INDUSTRIAL DESIGN

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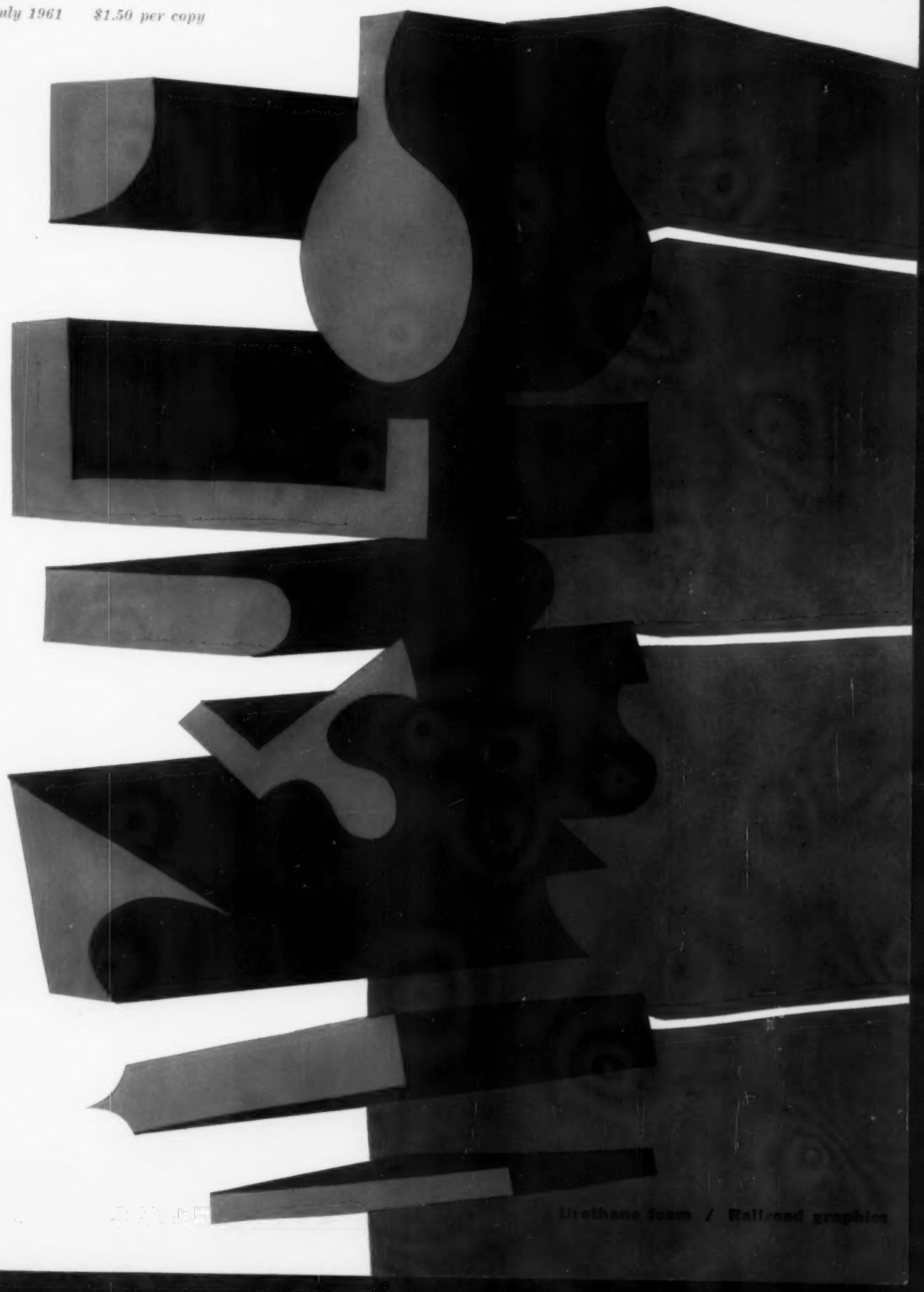
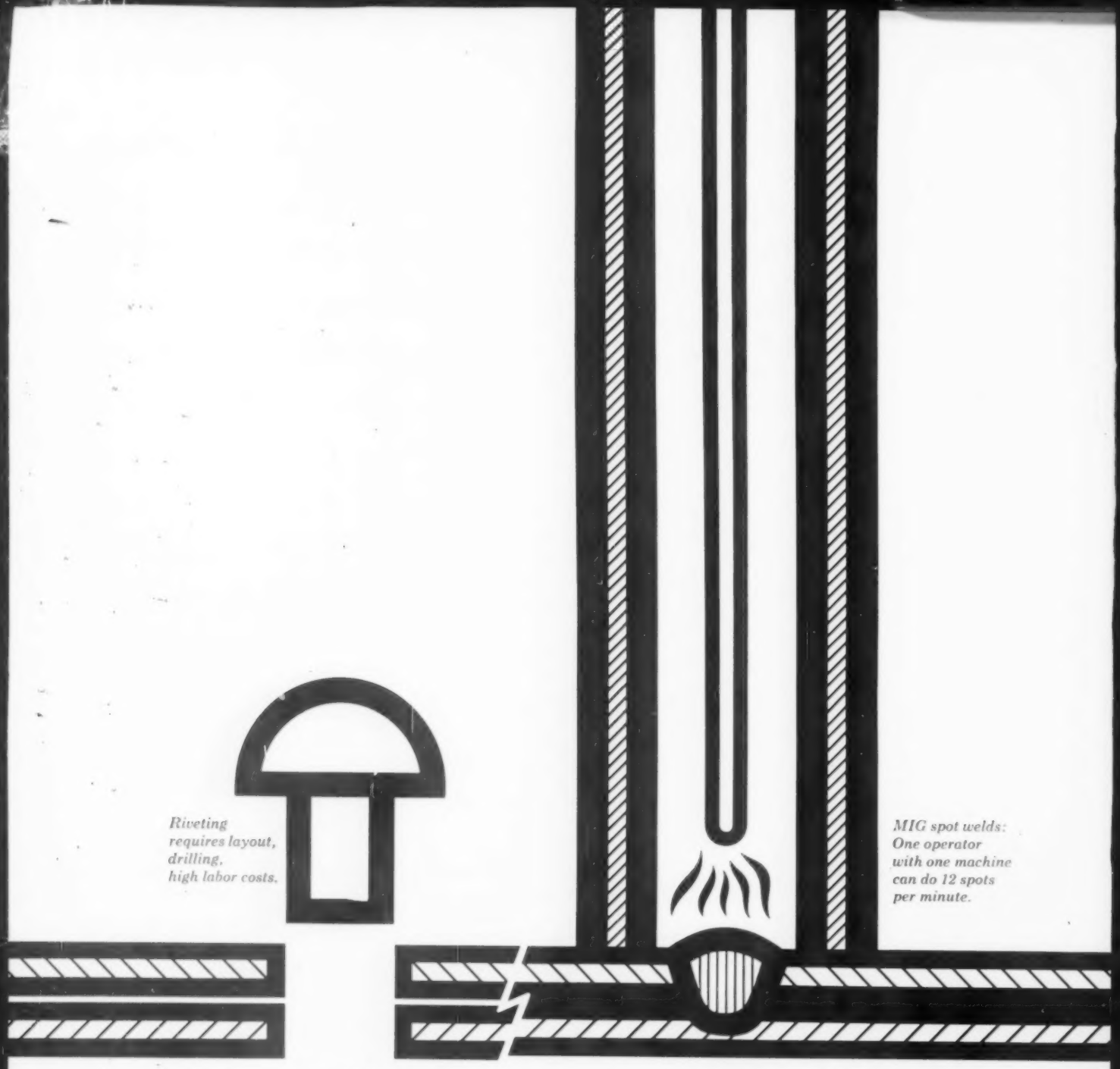


Urethane foam / Railroad graphics



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JULY, 1961 VOLUME 8 NUMBER 7

INDUSTRIAL DESIGN

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 AUGUST—*Foils and foil substitutes; Taxi design*

IN SEPTEMBER—*The designer and the engineer*

COVER: Urethane foam, featured in this issue (page 38), can be cut into an infinite variety of shapes, some of which are the subject of this month's cover by Peter Bradford.

FRONTISPIECE: Pratt students (page 60) have designed a tension-compression joint of eight members—two tubes in compression and six wires in tension—all bound by a strap.

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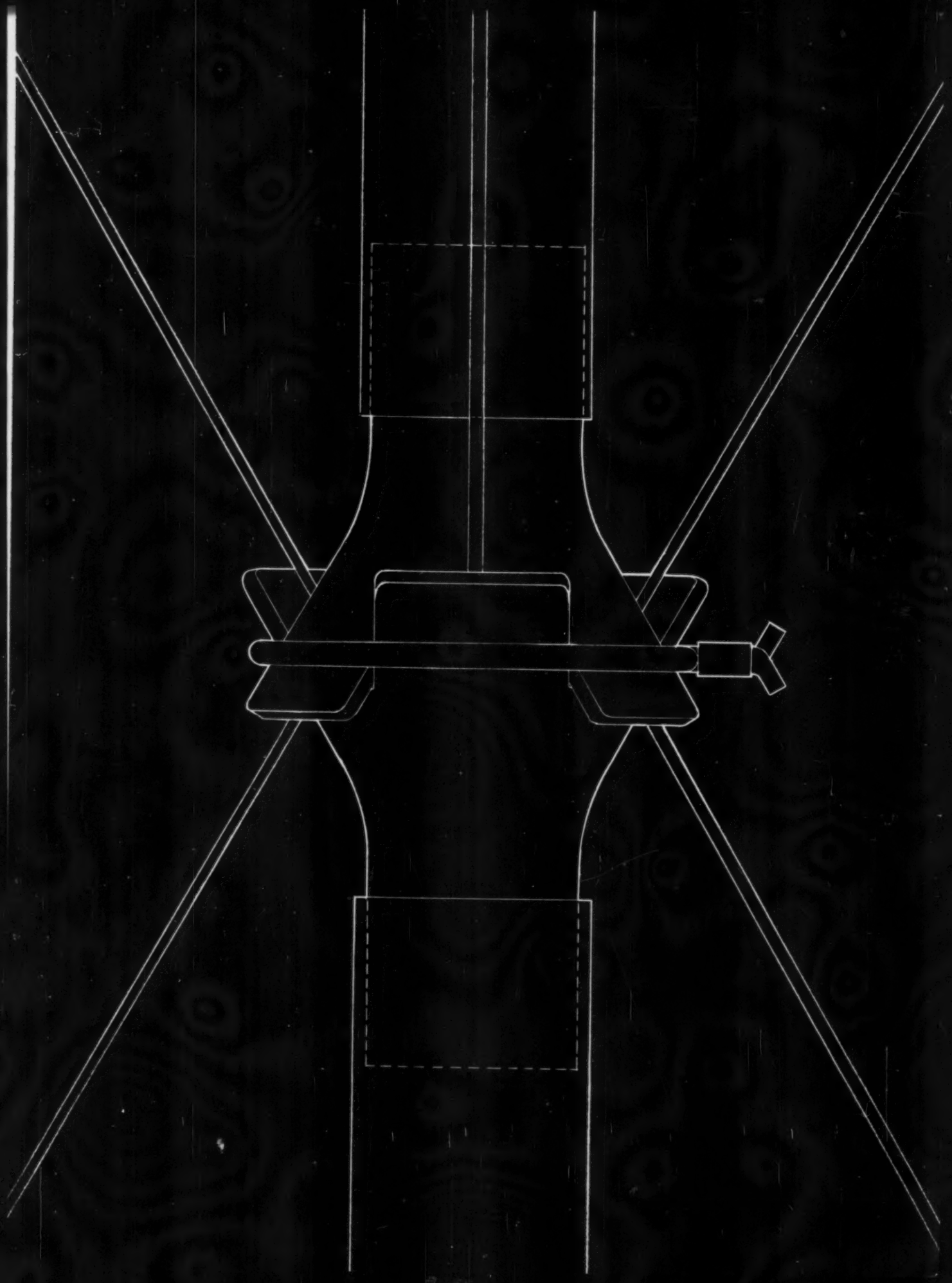

Monsanto introduces...

LUSTRAN TYPICAL PERFORMANCE DATA			LUSTRAN I							LUSTRAN A	
			MOLDING				EXTRUSION*				
PROPERTIES	Test Conditions	Units	210	410	610	710	261	461	761		ASTM
Tensile											
Stress at Yield	73° F.	psi	9,000	8,000	6,800	6,200	6,800	6,000	5,100	11,800	D638-58T
Stress at Failure	73° F.	psi	6,800	6,200	5,400	5,200	6,200	5,300	4,500	11,800	D638-58T
Elongation at Yield	73° F.	%	3.3	3.0	3.0	3.2	2.2	2.3	2.5	3.0	D638-58T
Elongation at Failure	73° F.	%	45**	55**	55**	70**	25	35	40	3.0	D638-58T
Modulus in Tension	73° F.	psi	420,000	380,000	330,000	300,000	380,000	320,000	290,000	520,000	D638-58T
Flexural											
Maximum Stress at Yield	73° F.	psi	13,700	12,000	10,000	9,200	12,500	10,000	8,500	15,600	D790-59T
Maximum Deflection at Yield	73° F.	inches	0.50	0.47	0.45	0.45	0.3	0.3	0.3	0.32	D790-59T
Modulus in Flexure	73° F.	psi	450,000	400,000	350,000	320,000	400,000	380,000	320,000	—	D790-59T
Impact Strength											
Izod ½" x ½" Bar Mld. (.010" Notch Radius)	73° F.	ft. lbs./in. of notch	1.1	1.8	3.5	4.3	0.9XX	1.8XX	3.6	0.4	D256-56
	0° F.	ft. lbs./in. of notch	0.8	1.2	1.6	2.0	0.6XX	0.9XX	1.5	—	D256-56
	−40° F.	ft. lbs./in. of notch	0.6	0.7	0.9	1.4	0.6XX	0.8XX	1.1	—	D256-56
Izod ¼" x ½" Bar Mld. (.010" Notch Radius)	73° F.	ft. lbs./in. of notch	1.3–4.0	2.5–5.5	4.0–6.0	6.0–8.5	—	—	—	0.4	D256-56
	0° F.	ft. lbs./in. of notch	0.7–1.2	1.1–1.6	1.4–2.0	2.0–2.6	—	—	—	—	D256-56
	−40° F.	ft. lbs./in. of notch	0.6–0.8	0.7–1.0	0.9–1.2	1.1–1.8	—	—	—	—	D256-56
Hardness											
Rockwell	73° F.		R-119	R-113	R-108	R-103	R-113	R-106	R-103	(M85-M90) R-122	D785-51
Thermal											
Deflection Temp. under Load Unannealed ½" x ½" Bar	264 psi	°F.	185	183	178	177	196+	192+	187+	197	D648-56
Physical											
Specific Gravity (Naturals)		—	1.07	1.06	1.05	1.04	1.07	1.06	1.04	1.08	D792-50

*Data on Extruded Sheet **Monsanto Test +Data on Molded Samples XX½" x 0.115" Bar-Sheet

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IN THIS ISSUE

Ronald Beckman is an instructor at Pratt Institute and also a designer with the George Nelson office. In the former capacity he is responsible for setting the student project reviewed on page 60. As a Nelson designer he is currently working on films and furniture. He joined the Nelson office to work on the development of an experimental industrialized house, leaving his graduate studies in architecture at Yale to do so (however, he is now working toward his master's degree in design). He has lectured at the Rhode Island School of Design as well as Pratt.

James Valkus of James Valkus, Inc., is the primary designer for Canadian National Railroad's redesign program (page 52). A graduate of Pratt Institute, Valkus spent three years with the offices of Raymond Loewy and George Nelson before opening his own firm—which now has a Montreal branch—in 1956. His firm's design activities are divided between graphics and product design, and among his recent clients are the United States Department of Commerce (for the Helsinki Trade Fair), Westinghouse Corporation, and Columbia Records.

Allan Fleming is the young Canadian designer chosen to work on the logo in Canadian National's redesign program (page 52). Now vice president in charge of creative services at Cooper & Beatty, Ltd., a Toronto typographic firm he joined in 1957, Fleming received his design training at Canada's Western Technical Commercial School, then worked in art studios and advertising agencies until 1953, when he went to England for further study in typography. Exhibitions of his work have appeared in galleries in Canada as well as the United States and England, and he has published articles in such periodicals as *Canadian Art*, *Canadian Architect*, and *Print in Britain*.

Hans Roericht is the young German designer whose line of compact china is being manufactured by the German china firm of Rosenthal Porzellan (page 70). The design was Roericht's senior project at the Hochschule für Gestaltung in Ulm, where he studied. Now an assistant in the school's Institute for Product Design, Roericht received the Society of German Engineers prize for china design in 1959.

David Goodman, who initiated the Healthways sport goods packaging program (page 83) shortly after Porter & Goodman Design Associates was formed in 1958, came to design by a somewhat roundabout path. As head of a construction crew on a large Los Angeles apartment building, he ended up coordinating color and furnishings for its interior; and he studied business administration at the University of California for two years. A skin and scuba diving enthusiast himself, Goodman is familiar with both ends of the sports equipment field.

Allen Porter, a partner in Porter & Goodman Design Associates, the design firm whose project for Healthways is discussed on page 83, has been involved in some aspect of the "communications" field since his job-after-high-school days as a copy boy on one of Chicago's morning papers. After receiving his design education at Chicago's Institute of Design, he worked in a letterpress shop and then as the one-man art department in an offset printing plant. Porter, whose major interest is packaging design, has had his own practice since 1951, except for a year and a half in the interim as design director for Dashew Business Machines.

Beckman

Valkus

Roericht

Fleming

Goodman

Porter

LETTERS

Fresh air for the Midwest

Sirs:

The editorial entitled "Don't look now but mama is everybody" (April, 1961) is really a bell ringer, and it is all the more striking when compared with some of the weak, wishy-washy editorials that we have read on this subject here in the middle west. Your editorial, therefore, is really like a breath of fresh air in a stuffy room.

Julius Braun
Chicago, Illinois

Second look at exhibitions

Sirs:

Just a short note of congratulations for your article on "Dynamic America" in the May issue of INDUSTRIAL DESIGN, and even more so for your brilliant presentation of the "Biology of Man" exhibit in the American Museum of Natural History.

Stephan F. Borhegyi
Milwaukee Public Museum
Milwaukee, Wisconsin

Sirs:

I was particularly pleased at your happy selection of the word "Happening" at the end of the "Biology of Man" critique (May, 1961). For years we have used "Experience" or "Experience-Situation," but neither of these have the right connotation. Now if you can summon up a better word than "Museums" for the institutions which house contemporary, participative happenings, you'll have made a major contribution to the inadequate vocabulary we usually use in this field.

Donovan Worland
Latham, Tyler, Jensen
Chicago, Illinois

Design student recruitment

Sirs:

The recruitment of qualified high school students to enter our colleges in preparation for a career in industrial design has become a problem of growing concern. An unfortunate mixture of lack of knowledge and abundance of misinformation as to what an industrial designer is and what he does compounds the problem.

In order to do something about this, I have spent a good deal of time visiting high school principals and school superintendents in our area. I explained the nature of our profession to them, its opportunities and its challenges. All of this came as a surprise to them. I further explained that the prospective designers should come from the upper 20-25 per cent of the class and that the broader their academic background the better their chances for success. This, too, surprised them greatly.

It is apparent that if we wish to attract intelligent and talented people to our profession, we have a good deal of spade work to do in just acquainting high school principals, guidance teachers, and art teachers with:

a. What our profession is.
b. What its rewards are.
c. What background and training it requires.
d. Where this background and training can be received.

We have formulated some ideas and plans to attack this problem. We would appreciate hearing from others who may be interested in it, too.

Abbot Eron
Eron & Eron
36 Grand Avenue
Englewood, New Jersey

Immobilized appliances

Sirs:

In this age of automobiles (1961 Ford Thunderbird) resembling a speedboat and portable electric mixers that suggest the work of a designer too recently behind the board in GM's Styling Department, one gets the impression that our industrial designers are more engrossed in change for the sake of a change than they are in change for the sake of improvement.

This unhappy feeling was brought even closer to home this evening as I wrestled with our laundry dryer, trying vainly to move it the few inches needed to line it up with the sink. Its designer, who was careful to include the useless chrome trim and an aeronautical control console, never thought to provide a few places by which to grab hold of the thing.

An exception? Hardly. Just glance around your own kitchen or laundry room for a moment. Examine the refrigerator, the freezer, the stove, as well as the washer and dryer. Do any of them reflect the obvious necessity of periodic service or repair that means moving these appliances away from their normal locations? Certainly none of mine give me much chance of gaining access through the front; that might mar the fluidity of form or something.

Such an immature approach to industrial design, an approach which has been all too evident in America during the past decade, can hardly be healthy. While the esthetics of Russian industrial design may leave something to be desired, the Russians certainly seem to be making rather impressive strides in the workable design of worthwhile objects, such as rockets and surgical instruments.

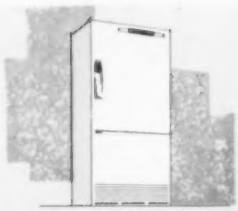
A nation which is busy designing electric can openers, instead of cleaning up existing design botches, strikes me as a poor bet in any hot war against people tough enough to tolerate old-fashioned cast iron horrors in their kitchens as long as they cook food effectively.

Hmmm? No, I never did manage to move that dryer.

R. T. Patterson
Milford, Connecticut

Erratum

Ladislav Sutnar's skewed "S" symbol, which appears on the jacket of his book, was inadvertently shown upside down in ID, June, 1961, page 73 (top). It should have been shown right side up (directly above).



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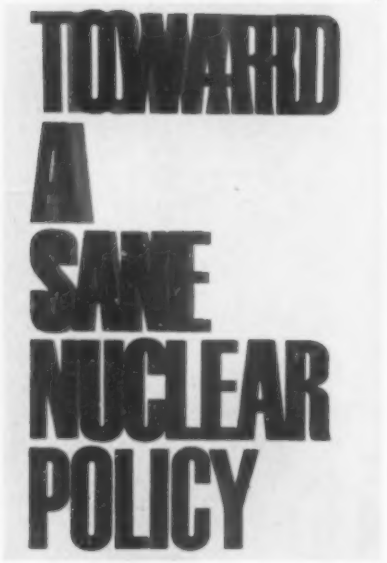
REVIEW: EXHIBITIONS

1



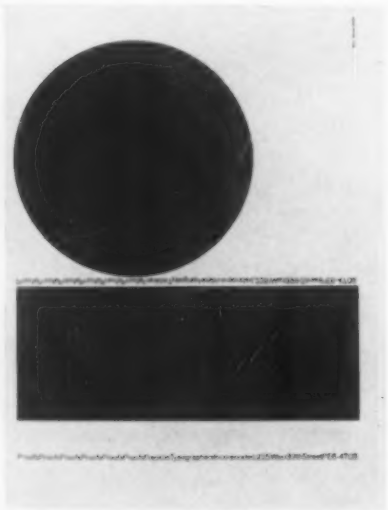
2

Type Directors Club: *1—National Associated Mills, Inc., Kurt Weihls; 2—National Committee for a Sane Nuclear Policy, Ivan Chermayeff; 3—Franklin Typographers, Roy Kuhlman; 4—Fairchild Publishing Co., Walter Lefman.*

Two Type Shows

Design through typography was the subject of two recent shows, one in Chicago, the other in New York. The 34th annual Design in Chicago Printing Exhibition (at right), sponsored by the Society of Typographic Arts, showed designs for business communication. The exhibition, which closed June 30, included 177 pieces selected from over 1,000 entries, making it one of the largest in the history of the STA. Chairman was Robert Vogele, and the judges were Robert Eganhouse, Everett McNear, and Don Smith. The show is available for loan from STA, 448 West Grant Place, Chicago.

The seventh annual exhibition of the Type Directors Club was held during May at the Mead Paper Company's Library of Ideas in New York. The 187 annual reports, advertisements, packages, brochures and announcements were chosen from over 2,700 entries. The jury included Robert Sutter, George Salter, George Lois, Freeman Craw, James Fogleman, and Allan Fleming.



3

4

5

6

7

Society of Typographic Arts: *5—Knight Magnetic Tape, Klein-Wassman Design; 6—Ansul Fire Equipment, Chad Taylor; 7—Red Wing Preserves, Robert Kennedy.*

NEWS

Award-winning car and typewriter

IDI announces annual awards

Winners of the Industrial Designers Institute 11th annual design awards were announced at a luncheon at Chicago's Hotel Ambassador West on June 22nd. Citations and medals were presented to George W. Walker, Eugene Bordinat, Jr., Elwood P. Engel, John Najjar, Robert M. Thomas, and Don R. De La Rossa of the Ford Motor Company Styling Staff for the 1961 Lincoln Continental (above); to Arnold J. Copeland, Robert Baker, and Robert Y. Kimura of Visual Marketing, Inc., for the Educational Project Kits (right) for the General Electric Company (see ID, March 1961); and to Carl W. Sundberg, Montgomery Ferar, Richard W. Figgins, and Toshihiko Sakow of Sundberg-Ferar, Inc., for the Tower Capri Portable Typewriter (above) executed for Sears, Roebuck & Company.

The competition awards three medals each year to individual designers or design teams "for their noteworthy and fresh approach to the design of a product which is mass produced and nationally distributed in the United States." Judging is based upon examples of current work submitted to the jury, which this year included IDI national president Leon Gordon Miller; Jon W. Hauser, chairman of the program and honorary member of the committee; Richard Kostka, chairman of IDI's Florida chapter; Harold E. Zierhut, chairman of the Los Angeles chapter; Ira W. Simons, chairman of the Ohio Valley chapter; and Paul MacAllister, founder of the program and honorary member of the committee.

A new medal, designed under the direction of John Vassos, was introduced this year. Leon Gordon Miller made the presentation, and Bay E. Estes Jr., Vice President-Marketing at United States Steel, was the featured speaker at the luncheon.

GE educational kit

ICSID reports

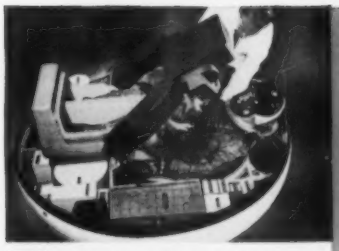
The International Council of Societies of Industrial Designers has just published its second analysis of the societies of industrial designers, and of industrial design throughout the world. The report is compiled from replies to a detailed questionnaire sent to member societies, and all the information is as of June 1960. Among the changes effected since the council's first report in 1958 is an increase from 33 societies in 20 countries to a current count of 42 organizations in 24 countries—representing a change of almost 30 per cent. According to the report, almost half of the total membership under consideration are practicing industrial designers, with some 15 per cent concerned exclusively with graphic design. In 1958, only 37 per cent of the members were practicing designers. Requirements for membership indicated a great variance among the groups, with the criteria being dependent mostly upon the interests and orientation of the group. The report concludes that for the most part, designers rarely specialize in one field, design both consumer and capital goods, and engage in a wide field of graphics, packaging, and exhibition design. Because of the differences and diversity of societies and their areas of interest, valid comparisons are often virtually impossible. ICSID will next attempt, therefore, to reach some general agreement on criteria for the assessment of industrial design.

News from ASID

American Society of Industrial Designers' president Raymond Spilman and Chicago designer Dave Chapman were two of the featured speakers at ASID's Allegheny Chapter Meeting held at Cleveland's Wade Park Manor on June 9, 10, and 11. Spilman spoke at the opening luncheon, while Chapman addressed the dinner the next night on "Design Frontiers—Problems and Challenges." The schedule of events included a business meeting, experimental design student movies, a session called "Designer Oriented Exploration of Human Relations Phenomena," and an open forum covering topics such as: Are we obsoleting

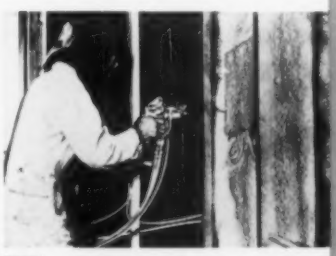
(*Continued on page* 16)

1 USED FOR INSULATION, urethane foam has a K factor of .11 to .16.



2 AMERICA'S SPACE PROGRAM uses urethane cushioning, insulation.

3 MOLDED CHAIR, another "first" for urethane foam in furniture industry.



4 SPRAYED-IN-PLACE urethane foam insulation is quick, easy, efficient.

5 URETHANE INTERLINING gives warmth-without-weight in clothing.

6 FOAMED-IN-PLACE URETHANE insulates refrigerated trucks, reefers.

7 REUSEABLE FILTERS of urethane for air cleaners, air conditioners.

8 ACOUSTICAL TILE of decorative urethane foam for homes and offices.

9 CONTOUR-CUT urethane foam cushions delicate items in transit.

10 URETHANE CURTAIN WALLS go up fast, provide excellent insulation.

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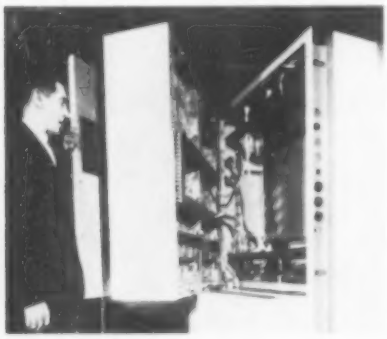
NEWS *continued*

our profession before it even becomes one? What is the real value of creativity to the client and how much is he willing to pay for it? How good are we professionally? Should we revise standards of Society acceptance? Is the consultant designer going out of style, is he being absorbed by internal design departments, and do internal departments stimulate or restrict creativity?

