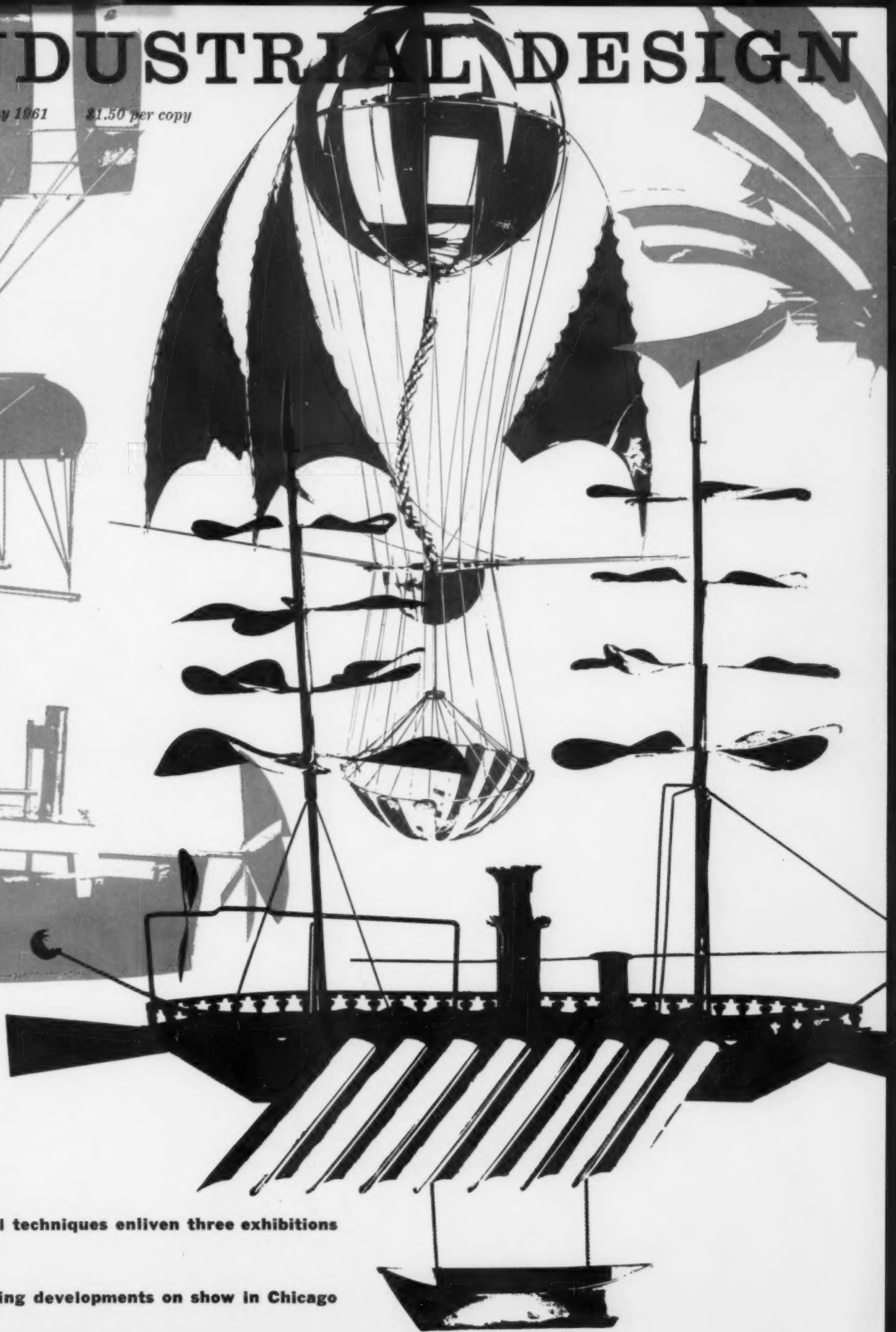


# INDUSTRIAL DESIGN

5

May 1961

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**Unusual techniques enliven three exhibitions**

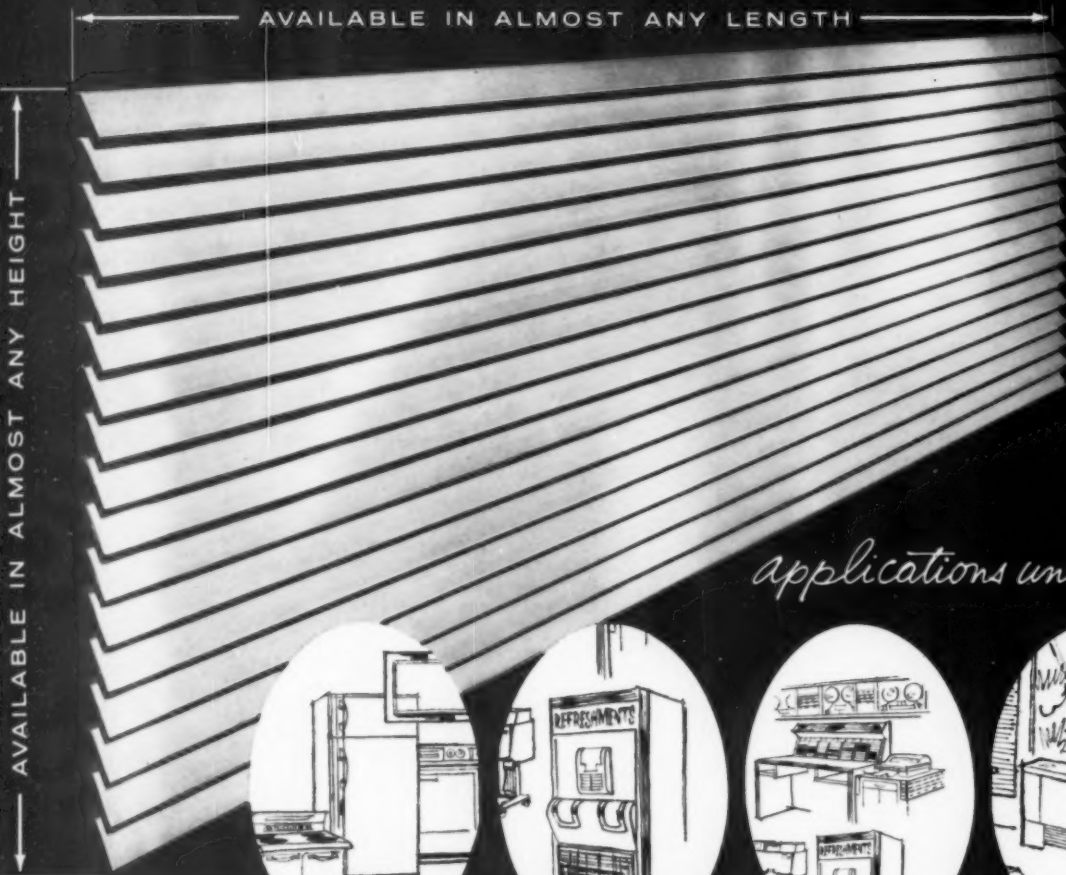
**Packaging developments on show in Chicago**

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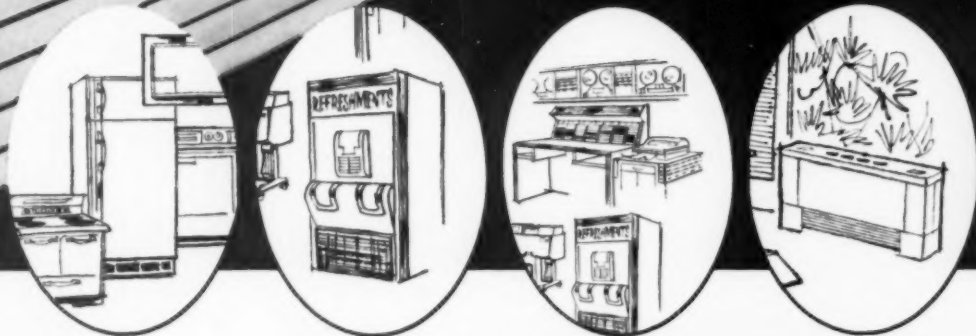
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# **PACKAGING**

in

## **INDUSTRIAL DESIGN**

### UPCOMING STORIES:

In this Issue:-**MATERIALS AND TECHNIQUES FOR PACKAGE DESIGN**

A review of the latest materials in creating packages for both industrial and consumer use. This article will include a report on the AMA's 30th packaging materials show.

August Issue:- **FOILS AND FOIL SUBSTITUTES IN PACKAGING**

Foils offer so many advantages that even the most prosaic contents are now sold in aluminum foils. But competing materials suppliers are not sitting still. Metalized papers, as well as specialized inks, are already in wide use as foil substitutes.

December Issue:- **ANNUAL DESIGN REVIEW**

In the 8th Annual Design Review December issue our editors will include a comprehensive section on significant packaging in 1961. In 1960 this section, titled "Selling" totalled some twelve pages.

# **ID**

**MEMO TO ADVERTISERS**

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Also publishers of **INTERIORS**

**PACKAGING in**

The industrial packaging whi

Packaging whi categories:

1. Foil disp to p
2. Heavy deli for prod glan

**Industrial de**

Dave Chapman  
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Walter Landon  
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Henry Dreyfu  
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# INDUSTRIAL DESIGN

...the magazine for the men whose decisions today shape the products of tomorrow

in INDUSTRIAL DESIGN:

Industrial designer has become increasingly important in the area of packaging which has become such an important factor in successful marketing.

The area which concerns the industrial designer breaks down into two main areas:

**Point of Sale packaging.** The packaging of products for display in supermarkets, drug stores, stationery stores etc., to prompt their purchase.

**Heavy Duty packaging:** Packaging of products for safe delivery, not only consumer products packaged in quantity for delivery to retail outlets; but the packaging of products such as TV sets, aluminum Christmas trees and glassware.

Industrial designers speak for themselves:-

**Man:-** "... We have a total staff of about 35 people of whom about 10 are designers or design administrators. Of this number 7 or 8 are graphic or graphics people. The other designers are product, display, and from time to time they may involve themselves in packaging, cartons, corporate identification and other related marketing programs... It appears at this time that our packaging division will experience a higher rate of growth than our older and more established practice of graphic design. We are having an increasing number of inquiries on display, shipping carton and corporate identification programs... We like to think that the Industrial Designer makes a more basic analysis of packaging problems than the older practitioner of packaging design who very often has dealt with packaging as "graphic art".

**Editor:-** "... Such an attitude has stimulated a new dependence on the industrial designer as the source not only of package surface design and package structure, but as a creative consultant in all matters of packaging, particularly in the selection of materials, inks, adhesives, and in production specifications... As an example, only recently we contacted a toy manufacturer to use vacuum packaging, a food processor to use a higher quality board, a brewer to change adhesives, and one of the nation's giant manufacturers to explore plastic packaging in place of metal packaging".

**Wyfuss:-** "... When we do a package we are deeply concerned with the materials of which it is made, and familiarize ourselves completely with the materials available on the market both at present and in the future. We determine the inks and the exact formula of inks to be used. This is also true of adhesives and closures. All of this is done in close association with the manufacturer, and before entering into a concept of a package, we view the new developments and rely on the manufacturers of packaging materials for their good advice. We assume that any new developments in any field related to packaging will be brought to us as they approach a stable stage".



**INDUSTRIAL DESIGN**

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*A monthly review of form and technique in designing for industry. Published for active industrial designers and the executives throughout industry who are concerned with product planning, design development, and marketing.*

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**COMING**

**IN JUNE—***Vending machines,  
Antique tools*

**IN JULY—***Urethane foams*

COVER: Scale models of fantastic flying machine from the Dynamic America show (page 44) first appeared as engravings in General Dynamic's corporate history book.

FRONTISPIECE: A shiny abstraction of stretched diamonds is really the overhead lighting of New York's Coliseum reflected on the hood of the Jaguar XK-E at the auto show (page 79).

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ANNUAL DESIGN REVIEW *Irma Weinig*  
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## IN THIS ISSUE

Gardiner



**Henry Gardiner**, who is responsible for the exhibit discussed on page 56, is design supervisor of the American Museum of Natural History in New York. Before graduating from the Institute of Design in Chicago in 1949, he worked on several urban redevelopment exhibits. Gardiner, whose hobby is landscape painting, came to the Museum as an exhibit designer in 1954, at which point he had done graphics for Container Corporation of America's "World Geo-Graphic Atlas," and an exhibit at Tulsa's International Petroleum Exposition. Recently he has worked on the U.S. Pavilion at Izmir's International Trade Fair, and a flexible exhibition system for New York's Interchurch Center.

Nitsche



**Erik Nitsche**, the dynamo behind the "Dynamic America" exhibit (page 44), was born in Lausanne, and studied in Switzerland, Munich and Paris. Over the years he has done covers, illustrations, photographs, and layouts for leading American magazines. He has produced complete advertising campaigns for clients as varied as retail department stores, airplane manufacturers, and Hollywood movies, and has designed fabrics, packages, and direct mail promotion. He heads Erik Nitsche International, a design organization founded last year.



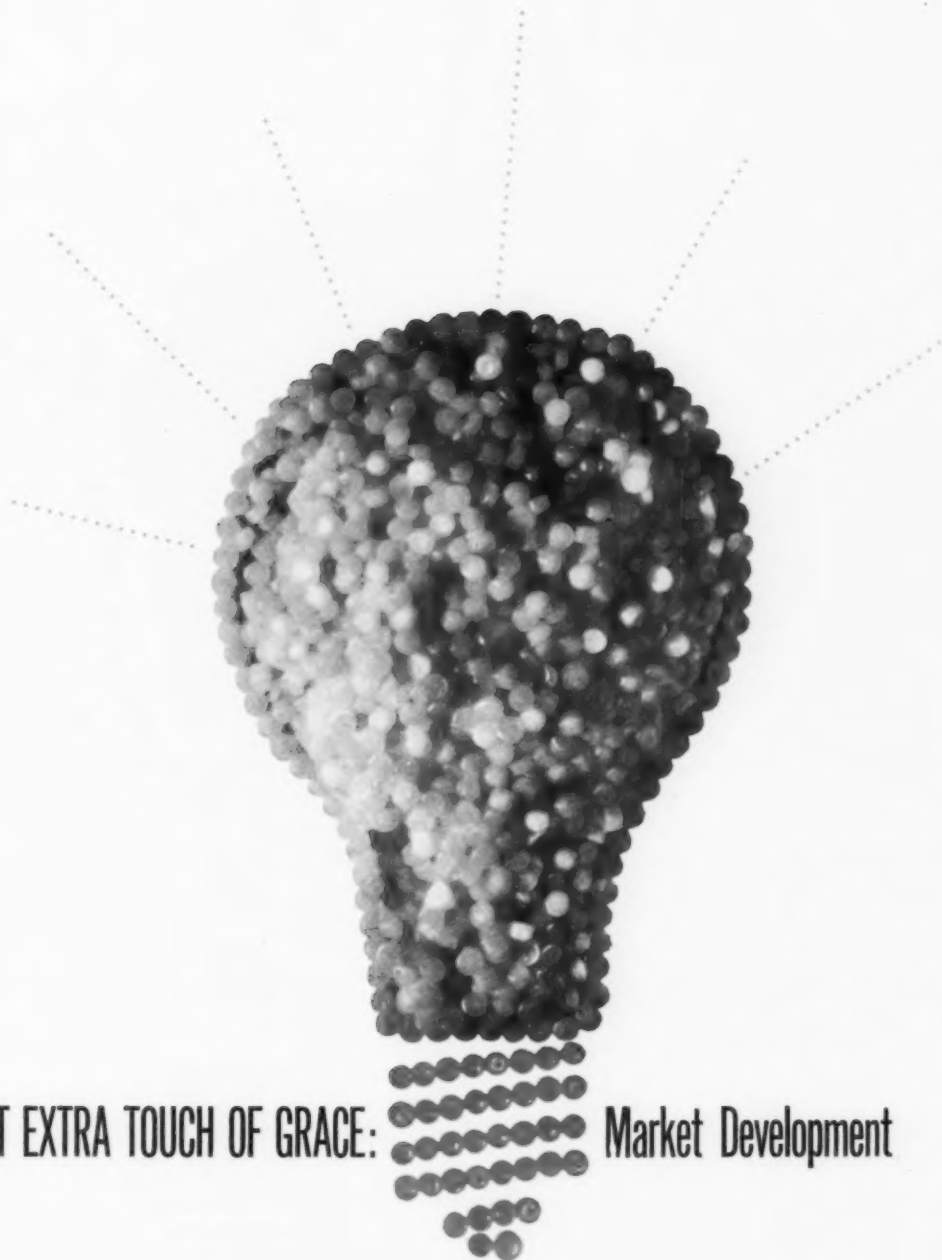
**Walter Stern**, who reports the AMA packaging show on page 69, is Vice President and Director of Packaging and Graphics of Raymond Loewy/William Snaith, Inc. He studied at the Academy of Arts and Design in Munich, the Academy of Arts and Crafts in Hamburg, and the Chicago Academy of Art. Some of his extra-design activities include authoring *Package Engineering* (published by Board Products Company, Chicago) and various articles on the technical aspects of packaging and graphics, lecturing on like topics at the Chicago Art Institute, and serving as a technical consultant to the AMA. He is a member of the Packaging Institute and the Board of Directors and Executive Committee of the Package Designers Council.



Stern  
Wrablica

**Paul Wrablica**, who appraises the Institute of Radio Engineers Show on page 65, heads his own four-man design firm in New York. The office has always done a lot of instrument and component design work, but its recent quarterly newsletter also reports projects in space planning and graphics as well. Mr. Wrablica is a member of ASID, has served as a member of the Fulbright Committee on Education, a delegate to the Intersociety Color Council, and director of the International Fine Arts Council (an organization of professional people devoted to furthering the use of art in industry).





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## LETTERS

### World's Fair comment

Open letter to Robert Moses:

The March issue of *INDUSTRIAL DESIGN* carries information on plans for the 1964 New York World's Fair. The magazine has asked me, as president of one of our two national design societies, for comment. I feel this comment should be addressed to you as president of the New York World's Fair Corporation.

It is not easy to believe, in this period of national concern for our prestige in the world, that the U. S. Government had in mind giving public sanction to so narrowly private an affair as seems to be taking shape in Flushing Meadows.

During the past century numerous international fairs and expositions have been held. Common to each is the notion that participating countries showed the best they had in the best way they could, and that their ablest talents were drawn on to present, architecturally and through exhibits, a broad view of national accomplishment.

With the privileges of a city site franchise and government support, implied or in fact, has always come the obligation to employ them in good faith for the best national interest.

Your Committee on Conformity, to pick a specific which concerns me professionally, is not a good sign that the country's best will be shown, nor that the broad national interest will be served. Such vision as is envisioned here is that of the veto.

Among pitfalls avoided by the BIE-recognized Century 21 Exposition is that instead of inviting an assortment of unrelated exhibitors to conform, the Seattle planners have invited architects, designers and their organized societies to participate actively and professionally in planning structure and exhibits that will flexibly unify and enhance the presentations of participants.

While as a citizen I might lament, I probably would not comment publicly on the rather hopeless situation that seems to have grown out of the Fair Corporation's self-interested philosophy.

But since industrial designers in this country will be particularly vulnerable to the judgments passed on this 1964 affair, even though conditions are not of their making and are largely beyond their control, I feel it necessary, as president of the IDI, to suggest one of the following alternatives:

Either the Fair Corporation should cancel its private trade show now, to save everyone further embarrassment, or else assume its public responsibilities

and, with the assistance of a more representative body, enlist from the creative resources of professions in the arts, engineering, architecture, site planning and industrial design, cooperation in planning a World's Fair that is truly so in fact, one in which the nation as a whole can take pride.

Leon Gordon Miller, President  
Industrial Designers Institute  
New York, New York

### First major steel assignment?

Sirs:

We were fascinated by two comments which appeared in your February issue. Your editorial about our natural reluctance as designers to "hide our light under a bushel" and the statement in your Steel article that "the first major industrial design assignment by a steel company was L & M's redesign of U. S. Steel's graphic symbols and the creation of the 'Steelmark.'" We certainly aren't going to hide our light: the first such assignment was Gerald Stahl's redesign of the Jones & Loughlin corporate identification in 1955. It preceded and influenced the USS program, and received the PDC's two first prizes as the best industrial packaging and best coordinated design program of 1956.

As your editorial indicated, we all have enough trouble trying to get suppliers and even clients to give proper credit to designers. When the publication we cherish the most slips up, then it really hurts.

Gerald Stahl  
New York, New York

### Translation unacceptable

Sirs:

The translation of Mr. Alfieri's letter in the February issue of *ID* may be "generally acceptable to the translators," but it is nevertheless incorrect in a very important part. The original reads:

"2. Poichè sembra che le traduzioni fossero pessime, i casi sono due:

"a) o il suo censore leggeva il testo originale; oppure

"b) non esprimeva un giudizio su un testo che dichiarava a priori illeggibile."

It is translated as:

"2. There are two reasons why the translation may appear to be bad: Either your reviewer read the original text, or he is not passing judgment on a text which he declares a priori to be illegible."

It should be translated as:

"2. Since it appears that the transla-

tions are very bad, there are two alternatives:"

In other words, in case of a bad translation the reading of the original or the ignoring of the text—"not passing judgment on a text"—are the alternatives left to the reviewer in Mr. Alfieri's opinion. They are not "reasons why the translation may appear to be bad." The either/or actions of the reviewer of a poorly translated text are the result of, not the reasons for, the seeming poor quality of the translation in Mr. Alfieri's very precise language.

John Margo  
Los Angeles, California

### Assistance welcomed

Sirs:

I have just finished reading your report on our recent 16th Annual Reinforced Plastics Conference and Exhibit. While the exhibit was my baby, I can hardly take exception to Mr. Specht's keen analysis of its faults. However, the fact that it occurred at all, for about the 15th consecutive year, and was of sufficient impact for you to devote several valuable pages to it, among other similar signals, is prima facie evidence of comparatively great value.

In modest defense I would like to point out that this exhibit has been put together largely by people whose best qualification for such work is that they were willing to do it without pay in the interest of the industry. I am sure I speak for the Reinforced Plastics Division of the Society of the Plastics Industry, Inc., in saying we welcome any assistance (beyond and including constructive criticism) from interested industrial designers in putting on future exhibits that will be more effective in promoting the use of reinforced plastics. We are not any longer, if we ever were, interested in talking only to ourselves.

Mr. Specht might also be advised that the judges awarded the booby prize to the bicycle. Unfortunately, we had no ribbon for this category. I don't think the 4-H Club has either. This unofficial award was censored out of the press release, although the judges made it on the condition that their opinion (and I think it was one) would be publicized.

P. Robert Young  
Plainview, Long Island

### Erratum

The Dominion mixer on page 79 of the March issue was designed by Banka-Mango Designers, not by Gordon Florian.



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## CLIPS AND QUOTES

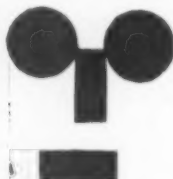


Dr. Gerhart D. Wiebe, partner, *Elmo Roper & Associates*, in *PDC's first Symposium on Package Design Research*, March 21, 1961.

"Although esthetics may be considerably diluted in package design, and science may be considerably diluted in package design research, still the turbulence where these two meet is essentially similar to the turbulence that often characterizes the confluence of the humanist and the scientific traditions."

Dr. Myron Helfgott, head of *Lippincott & Margulies' Package Research Institute*, in *PDC's first Symposium on Package Design Research*, March 21, 1961.

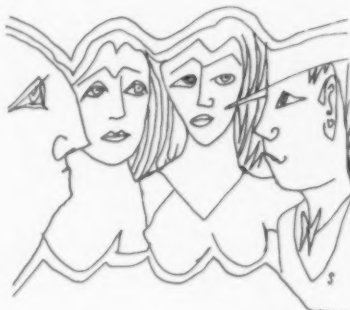
"It used to be, and is less so today, that all one had to do to be in the research business was to collect as many visual apparatuses as possible—and the more straps it had, the more reflectors, the more lights flashing on and off, the better the machine must be. If you had enough of these and you ran each one in a little experiment with two or three people, you might be able to find something about how the package functions in bad illumination, on the bottom shelf when it is turned upside down."



Richard G. Stern in *Golk, Meridian*, pages 31-32.

"The Parisak Building was one of the glassy boxes which in the nineteen forties and fifties began turning Manhattan into a kind of open air bazaar, a transparent hive of commuting drones. It took up a full city block and displaced 26 stories worth of East River air. Its architects had tried to imply a relationship between it and the slender, taller UN Secretariat Building across the way, but had contrived only the sinister ap-

pearance of a crouching beast camouflaged to look like its neighbor in order to devour it. Inside the rose-tinted, air-conditioned, environment-proof bulk reigned the modern architectural trinity: cleanliness, spaciousness, and luminosity. Inside and out, abstract design, which would have been equally suitable in a bank, a mortuary, or a five-hundred-family house, testified in its anonymous power to the rule of the species, of the institution."



George P. Elliott in *Parktilden Village, Signet*.

"The Devereaux apartment had two bedrooms instead of one, their walls and rugs were pinkish gray rather than bluish gray, their furniture was blond ash modern instead of steel tube modern, and instead of a copper-wire spiraling mobile over the dining table they had on the wall a black wrought iron outline of a fish with an iridescent eye. Otherwise the apartments were identical—and identical with the 1,120 other apartments in Parktilden Towers, except for the furnishings, in which there were these two or three other choices, and the colors, of which there were eight hues of gray."

### ARCHITECTURAL DESIGN

Lawrence Alloway, in an article on *"Junk Culture," Architectural Design*, March 1961.

"Throughout the twentieth century both the role of the artist and the technical definition of the work of art have been stretched. 'Everyone is talented': This proposition, for instance, is common to both the Surrealists and the Bauhaus educators. Moholy Nagy believed in everybody's 'capacity for developing the creative energies in his nature,' which is not far from Andre Breton's belief that access to his unconscious mind

makes every man a poet. Such ideas combine to subvert the compact, professional image of the artist as the possessor and exponent of unique skills. As a result, the reach of the artist has been increased and the area that could be claimed as art has expanded. The definition of art has dilated, like cinema screens in the Big Screen revolution of the 1950's."



From *"CONVERSATIONS WITH ARTISTS,"* February 6, 1961, at Philadelphia Museum College of Art.

Peter Muller-Munk: "Architecture, fabrics, films, furniture, power tool design—all these are forms of art along with music, painting, literature, sculpture. Industry cannot survive without art, nor can artists survive without industry. The old pigeonholes of professional specialization are no longer with us. We are at the stage where every living art influences the other."

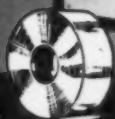
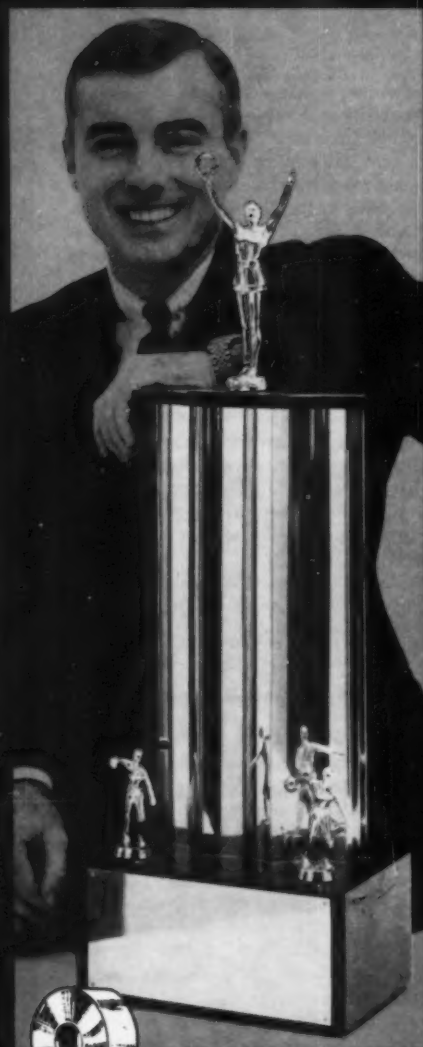
Saul Bass: "I find the creative process fascinating. The tremendous number of ways we manage to try to avoid the creative problem can be cataloged—sweeping walks, getting small errands out of the way, telephone calls, straightening out drawers, dropping off the kids at their friends' houses—a host of them. Man is practically the only animal that chooses to do things that are difficult for him."

Joseph Carreiro: "The designer's stylistic gyrations have earned him popular acceptance with the older adolescent consumer almost equal to the adoration accorded Elvis Presley. He has been riding this enormous wave of popularity, financial success and stature for some time. But danger signals have also been flying for some time. The warning flags have been up for some time. The wave is breaking. The free ride is over."

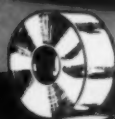
Richard Latham: "The designer must upgrade mass taste. Just as people are given medicine when they are sick because it is good for them, designers have an obligation to try to improve the appetites of consumers. Too often, designers are prisoners of their culture, too wary to explore the opportunities for innovation."



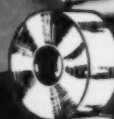
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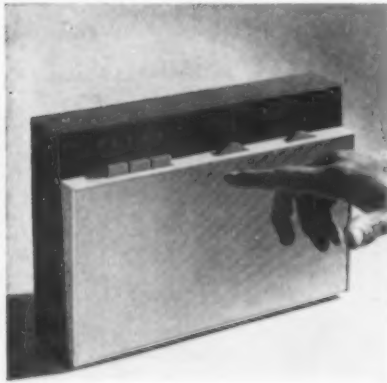
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## NEWS



### Design Centre awards announced

Great Britain's highest honors for industrial design, the annual Design Centre Awards, will be formally presented to manufacturers of the winning products on the 17th of May by the Duke of Edinburgh. Thirteen products were selected to receive awards from the more than 3,000 exhibits displayed during the past year at the Design Centre (where the awards ceremonies will take place) or at the permanent outdoor exhibition of Street Furniture. At the same time, the Duke of Edinburgh's Prize for Elegant Design, the most distinguished of British awards, will be presented to Eric Marshall for his design of the TR-70 portable transistor radio (1), manufactured by Ultra Radio and Television. The set has a high-impact polystyrene cabinet and expanded aluminum grille, and received the award in only one of the two available color schemes—a gray, black and white cabinet with silver grille. The jury for the Duke's Prize, which consisted of Mrs. Gaby Schreiber, Robin Darwin, Jane Drew, and Sir Kenneth Clark, chose the radio on the basis of two



1, 2 Prizewinning radio and camera

criteria—"First, the elegant, precise, economical solution to a problem; and, second, the more discriminatory use of the word (elegant) which implies both a refinement of taste and an awareness of what is appropriate to the 'times.'" The jury further cited the clean, trim effect, the contrasting shapes of the two tapers, and the graphics. Under the conditions of the award, the winning designer receives a prize which can take any form he chooses, so long as it can carry an inscription (and costs no more than 100 pounds); the winner can either design it himself or commission someone else. The award will be presented to him at the same ceremonies the following year.

Among the other award-winning products are: Kodak's "Kodalight 40" manually operated slide projector (2), staff designed in association with Kenneth Grange, commended for its "compact and expressive shape"; G. A. Harvey & Company's cylindrical litter bin (3) of perforated sheet steel (in various finishes), designed by Derek Goad and John Ricks of Donald Forrest, and cited for general appearance, easy cleaning, and wide

applicability; Joseph Gillott & Sons' enameled furniture casters of zinc base alloy and steel with enclosed bearings (4), designed by the company's staff in conjunction with R. David Carter, and commended as a fresh approach to a component normally taken for granted; Rotaflex's adjustable spotlights (5), designed by John and Sylvia Reid, with natural anodized aluminum lamp housing contrasting with matt black of other metal parts and white vitreous enamel base plate, cited for its "extreme design simplicity and sensitive use of materials."

Judges for the awards were Whitney W. Straight (Chairman), Neville Conder, Jo Patrick, J. M. Richards, and Mrs. Gaby Schreiber, all of whom were appointed by the Council of Industrial Design.

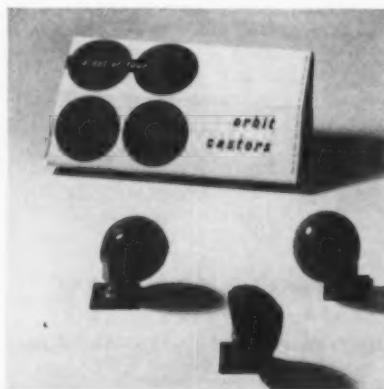
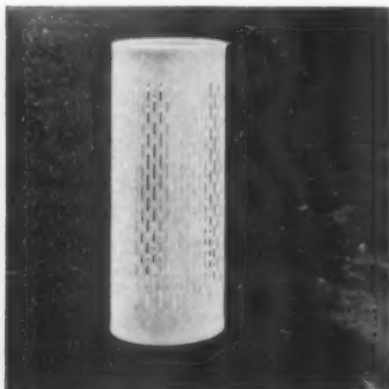
All the 1961 award-winning products will be on display at the Design Centre, 28 Haymarket, London, until June 3rd.

### PDC examines package research

An investigation into the significance and reliability of package design research was conducted at the Package Designers Council's symposium at the University Club in New York recently. Meeting chairman Walter Stern, vice president and technical director at Loewy/Snaith, opened the program with a demand for better designed research tools, pointing out that present test results do not always jibe with a package's sales results.

