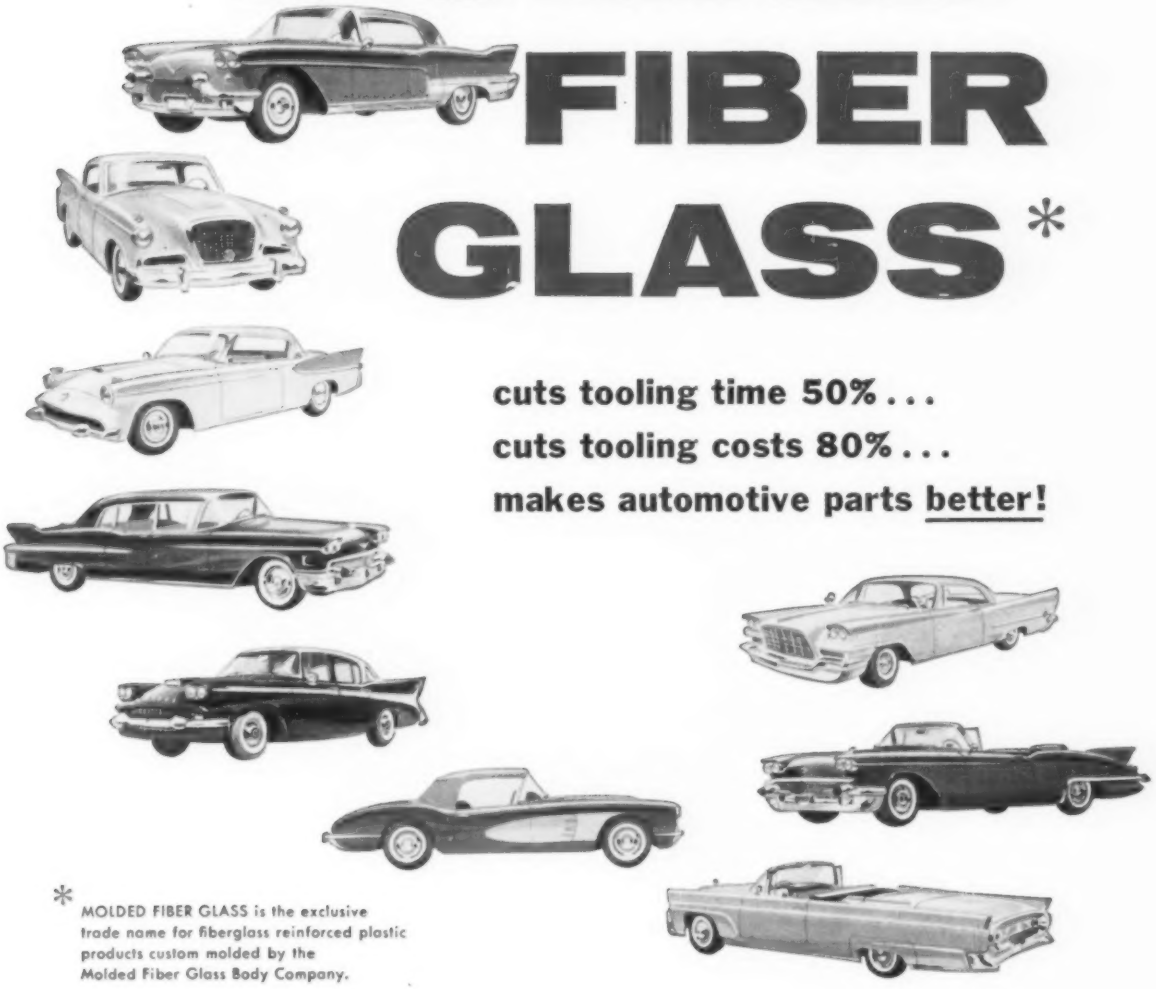

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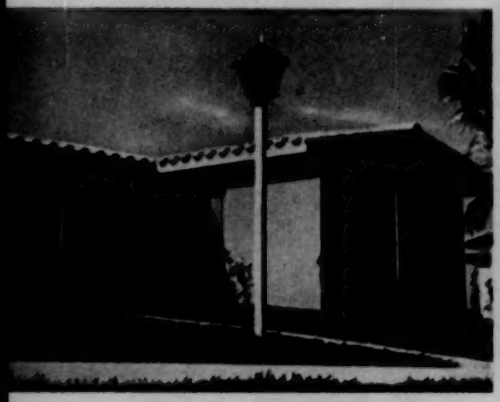
Florida's damp salt air doesn't harm these attractive lamps. They never need painting. MARLEX *won't rust!*



Home in the new Coral Key Villas section near Pompano Beach, where more than 120 Cape Codder lanterns are installed, and 690 are planned.

CAPE CODDER LANTERN MADE BY ENGINEERED PRODUCTS, INC., KIRKWOOD, MO.

A revolutionary, new lantern that can't crack, peel, or rust even in salt air because it's made of MARLEX*

RIGID POLYETHYLENE

"Damp salt air and intense sunshine are tough on most materials. We think MARLEX is just the ticket for these difficult conditions," says George O. Palmer, Owner, Palm-Aire Construction Company, Pompano Beach, Florida. "MARLEX is a durable plastic that can take plenty of punishment. Lanterns made of it stand up well in all kinds of weather."

Every day MARLEX is finding its way into new uses. In many cases this premium quality rigid polyethylene is the least expensive material that can meet manufacturers' strict specifications.

MARLEX is highly versatile, too. It can be molded into attractive colorful housewares or used in many heavy duty industrial applications. It can be extruded into tough film or filaments. It's odorless, tasteless . . . can be steam-sterilized . . . is unaffected by most acids, alkalies, and oils.

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*MARLEX is a trademark for Phillips family of olefin polymers.

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