The 17th Annual Meeting of the American Society of Industrial Designers will be held October 6-8 at the St. Catherine Hotel, Santa Catalina Island, California. Theme for the convention is "Design Explorations," with emphasis on new strides in the fields of graphics, movies, architecture, and other related areas. Pasadena designer Melvin Best is serving as convention chairman. On October 5th, members will convene at Los Angeles' Ambassador Hotel for a preliminary industry-oriented program, after which all proceedings will move to Santa Catalina.

Alcoa announces award winners

George Beck, Walter Landor, and the team of Don McNab and Howard Savage are the winners of Alcoa's third annual Industrial Design Awards for outstanding achievement in design with aluminum. The awards are made on the basis of the designer's work during the preceding year, as indicated in a submitted exhibition, and not for any one product.



Top, Beck; below, Landor

McNab and Savage

Although a sculptured aluminum stabile is given to each winner, the major portion of the award is a four-page color insert advertisement (in INDUSTRIAL DESIGN and *Fortune*) sponsored by Alcoa, featuring the work of each designer. George Beck (below), manager of industrial design at General Electric's Light Military Electronics Department, is shown with GE's missile computer test set, which was designed under his supervision. Both the structure and enclosure are largely aluminum, and the set is so constructed that it can be operated even when opened for maintenance. San Francisco designer Walter Landor is shown (below) with transceiver he designed for Kaar Engineering Corporation; the two-way radio is housed in an interlocking case formed from aluminum sheet. Don McNab (above, left) and Howard Savage, partners in Savage-McNab-Wilson and Associates, are shown holding some of the items from a line of home and office accessories they executed for Geometrics, Inc.; the group of boxes and lighters employ standard aluminum extruded shapes for bodies and decorative inlay. Jury for the 1961 awards consisted of Miss Greta Daniel, associate curator of design at New York's Museum of Modern Art; William T. Hurley, vice president of Reed & Barton; Joseph Carreiro, director of the industrial design department at the Philadelphia Museum College of Art; Theodore S. Jones of the Institute of Contemporary Art, Boston; and Otto Storch, art director of *McCall's*.

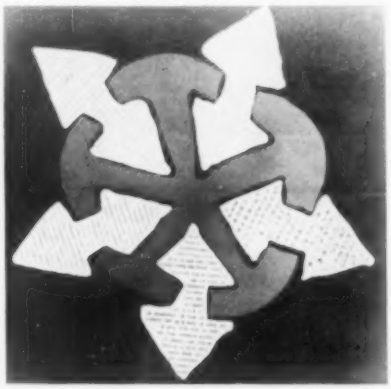
IDI members exhibit work

Members of the Central New York chapter of the Industrial Designers Institute displayed their work in a month-long exhibit which closed recently at the new, Philip Johnson - designed Munson - Williams-Proctor Institute Gallery in Utica. Among the highlights of the exhibit, which was composed of drawings, photographs, models, and actual products, were an Easy automatic washer and drawings showing the evolution of its design; a full-scale mock-up of an IBM data system processing console; a quarter-scale model of an Eastman Kodak mini-card system; and a hypothetical full-scale mock-up of a re-entry glide vehicle, from GE's Light Military Electronics Department.

As part of the opening functions, the chapter held its first annual scholarship dinner, during which this year's grant-in-aid was awarded to Syracuse University industrial design student Barbara Anne Kubis. IDI national president Leon Gordon Miller was the featured speaker.

Multi-lingual poster

Five languages announce the graduate design program of Southern Illinois University on the poster below, which will be mailed to U. S. embassies, overseas libraries, and schools throughout the world. The purpose of the poster is to attract qualified foreign students whose additional training would be of great value to their countries when they return. Designed by Virdon Lipe, SIU graduate student in visual design, the poster



SIU poster

makes the announcement in English, French, Hindi, Mandarin, and Spanish. The design is orange and olive on a solid black background.

European crafts displayed

Objects designed and executed in the contemporary style (most of them since 1955) by prominent European artist-craftsmen are being displayed now through September 10th at the Museum of Contemporary Crafts in New York.

(*Continued on page* 21)

Schaffner's coffee pot

the designers who did something about the weather and tapped a major market

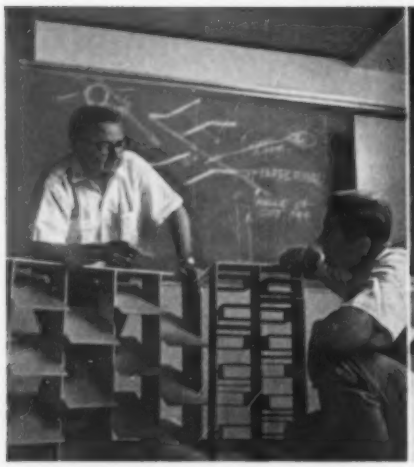
THIS STORY begins with three men who refused to stand pat. One is Henry E. North, Jr., president of Arcadia Metal Products in Fullerton, Calif. The second is A. Quincy Jones, FAIA, noted Los Angeles architect. And the third is Robert A. Gelert, Arcadia's design engineer. Their dissatisfaction with things as they found them hit a peak one summer day in 1959.

Henry North, who had left as head of Douglas Aircraft materials research labs to found Arcadia and push its building products sales to the multimillion-dollar mark, wasn't content with a product line limited to sliding doors and windows. Quincy Jones had discovered he had a problem with the white-hot Southern California sun: it meant blinding glare and a brutal burden on air conditioning in the new, glass-walled library he was planning for U.C.L.A. To Industrial Designer Bob Gelert, the problem offered a new opportunity to explore the use of metals in architecture.

Conscious of the exciting aesthetic possibilities in an exterior sunscreen, Jones came to Arcadia with several design ideas involving extruded aluminum components joined to form geometric patterns. The architectural criteria: a screen that would be light in weight, simple to install, moderate in cost and, most important, an effective sun control device. To these were added Arcadia's desire for a system which could be mass-produced economically and which would be extremely flexible to meet the aesthetic and mechanical requirements of other applications. Bob Gelert undertook to prove out the designs for manufacturing and ended up with an ingenious new concept to meet the manifold demands.

How this multipronged problem was resolved is a striking example of collaboration between architect and industrial designer at its productive best.

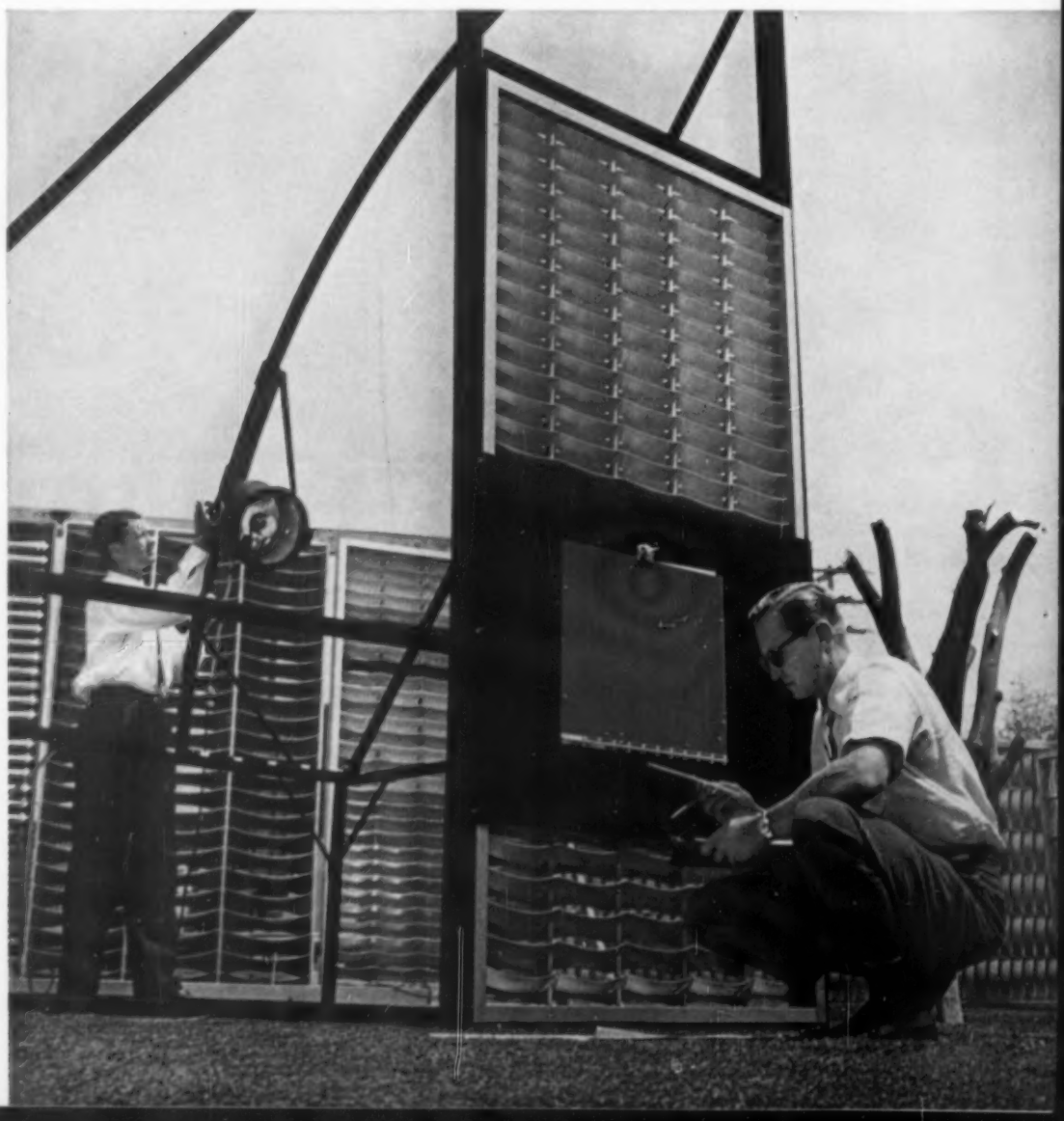
THE ALCOA INDUSTRIAL DESIGN AWARD presented to Robert A. Gelert and A. Quincy Jones in recognition of notable achievements in design incorporating imaginative and effective use of aluminum. Lester Beall, Robert Kolli, Just Lunning, Nanci Lyman and Jane McCullough comprise the distinguished jury of critics, editors and educators in the design field which chooses recipients of the award from the Alcoa collection of industrial design.



Heat and glare are headaches to curtain wall construction with its vast areas of glass. When architect A. Quincy Jones undertook to plan a university library, he designed metal screens to reduce solar impact. Prototypes were fabricated by Arcadia Metal Products, manufacturer of sliding doors and architectural building components. After analysis pointed up manufacturing difficulties, Jones and Industrial Designer Bob Gelert looked for a fresh approach to meet the architectural needs and also become the basis for an Arcadia product line.

Inspiration struck Bob Gelert one Sunday on Laguna Beach. Experimenting with scraps of paper to simulate metal, he hit on the principle of the inverse plane. By early Monday morning, he was outlining the concept to Arcadia President Henry North, explaining how coiled aluminum sheet could be lanced parallel to its edge, then formed into opposed planes to become the key cellular component of an entirely new solar screening system.

Demands on solar screening vary widely in accordance with geographic location. Bob Gelert designed and built his own version of the heliodon, an all-aluminum device that uses a parallel ray Beamlight to duplicate any angle of solar rays. By simulating conditions of the job site, Gelert can determine essential variations in cell shape, tilt, width, opening and row spacing to meet individual requirements. The heliodon also extracts data useful in determining savings in air-conditioning equipment and operation. Here, he and Ray DuShane, another Arcadia engineer, are setting up a panel for testing.



Bob Gelert and Quincy Jones shared a common viewpoint in approaching the problem. In industrial design, as in architecture, form arises out of fulfilling human needs. Jones' prototypes proved to be successful sun control devices and satisfied his aesthetic requirements for the library building. However, additional study revealed major obstacles: Cost and weight would be excessively high; assembly was intricate and time-consuming; mass-production economies would be unattainable. Also apparent was its lack of flexibility as a product line for Arcadia. The results suited nobody, and the two backed off for a totally fresh start.

First, they drew up a list of requisites and those of a material nature pointed clearly to aluminum. It had the light weight that would save shipping costs and reduce the requirements for supporting structures. It provided strength to withstand all wind and snow loads; freedom from corrosion, essential to minimum maintenance; reflectivity to repel solar heat; and unlimited textures and finishes. Moreover, its workability would pay dividends in low fabricating costs, more economy for the buyer and consequent widespread acceptance.

But their big breakthrough was in basic design. Both had given considerable thought to forming continuous louver blades from aluminum coil stock. Toying with the problem during a week-end respite on Laguna Beach, Bob Gelert split a sheet of paper along its center line, allowing the formation of two opposed parabolic blades. This was the birth of the unique concept of the inverse plane in solar screening.

Translated into aluminum, the inverse plane concept permits formation of two-plane cells continuously along the length of a single coil strip. The cellular blades, supported on aluminum framing, comprise a modular system of grid panels that can be produced by mass fabricating techniques. Blade shape, tilt, width, opening and row spacing can be varied to provide any desired degree of shading with maximum visibility—or maximum privacy. At the same time, endless flexibility in design is afforded to counter the monotony that threatens much curtain wall architecture.

This, then, is "Arcadia Brise-Soleil"—broken sunlight—the product of a manufacturer, an architect, and an industrial designer who brought ingenuity and a new view to the problem of sun control.

No product springs into being full-blown and ready to sell. Gelert knew from his company's long and successful experience that aluminum afforded the necessary combination of lightness, strength, heat reflectivity and workability. But for specialized counsel on a temper sufficiently ductile for extreme forming, yet one that would meet finishing requirements when anodized, he turned to Ted Anderson, sales engineer from Alcoa's Los Angeles office.

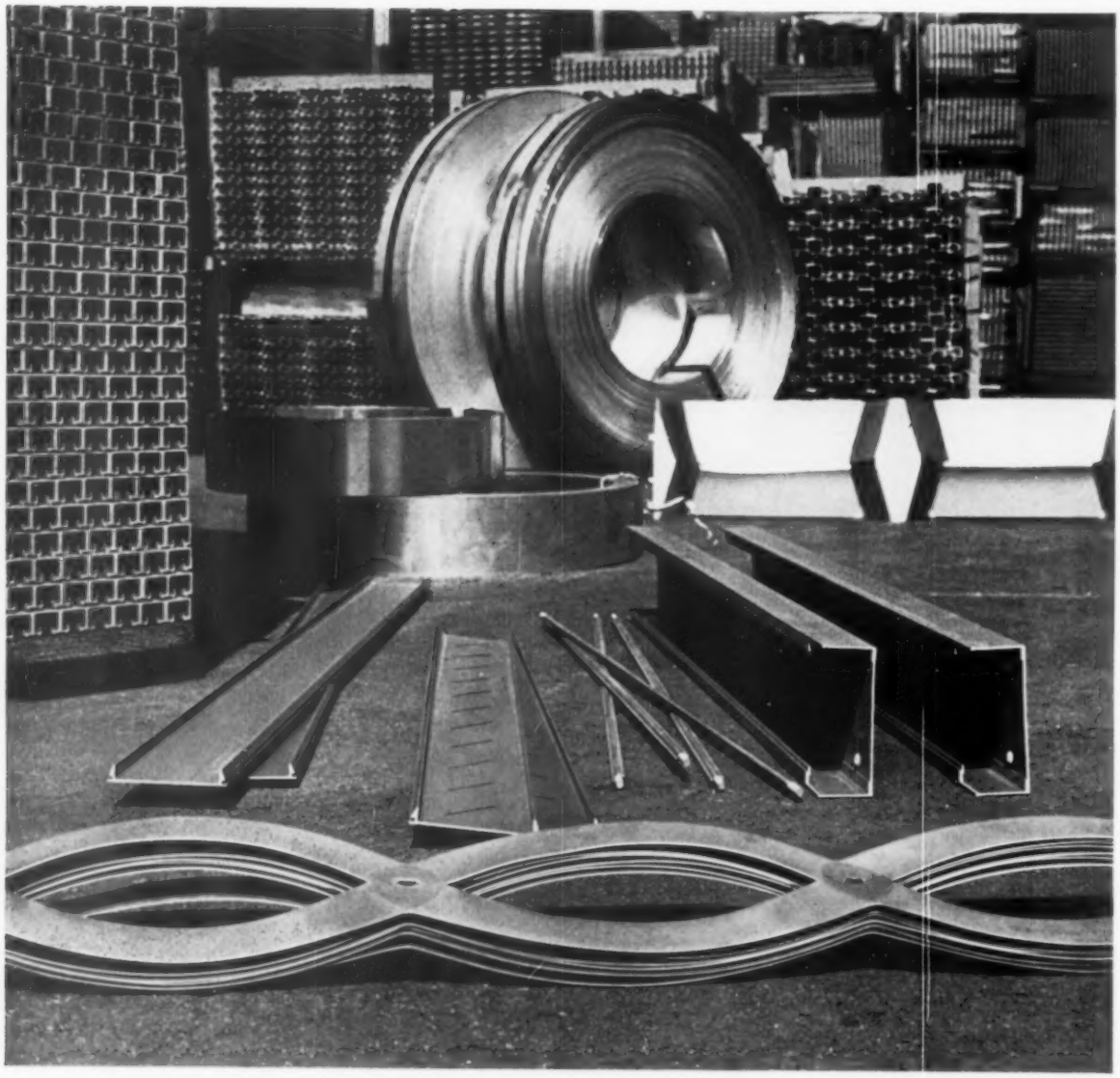
Simplicity in tooling, a prime economic concern, was promised when pilot runs readily showed how coiled aluminum sheet could be slit and stamped to the desired configuration. Gelert and Garold Frymire, Arcadia production engineer, worked together to set the pattern for future mass-production methods.

Brise-Soleil stands for broken sunlight, but the market picture is uniformly sunny at Arcadia Metal Products, where overwhelmingly enthusiastic response from architects and building owners has confirmed the company's earliest and highest hopes. President Henry North, understandably reluctant to predict actual sales volume, puts it this way, "We won't introduce any product unless it will yield at least $1,000,000 of annual sales. You can say that the Brise-Soleil will easily be a multiple of that figure."

design begins with function, culminates in form

Aluminum is the designer's metal...

Quincy Jones and Robert Gelert had manifold problems to solve in designing their unique solar screening system, but choice of material was not among them. The reason? They knew that only aluminum could meet their combined requirements for lightness, strength and resistance to corrosion. They knew that in coiled sheet for the screen blades and in extruded shapes for framing members and spacers, aluminum would lend itself perfectly to mass fabricating methods with minimal cost for tooling. And they knew that in aluminum they would find a limitless variety in form, color and texture to permit the broadest range of individual expression by the architects this product would serve.



Alcoa is the designer's ally...

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ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

NEWS *continued*

The exhibition, titled "Artist-Craftsmen of Western Europe," features a wide selection of items in wood, glass, fibers, leather, metal, and ceramics. Swiss artist Alexander Schaffner's silver and ebony coffee pot (page 16) is one of the almost 300 designs which comprise the show. Selection of the works was made by Robert A. Laurer, associate director of the museum. Following its stay in New York, the exhibition will circulate to a number of museums.

Stevens creates French award

Milwaukee designer Brooks Stevens has established an annual award to be made to two French students of "industrial esthetics" who offer the best solutions to a given problem. Aimed at encouraging design students in college-level French schools, the award consists of both a plaque and a monetary prize. Candidates are submitted by faculties of the schools and by individual professional designers, with finalists being chosen by a jury from the French Institute of Industrial Esthetics; Stevens makes the final choice. This year, the problem, as set up by the Institute and Stevens, offered the candidates three choices: a cart with a fiberglass structure; a can for preserves; or a subject of their own choosing. Top awards were won by Francois Guillon, a student at the Upper School of Industrial Esthetics in Paris, who chose the cart as his subject, and to Daniel Richelet, also a student at the Upper School, for his design of a vise. There were also four other special mentions.

Boxes win two awards

Two boxes were double winners in the National Paper Box Manufacturers Association's recent 11th annual competition. Shell Chemical's sample chip box (above), designed by Industrial Contacts, received a first award in the promotional box category and was rated the best in superiority of construction. Glossy dark red paper with gold leaf stamping over a heavy paperboard rectangle houses two acetate-covered trays. Home-movie light box (above) for Sylvania Electric Products took first place among photographic boxes and in surface design. Designed by Case-Hoyt, box uses white background set off by nine colors. Cover has die-cut platform and insert to protect mechanism in shipping.

Sample chip box

Movie-light box

New York World's Fair

The World's Fair Corporation has announced that it will definitely include an amusement area, although, Robert Moses says, "There will be no third-rate Coney Island midway area." (Coney Island at once replied indignantly that its annual attendance exceeded 50,000,000 visitors, while the fair would be attended by only 75,000,000 persons in its two-year duration. The president of the Coney Island Chamber of Commerce added that "We respect the work of the fair and, in turn, we expect them to respect Coney Island, which has rightly become known as the playground of the world.")

The principal amusement announced so far for the 1964-65 fair is a musical extravaganza to be produced by Meyer Davis, the orchestra leader, and Leon Leonidoff, the stage-show producer. It will take place in the amphitheatre that was the scene of Billy Rose's Aquacade in 1939, and although the exact theme of the new production has not yet been determined, the Corporation announces that "Spectacular acts will be brought to the Fair from all corners of the earth, and the sound and lighting effects are planned to be the most original and overwhelming to be seen on any stage."

Although the federal government has not yet appropriated money for a United States pavilion at the fair, Robert Moses said, in a speech May 22nd before the National Press Club in Washington, that the pavilion must be one that will "compel the respect and even the admiration of mankind. Our deepest thinkers and cleverest artificers should be recruited to imagine, design, and furnish the pavilion." He added that "the avant garde are intolerant, fanatical, and armed with sharp stones in their glass houses. Our rules will not give any self-constituted clique control and a patent on which they can set their seal."

(*Continued on page* 22)

New packages

1 — Mennen's Skin Bracer bottle uses surface pattern to give feeling of effervescence, permit better grip. Width of shoulders and neck is emphasized by broad label band, which incorporates new label format (old bottle at right). *Francis Blod Design Associates.*

2 — Royal Cup coffee pack has maroon background, ribbon-like strip in gold, orange-red, and yellow. New logo, which will extend to company's other lines, features maroon lettering in gold-bordered white oval; crowned goblet is also in gold. *Frank Gianninoto & Associates.*

3 — Wesson Oil label uses clear yellow and green print on white background, gold oval around logo, and scalloped border. *Frank Gianninoto & Associates.*

NEWS *continued*

People

APPOINTED: **Anthony J. Carsello** (below), assistant director of design at the Chicago office of Reinecke & Associates, as director of design at the company's Pasadena, California, office. . . . **David K. Munro** (below), head of project coordination and planning; **Alexander B. Musichuk** (below), head of the product design section; **Richard Arnesen** (below), head of market planning aspects, and **Donald L. Craddock** (below), director of packaging and graphics, as vice presidents of Scherr & McDermott, Akron and New York. All four were formerly associates of the firm. . . . **David R. Crenshaw**, previously head of the technical services division, as executive vice-president at Merendino/Greene & Associates, Pasadena, California. . . . **N. Thomas Wolfe**, formerly with the South Pasadena, California, office of Henry Dreyfuss, to the staff of the industrial design department at Remington Rand Univac. . . . **Martin G. Prehn**, account supervisor and design director at Donald Deskey Associates, New York, as a vice president of the firm. . . . **James R. Kearl**, previously with Douglas Aircraft, as vice president of Dean Myers Associates, Newport Beach, California. . . . **Jorgen Hansen**, formerly a partner in the architectural firm of Hansen & Thuesen, as design coordinator of architecture and interiors at Cushing & Nevell, New York. . . . **Selwyn C. Multer**, previously packaging coordinator at Joseph E. Seagram & Sons, as director of marketing for the New York firm of Associated Industrial Designers, a division of Design for Selling, Inc. . . . **Herbert Meyers**, formerly director of graphic design at the Meade Paper Company, as director of creative design for Lord Baltimore Press, New York. . . . **Ben F. Jones** as director of product planning for B. F. Goodrich Aviation Products, Akron, Ohio. . . . **Ted Beyert** as general manager of design and research at the St. Louis lighting firm, Soundolier, Inc. . . . **Tom Lee**, New York, as chairman of exhibitions for the Architectural League. . . . **Irvin J. Gershen**, Maplewood, New Jersey, by the Rockefeller Brothers Fund, to be the technical advisor to a team that will conduct a plastics products study in Ghana and Nigeria. . . . **William Hodgkinson** as assistant director of the packaging and graphics department at Van Dyck Associates, Westport, Connecticut. . . . **Myron Tessler** to the design department of Industrial Design Affiliates, Beverly Hills, California. . . . **Belle Kogan**, of Belle Kogan Associates, New York, as senior advisor to student and junior members of the Industrial Designers Institute. . . . **Francis S. Camiolo** as manager of the Technical Data Division of Malt & Ness Technical Services, Inc., Buffalo, New York. He will have complete responsibility for the engineering documentation, graphic arts, and production departments.

LEAVING: Textile designer **Bittan Valberg**, to return to her native Sweden, where she will be associated with AB Limhamns Textil, textile mill. She will create her own department of design and production for the company.

ELECTED: **William Blau**, vice president of marketing at Harley Earl Associates, Warren, Michigan, as president of the Detroit chapter of the American Marketing Association.

AWARDED: To **Robert G. LeTourneau**, founder and head of R. G. LeTourneau, Inc., the American Society of Mechanical Engineers' Machine Design Award.

Company News

RETAINED: **Latham, Tyler, Jensen, Inc.** (Los Angeles) by Revell, Inc., and Washington Steel Products, Inc. . . . **D'Elia, Stolarz, Nishanian** (New York) to handle new product research and development for Admiral Plastics Corporation and the Triangle Manufacturing Company. . . . **Van Dyck Associates** (Westport, Connecticut) by Turner & Seymour Manufacturing Company, Potter Instrument Company, NYPAC, Inc., and Sanford Associates. . . . **Don Doman Associates** (Janesville, Wisconsin) to serve as design consultants to the Kohler Company. . . . **Dean Myers Associates** (Newport Beach, California) by the Glasspar Boat Company as design consultants. . . . **Robertson-Montgomery** (San Francisco) by Stanford University, to provide the graphics for the school's new money-raising campaign. R-M has already completed a symbol for the project. . . . **John A. Gait Associates** (Wheaton, Illinois) by the Hamilton Glass Company, for mirror and glass product designs. . . . **Good Design Associates** (South Bend, Indiana) by the H. B. Sherman Manufacturing Company, Wheel Horse Products, Overhead Door Corporation, and by the First Bank and Trust Company of South Bend to serve as architects and interior designers for a new branch bank. . . . **George Patton Jr.** (Warwick, Rhode Island) by the Bullard-Pickering Company, to serve as design consultant for point-of-purchase displays. . . . **Scherr & McDermott** (Akron and New York) by Pyramid Rubber Company, National Cash Register, Smith-Erie Division of A. O. Smith Corporation, TelePrompTer Corporation, B. F. Goodrich, and the Mailograph Company. The firm has also acquired a technical assistance contract with the Department of Rural Development and Cottage Industries in Ceylon. . . . **Carreiro/Sklaroff** Design Associates (Philadelphia), by the Foreign Agricultural Service, United States Department of Agriculture, to develop and design the 1961 Mobile Feed Exhibit for Europe, to be shown in Denmark and Austria. . . . **William M. Schmidt Associates** (Detroit) by the Stran-Steel Corporation, division of National Steel, as styling and design consultants for the company's product development and improvement programs.