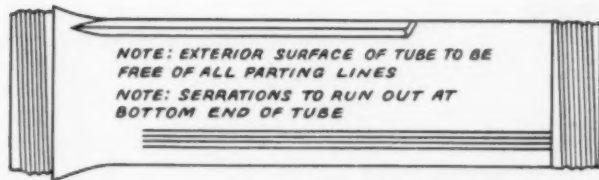
Herbert E. Krugman, vice president of research at Loewy/Snaith, won audience approval by anticipating an objection: "The creative man has a real gripe when he has designed something new and research's tests don't give it a chance," he said. Krugman warned that designers should be most uneasy about

(Continued on page 16)



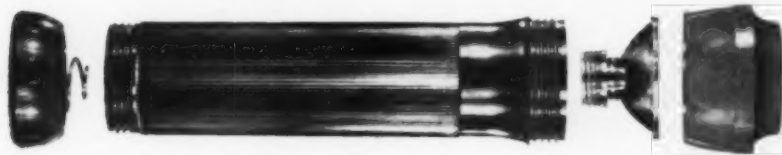
3, 4, 5 Prizewinning litter bin, casters, spotlight

All-plastic case shows finely drawn functional detail—Tube, lens ring, and cap are all molded of BAKELITE Brand high-density polyethylene. The designer made good use of this material's functional properties. Fine details are reproduced with fidelity—serrations on the tube are precisely formed and provide a firm grip. Minimum finishing after molding helps keep mass production costs low. Tough and rigid with excellent chemical resistance, the flashlight will take hard usage. Its gloss adds sales appeal. On top of all these design advantages, the low price of this material makes it an even stronger value.



**Molded-in threads, hidden parting line make this design unusual—** Because of the high temperature resistance of BAKELITE Brand high-density polyethylene, these flashlight components always hold their shape. The molded ten-pitch threads don't soften, keeping the lens ring and cap firmly in place.

While the threaded sections at the bottom and top of the tube required a parting line, the designer specified that the main body of the tube have no parting line. The one-piece mold used for this feature costs more, but the appearance of the finished product makes it worthwhile. A slight taper in the tube permits easy removal from the mold. Since holes for the switch plate are molded in, there's no need for drilling or piercing.



## HIGH-DENSITY POLYETHYLENE ... Idea-material for new designs

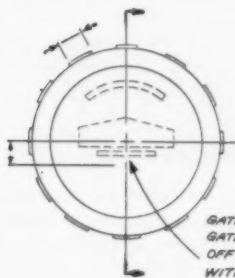
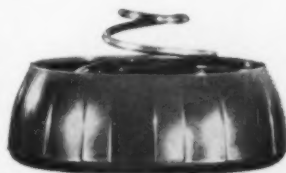
The Eveready "Shop Lite" gained several advantages when the designer chose this new polyethylene. Check the high points on this page . . .

A new material often expands the designer's opportunities to try new ideas. This is especially true of high-density polyethylene, which offers properties that can reduce costs, extend performance, and improve appearance. Polyethylenes are only one group of BAKELITE Brand Plastics—the others are epoxies, phenolics, styrenes, and vinyls—that you can draw on. Molded, laminated, extruded, and in coatings, BAKELITE Brand plastics can be a source of genuine product improvement.

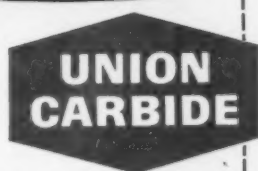
Check their properties in Sweet's Product Design File, Section 2a/ui.

**Clean mold gating, color, feature high-density polyethylene**—The designer called for a conventional gate on the flashlight cap mold; the tube and lens ring molds have a "diaphragm" gate used in fabricating tubular plastic designs. See how the finished part compares with his design. The cap and lens ring come in three glossy colors—red, yellow, and green—an attractive combination with the black tube.

Visit our booth at the Design Engineering Show, Cobo Hall, Detroit May 22-26.



GATE HERE—  
GATE TO BREAK  
OFF FLUSH  
WITH SURFACE



BAKELITE, EVEREADY, and UNION CARBIDE are registered trade marks of Union Carbide Corporation.



This was an informal test—but it demonstrated the toughness and impact resistance of the BAKELITE Brand high-density polyethylene used in the EVEREADY "Shop Lite." It came through the bump, bounce, and batter undamaged.

Dept. JF-73E, Union Carbide Plastics Company  
Division of Union Carbide Corporation  
270 Park Avenue, New York 17, New York

Please send me information on the use of BAKELITE Brand plastics in design with particular emphasis on these properties \_\_\_\_\_

The type of application being considered is \_\_\_\_\_

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FIRM NAME \_\_\_\_\_

STREET \_\_\_\_\_

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research when they are trying to innovate or raise consumer taste with an imaginative new design. "This," said Krugman, "is because most conventional techniques overlook the effect of familiarity on design preference." Krugman described some of his own experiments in simulating repeated exposure (or familiarity), suggesting that design elements can be controlled to produce the optimum combination of initial preference and long-lasting approval.

Other speakers at the meeting were Noel Schwartz, director of research at the U. S. Testing Laboratories; Dr. Myron J. Helfgott, vice president at Lippincott & Margulies; and Dr. Gerhart Wiebe, director of research at Elmo Roper & Associates.

**As Steichen has seen it**

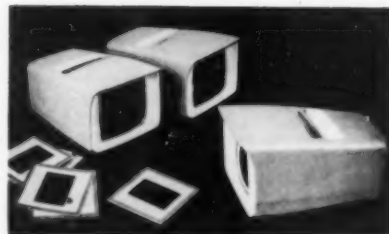
About three hundred photographs, representing the work of Edward Steichen over the last 65 years and chosen by the photographer himself, are on display through the 21st of May at New York's Museum of Modern Art. Included in the show is a scale model of a section of the "Family of Man" exhibit that Steichen created for the museum in 1955. There

are also installation photographs of his "Power in the Pacific" (1945) and "Road to Victory" (1942) exhibitions, as well as portraits made during the '20s and '30s, early Photo-Secession photographs, and a selection of the color "shad-blow" studies Steichen has been doing for the past six years.

**U.S. products chosen for display**

Sixteen products for use in the home—ranging from an electric knife sharpener to a washing machine wringer, but all made of plastic—will comprise the U. S. display at the 1961 International Plastics Exhibition, "Interplas '61," to be held at the Olympia exposition hall in London, June 21-July 1. A panel of industrial designers, consisting of Bronislaw Zapolski (chairman), Belle Kogan, William S. Renwick, Gerald E. Thurston, and Peter Quay Yang, selected the products from a wide field of entries submitted by members of the Industrial Designers Institute and the American Society of Industrial Designers.

Two of the American products to be displayed are the fiberglass chair manufactured by the Troy Sunshade Company and designed by H. V. Thaden, and the Argus Pre-Viewer, designed by Harley Earl Associates and manufactured by the Argus Camera division of Sylva Products, Inc. The chair (right) was selected because of its new use of



*Argus viewer, Troy chair*

fiberglass for both structural frame and webbing, while the viewer (above) was chosen for its simplicity and practicality for home use.

The exhibition is a bi-annual event organized by the publication *British Plastics*, which co-sponsors the International Design Display in conjunction with the Design Committee of the Plastics Institute of Great Britain. In addition to the United States, Belgium, Canada, Denmark, Finland, France, Western Germany, Italy, Holland, Norway, Sweden, Switzerland, and the United Kingdom will participate. A leading design organization in each country was appointed to make the selections, with the IDI serving as organizational sponsor in the U.S. Members of both ASID and IDI served on the selection panel.

**SIA considers name-change**

British industrial artists are considering changing the name of their professional group. Last January, at a council meeting of the Society of Industrial Artists, president Misha Black proposed in a letter read at the meeting that the internationally recognized term "industrial designer" replace the current title. A resolution on the matter will be circulated before the annual general meeting, and the members will be asked to vote on the measure at that time.

**Carpet design contest opens**

An international competition for carpet designs is being sponsored by the British firm of Carpet Trades Limited to mark the Spring 1962 opening of the company's new Administration Block office building. A first prize of 400 pounds (\$1,120), second prize of 100 pounds

*(Continued on page 18)*



1

**New products**

1. Underwood's Raphael electric typewriter with square body is one of four models to be introduced since Olivetti bought Underwood.

Designed by Giovanni Pintori.

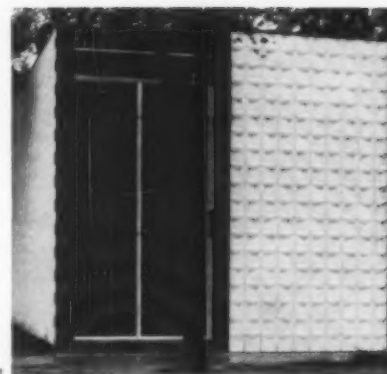
2. Elac's Miracord operates as both a turntable and automatic record changer, has hysteresis motor for absolute speed control; available in ebony and oiled walnut, with satin chrome finish on machined parts, enamel on table deck and surfaces.

Designed by Roberto Hernandez.

3. Pittsburgh Corning's sculptured glass modules are hollow units with design pressed into both faces. Color, fused onto surface, is translucent, allows light to pass through. Available in four patterns and eleven colors.



2

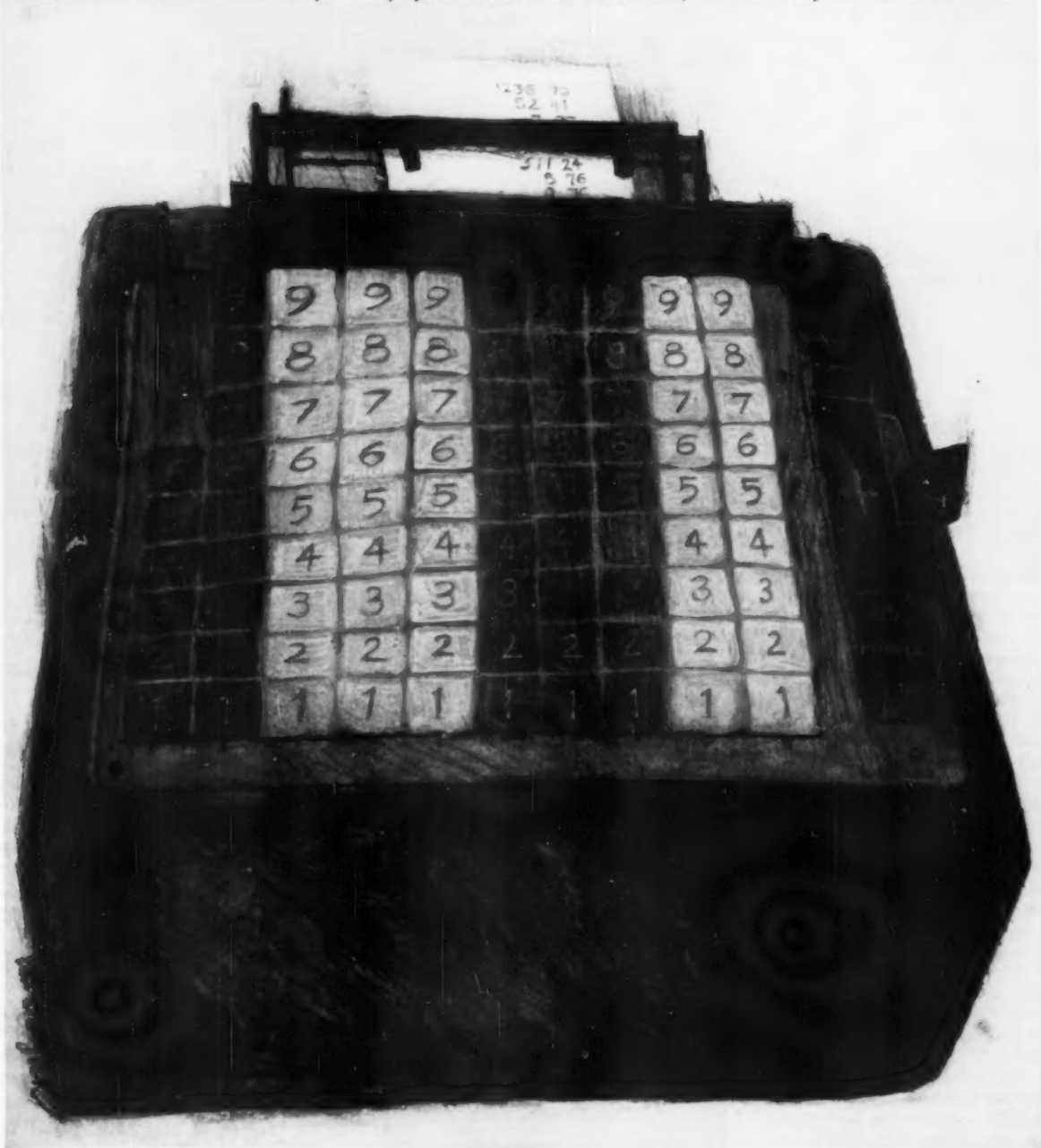


3



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WALLINGFORD, CONNECTICUT. OFFICES IN: BOSTON • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DETROIT • LOS ANGELES  
MINNEAPOLIS • NEW YORK • OAKLAND • PHILADELPHIA • ST. LOUIS • SEATTLE • IN CANADA: CYANAMID OF CANADA LIMITED, MONTREAL • TORONTO

## NEWS *continued*

(\$280), and third prize of 50 pounds (\$140) will be offered in each of three categories. Carpet Trades Limited will purchase and display the winning carpets. Entry forms are available from the firm, located at Mill Street, Kidderminster, and will be accepted until September 30th. Only designs not previously reproduced, sold or entered in any other competition are eligible.

### New York World's Fair

Following the lead of the gas industry, an association of private electric companies has leased a plot in the industrial area of the New York World's Fair. Design of the electrical exhibit is in the hands of Veck Associates, a recently formed organization specializing in the design, construction, and maintenance of fair exhibits.

The two Senators from New York and five Representatives from Brooklyn have been named to the board of directors of the fair, bringing the total to 165. (Figure as of April 5th.)

In response to *Variety's* charges that the fair was making no provision for entertainment, Robert Moses elucidated the official stand on amusements: "The most expensive amusements or, if you please, entertainments, will be part of the industrial exhibitions and in some foreign pavilions. Here the exhibitors can afford to put on good shows in the way they do on television, radio, and the live industrial musicals, not to make money directly, but to advertise their product." This does not mean, Moses continued, that there will not be a separate section of the fair devoted exclusively to "wholesome fun." But, he warned, "We shall not, on the other hand, have a blatant, crude, cheap, mechanical, old-fashioned midway at the World's Fair with the accompanying come-on stuff, barkers, shills, etc." (Some time ago, Moses announced that the amusement section of the fair would be modeled on Copenhagen's Tivoli, but this plan has been dropped. Negotiations to have Walt Disney take over the amusement section have also fallen through, and the area allotted to amusements has been reduced.)

The fair will not, however, be too highbrow for hot dogs. Two restaurant chains, Restaurant Associates, Inc., and the Brass Rail Food Service, have signed leases for 29 snack bars, which will serve beer, soft drinks, and sandwiches. A souvenir stand will form part of each building, and five of them will also house first aid stations.

The fair has appointed a licensing agent to direct the use of the World's

Fair name, symbol and sponsorship for products such as souvenirs and toys. He is Martin Stone, who has previously undertaken similar work for Howdy Doody, Jackie Gleason, and Lassie.

### IDI awards deadline nears

Closing date for entries in the 11th Annual Design Awards Program of the Industrial Designers Institute is May 14; presentation of the awards will take place on June 22 in the Four Georges Room of Chicago's Ambassador West hotel. Contest judges are Jon W. Hauser, Paul MacAlister, Leon Gordon Miller, Richard Kosta, Ira W. Simons, and Harold Zierhut.

### Student wins Motorola award

Albert Nagele, an industrial design student at the University of Illinois, won the annual \$500 Motorola undergraduate design award as the top member of his class for the first semester 1960-61 on the basis of a plywood stool and other



Plywood stool and creator

designs executed in courses. He is shown above (with the stool) holding the scale-model plywood experiment that led to the winning design. The award was established in 1956, and the winner is selected by the university's industrial design faculty.



1



2



3



4

### New graphics

1. Quaker Oats Company of Canada, Ltd., continues the vanishing Quaker trend begun about 10 years ago by Jim Nash. Newly designed corn flakes package further reduces him to a postage stamp and incongruously makes him share space with a premium rifle.

Designed by Foord and Bist of Bomac Design Division.

2. Boles Aero Travel Trailer symbol incorporates flight theme into initial; for all products and printed matter.

Designed by Jerry Braude for Industrial Design Affiliates.

3. Roberts Dairy Company's new packaging includes "leaf from the Tree of Life" and colors keyed to contents; gable closure carries company slogan. Designed by Thomas Laufer & Associates.

4. DeSoto Chemical Coating's new label and packaging system categorizes paints via nine color combinations, will extend to sales promotion materials.

Designed by Robbins, Caver, Page & Associates.

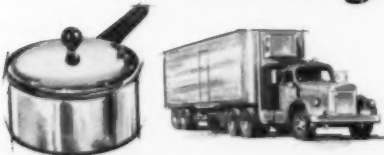
(Continued on page 20)

**THIS MAGIC METAL IS ALUMINUM  
COMBINED WITH STAINLESS STEEL**

The unretouched photograph below shows a specimen of Fairmont Stainless Steel Clad Aluminum almost three times actual size. Note the fine bond line of this homogeneous metal—aluminum inseparably bonded to stainless steel.



**Now Fairmont creativity combines the  
advantages of two great metals**



**FROM POTS AND PANS TO  
REFRIGERATED TRUCK BODIES**

Cooking utensils which combine the excellent heat transfer properties of aluminum with the resistance to food acids of stainless steel. Or refrigerated transport which meets stainless regulations and also makes use of aluminum's light weight for bigger payloads. Or what have you? Fairmont Stainless Clad Aluminum will revolutionize a complete field of metal fabrication. Get in on the ground floor with Fairmont!

**THEY SAID IT WASN'T PRACTICAL.** But an intensive research program has been concluded, and Fairmont's new Stainless Clad Aluminum is now being rolled on a production basis, via patented methods providing a perfect molecular bond.

By successfully combining the ductility, light weight and high conductivity of aluminum with the strength, corrosion resistance and lustrous beauty of the stainless steel, Fairmont has opened doors wide to a thousand and one product improvements leading to more sales and new products by fabricators of all kinds.

Initially, Fairmont Stainless Clad Aluminum is being produced in flat sheet and flat circles or blanks. Other sheet forms will be made available in the not too distant future. For fabricators who know it pays to plan ahead, NOW is the time to call in a Fairmont representative for detailed facts, figures, application ideas.

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## NEWS *continued*

### People

**APPOINTED:** James P. Gilgannon (below) as supervisor of packaging at CIBA Pharmaceutical Products. . . . Joseph D. Portanova (below), formerly vice president for styling at Hoffman Electronics, Consumer Products Division, as head of a new facility to coordinate and centralize all the company's industrial design functions. . . . James D. Floria as director of design for the B. F. Goodrich Company. . . . Byron E. Freitag as consulting engineer/industrial designer for the Missile and Space Vehicle Department at GE. . . . John B. Parker as graphic arts director in the Advertising and Public Relations Division of Leeds & Northrup, instruments manufacturer. He will also serve on a committee to improve the packaging of the firm's products. . . . Donald Bartholme as manager of market development at W. R. Grace & Company's Polymer Chemicals Division. . . . Alphonse Marra, formerly with Richard Arbib Company, to the design



Gilgannon



Portanova

staff at Westinghouse's Major Appliance Design Center. . . . Richard M. Smith as development manager of consumer durable goods at Alcoa. . . . W. F. Girouard (above), previously assistant professor of industrial engineering at the University of Southern California, as director of industrial engineering at the Librascope Division of General Precision, Inc. . . . Thomas Downey, to head a new graphics department at Van Dyck Associates, Westport, Connecticut.

**RESIGNED:** Theodore S. Jones (above) as director of the Design Division of the Institute of Contemporary Art, Boston, to develop and expand his national placement service for designers and creative engineers. He will continue as an advisor to the Design Division.

**AWARDED:** To I. M. Pei, the 1961 Brunner Award of \$1,000 of the National Institute of Arts and Letters, an annual award to an American architect for contributions to "architecture as an art." . . . To Danish architect Arne Jacobsen, the Grand Prix International d'Architecture, sponsored by the French magazine, *L'Architecture d'Aujourd'hui*. . . . To

Vic Anderson (of A & A Die Casting), the Zinc Die Casting of the Year \$1,000 Grand Prize, for a vacuum chamber used by Ampex Data Products in an electronic computer tape handler. . . . Rome Prize Fellowships to Robert M. Golder, Bernard N. Steinberg, Charles T. Stifter (architecture), and Stephen G. Werlick (sculpture). The fellowships carry a \$3,000 cash award and free residence and studio at the American Academy of Rome for one year, from October 1.

**ELECTED:** F. C. Hayes, president of Container Statistics Limited, as president of the Packaging Association of Canada.

**INVITED:** Samuel Scherr, by the U.S.S.R., to conduct an industrial design seminar at the Moscow High Arts and Industrial Design Institute during the Fall of 1961.

### Company News

**RETAINED:** Saul Bass & Associates, Los Angeles, by the Aluminum Company of America, to serve as graphic consultants and to review and analyze all aspects of the company's "public face," with an eye toward strengthening Alcoa's 1962 graphic designs. . . . Cushing & Nevell,



St. Clair



Girouard

New York, by the Exercycle Corporation, to serve as consultants on new product development and product promotion. . . . Larsen Design Corporation, by La France Industries, to design and color a new collection of dimensional upholstery fabrics for furniture and transportation. . . . Lee W. Court Associates, New York and Boston, to create an exhibit for the Greek government for exposition in the United States.

**ESTABLISHED:** His own industrial design office by Franklyn W. Jacoby, at 370 Seventh Avenue, Penn Terminal Building, New York. . . . Howell Design Associates, 53 Transit Street, Providence, Rhode Island, by James A. Howell and Marie Howell, previously with Cicchelli-Howell Associates. Both Howells are assistant professors at the Rhode Island School of Design.

**RE-NAMED:** Mel St. Clair (above), Industrial Design, Punch Brook Road, Burlington, Connecticut, to Mel Saint Clair Associates.

**GOING PLACES:** Jensen Engineering Company, to 9210 Wyoming Place, Kansas

City 14, Missouri. . . . George Tanier, Inc., to the Decorative Arts Center, 305 East 63rd Street, New York, with the interior architecture of the new quarters executed by Finn Juhl.

### Events

"Visionary Architecture," the Museum of Modern Art's exhibition of proposed architectural projects considered too revolutionary to build (ID, November 1960), had a two-week showing last month at Southern Illinois University. Two of the projects shown were Frank Lloyd Wright's mile-high skyscraper, and Frederick Kiesler's "Endless House."

The 1961 Design and Drafting Seminar, sponsored by the American Institute for Design and Drafting, will be held at Oklahoma State University (Stillwater), on May 19 and 20. Among the topics scheduled for discussion are standards, training of design/drafting personnel, microfilming, reproductions, and photodrawings.

An exhibition of paintings by British industrial designer Richard Lonsdale-Hands (below) opens on the 16th of May



Jones



Lonsdale-Hands

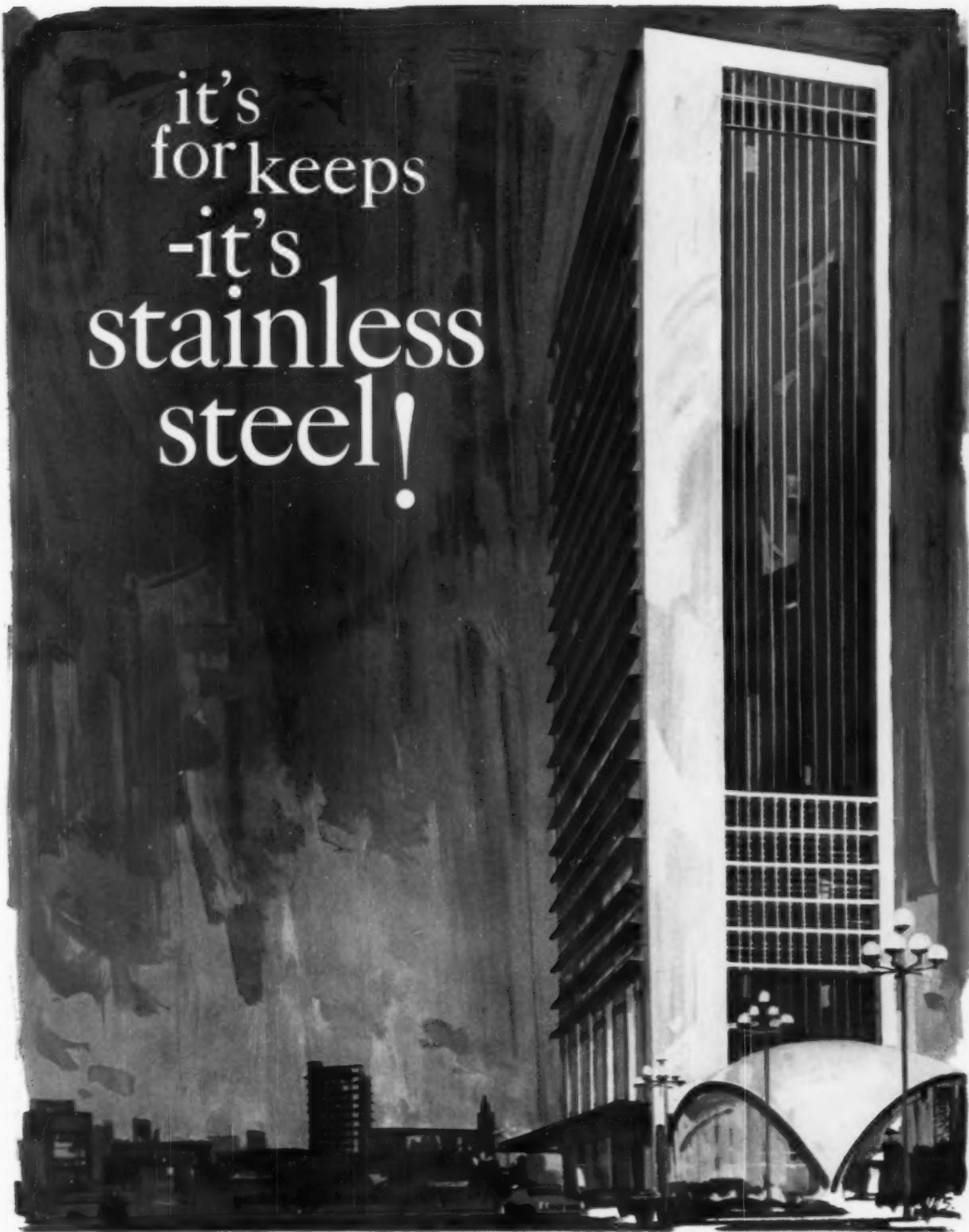
at the Hirsch & Adler Galleries, 21 East 67th Street, New York. The show consists of about 60 oils, drawings, and pastels on a range of subjects, including scenes, portraits, and a number of studies of the artist's cat. Closing date is June 3rd.

"Global and Space Environments—A Challenge to Industry" was the theme of last month's annual meeting and equipment exposition of the Institute of Environmental Sciences. Among the topics covered by executives were "Environment and its effects on man-machine design" and "Problems in determining space environmental design criteria."

Four lectures on "Management and the Computer of the Future" are being offered this month by the Massachusetts Institute of Technology. Among the participants in the program are Sir Charles Percy Snow, Norbert Wiener, and Vannevar Bush. On May 5th, Sir Charles lectured on "Scientists and Decision Making." The series, which is being conducted by MIT's School of Industrial Management, was made possible by a grant from IBM. **END**



it's  
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-it's  
stainless  
steel!



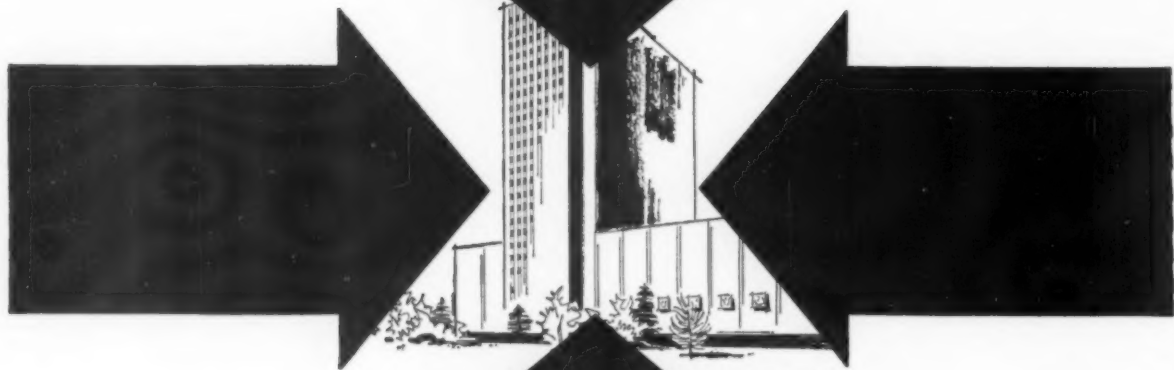
Stainless—the building metal of permanence, economy and beauty.  
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on the products you buy



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WHAT'S  
NEW  
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PLASTICS



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# READY

- ...to help you plan new products
- ...to help you improve existing products
- ...to help you cut manufacturing costs



Since February, 1961, Tenite Polypropylene has been in commercial production at Eastman's new plant in Longview, Texas. This is the newest member of the Eastman family of thermoplastics, all bearing the trade name "Tenite."

In Tenite Polypropylene, industry has a versatile new plastic that will replace conventional materials in many traditional applications . . . a plastic that will improve the performance of hundreds of existing products . . . a plastic that could markedly reduce material, fabricating and assembly costs.

*And it's a material that's now available in carload quantities.*

**Tenite  
Polypropylene  
offers  
a broad range of  
useful properties**

**High Strength** — Tenite Polypropylene has good tensile and impact strength, plus rigidity and surface hardness.

**Light Weight** — Tenite Polypropylene is the lightest of all solid plastics. This plastic produces more molded or extruded product per pound than most other plastics.

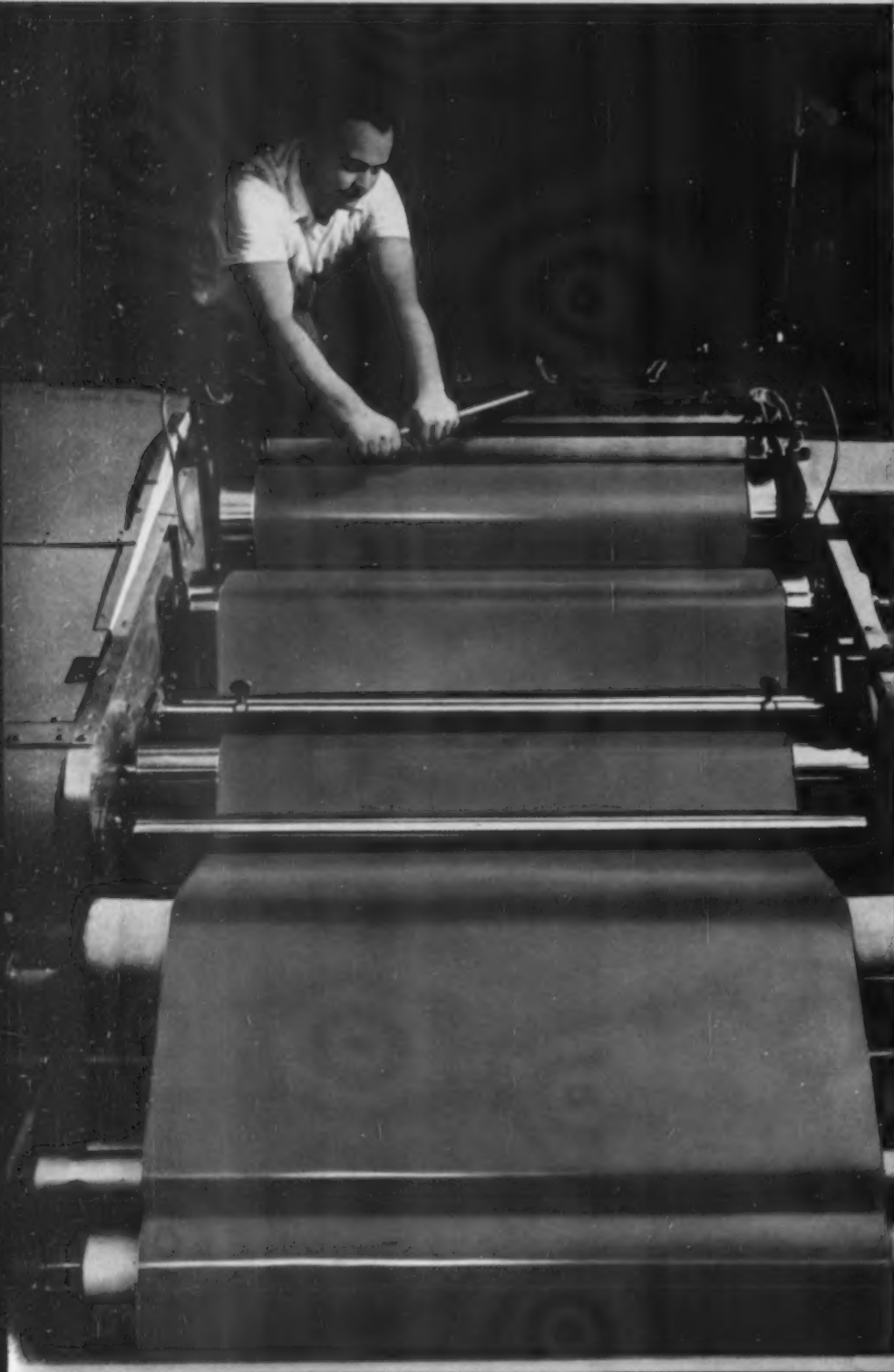
**Heat Resistance** — The high melting point of Tenite Polypropylene permits objects made from this plastic to be sterilized without suffering distortion. This feature makes it well-suited for hospital and laboratory ware.

**Chemical Resistance** — Tenite Polypropylene resists the attack of acids and alkalis and a broad range of other chemicals.

**Fatigue Resistance** — Because it can take innumerable flexings, Tenite Polypropylene can be designed as one-piece moldings with integral hinges.

**Resistance to Moisture Vapor Transmission** — Tenite Polypropylene is an effective barrier to moisture vapor transmission. In film for packaging, this feature is a vital factor in prolonging the freshness of many foods.

*Red polypropylene sheet rolls off an extruding machine in Eastman's plastics development laboratory. For two full years before launching polypropylene production on a full-scale commercial basis, Eastman engaged in exhaustive research and study of the characteristics and properties of polypropylene, thoroughly pre-testing the material in actual molding and extrusion operations and developing a number of formulations for use in plastics fabrication.*





## Tenite Polypropylene can be used in all these ways

**Dielectric Strength** – Tenite Polypropylene has excellent dielectric properties and retains these properties even under adverse moisture and temperature conditions.

**Abrasion Resistance** – Tenite Polypropylene has excellent abrasion resistance. Its surface hardness suggests its use as gears or bearings. Conveniently, it also has a low coefficient of friction.

**Resistance to Environmental Stress Cracking** – Tenite Polypropylene has excellent resistance to stress cracking. No environment has yet been discovered in which stress cracking of polypropylene occurs.

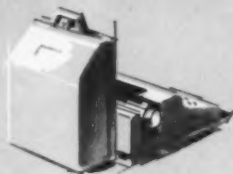
**High Gloss** – Articles molded of Tenite Polypropylene have a natural lustrous finish, and film extruded of Tenite Polypropylene exhibits a sparkling surface.

**Heat Sealability** – Tenite Polypropylene is relatively easy to "tack" or "weld." This can be accomplished in many cases with existing equipment.

**Printability** – With a simple treatment, film of Tenite Polypropylene can be easily printed by conventional methods.

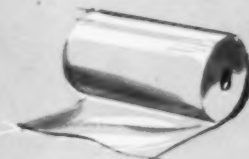
**Resistance to Mold and Mildew** – Tenite Polypropylene resists the growth of mold or mildew, and is not attacked by insects or marine organisms.

**Processability** – Tenite Polypropylene has excellent flow properties, permitting good mold-fill in injection molding.



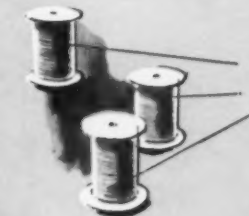
### Injection Molding

Tenite Polypropylene can easily be molded into a wide variety of durable low-cost parts with high gloss and surface hardness—for example, appliance housings, automotive accessories, toys and housewares.



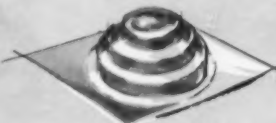
### Extruded Film and Sheeting

Tenite Polypropylene can be extruded into sparkling clear film and sheeting, with the excellent protective characteristics so important for durable packaging. It can also be extruded in opaque, translucent, or transparent colors.



### Monofilament

Tenite Polypropylene can be extruded into monofilament offering high strength, wet or dry, and excellent flexibility at low temperatures. Webbing for outdoor furniture and cordage are among the many possible end uses for this tough material.



### Thermoforming

Sheet of Tenite Polypropylene can be used in vacuum forming, pressure forming and skin packaging, with existing equipment.



### Wire and Cable Covering

Excellent electrical, thermal, and mechanical characteristics make Tenite Polypropylene desirable for either primary insulation or jacketing. Formulas are available for solid coatings, or for cellular coatings of extra-low dielectric constant.



### Pipe

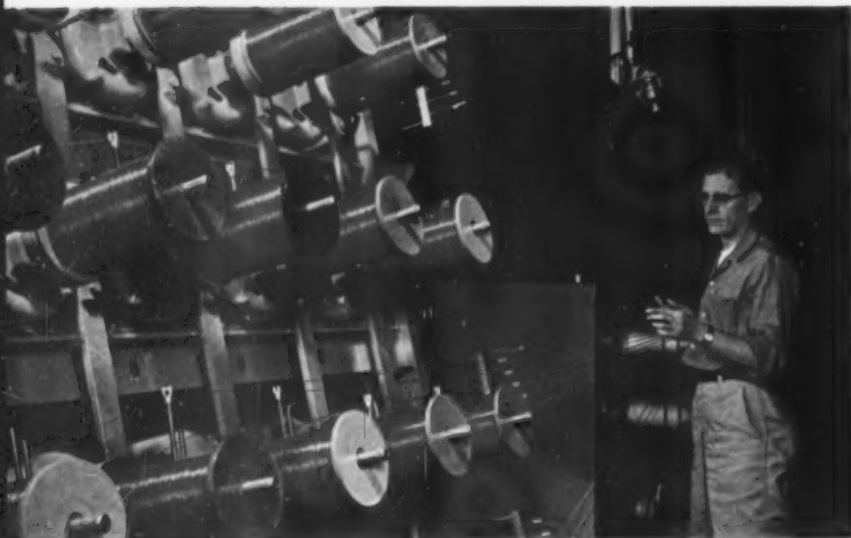
Chemical inertness, resistance to stress cracking, and heat resistance make pipe of Tenite Polypropylene a good choice for industrial use.



### Blow Molding

Tenite Polypropylene in special formulations can be blow-molded into many articles possessing exceptional wall strength, resilience, and chemical resistance.

Spools of lustrous red polypropylene filament, extruded for testing purposes in Eastman's development laboratories. Eastman's work over many years in producing plastics of almost unlimited colors has been of significant value in developing superior polypropylene formulations for monofilament extrusion.



### A special word about this new polypropylene

The process for manufacturing Tenite Polypropylene was developed by Eastman scientists, engineers and production staff. This exclusive process yields a polypropylene that is superior in several characteristics to other polypropylenes. We base this statement not only on our own laboratory findings but on the opinions expressed by those users who have had the opportunity to evaluate Tenite Polypropylene from our semicommercial plant during the past year.

Since the first Tenite plastic was produced, in 1932, over 42,000 color effects have been formulated in the Tenite color laboratory. This experience, plus pre-eminence in color photography and textile dye technology, enables Eastman to offer the broadest range of colors available in the entire plastics industry. We believe that Tenite Polypropylene represents an improvement in quality and stability of color in this type of plastic. And Tenite Polypropylene color concentrates now offer molders and extruders a clean, easy way to color polypropylene. Use of these concentrates virtually eliminates color contamination and color uncertainty.

We have given you only the highlights on this promising new plastic. For further information, call a Tenite sales office or send this coupon to EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.



This glimpse into the color chip storage room at the Tenite Color Laboratory gives some indication of the variety of colors that has been developed by Eastman since 1932.



Measuring the optical properties of Tenite plastics is but one phase of the diverse and thorough testing done in the Tenite Quality Control Laboratory.



Eastman technical service representatives are ready to work with any customer in finding the most efficient way in which to fabricate products of Tenite Polypropylene.

**EASTMAN CHEMICAL PRODUCTS, INC.**  
 subsidiary of Eastman Kodak Company, Kingsport, Tennessee

Please send me more information on Tenite Polypropylene,

for \_\_\_\_\_  
 (product or purpose)

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City & State \_\_\_\_\_ Tel. \_\_\_\_\_

# TENITE®

## POLYPROPYLENE

an Eastman plastic

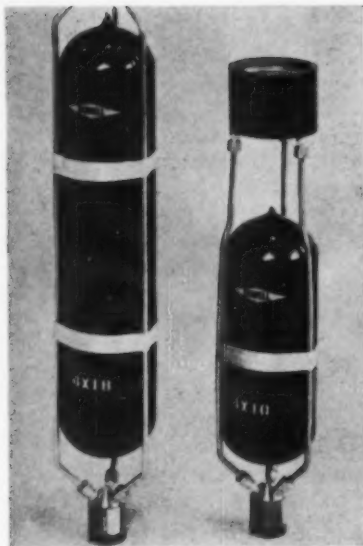
Other plastics made by Eastman include Tenite Polyethylene, Tenite Butyrate, Tenite Propionate, Tenite Acetate, and Tenite Polyester. Information on any of these materials is also available on request.

# THIS IS GLASS

A BULLETIN OF PRACTICAL NEW IDEAS



FROM CORNING



Glasses." We are in Corning, New York, and can be reached by coupon.

\*Dowell Service Mark

## HOW ABOUT A DEGREE IN MEDICAL ENGINEERING

The mechanics of modern medicine are fast maturing to the point where some engineers are specializing in the building of machines like this Infant Servo-Controller for the Isolette, manufactured by Air-Shields, Inc., Hatboro, Pennsylvania.

This particular machine is used with prematurely born infants who must keep their body temperature at a constant level, but lack a well-developed thermal regulatory device.

You attach a thermistor to the babe's abdomen and let him work as his own thermostat. He automatically requests heat from infrared lamps whenever his skin temperature drops below 97°F. When things are just right again, he switches off the lamps and takes a rest, with the odds for survival more in his favor.

If you've ever tried to unbulb an infrared lamp, you know that it gives off *direct* heat as well as IR energy.

or a glass which transmits as little as 8% of the IR.

Happily for our product specialists, there is demand for both situations. We've prepared some bulletins on many of these IR characteristics, a copy of which you may have by sending the coupon.

## VYCOR® GLASSES AS WATER-GETTERS OR PROBE PROTECTORS

Put a piece of porous Vycor brand glass into a humid environment and it drinks up 25% of its weight in moisture before becoming sated.

This has suggested its use as a substitute for desiccants to a number of people, particularly people who want a getter with unusual rigidity under stress conditions. Say, in a sealed inert-gas gyroscope, for example.



Others have seen in this same 96% silica glass a clean, long-lived semipermeable membrane.

Put one of these tiny tubes of Vycor glass around a pair of thermocouple wires and you have a device for reading the temperature of working melts of metals or anything else that runs from 2000 to 3000°F.

The tubes will stand up from four to six seconds even under this intense heat, keeping the wires intact long enough to get an accurate reading.

Actually, in practice these tubes are emerging from metal melts marred but still intact two times out of three! Since the glass is 96% pure silica, there's no threat of contamination to the melt even if the tubes should disintegrate.

All of which serves to demonstrate just two of the many amazing properties of the Vycor brand glasses.

There's more about the various Vycor glasses, with their varied properties and the sizes and shapes we can deliver, in a bulletin which is mentioned in the coupon.

see our catalog in Sweet's **S**

## NEW WAY TO TICKLE A "TRICKLE" WELL

For some centuries now, great bangs around the globe have borne witness to man's sometimes happy faculty for putting to work the phenomenon we call "explosion."

Now we are finding ways to make use of implosion. And glass is helping us.

Supposing your oil well starts to ooze instead of gush. You take one of the devices shown above and lower it into the well. Fill the hole with fluid and apply pressure. When the psi reach a set level, you get a squoosh and then a whoosh and then—with luck—a gush of oil.

The squoosh signals an implosion; the whoosh, a counteracting explosion in the fluids. Working together, the two forces develop pressure waves up to 20,000 psi, usually enough to fracture the surrounding strata and to stimulate the flow of any oil present in the formation.

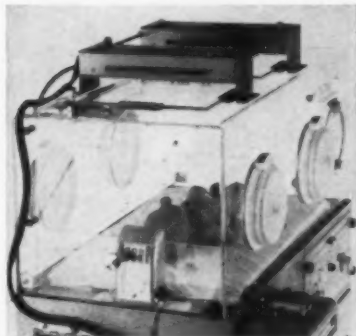
The service using these capsules is called Rockshock;® it was developed and is offered by Dowell Division of The Dow Chemical Company. The capsules are made from PYREX® brand glass blanks which we supply. The capsules are evacuated to extremely low pressures.

We make the composition of the glass blanks and their wall thicknesses to exactly the right specifications so that the capsules will implode at specified pressures.

We make the glass so that it will *dice* when it implodes, disintegrating instantaneously to pieces small enough to pass through valves and pumps without damaging them.

At the same time, we make the glass sturdy enough so that you can handle the capsules used in Rockshock above ground with as much safety as glass bottles.

Dowell can tell you more about Rockshock. They are in Tulsa, Oklahoma. We can tell you more about the marvels of glass . . . say, in our Bulletin B-83, titled "Properties of Selected Commercial



That's why there are two PYREX No. 7740 glass plates sitting on top of the plastic chamber in the picture. You can see them, if you look closely. The PYREX plates are heat resistant and will also dissipate the *direct* thermal output of the lamps. So, the plastic forgets the lamps are there.

As far as the IR energy is concerned, the PYREX plates don't exist either, so practically all the IR gets through to the baby.

The over-all relationship between IR and glass is an odd one. We can give you glass which transmits as much as 92% of the IR



CORNING MEANS RESEARCH IN GLASS

CORNING GLASS WORKS, 5405 Crystal St., Corning, N. Y.

IR Reflecting Glass  VYCOR  B-83

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

Company.....

Street.....

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





## **Perkins and Will...**

... has recently re-organized the interiors department of its architectural firm as an autonomous corporation under the name of Interior Space Division, (ISD). As proof of the buying power of the members of The Interiors Market, ISD by itself annually specifies and purchases \$8,000,000 of materials for interior installations. July INTERIORS brings you a close look at one of the nation's top design firms, INTERIORS case study #8 ...a behind the scenes view of design at work.

Interiors



## COMING NEXT MONTH

### Design in the vending machine industry

The vending machine industry, with sales last year of two and a half billion dollars, has shown little sign of being aware of design, but the nature of the product and its environment suggest that some awareness is mandatory. More and more vending machines are being installed in locations where design counts, i.e. in the lounges and corridors of modern office buildings. Also, as the machines themselves become more complex—offering more items, versions (light, medium, or dark coffee), and flavors—human factors become important in the design of controls and instructional markings.

### Designer's case study

Designer Stowe Myers next month recounts the steps he took in his latest project for Cenco, a Chicago manufacturer of scientific equipment for school and industry. Beginning with 30 pieces of school laboratory equipment, Myers developed a series of standard forms within which Cenco is gradually unifying its entire line.

### Design review: furniture

ID reviews new directions in furnishings for the home and for the office, selected from manufacturers' displays at the coming June Market in Chicago.

Each issue of **INDUSTRIAL DESIGN** delivers to the desks of designers and executives a definitive review of contemporary design ideas and techniques.

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Subscription rates: \$10.00 for one year  
\$18.00 for two years  
\$24.00 for three years

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This mark  
means Glass,  
engineered by  
Lancaster



Esterbrook created the modern desk set. Lancaster engineered the handsome glass base. This flawless component was molded and decorated

in mass production—with rigid quality control. The process included fired-in ceramic color to achieve the subtle beauty of a precious stone.

Plan on beautiful, practical glass components for your next product—custom-designed by Lancaster. Consult Lancaster in the planning phase for expert engineering assistance. And rely on Lancaster for mass production and dependable delivery. Have a product on the board now? Send for quotations.

This mark means glass, engineered by Lancaster

**Lancaster**

LANCASTER GLASS CORPORATION, LANCASTER 7, OHIO

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## THE INDUSTRIAL DESIGNERS INSTITUTE ANNOUNCES THE 11<sup>TH</sup> ANNUAL DESIGN AWARDS PROGRAM

*The IDI Design Award is a token of recognition bestowed on a designer or a team of designers for outstanding design of any product mass produced prior to May 14, 1961. The award is open to all designers, regardless of affiliation.*

**submissions** Entries may be made either by the designer himself, or by anyone else on behalf of the designer. Copies of the submission form are obtainable from the address below. Forms must be returned postmarked not later than May 14, 1961.

**presentation** Announcement of the designers to be honored and presentation of the award medals will be made at a luncheon on June 22, 1961 at the Four Georges Room, Hotel Ambassador East, Chicago.

**Request Forms From Jon W. Hauser, St. Charles Nat. Bank Bldg., St. Charles, Illinois**



in decorative plastics KENT DOES THE THINGS THAT HAVEN'T BEEN DONE BEFORE



How much can you demand of one decorative plastic injection mold? The men who designed these units know. They required unusually large three-dimensional plaques, with perfect uniformity of finish throughout. To enhance the dimensional effect, multi-color spray finishing and vacuum metallizing were done entirely on the rear surface of the clear plastic. The units were made to close tolerances for mounting, and had to be proved durable enough for years of outdoor use.

For the Pepsi-Cola plaque, Kent also developed a new, translucent blue finish — and created an effervescent effect by designing a textured background around the sparkling bubbles.

Plenty of room for production problems, there; but Kent's process engineering group tackled and solved them all. Both jobs were done from start to finish within Kent's four walls, permitting close quality control.

Call on your Kent sales engineer for the unusual in effect, size or volume. He is particularly helpful in the "rough idea" stage of your design.

  
**KENT PLASTICS**  
 CORPORATION  
 1528 N. FULTON AVE • EVANSVILLE 10, IND.



## ***New diet for thinner thermal insulation —rigid urethanes foamed with FREON®***

Designers of cold-storage units are solving space problems from the inside out these days with a new and thinner type of insulation—improved rigid urethane foams blown with Du Pont "Freon". Urethanes foamed with "Freon" now have a K-factor of just 0.14 . . . provide the same insulating value with just half the thickness of conventional materials. The result . . . more space *inside*, same dimensions *outside*.

Immediate advantages are many. **Design:** new, slim-line styling for consumer units . . . greater design versatility since these improved urethanes can be foamed in place. Great structural strength lets you combine insulation and lightweight structural support in one material. High adhesive strength makes these foams ideal for bonding . . . and offers a built-in water-vapor barrier. **Production:** lowered costs be-

cause use of "Freon" blowing agents permits more urethane to be produced from the same amount of raw material—eliminates the core-charring that can occur with other blowing agents. **Application:** greater capacity for *all* refrigeration units . . . more efficient ultra-low-temperature storage resulting from twice the insulating value of other, equal-thickness materials.

Urethanes made with Du Pont HYLENE® isocyanates and foamed with Du Pont "Freon" blowing agents give you the ultimate in quality, economy and durability.

**For more information** on how urethanes foamed with "Freon" can provide design, production and sales advantages to designers of *all* cold-storage units, write to: Du Pont Co., N-2420IA, Wilmington 98, Delaware.

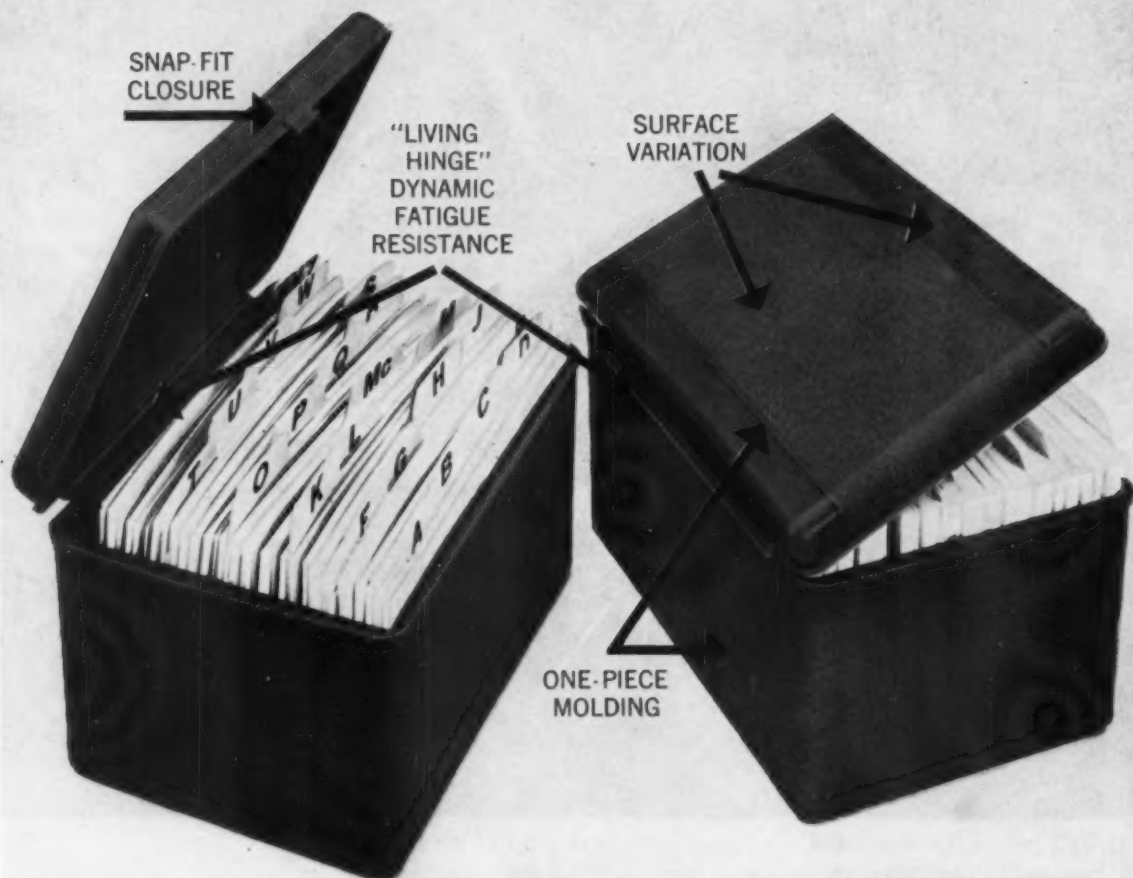
**FREON®** BLOWING AGENTS

Better Things for Better Living . . . through Chemistry





## WHAT'S NEWS IN PLASTICS



### File box with "living hinge" shows design versatility of **Escon** polypropylene

A "living hinge" with extraordinary life, snap-fit closures to replace metal parts, various surfaces—gloss, matte or textured—these are just three of the countless design possibilities when you mold with versatile Escon polypropylene. Testing of "living hinges" was discontinued after 1,300,000 flexes without signs of weakening.

Escon polypropylene offers molders a balanced combination of properties for high-speed, continuous production. These include resistance to acids, alkalis and corrosion; high strength; low volume cost; negligible water pick-up; high heat distortion point; excellent electrical characteristics; abrasion resistance; easy processing

and many more. For technical assistance, write to Enjay at 15 West 51st St., New York 19, N. Y.

EXCITING NEW PRODUCTS THROUGH PETRO-CHEMISTRY

**ENJAY CHEMICAL COMPANY**

A DIVISION OF HUMBLE OIL & REFINING COMPANY





## A TEXTURED FINISH THAT TAKES HARD **KNOCKS** ...M&T SPRAY-ON VINYL

Beauty... distinctiveness... color... you get all of these aesthetic qualities with the new vinyl finishes from M&T. But that's only half the story.

These coatings give your product an enduring coat of armor that withstands just about all the physical abuse users can give it. The finish absorbs impact without chipping, doesn't fade, refuses to stain or deteriorate despite constant handling.

You can spray M&T Vinyl Finishes on the most complex parts... and produce a rich-looking texture on smooth surfaces. Or you can reproduce the most exact detail of finely patterned metal. Or you can put a smooth protective overcoat on smooth metal.

Business machine manufacturers will find M&T spray-on vinyls very well suited to their products. Not just for decorative texture and eye-appeal, but for long-term *durability*, too. There is hardly a finish that so economically offers so much resistance to scratching, scuffing, abrasion—and the encroachment of “age.”

Write for more information on what M&T Vinyl Finishes can do for your products.



**COATINGS & FINISHES**

METAL & THERMIT CORPORATION  
General Offices: Rahway, New Jersey  
In Canada: M&T Products of Canada Ltd., Rexdale, Ont.

See us at the Design Show in Detroit

## The future lies behind

This is the year man got into outer space (as compared to last year, when monkeys did, which is, after all, the traditional order of events). The achievement has staggering design ramifications, partly because of what it will soon become possible and necessary for designers to do, but also because of what it has already become absurd and unnecessary for designers to do: namely, the brand of "design for space" that is glittering down in the lower left-hand corner of this page.

These vehicles, complete with moon-mist, were soberly presented, *only a few months ago*, as representative of one company's "advanced design ideas." Of course, nearly everyone has done this sort of narcotic doodling, just as nearly every man has sighed through the fumes of a stuffy theatre balcony and convinced himself for a brief eternity that the voluptuous creature on the screen belongs to *him*. It does not make for the richest or most profound fantasy, but all of us have the right to some harmlessly fraudulent indulgence now and then. This is not a *professional* right, however; and if as professionals we do not outgrow the toys in the attic, circumstances will consign us to the attic with them, which is what has happened in this case. There is scarcely an American designer over the age of 12 who has not at some time airbrushed a Sunday-supplement spread entitled "The Car of the Future As Seen by a Famous Industrial Designer," and lived to blush about it afterwards. These ersatz prophecies are commonly compared to such comic strips as Buck Rogers and Flash Gordon, and are distinguishable from them chiefly in that the latter tend to be better drawn and more seriously conceived. But all, until now, have been innocuous. (Bernard DeVoto once pointed out that madness consists not in designing such fantasies, but in putting them into production.)

The future, as Mort Sahl has said, lies ahead — but not as far ahead as it did when he said it. The "future" shown here lies behind, for paradoxically the space age has just put an end to so-called "space design." As long as the other planets seemed forever beyond our reach, designers were able to get away with the hocus pocus typified by these swooshy lunar hot rods. After all, when conceived by someone with the splendid gifts of Norman Bel Geddes, this kind of design could be tremendously exciting, and often truly prophetic. And even in the hands of lesser talents, the approach was as safe as any other fortune telling: the predictions were not subject to verification, and anyway the gypsy could always move to another neighborhood.

Those days were over the moment Major Gagarin shot into orbit. Designers can never again, with impunity, be so irresponsible. (For that matter, maybe they never could: we do not know how it is possible that a totalitarian state, presumably inhibitive to free thought, can outdistance us in science, but there might be at least a clue in some of the things we were doing at the time.) We are glad of that. Space is a fresh world, so far as we know, free of both Eastern and Western tradition, free of market pressures—free of everything but problems, of which there are multitudes. This means a second chance for designers to contribute to a meaningful evolution of useful form.—R. C.



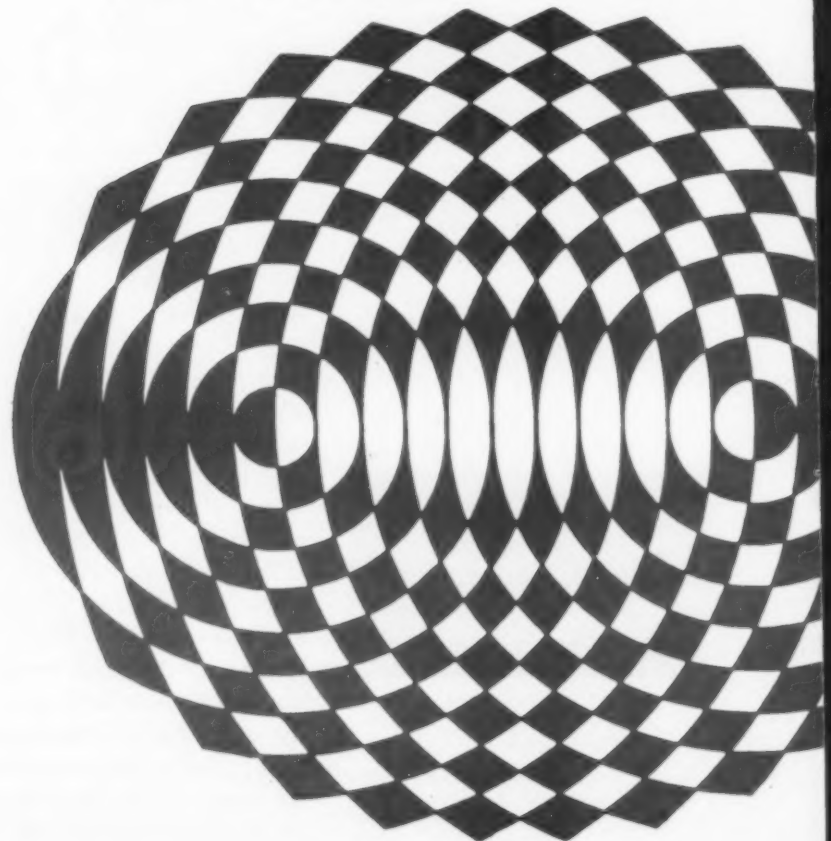
## THREE EXHIBITIONS INFORM BY DESIGN

### 1. *Mathematica: A World of Numbers ... and Beyond*

*Problem:* To dramatize the "best kept secret in the world": why mathematics is fun.

*Solution:* Illustrate with ingenious machines how the intriguing principles of higher mathematics work.

*Credit:* Charles and Ray Eames, assisted by Gordon Ashby and John Neuhart; designers. Dr. John Redheffer; consultant. Parke Meek, Jeremy Lepard; film production. Displaymasters, Scale Design, and Remanco; construction. IBM; sponsors. California Museum of Science and Industry, Los Angeles.





## **2. *Dynamic America***

*Problem:* To convert a massive corporate history into a manageable (and amusing) general exhibition.

*Solution:* Interweave the development of General Dynamics Corporation with the colorful technological development of the nation.

*Credit:* Erik Nitsche, assisted by Andre Pache and Eric Tschumi; designers. Gaston Burnand; coordinator. Andre Pache, Maurice Ruche and Andre Landry; scale models. Roto-Sandag and Imprimeries Populaires, Geneva; printers. General Dynamics Corporation, New York City.

## **3. *The Biology of Man***

*Problem:* To summarize current scientific concepts of human biology for the general public.

*Solution:* Enliven abstract biological principles with imaginatively animated and accurate models which graphically explicate these principles.

*Credit:* Dr. Harry L. Shapiro, chairman, anthropology department; conception and planning. Henry Gardiner; design supervisor. Gordon Reekie, chairman, exhibition and graphic arts department. Luther A. Williams, chief, exhibition division. American Museum of Natural History, New York City.





THE VIEW THROUGH THE F

## 1. Mathematica BY JUDITH R. MILLER

Just as, traditionally, children were to be seen and not heard (except for mathematicians, if one can believe their biographies in this exhibition), so exhibits have been to look at but not touch. Additionally, stress has been on data rather than on concepts, with no distinction made between "looking at" and "seeing."

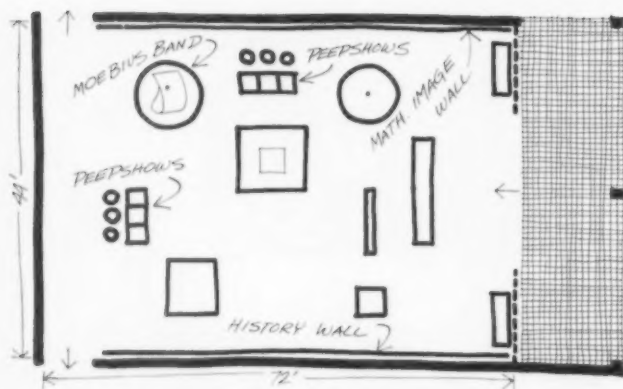
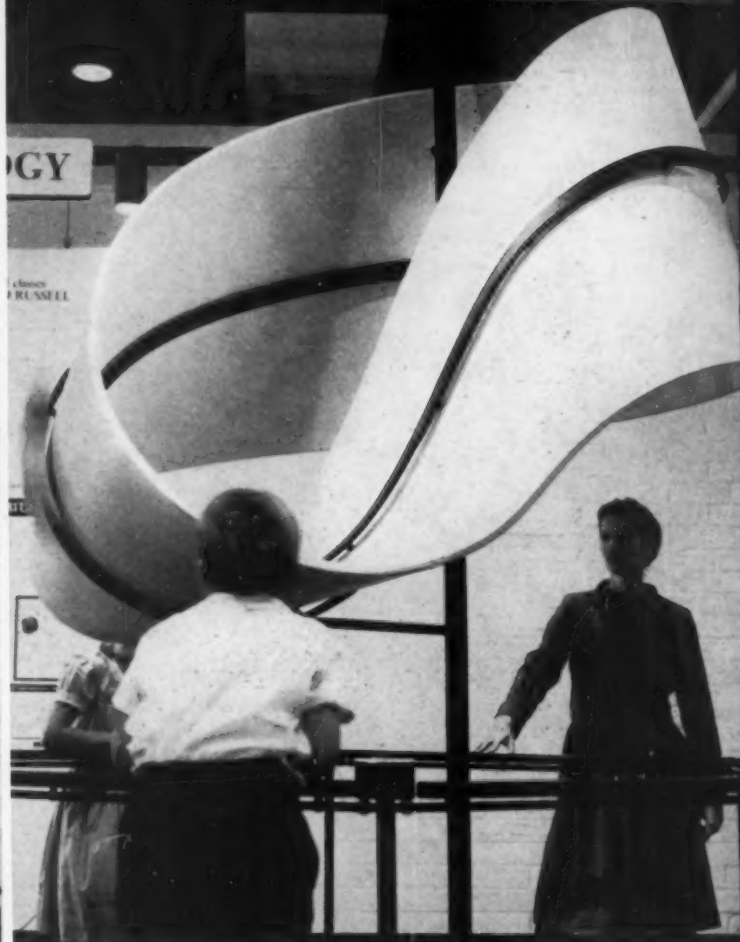
In Mathematica, Charles Eames has designed a show in which visitors not only touch, but actually operate, such machines as a Probability Board showing how a mathematical formula can accurately describe the effects of chance. At six peep-shows they watch two-minute movies which illuminate other concepts — for many, probably for the first time. And at a 50-foot History Wall they can check themselves out against documentation of 800 years of mathematics' meaningful discoveries, names and dates. Clearly, the exhibition says to visitors: "Now you can *see* what mathematics means." Handsome, inviting, undemanding, reassuring, it takes you from what you *know* to what you *could*

Left: Soap solution adheres to wire frames to illustrate minimal surfaces theory. Below: Pantographic entrance gate.