ESTABLISHED: **Deschamps - Mills Associates**, 665 Roosevelt Road, Lombard, Illinois, by Robert L. Deschamps and Thomas C. Mills, both former associate designers at Palma-Knapp Associates. . . . **Alex-Mauro-Witteborg**, exhibition consultant firm, at 20 East 46th Street, New York, by William Alex, Charles Mauro, and Lothar Witteborg. . . . By **Joseph D. Portanova**, his own consultant design firm at 1026 Monte Verde Drive, Arcadia, California.

Top: Carsetto, Arnesen, Munro
Bottom: Musichuk, Craddock

GOING PLACES: **Reinecke & Associates** California office to 3780 Berwick Drive, Pasadena; **Reinecke & Associates** Illinois office to 601 Lee Street, Des Plaines. . . . **Dave Chapman, Inc.**, to 35 East Wacker Drive, Chicago. . . . **Michael Saphier Associates** San Francisco office (Gene Tepper division) to larger quarters at 1620 Montgomery Street.

EXPANDING: The **Institute for Motivational Research, Inc.**, Croton-on-Hudson, New York, with the opening of new affiliate offices in Buenos Aires, Argentina. Alberto Taubenschlag will be the director of the new facilities and will be associated with Dr. José Enrique Miguens.

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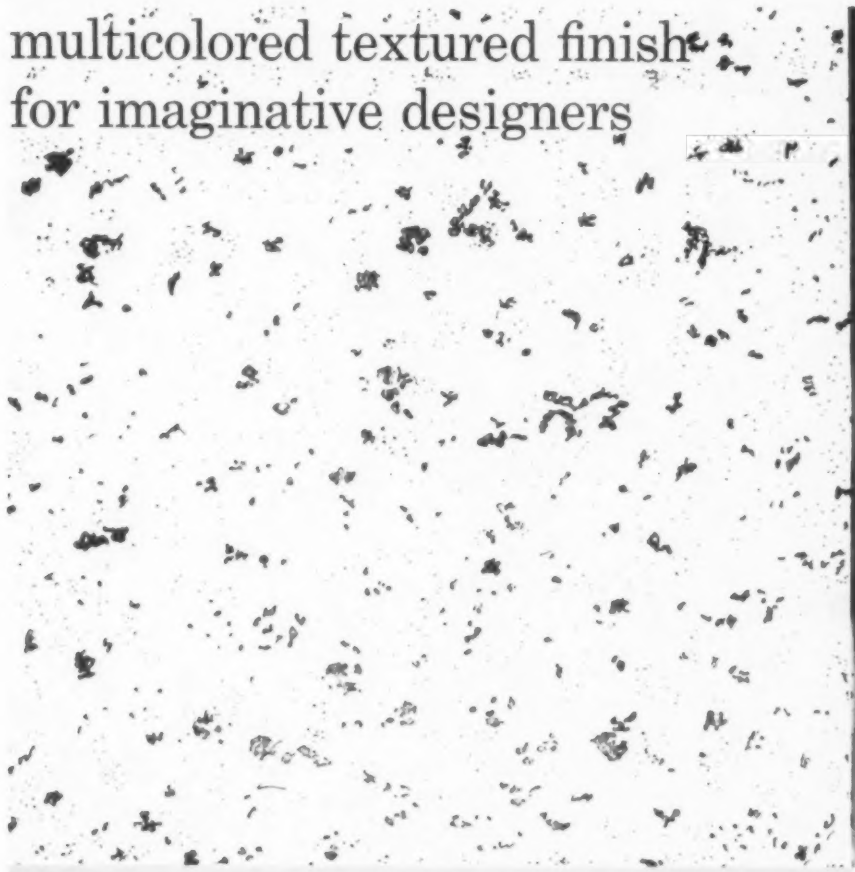

In little more than a decade, Plextone has become an accepted industrial finish. Continuous research has resulted in new colors, new design effects, greater durability, wider application. Today, this textured, multicolored industrial finish has reduced costs up to 35 percent. Its one-coat application of two or more interlaced colors is sprayed at **one** time, from **one** gun! Shown above is just one of many pre-mixed Plextone colors available for prompt shipment.

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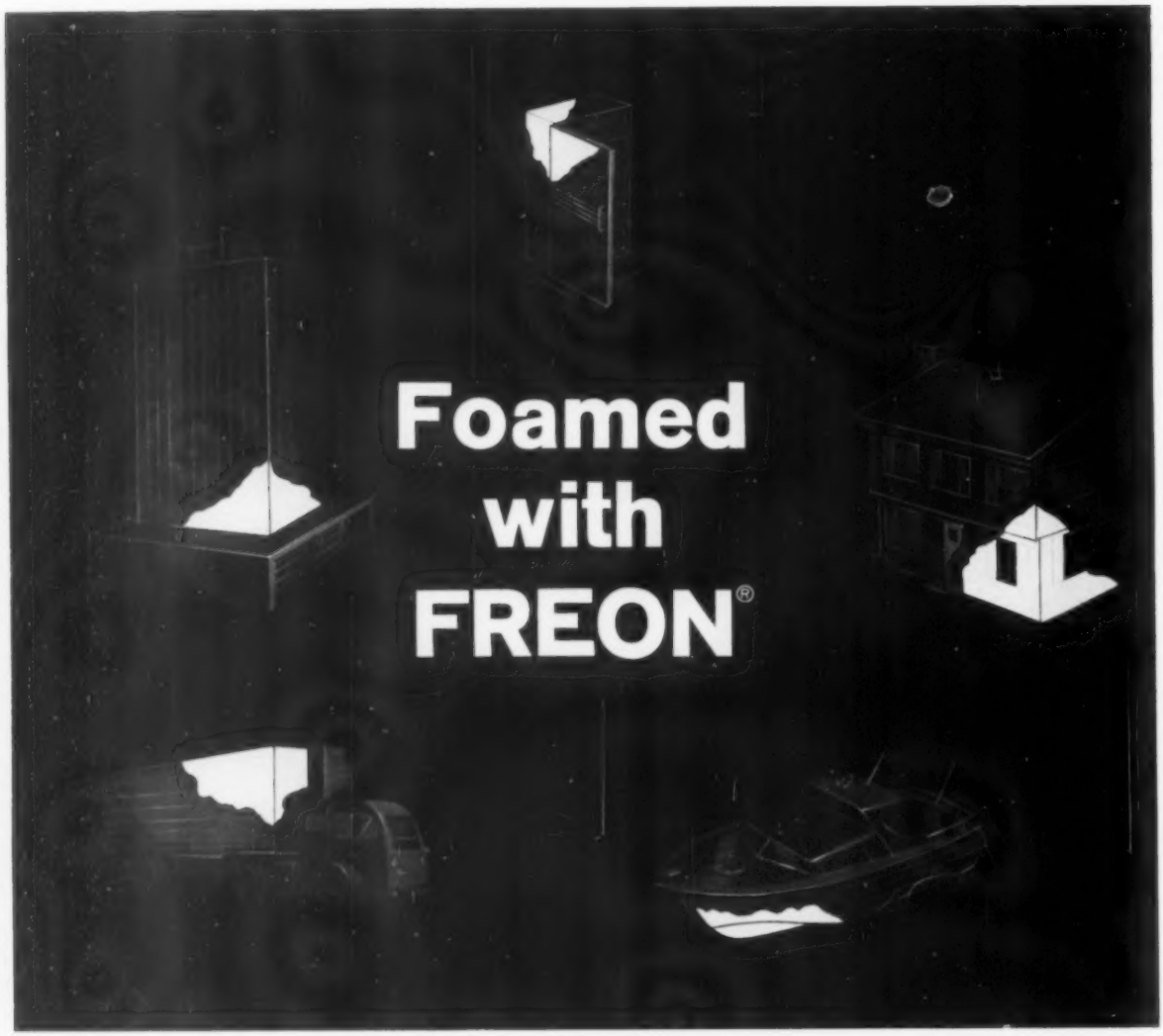
MARBON CHEMICAL DIVISION **BORG-WARNER**

WASHINGTON WEST VIRGINIA



New, rigid urethane foams are filling a void in many industries

New answers to problems of insulation, structural design and costs are being provided daily by the versatile qualities of improved urethane foams—especially foams blown with Du Pont "Freon" blowing agents.

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Lowered costs result from the ability of "Freon" blowing agents to produce more foam from the same base materials. The foams themselves often require just half the volume to equal other materials in performance. And you can get the installation versatility and convenience of foaming in place.

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it's all one piece!

Opening and closing this one-piece carrying case demonstrates the remarkable "hinge" property of TENITE POLYPROPYLENE

Flexed a million times in one continuous laboratory test, a molded specimen of Tenite Polypropylene—the Eastman plastic with the "built-in hinge"—showed never a crack. That's why this case can have its base, cover, and handle molded as a unit, with obvious savings in design, fabrication, and assembly.

Made for a child's typewriter, the case is well able to take slam-bang treatment that will come its way. The high abrasion resistance demonstrated in this use gives long life to the beauty of many products made from Tenite Polypropylene, and also suggests its use for gears, bearings, and similar hard-working parts.

In addition to being injection molded, Tenite Polypropylene can be extruded into film, sheeting, and monofilaments, and in special formulations is adaptable to blow molding, where its exceptional strength permits thin walls. The film is sparkling clear, heat-sealable, printable, and an effective moisture barrier—important features in packaging. Rigid sheet is readily thermoformed on standard equipment into large-scale sections or skin packaging.

As extruded wire covering, Tenite Polypropylene exhibits excellent electrical and thermal properties. And formulations combining weatherability, low-temperature flexibility, and high tensile strength may be used to produce monofilaments that are ideal for such applications as webbing for outdoor furniture.

With the lightest weight of any solid plastic, Tenite Polypropylene gives the greatest product yield per pound. As for colors, thousands of vibrant hues are available in Tenite Polypropylene—or in color concentrates for mixing with uncolored plastic to produce the desired color when molded or extruded. Eastman experience in coloring plastics extends over 25 years, with additional background in color photography and textile dyes. In applying this plastic to your product ideas, you can call on the aid of Eastman's technical representatives and its extensive laboratory facilities. For information on Tenite Polypropylene or any other plastics in the Tenite family—butyrate, acetate, propionate, or polyethylene—write EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

Carrying case molded by manufacturer of the "Tom Thumb" typewriter, Western Stamping Company, Jackson, Michigan.

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POLYPROPYLENE

an Eastman plastic

COMING NEXT MONTH

Three perspectives on taxis

Customers are not the only people who complain about the physical inconveniences of stock-car taxis. As conveyances, they do not please drivers or owners either, but for different reasons. The driver would like better maneuverability, visibility, and ease of handling (he would also like some protection against robber-passengers); the owner would like a vehicle that is less expensive to run and maintain. The viewpoints of all three of these people are explored in this article, measured against existing taxis and against other existing vehicles that might be used for taxis. Finally, the article offers a schematic projection of what the ideal taxi should be.

Foils and foil substitutes in packaging

Foils offer so many advantages in both structural and surface design, and they can be so eye-catching, that even the most prosaic contents are now sold in (and, some experts believe, by) aluminum foils. But despite insured sales increases, the cost of using foil is quite high, and competing materials suppliers are making the most of this deterrent. Metallized papers, as well as specialized inks, are already in wide use as foil substitutes. ID's article will discuss recent trends and foreseeable developments in the future of foil, including ways in which designers have effectively used foils and foil substitutes as a weapon in the competitive products battle.

Design review: photographic equipment.

A review of some recent developments in the function and styling of photographic equipment, including both cameras and accessories.

3 seating solutions

Difficult office and reception area seating problems need no longer puzzle interior designers. Herman Miller offers no less than three systems—Steelframe Seating, Contract Bench System and the Modular Seating System to answer these specialized needs.

HARPER.

"The time has come," the Walrus said,
"to speak of many things:
of shoes and ships and sealing wax—
of cabbages and kings"
and what you can enter in the eighth
ANNUAL DESIGN REVIEW

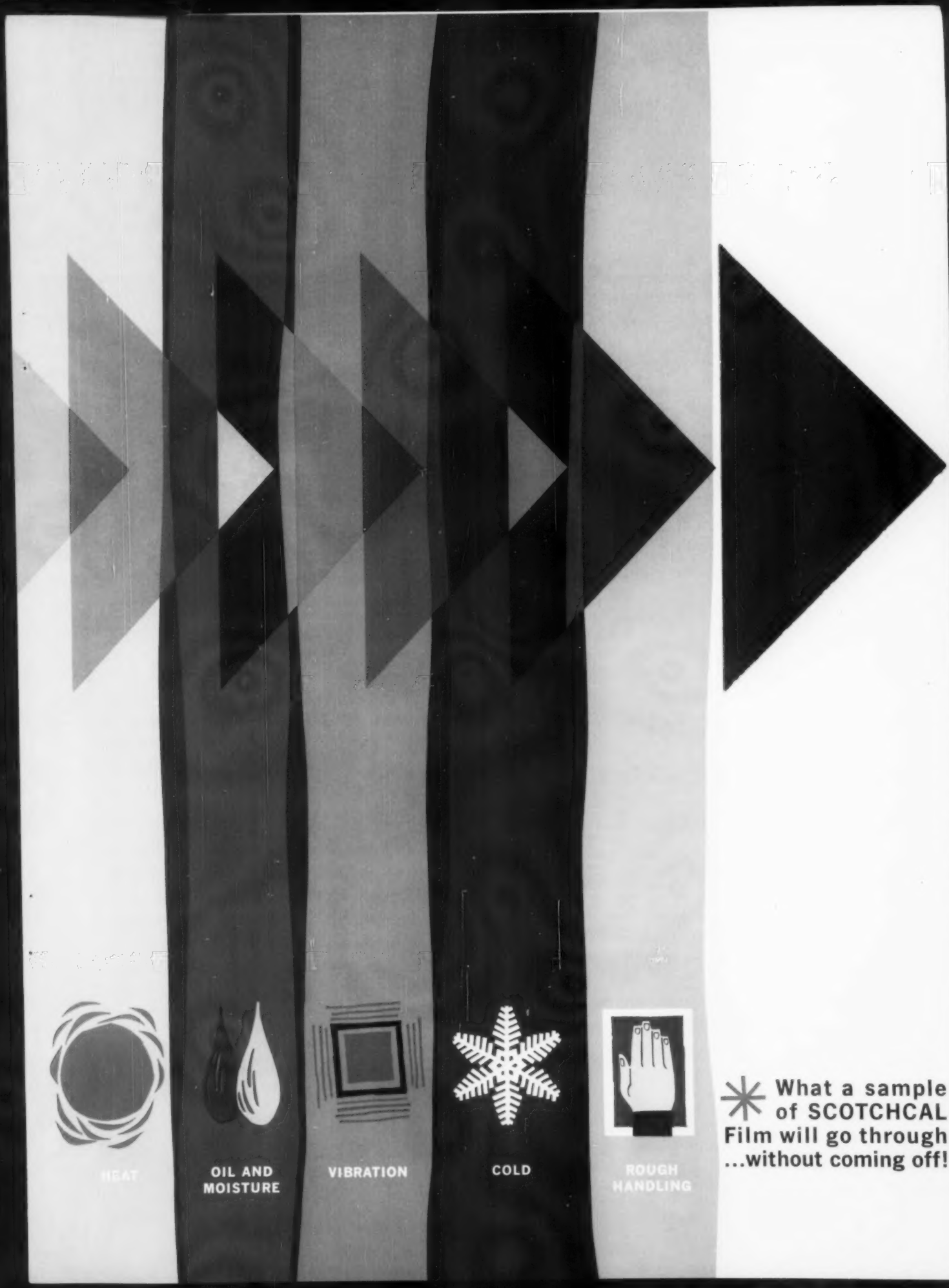
Our categories, while not so various as the walrus', cover a wide range: consumer products, furniture, packaging, professional and industrial equipment, corporate identity and logos, architectural components, building systems and materials.

There is no limit to the number of your designs we can show. Consider the work you have done this past year, then send us those designs that you deem significant. Send a glossy, unretouched photo of each entry, noting where we can see it locally and the designer's name. Also tell us the specific design features that you feel make it appropriate for ADR.

Send material to: Irma Weinig, ADR Editor

INDUSTRIAL DESIGN

18 East 50th Street, N. Y. 22, N. Y.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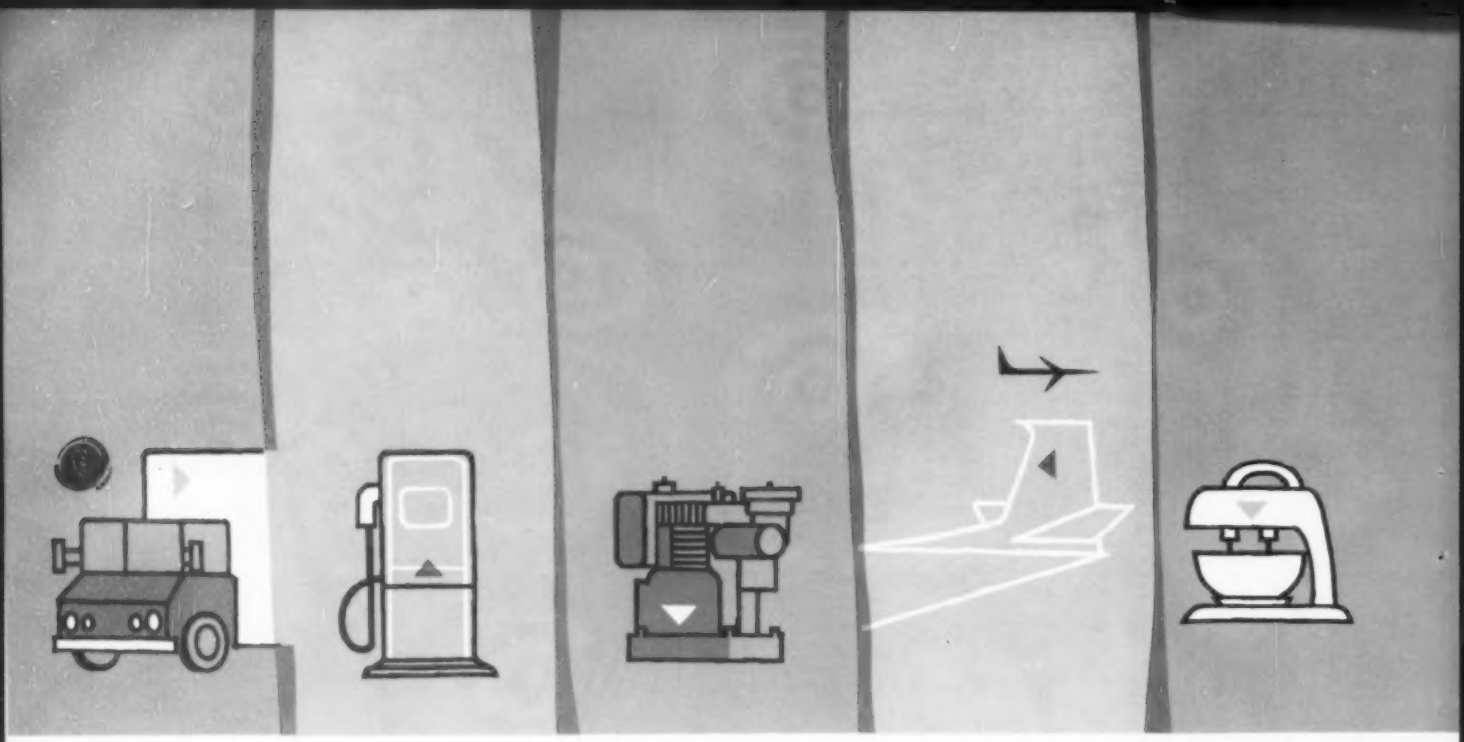

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SCOTCHCAL Film makes markings, trim ...you-name-it... stick like new through the toughest conditions

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Where can you use persistency like this? From the most prosaic label to a multi-colored pictorial, "Scotchcal" Film stays on faithfully—stays bright and beautiful year after year. And the application is press-on simple. "Scotchcal" Film is available in chrome and gold finishes, six base colors, fluorescents, unlimited printed-color combinations. For samples and complete information, send for the "Scotchcal" Film Design File today. No charge or obligation.

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97% of pre-school children tested couldn't open this bottle cap—Since hundreds of young children are poisoned every year by medicines taken accidentally, this percentage is significant. According to the manufacturer, Brockway Glass Company, the safety cap, which looks like a conventional bottle cap, is "the first major improvement in prescription packages in fifty years." Unique in design, it must be pressed down and turned to open—operations that children five and under can rarely perform simultaneously. For them, the cap turns freely without unscrewing from the bottle.

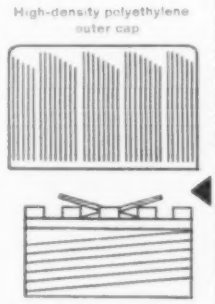
Two plastics help make this design workable—Manufactured for the Brockway Glass Company by Seals, Inc.,* the new safety cap consists of two parts—an outer shell molded of BAKELITE Brand high-density polyethylene, and an inner section molded of BAKELITE Brand C-11, an acrylonitrile-styrene copolymer. There are multiple advantages to this combination—eye appeal, low cost, resistance to chemicals and stress cracking, and durability. The toughness and resilience of both these materials are important mechanical features. Lugs on the inner cap engage those inside the outer cap when pressure is applied. Without pressure, the two leaf springs molded on the inner cap keep lugs from engaging, and the outer cap turns without opening.

Molded details in two tough materials are key to function, low cost—Both the BAKELITE high-density polyethylene and the BAKELITE C-11 plastic used in the cap have a degree of "give"; they are neither brittle nor soft. It is this factor that makes the lugs disengage unless pressure is applied, and it also means that the lugs will not break off or wear down with repeated use, as might happen with a brittle material. The list of molded-in details is impressive—screw thread, lugs, leaf springs, printing, knurling—yet all are readily formed in these plastics with a simple, economical molding operation.

*U.S. Patent No. 2964207

Keep an eye on packaging—it's one of the liveliest areas of design and a source of refreshing ideas. Not only must it keep pace with changing esthetic concepts, but it also involves practical mechanics. This is often the reason why packaging designers have made such bold use of plastics in working out their plans. Plastics can provide properties that differ from those of conventional materials. And since there are differences among plastics, the range of possibilities is far-reaching.

Under the BAKELITE Brand, for example, you can select from five different classes of plastics to fit your needs—polyethylenes, epoxies, phenolics, styrenes, and vinyls. Molded, extruded, laminated, and in coatings, they can be a source of genuine product improvement. And from Union Carbide, you can get expert technical assistance in putting them to the best use. For information, see Sweet's Product Design File, section 2a/ui.



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3 **Interiors Book of Offices.** How to get maximum utility and beauty for every size and type of office interior. Materials, finishes, furnishings, partitioning, and many other practical aspects of office design are dealt with and 300 illustrations give visual interpretations of their design use.

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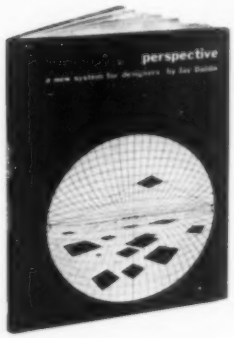

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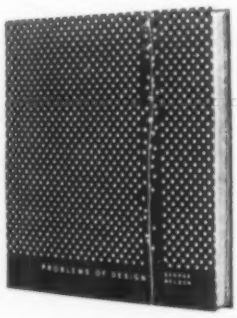

8 **Problems of Design** *by George Nelson.* An important guide for every designer and student aiming at the top of his profession. By one of this country's most versatile and accomplished designers in one of his most provocative moods.

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A BULLETIN OF PRACTICAL NEW IDEAS FROM CORNING

ECHOES IN THE INFRARED TRIP A TRAFFIC SIGNAL

Your car passes under a compact little unit hanging over the road and—presto—up ahead a traffic signal changes to green.

There are two devices in the unit which is fabricated by Infrared Industries of Waltham, Mass. One emits a beam of infrared down at the pavement *via* a special glass lens which we supply. The second device receives the echo sent back when a car passes through the infrared beam. The beam bounces back up through another Corning lens, off a silvered reflector (also ours), and onto a cell which activates the unit. The unit in turn activates the traffic signal or just keeps track of the traffic.

If you happen to spot one of these devices on a drive and still have to stop for a red light, do not despair. Take those few seconds and consider the red, yellow, and green roundels on the traffic light itself. That's right, we make those too, and it's quite a trick, since we have to mass produce those roundels by the thousands, holding to some of the most rigorous color standards you've ever seen.

All of this adds up to a good story on the passing of light—visible or invisible—through glass. We have the capabilities. If you have the problems, perhaps we can get together and produce some products.

We'll be glad to send anything you ask for in the coupon.

A FEW FREE SUBSCRIPTIONS TO GLASS TALK STILL LEFT

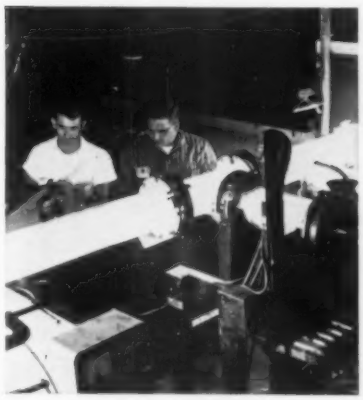
Like many of our worlds, the world of glass continues to grow at a breathless pace . . . adding more and more exotic, but eminently useful, glass products every month.

To keep people like you up to date on what's being done, we put out a bimonthly (more or less) publication called *Glass Talk*. The economics of printing are such that we can add a number of new names to our mailing list without upping costs greatly.

So, if you think glass has a place in your future, send us your name and address on the coupon. Naturally, *Glass Talk* is *gratis*.

HOW TO STUDY A BLIP

When you go to all the trouble of generating two opposed gas waves, each travelling eighty times the speed of sound, you like to get a permanent visual record of what happens when they meet.



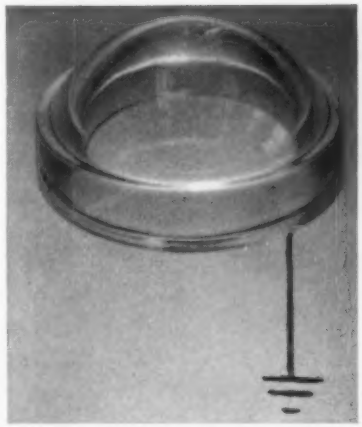
A gas physics group at Boeing Scientific Research Laboratories is doing this with the help of a twelve-foot length of PYREX® glass pipe . . . believed to be the largest tube ever used in work of this sort.

At wave impact the tube blips light for a few microseconds, and a camera stops the action and spectra of the radiation for further study.

The data collected could show important results in effective ion- and plasma-propulsion systems. The tube is also expected to be useful in measuring gas temperatures up to several million degrees.

The tube is made from the same tough borosilicate glass as our pipe for chemical and food processing plants and our drainlines and heat exchangers.

If you would like to know more about it, so that you could put its strength and transparency to work on some task of yours, send the coupon.



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One of the old bugaboos of using glass in conjunction with extremely sensitive electronic devices—static charging—should bother you no longer.

We can supply a variety of shapes with an electroconductive coating which you can run to ground. And static charge drains off as soon as it forms, so there's no danger of outside signals throwing your device into a tizzy.

The same method also eliminates the nuisance noise broadcast by fluorescent tubes. We make a glass shield which looks like a regular lighting panel except that it, too, has a grounded electroconductive coating.

Think about this glass for a minute and you'll see there are many other equally sensible applications.

Run a current through a piece of it, for example, and you have a warm piece of glass . . . perfect for self-defrosting mirrors or windows.

You'll find that certain glasses become efficient infrared emitters when you run a current through an electroconductive coating . . . great for space heaters or driers (both of which we make).

Turn the glass around and cut off the current and you find that it *reflects* infrared while passing visible light. That makes an excellent heat shield.

Send the coupon for the full story on our electroconductive glasses.