# THE VIEW THROUGH THE E



understand, and permits you to retreat without embarrassment, ostrich-like in the privacy, for example, of a headpiece outwardly reminiscent of the old stereoptican viewer. This is a story about mathematics, told to non-mathematicians by non-mathematicians who have, in the course of making the exhibit, found out what mathematicians—specifically UCLA's Dr. Raymond Redheffer, who served as consultant—are talking about. Although International Business Machines

Corporation sponsored the exhibition for the Los Angeles Museum of Science and Industry, "it does not necessarily present any 'IBM kind of mathematics'" Eames explains. "The firm realized that, like any corporation in our time, its future depends on a broad base. We tried to make a cultural contribution. How did I approach it? Just as if I were a majority stockholder in the company, or just as if it were the ultimate thing I wanted to do—in other words, there is a constant overlapping of purposes."

Although almost invisibly merged in the final presentation, two levels of research were necessary to Mathematica: the first was Dr. Redheffer's documentation of the history and development of mathematics itself; the second was the search for ways to translate into exhibition terms what mathematicians say with symbols. After this came the problem of implementation: how to build a working demonstration of the nature of probability, the laws of minimal surfaces and of multiplication, the principles of projective geometry and of topology.

Of the problems in implementation, that solved by the six two-minute peep-shows, explaining basic mathe-



mathematical concepts, is characteristic. Since no one seems to produce a sound projection machine that takes 8-mm film and is designed for individual use, the Eames staff set about to engineer one. Early models looked like hybrids of beauty salon equipment and Martian gear. The final design, done with mirrors, is comfortably familiar, looks magically simple and "undesigned." Adjusting to the viewer's height, it invites him to sit down for about two minutes. Thereupon it provides him with complete privacy while he receives an uncluttered, light-hearted explanation of a fairly profound mathematical concept. (At this point the show's main problem is the translation from studio operation to public participation. In the shop, handled occasionally by sensitive operators, the machines all run; in the museum, at the mercy of an over-stimulated, uninitiated mob, the machines break down.)

Today we are often misled into accepting the symbol for the thing—e.g.: the man with a degree is educated;

four million cars equal transportation; creature comforts equal the good life. (The ability to do sums, subtraction, multiplication and division *with numbers on paper* is a "sign" of mathematical ability.) The too-ready acceptance of symbols carries with it the danger of lack of understanding and the consequent misuse of symbols. The chief premise of *Mathematica* is that the understanding of the idea takes precedence over the use of the symbol. And the designers are at their best when explaining, less successful when reporting.

Throughout the exhibition are examples, crisp, fresh and graphic, of the Lincolnian device of establishing

**Top left:** Distortions of Projective Geometry Machine dramatize difference between what is shown and what actually exists. **Right:** Moebius Band, a continuous strip with but one surface and one edge, represents topological concept used in map making, city planning. **Below left:** Visitor gets visual image of what math means today from 12 models of helix, pseudo sphere, etc. at show's entrance. **Right:** Peepshows explore such subjects as symmetry and numbers in live films and cartoons.



(across which visitors send orbiting marbles) a principle through the use of anecdotal demonstration. Item: children make paper Moebius bands almost as readily as they do paper airplanes. Item: it is widely understood that a conveyor belt twisted *à la Moebius* wears evenly over its whole surface. From these two commonplaces the viewer of the topology exhibit (page 40) moves delightedly into the world of topology, comforted by the fact that he can always get back to the starting point—or go forward to it.

More important than the base-touching aspect of the exhibition is its age-spanning relation to its audience. At age five, or even 55, one may not understand Kepler's three laws; but the magic of the celestial mechanics machine is that its explanation of gravitational pull does not initially require understanding, only acceptance. The demonstrations do not tell how to do something, but rather show how it is done or "how it happens that . . ." The projective geometry machine (page 40), for example, presents the difference between what-is and what-is-one's-view-of-what-is. The viewer is left to draw his own inferences, either political, or mathematical, on the effect of viewpoint upon the understanding of truth.

Hanging in stately order from the ceiling is a galaxy of quotations, entitled "Portrait of a Mathematician." Each of these is set in a type chosen especially for its appropriateness to the vintage of the idea expressed. These type differences are subtle ones, depending on consistency and scale for their effectiveness, rather than mere difference. More than preciousness is involved here, for the show—though three-dimensional—is primarily an achievement in graphics. The major portion of the exhibition is a photo-product, all copy having been linotyped, photographically enlarged, set in repro and pasted up. One could even say that the exhibit comes K-D — with a certain degree of independence of the parts. The economic advantages and versatility of such a technique are immediately apparent (and will help in assembling the facsimile being prepared for the Chicago Museum of Science and Industry): 1. The show may be reproduced readily and cheaply. 2. As galleries differ in size or character, elements may be eliminated, added, reduced, enlarged, corrected or otherwise changed. 3. The repair of deterioration or damage should reduce to a housekeeping chore. 4. New models, new ideas, fuller explanations may be introduced without disrupting the layout.

The History Wall, 50 feet long and 11 feet high, attempts to (1) establish the flow of mathematical communications along with the chronology of mathematical concepts in the western world, (2) identify and present creative mathematicians with their unique con-

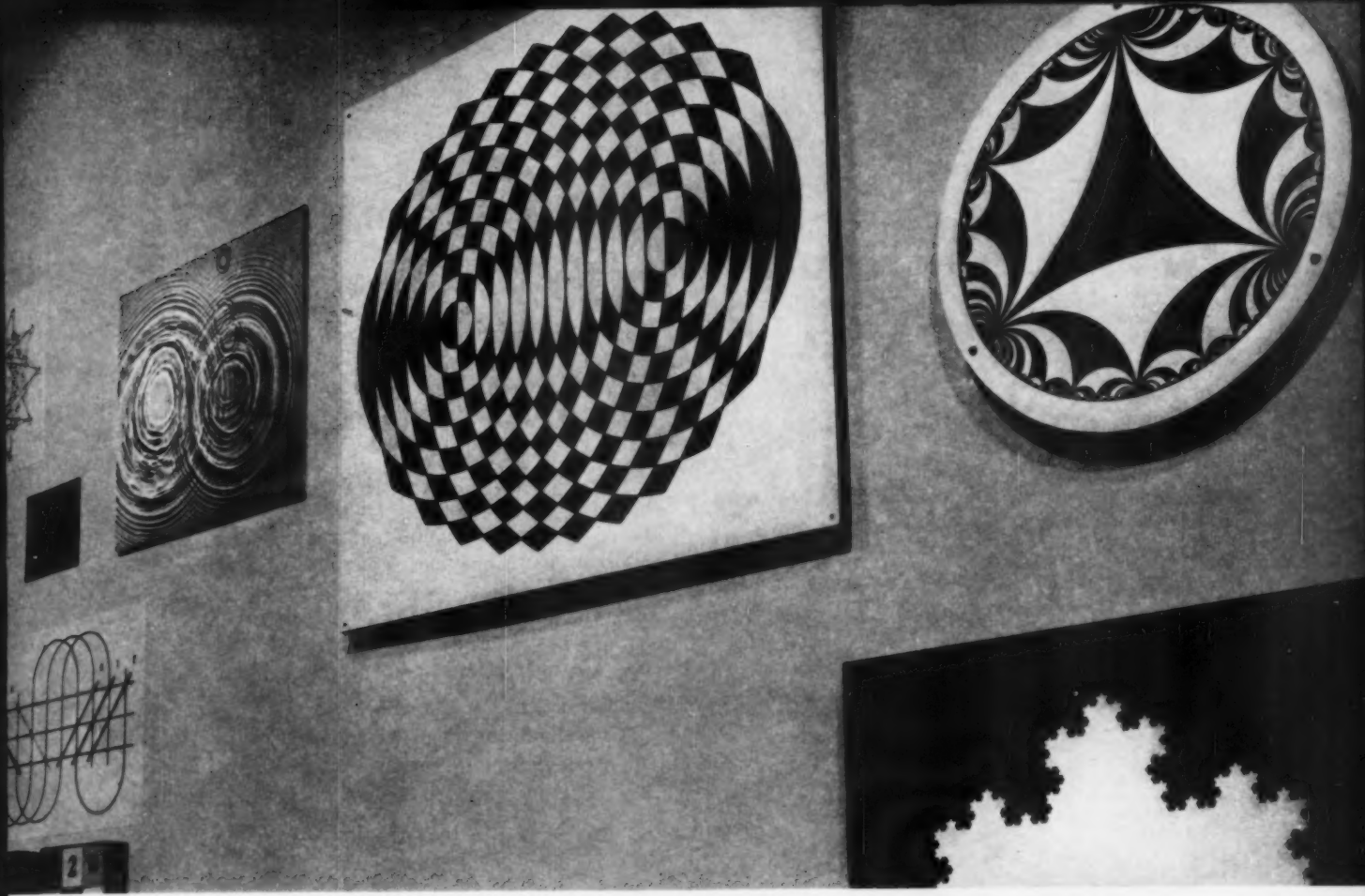
tributions to the art, and (3) set, if only lightly, the historical scenes of the seven and one-half centuries (12th into 20th) thus documented. If there is a weakness in the concept of the wall, it is its old-fashioned parochialism (and an Apologia is missing) — what if the Eames office were called upon to duplicate the History Wall in Calcutta? Or, if some ten-year-old asks, "Did nothing happen before 1100?"

Even after a long look at the History Wall, one might be intimidated. Here is the Encyclopedia of Mathematics opened out as a road-map which spans both time and space—everything is there but the room to breathe. The chance use of color on the wall could reasonably be exchanged for a schematic device which would code the data. Distinct color differences would organize the material for the viewer so that he could tell where he was going and where he had been.

Typographically the History Wall represents an interesting but not wholly satisfying compromise. Eames insisted on large clear type — in this case 18-point Century Bold Book type blown up graphically to display size (24 to 30 point) but still treated as book type. Reduced margins result in maximum use of the reading area. Letters and words read easily; phrases, lines and ideas less so. Possibly the most exciting, and at first, least noticed element of the Wall is the use of photographically reproduced title pages or frontispieces of first editions which presented important mathematical achievements. More than merely a charming device, this way of presenting the mathematician helps the viewer to cross time barriers (and gives many observers the closest look they will ever have of the history of printing).

At the end of the History Wall, the list of the names of living mathematicians quite incidentally performs a valuable service: it subtly reminds the newly informed viewer that, to quote Dr. Redheffer, "on the mile-high column of modern mathematics, an inch would account for what most high school graduates know."

Top: "For Image Wall we selected vivid material to which uninitiated would respond." Bottom: "Only Redheffer and I had chutzpah to make selections for History Wall," says Eames.



# 500 1600 1700

A dense grid of small informational cards and images, organized chronologically from 1500 to 1700. Each card features a portrait of a scientist, a small diagram or illustration, and a short text block. The names of the scientists are printed in bold letters above their respective cards.

**1500**

- TARINQUE
- CARDAN
- VITIA
- NOPIER
- STEVIN
- CALILEO
- KEPLER
- WALLIS
- GREGORY
- NEWTON
- DEMOIVRE
- LEIBNIZ
- GERMAT
- PASCAL
- BERNOULLI
- DISARGUES
- DISCARTES
- BERNOULLI
- HOYGENS
- SERI

**1600**

**1700**



## 2. Dynamic America BY ANN FEREBEE

A spoonful of corporate history blends smoothly with a dash of fancy in the fact-packed exhibition in the lobby of General Dynamic's new headquarters at Rockefeller Center, New York. If corporate history is not one's dish—as it isn't for many of the casual tourists who visit it—the show's melange of comical electric corset ads and weird flying machines (see cover) still adds up to fun. And if the show's premise—that the aims of the company coincide with the aims of the nation and spring from the same historic impulse—is pretentious, one can skip over the message into a flurry of bright posters and handsome models (page 55, enjoyable for their own sake. Although he did not live to sample it, the person for whom this exotic dish was concocted was, in an important sense, the company's first president.

When John Jay Hopkins created General Dynamics 10 years ago to unite such commercial giants as Stromberg Carlson, Electro Dynamics, and Convair, he

Visitor begins at left with company history, passes by models and posters to balcony, ends tour near panel of president Frank Pace, right.







On balcony, World War II is compressed in picture books with captions keyed to reading ramp.

wanted to impress this complicated new corporate entity on the mind of the general public. Since many of the company's products—the Nautilus, the Atlas and Polaris—were still secret at that time, he turned to graphic design to express in abstract symbols the company's mission (ID, June, 1957).

The present exhibition is based upon the company's massive corporate history, *Dynamic America*, and both are a kind of final flowering of Hopkins' idea. "Our idea," says Courtland Canby, who collected the material and wrote most of the book, "was to weave the story of General Dynamics' growth into the technological history of the whole country. In effect, this was a very high level public relations job." (It was conceived as such by PR man John Nevin, who also helped edit the book.) Credit for the handsomeness of both the book and the exhibition goes to Swiss-American designer Erik Nitsche, whom Hopkins had retained in 1955 to help explain the company's broad activities.

After Canby cut in half the first mammoth draft of *Dynamic America* to bring it down to its present 426 pages, he began collecting visual material from dozens of corporate sources, from the Smithsonian, and from

military and commercial archives. As he completed each of the book's 12 sections, he sent them to Nitsche at his Ridgefield, Connecticut, studio. There Nitsche imposed a rigid design scheme to assure a coherent pattern for the clutter of visual material. He consistently maintained a horizontal format on every spread, numbered each illustration's captions consecutively for easy reference, and allowed room for provocative tag lines at the bottom corner of each page. "In order to attract readers," says Nitsche, "we featured material as imaginative and non-commercial as possible." And the 17th century engravings (see color insert), the old song sheets, advertisements and newspapers are what give the work its special excitement and exotic color. Each division of the book begins with what Canby calls a "fantasy section," and it is here that one discovers Admiral Dewey on a Spanish-American War poster, patent drawings for the Navy's first submarine cheek by jowl with Jules Verne's fantastic vehicles, even Barney Google with his goo-goo-googly eyes. Such treasures make book and show great fun.

Nitsche had felt from the beginning that the material in the book would lend itself to an interesting



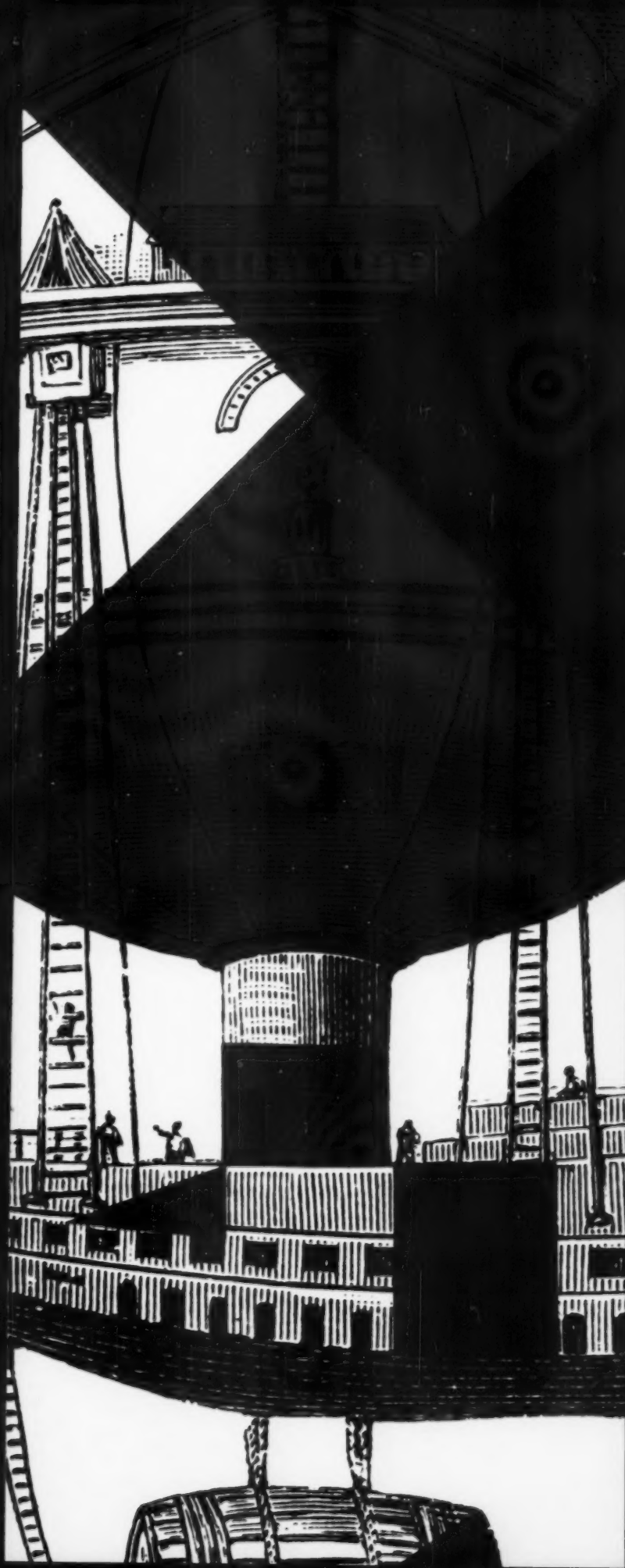
exhibition. But it was not until General Dynamics moved into its new Rockefeller Center headquarters last year that he began the arduous conversion job. Working with Gaston Burnand, director of his Geneva, Switzerland, design office, Nitsche sifted through the book's 1,014 illustrations five times, finally eliminated half of them. One of the difficulties in compressing the remaining mountain into a manageable molehill was the unequally divided exhibition space (see plan above). From Time, Inc., the former tenants, General Dynamics had inherited an irregularly shaped 100 by 20 foot wide exhibition area with a small second floor

balcony. However, the peculiar geography itself suggested the show's three divisions: early history (including much of the fun and romance) on one of the walls; 1920 through World War II (the voluminous material on the war has been fitted into three giant picture books, page 45, to avoid monotony) on the small balcony; and the post-war period and present status of the company on the irregular wall below.

When Nitsche had finished selecting the book's most colorful material—from William Griscom's pioneering fist-sized electric motor, Gallaudet's glider and Glenn Curtiss' Gold Bug (which flew 25 miles before landing), down to plans for Centaur, the company's latest space project—he knew he had material that could capture the attention of the most varied audience, children and tourists as well as corporate vice presidents.

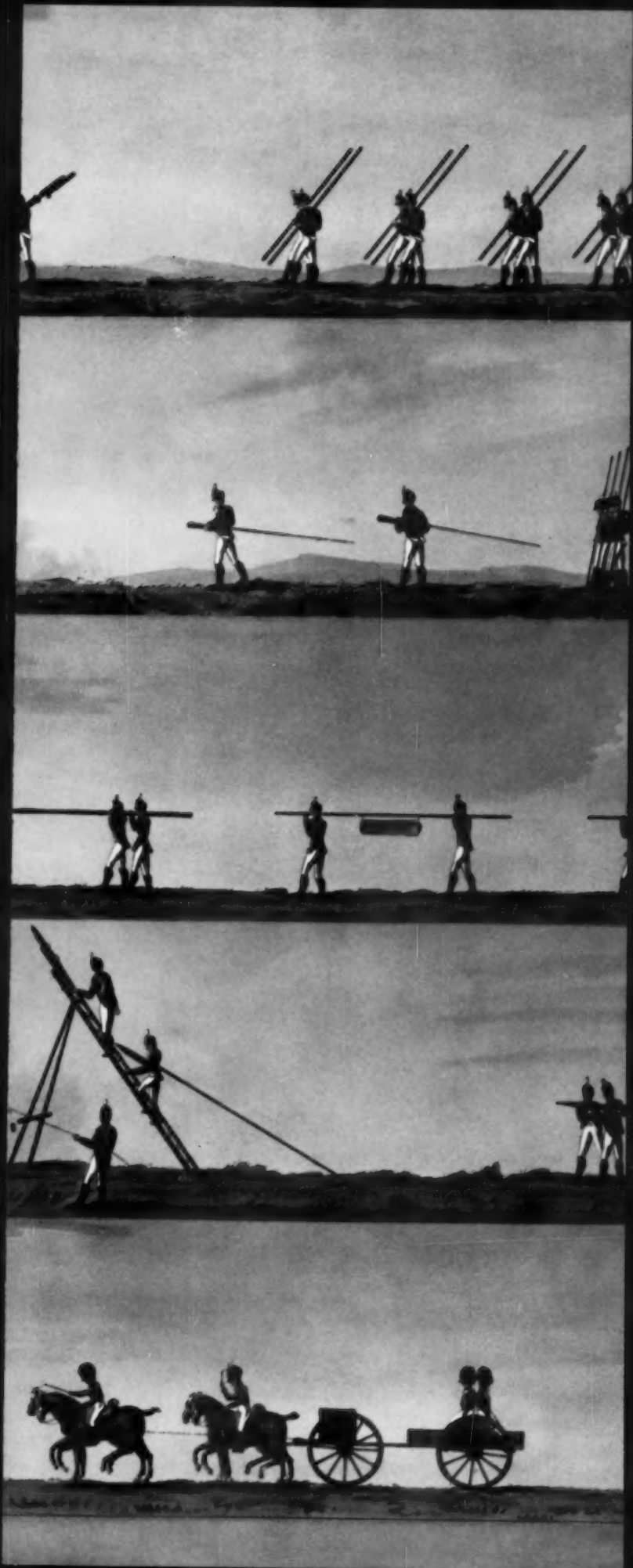
To further capture interest Nitsche used such audience participation devices as a crank movie on post-World War I stunt flying. This, the picture albums on

















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AF-5

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FELIX  
OSKIN

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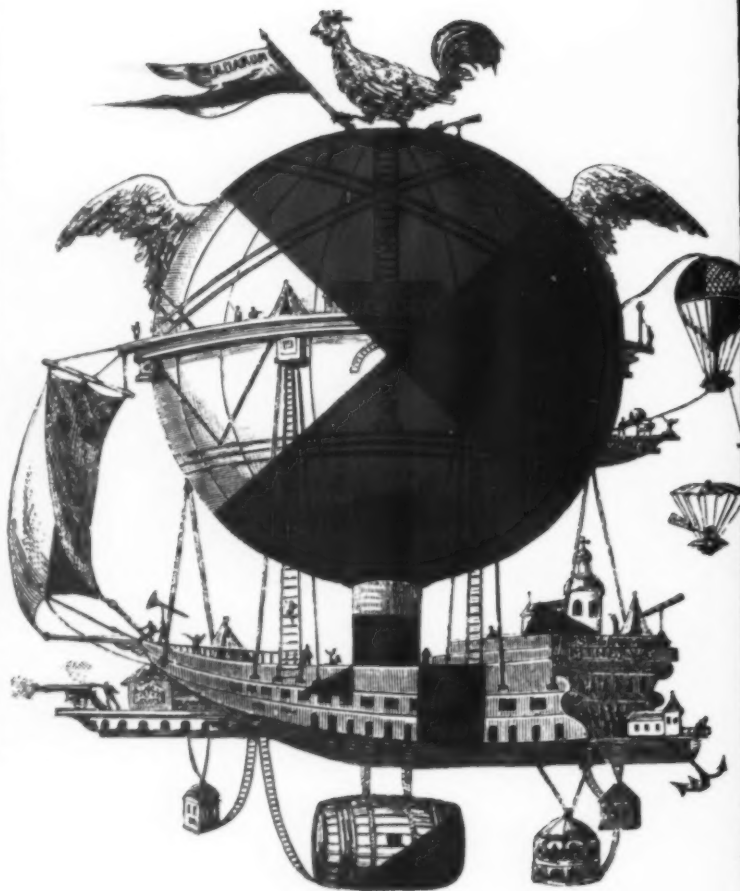
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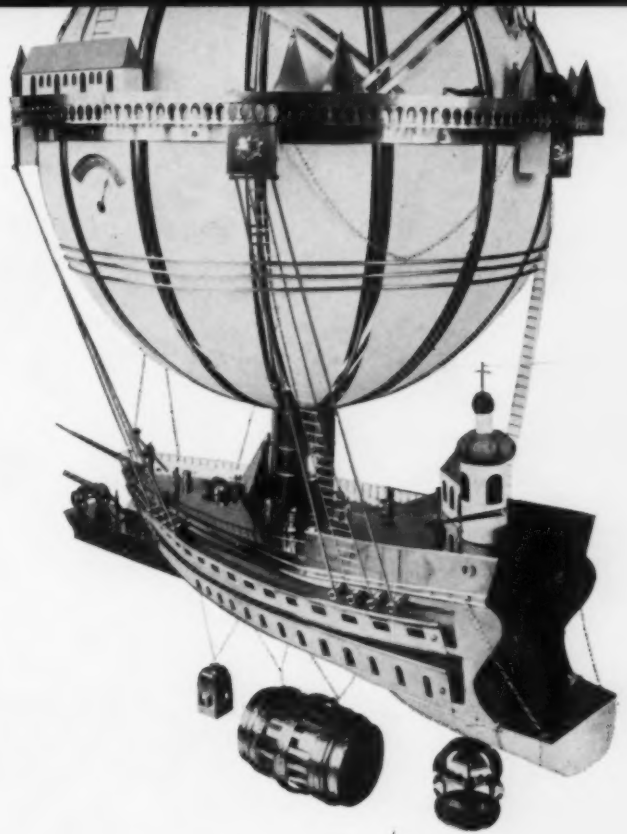
*Exhibit catalog designed by Erik Nitsche*

*ENI S.A. / Erik Nitsche International Geneva, Switzerland and Ridgefield, Connecticut*

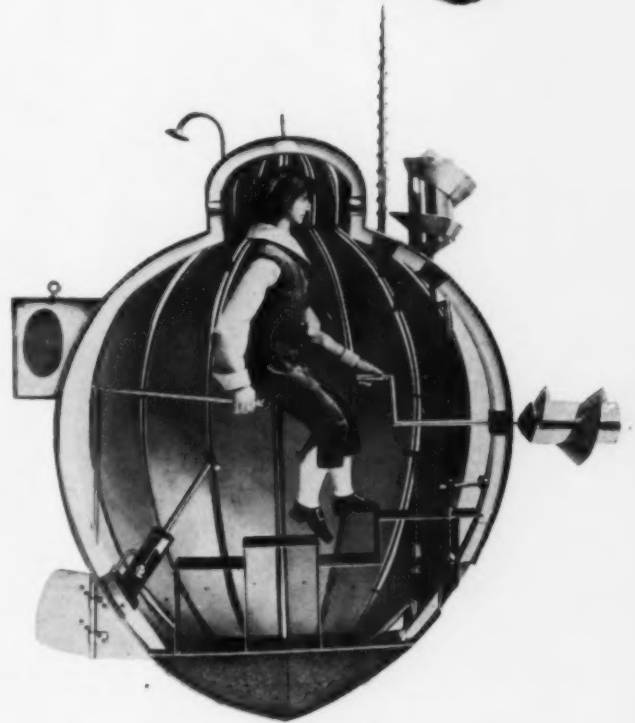
*Printed in Switzerland by Roto-Sozial, Geneva*



World War II (page 45), and a pivot panel device also helped compress a still massive collection of material. But the visitor to Dynamic America may nevertheless come away with visual indigestion if he tries to swallow everything at once. The trouble is the design doesn't provide enough tips about which elements are most important. The reading ramp (page 45), on which each numbered caption corresponds to a numbered item on the wall, makes all elements seem equal in significance. With no headlines to emphasize the show's main ideas, the visitor must act as his own editor. In the process he may pick up quite a bit of information on the private yacht of the last Czar, but very little on what General Dynamics is or does. Nor do Nitsche's handsome posters (which have been called "symbolic expressions of General Dynamics' corporate mission") tell much about what the company does. But they, like the rest of the show, do immediately convey a vigorous, imaginative corporate personality.



Color insert, left, is from Dynamic America exhibition catalog. Beginning with catalog cover, the subjects are: proposed space balloon, Minerva; mock naval battle from Hanzelet's *Pyrotechnic*; Congreve's *Rocket System*, published in 1814; core of Triga reactor; radome of tracking antenna; information center of nuclear-powered USS Triton; problem board used in development of Atlas. These color pictures appeared first in book, later in promotion for it, and then in exhibit panels. Show's elaborate models include Convair's proposed atomic powered plane (page 54); space balloon Minerva (also shown on front and back of catalog); Bushnell's Turtle submarine (right), which unsuccessfully attacked British during Revolution.







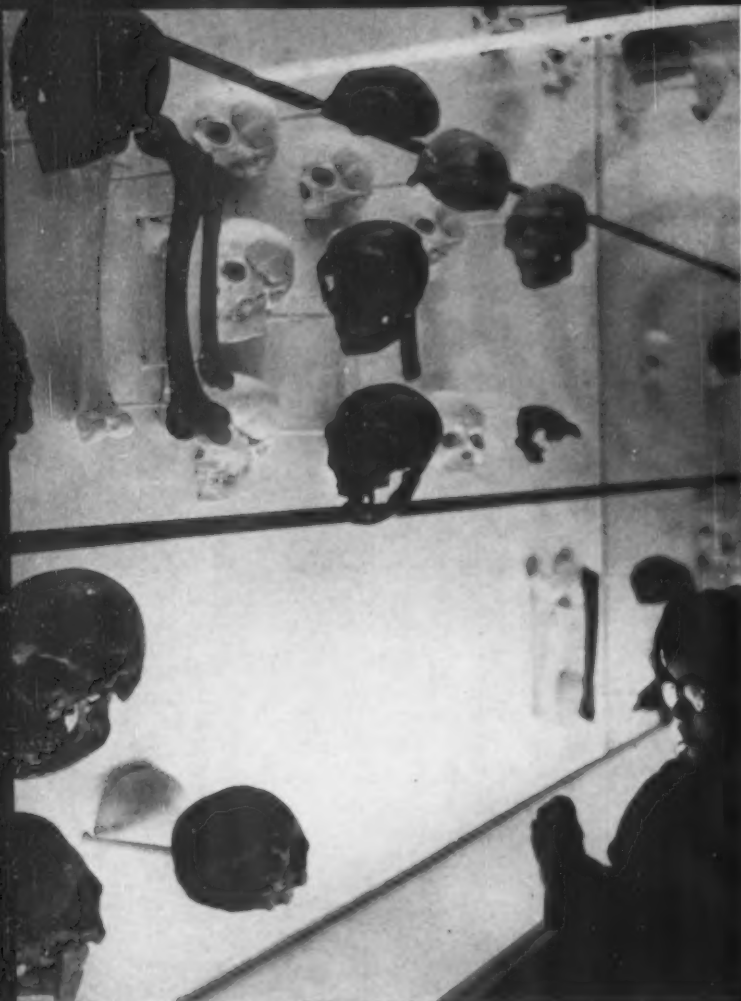
### 3. Biology of Man BY ANN FEREBEE

The facts of life — from how man got here to what, biologically speaking, keeps him here — are presented with a new standard of scientific accuracy and neat good looks at the American Museum of Natural History's permanent exhibition on the Biology of Man (and woman) which opened last month in New York. Starting with a bright yellow, red, green, and blue tile diagram (page 55) dramatizing man's brief tenure on earth, the show goes on to classify man in relation to other animals, and, in a second room (see plan, page 58), illustrates circulatory, reproductive, digestive and other systems with ingenious and handsome models. For the museum the show is a radical design departure. Traditionally known for its habitat groups (where natural laws are implied through total reconstructions of scenes from nature), the museum here relies on *explicit* visual demonstrations.

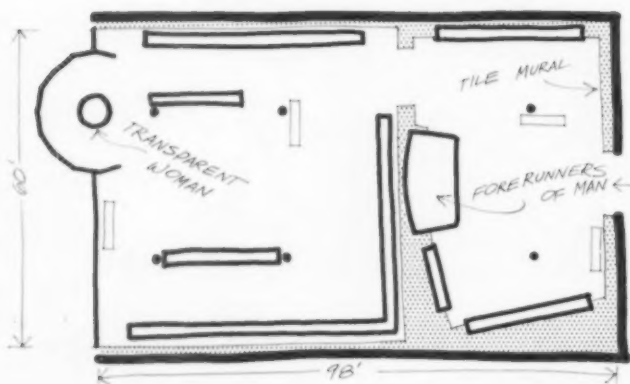
Of the three shows reviewed this month, this is the most serious, perhaps the most socially significant,

Left: Model of circulatory system simulates blood flow, pumping heart. Below: Reconstructions of forerunners of modern man.