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THE HIGH COST OF MIRACLES

Novelist Philip Roth complained recently in *Commentary* that American truth has become so much stranger than fiction that it is in unfair competition with fiction writers. Reality in America, Roth observed, is "a kind of embarrassment to one's own meager imagination. The actuality is continually outdoing our talents. . . ." The advertisement at left, from the "shopping guide" of *The New York Times*, is a small case in point — one of thousands; it must be real because only the late Nathanael West could ever have invented it.

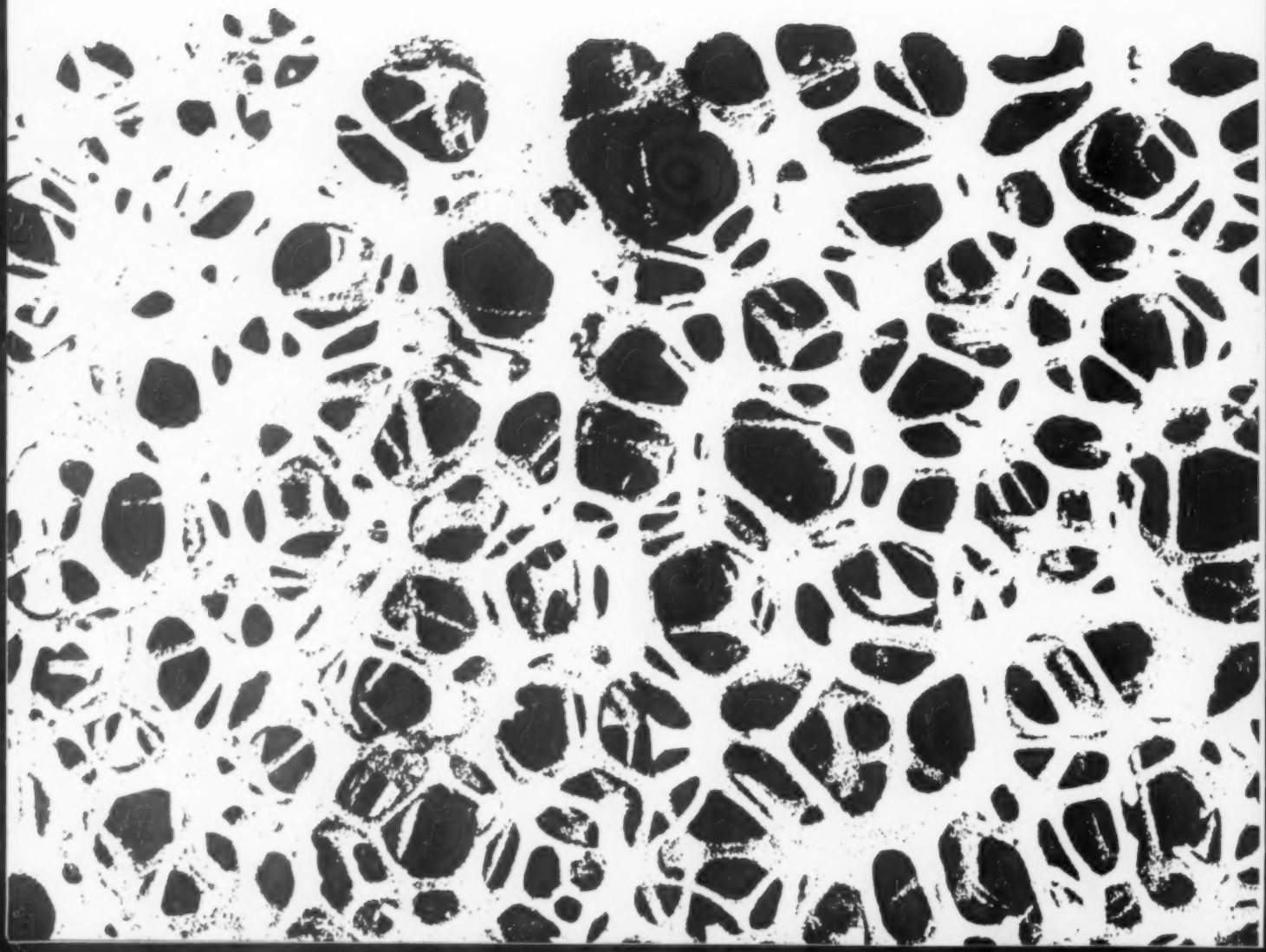
There has always been enough lunacy to make the world seem out of joint. But now we seem to have reached the point where we can't stand it any other way, and designers of consumer products are expected to design fantasy into even the most prosaic objects for a society that can't take reality straight. A few years ago, just when radio and television had transformed us into a nation to whom all silences are embarrassing, the development of semi-conductors made possible the shirt pocket radio and the consequent ubiquity of sound. It wasn't enough. You see, we have this monkey on our back. The man who wants to be the first on his block to own a bombsight, and to whom the destruction of Hiroshima is not the dark night of the soul but just a selling argument, also requires that a healthy sense of the soil be reflected in his sedan power mower, that virility be built into his electric razor, that womanly competence be engineered into the labor-savers in his wife's kitchen. The designer, after consulting the dream books for shape and symbol, can do it — to all appearances. And all appearances are all we want.

In a sense, this puts the industrial designer in America right where he came in, some 30 years ago, as an illusionist. But in the depressed Thirties it was industry itself that wanted magic performed. Now management is selling the magic, and feeding itself on lesser fare, just as during the depression farmers ate margarine at home and sent all their butter to market.

That old magic worked (it even fooled some of the conjurers themselves into believing they had ended the depression), but it didn't last; and neither will this. For it is not "real magic" that is in demand, but tricks. There is nothing wrong with tricks. They can be wonderfully entertaining as diversion (pulling hares from hats) and effective as supportive design technique (painting a tractor in a way that suggests a safe distribution of weight). As a way of life, however, they leave something to be desired: life itself.

Scientists are always fretting that no one loves them any more, and they think that this is because they have made The Bomb. It is not. It is because they, like artists, keep revealing to us that magic, real magic, implies responsibilities: *King Lear*, the splitting of the Red Sea, $E=MC^2$, all the awesome revelations that enable us to deal with the real world, relentlessly involve us in that world. And it is the only world worth designing.—*R.C.*

EFFERVESCENT URETHANE



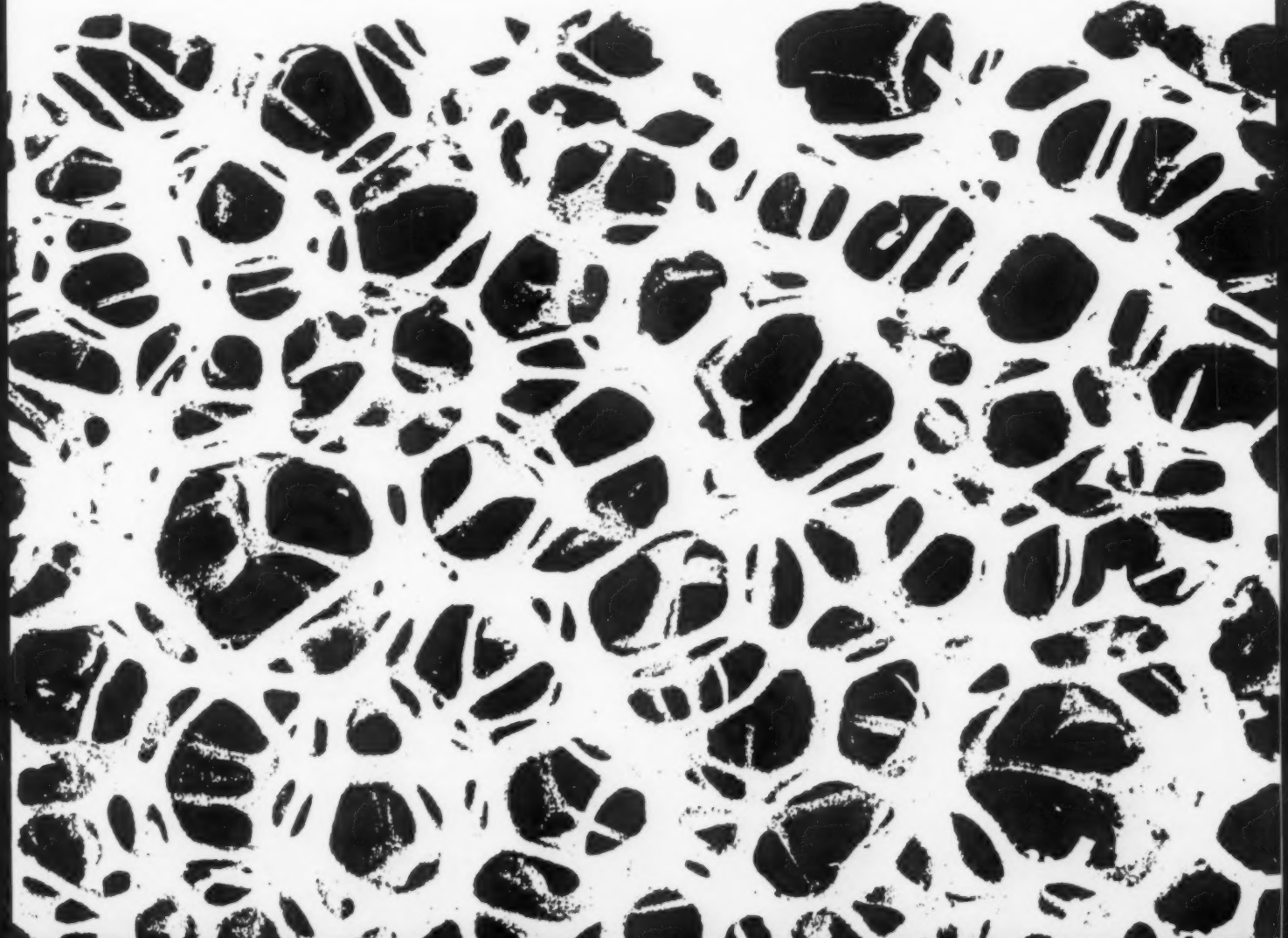
Urethane foam, bubbling toward a 300 million-pound market, compels design excitement by means of its chemical and mechanical variety

BY RICHARD BURTON

Of all the plastics vying for attention as design materials in today's market, none enjoys a more advantageous position than urethane foam. It is the most versatile of all foamed plastics, capable of doing more different jobs than any other foam; and it is a superbly competent cushioning material and thermal and acoustical insulating medium. Besides all this, it floats.

Urethane foam is not cheap, however. (Only polyethylene, newest entry in the foam plastic field, costs more—and its price is expected to come down soon.) Also, under spray-in-place application conditions, its components are toxic. Nevertheless, in appropriate applications calling for its light weight, insulating qualities or cushioning abilities, urethane foam is undoubtedly one of the chemical industry's best buys. And there is genuine design excitement in the variety of its forms, both chemical and mechanical (i.e., both those that happen organically and those that happen as the result of physical processes such as molding or machine forming). Urethane comes in dense slabs and blocks and, in contrast, it has been produced experimentally at Johns Hopkins University in the consistency of a smoke-like vapor, in which form it is being studied for use as atmospheric control (as a cloud-seeding material for rain making, a smudge blanket for delicate crops, a precipitator for smog). It can be as rigid as wallboard, as limp as a dishrag. As a shock absorber, or cushion, its variable formulations permit exactly the right amount of compression and recovery for the object being protected and the type of shocks anticipated.

Four other compounds presently compete with urethane foam. They are latex, styrene, polyethylene, and vinyl. All of them can be foamed or expanded. Latex seems unlikely to survive as a major competitor because it ages quickly, is costlier, less "engineerable",



Property Comparison: Principal foamed materials

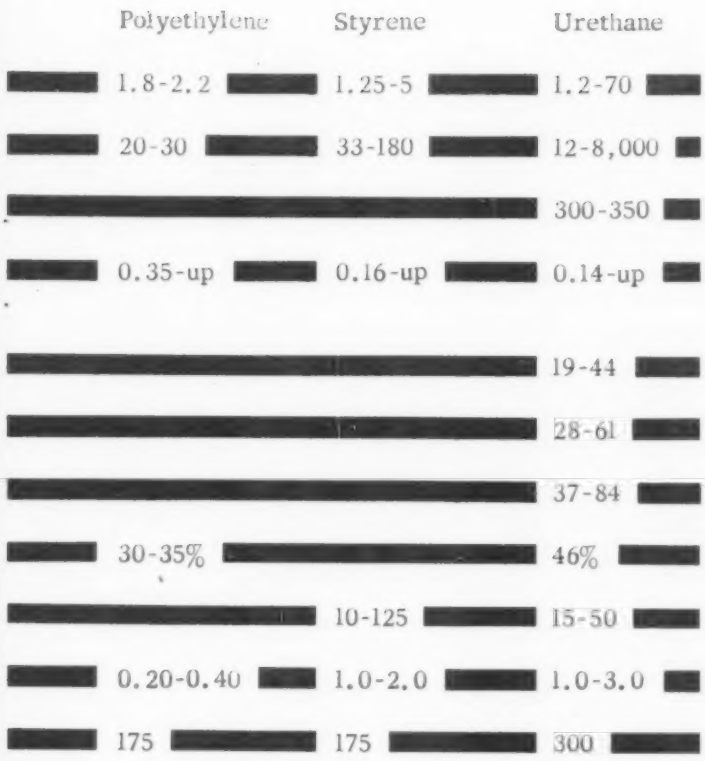
	characteristics	Latex	Polyvinyl chloride
	Density (lb./cu. ft.)	4.24-4.5	3-25
	Tensile strength (lbs./sq. inch)	5-6.5	10-200
	Elongation per cent	175-200	75-300
	K factor		0.20-up
	Resistance: four-inch slab		
a.	25 per cent deflection (pounds)	27-30	
	50 per cent	55-60	
	65 per cent	90-100	
b.	Resilience	50%	
c.	Compressive strength		60-200
d.	WVP		0.30
	Max. service temperature (degrees F.)	160	150

Sources: B. F. Goodrich Rubber Company; Dow Chemical Company; Allied Chemical Company

and more vulnerable to chemical deterioration (major rubber producers have noted the handwriting on the wall; Firestone, B. F. Goodrich, Goodyear, and others are engaged in the scramble for urethane markets). Foamed styrene, however, will no doubt continue to dominate certain fields. It is a good packaging material, can be made in embossed, decorative film, and has been effectively employed as a protective cushion in situations where its failure to return after compression is not a drawback. (Foamed styrene is commonly used to protect corners of furniture during shipment. It crushes under impact and cannot be re-used.) Polyethylene foam shares urethane's excellent buoyancy and has been used as dock padding. It recovers from compression, but very slowly. It has better chemical resistance than urethane foam, poorer resistance to high temperatures. Urethane formulations for cushioning are less costly than vinyl; they can be made in lower densities, using less raw material. However, vinyl is flameproof—urethane is not.

The most significant competitive edge for urethane foams in any market, and against any other material, is the fact that it can be foamed in place. This is the property above all which sets it apart from the other foams. Boat hulls, for example, can be amended, or custom-built with foamed-in-place urethane for insulation flotation elements that would otherwise have to be fabricated, shipped, and inventoried in a bewildering number of sizes and shapes. Refrigerator manufacturers can take short cuts in production by foaming insulation right into a new model, eliminating the need to form dies and jigs for fabricating insulation which conforms to new model shapes. Moreover, in packaging applications, container sizes can be standardized because the foam's adaptability to any contour means that package designs will not become structurally obsolete with each model change. Royal McBee, for instance, abandoned its shaped styrene foam carton liner, now puts its electric typewriters in polyethylene bags and sends them along a packaging line on which a urethane dispenser squirts foam-in-place components right into the carton just before it is sealed. The foam-in-place technique permits packaging of different carriage sizes without the need for varying cartons or cushions.

On balance then, urethane foams appear likely to compete on better than even terms with other foamed plastics because of superior insulating properties, cushioning characteristics, and ability to be foamed in place. In the four years of its commercial life, urethane foam has already established a firm hold in several markets.



a—Resistance is calculated by pressing a 50-square-inch disc into a piece of foam to various percentages of its depth. It is expressed in the number of pounds needed to reach the specified depth.
b—Resilience is calculated by dropping a steel ball onto a piece of foam, and then measuring the distance it rebounds. It is expressed as a percentage of the distance the ball originally fell.
c—Compressive strength indicates the number of pounds of pressure needed to break down rigid cell structures and destroy the foam.
d—WVP: water vapor permeability expressed in grains of water which will pass through a cubic inch of tested material.

First of all, cushioning. In this field, urethane is already all over the place. As one enthusiastic booster puts it, "You're walking on it, riding on it, flying on it. You're sleeping and sitting on it." Automobile dashboards are padded with firm urethane foam; a softer grade is used in the same car's seating, and a third grade may cushion the roof (where it not only protects the passenger's skull, but adds a measure of insulation).

In the furniture market, urethane foam cushioning has generated considerable interest for its light weight, superior tear strength, and easy application—it can be stitched, tacked, stapled, or glued. Its molding capabilities, however, have been only slightly explored (see the Karpen chair, ID, April, 1961, page 85), even though its potential in this direction is obviously enormous — any material which serves equally well as cushioning for a car seat or a space couch deserves serious consideration. (Commander Alan Shepard withstood the gravitational punch of his 215-mile ride with equanimity and reasonable comfort partly because he was foamed in place with urethane.)

The same properties which make urethane foam so felicitous a cradle for the human form suggest its use as a protective padding for many other forms. Currently, most of its packaging applications are in the military and electronics equipment field, where the object to be protected is (1) very expensive, (2) very fragile, or (3) very limited in production. Thus, urethane has been used as a potting compound by Westinghouse for a one and one-half ounce missile component. ("Potting" is the process of taking a delicate object and, in effect, sticking it into a pot and surrounding it with insulation and cushioning so that it is immobilized.) At the same time, the Thiokol Corporation cradles an eight-foot metal cylinder having a diameter of three feet and weighing more than a ton in six inches of rigid foam.

Closed-cell forms of rigid urethane foams are possibly the best thermal insulation anywhere. They can be formulated with a "K" factor as low as 0.14 in a density of two pounds per cubic foot. (The K factor is the measure of thermal conductivity; the lower its value, the better the inulation.) By way of comparison, rock wool has a K factor of 0.29; glass wool is 0.30; corkboard is 0.30, and cane-fiber insulating board is 0.34. Uninsulated concrete-gravel-sand aggregate has a K factor of 12.6. Accordingly, the plastics industry anticipates explosive growth in the use of urethane foams as insulation in building, in appliances, in clothing, in refrigerated trucks and railway cars.

A. Typical Properties: Flexible urethane foams (cushioning, bedding, etc.)

	characteristics	formula 1	formula 2	formula 3
	Density (pcf)	1.8-1.9	1.5-1.6	1.2-1.3
	Tensile strength (psi)	21-23	15-17	10-11
	Elongation per cent	300-350	300-330	275-300
	Tear strength (pounds)	3.4-3.7	2.8-3.3	2.5-2.7
a.	Resistance (pounds/50 sq. inch)			
	2 inch: 25%	27-31	22-24	13-15
	50%	40-42	36-38	19-21
	65%	53-57	40-48	25-27
	4 inch: 25%	40-44	32-36	19-21
	50%	58-61	52-54	28-30
	65%	80-84	70-73	37-41
b.	Compression set: per cent			
	50% deflection	5-6	4-5	4-5
	90% deflection	8-11	6-7	8-11
c.	Resilience: per cent rebound	42	41	35

a—Calculated by pressing 50-square-inch disc into foam to calculated depths and measuring pounds needed to reach specified depth.
b—Percentage height loss when foam is squeezed and then released.
c—Measured by dropping steel ball onto foam; measuring rebound. Expressed as per cent of distance ball originally fell.
d—Measure loads which deflect foam sample to percentage of original thickness.

e—Pounds needed to break down cell structure. Parallel tests use pressure parallel to direction of foam rise. Perpendicular tests are exerted perpendicularly to foam rise.
f—Compressive strength (parallel) at 23° C., after aging at 70° C., 5% relative humidity for two weeks.
g—Volume change under conditions above (f).
h—Compressive strength (parallel) at 23° C., after aging at 70° C., 95-100% relative humidity for four weeks.
i—Volume change under conditions above (h).
j—Compressive strength (parallel) at 23° C., after aging at —25° F. for two weeks.
k—Measured after 60 days.
l—WVP: water vapor permeability in grains of water which pass through one inch of tested material.

(The industry's bets are hedged only by the problem of amending some building codes which were drawn before people could pronounce urethane, let alone build with it.) But ignoring the building industry, urethane foams have so reduced the amount of insulation bulk in trucks that a Massachusetts fleet operator has increased his loadings by 20 per cent while retaining the outside dimensions of the vehicles. Sir Edmund Hillary, conducting physiological tests five miles high on Makalu in the Himalayas, kept himself warmer with less clothing weight and bulk than ever before with a suit of urethane-backed long-johns. Urethane even insulates bridges. Highway over-passes along the New York State Thruway ordinarily freeze before adjacent sections of roadway—an annoying and dangerous phenomena as well as one which increases maintenance costs. Last winter, however, the surface temperatures on a test bridge were stabilized by a coating of urethane *under* the bridge. The result was fewer skids, fewer potholes, and less surface erosion.

The chemistry of urethane involves a rather curious reaction which can be compared to the rising of a cake being baked in an oven. In manufacturing urethane foams, a reaction takes places in three very nearly simultaneous steps: a mixture of liquids begins to thicken; an immense quantity of gas is generated within the mixture and it greatly increases in volume; the risen mixture then hardens into a cellular mass. The gas-generating phase is commonly accelerated by pumping in fluorocarbon "blowing agents" which expand the foam cells, resulting in lower densities than would be otherwise obtainable. These reactions involve a mixture of polyisocyanate, a resinous

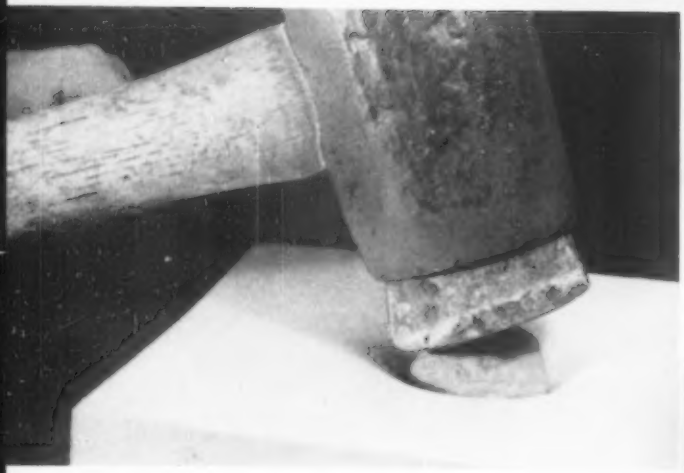
B. Typical Properties: Semi-rigid urethane foams (packaging, etc.)

	characteristics	formula 1	formula 2	formula 3
	Density (pcf)	6.0	7.1	5.1
	Tensile strength (psi)	23.2	26.0	19.3
	Elongation per cent	90.0	60.0	60.0
	Compression set: per cent			
	50% deflection	23.0	25.5	33.0
d.	Compression-deflection: (psi)			
	25%	2.5	2.75	2.5
	50%	5.25	4.50	3.75
	65%	7.5	6.75	5.25

C. Typical Properties: Rigid urethane foams

	characteristics	poured in place	sprayed in place
	Density (pcf)	2.0	2.3
	Compressive strength at 23° C, parallel (psi)	42	26
	Compressive strength at 23° C, perpendicular (psi)	13	12
e.	Compressive strength at 85° C, parallel (psi)	33	15
	Compressive strength at 85° C, perpendicular (psi)	12	6
f.	Dry aged strength (psi)	47	31
g.	Volume change after dry aging (per cent)	2	7
h.	Strength after moist aging (psi)	29	23
i.	Volume change after moist aging (per cent)	30	10
j.	Strength after cold aging (psi)	44	27
k.	Volume change after cold aging (per cent)	0	-1
	Percentage of closed cells	91	86
l.	K factor at 23° C, 50% relative humidity, parallel	0.16	0.16
	K factor at 23° C, 50% relative humidity, perpendicular	0.14	0.14
m.	WVP parallel (perm-inch)	3	
	WVP perpendicular (perm-inch)	1	

Source: Union Carbide Chemicals Company



1–2

3

material and a catalyst. For foam production, the most widely used isocyanate component is toluene diisocyanate—TDI. TDI and the other polyisocyanates are highly reactive materials and they will combine readily with any compound containing an "active hydrogen." Chemicals with active hydrogens include water, organic alcohols, acids and amines. But the group of compounds most frequently used to produce urethanes are polyethers and polyesters. When the isocyanate is combined with any one of these resins and a catalyst, it begins to thicken (the chain-extension reaction) and ultimately becomes a solidified cellular mass (the cross-linking reaction). This cellular mass can be flexible, semi-rigid, or rigid, depending on the cross-link density. The variety of properties possible in urethane foams is obtained by varying the different ingredients.

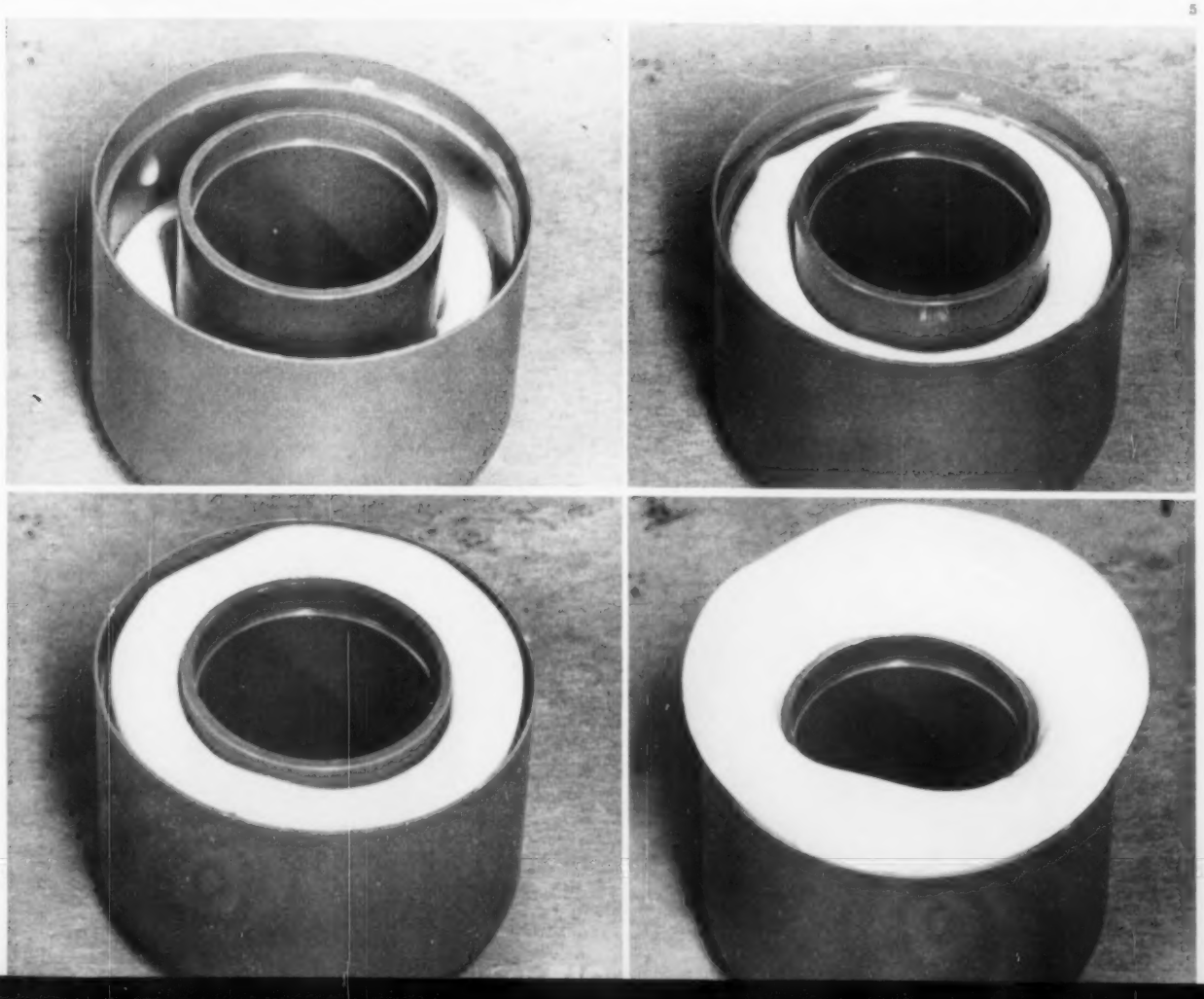
Urethane's future is just about as bubbly as its chemical reaction, and no one can be quite sure of its limits or its direction. One thing is quite clear, however: the major companies are putting a lot of blue chips on the likelihood that in 1965 more than 300 million pounds of urethane will be sold. There is presently a production race among several of the leaders in the urethane industry to expand facilities in order to come to terms with this market.