Photos on pages 57-59 by MAUDE DORR



but also the most academic. Yet the museum's excellent design department, working here under the direction of Henry Gardner, has made an uncluttered and handsome design of needlessly bookish concepts. For one thing, bright colors help warm an essentially cold presentation. And color — green, grey, purple — helps to a further degree by desensitizing such clinical subjects as the embryonic development of the human face (page 59). Many of the models are extraordinary (page 56 and page 61). By superimposing

etched sheets of Lucite and edge-lighting them independently, the design department has found a way to illustrate multiple activities in a single model (see circulatory system, page 61). They also use photographs dramatically. Behind plaster models of the male and the female reproductive systems (above), the designers have placed an astonishing photo — enlarged 8,000 times — of a human egg surrounded by sperm. Surprisingly, this microcosm reiterates the macrocosm of heavenly bodies in outer space.

What interests people most in the show? One eight-year-old boy, who preferred "the dragons they keep upstairs," was also interested in "the lady with her stomach cut open." Another child, who liked the skulls, obviously enjoyed them for their own spooky sake, missed the point that they were "fossil evidence of human evolution" (above). Toddlers under school age often ignore the show, but enjoy studying their own reflections in the black strips of glass spaced between exhibit panels for visual relief. The exhibits which draw the biggest crowds are the talking transparent woman (because she talks?), Dickenson models on the birth of a baby, reproduction, filtration of the

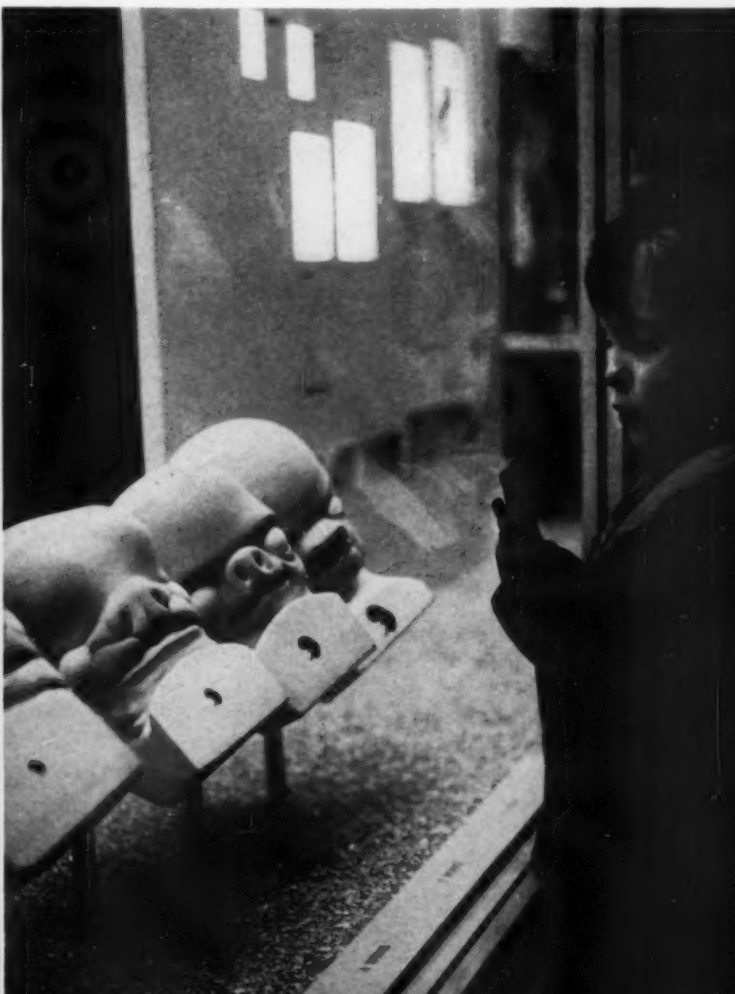
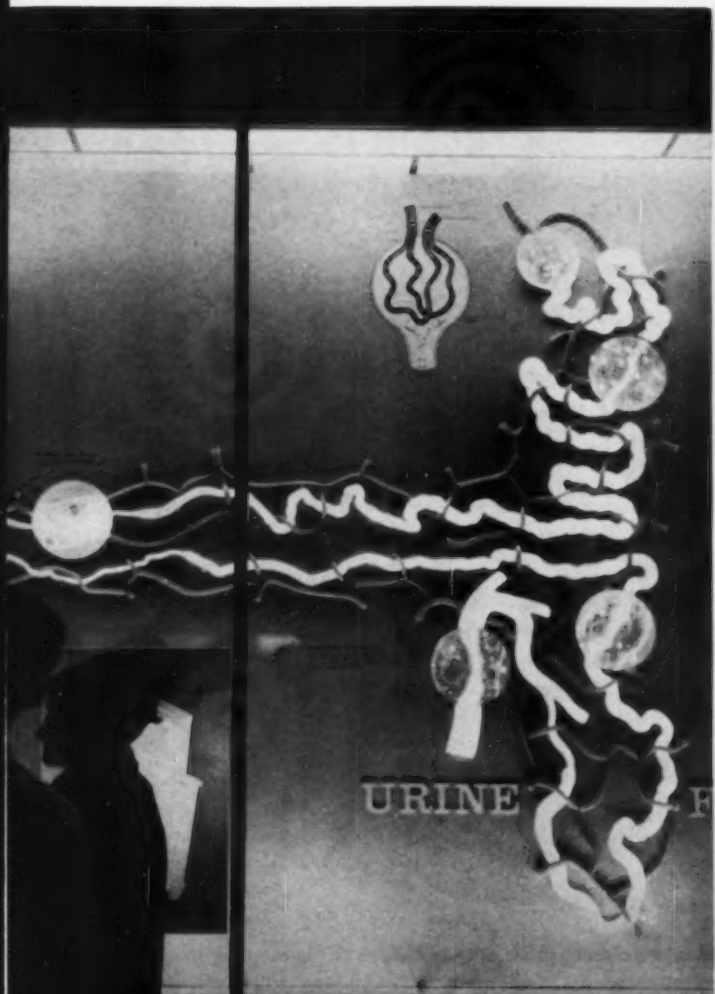
kidney (below). Reactions run from the bloodthirsty to reverent awe, and on a typical Sunday (the most popular day) the crowd may include high school students on assignment, bearded university students, babes in arms and in baby carriages, lovers, parents with teenagers, even the Sheikh of Oman. Except for those on assignment, few look with much system, pausing randomly at the cases which attract them.

Although the purposes of this wildly mixed crowd range from pure enjoyment and getting in out of the rain to concentrated study for classroom examination, the exhibition aims at only one end of the interest spectrum. While officially the new hall's purpose is to "summarize for the general public present concepts of human biology as developed by most recent scientific research," in fact it provides mainly for students, presenting a good three-dimensional system of freshman biology, but little for young children or unprepared adults (although these two groups make up a

big portion of the viewers). The exhibition might have communicated better if the museum had first answered some obvious questions: Who would come to the show? Why? How could they be reached? The failure to resolve *these* questions suggests that the museum could not face up to the central one: whether its own intent was sufficiently "democratic" to satisfy the public's needs. Having to duck this issue, the museum fluffed on the others too. But what the museum has chosen to present could be far more effective simply through intelligent editing.

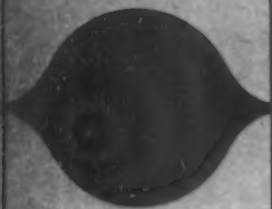
For example, the present show assumes a vocabulary that many visitors just don't have; unless he has oiled up his Latin in advance, the visitor may not recall that "arboreal life" has something to do with living in trees. And titles like "Man as a Verti-

**Top left:** Child studies early skulls, fossil evidence of man's evolution. **Right:** Male and female reproductive systems appear in front of Dr. Landrum B. Shettles' greatly magnified photo of human egg surrounded by sperm. **Below left:** Filtration system of kidney appears in such detail museum hopes even specialists can learn from it. **Right:** Dramatic changes in formation of face before birth are shown in green, purple, and grey models.



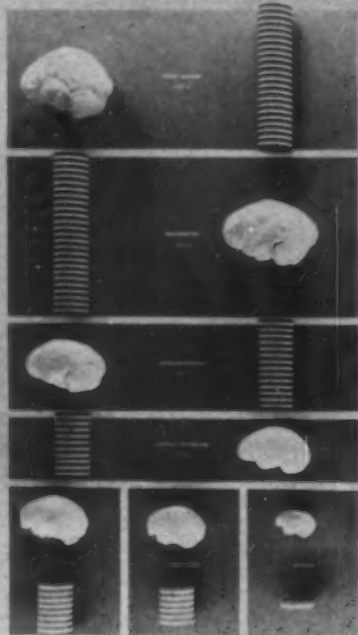


## MAN AS A HOMINID



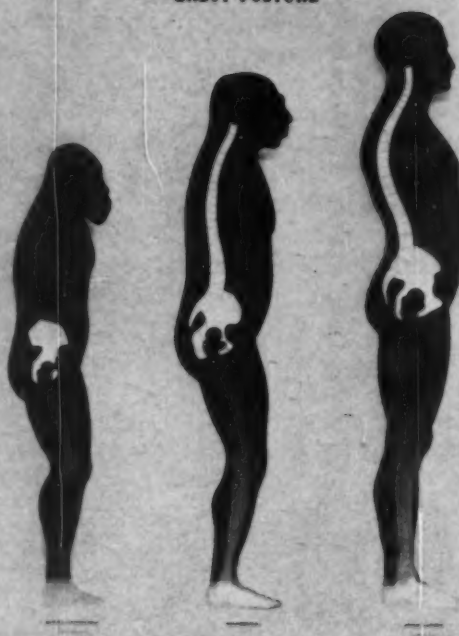
MAN AS A HOMINID

### INCREASING BRAIN SIZE



INCREASING BRAIN SIZE

### ERECT POSTURE



brate," "Man as a Hominid," don't mean much unless one is already familiar with these terms. Here, an editor might follow the scientific titles with more intriguing, non-technical subtitles. Without reducing the text to pap, he could drop a term like "bi-pedal locomotion" in favor of the simpler "ability to walk on two feet." The sheer quantity of text is formidable. Certainly, a good editor would not have wanted, in the already text-loaded Hominid case (above), a 10-line footnote debating whether the Australopithecinae of South Africa should be included in the Hominid family along with man. But since it does raise interesting questions, he might blow it up into a whole panel on "missing links," the role of evolution in anthropological thought, Darwin, the monkey trial, or how (and why) anthropologists classify as they do. As it is, the fascinating theory of evolution comes up only offhandedly here and in the exhibit on fossil evidence of early man. In this exhibit, as elsewhere, the show lacks a point of view. With little editorial definition, each exhibit panel carries equal weight, denying the visitor a sense of meaningful progression.

Better planning in terms of time might have helped

**Above:** Stacks of red and white chips compare sizes of Hominid brains. Lucite models (right) compare posture of Australopithecinae, Neanderthal and modern man. Large brain and erect posture distinguish Hominid family to which man belongs. **Opposite:** Layers of etched lucite are edge-lit to show interaction of heart and lungs. Air sacs of the lung are greatly magnified in detail section at lower right.

the show too. Dr. Harry L. Shapiro, the museum's urbane chairman of anthropology, who conceived and planned the exhibition, feels that to have "anticipated the time visitors spend at each case would have been folly since each new hall presents new problems." Perhaps. But a thorough tour of the present show takes at least two hours, not counting more than 15 minutes for the stand-up lecture of the transparent woman. This underlines the casual visitor's need for easy-to-grasp titles and subtitles in a show of such length and complexity. Soundtrek will solve this problem for many. This new, three-channel recording system carries a layman's, an advanced, and a Spanish lecture.

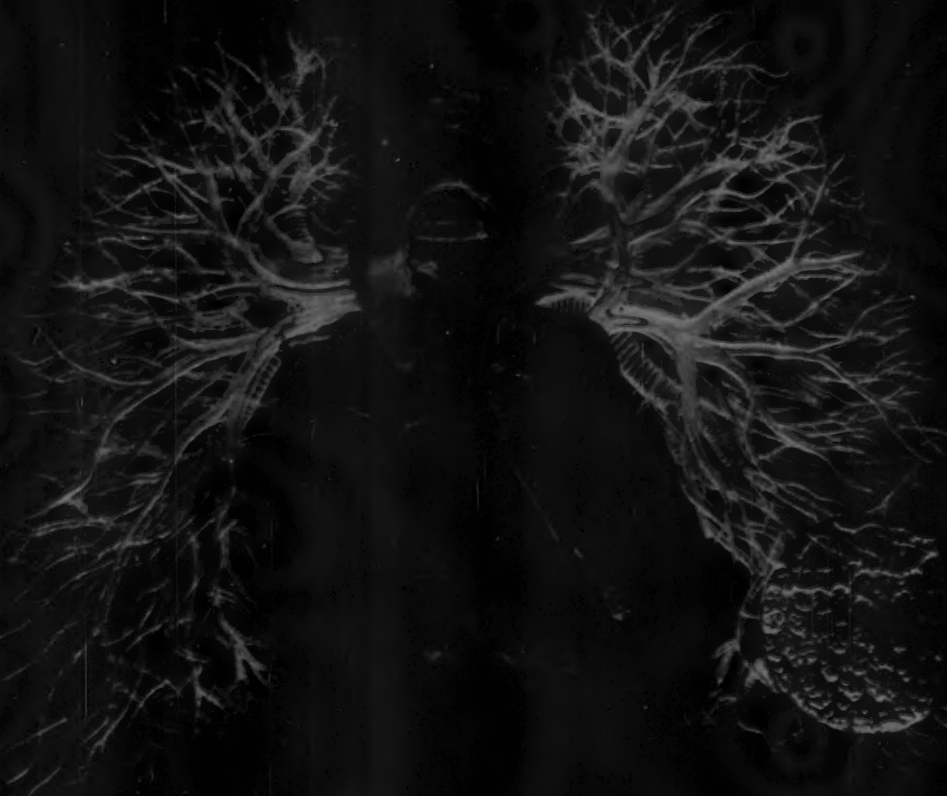
A more effective designer-curator relationship is one key to better exhibitions. At present the curator arbitrates on all questions—including the design questions. This, says the curator, is necessary because only he is equipped to translate the complexities of his discipline into accurate exhibitions (although amateur Eames worked successfully with highly ab-

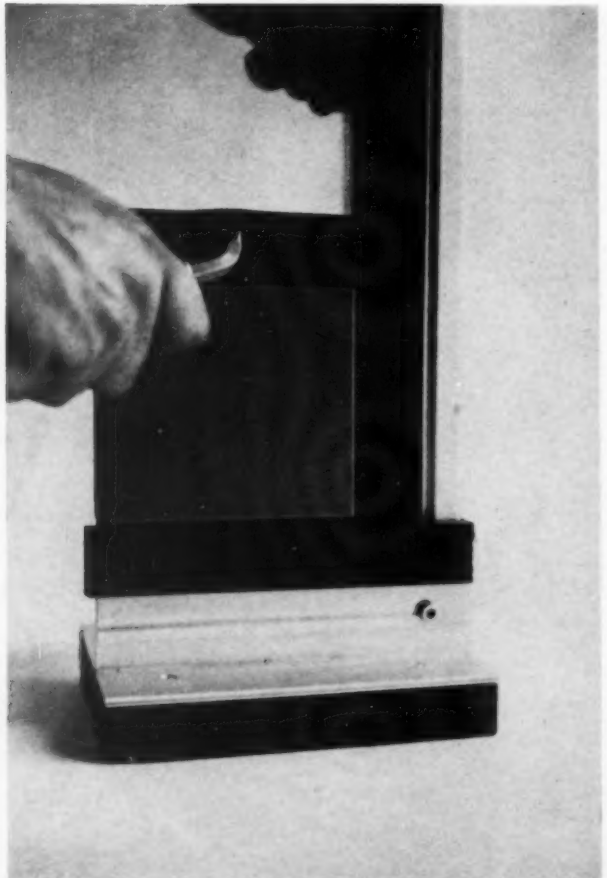
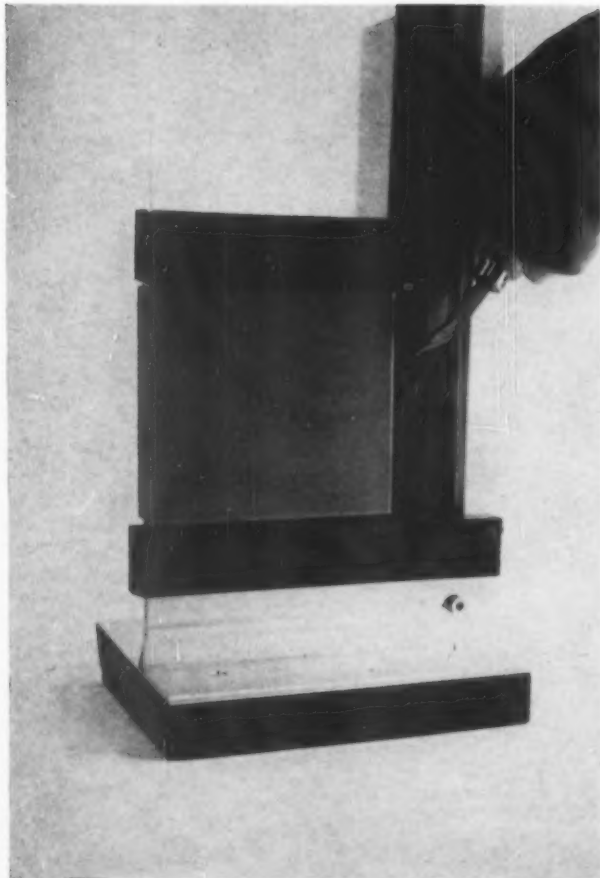
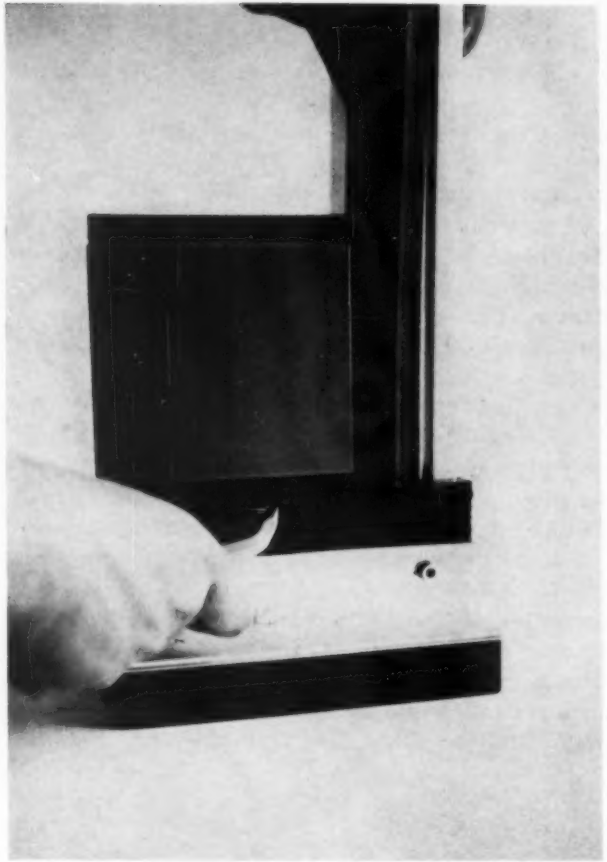
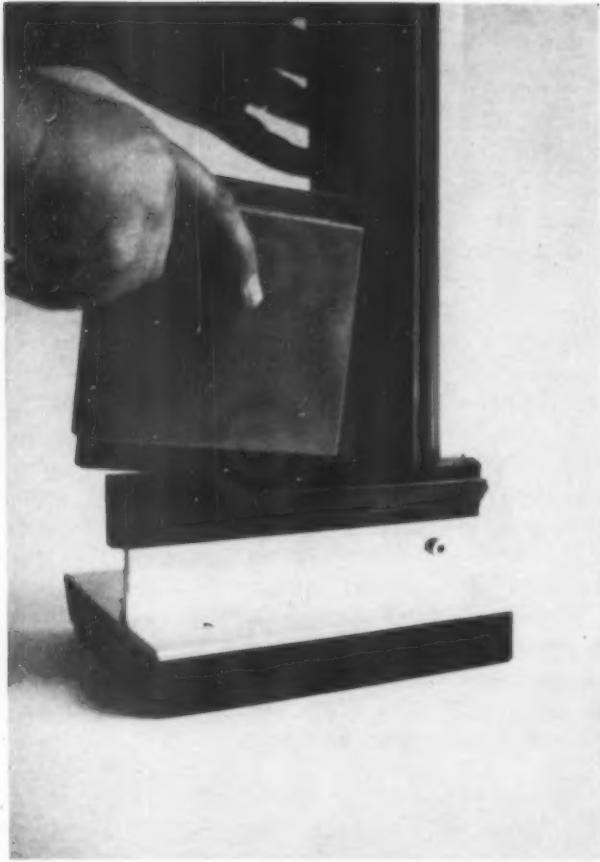


struse concepts in *Mathematica*). On the other hand, even the design-conscious curators aren't able to step far enough out of their primary roles to produce scintillatingly effective shows. And the curator's most carefully planned message means little if it fails to come across. Museum of Natural History's former director, Albert Parr, suggests a way out of the quandry is to make designer and curator each responsible for his own field. With the director acting as umpire, the designer needn't distort the show's contents nor the curator disrupt the design.

While the museum's carefully scientific presentation of the *Biology of Man* is impressive, the nagging problem is how much, and how, visitors use this information. Given the mixed audience, one wonders if another design concept might not have conveyed more to more people. It is clear, for example, that many children will piece together their first coherent picture of "the facts of life," from this show. But sci-

ence is not life. And the scientific is only one of many ways to present this kind of information. The random method of touring the show also brings to mind other design approaches. At present, visitors do not begin at the beginning of the show. Instead of the tile wall, they see first the heads of early man (page 57) or charts of zoological classification. Yet experiments show that it is possible to control the sequence in which visitors move, even to insure a particular kind of experience. Latham, Tyler, Jensen, for example, have experimented at the Cantigny Museum (ID, July 1960) with giving the audience an actual experience of the Battle of Cantigny as an introduction to the museum's artifacts and exhibits. In New York an artist named Allan Kaprow recently put his audience in a black box, dropped rain down on them, flashed matches, and bombarded them with blinking lights and electronic sounds. What about galvanizing attention with a *Happening* like that?



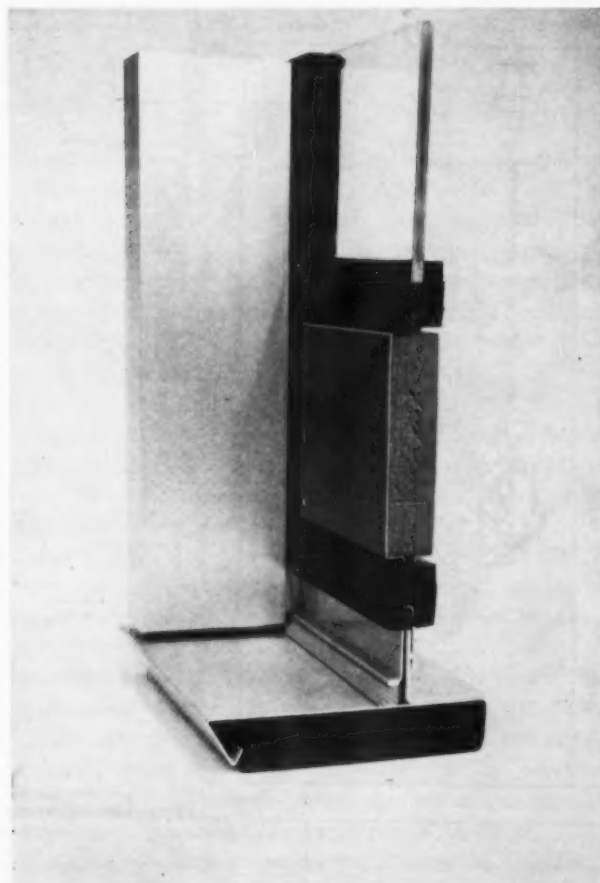


## ARCHITECTURAL ZIPPER

*A gasket with built-in slide fastener joins the panels and framing members of a new, speedy curtain wall system*

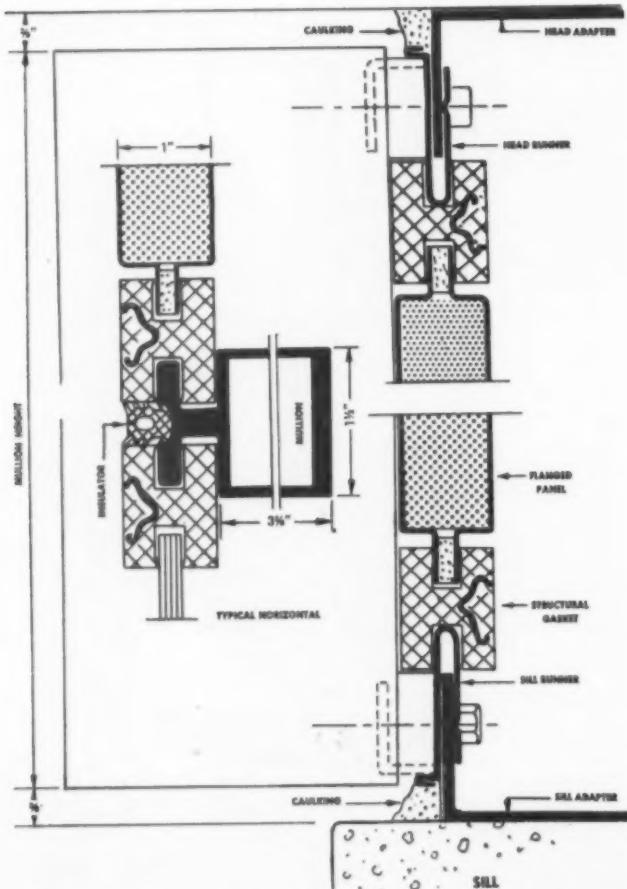
The idea of using visible gasketing around the windows of curtain walls is not new: Eero Saarinen borrowed it from the automobile industry for the GM Technical Center and the University of Chicago Law School, and Skidmore, Owings & Merrill gasketed the windows on the Libbey-Owens-Ford office building in Toledo, Ohio. But the Neoprene gasket shown here is different from these predecessors. Where they are primarily weatherseals, this one is both weatherseal and structural joint. And where they were custom parts for custom buildings, this one is a stock part for a new stock curtain wall system called Zipperwall which has been developed by the Kawneer Company of Niles, Michigan. The zipper in Zipperwall is quite literally just that: a slide-fastening hinged closure on the gasket locks together the various components that make up the system. These are (1) an extruded aluminum mullion, (2) a two-piece, self-leveling runner to be

Zipperwall's zip-together action is shown in the sequence of photographs at left; an end-on shot of a completed section appears at right. The all-important gasket, which looks like a diminutive H-beam, has a hinged, bracket-shaped lip that is opened and closed with the ball-ended tool shown (one of Zipperwall's extra benefits is that damaged parts can be easily replaced). A caulking strip for the base of the sill and a snap-on vinyl strip for the exposed flange of the mullion are provided with the system to seal off these metal parts in locations where thermal leakage is a problem. A wider version of the gasket, to hold 1-inch-thick thermal glass, is currently under development.

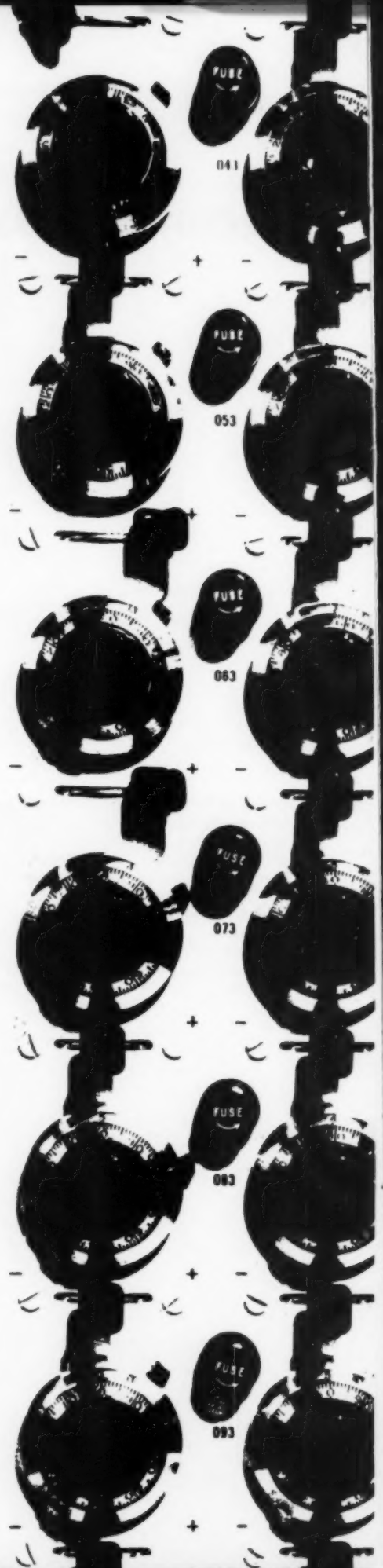


ZIPPERWALL

used interchangeably as sill or heading, and (3) panels of 1/4-inch glass, or of 1-inch enameled-steel-over-perlite-core with flanged edges that narrow to 1/4 inch. The gasket joins panels, windows, and mullion-and-runner frame in pattern arrangements that are limited only by the size of the bays between mullions, which in turn are governed by a building's environment. Depending upon the windload a wall must withstand, Zipperwall will span bays up to five feet wide and 13 feet high without any additional horizontal bracing—the stresses of the wall's own dead weight, as well as the live weight of the windload, are carried outward to the mullions by the gasket. Zipperwall is designed to be assembled on site; it can be cut and fitted by unskilled workmen (the corners are simple butt joints). To compensate for seasonal expansion and contraction, the gasket is cut slightly longer than required and installed under compression (a chart shows additional lengths needed for various spans at various temperatures), and a sealer-adhesive is daubed on the end of the gasket to insure a tight joint even when the cut is not quite true. The zipping is done with an awl-like tool furnished with the system.—B. D.



Zipperwall in plan (left) and elevation (right).





## 1961 IRE SHOW

*The design news this year was imaginative engineering and the increasingly intelligent use of color* BY PAUL WRABLICA

The electronics industry is like a classic riddle: what grows smaller as it grows larger? Five years ago the annual show of the Institute of Radio Engineers was a strictly intramural affair put on by electronics engineering firms for engineers in other electronics firms in one or another of New York City's dingy armories. This year's IRE show drew a roster of 875 exhibitors to the New York Coliseum from March 20 to 23, and its record audience included visitors from 40 foreign countries representing the fields of defense, medicine, heavy industry, and consumer goods. The products they came to see were—as might be expected—smaller than ever.

Aside from miniaturization, the news at this IRE Show centered on imaginative engineering and on a really remarkable rise in the incidence of color—not just frivolous color, but color used intelligently to project both the creativity and the reliability of the engineering. Technical Instrument's potentiometers (7), for instance, are alternate disks of red and silver anodized aluminum that look like precise, precious jewels—a look that is bound to encourage careful handling by maintenance and assembly personnel.

Color also makes a notable contribution to Computer

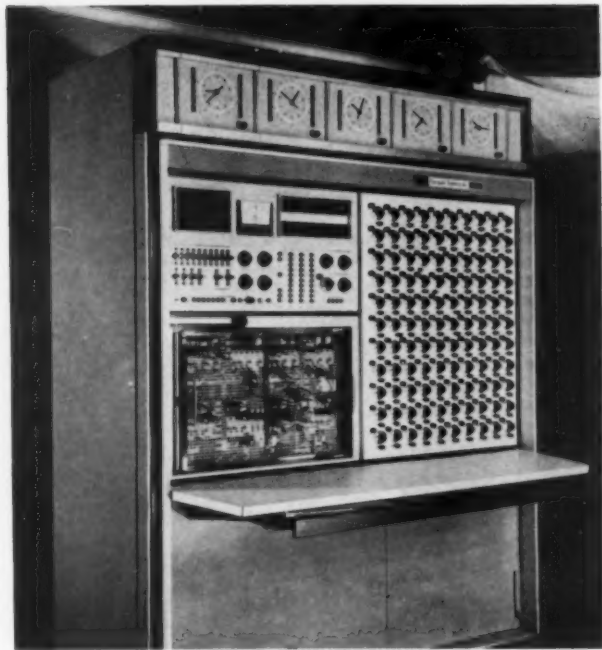


1 (Pattern on preceding page) — A bank of potentiometers on Computer System's analog computer makes an interesting textural pattern. These devices, familiarly called "pots" (see also 3 and 7), control the variables in electronic equipment much as glands regulate the human body; they match, balance, and organize voltage information into numbers.

2 (above) — Westinghouse exhibit was one of the few displays that considered the relationship between product and viewer. Overhead lighting was illuminating without being distracting; simple cube and cylinder shapes complement the products.

Systems, Inc.'s new analog computer (3) designed by Robert P. Gersin Associates, a massive console with an overwhelming array of potentiometers, jacks, and switches that manages to look both orderly and refined. To accomplish this, the latter elements are grouped into areas and treated as distinctive textural patterns which nevertheless have a relationship. The satin aluminum control panels are framed in an excellent "technical" blue (as distinct from a "textile" blue). And the multi-colored plastic jacks on the pre-patch programming panel make complicated problem-solving look as simple as Chinese checkers. In addition to its elegant appearance, this computer is also considerate of maintenance factors: its entire front panel swings open like a refrigerator door, exposing all wiring and additional facilities for possible expansion of the system.