Nonetheless, there are some long memories in the chemical industry of an earlier boom, and of its unfortunate aftermath—of fragile radio cases and the branding of polyethylene as "a cheap substitute." Few plastics are as vulnerable today as urethane foam to a marketplace betrayal in which quality standards erode, where the material is improperly used, and where everybody wants to get a "little piece of the action." Accordingly, the major manufacturers of urethane foam chemicals are concerned with controlling quality, and are trying to monitor the use of urethanes for application in which they are completely logical. D. S. Alcorn, manager of Union Carbide's market development division for resin chemicals, says in this regard: "After some initial quality problems, producers of flexible urethane foam appear to have turned out a product well-suited to a variety of cushioning and packaging applications—the technical difficulties in operating foam machines have inhibited the production of sub-standard products. However, the ground rules for rigid foams are not as well set, much of the basic engineering data needed for design is still being developed, and designers should be sure that the material is suitable for desired application, and that careful methods of specification are developed and used."

4

Physical properties of urethane foams, permit them to range from down-soft densities for mattress and cushioning applications —1— to semi-rigid formulations used for packaging and energy-absorption —2— to slabs of board-like hardness made of closed cells —3—. These characteristics can be varied over a wide spectrum, depending on the formulation of urethane components to develop greater or lesser densities and greater or lesser degrees of softness. The chemistry of urthane foam involves a reaction between two basic chemicals—a diisocyanate and (usually) a polyether in the presence of a catalyst which accelerates their reaction—much in the manner of yeast in a loaf of bread. The mixture forms gaseous bubbles, begins to rise and hardens into shape when the reaction has been completed as shown in the sequence of photos below—4, 5.

5



1

2

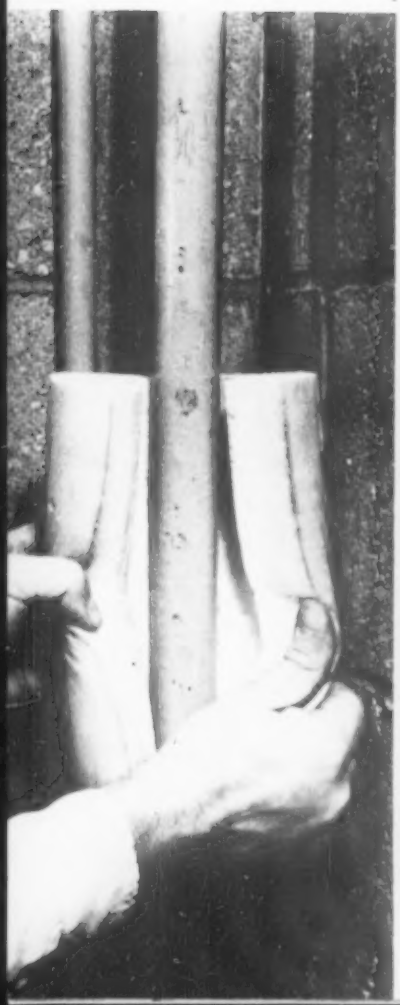
As insulation, urethane foams have been experimentally sprayed in place on the undersurface of a bridge on the New York State Thruway (opposite) to inhibit freezing of the road surface for greater safety and lower maintenance costs, and onto the surface of tank cars carrying chemicals—1—to protect their contents from solar heat buildup. Foam components can also be mixed and poured into place in sandwich walls for structural paneling—2. All three techniques illustrated here were developed by the Application Research Laboratory of Allied Chemical's National Aniline Division.

Pre-formed insulation is available in a variety of shapes carved from urethane foam slab stock or molded to specific shapes such as pipe coverings—1—manufactured from Mobay Chemical Company's components by American Cellular Products, Inc. It can be laminated to fabric backings for stabilizing the material and to provide warmth without appreciable increase in weight as in London Fog raincoat—2—which uses Scottfoam sheeting. In strip form, it is available with an adhesive backing—3—for weather stripping and other sealing, cushioning and insulating applications from Air-O-Plastik Corporation. Insulation panels—4—filled with rigid urethane foam reduce weight, increase truck payload capacities up to 12 per cent; panels developed by Allied Chemical Corp. The same paneling in RCA Whirlpool's new refrigerator—5—is said to permit capacity increases up to 35 percent with no additional floor space.

3—4

5

1



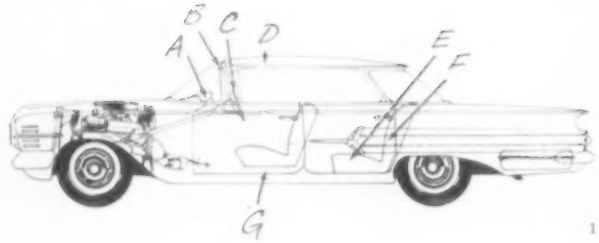
2

1

2

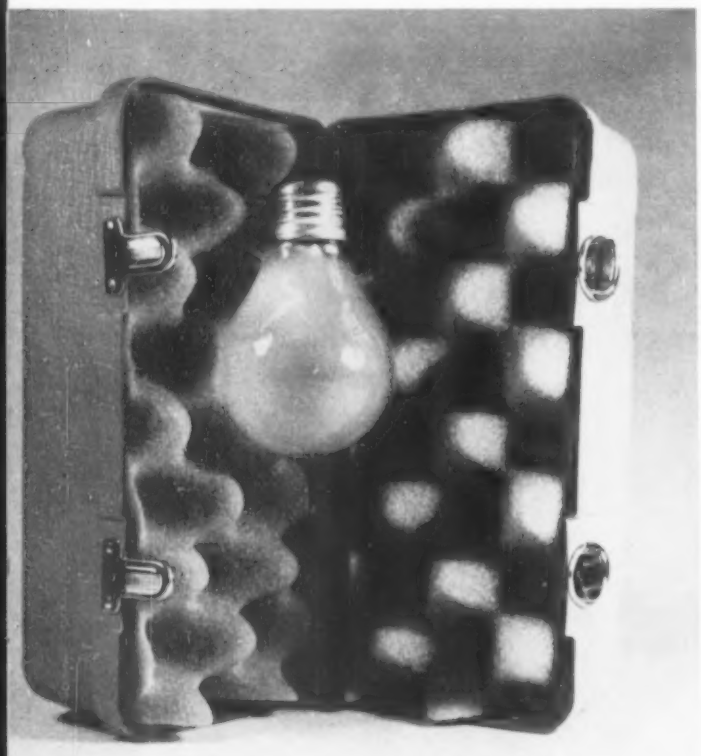
Cushioning applications for urethane foams are well on the way to supplanting foam rubber altogether. In fact, urethane foam plant capacity for cushioning now exceeds the manufacturing capabilities of component producers, and foamers are able to turn out mattresses in vast quantities using only fractional capacity as in General Tire & Rubber Company's plant shown here—1. More sophisticated forms of cushioning include the contour couches made of Nopco Chemical Company's Lockfoam poured for each of the United States astronauts by McDonnell Aircraft Corp.—2—and the lightweight seat designed by E. Gilbert Mason for Teco, Inc. to be used in commercial aircraft (see ID, February, 1961)—3.

3



1

As protective cushioning urethane foams have earned a quick acceptance among packagers of delicate products. Components of a U. S. Army rocket engine are delivered for assembly in a combination container-assembly jig which also serves as a checking fixture to see that no parts are missing—3, 4. Kuddl-Pak cushions a broad range of delicate objects, is available in several sizes—2. Automobile manufacturers currently use Wyandotte Chemical Company's urethane foam both to comfort and protect passengers in (A) dashboard padding, (B) sunvisors, (C) horn ring pads, (D) head lining, (E) seat cushions, (F) arm rests and (G) rug underlay—1.



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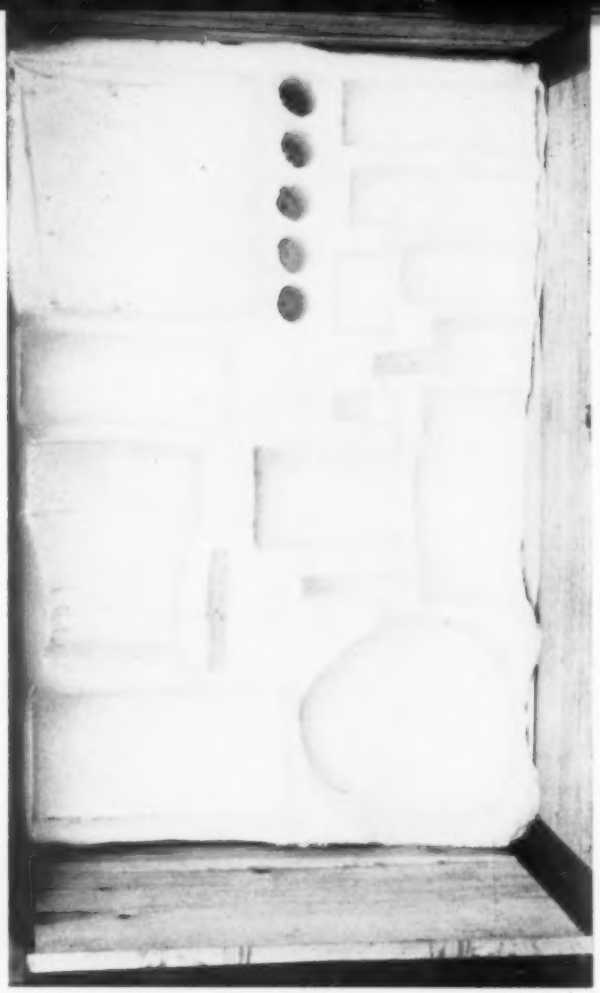

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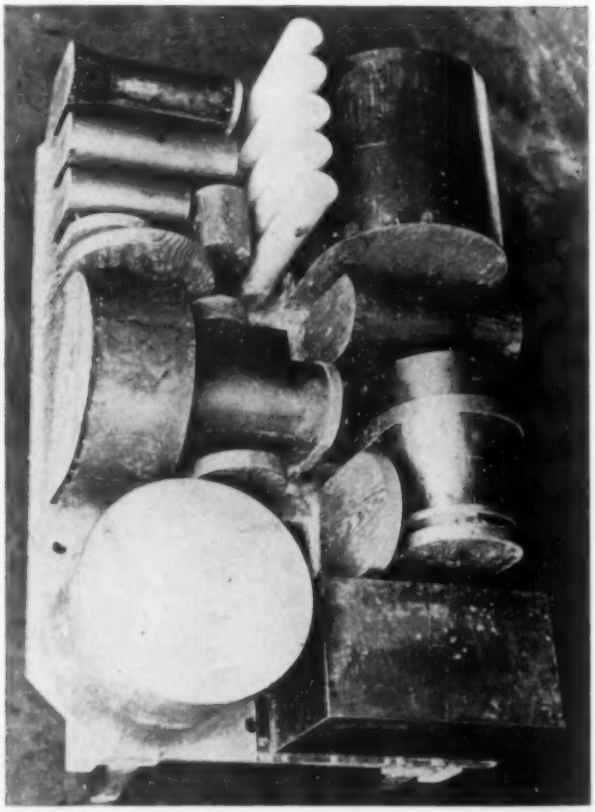
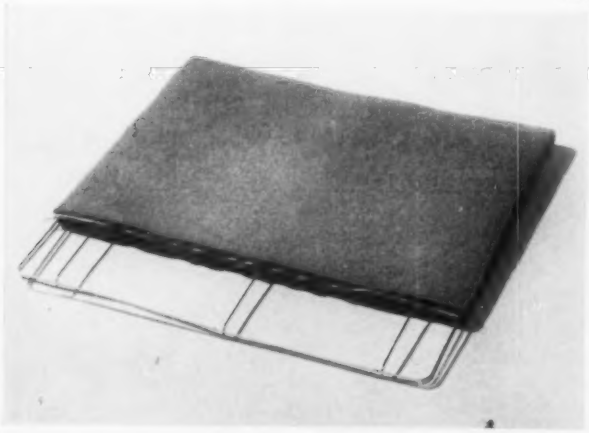
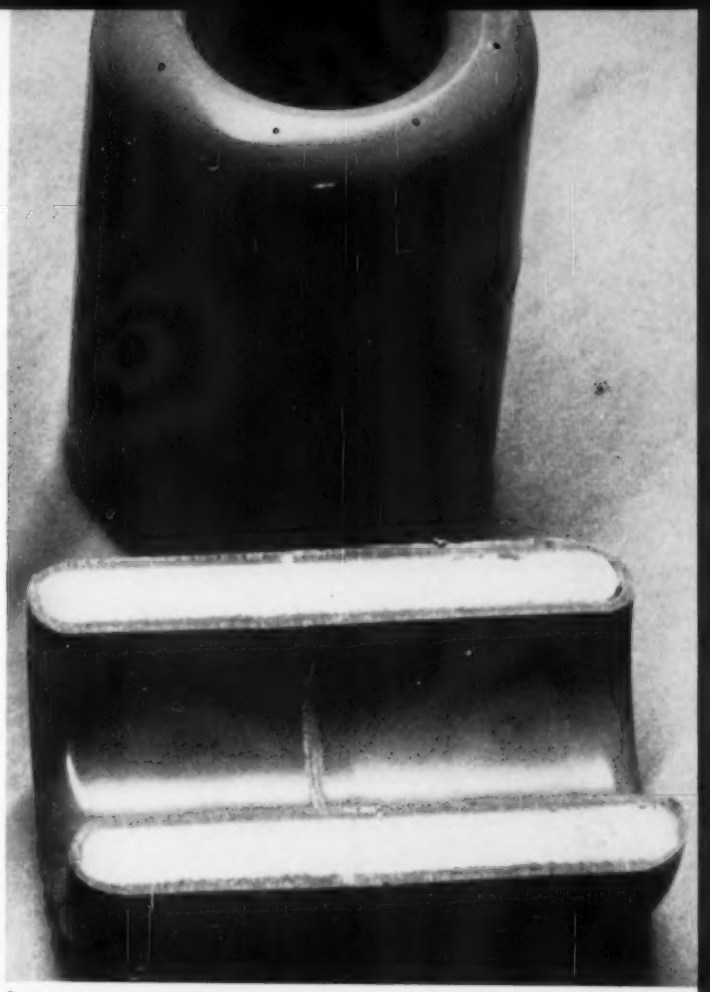


Marginal applications for urethane foams range far beyond its essential markets of insulation and cushioning and include marine products such as cable floats made in a high-impact styrene shell filled with Nopco Lockfoam—3—and water shoes—2—which weigh about 7 pounds each and are equipped with angled flippers on the bottom to provide traction. The floats are made by Water Shoes, Inc. and use Allied Chemical Company's urethane components. It is also employed as a filtration medium for air conditioning units—1—made by the Auto Flo Corp. from Scott Filter Foam. Urethane's spray-in-place capabilities furthermore permitted the Atlantic Research Corporation and the Army Quartermaster Corps to develop a low cost, disposable field shelter—4.

1—2





3

4

FACE TO MATCH THE FIGURES

Canadian National Railway's new design program is meant to be visual evidence of its up-to-date operations, but management had to be sold on the program and, once sold, to be kept from happily misusing it.

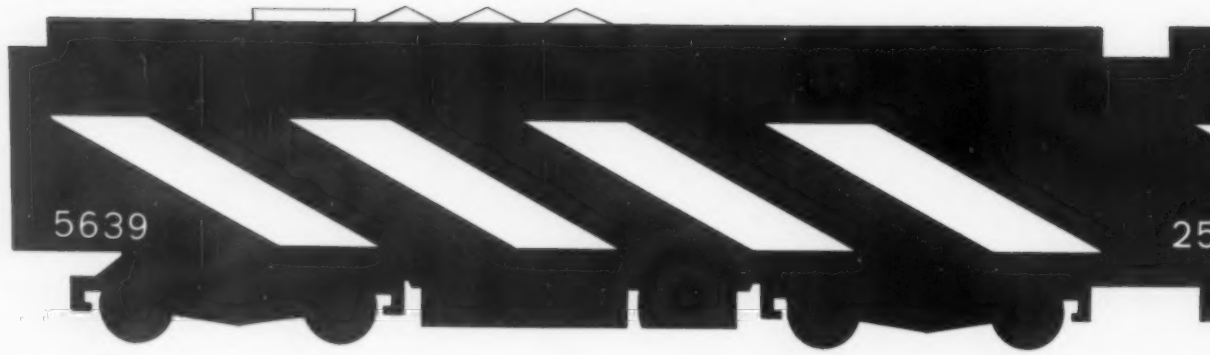
BY IRMA M. WEINIG

In the summer of 1959, W. R. Wright, director of public relations for the Canadian National Railways, discovered as a result of a public opinion poll that very few Canadians thought the railroad efficient, progressive, or well-run. This piece of information would not have been quite so upsetting if it had not been for one fact: in the preceding nine years the CN had poured a billion dollars into modernization. As one railroad official ruefully put it, "Like an iceberg, most CN modernization lies below the surface." Clearly the time had come, Wright decided, to bring the surface in line with the facts. But to do so he had to convince his fellow officers of the benefits of corporate image design, and he knew he would have a better chance of success if he had something specific to show them.

To turn out that "something specific" he chose James Valkus, Inc., a young (three years old), small (six staff members) New York design office. For both Valkus and Wright the undertaking was a gamble. Wright used funds from his own budget for the initial design and presentation. Valkus took a chance on a career-making assignment that might prove too big to handle: the redesign not only of railroad cars, but also of stationery, reports, tickets, signs, linens, dinnerware, uniforms, interiors, and building exteriors. For Canadian National is a three-billion-dollar corporation that operates, in addition to the largest railroad in North America, a fleet of trucks, a string of hotels, steamship and ferry lines, a telegraph service, telephone system, and a radio and tv network.

The owner of this colossus is the Canadian government, which appoints CN's management and Board of Directors. With Parliament to report to, it is not surprising that the railroad is careful in its decisions, mindful of all opinions, chary with its money, and interested primarily in economy, efficiency, and better service—not frills. Its maple leaf symbol had never been designed, and never remained particularly constant; it changed to suit different needs. Sometimes it appeared in two colors, sometimes in three, and sometimes with the slogan, "Serves All Canada." The railroad was aware of design to this extent: it had its own architectural department, and a visual design section


CN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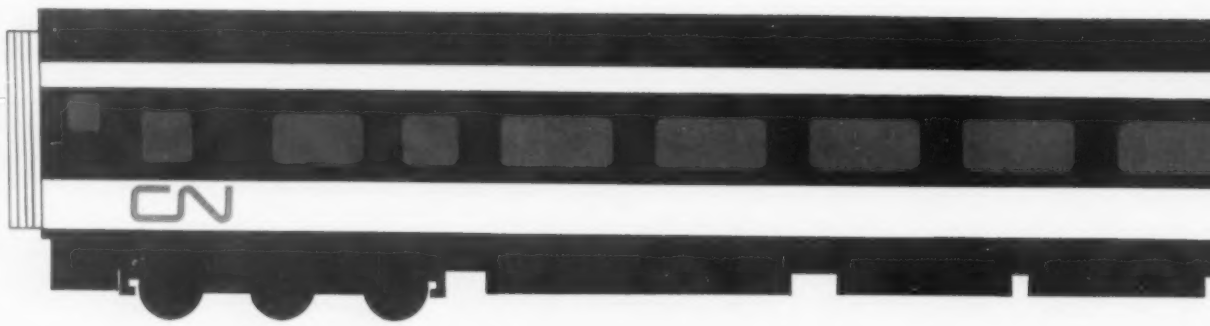
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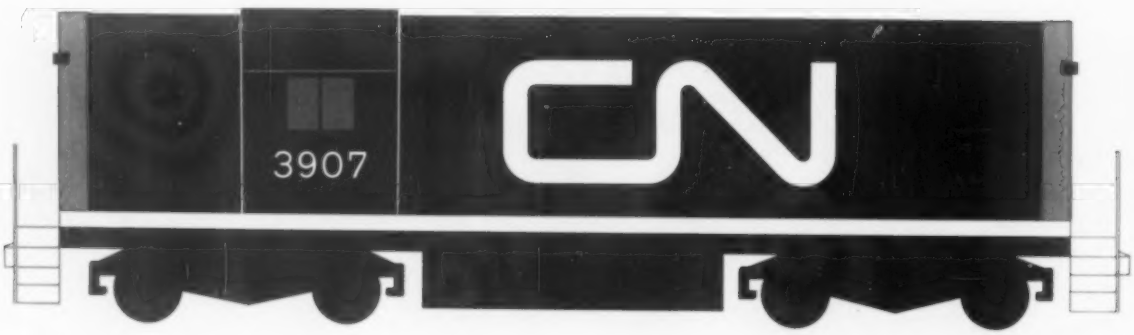
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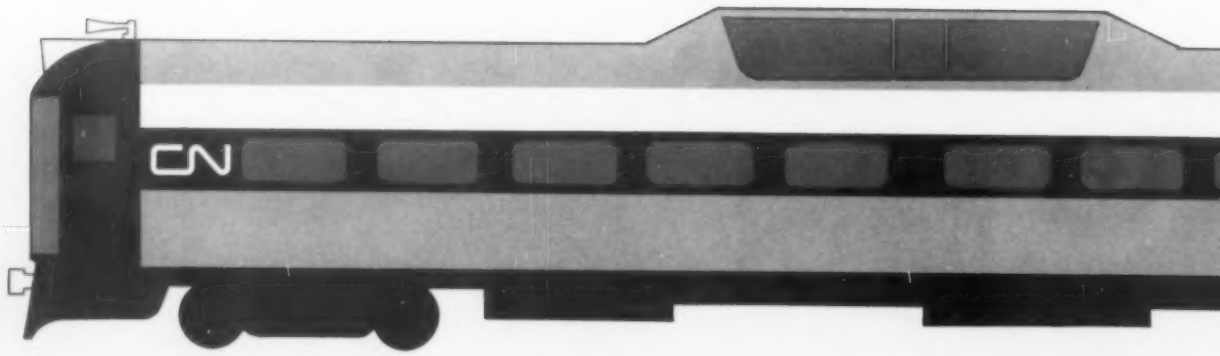
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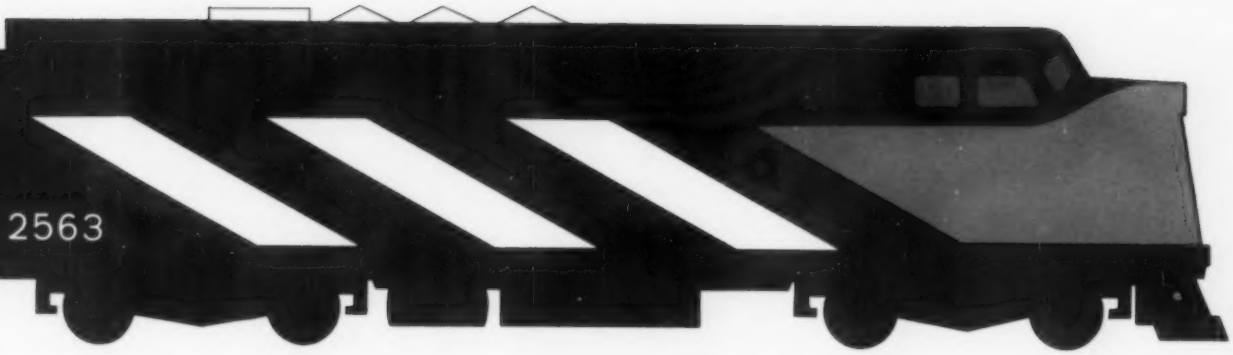

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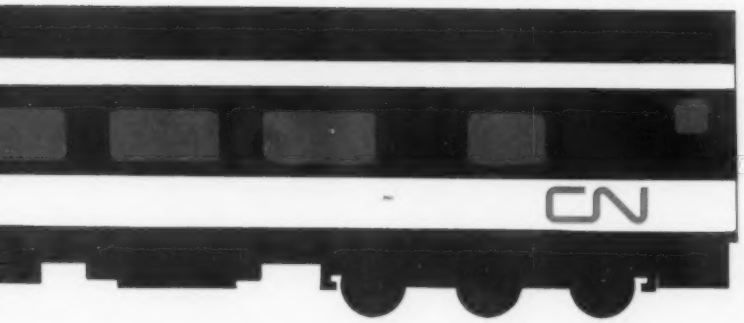

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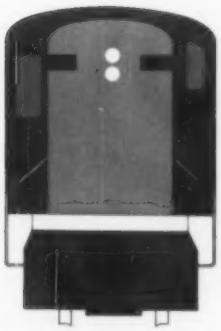
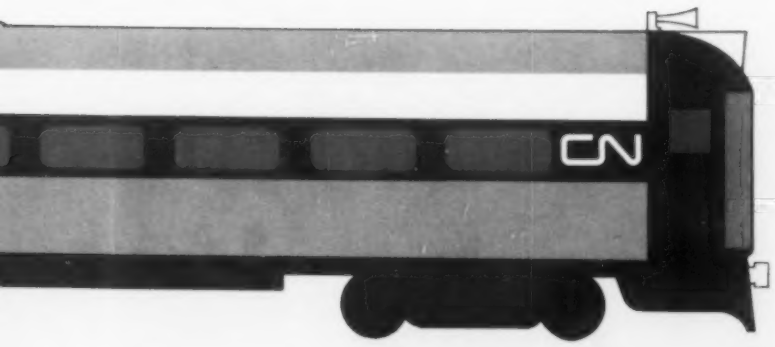


3

Valkus visualized train as a horizontal line. If you put color at one end it heads in that direction; change the line to diagonals and it begins to move. Diesel A unit (1) which heads passenger train has red nose; B unit, a subsidiary source of power, does not. Railiner (4), a commuter coach with its own motive power, and Road Switcher (3) will travel in either direction. To bring order to train composed of passenger (2), mail and luggage cars of different heights and window sizes horizontal banding on all coaches starts at same height above rails.



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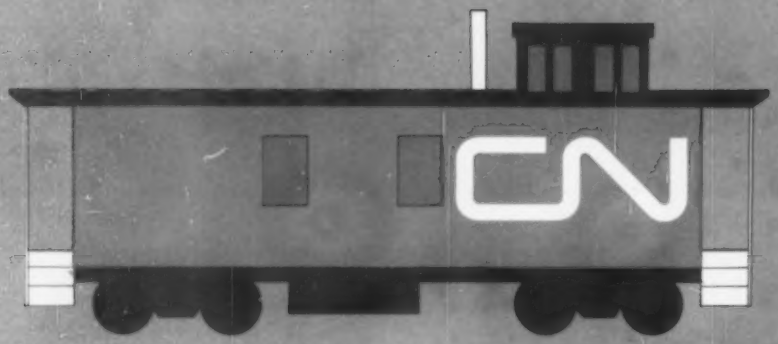

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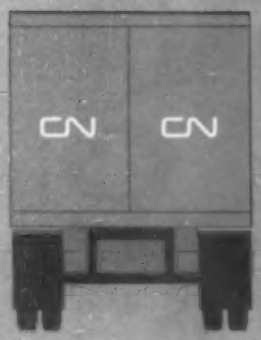

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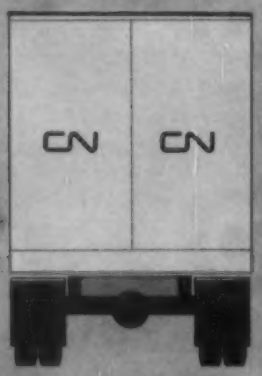
In freight equipment (switcher and Diesel units overfold are also freight haulers), logo assumes heroic proportions to compete strongly in hodge-podge that makes up a freight train. On boxcar (1) all vital information is logically arranged in one place in clear, bold type, a Valkus modification of the Standard face. Caboose (2) recalls the red which begins the train. Graphics on trucks (3) are placed with an eye to promotional effect on the passing motorist. On stainless steel vans (4) used for piggyback service, black logo shows up for the first time.



4

which handled displays. This was the conservative backbone that had to be convinced that symbolic design was as important as the structural kind.

But there is another facet to the railroad's personality. It has the corporate structure of a private business and as such is supposed to make money, which, like most railroads in the U. S. and Canada, it does not. It does, however, respond aggressively to the competition of other forms of transport, and has reorganized, modernized and, surprisingly, campaigned for less government interference and more financial aid. The power behind these moves is president Donald Gordon, a man who could be counted on to back a new corporate symbol, provided it gave the company an up-to-date face.

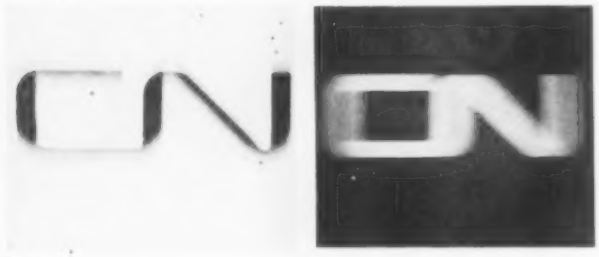
With a fairly clear idea of what the design program should achieve, but only a hazy notion of what the program should be, Wright set about looking for a bright, imaginative designer with enough training and experience to handle the job, but also with enough professional freedom to treat it as a major assignment. From a fellow public relations man, he heard about Valkus, whom he visited out of courtesy and stayed to hire, impressed by his enthusiasm and undogmatic approach. Valkus, acutely aware of the anomaly of an American designing for a Canadian government enterprise, retained Canadian designers for special projects wherever he could. The CN logo, for example, is by Allan Fleming, a young, but widely respected Canadian graphic designer.

In March, 1960, the designers made their presentation to the management committee, which in turn was to present it to the Board of Directors. Present were the president, executive vice-president, six vice-presidents, Valkus, Fleming, and Charles Harris, formerly Wright's assistant and now his successor (Wright had left CN for another job). The designers were armed with the usual scale models, schematics of trains, trucks and stations, textiles, dinnerware, etc., but kept them out of sight until they had fired the big ammunition—a 20-minute slide show. With the slides they sold a concept of the company—efficient, modern, big—with which the executives agreed. And once in agreement, they had to accept the design which carried it out.

In this presentation Allan Fleming prepared and delivered the discussion leading up to the logo. Historical and current marks (photo **1**) introduced the concept that symbols have been part of human communication for thousands of years. Their quality of timelessness was attributed to their simple, geometric design and single-thickness line. These types of symbols are used today for corporate logos (photo **2**) without any re-

1—Symbols—a. Latin cross, b. pre-Christian Buddhist, c. cattle brand, d. stonemason's mark (Pompeii), e. Dutch merchant's mark (15th C.), f. iron filings (alchemy), g. Egyptian symbol for life, h. "halt" in hobo—reveal designer Allan Fleming's line of thought behind new logo. 2—Examples of current usage indicate variety possible within this continuous-line form.

3



4

5

3—Logos for Central Vermont and Grand Trunk Western, affiliates, follow CN style. 4—Subjected to bouncing, to forward motion, or—5—painted on corrugated surface, CN logo remains recognizable.

sulting confusion, Fleming noted.

"What is common to the complete CN system?" asked the designers. "The movement of men, materials and messages from one point to another. And what better way to symbolize this than a continuous line?" This logic launched the CN logo along with those for the Central Vermont and Grand Trunk Western (photo **3**), railroads which also operate in the U. S. and therefore retain their own names.

The designers then laid down criteria for a successful logo: was it legible, easy to remember? It was shown reduced to 1/32 inch, and in vertical and horizontal motion (photo **4**) without loss of identity. Easy to reproduce? It is one color, consists of straight lines, with one setting of the compass for drawing all curves, easily applied to all types of surfaces (photo **5**). In this context, the logo was a marvel of simplicity, versatility, and economy.

The logic of the moving line on which the train paint scheme was based also was not questioned, backed as it was by data on dirt tests and favored colors. Applying the design, however, meant ignoring many minor mechanical details of the cars and diesels to impose a uniformity which did not actually exist.

Whether or not they saw these objections and considered them minor, or did not see them at all, CN management endorsed the designs and retained Valkus

6

7

6—Company magazine, published in 130,000 English and French copies, got new format in Feb. 1961. 7—For all outdoor needs, designers evolved two sizes of logo signs which will combine with lettered signs scaled to fit beside or below them.

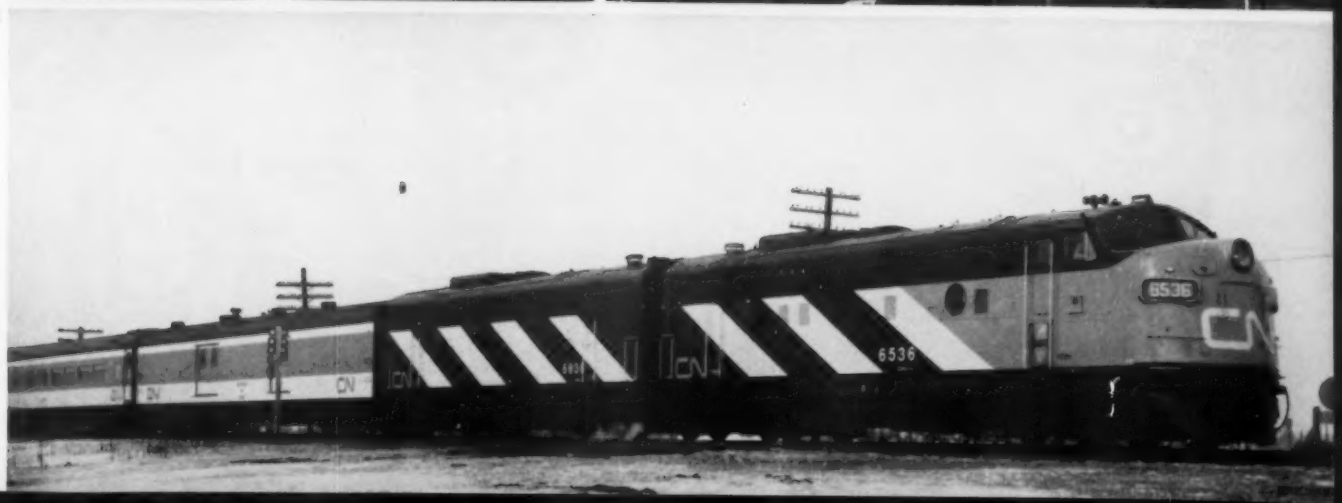
to supervise their application, with the proviso that all items be redesigned only as they required reordering or refurbishing.

In June, 1960, Valkus opened a Canadian office, partly to expedite the work and partly, again, to make use of Canadian designers whenever and wherever he could. The personnel of this office changes with the nature of the immediate job on the boards; there are now five Canadians on the staff. And at the moment their main job is a style book. For Valkus knows of course that although he has sold CN on a corporate design program, he cannot always control every instance of its use. In fact, his biggest challenge may lie ahead: to educate his client to the unique contribution of design and the designer, to insist that a good design is only as good as its context and detailing.

8—Painting CN on road switcher means covering louvers, hinges, etc. 9—Cut-out CN is nailed on aluminum truck body. 10—Caboose. 11—Entire train is in itself a trademark.


PIGGYBACK


CN 78348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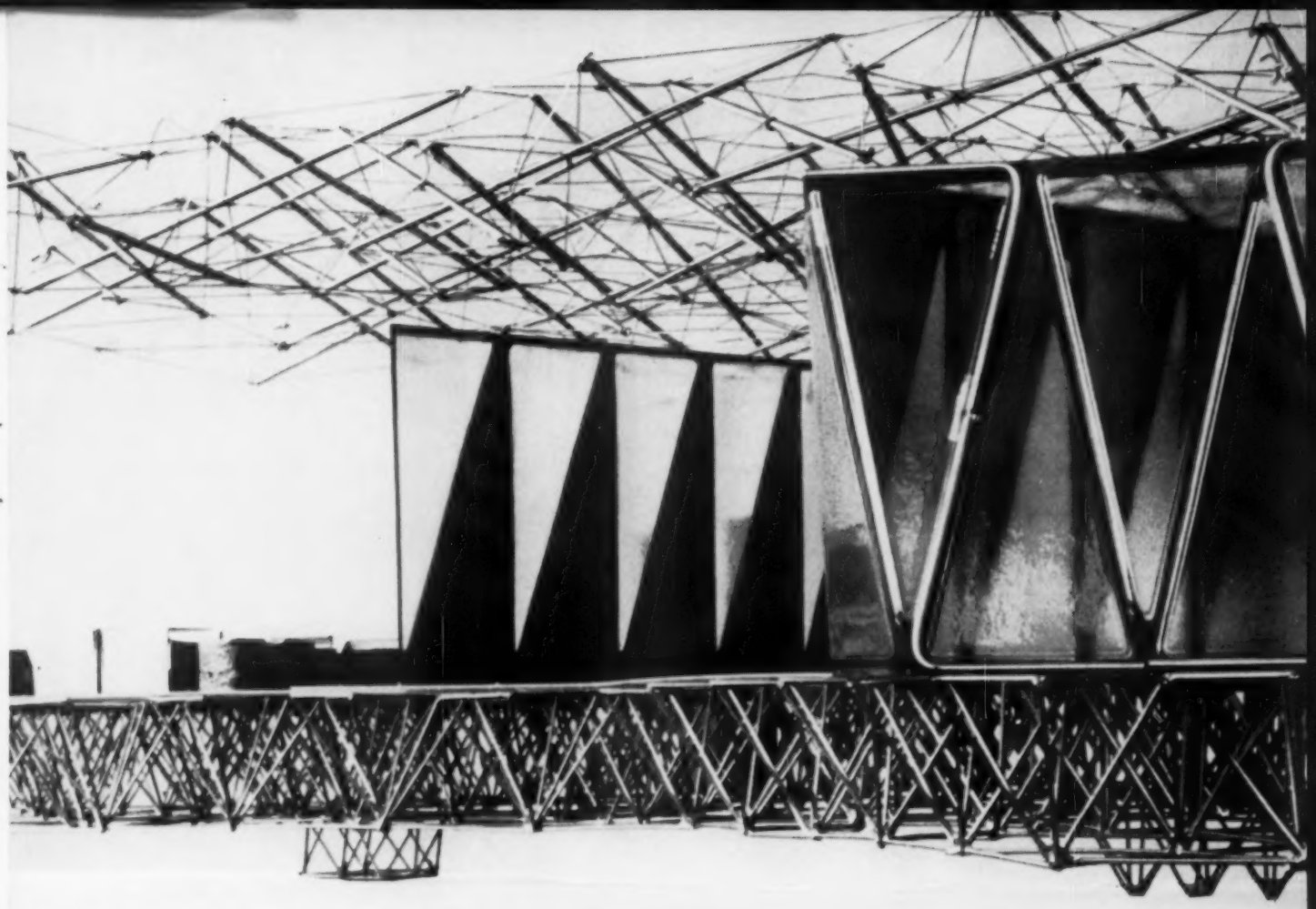
STUDENT PROJECT: PRATT

Model of school, right, shows foundations, curtain walls, and tension compression ceiling. Traveling exhibit of school, left, folds into a box for transport. *All photos by Bruce Davidson.*



A class learns practical sociology along with bread-and-butter technical information, in designing a schoolhouse for underdeveloped countries

A course named "Materials and Structures" may seem practical to the design student; it can seldom seem exciting. The problems of infusing immediacy into a necessary but rather static subject, of relating a body of self-contained facts to the whole field of a student's interests, are tests of any teacher's ingenuity. Pratt Institute's Ronald Beckman was faced with these problems when he constructed the syllabus for his junior-year industrial design course on the nature of contemporary materials and structures. In addition, he set other goals for the course: to train the students in various presentation techniques, to teach them to synthesize and coordinate the different pieces of their newly acquired knowledge, and to accustom them to working together in groups, as they will have to do later in design offices.

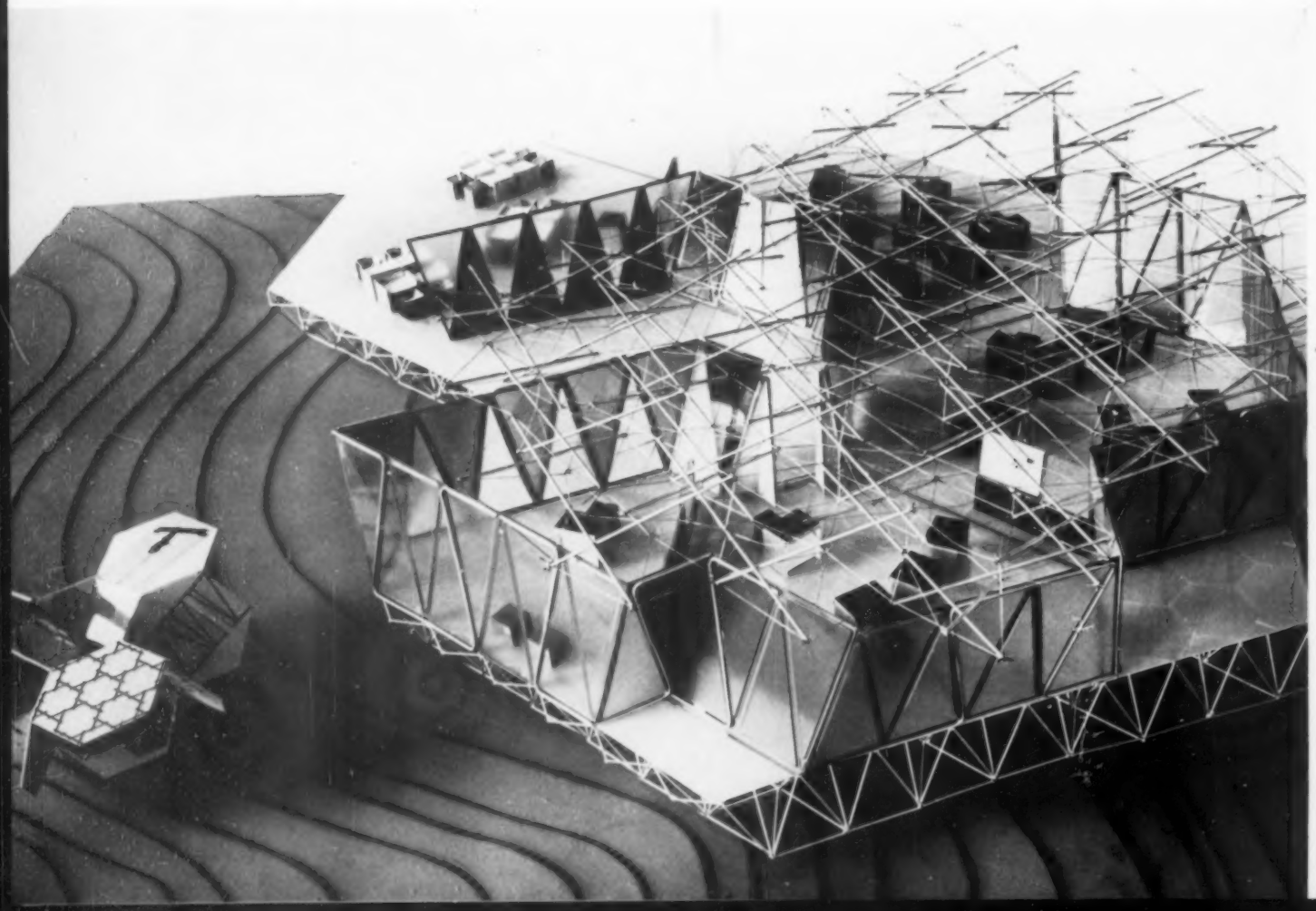
To accomplish all this (and, he admits freely, to pursue an interest of his own) he chose as a problem the design of a schoolhouse for underdeveloped countries. In his own words, from his outline for a master's thesis based on the project, "Students are generally sensitive to the difference between the haves and the have-nots; industrial design students particularly, because their profession deals with the creation of things to have and for the have-nots to want. It is difficult to justify want creation as the basis for an education, to students aware that all is not right with the world. We have therefore abandoned the whole business of want creation, and rather selected an area where design can service a situation of urgent importance to human survival: the creation of universal literacy. We have selected a project for the developing countries as a statement of our interest, and also because here industrialization may be applied directly to resolve an immediate need, unhampered by any necessity for 'stylization.'"

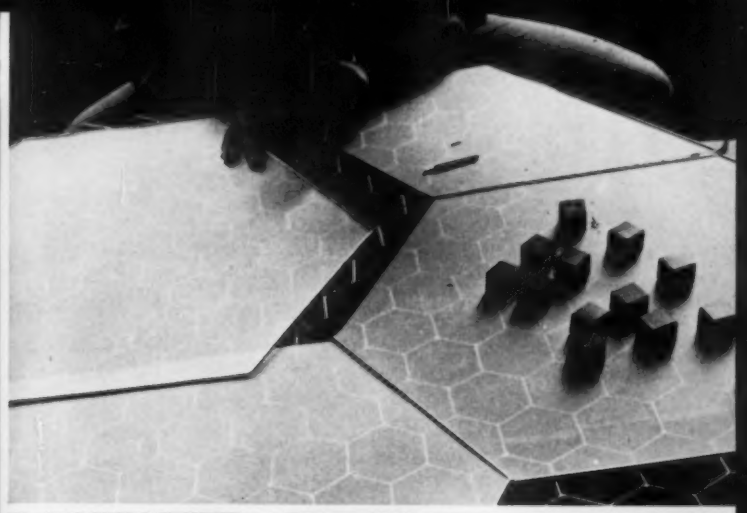
One of the most important features of the course, Beckman feels, was the fact that the students never realized, until halfway through the year, what it was they were designing. (With only two years of design schooling behind them when they started, they would have been discouraged, he thought, by so large a beginning project.) For most of the first semester, the

assignments proceeded in a conventional manner: research one week, design project based on the research the next. And for each new project (there were seven in all), the student had to use a different presentation technique. After a week of research in laminated wood, for example, the student had then to design a stool or table—or a combination of both—and present his design in a pastel drawing. (These assignments were coordinated with another course, called Production Methods, which the juniors were taking at the same time.) Their other research assignments included sheet metal, metal extrusion, plastics, paper, and chemical fasteners, and their projects were a solar oven or stove, metal screen doors and windows, plastic food containers, a compression-structure platform, an outdoor exhibit structure, and a tension-structure sunshade. These were all to be products suitable for manufacture and use in the newly developing countries. The sunshade, for example, was to shade a kind of prayer platform.

Not until January, for the final presentation of the semester, were the students told to design individual schoolhouses, and not until their instructor told them so did they realize that they had already designed all the components for a school. That is, they had a design idea for each separate aspect of the school; their task now was to make these ideas compatible with one another, to discard solutions that could not be reconciled with the total plan, and to devise others to take their place. As in all the previous assignments, they were to keep in mind the needs of a country that was just beginning to generate light industry, and that needed a temporary village school immediately.

The second semester began with a change of pace and with a reading list of 20 books, ranging from *Death of a Salesman* to *Candide*, and representing authors ranging from Russell Lynes to Karl Marx. The basic text for the ensuing seminar discussions was the sociologist Pitirim Sorokin's book *The Crisis of Our Age*, with each student, in addition, reporting on a book from the reading list. The topic of these discussions was the relation between design and the world around it, and the point was that the designer



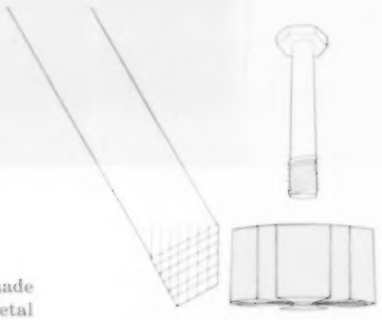


At left, the model with roof canvas removed to show structure. Above, students test scale model of chair (of cardboard-styrofoam sandwich panel), work out hexagonal pattern of floor, examine tension-compression system of ceiling. Student designers were: H. Yarme, D. Gilchrist, E. Tator, J. Morgado, D. Grady, J. Mezits, P. Lomprey, H. Berelson, R. Jacob, C. Hillman, A. Apissomian, S. Moskowitz, C. Williams, S. Wax, J. Fambrough, C Helms, M. Kaplowitz, J. Schumm, H. Bradley, I. Saltz, D. Morgan, and P. Purpura.

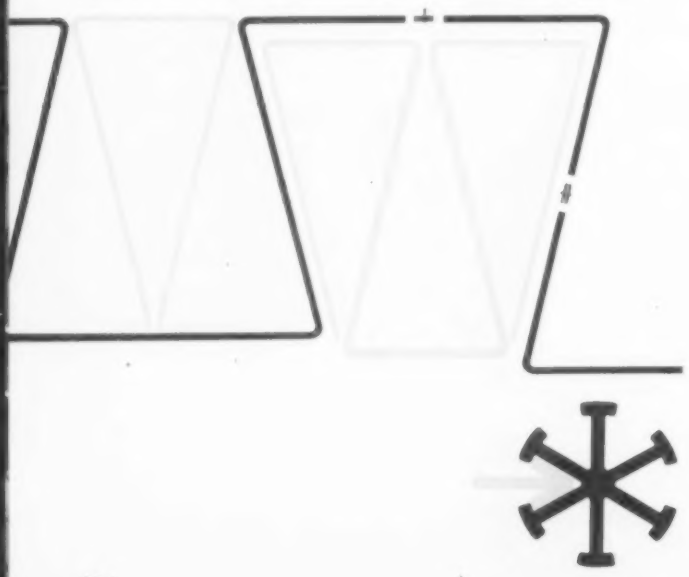
cannot perform significantly in a social vacuum.

At last, fortified by all this background, the class began work on its group project: a primary schoolhouse that was to be mass-producible, flexible, and transportable. Beckman divided his class into five teams, each with a job captain, and formed the job captains themselves into a sixth, coordinating, team. Each team designed a system to form part of the school: furniture (chairs and desks), compression structure (to serve as foundation and support for the building), tension structure (which formed the ceiling), a curtain wall system, and a traveling exhibit. (The exhibit was intended to travel in advance of the school, to prepare the people of the village for it and to explain it.

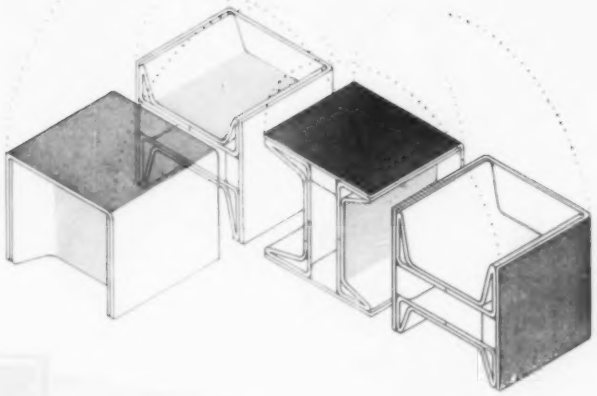
The furnishings—desks and chairs—are simply box-like forms whose tops are at various distances from the floor, depending on which surface is uppermost. To adapt a desk or a chair to children of varying ages, the boxes are simply flipped over into the appropriate position. The school building itself owes much to Buckminster Fuller for its foundation and roofing: although there have been some modifications of the Fuller constructions, the reference is obvious and intended. In fact, this is a point on which the school might be criticized, if it were not that the purpose of the project was purely educational. As it stands, the present foundation is far more elaborate than a temporary five-room schoolhouse requires, and the roof is more suitable to an airplane hangar, as one viewer remarked. But the course is, after all, called "Materials and Structures"; there is certain information that the students must absorb, and if the instructor can find a means of making them absorb it eagerly and wholeheartedly, he has accomplished his task. To finish their project, Beckman's students stayed on two weeks after school was out, lovingly putting the final touches on their model. And Beckman concludes his thesis outline: "Too often design schools remain 'thing-oriented' to a point where the end justifies the means. But we believe that, in education, the means are of lasting worth, and the experience of making an idea become real far outlasts the lump of clay or portfolio page in value."—U.C.

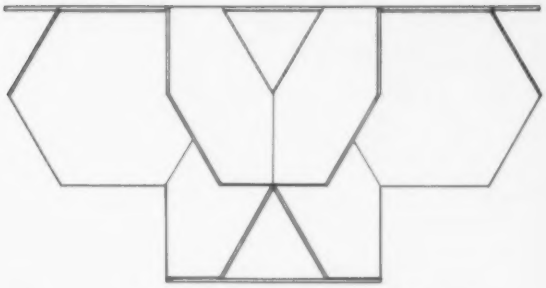


Outer wall frames are extrusions permitting units to be made of continuous and indefinite length. Principle sections are metal strips with six grooves (elevation and cross section in black, below). These are bent to the prescribed angles on building site. Glass or screen panels are attached to this metal frame by an extruded plastic border with an arrow shaped edge to fit into metal grooves (color, below). Walls lean in or out 10 degrees and form tripods at corners to support ceiling. Blackboards, (above left) are room dividers and sink into floor.



Foundation system is not new: it uses Buckminster Fuller's octet truss, and a rod-and-joint system manufactured by the Fentriman Company. Pratt students did improve the latter by swedging rods in two directions so that they fit horizontally into grooves as well as at angles, pointing up or down. The joints bearing the rods are fastened with bolt through the centers. Advantages of the system are that no foundations are needed below ground level, it is easily assembled, dismounted, transported. Disadvantage is large number of units needed.





Desks (below) and **chairs** (above) are made of impregnated paper with styrofoam sandwich core. Manufacturing process and assembly are simple and inexpensive: shapes are die cut, joints are printed with glue, units fold flat for transport and are set up on site. Although they are not designed for lasting wear, the furniture has been carefully designed to accommodate children of progressive ages and sizes. The desks (with flip-flop tops) and chairs can be turned on their sides to make four different heights; each size has a different color showing on the top surface. According to Pratt's research, small children study best in small clusters (for security and communication) and desks are arranged in groups of four as shown above.