Other color news included Keithly Instruments' adoption of a subtle beige-gray for all their instruments. The line, on which F. Eugene Smith Associates serves as design consultants, also has clean, uncluttered cases, bezels, and lettering. Lettering—and for that matter instructional markings and trademarks, too—appear to be getting more attention generally. Litton Industries (6), for example, has an elegant trademark (by Art Direction) that contributes to a feeling of quality, and the Loewy/Snaith logotype for British Instruments is one element in the careful attention to detail that gives this line its refreshing appearance.

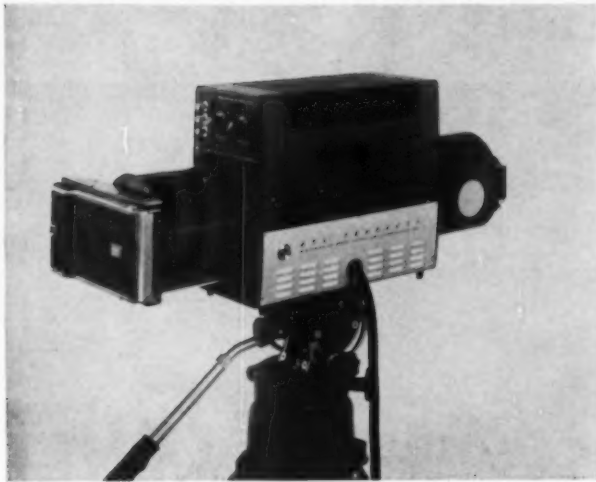


3 — Computer System's analog computer treats its masses of switches, jacks, and potentiometers as separate areas of texture and color; the potentiometers are patterns of polka dots (see also 1), the multi-colored jacks resemble a Chinese checker-board. Machine's function is to simulate physical systems and operating conditions.

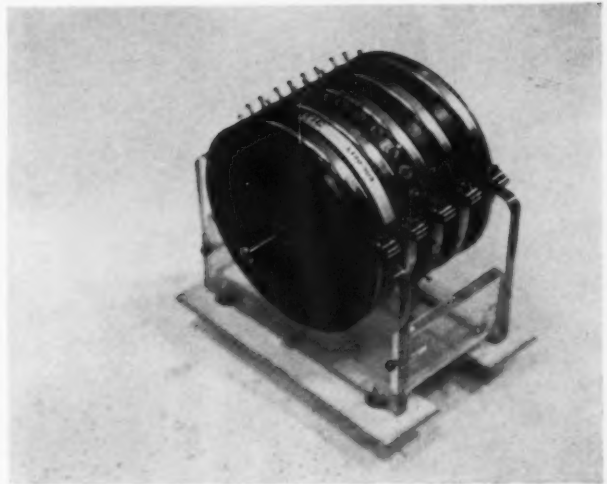
One of the most interesting appearance designs in the show was John Bruce's convertible case for the instruments of Electronics Associates, which solves a persistent problem: how to adapt a normally rack-mounted panel into an independent bench-top unit. Bruce's neat solution is a snap-on molding strip that camouflages the slot-and-screw mountings.

For designers the most exciting engineering developments were probably Photocircuit's printed circuit motor, eliminating the spinning of windings; Space Technology Laboratory's image converter camera (4), which converts electronic impulses into pictures taken on a Polaroid camera; and Lockheed Missiles and Space Division's unfurlable antenna (9) of Mylar aluminum foil laminate.

The show's most discouraging design element was the displays themselves. One of the best was Eliot Noyes' Westinghouse exhibit (2), which acknowledged the nature of the product and the necessary environment for understanding it (with simple, geometrical shapes and good top-lighting), but in most of the other displays, devices were shown against jumbled backgrounds and/or back-lighted panels that fuzzed their silhouettes and strained the viewer's eyes.



4—Space Technology Laboratory's image converter camera converts electronic impulses into Polaroid photographs. It has four interchangeable tops that lock into the base by means of a lever that activates a sophisticated cam-bolt arrangement on the inside of the case; the electrical contacts are plugs and receptacles that disengage when top is lifted.

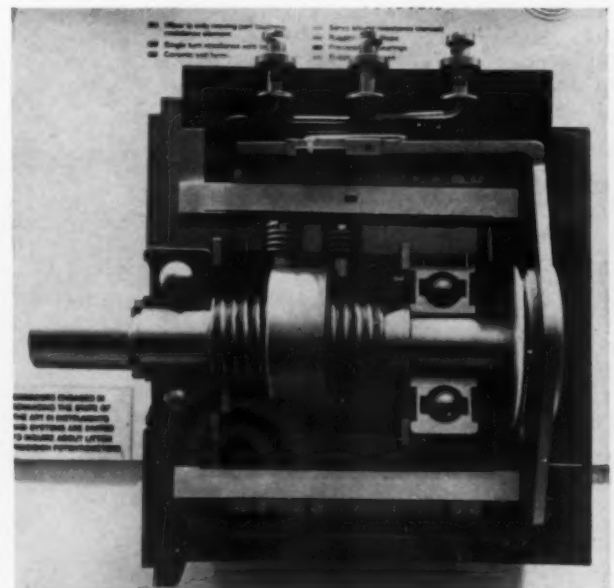


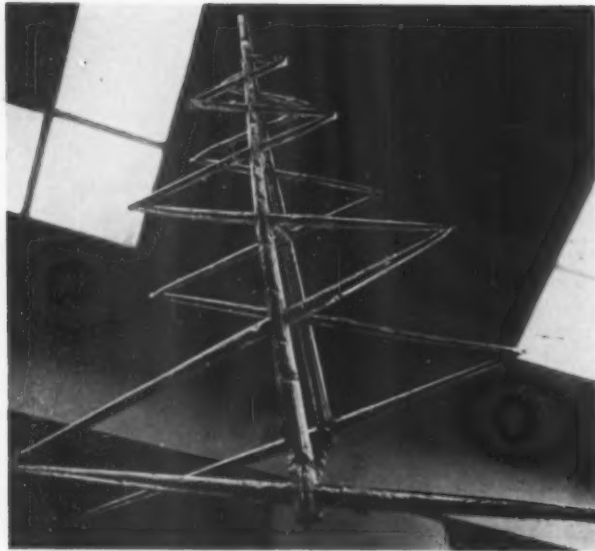
7—TIC's red and silver anodized aluminum potentiometers reflect both sophisticated function and capable performance. The inside of this 2"-diameter case is similar to that of the Litton cutaway demonstration (8). This small measuring device has an important function: a potentiometer is behind every dial on the analog computer panel (3).

5—Borg Equipment's microdial frames a three-digit readout, helping to isolate it from other informational controls that may appear on the board. The numerals are illuminated from the rear, emphasizing the device's visual focusing.

6—Litton Systems division of Litton Industries developed a miniature shaft encoder that combines good taste with good engineering. A rotary shaft converts electric voltage into digital information; access to the mechanism is by lifting the hinged cover. Its sophisticated appearance belies the economies of sheet metal fabrication and silk screen markings.

8—Litton Industries displayed the inner mechanism of a potentiometer (see also 3 and 7) to show the intricacies of the device (average diameter, 2") that controls and adjusts voltage information.

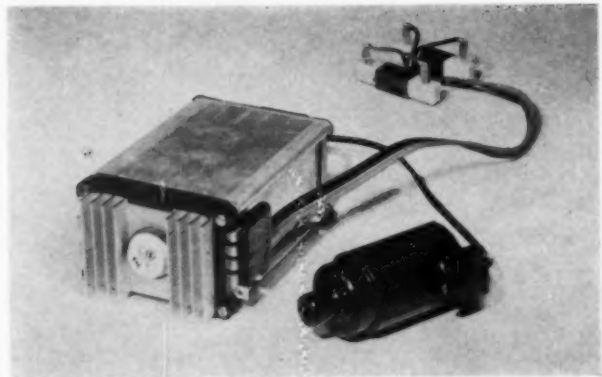
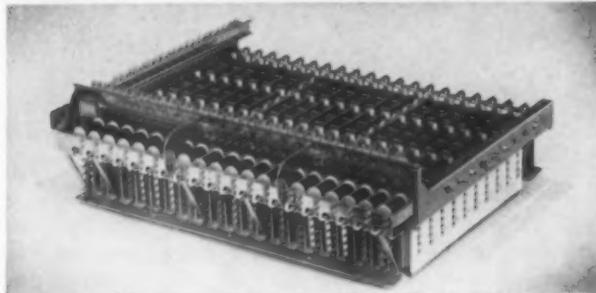
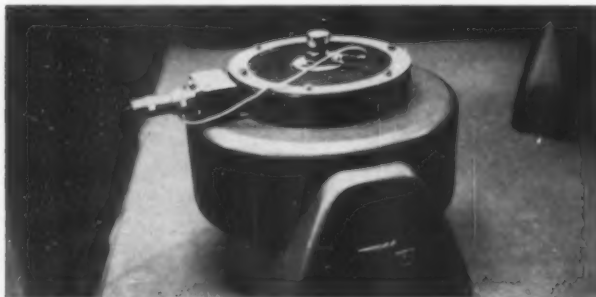




9 — Lockheed's unfurlable antenna of Mylar aluminum foil laminate is for space vehicles. It is 8 feet long, folds into an approximately 4-cubic inch package, weighs 12 ounces.

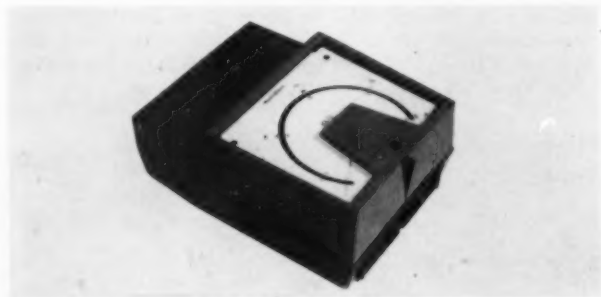
10 — Portable vibration test machine by MB Electronics uses a permanent ceramic magnet for stability, has a metal case put together with epoxy adhesive instead of bolts. A miniature powerhouse (7" diameter), with a frequency range of over 10,000 cps, provides 50 lbs. force, 100 g acceleration.

11 — Disciplined engineering thinking is reflected in Cunningham's crossbar switch, a device for switching and organizing data; contact may be established immediately on any one of the 600 gold closures in this 10" x 10" x 6" package.



12 — Electronic ignition system developed for the automotive industry by Yung-Sol Electric provides a constant source for the energy necessary to fire sparkplugs and maintain freshly tuned engine performance; breaker points last the life of the car, and sparkplugs never need to be replaced. The system's other advantages are immediate starts, savings in fuel, and reduction of contaminants in the exhaust.

13 — Portable meter by Westinghouse incorporates a new principle of suspension for the calibration needle: instead of pivoting on a post, the needle is continuation of a single taut band that emerges directly from the inner mechanism. Its benefits are ruggedness and increased freedom from error.





**PACKAGING** *Some new tools for the trade*



## PLASTICS DOMINATE PACKAGING SHOW

*Genuine design vitality — expressed in constructions, wider materials range, and alert adoption of new materials — seemed confined to plastics. Other materials just maintained their status quo.*

BY WALTER STERN

The 30th American Management Association National Packaging Exposition was handsomely packaged itself in Chicago's new lakefront exposition center with floor-to-ceiling glass walls dramatically exposed to sleet-driven take-offs and landings of aircraft at Meigs Field. In contrast to the usual hard-boiled commercialism of exposition halls, its entrance walls were decorated with announcements of chamber music concerts of Haydn, Chavez, and Dallapiccola. Even before approaching the exhibit area, visitors were invited to spend a few quiet moments in a superb exposition of contemporary American paintings and sculpture featuring such names as Kantor, Shahn, Motherwell, Gwathmey, and Ivan LeLorraine Albright.

The exhibit echoed this cultural elevation with well-designed units of maximum technical interest and minimum carnival atmosphere, and a generally high level of design competence. Press releases, however, persisted in announcing every minor improvement as a "break-through," any material change as promising "30 per cent savings" (30 per cent seems to be the magic number this year), and in describing all packaging material economies in terms of a cost "equal to that of paper or paperboard."

The exhibit was completely dominated by plastic developments, with few innovations in other packaging materials fields. The single-floor exhibition layout, while making for maximum accessibility and convenience, also seemed to make it extremely difficult to locate special exhibits because vantage points were completely lacking. Many significant advances were hidden to the point of being all but impossible to find. The consistently developing pattern of mergers required the viewer's constant re-orientation. Accustomed to finding a certain development in the exhibit of packaging company A, he discovered that A had in the meantime merged with B, who had been bought out by C, a fact which sometimes not even the exhibition personnel fully understood. Further, there appeared an increasing reluctance to discuss or show developments that have not reached the commercial stage, so that even some pilot

production items were under wraps. Scant leads garnered in cocktail parties, courtesy suites, press booths and taxicabs had to be followed up tenaciously in order to develop any clear picture of certain developments. What is more, some items that figured prominently in last year's exhibit, and had seemed then to hold considerable promise for further development, were conspicuously absent.

The paperboard field concerns itself mainly with new constructions rather than with basic changes in the finish or manufacturing process of papers or board. Of considerable interest was a sleeve structure called Gusset-Pak (page 73), shown by Diamond National, which consisted of an open-end rectangular tube with small end corner pieces facilitating the packaging of multiple units with a minimum of board feet. This package is formed wholly automatically, from hopper to conveyor, at speeds up to 100 six-packs or four-packs a minute and seems to be especially adaptable to the problem of packaging for combination and promotion.

The Mead Corporation featured an adaptation of their well-known Cluster Wrap (page 73), which has been firmly established in the field of cans or glass six-packs. The Cluster Pak and Cluster Wrap packaging systems are offered on a machine-lease basis, including continuous service policy. The package itself results in a completely closed shipper which can be easily opened into an effective display.

One of the few fields in which both paper and plastics seem to have achieved striking advances is that of cushioning. The increasing speeds of modern transportation, with its sudden and sometimes violent impacts, has spurred the development of a tremendous variety of highly ingenious cushioning materials and methods, including developments in knit paper, which in tube form may be ideally suitable for the packaging of glassware and other fragile items (See ID, March, 1961).

Automation of polystyrene foam molding is now a matter of fact. This is all the more impressive when one considers that in the surprisingly short time of a year and a half the molding process for expandable polystyrene beads has been transformed from a manual operation, frequently experimental in nature, into this fully automatic process. One of the many advantages of expanded polystyrene as a cushioning material is that its density and cushioning characteristics can be completely controlled. Expanded polystyrene offers great shock absorption at a low cost, is light in weight, and retains its physical characteristics in temperatures ranging from approximately minus 80 degrees to plus 160 degrees F.

Many designers were considerably impressed with

the potentialities of foamed styrene film when they first saw it last year, but few commercial applications were evident. However, in a year's time considerable progress has been made in adapting this fascinating material. One of the outstanding characteristics of foam film is that it will lend itself to the creation of thermo-formed packages which, in addition to the pliability and formability of other films, furnish the additional advantage of a rich, soft surface, a variety of colors, and maximum cushioning at minimum material expense.

Package designers sometimes appear to be badly informed about the true comparative costs of films vs. paper. At first guess, for instance, the use of polyethylene envelopes for the shipment of technical publications and magazines would seem a luxury, condonable only as a promotional device. This notion is refuted in cost figures disclosed by the publishers of *Consulting Engineer*, which for many years has been mailed in a conventional, heavy manila envelope. The publisher recently test-mailed the publication in .002-inch polyethylene film, formed around each copy from roll stock. Five hundred copies were sent out, accompanied by a post card asking for subscribers' reactions. Apparently the results of the questioning were extremely gratifying; 86 per cent of the comments received were complementary. What is more, postage savings amounted to \$2.50 per thousand copies and the makers of the envelope machine claim a materials cost saving of more than \$5 per thousand is possible.

The "boil-in-bag" field has expanded rapidly, but with little improvement in the physical characteristics of polyester bags themselves. They are still somewhat difficult to extract from the boiling water, are not too easily opened, and certainly are not as convenient to use as they should be. A step in the right direction is an inexpensive heater designed for volume preparation of boil-in-bag meals by restaurants and similar institutions. The portable, multi-unit heater, introduced by Minnesota Mining and Manufacturing Company, is capable of heating as many as 12 large plastic packages of frozen, pre-cooked meals simultaneously, so that they are ready for garnishing and serving at the rate of a package per minute. One of the most effective characteristics of the heater is the fact that its compartments hold the packages upright at all times, with the package seal exposed. The top edge of each package can thus be easily pulled from the compartment by hand without discomfort. Heating time is said to vary from 3 to 12 minutes, with packages of ordinary soup being quoted as ready for serving in approximately 5½ minutes.

In a further exploration of the boil-in-bag, or heat-in-pouch field, the Kaplan Paper Box Company of St.



Paul demonstrated a heat-sealable polyester film pouch set into a curved, scored cardboard package. The curved scores fold to form smooth convex panels and concave ends, which in turn create a container strength that can easily withstand the rough treatment of supermarkets, grocery stores, and vending machines. The combination package—board jacket with plastic liner—keeps the polyester bags completely enclosed during transit and does not require assembly by processor. After filling, the opening of the bag is heat sealed and the carton closed by a slot and tab arrangement. When placed in the freezer at zero or lower temperatures, the bag releases from the carton (the low temperature breaks down its bond to the cardboard) and it is then ready for quick, easy removal from the carton.

A new water soluble film, to compete with polyvinyl alcohols was introduced by the Plastic Films Division of Union Carbide Corporation. Trademarked Hylox, the film is said to be made from a polyethylene oxide resin. It will soften at low water temperatures, with the complete range of solubility quoted at about 35 to 175 degrees F. It seems to have good sealing, printability, and permeability characteristics, and at present functions primarily as a container for the packaging of pre-measured quantities of additives. Hylox is also being tested as a container for chemical and industrial powders that have to be added in exact amounts under conditions of controlled sequence and solubility. The handling of toxic items is another likely application. At present the film is available on a limited basis in thicknesses from 11½ to 10 mils, and comes in rolls up to 20 inches wide.

The rapid increase of the use of polyethylene films seems not to have inhibited the increase of cellophane usage. This is especially borne out by research and development activity in this field. Du Pont demonstrated a new cellophane called MSD 60, which apparently resulted in increased material yields of approximately 5 per cent with a 19 per cent yield increase for "K" cellophane.

Du Pont also showed aerosol containers molded of Delrin (page 78) that are filled from the bottom and sealed by "spin-welding," i.e. a disc of the plastic is set into the bottom and rotated under pressure until it forms a bond. The Del-Sol container can be injection-molded in various shapes and colors and, since it is completely pre-assembled, it only needs to be filled and sealed.

Another improvement relates to the introduction of a tamper-proof cap (page 77) for critical or toxic drugs; this consists of a rather intricate two-piece arrangement of an outer shell of high density polyethylene

and an inner shell of styrene-acrylonitrile copolymer. This safety closure was recently introduced by the Brockway Glass Company for capping bottles containing prescriptions dangerous to small children.

One of the most fascinating displays was the application of ultrasonic sealing to materials other than foils. At the show the ultrasonic seal was for the first time applied to the problem of sealing plastics, or plastic-paper combinations. Mylar, Cronar, polyethylene, polypropylene and many other materials were shown in typical seal operations achieved by ultrasonic vibrations. Ultrasonic welds are made quickly, completely silently, and without the aid of heat, adhesive or chemicals.

Finally, and importantly, the Aluminum Company of America is apparently now building prototype equipment for the production of the recently introduced easy-open aluminum can tops (page 77). This may lead to—among other things—the first easily opened sardine can in history.

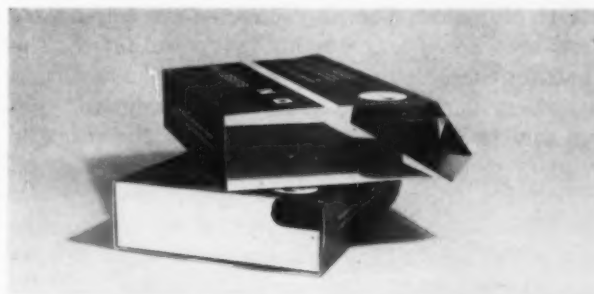
*On the following pages—and in greater detail—is a survey of the exhibition's most newsworthy developments in the areas of construction, closures, cushioning, material applications, packaging machinery, and dispenser packages.*



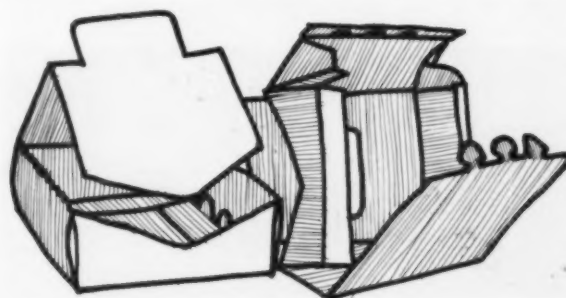


Constructions in the paper and boxboard field showed considerable engineering skill. The Robert Gair division of Continental Can Company displayed Can-Trak, a simple cardboard structure die-cut and folded to grip the top of a row of cans; it can be applied by machine or slipped on by hand for in-store promotion. Olin Mathieson displayed a cardboard carton which can be tailored to order for various strength requirements—extra strips of board can be slipped between outer layer and corrugation to provide added support in specific areas. The Vanant Company introduced an expendable warehouse pallet of paperboard with wedge-shaped corrugated cardboard feet; it ships flat and the footed section is formed at point of use.

1—Gusset-Pak reduces materials cost by using only small retaining flap at package ends. It is formed automatically at speeds up to 100 units a minute. Construction holds four or six smaller units. By Diamond National Company.



2—Cluster Wrap permits automatic collecting, loading, locking, of multiple units without glue, staples, or tape. Package opens to form effective display, is made on extremely simple machinery which is available on lease. By Mead Corporation.





Materials innovations were limited largely to the penetration of new markets by existing or modified materials. Thus, Liqui-Pak Corp. packaged household ammonia in a polypropylene-laminated paper bag, and Albert Mojonnier Company directed its polystyrene containers specifically at the dairy industry. The Thatcher Glass Company demonstrated the first commercial production equipment for polypropylene tubing, said to be particularly suitable for the cosmetic industry because it confines fragrance and resists oil and water penetration. One genuinely new material was Union Carbide's Hylox water soluble film, said to be made of a polyethylene oxide resin, which will release its contents at temperatures between 35 and 175 degrees F.

1—Polystyrene containers are made in two sections and nested together for shipping. Half-pint size costs only 1½ cents, and lowered transportation costs should produce additional economies. By Albert Mojonnier Company.

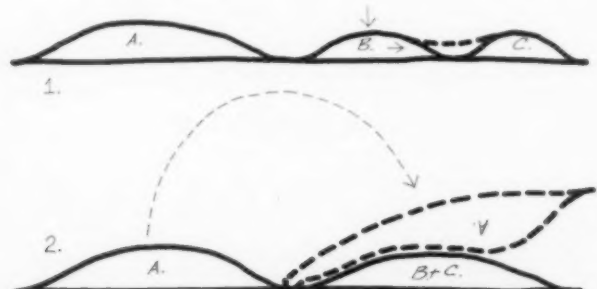


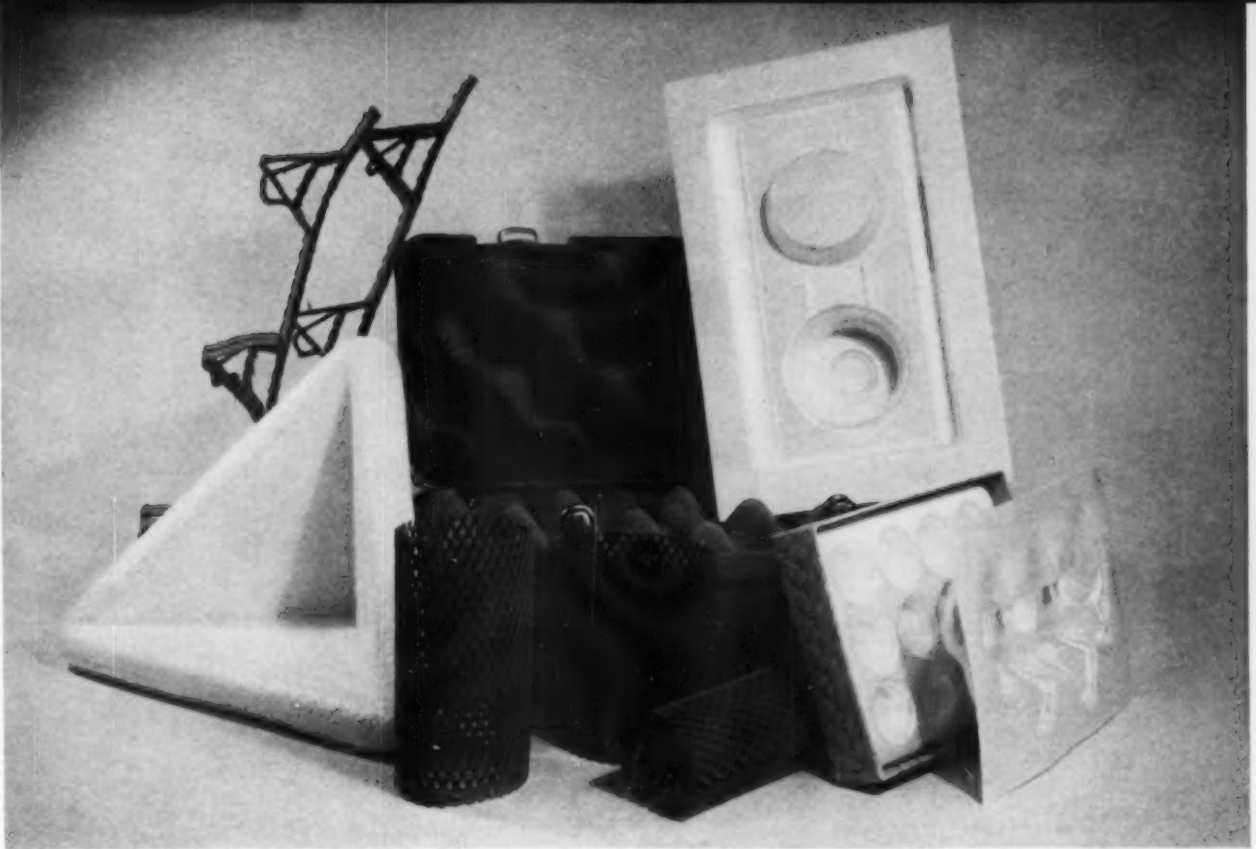
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2—Oil container with side-mounted spout successfully violates production dogma on blow-molded polyethylene which says that the opening cannot be placed more than ¼ inch from the container's center. By Phillips Petroleum Company.

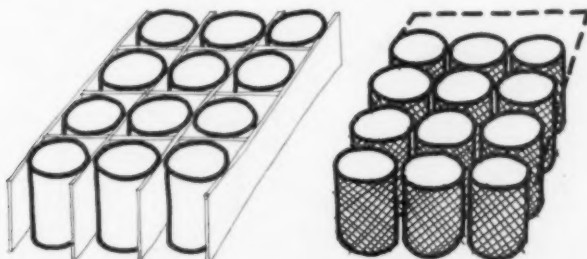
3—Insta-Pak offers a vest-pocket bar to cool pre-mixed drink. First, powder and liquid chemicals (B & C) are mixed by breaking seal. Then the beverage section (A) is folded over onto the cold mixture. By William Steven Company.





**Cushioning materials** of foamed plastic almost totally eclipsed paper and felt as protective padding. Miller & Van Winkle offered Tri-Lite polystyrene corner pads—nearly 80 per cent lighter than conventional materials used inside shipping containers. It was shown supporting delicate glassware and heavy machine parts with equal effectiveness. Polyurethane foam appeared in the form of firmly molded custom shapes for cushioning specific products, and as compressible sheets or blocks for wrapping and taping irregular shapes. Foam plastics were also laminated to the inner surface of shipping containers by Dyna-Foam Corp. and were demonstrated in heavily embossed and corrugated sheet stock for decorative as well as protective purposes.

1—Vexar net cushioning for glass containers is said to permit smaller cartons, reduce in-transit breakage and allow automatic end-loading of cartons. Machines under development will use roll stock. By Burton Machine Company.



2—Production of polystyrene foam, less than 18 months after introduction, is fully automatic, permitting wide variety of packages which take advantage of material's easily-controlled density and cushioning characteristics.

3—Kudl-Pak cushions expensive, limited-production items with interlocking urethane foam in polypropylene box. Custom fitted compartments are unnecessary because of the foam's compressibility. By North American Aviation Company.

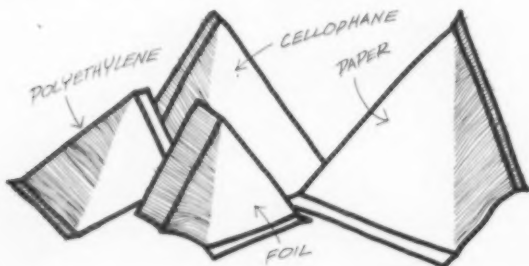






Packaging machinery improvements were limited chiefly to higher speeds and more automation. For example: Bartelt Engineering's Continuous Motion Packager now makes 300-600 film pouches a minute, and Food Machinery & Chemical Corp.'s Stokeswrap 1000 offers form-fill-seal packaging in which two types of film can be run simultaneously to make different size packages for different products. In the Stokeswrap machine, packages are formed using any type of heat-sealing film, paper, foil, or laminate. Bemis Brothers' Ultra Pak extended the range of products in tetrahedron packaging from liquids to powders and semi-liquids. Its competitor, Tetra Pak Type 2, incorporates a photocell device so that printed matter is centered on each package automatically.

1—Tetrahedron packaging, formerly limited to liquids, has been widely extended with new machinery. It now accommodates powders and semi-liquids in paper, plastic laminates, or other packaging materials. By Ultra-Pak.



2—Beer cans are more readily accessible in Phantom Pack made of Union Carbide's high-impact styrene. Development permits fully-automatic six-pack assembly; cost is competitive with printed boxboard. By Tay-Pak Corporation.

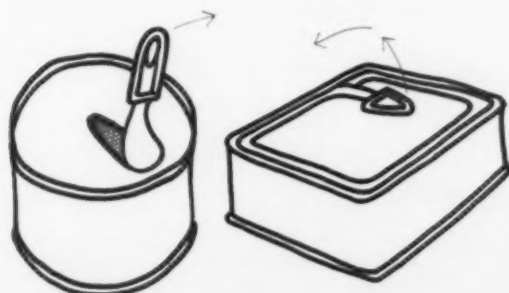




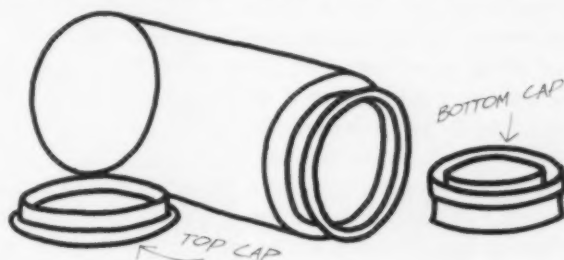


**Closures**, mostly of plastic, demonstrated considerable sophistication. A glue bottle cap by U.S. Plywood incorporated a spreader and a snap-off seal which, when inverted plugs its own hole. Lily Tulip Cup Corp. introduces a new method for removing the thin, troublesome film seal on plastic one-serving cups—a tuck across the top of the seal can be pulled to peel back enough of the seal to pour out, spoon out, or shake out the contents. A breakaway lid for the Hastomatic Corp.'s Seal-Tainer incorporates a bead-and-ring molded in one with the container to which it is joined by a thin membrane. The container is filled and a plastic film seals the top. The membrane between ring and bead is broken to open the container.

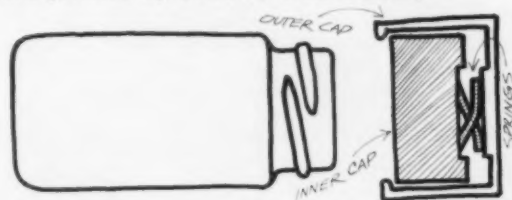
1—Aluminum can adopts tear-tape opening principle: by pulling tab user removes pre-scored strip, permitting easy access to contents. Closure design works equally well on sardine or beverage cans. By Aluminum Company of America.