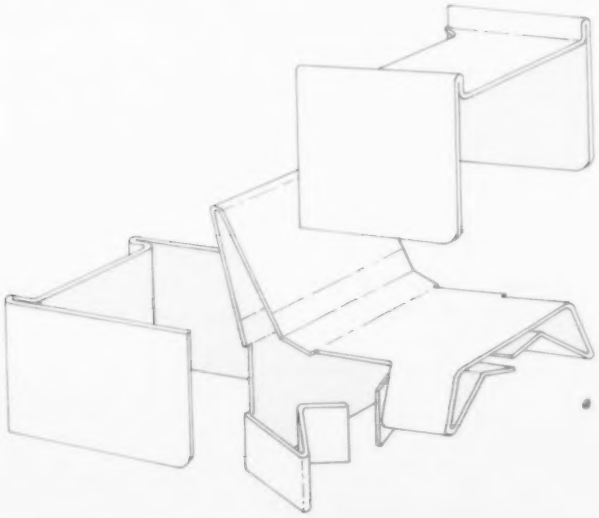
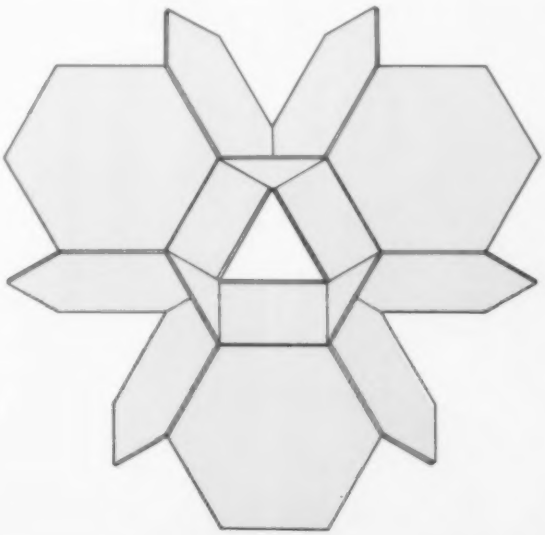
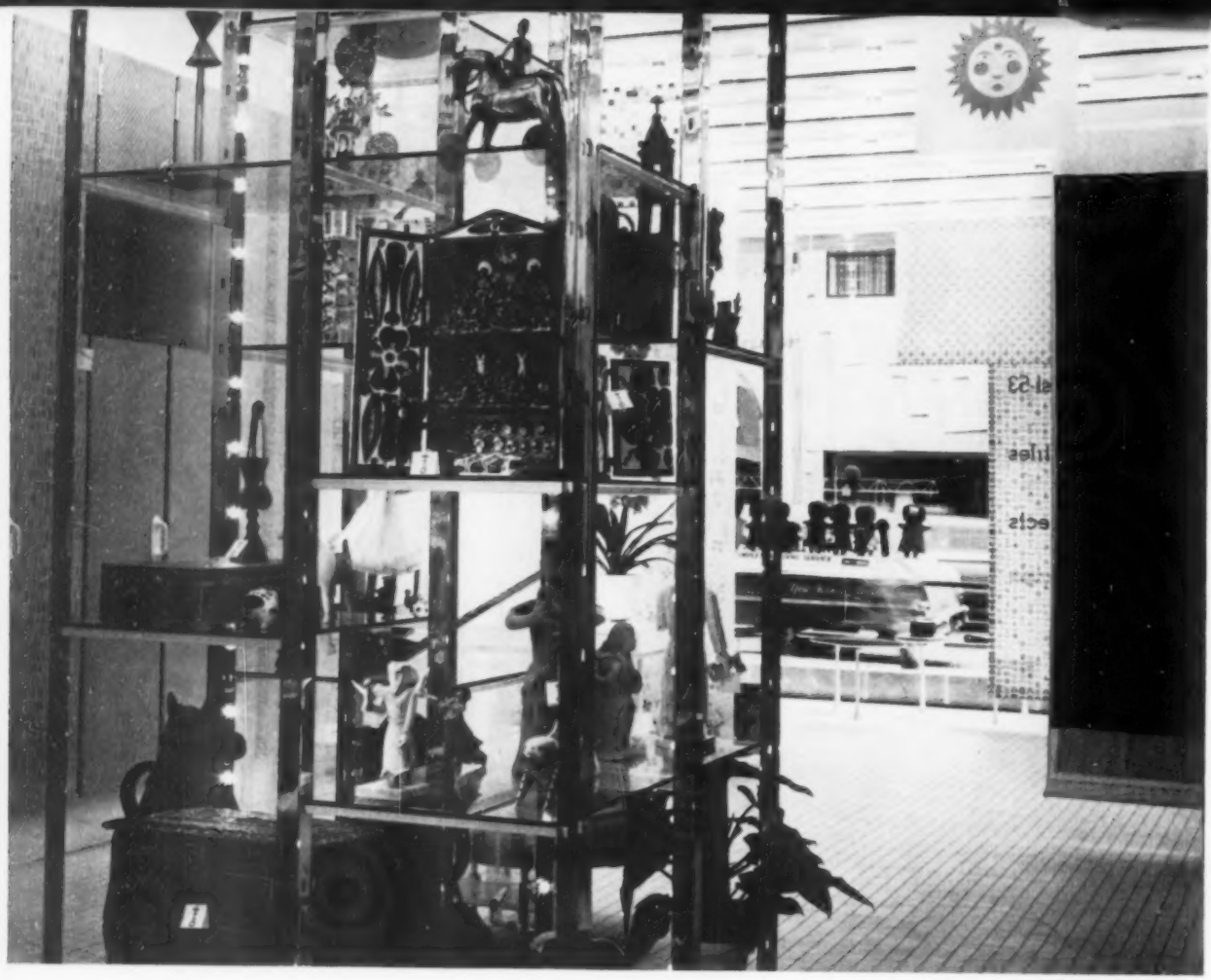


Exhibit unit (above and below) consists of large hexagonal panels showing various facets of the school. It is a fanciful display system with overhanging panels, and the observer is faced with several visual planes, including a view through the plastic core to a far panel which continues the theme or picture in the immediate foreground (note cable supporting construction worker reappears above). It may be debatable, however, whether such general photographs and abstract drawings could convey a concrete picture of a school to a backward community.





1

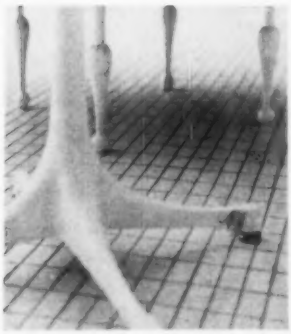
DISPLAY CASE FOR FABRICS

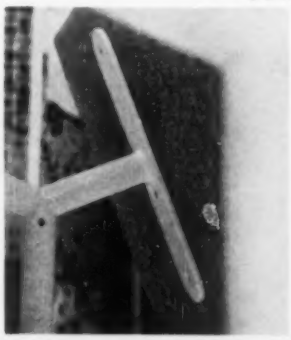
The Herman Miller Furniture Company has just opened a retail shop for its fabrics in midtown Manhattan, and even for a city dotted with recherché drygoods emporia, this one is rather special. It is designed by Alexander Girard, who also designs the Herman Miller fabrics. Girard has chosen to display his bright bolts of cloth like banners, and to surround them with Mexican folkart treasures (he is an avid collector). In fact there is as much folkart as fabric, and both are for sale. The shop is called, appropriately, Textiles & Objects, and it is a riotous profusion of colors and forms. But for all that, it is meticulously conceived. Everything from its lighting to its cupboard hardware intensifies the general and particular character of the merchandise. The setting is almost clinically harsh: the light is dazzling and the white walls and ceilings are refrigerator-shiny, yet the combination produces glareless, shadowless illumination at eye level (a specially designed bulb bounces most of the light back up against the reflectant ceiling). Interspacing the lighting strips are rows of perforated steel angles from which fabrics are suspended on an arrangement of hooks and rods. At the front of the shop there is an equally dazzling chrome and glass display tower with integral lighting. These, and a selection of other T&O details, appear here.

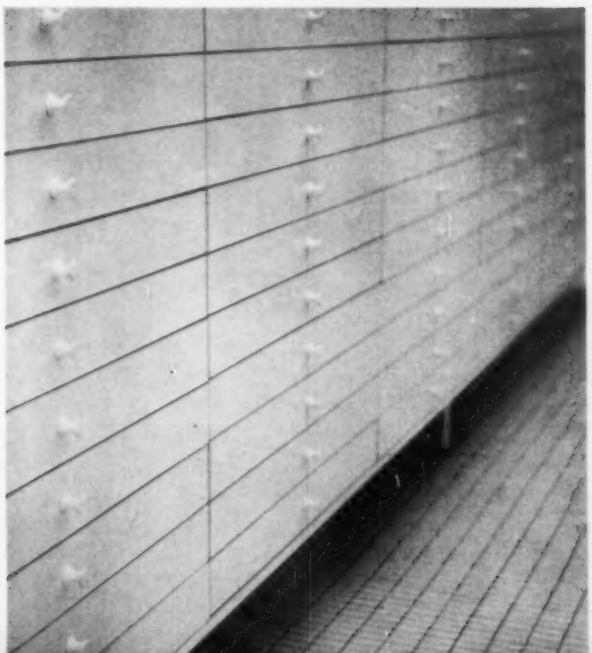
Display tower—1—is constructed of chromed 2-by-2 inch steel angles; at the center of each side, two of these combine to form a hollow post for lighting channels. Shelf supports are white cellulosic-coated aluminum bars treated on top with a non-skid plastic. Ceiling lighting and display system—5—is same steel angles, painted white. They are placed at 18-inch intervals. Alternate rows hold 40-watt bulbs (also 18-inches apart) painted with a silvery ring that reflects light against the ceiling and also directs it downward (through the hole in the ring). Other strips are perforated to accept hooks which hold rods for suspended fabric panels. Special furniture for the shop include tables and stools with shapely legs—2—long double-easel fixtures—3—for showing fabrics, and a fabric cutting counter that is also a storage cabinet—4—made up of shallow drawers with special pulls. Storage cupboards have removable fabric-covered door panels, hinges—7—that permit two doors to open back-to-back, and white cellulosic-coated aluminum handles—6.

5

2-3-4







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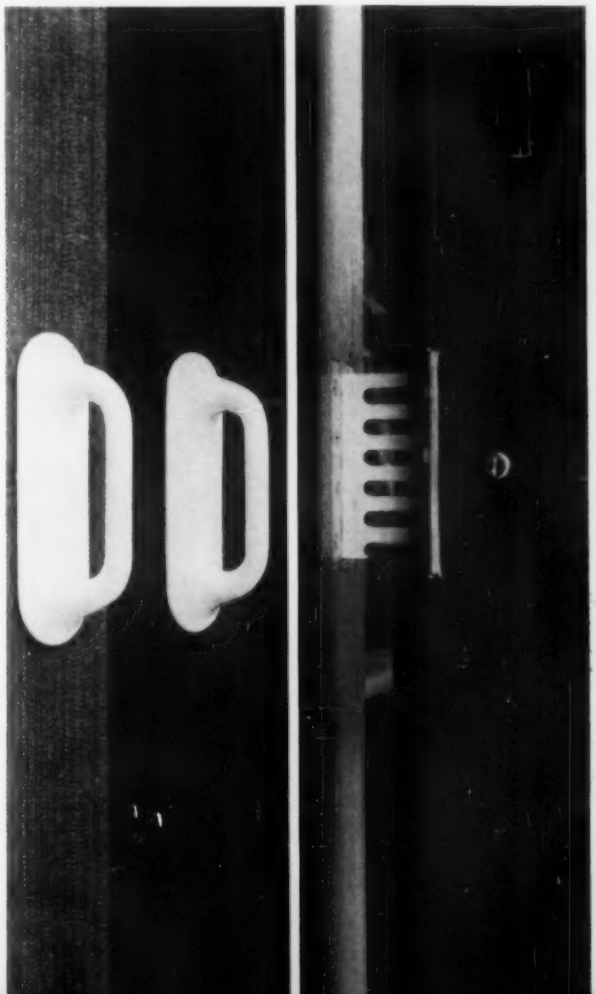

1

NEEDLE SHARPENER

Every apprehensive patient who rolls up his sleeve in the doctor's office hopes that the hypodermic needle will do its job smoothly, easily, and imperceptibly. When it does not, the fault is frequently in the needle. The tiny defects of mass-production plus the subsequent imperfections of hand-honing can leave microscopic burrs and jagged edges. Besides causing pain, these can damage the tissue—and repeatedly damaged tissue (a problem, for instance, for diabetics) can create additional medical hazards. The little device shown here is meant to solve this. It is a needle-sharpener that holds the needle firmly at the correct angle against a tiny abrasion wheel that is then rolled back and forth across the palm of the hand. The weight of the needle shaft is sufficient to supply the necessary amount of pressure so that the needle is honed in the right place by the right force. It was designed—with as much care for its appearance as its function—by Charles B. Wesslund, head of product engineering at R & W Medical Equipment Company, North Hollywood, California. It is available in two models — a double-sided arrangement which sharpens both the standard and Huber (slanted) points doctors most often use, and a shaft-like, one-needle sharpener for diabetics; both models are molded of Cycolac.—*S.B.R.*

2

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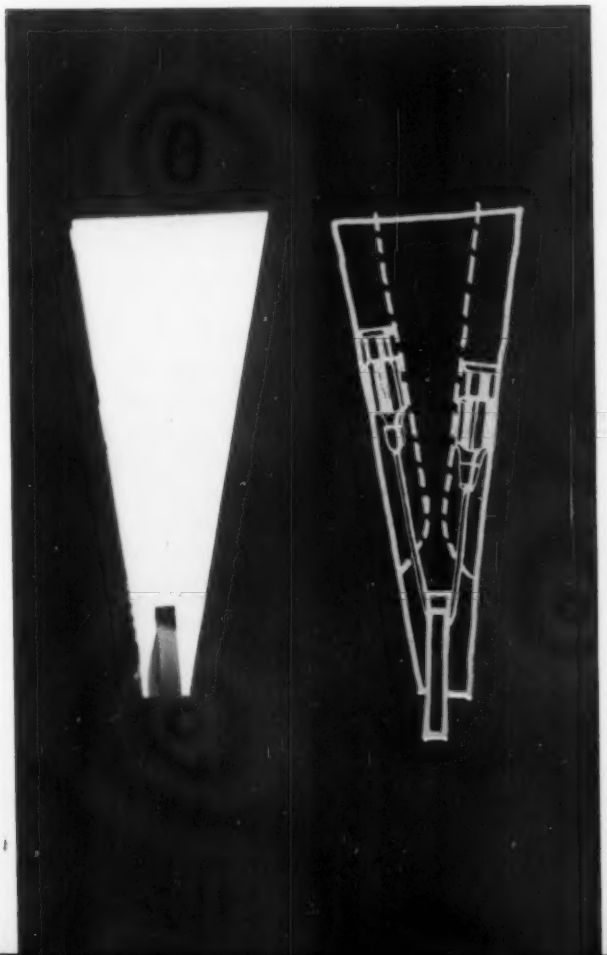


Model of needle sharpener for doctors (1) accommodates a standard point on one side and a Huber point on the reverse side, accepts all gages and lengths to two inches in grooves formed by extension of triangular pieces; drawing (3) of inner mechanism of professional model illustrates principle on which all models operate, achieve exact needle point angle. Model for diabetics (2) is rectangular, holds one standard needle. There is also a longer version for spinal needles.

1

DESIGNS FROM ABROAD *"New Bauhaus" dinnerware*

An Ulm student's diploma project for a set of compact restaurant china has become a commercial reality

At the Hanover Fair in Germany this past April, the German china firm of Rosenthal A.G. introduced a new line of commercial dinnerware called Kompaktgeschirr, meaning compact dish set (but more often referred to by its catalog designation, TC-100). The appropriateness of its name is immediately apparent: the pieces nest inside one another with admirable economy. But there is more to TC-100's compactness than its minimal displacement of space. It condenses a great variety of dish sizes and shapes, for a host of food service requirements, into a set of basic food containers that double, and sometimes triple and even quadruple, their purposes. It is meant to be as adaptable to the needs of a quick-lunch counter as to those of a hotel grill room, a school cafeteria, or a railway dining car. Beyond this, it simplifies the actual mechanics of food service: TC-100 not only nests when empty, it also stacks when filled, obviously benefiting the work patterns of such kitchen personnel as waitresses and short-order cooks. It is also designed to be cleaned efficiently in automatic

All photos by Wolfgang Siol; reproduced by permission of the Hochschule für Gestaltung.

dishwashers, and to take abuse. And, as a bonus, it is extremely good to look at.

The fact that its attractive appearance is an afterthought is not surprising: TC-100 is the diploma-project of a now-graduated student of Ulm's Hochschule für Gestaltung, where good form is regarded as the logical outgrowth of a full set of facts on a product's function and manufacture (if the facts are well and truly collected, goes the theory, the product should turn out right). The student was Hans Roericht, and the problem, as originally stated, was to design a set of dinnerware for commercial and institutional use.

Roericht's methods were not particularly novel, but they were thorough. He began, logically, by questioning china manufacturers and their customers—the stewards and managers of kitchens in mass-feeding operations— about the conditions of use, the customs of food service, and the necessary properties for china in such operations. He also assembled a mass of data on sizes, shapes, and composition of existing lines of commercial china. Many of his discoveries are not unexpected. He was told, for example, that commercial china should be durable, stackable, and easy to wash (smooth surfaces, no scallops or ridges, opening wide enough to permit maximum circulation of water). And some of his discoveries are simply curious: one manufacturer reported it carried five different sizes of coffee pots, but another carried 15 in a completely unrelated sequence of capacities, with no good reason for this number or disparity in sizing.

But the best part of his study is the quality of his observations and conclusions. Roericht listened between the lines and looked under the numbers, and postulated ideal properties for commercial china that its makers and users had never even been aware of. It was apparent, he concluded, that the existing product had always been regarded as an extension of domestic china, modified, mostly inadequately, to meet the more stringent demands of commercial use. In other words, its forms, dimensions, and relationships remained those of household china. Even the criteria of quality were the same: the greater the number of pieces, the more luxurious the service. And although the special needs were evident everywhere, no one had seriously attempted to catalog them, much less to specify requirements in the design and manufacture of china to meet these needs. Instead, paradoxically, the conditions of use had been tailored to the limitations of the product.

By wading painstakingly through the dimensions and capacities of each "standard" piece in existing lines,

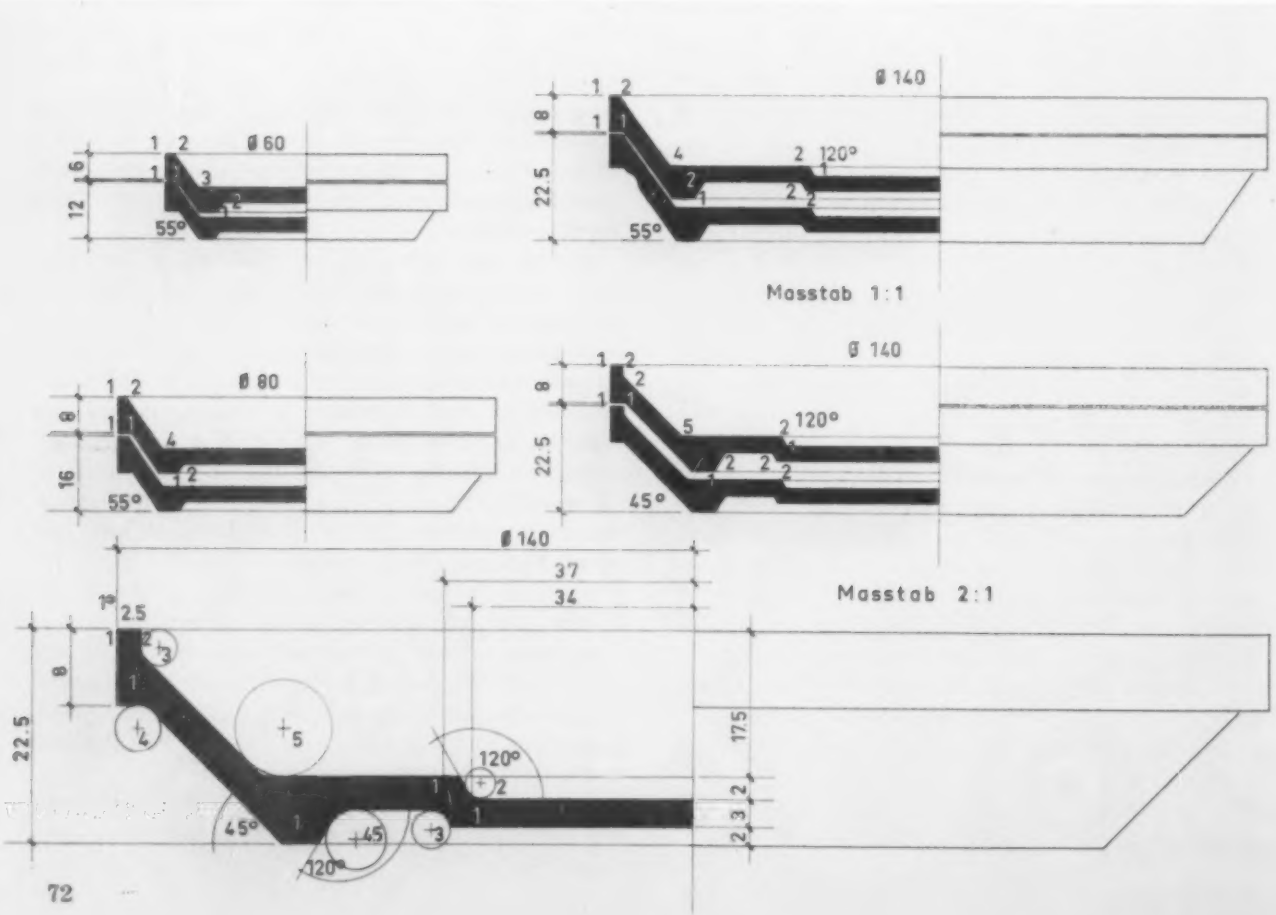
Roericht arrived at a norm for each one (50 in all) ultimately included as a component in TC-100. He tried also to consider the relation between the forms and dimensions of the various pieces, for it was obvious that a hodgepodge of sizes and shapes made storage a jigsaw puzzle. What he envisioned was a system that would allow different types as well as like types to fit together: TC-100 is so coordinated in height, diameter, and circumference that all pieces of the same diameter, whether alike in type or not, can be stacked, and that side-by-side storage is easier as well as more economical of space. Filled dishes can be stacked by covering them with inverted dishes of related diameter (there are no separate lids or covers in TC-100), and some dish rims are formed so that covers will recess into them.

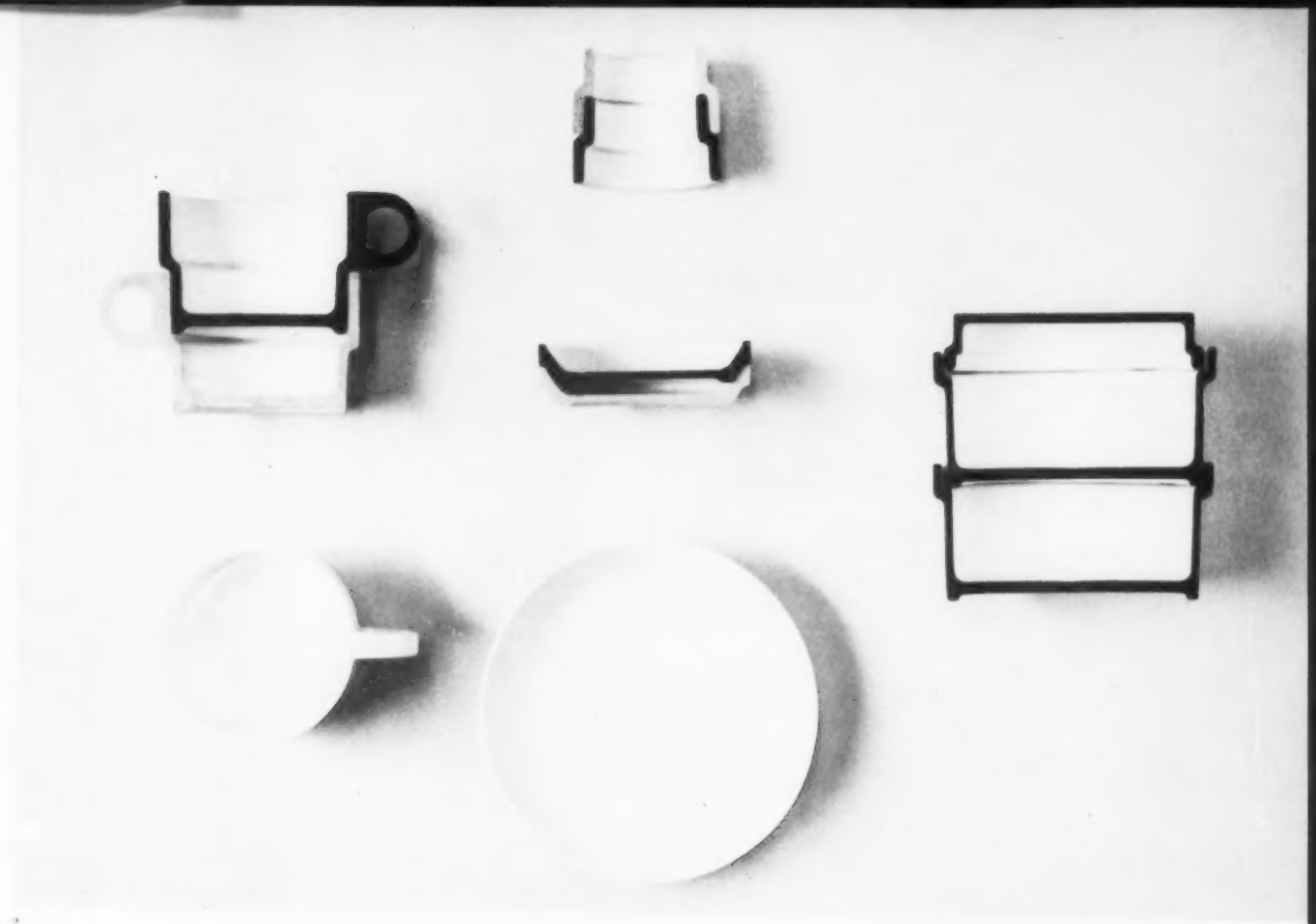
The number of pieces in the system could be cut down, Roericht reasoned further, if each piece served a multiple function. This would also be an advantage in the production process: fewer basic molds would be needed; a more careful watch could be kept on quality; and factory storage during and after production would be more convenient. In its final form, each piece in TC-100 fits into one of two families: In one, the formal constant is a vertical double cylinder — a wide top cylinder narrowing by the thickness of the china (plus slipping tolerance) into a smaller base cylinder. Examples of this family are the coffee cup, milk mug, and pitchers. The second family has as its constant an angled side of 120 degrees. Examples of this are the plates, bowls, saucers, and soup tureens.

The broad, flat bases of the latter family give these pieces a low center of gravity, making them more stable. Other pieces are made less breakage-prone by avoiding, wherever possible, fragile projections such as handles and knobs. In addition, strength is supplied in more usual ways: by thickening the walls and specifying a china with higher kaolin content.

Finally, states Roericht in his thesis, the distinctive appearance of such china would give the manufacturer a marketing advantage. And apparently the firm of Rosenthal agreed with him, for with a few minor modifications his student project is now in production.

1





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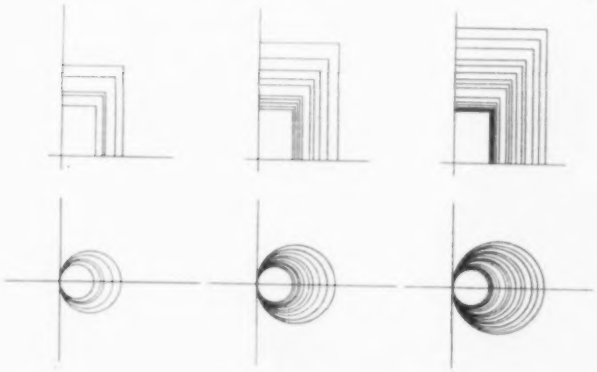
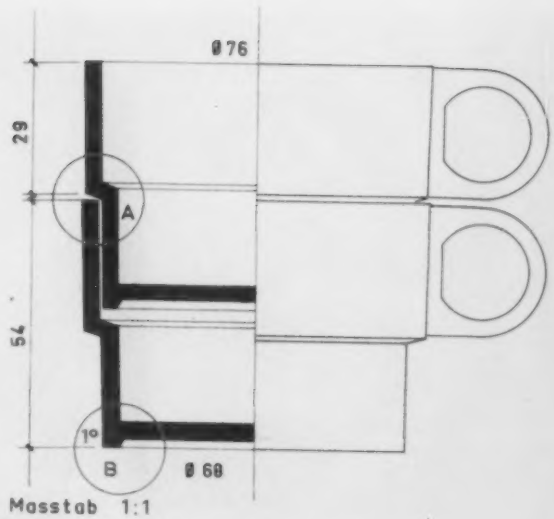
Cross sections of cups, plates, and soup tureens—2—show how nesting and stacking have been made more succinct. Soup bowl doubles as cover for tureen. Diagrammatic drawings (scale 1:1 and 1:2 as shown) illustrate two basic constants of system: the angled side of 120 degrees—1, and the vertical double cylinder—3. All dimensions are in centimeters (2.54 centimeters = 1 inch). Roericht arrived at a standardization of size and capacity by way of careful comparison and analysis, one element of which is reproduced below—4. The scaled comparison here is among coffee pots produced by three manufacturers.