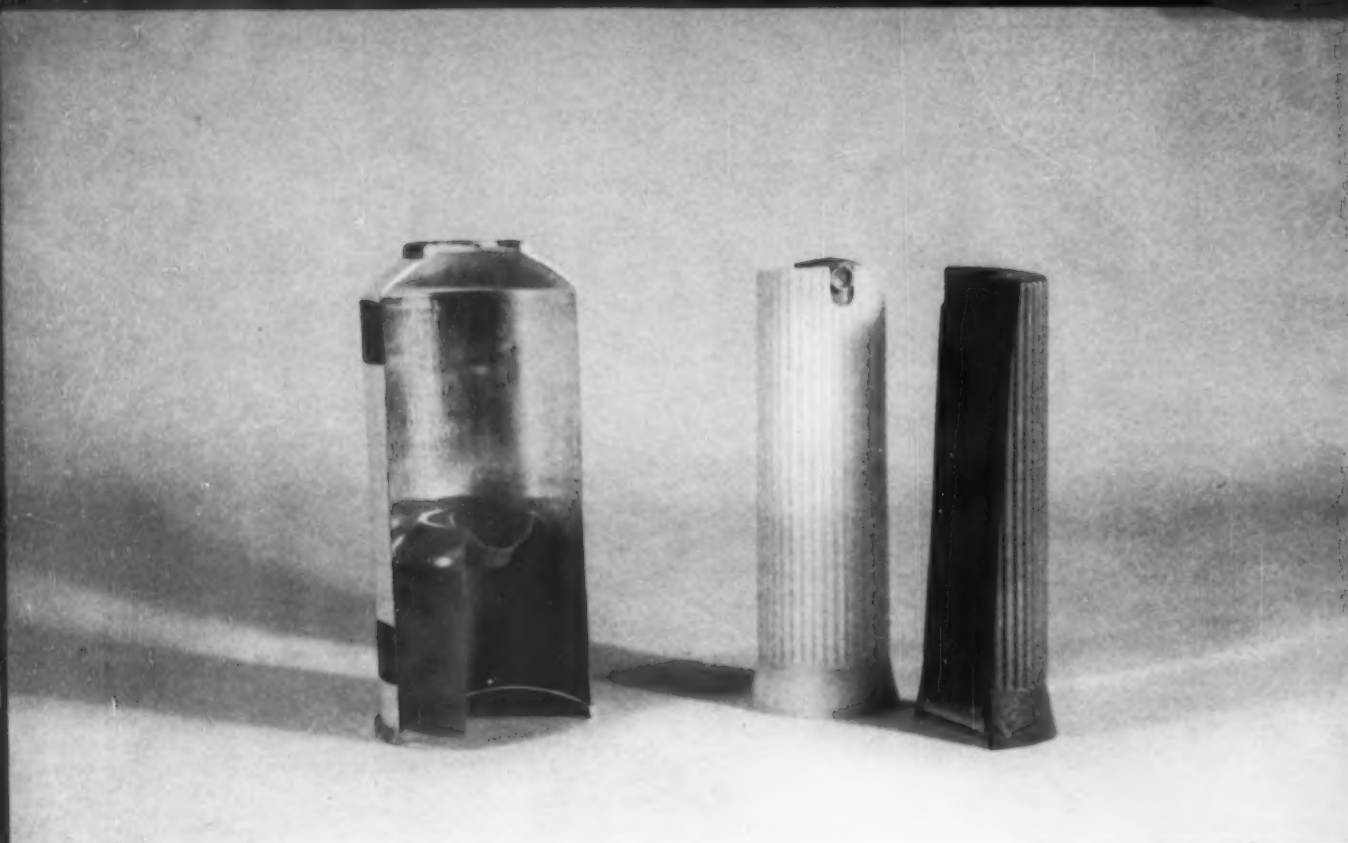


2—Vial uses glass tubing instead of conventional bottle form: one end is sealed with extremely firm closure which grips both inner and outer tube surfaces; other end closes with simple polyethylene snap cap. By Brockway Glass Company.



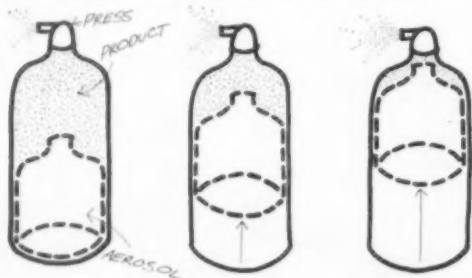
3—Two-part cap is a safety closure that helps keep dangerous drugs away from children. Spring-mounted inner cap seals contents while outer cap turns freely until engaged by considerable pressure. By Brockway Glass Company.





Aerosols are expected to reach vastly wider markets, particularly in food dispensing as the result of innovations in container construction and in chemical propellants. Du Pont's Freon C-318, developed just for use in food packaging, awaits approval by the Food and Drug Administration. It is said to generate consistent pressure in present aerosol containers and will eject liquids and semi-liquids in whipped, sprayed, or stream form, depending on the type of valve used. The piston-propellant system illustrated here is also expected to extend the range of pressurized foods by allowing complete separation of product from propellant. It also permits higher viscosities. New materials for aerosol packaging include glass and plastics (above) and combinations of these with metal.

1—Piston-driven aerosol separates propellant from product, maintains even pressure and dispenses nearly all of contents. Piston technique extends range of aerosol-dispensed products to higher viscosities. By American Can Company.





**FUNCTION AND FICTION  
COMPARED AT AUTO SHOW**



*The fifth International Automobile Show, held in New York's Coliseum last month, provided a clue to the changing character of the automobile market. There were more Detroit cars than ever, fewer ultra-small imports. Fantasy was subdued, but not suppressed*

BY ROBERT CUMBERFORD

Two extraordinarily imaginative designs: the Land Rover is absolutely functional; the Ford Gyron is absolutely fictional. Land Rover designers have eliminated every element which does not contribute to the car's ability to go anywhere under any conditions. Only the one-coat paint job is superfluous: the anodized aluminum body really requires no protection, but most customers demand color. Ford Gyron design is based on the idea of eliminating two wheels and substituting a gyroscope to provide balance and stability. The gyroscope was not installed for the show, and presumably the car would have fallen over if it had not been bolted down.

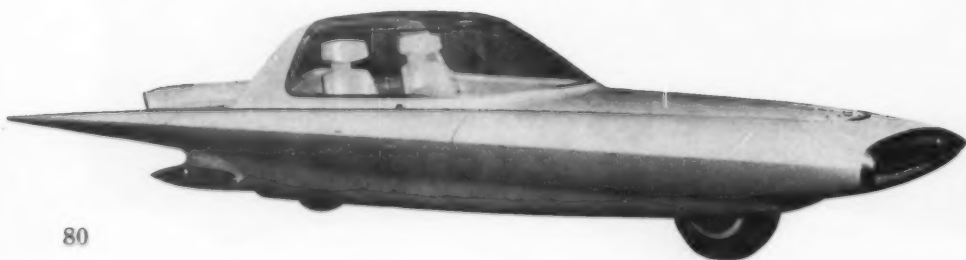
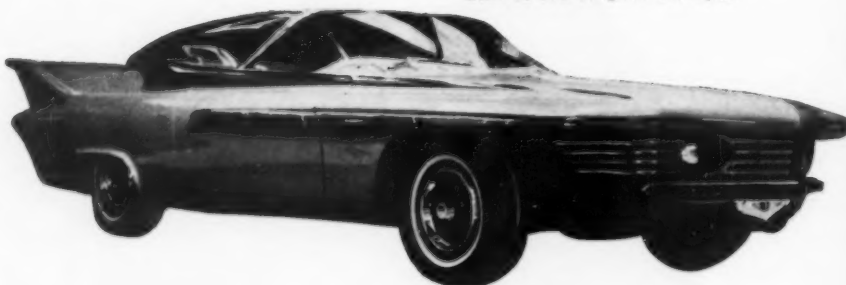
Aircraft design for automobiles, fact and fancy: The engineers responsible for the design of Svenska Aero-plan Aktiebolaget's efficient Saab 96 sedan are also responsible for design of the company's non-military aircraft, and the rigorous logic of aircraft design techniques led them to a simple and unassuming form. They did not try to make the car look like an airplane—not even in the interest of preserving "corporate identity." Chrysler Corporation's engineers, on the other hand, have provided their effusive Turboflite with a complete airplane tailgroup and a set of dive brakes. While the Turboflite is a legitimate test vehicle for a new automotive gas turbine engine, any public impression of engineering competence is destroyed by the absurdity of its "aerodynamic" form.



Land Rover and Ford Gyron



Saab 96 and Chrysler Turboflite





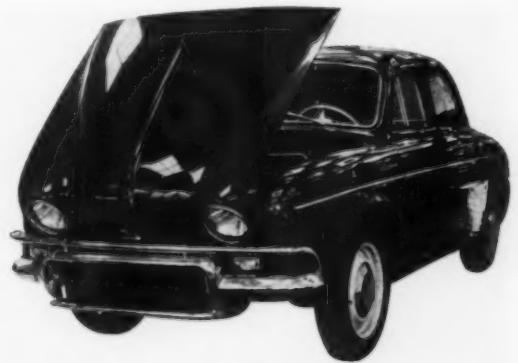


Evolution of a form: Jaguar XK-120-C, 1951; Jaguar XK-D, 1954; Jaguar XK-E, 1961. The E-type Jaguar was the hit of this year's show, favorite of press and public, if not of highway safety officials. The promised speed of 150 mph in standard trim is at once exhilarating and sobering. The new car is faster than the factory racing model of 1951, and is probably as fast as the exotic D-type racing car from which it was directly developed. Body forms of the E are highly refined, but awkwardly designed body hardware tends to obscure that fact. Surface and structure are integrated into a single load-carrying unit; there is no separate chassis. Despite minor imperfections in detail, the XK-E stands as a brilliant and daring design.

Novelty: The Henney Kilowatt, an electric runabout, was offered to the public for the first time at the show. Response was not notably enthusiastic, possibly because the price is high (\$3,500) and the performance low (30 mph). Power is stored in 12 heavy-duty 6 volt batteries, which make an imposing display when either the hood or the trunk is opened. Utility companies, eager to increase the sale of electric power in off-peak hours, have bought about 50 Kilowatts for promotional purposes. With seats for two passengers, the Renault Dauphine-based 4-door sedan has an impressive portal-to-people ratio, if nothing else. Greatest novelty of all: The Peugeot 404, a car shaped like a car. Solidly built, unobtrusively styled, the 404 has already attracted enough buyers to absorb the entire U. S. allotment for this year.

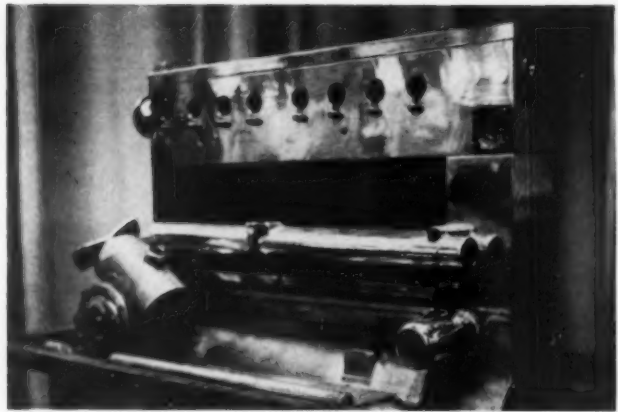


Jaguar XK-120-C (top), XK-D and XK-E



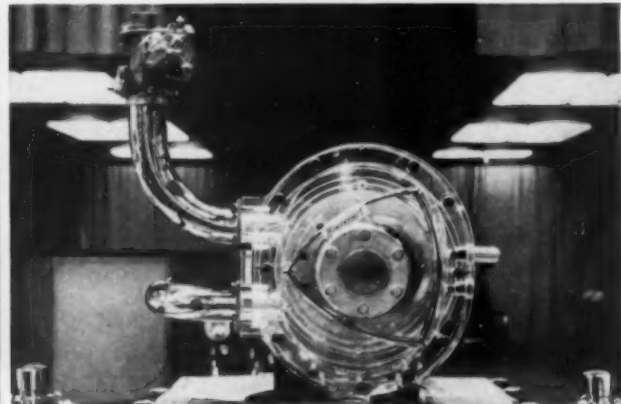
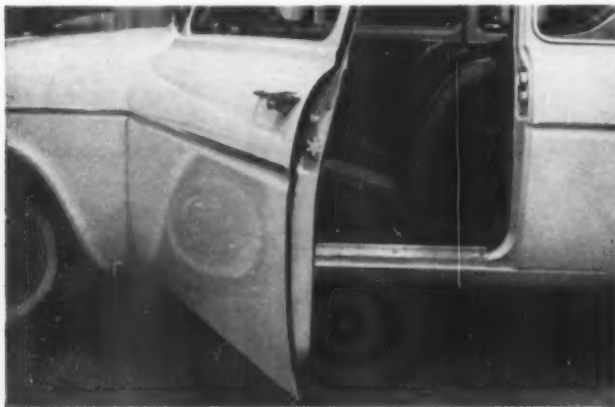
Henney Kilowatt and Peugeot 404





Engine evolution: Bugatti, 1923; Chrysler, 1961; NSU-Wankel, 196—? Ettore Bugatti was a sculptor's son, and his training in plastic arts shows clearly in the severe, beautiful form of his straight-eight engines. Bugatti was also the most successful racing car engineer of this time; function did not suffer at his hands. The Chrysler vee-eight is typical of the departmental engineering work of today; one man would never be able to achieve such confusion of appearance and still have the engine run. The NSU rotary engine, like the Bugatti, is one man's concept. Dr. Fritz Wankel evolved the basic idea through years of mathematical investigation. But it is only fair to point out that to develop a practical design from his ideas required the work of an engineering staff as large as Chrysler's.

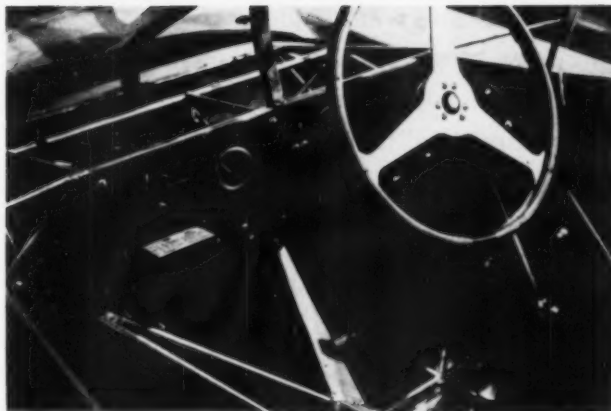
Thick as a bank vault, convoluted as a seashell, the Chrysler's door is more than twice as thick as the English Ford Anglia's. Yet both doors carry glass of standard thickness; both perform the same functions: opening and closing.



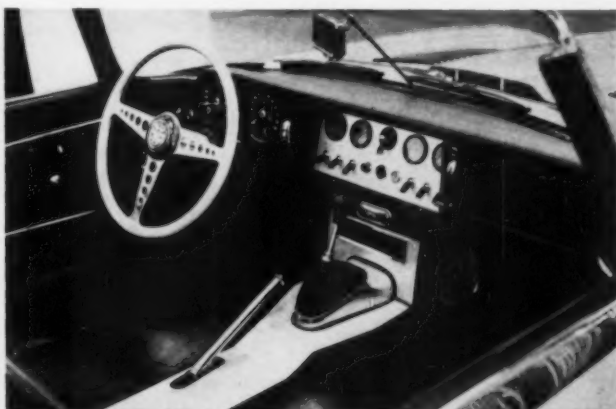
Anglia and Chrysler doors

Bugatti (top), Chrysler and NSU-Wankel engines

Key design principle: Plagiarize. Chevrolet adopted Italian Grand Touring car interior style and an Italian name for the fancy-trim Corvair Monza coupe. Extremely popular, it now accounts for almost half of all Corvair sales, so it is not surprising that other compact makers are now producing imitations of the Monza. Five such semi-sports cars, complete with bucket seats, were introduced at the show: Pontiac's Tempest Le Mans, Oldsmobile's F-85 Cutlass, Buick's Skylark, Comet's S-22, and Ford's Falcon Futura. The Corvair Monza is still the best of the lot; clumsiest copy-of-a-copy is the Falcon Futura.



An existential philosopher's view of the sports car: Existence, essence, and appearance. Maserati tipo 61 "birdcage," Jaguar XK-E, Oldsmobile 98 Starfire.



Corvair and Falcon interiors

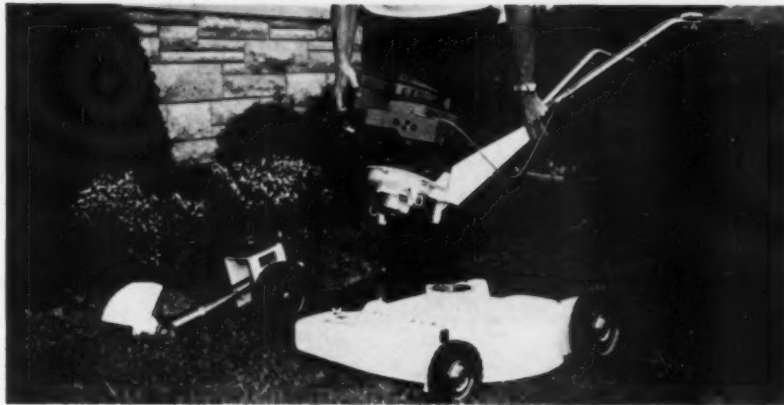
Maserati, (top), Jaguar XK-E and Oldsmobile Starfire cockpits

## DESIGN REVIEW *Garden equipment and tools*

The suburban garden supplies very sparse stimulation, judging by the 1961 lines of tractors and riding lawn mowers, many of which borrow their design ideas from jeeps, kiddy cars, and automotive "aerodynamics." A few do acknowledge an agricultural function, but do it by copying, in miniature, traditional farm equipment. As for hand-steered lawn mowers, tillers, and similar power tools, the varied physical shapes of their engine's components seem to bewilder designers, who are prone to disguise them with illogical housings. (On one mower, the designer provided a housing that doesn't have anything to house.) Also included in this review are shop tools; with them, honesty in shape and proportion is the rule rather than the exception.







2-3



4-5



### Power garden equipment

1. Tom Moore Tractor Company Farm-ette 650 encloses the power of its 5½ hp engine in an open-sided trapezoid whose angles seem to have originated from the angle of the mower-raising lever. It has a four-position geared transmission and an electric starter.  
*Designer: Kenneth B. Sadler, chief staff engineer.*
2. Homelite Yard Trac tapers its engine shroud in a direction opposite to the one normally expected, and fills in the front with a delicate grille-work. Its form seems borrowed from portable tv, but the fenders are pure jeep. A gear differential device automatically transfers power to the opposite wheel if one wheel slips (for example, on wet grass).  
*Designer: Albert Anderson, assistant chief engineer.*
3. Moto-Mower Terra-Handle is a basic motor and handle (combined weight 40 pounds) which attaches to a whole line of garden tools such as tiller, mowers, lawn vacuum, plow and edge trimmer. Changeover is accomplished without screwdrivers or wrenches by simply snapping clamps together.  
*Designer: Gutbrod Company, Bubbingen, West Germany.*
4. Toro riding mower has a molded fiberglass motor shroud, a stamped aluminum and steel chassis. The handle may be sturdy, but it has the soft curves of a paper clip.  
*Designer: Charles Butler Associates, and M. K. Hegemann for Toro.*
5. International Harvester Cub Cadet tractor, when equipped with an optional three-point hitch, permits full control of front-, center-, and rear-mounted attachments with only a single lever. Hood snaps up towards front for access to engine.  
*Designer: International Harvester staff; P. Lawrence Mikeska, head.*



1-2

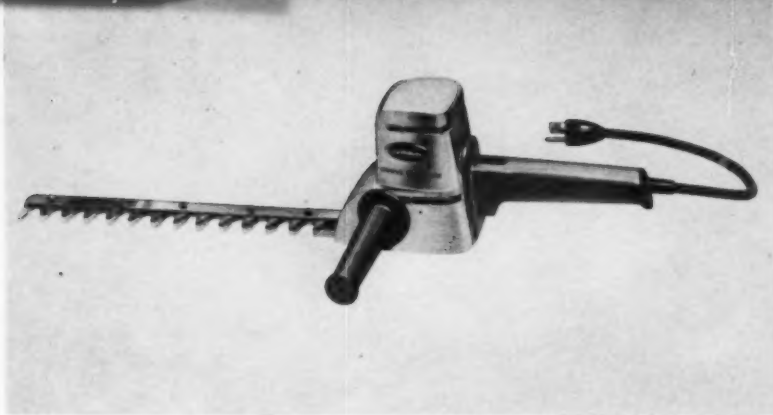


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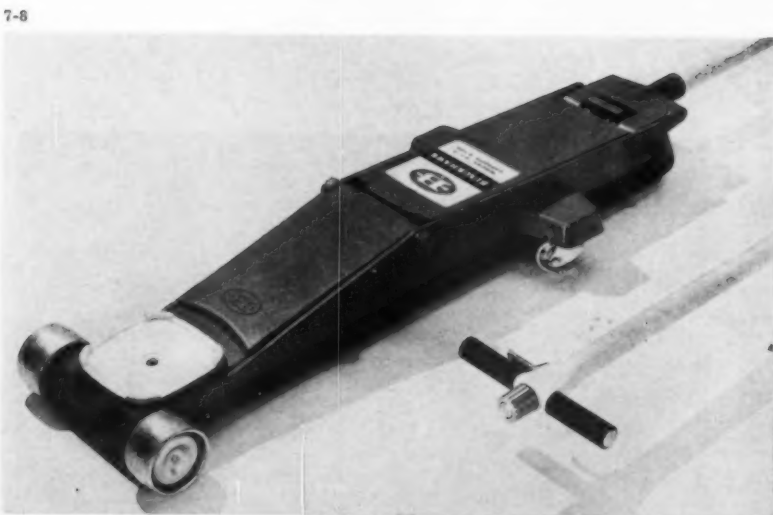


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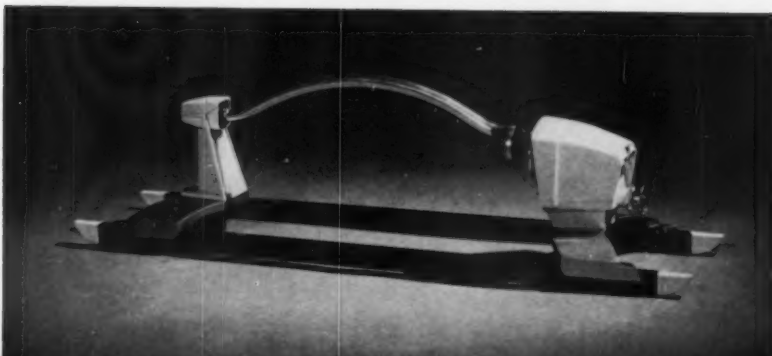




5-6



7-8



### Garden accessories

1-2. Black & Decker combination lawn trimmer and edger looks as though it might be in orbit, but actually makes good sense right in the garden—by turning the base on its side it becomes an edger, thus eliminating the need for two separate tools. The escutcheon plate seems an amateur afterthought.  
*Designer: Black & Decker staff.*

3. Lafayette Brass Spraymatic nozzle adjusts to any spray at the flip of the thumb, for one-hand hose control. The unit is chrome plated for corrosion resistance.  
*Designer: Irvin Gershen.*

4. Melnor Industries turret sprinkler boasts a turret spray selector that can be swiveled into four positions to permit spraying in four different patterns for variously shaped and proportioned lawn areas.  
*Designer: John D. Beinert.*

5. Cummins (division of John Oster Manufacturing Company) hedge trimmer has a 13-inch blade with a special decelerating clutch that gives safer operation by reducing kick-back on gears if the blade binds on large branches. Its high styling makes it look self-conscious and the forward curve of the motor housing seems weak—especially in relation to the size and position of the auxiliary handle.  
*Designer: Cummins design staff.*

6. Black & Decker hedge trimmer has an auxiliary side handle that may be moved to either side of the tool for operator comfort.  
*Designer: Black & Decker staff.*

7. Blackhawk automotive hydraulic jack has been redesigned with a lengthened chassis to reach under today's longer cars, and an 80 per cent larger lifting saddle to assure more secure lifting. The red and black side plates continue the red, black and white color scheme of the nameplate.  
*Designer: Latham, Tyler, Jensen.*

8. Melnor Industries oscillating sprinkler sits on sled-like runners and is finished in gold, black, and white. Automatic dial selector permits precise definition of area to be sprinkled.  
*Designer: John D. Beinert.*

## Shop tools

1. Stanley reciprocating saw is the first in its field to have both vertical and horizontal flush cutting without additional attachments. Blades can be mounted in six positions and auxiliary handle in five positions.

*Designer: Stanley staff.*

2. Stanley hack saw has handle's central web moved to the right where it forms a smooth side for placement against the user's palm. The space behind it is capped with a bright yellow plastic panel. A push button arrangement permits the steel tube top of the saw to be extended or retracted for different blade lengths.

*Designer: Laird Covey, Consultant; Robert West, Austin Stowell, Stanley staff.*

3. Cummins solder gun has an exclusive alloy tip that provides instantaneous heat, and requires no filing or re-tinning. A shadowless lamp, located above the tips, spotlights the working area. Although scarcely a surface is un-grooved, all the fluting has a reason.

*Designer: Cummins staff.*

- 4-5. Chicago Pneumatic Tool impact wrench, cast from aluminum, eases trigger switch operation by making it big enough for both the index and middle finger. Most power tools have a tricky time modulating the forms of handle-into-housing; this one is unusually successful. The bold, "branded" logo-type is also good.

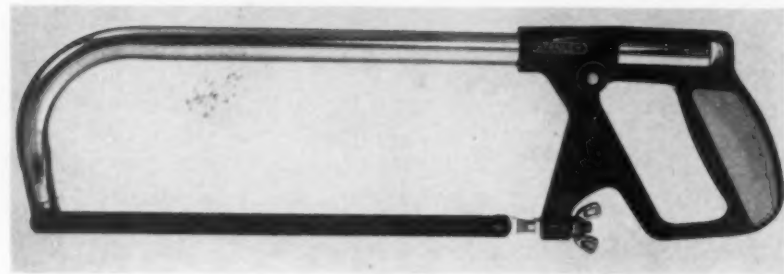
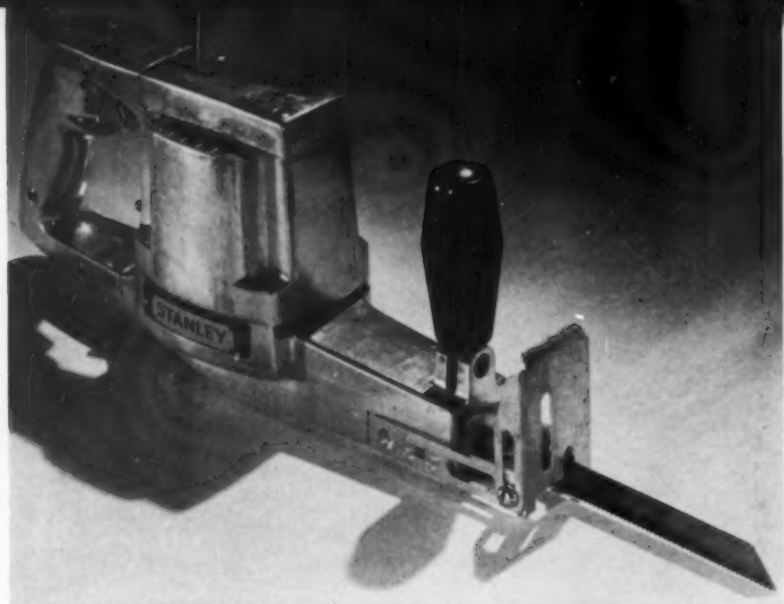
*Designer: Stevens-Chase.*

6. H. K. Porter Disston electric drill departs from conventional drill design and boxes motor and gears in a stand-up pedestal base that cuts down on overall dimensions. The recessed chuck enables the cast aluminum unit to get closer to work areas.

*Designer: Leotta & Parcher.*

7. Black & Decker jig saw has an exclusive blade-action that clears the blade away from material being cut on each down stroke for maximum efficiency on the up, or cutting, stroke. The size and forthright contours of the handle hardly seem to match the dimensions and delicate contouring of the motor suspended beneath it.

*Designer: Samuel Kohler, staff supervisor.*



1-2

3







4-5



6

7

**Plastic-on-plywood paneling**

*Technique perfected for surfacing plywood panels with invisible, durable plastic sheet*

Natural woods can now be permanently protected by a comparatively inexpensive, invisible, and virtually indestructible plastic surface. It is said to be the first time that a clear, permanent plastic film has been successfully bonded to wood by the roll-laminating process, and the manufacturer is predicting that application of plastic films to wood will eventually surpass the use of paint and other liquids in factory prefinishing. Designated Weldwood Permagard, the process is being used on plywood paneling for interiors; the film being used is Videne, a Goodyear Tire & Rubber Company product.

Cost of the new plywood is about 20 per cent higher than the company's top grade of prefinished plywood; but it is considerably less than the prices of high-pressure plastic laminates and architectural grade wood paneling that must be finished on the job.

Weldwood Permagard is said to have excellent stain and wear resistance (four times better than conventional high-pressure plastic laminates) and never requires waxing, suggesting its application for such furniture as coffee tables, end tables, desks, and conference tables. Other applications include vertical walls and counter fronts in high-traffic public areas as well as extensive residential use.

Any hardwood veneer can be surfaced with the film in a one-step process. Research is currently under way to develop protective films for exterior uses. *Manufacturer: U.S. Plywood Corporation, New York, N. Y.*

**Improved stainless steel**

*New stainless steel out-performs conventional grade, yields economies on machined parts*

The development of an improved free-machining chromium-nickel stainless steel is said to be the most important in its category in over 25 years. Designated Uniloy 303MA, the steel offers the following advantages over the AISI Type 303: greatly increased output of machined parts; longer tool life; better surface finish; 25 times better corrosion resistance; and improved resistance to longitudinal splitting during rolling op-



*Plastic-coated plywood*

erations. These factors mean substantial dollar savings for plants now using the regular Type 303 for machined parts.

The key to the improved performance of Uniloy 303MA is an amended combination of aluminum and sulphur additives, with a reduction of sulphur content to about one-half the level normally used. Sulphur is conventionally added to stainless steels for improved machinability, but, may bring undesirable side effects particularly in fabrication and performance of parts. By reducing the sulphur content these deleterious side effects are said to be eliminated. *Manufacturer: Universal-Cyclops Steel Corporation, Bridgeville, Pa.*

**Metal coatings**

*New silicone undercoat improves durability of heat-reflective metal coatings*

The durability of thin, heat-reflective, vacuum-deposited metallic coatings is reported to have been significantly increased by development of a new silicone undercoating. The undercoating is sprayed on the part and provides a

smooth, adherent surface over which the metallic coatings are deposited in thicknesses of only a few millionths of an inch. With the presence of the new undercoat, coatings are said to exhibit improved durability, adherence, higher resistance to weather, solvents, and chemicals, and high heat resistance. The undercoating also acts as a barrier to prevent diffusion of the coating metal into the base metal. *Manufacturer: Swedlow, Inc., Los Angeles, Calif.*

**Vibration isolation**

*Heavy machinery vibration is effectively damped with neoprene-coated high-density glass fiber pads*

To isolate and damp vibration under heavy production machinery, a high-density glass fiber pad encased in a neoprene jacket has been developed. The pads, furnished in 1/2-inch sheets, 18 inches square, are cut to proper size by hand (they are pre-scored at 2 inch intervals to simplify job-site cutting) and placed beneath the machinery. Cementing, bolting, and floor drilling are not required, which means substantial cost

savings. Damping is provided by the pumping action of air trapped between the glass fibers. The neoprene jacket makes the pad impermeable to water, oil, detergents, and other liquids. The pads can be used at temperatures ranging from minus 300 to plus 300 degrees F. *Manufacturer: Consolidated Kinetics Corporation, Columbus, Ohio.*

#### **New high-strength plastic**

*High-strength, high-temperature thermoplastic seen as substitute for metal parts*

A new plastic, trademarked Celcon, possessing properties similar to acetal and polycarbonate, has been developed and is expected to compete with them for the same market — replacement of metals such as die-cast zinc and aluminum, brass, copper and steel. The material is classified chemically as an acetal copolymer (giant molecule) and can be processed by injection molding, extrusion, blow molding and other thermoplastic fabricating techniques. The manufacturer claims that Celcon has many properties required of a high-strength engineering plastic: hardness, stiffness, dimensional stability, light weight, and resistance to abrasion and environmental attack. When used to replace metals, the new plastic, like acetal and polycarbonate, offers advantages of lower cost, greater design flexibility, less weight, and elimination of some finishing and



*Celcon takes impact*

assembly procedures. Typical markets include automotive, machinery gears and bushings, business machine housings and components, appliances, hose couplings, conveyor belt sections, etc. *Manufacturer: Celanese Corp. of America, New York.*

#### **Filing system**

*Wide range of rolled material accommodated in modular tube-sectioned storage units*

Exceptional flexibility in filing rolled tracings, prints, and other rolled materials is offered in a new cabinet arrangement consisting of various numbers of tube sections. Each tube section, containing four, six, or eight tubes of varying diameters, has a standard width to permit stacking for a storage and filing requirements. Made from a foil-wrapped paper laminate the individual tubes have steel ends for maximum strength, and



*Filing system*

are anchored in a metal frame that prevents accidental tube removal while permitting easy insertion of a tube without requiring tools, paste, or glue.

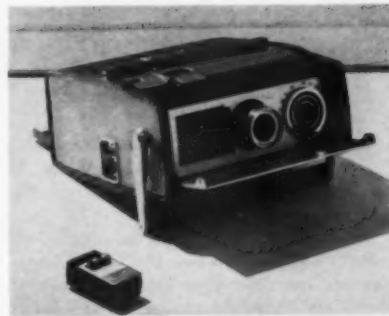
The tube sections have a hinged door, positioned by spring tension without latches or catches.

All sections are 18 $\frac{1}{2}$  inches wide, and are offered in lengths varying in six-inch increments from 24 to 60 inches. *Manufacturer: Hamilton Manufacturing Company, Two Rivers, Wis.*

#### **Automatic slide projector**

*Ultrasonic sound waves focus and change slides in new slide projector —all by remote control*

The first slide projector to focus and change slides by remote control has been introduced. It uses ultrasonic sound waves and requires neither wires nor batteries. Its principal advantage is that the operator is free to project from any point in the room or to wander at will (up to a distance of 40 feet from the projector). Thus, a sales manager who is



*Ultrasonic slide projector*

conducting a sales meeting can move around a room or speak from a lectern without an assistant. Or a teacher can illustrate his lecture without calling out, monotonously, "Next slide, please!"

The remote control uses two miniature transmitters, operated by push buttons, which vibrate and create sound waves in the same way as a tuning fork. (The sound is inaudible to the human ear.) One transmitter is for focusing and the other to change slides.

The case is completely self-contained and requires no cover removal. Its front and rear panels open to expose the lens and microphone (front) for the remote control unit, and the electrical control switches, elevation knob, and electric cord (rear). Construction is of light gage steel covered with black-grained vinyl and chrome trim. Suggested list price for the transistorized unit is \$269.95. *Manufacturer: Bell & Howell, Chicago, Illinois.*

#### **Stronger skylight**

*Reinforced plastic skylight offers easy installation, low cost, and high strength without need for protective screen*

A skylight strong enough to withstand the weight of a man without breaking is molded of continuous glass fiber reinforced polyester resin. Trademarked Sky-Glo, the translucent unit offers good light diffusion, blocks ultra-violet and infrared rays, is fire retardant, and shatter-proof. It is installed without a protective screen or barrier and is presently available in one-piece sizes ranging from 20 by 20 inches to 4 by 8 feet. *Manufacturer: Fiberglass Supplies, Inc., Malibu, Calif.*

#### **Stainless clad aluminum**

*First successful molecular bond between stainless steel and aluminum sheet provides new design material*

The desirable characteristics of stainless steel and aluminum sheet have been combined by bonding the two metals



## TECHNICS *continued*

"molecularly" into a single new material. Previously the metals could only be combined by casting and remained disparate materials.

The new stainless clad aluminum will cost less and weigh less than solid stainless and combines the advantages of both materials: the resistance to corrosion and staining, hardness, and strength of stainless, and the lightness, heat conductivity, and formability of aluminum. The process specifies no limits as to the gage of the stainless clad, nor are there any fixed content ratios of stainless to aluminum. A sheet of stainless clad aluminum .050 inch thick might be made up of .009 inch stainless and .041 inch aluminum; this combination would weigh approximately one-half as much as a similar .050 inch thick solid stainless steel sheet.

The product will have broad industrial applications in such areas as cooking utensils, liquid storage tanks, and automotive parts normally made of stainless. *Manufacturer: The process was developed by Composite Metals Products, Inc., Washington, Pa., and will be manufactured and marketed by Fairmont Aluminum Company, Fairmont, W. Va.*

### Speaking to the typewriter

#### *Experimental phonetic typewriter converts speech directly into type*

A simplified model of a phonetic typewriter that can convert spoken words directly into words typed on paper has been developed by RCA to study and demonstrate the requirements for a practical phonetic typing system. In its present form, the laboratory device can type up to ten spoken sounds in various

arrangements to make up a number of intelligible sentences with a typing accuracy as high as 98 per cent.

The system required the development of electronic means for analyzing the sounds of speech, identifying the analyzed sounds, encoding, storing and decoding the sounds for operating the typewriter control mechanism, and operating the typewriter itself. The most complex of these is the analysis of speech sounds, which necessitates a number of different electronic networks. Since pronunciation of sounds differs among individuals, each phonetic typewriter will probably be limited to use by a single person. Substantially more research is required, however, in the means of electronically discriminating among sounds before the unit is commercially practical. *Manufacturer: RCA Labs, New York, N. Y.*

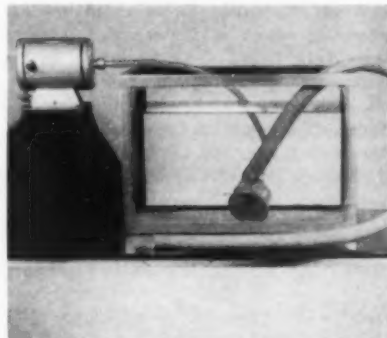
### All-purpose pump

#### *Small pump, operating on novel principle, can be used in many different applications*

Although conventional pumps generally use a tightly fitted impeller to create suction, a new pump, imported from France, employs a loosely fitted impeller to accomplish the same purpose. The advantage of the new pump, called the Heliflex, is that it is not affected by the considerable wear and clogging associated with conventional pumps because any sand or grit accompanying the liquid being pumped flows past the impeller and is not trapped or jammed up against it.

To compensate for the reduced suction within the pump (since the impeller is not flush against the pump walls), the impeller runs at a higher speed than those in conventional pumps.

The pump can be used on boats to remove water from bilges, to supply water for washing decks, and to provide water for the galley and shower. In the



*Light weight pump and motor*

house, it will remove water from the cellar, drain pools, tanks, boilers, etc.

The Heliflex unit consists of a pump, a motor to turn the impeller, and a flexible shaft between the two. The pump itself weighs only three pounds and can deliver 400 to 500 gallons an hour with 1/50th horsepower motor consuming 40 watts. It costs \$39.95. *Importer: Heliflex Division, Hughes Auto Electric Company, Englewood, N. J.*

### Plastic-fabric laminations

#### *Laminating Mylar to various cotton fabrics provides new, inexpensive decorative materials*

Four new metallized plastic-to-fabric laminations have been placed on the market; in each case the plastic film used is Mylar: 1) Mylar laminated to flannel where extremely soft, flexible, base materials are required. The material can be glued, sewn, stitched, or wrapped around a base. Available in metallic colors and in various pattern embossings, the product is useful for women's shoes, belts, handbags, cosmetic cases, and elsewhere. 2) Mylar laminated to vinyl-coated cotton sheeting, woven on a bias for extra tensile strength. 3) Mylar laminated to general purpose vinyl-coated cotton sheeting. Can be processed like (1) above, and is particularly suitable for wallets, dressing cases, etc. 4) Mylar laminated to elasticized cotton backing. *Manufacturer: Coating Products, Inc., Englewood, N. J.*

### Better cellophane

#### *Polyethylene-coated cellophane for meat packaging said to be especially durable, stable*

To extend shelf life and cut down on rewraps, a new polyethylene-coated cellophane film has been introduced for meat packaging. Called Olin 300 OF-18, the film is reported to have special qualities of durability and stability necessary for wrapping large, irregularly-shaped or bony cuts of meat. In addition, the film



*Typewriter takes dictation*



has good moisture-proof properties which help protect meats from shrinkage and weight loss. It has a yield of 18,250 square inches per pound, and is available in conventional sheets, parallelogram custom meat sheets, and rolls. *Manufacturer: Olin Mathieson Chemical Corporation, New York, N. Y.*

### Casting titanium

*Mass production of titanium pumps, valves, fittings is possible with new casting process*

Titanium, a strong, lightweight metal highly resistant to corrosion, has been rarely used in castings because of the high costs of the graphite molds required. But castings are a primary fabrication technique in the rest of the non-ferrous metals industry, providing about 19 per cent of aluminum shipments, 23 per cent of magnesium, and 88 per cent of wrought zinc shapes. The development of a new process for casting titanium, using permanent molds, promises to make use of the cast metal more practical in small parts such as pump housings, impellers, valve bodies, fittings and pump sleeves. To date, the process has been used in the production of a 12 pound impeller. In this application, mold costs



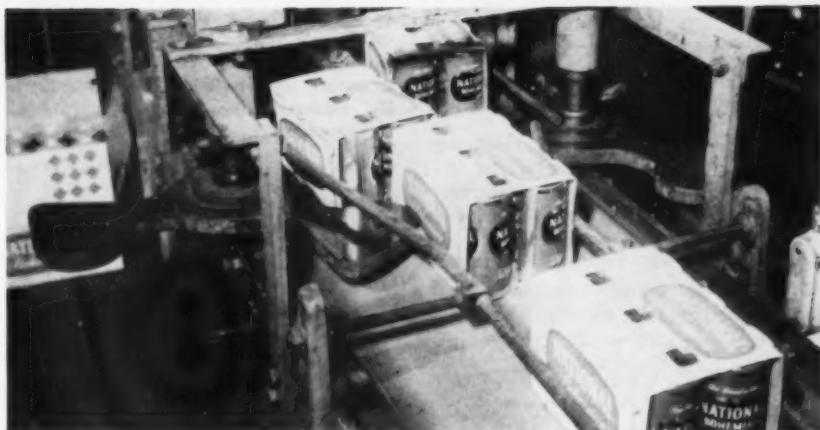
Cast titanium impeller

were absorbed with just nine impellers, at lower prices than charged for the conventionally fabricated titanium welded assemblies. Size limitations of the process are 5-by-10-by-24 inches, with a 12 pound weight maximum. *Manufacturer: Titanium Metals Corporation of America, New York, N. Y.*

### Solving bottling problems

*Replacing rubber guides with phenolic laminate guides cuts costs on bottling lines*

National Brewing Company, Baltimore, Maryland, has substituted phenolic laminate for rubber in the guide wheels of its bottle-filling and handling operations. The rubber guides had to be replaced as often as every two weeks because they



Plastic guide wheel

were cut and weakened by broken glass—a chronic bottling plant problem. The plastic offers greater durability, resistance to cutting, and noise-free qualities. It was put to work on the bottling line in star wheels that guide and space; and it was substituted for rubber in the hundreds of one-inch diameter rollers which hold the bottles on the conveyors, and in the paddle-armed divider wheels which move cardboard cartons filled with beer cans onto conveyor lines. National Brewing estimates that use of the plastic on the various bottle-guiding devices saves hundreds of dollars monthly in maintenance and replacement costs. *Manufacturer: Westinghouse Electric Corporation, Micarta Division, Hampton, S. C.*

### Coherent light radar

*Radar for outer space purposes is first practical application of optical maser research*

The optical maser (see ID, August, 1960, page 12), a device that generates coherent light waves, has been put to work in a radar unit to detect distant targets. Essentially, the new radar replaces microwave signals, used by conventional devices, with narrow light beams of the optical maser. Its advantages are low weight, low power needs, small size, and more accurate identification of targets.



Radar uses coherent light

In fact, the manufacturer claims that the device could detect a target 100,000 miles distant if it were used in space environments where an absence of atmosphere extends its capabilities.

The maser serves as the transmitter, and a telescope coupled to a photoelectric tube is the receiver. In operation, a beam of light from the transmitter strikes a target and is reflected back into the telescope receiver, which collects and focuses the light through a filter and into a photoelectric tube for amplification. The measure of time between the moment when the light is first emitted by the transmitter and the moment when it is received back in the telescope provides the distance of the target.

In the earth's atmosphere, the optical maser radar would have a range of nearly six miles, and at this distance its narrow beam would discriminate between two diffuse objects only ten feet wide placed side by side. *Manufacturer: Hughes Aircraft Co., Culver City, Calif.*

### De-salting sea water

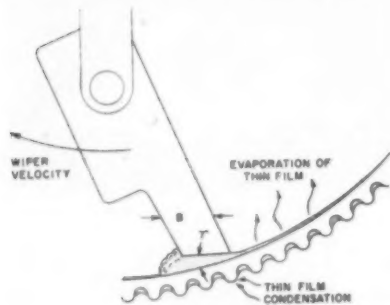
*Windshield wiper device speeds evaporation in salt-water conversion process without need for boiling*

A process for de-salting sea water is said to offer a 60 per cent space saving and a 40 per cent weight saving over conventional systems. Its key feature is an assembly of revolving blades, much like an automobile windshield wiper, which spreads the water into a very thin film for easy evaporation. Neither boiling or bubbling is required. In experimental tests so far, the system has produced fresh water with only one part of salt per million parts of water. It can extract 42 pounds of fresh water from each 100 pounds of sea water used.

The evaporator in the system consists of two vertical tubes, one inside the other, and a wiper assembly located inside the inner tube. When sea water

## TECHNICS *continued*

is fed into the unit, slowly revolving blades spread it on the surface of the inside tube in a film scarcely one-thousandth of an inch thick. Heat, produced



Salt water converter

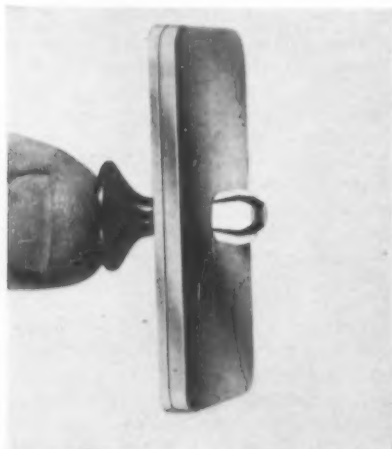
by steam, is transferred through the walls of the inside tube and causes the salt water to evaporate. Pure water leaves the evaporating chamber as vapor, and the concentrated brine is drained off. *Manufacturer: General Electric Co., Schenectady, N. Y.*

### Plunger fastener

*Push-pull fastener works under finger pressure, uses molded plastic in grommet and plunger*

A new, low-cost plunger fastener has been introduced for push-pull fastening and unfastening of panels, doors, drawer fronts and other sections. The fastener, called the Nylatch, is in two parts: a molded plastic grommet and a plunger, both of which remain captive.

For installation, two holes with standard tolerances are required. The grommet is placed into the aligned holes and the plunger is inserted within the grommet. To fasten, the plunger is simply



Low cost fastener

pressed into the grommet, which expands its open end. Retracting the plunger collapses the open end of the grommet and permits the fastener to be removed. *Manufacturer: Hartwell Corporation, Los Angeles, Calif.*

### Largest drag bucket

*Steel drag bucket sets capacity record at 52½ tons per bite, is designed for open pit coal mine*

The largest drag bucket ever put into service is ready for its first assignment: stripping coal, at the rate of 35 cubic yards a bite, from an open pit coal mine in Brazil.

The 70,000 pound scoop is 13 feet long, 10 feet wide, and has a capacity of 52½ tons. It will be worked by a power shovel with a 220 foot boom which can dig material 170 feet below ground level, and then cast it on a pile



Bucket with a bite

up to 110 feet high and 400 feet away. The bucket is made of welded steel plate, with thicknesses up to 5 inches. *Manufacturer: Esco Corp., Danville, Ill.*

### Aircraft locating device

*Transistorized cockpit display map eases navigation problems with graphic position indicator*

An easy-to-read cockpit display map has been introduced to help a pilot determine where he is during every moment of flight. The device, which is designed for integration with the Federal Aviation Agency's VORTAC air navigation program, is said to greatly ease the navigational workload on pilots and free them to concentrate more fully on actual flight problems.

The display consists of a 12-inch-diameter map overlaid with two transparent discs, one inscribed with a spiral line and the other with a straight radial line. The aircraft's precise position over the area shown on the map is the intersection of the spiral and straight lines. The unit holds as many



Aircraft display map

as 20 individual maps which are stored in sequential order according to the flight plan. For enroute flying, each map is scaled to represent an area of 390 miles in diameter; however, for landing and take-off, a more detailed map is required.

After the maps are inserted in the display unit, the pilot simply tunes in the VORTAC station in the area. The system provides location-giving radio signals. When the plane flies out of one map area into the next, the pilot simply changes to the next map, which automatically pops into place as the used one is removed. The unit is fully transistorized and weighs 13 pounds. *Manufacturer: International Telephone and Telegraph Corp., New York, N. Y.*

### Encapsulated transformer

*First epoxy-encapsulated transformer does away with traditional insulations, cutting size and weight*

What is claimed to be the world's first practical encapsulated distribution transformer has been announced. Utilizing a new concept in transformer design, the unit eliminates all paper insulation and nearly all oil from the core and coil, and yet has a dielectric strength equal that of conventional oil-type transformers. The unit is encapsulated in epoxy and weighs 25 per cent less than the conventional units and is also 25 per cent smaller. Its future applications include direct burying in areas where moisture and other similar problems are constant threats, and replacements for pole-top use. The first application will be in a unit residential package housing the transformer and other accessories including load break disconnect switches and meters to give the consumer complete control in restoring electric power. It will be suitable for mounting on the outside wall of a house or garage. *Manufacturer: General Electric Company, Distribution Transformer Department, Pittsfield, Mass.*

## FREE LITERATURE *available from manufacturers, on materials, components, processes, machines*

### Materials—Plastics

**Drafting film.** Keuffel & Esser Company, Third & Adams Streets, Hoboken, N. J. 8 pp. Ill. Brochure describes strength, erasure, reproduction, stain and durability characteristics of Herculene polyester-base film for drafting.

**Laminates.** American Cyanamid Company, Plastics and Resins Division, Wallingford, Conn. 12 pp. Ill. Technical booklet gives characteristics, fabricating procedures, and end uses of 24 standard Laminac polyester resin formulations.

**Vulcanized fiber.** Taylor Fibre Company, Norristown, Pa. 8 pp. Ill. Catalog offers information and basic engineering data on Taylor laminated plastics and Taylaron vulcanized fiber.

**Silicone-treated release paper.** General Electric Company, Silicone Products Division, Waterford, N. Y. 16 pp. Ill. Bulletin presents data on various silicone coatings for release paper.

**Vinyl coatings.** B. F. Goodrich Chemical Company, 3135 Euclid Ave., Cleveland 15, Ohio. 24 pp. Ill. Bulletin G-15 offers complete information on the preparation and application of vinyl solution resins for coating metal, wood, paper, fiberboard and rubber.

### Materials—Metals

**Stainless steel finish.** Sharon Steel Corporation, Sharon, Pa. 4 pp. Brochure describes new bright annealed stainless steel finish for automotive applications that is said to reduce, and often eliminate, buffing.

**Stainless steel in architecture.** National Carbon Company, 270 Park Ave., New York 17, N. Y. 8 pp. Ill. Booklet discusses the expanding role of stainless steel in the architectural market.

**Expanded metals.** United States Gypsum Company, Dept. 122, 300 West Adams St., Chicago 6, Ill. 16 pp. Ill. Catalog presents photographs of architectural applications of expanded metal and describes framing, finishing, and fastening details.

**Aluminum impact extrusions.** Reynolds Metals Company, Richmond, Va. Booklet describes features and preparations of aluminum impact extrusions.

**Pre-plated metal samples.** American Nickeloid Company, Peru, Ill. Sample package of pre-plated metals with textured surfaces is offered free. Various patterns are shown with heavy plated finishes of copper, brass, nickel, and chromium on a base of steel; other base metals include copper, brass, and zinc. A data folder with tables of properties and fabrication information is included.

**Basic metal products.** National-Standard Company, Niles, Mich. 8 pp. Ill. Brochure describes applications of company's metal products which include stainless, high-carbon, copper-plated, and specialty steel wire; decorative, protective, and screening grades of perforated and pierced metals; wire cloth;

high-carbon spring steels, and special machinery for wire handling and metal lithography.

**Aluminum selector.** Fairmont Aluminum Company, Fairmont, W. Va. Design data file summarizes essential facts about aluminum alloy sheet, coils, and blanks as they pertain to application, physical properties, manufacturing data, and fabrication characteristics.

**Thin welded tubing.** Western Pneumatic Tube Company, Kirkland, Wash. 88 pp. Ill. Charts list production limits for ultrathin welded tubing in stainless steels, high-temperature alloys, nickel-base alloys, and nickel-iron alloys. The weldments are subjected to repeated cold drawing and annealing which is said to re-crystallize and refine their grain structure so that their mechanical and corrosion-resistance properties are equivalent to those of the parent metal.

**Corrosion.** H. M. Harper Company, Morton Grove, Ill. 24 pp. Ill. Brochure discusses the various kinds of corrosion and the resistances of different metals to them. Also discussed are various types of metal fasteners.

### Methods

**Set screws.** Standard Pressed Steel Company, Box 883, Jenkintown, Pa. 8 pp. Ill. Brochure describes the various holding forces that a set screw must have to resist loosening. These factors are related to the design, metallurgy and fabrication of such screws.

**Laminated architectural glass.** Monsanto Chemical Company, Plastics Division, Springfield, Mass. Information folder describes methods and materials for installing laminated architectural glass, which consists of a layer of polyvinyl butyral plastic sandwiched between two sheets of glass.

**Vacuum metallizing.** Bee Chemical Company, 2700 E. 170 St., Lansing, Ill. Chart describes vacuum metallizing coatings that may be applied by spraying, dipping or flow coating to plastics, metals and glass.

**Packaging electronic components.** AMP Inc., Harrisburg, Pa. 8 pp. Ill. Booklet describes a new concept of packaging electronics components in three-dimensional modules.

**Printing on polyethylene.** W. R. Grace & Company, Polymer Chemicals Division, 225 Allwood Road, Clifton, N. J. 16 pp. Ill. Booklet describes the techniques used in the printing and decorating of polyethylene, and compares the principles of hot stamping, flexography, gravure, offset lithography, silk screening, transfer labeling, and four-color dry offset lithography.

**Machining thermoplastics.** Cadillac Plastic & Chemical Company, 15111 Second Ave., Detroit 3, Mich. 8 pp. Ill. Reprint outlines recommended procedures for machining and finishing of thermoplastic sheets, rods and tubes. Procedures discussed are sewing, routing, drilling, turning, shearing, punching, and grinding.



## FREE LITERATURE *continued*

### Components and Machines

**Prismatic light fixtures.** Stonco Electric Products Company, Kenilworth, N. J. 4 pp. Ill. Catalog PB61 describes new line of completely weatherproof prismatic wall brackets and ceiling fixtures for all residential, commercial and industrial exteriors.

**Skylights.** Kalwall Corporation, 43 Union St., Manchester, N. H. 4 pp. Ill. Brochure presents line of Kalwall residential translucent panels, skylights, and skyroofs. The product is a sandwich panel made with sheets of polyester-fiberglass bonded to both sides of an aluminum core.

**Air conditioning controls.** General Electric Company, Schenectady 5, N. Y. 8 pp. Ill. Bulletin GEA-7316 describes line of controls for air conditioning and refrigeration equipment.

**Electric trucks.** Raymond Corporation, Greene, N. Y. 16 pp. Ill. Catalog describes line of narrow aisle electric trucks and hydraulic pallet trucks.

**Metal finishing equipment.** Meaker Company, Nutley, N. J. 29 pp. Ill. Guide to machines and equipment designed to automate metal-finishing operations. The guide also gives factors relating to setting up an automated process line.

**Metalworking equipment.** Di-Acro Corporation, 752 8th Ave., Lake City, Minn. 32 pp. Ill. Catalog gives detailed information and costs on all Di-Acro metalworking equipment: benders, brakes, press brakes, punch presses, rod parters, rollers, notchers, shears, spring winders, and hole-locator layout machines.

**Temperature controls.** Fenwal Inc. Ashland, Mass. 8 pp. Ill. Brochures describes 17 different types of temperature controls.

**Liquid springs.** Taylor Devices, Inc. North Tonawanda, N. Y. 12 pp. Ill. Handbook CH-1 describes line of standard liquid compressible springs for storing and absorbing energy.

**Steel processing.** Steel Equipment Company, 20805 Aurora Road, Cleveland 22, Ohio. 16 pp. Ill. Catalog describes various kinds of steel processing equipment including integrated slitting lines, cut-to-length lines, coil-handling equipment, strip mills, and processing lines for rolling, cleaning, pickling, and coating steel strip.

**Electrical heating.** Trent, Inc. 211 Leverington Ave., Philadelphia 27, Pa. 16 pp. Ill. Bulletin 103-T features industrial electrical heating units for furnaces, ovens and dryers.

**Self-locking nuts.** Kaynar Manufacturing Company, Box 2001, Terminal Annex, Los Angeles 54, Calif. Catalog describes light weight, all-metal self-locking nuts for airframe, propulsion, and electronic industries.

**Drafting aids.** Hamilton Manufacturing Company, Two Rivers, Wis. 32 pp. Ill. Bulletin describes engineering drafting equipment including tables, file cabinets, drawing boards, etc.

**Electrical enclosures.** Machinery Electrification, Inc. 56 Hudson

St., Northboro, Mass. Brochure presents line of prefabricated enclosures for electrical elements, along with construction details and complete specifications.

### Miscellaneous

**Coated fabrics.** Vulcan Division, Reeves Brothers, Inc., 1071 Ave. of the Americas, New York 18, N. Y. 12 pp. Ill. Catalog describes properties, performance, and applications of Reeve-cote industrial coated fabrics. Applications include diaphragms for gas meters, regulators, fuel pumps, bearing seals, flexible tubing, vapor barriers, ventilation tubing, and welding curtains.

**Plastic molding.** Automatic Plastic Molding Company, 830 Bancroft Way, Berkeley, Calif. Brochure presents company's facilities for injection, compression, and fiberglass molding.

**Glass filters.** Tiffen Optical Company, 71 Jane St., Roslyn Heights, N. Y. 40 pp. Ill. Catalog 161 contains latest technical specifications on light filters for industrial, scientific, and photographic needs.

**Philco 2000 computer.** Philco Corporation, Willow Grove, Pa. Booklet describes in non-technical language the features of the Philco 2000 data processing system.

**Air conditioning psychometrics.** Trane Company, La Crosse, Wis. Psychometric chart provides information required to solve air conditioning problems related to human comfort.

**Galvanized products.** American Zinc Institute, 292 Madison Ave., New York 17, N. Y. 32 pp. Ill. Manual describes significant factors governing inspection, properties, specifications, and purchasing of hot dip zinc coatings, used to protect ferrous metals from corrosion.

**Magnetic ink character recognition.** A. B. Dick Company, 5700 West Touhy Ave., Chicago, Ill. 48 pp. Ill. Booklet explains magnetic ink character recognition used for check coding.

**Ceramic cutting tools.** Carborundum Company, P. O. Box 337, Niagara Falls, N. Y. 28 pp. Ill. Catalog gives property data on Stupalox ceramic cutting tools, inserts, and holders.

**Glass polyesters.** Westinghouse Electric Corporation, Micarta Division, Hampton, S. C. 8 pp. Ill. Brochure B-8216 describes features of water-resistant glass-mat laminates and molding compounds for insulation applications.

**Carbides, ceramics.** Carborundum Company, P. O. Box 337, Niagara Falls, N. Y. 8 pp. Ill. Booklet describes properties and applications of new carbides and ceramic materials useful in areas requiring resistance to abrasion, corrosion, chemicals, nuclear radiation, and high temperatures.

**Emergency lighting.** Electric Cord Company, 432 Plane St., Newark, N. J. 8 pp. Ill. Catalog presents line of automatic, battery-operated emergency lighting equipment for both indoor and outdoor application.

**Electric heating equipment.** Edwin L. Wiegand Company, 7500 Thomas Blvd., Pittsburgh 8, Pa. 16 pp. Ill. Catalog 975-D presents application and product information on Chromalox electric heating equipment. Products covered include baseboard heaters, forced-air wall heaters, radiant heaters, floor dron-in types, snow melting mats, and others.



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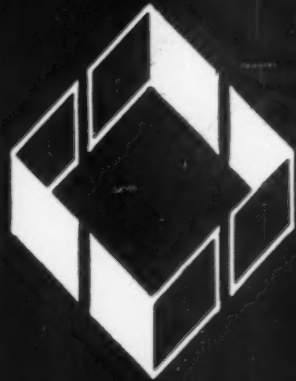
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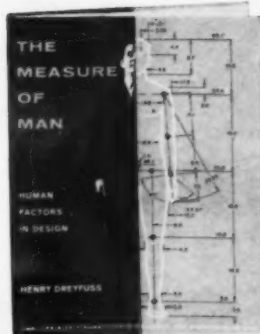
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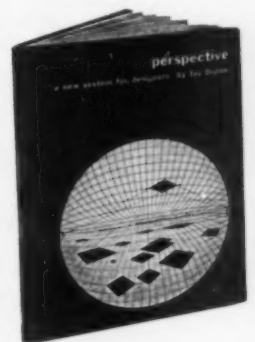
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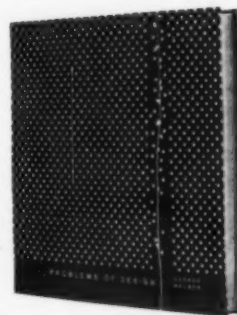
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### MISCELLANEOUS

**PRODUCTS WANTED:** Well-established research and development company desires to contact designers and inventors having new, novel and original ideas or inventions for toy or hobby field. Royalty or outright purchase. Prefer items two dollars retail and higher. Any accepted medium OK. Please send for submission forms. Box ID-377, INDUSTRIAL DESIGN, 18 East 50th Street, New York 22, New York.

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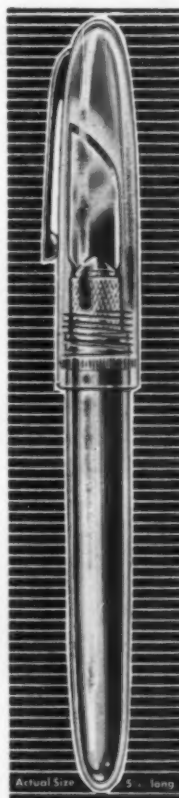
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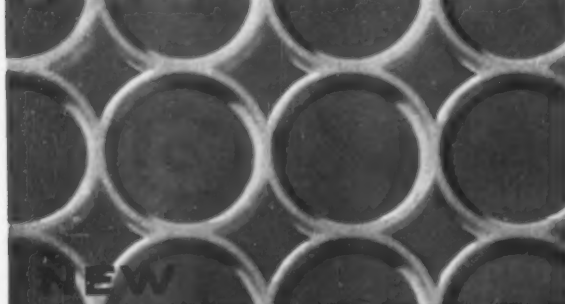
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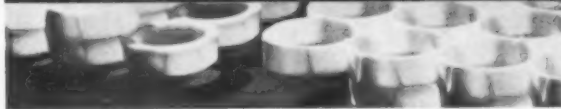
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- May 3-13.** Fifth annual United States World Trade Fair. New York Coliseum.
- May 9-11.** Annual western joint computer conference sponsored by the National Joint Computer Committee. Ambassador Hotel, Los Angeles.
- May 10-12.** Production engineering conference of the American Society of Mechanical Engineers. Royal York Hotel, Toronto, Canada.
- May 11.** Workshop on international advertising sponsored by the Association of National Advertisers, Plaza Hotel, N. Y.
- May 15.** Packaging industry technical conference of the American Institute of Electrical Engineers. New Ocean House, Swampscott, Massachusetts.
- May 16-18.** 1961 spring conferences of the Building Research Institute. Shoreham Hotel, Washington, D. C.
- May 19-20.** Design and drafting seminar sponsored by the American Institute for Design and Drafting. Oklahoma State University, Stillwater, Oklahoma.
- May 19-June 4.** British Trade Fair will display capital and consumer products. Sokolniki Park, Moscow.
- May 21-23.** Annual meeting of the Fluid Controls Institute, Inc., will have as its general theme "Marketing Feed-Back." The Cloister, Sea Island, Georgia.
- May 22-25.** 1961 design engineering show and the American Society of Mechanical Engineers design engineering conference. Cobo Hall, Detroit, Michigan.
- May 22-26.** 1961 convention and tool exposition of the American Society of Tool and Manufacturing Engineers. Statler Hilton Hotel and Coliseum, New York.
- May 22-26.** 1961 national conference of the Society of Photographic Scientists and Engineers. Arlington Hotel, Binghamton, New York.
- May 26-September 10.** Exhibit of the work of artist-craftsmen of Western Europe. Museum of Contemporary Crafts, N. Y.
- May 30-September 12.** "Futurism." A comprehensive survey commemorating the 50th anniversary of the movement. Museum of Modern Art, New York.
- May 31-June 11.** International Industries Fair, notable for its furniture and accessories. Munich, Germany.
- June 5-8.** International instrument-automation conference and exhibit of the Instrument Society of America. Royal York Hotel and Queen Elizabeth Hall, Toronto, Canada.
- June 5-9.** Ninth national plastics exposition and national plastics conference sponsored by the Society of the Plastics Industry. Coliseum and Hotel Commodore, New York.
- June 12-25.** International electronic-nuclear energy exhibition and congress. Rome, Italy.
- June 14.** Plastics in packaging is the subject of a regional technical conference of the Society of Plastics Engineers. Sheraton Mount Royal Hotel, Montreal, Quebec.

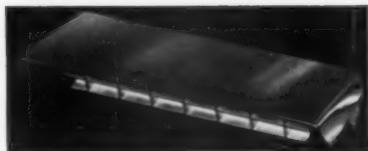
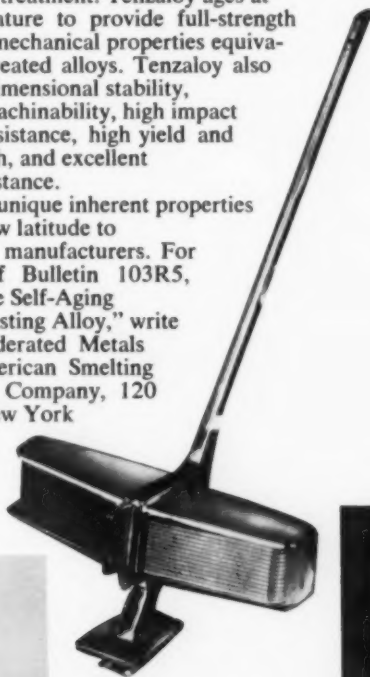
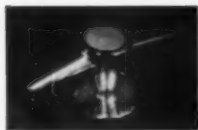
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