4





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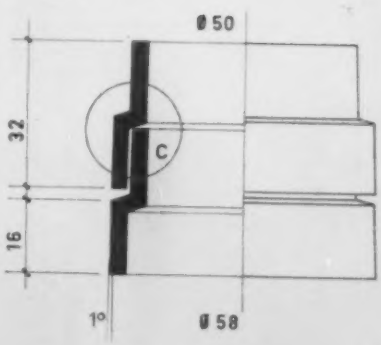

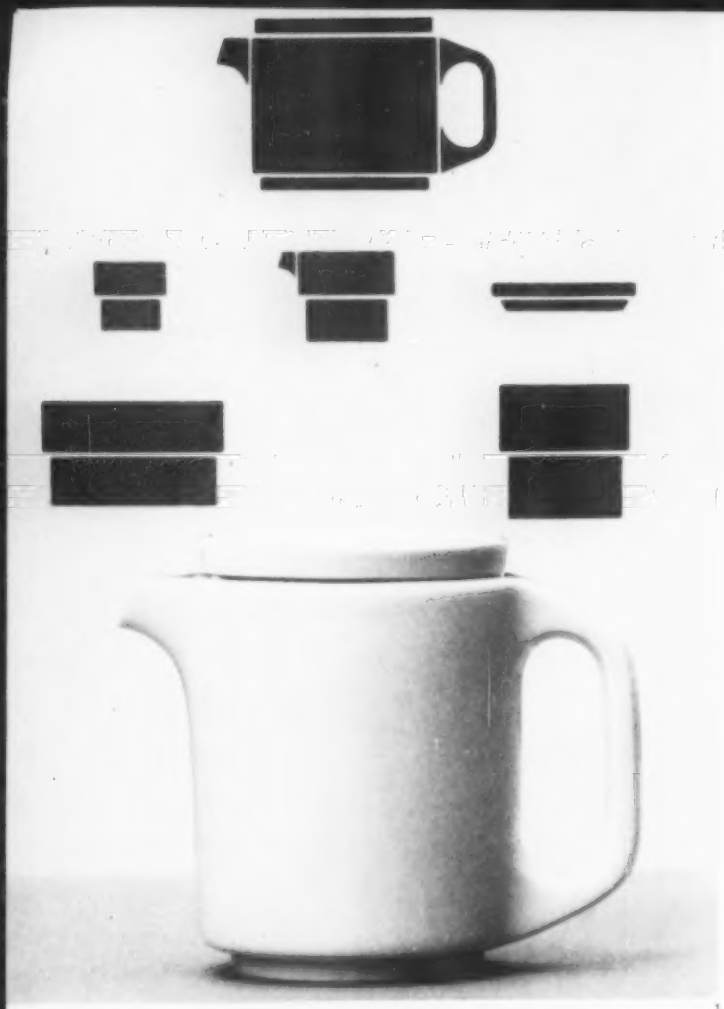

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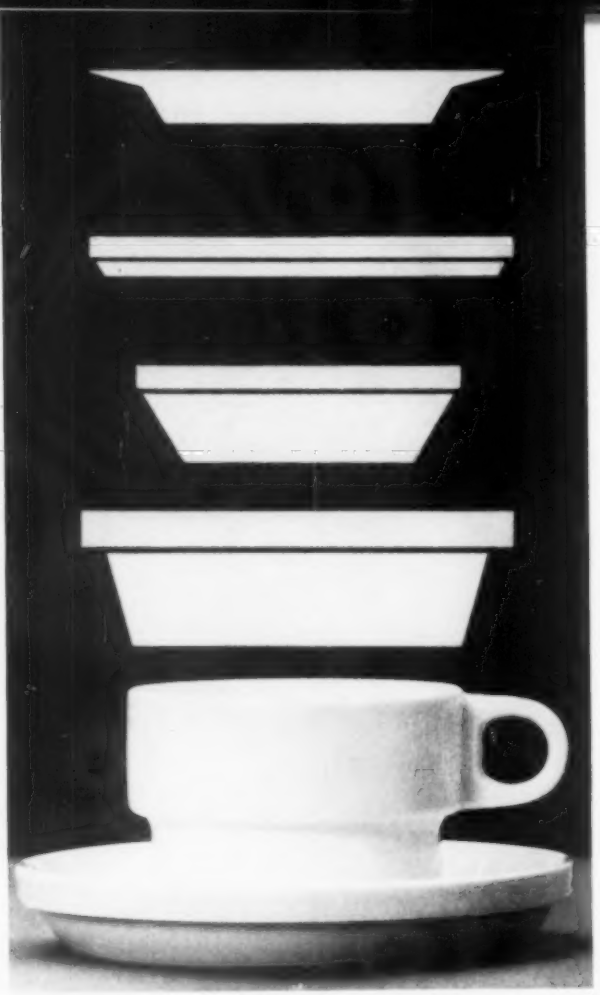
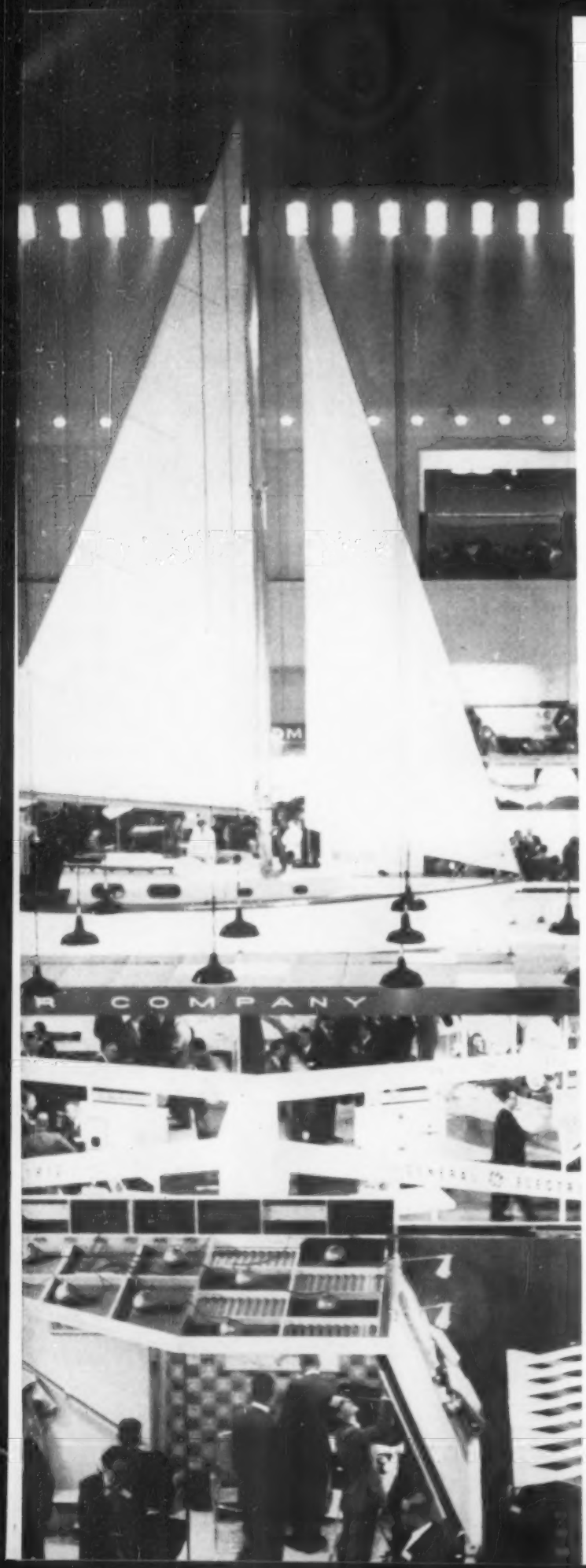


3

2

Cover for pot or pitcher—1—can be used, inverted, as a saucer or a cover for a cup. Saucer—3—doubles as plate or cover for a tureen—2. Tureens (shown here as clay models) can be stacked while full, as can plates, cups, pots, and pitchers. Roericht's standardization of sizes and shapes led not only to convenience in vertical stacking and nesting but also to more efficient side-by-side storage (opposite page).



PROFUSION OF PLASTICS

Underneath the hoopla the annual SPI show produced some real news in materials and product applications

Expensively dressed, flashy, talkative, and sure of itself, the plastics industry surged into New York's Coliseum early last month and didn't stop hawking its wares until the last visitor, tired and perspiring, edged out the door. There was plenty to see at the 1961 National Plastics Exposition (262 companies exhibited), and it ranged from several significant new materials, through exciting applications of well-known materials, to squads of plastics processing machines spewing out cocktail shakers, footballs, and dinnerware to surprisingly long lines of sample-seekers.

To tell the story of Lustran, a tough new thermoplastic based on styrene, Monsanto combined a revolving circular stage with earphone-equipped listeners' seats and presented a number of lecture-demonstrations illustrating its properties: light weight, high impact-resistance, durability, thermal stability, colorability, and low cost. Lustran has already been used for safety helmets, dinnerware, and a floor polisher.

Du Pont's entry in the new materials section was

2

1—Third floor view of the 9th National Plastics Exposition held in New York's Coliseum. The 35-foot racing sloop, in the background, was exhibited by Celanese Corporation, the supplier of the fiberglass-reinforced polyester resins for its hull.

2—Shower stall, molded in two pieces from American Cyanamid Laminac fiberglass-reinforced polyester, is manufactured by Ceralyte, Inc., Salt Lake City. Available in either pink or off-white, it costs $211.

3—Bowling ball carrier, manufactured by Regal Plastics, Kansas City, Missouri, is vacuum-formed from Lustran, a tough, new thermoplastic developed by Monsanto.

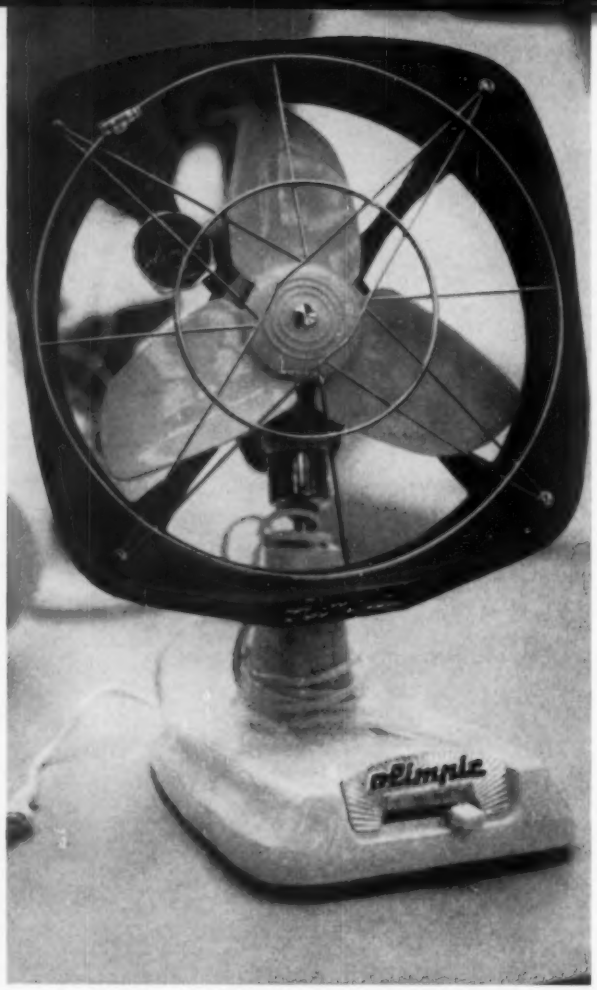
3

Elvex, a series of vinyl resins specifically formulated for compatibility with paraffin wax. One of its many uses is expected to be in packaging coatings where it will extend the use of conventional wax coatings which are brittle, prone to flaking, and which break if flexed or creased. Blending Elvex in with the wax imparts flexibility and toughness to the coatings, and is also said to markedly improve their water barrier properties.

A British firm, Porous Plastics, Ltd. (Dagenham Dock, Essex, England), introduced a porous plastic made from high-density polyethylene. Tradenamed Vyon, the material has uniform and controllable permeability, is flexible, strong, and can be machined and fabricated. It can be used as a filter medium in air and liquid filtration and, in a quite different application, has been specified for orthopedic splints and appliances where it provides a firm and flexible support for the limb, at the same time allowing the skin to breathe.

Interest in polypropylene was high and centered in Montecatini's booth where a number of applications of the material in the form of fibers were shown. Featured was a 100 per cent polypropylene blanket, already used in Italy, that promises serious competition to wool blankets because it is stronger, lighter weight, and warmer than wool, and can be washed in soap and water with-

1—2
3



4

out shrinking. Montecatini is also developing polypropylene carpets and clothing fabrics. Spencer Chemical exhibited a womb chair injection-molded from polypropylene, designed to compete with the heavier, glass reinforced-polyester models.

New packaging developments underscored the continuing importance of plastics to the packaging industry. Dow exhibited expandable polystyrene in spaghetti-like strands for use as a cushioning and packing material. Trademarked Pelaspan-Pac, the strands are said to provide better cushioning at a lower overall cost than excelsior. In addition, they are not subject to spontaneous combustion, do not support rodents or vermin, and can be stored, unfoamed, in much less space than a comparable amount of excelsior.

Nixon-Baldwin Chemicals introduced Vynex, a new extruded, high-gloss, rigid vinyl sheeting for blister packaging; it has an extremely high clarity, heretofore unavailable in extruded vinyl sheeting.

Koppers displayed a high-density polyethylene beer container (capacity 24 bottles) that is injection-molded in one piece with integral hinges, and is said to last three and a half times as long as a fiberboard box.

Unlike most trade shows, the SPI's annual fair pretty much lived up to its advance ballyhoo. —*L.D.G.*

1—Nopco Chemical Company displayed this Royal typewriter that is placed in a polyethylene bag and surrounded by foamed-in-place urethane as its cardboard container moves down the production line. With this new packaging technique, the typewriter does not have to be bolted down or otherwise protected.

2—Portable polyethylene skin packaging machine (cost $995) made by MFP Company, San Mateo, California, is the first portable machine of its kind. It is being put to work by home moving companies to simplify the packaging of china and other small and delicate items.

3—Dow Chemical's new expanded polystyrene strands are designed to compete with excelsior for loose fill packing and cushioning.

4—Oscillating fan, by Filli Coste, Milan, Italy, displayed by Montecatini, has a polypropylene housing and fan blade.

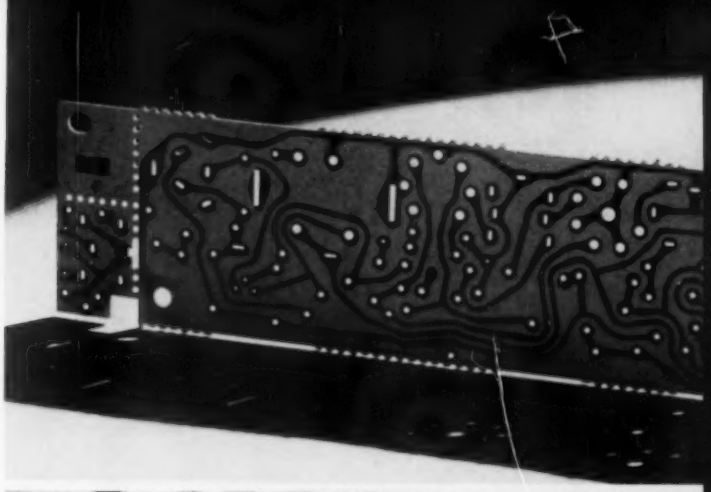
5—Polypropylene fabrics, shown by Montecatini, are noteworthy for their light weight, strength, and washability.

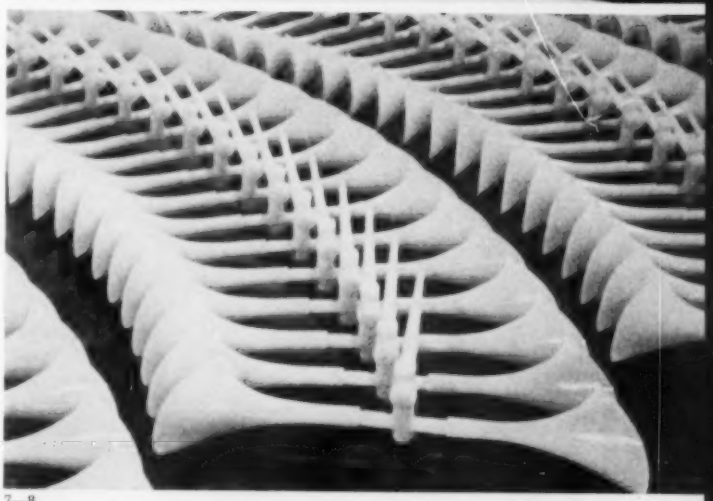
6—Cervical collar is made from Vyon, a new porous polyethylene introduced by Porous Plastics, Ltd. of England.

7—Printed circuit for car radio is made from Cimclad, a new break-resistant fiberglass-reinforced laminate manufactured by Cimastra Division, Cincinnati Milling Machine Company.

8—Plastic shoe heels are molded two at a time (and then cut apart) from the new Celcon acetal co-polymer, made by the Celanese Polymer Company.

9—Polypropylene chairs, by Alladin Plastics, Gardena, California, are stronger and much lighter weight than similar fiberglass-reinforced polyester chairs. They cost $9.95.





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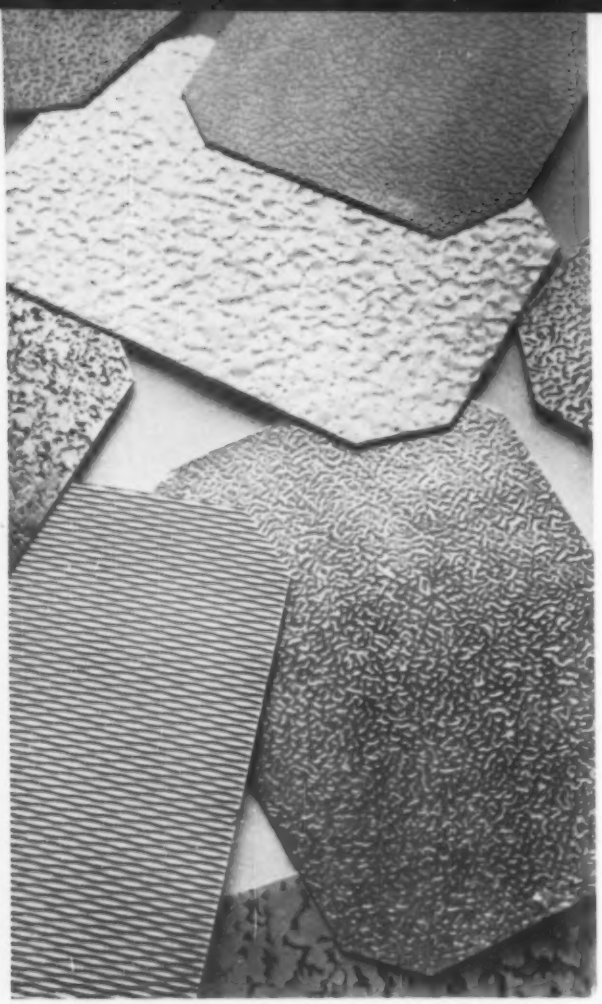
DESIGN SHOW IN DETROIT



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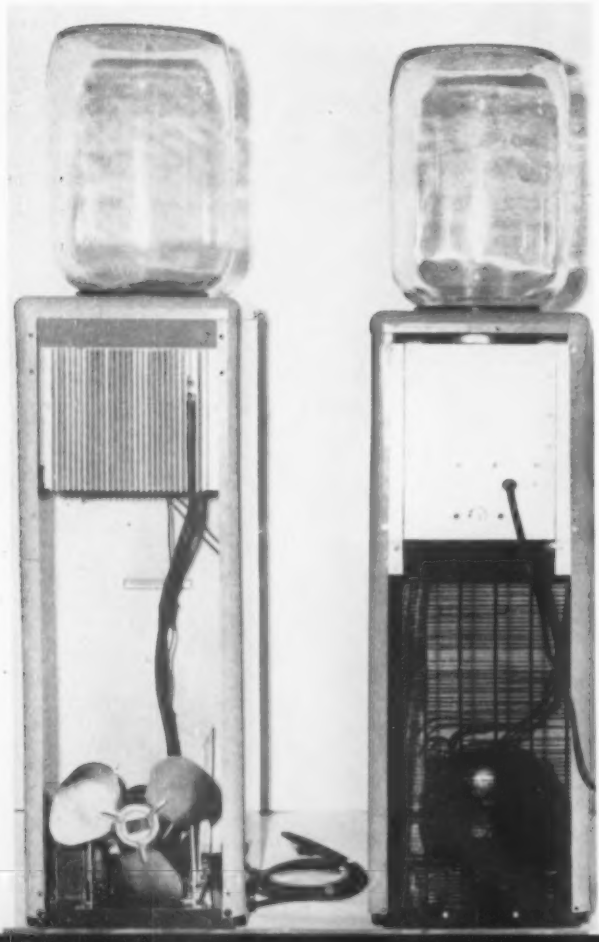

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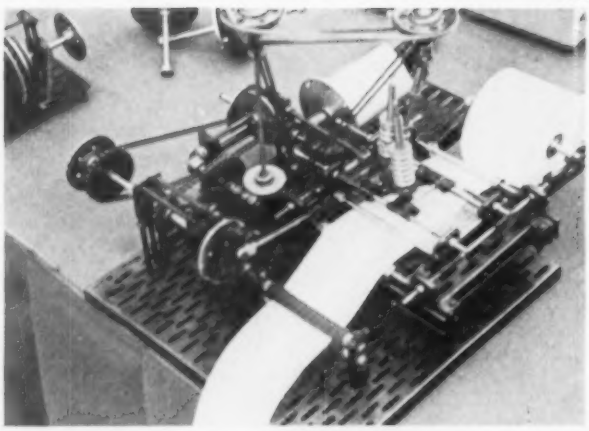
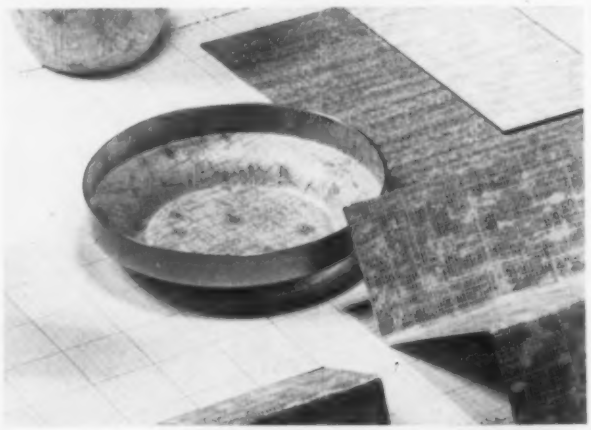
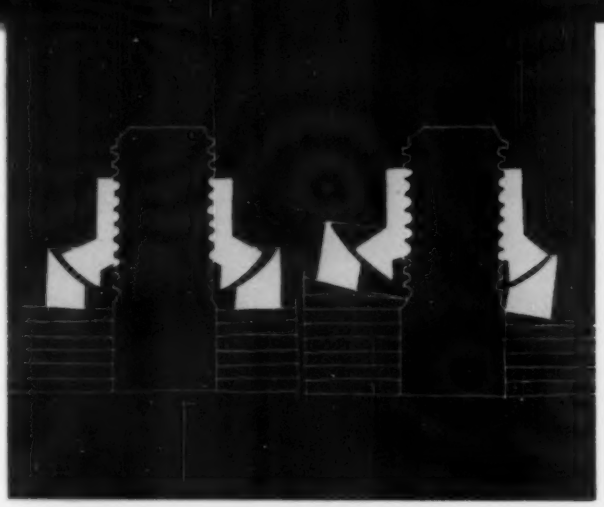
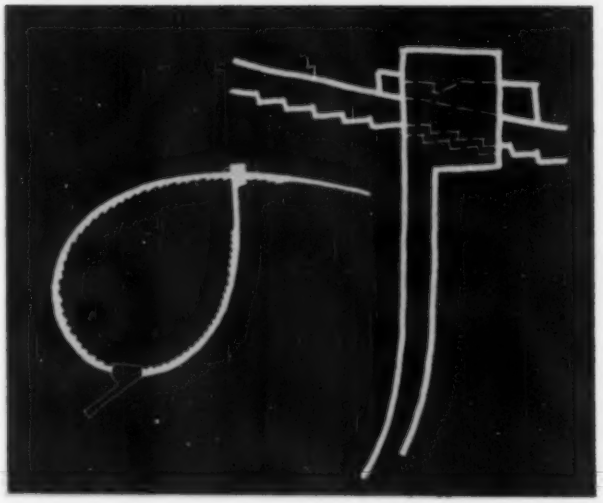








1—Metal & Thermit introduced multi-colored electroplated finishes on textured metal surfaces. The photo shows zinc-plated steel dyed with colored-chromate coatings. Buffing the raised areas of the textured surface makes them lighter gray in contrast to the dark gray coating left in the low areas.

2—American Smelting and Refining (ASARCO) exhibited these Westinghouse water coolers. The one on the left is powered by thermoelectricity (ASARCO supplied the thermoelectric elements) and requires 25 per cent less volume for its cooling components than the standard compressor-operated unit on the right. Its only moving part is a fan that dissipates heat drawn from the cooling elements.

3—FAC Division of Overseas Commodex displayed its super-duper erector set for working out concepts in mechanical design. The set is said to contain all the necessary components for constructing functional models with complete detail.

4—Alcoa offered a new aluminum-vinyl laminate for decorative purposes, some of which are illustrated here.

5—Standard Pressed Steel's new locknut can compensate for out-of-squareness up to 8 degrees by swiveling within the spherical seat of a special washer.

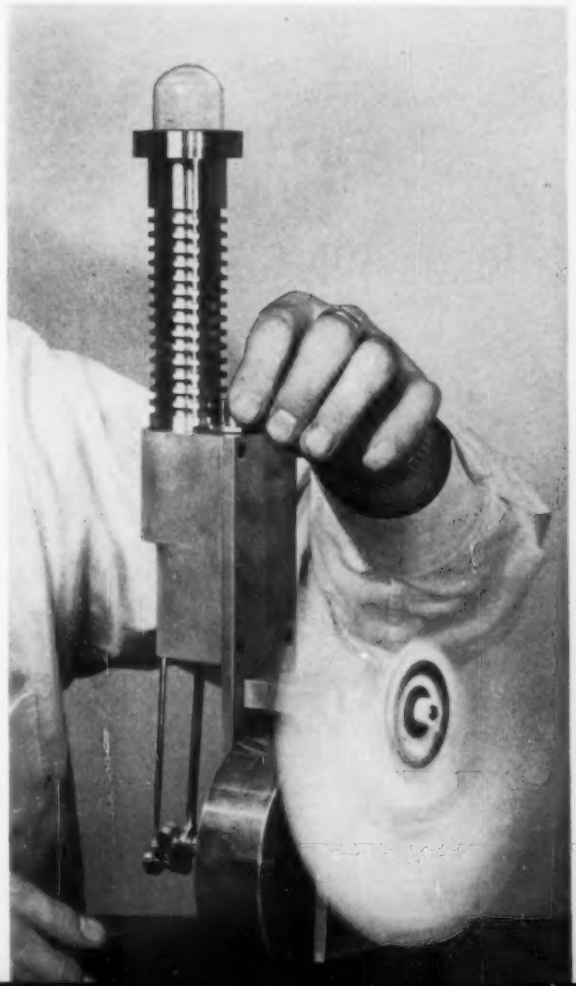
6—Weckesser nylon band clamp features a positive holding and locking action for quick assembly. Ratchet teeth on the band engage with matching teeth inside the clamp loop and are locked together by a small floating wedge. However, once locked, it cannot be taken apart, and must be cut open.

7—Battelle's Stirling engine, designed to operate on sunlight, is here driven by light from a 350-watt bulb. The transparent quartz head permits passage of the light directly into the engine with very small heat loss.

The annual Design Engineering Show picked a fertile locale this year, and harvested a standard crop of products

Although the "breakthrough" has become a standard designation for new products, it was difficult to pick out any truly new developments in the 1961 Design Engineering Show held in Detroit's Cobo Hall in late May. For the most part, the exhibiting manufacturers, small and large, were content to display modifications or amendments to their standard lines. Nevertheless the designer looking for new tools and techniques to apply to the problems of appearance design could find some noteworthy material. The most relevant contributions were in products that improved function or made assembly easier. In addition, several interesting decorative processes were shown.

Plastics did not dominate the show by any means, yet curiously, they popped up in many of the exhibits most worthwhile for designers. Du Pont showed a class of unique spring devices made from Mylar film. The springs are functional over a wider range of elongation than are most metals—pound for pound, they will provide three times as much spring action as steel and



eight times as much as copper. And, of course, they are non-conductive, resistant to most corrosive conditions, and lightweight. An accordion-pleated sheet spring, made from Mylar, has already been used as a closure between air conditioner sets and window edges; other applications might be as room dividers, rollerless window shades, suspension packaging, and shock-absorbing straps. Du Pont also made the first public demonstration of the new cementable Teflon FEP film, which may be anchored with common adhesives to a wide variety of engineering materials including metals, elastomers, fabrics, and other plastics.

Minnesota Mining and Manufacturing introduced a film adhesive, designated AF-110, which eliminates the need for elaborate or expensive jigs and fixtures for applying pressure during curing, thus making the adhesive applicable to fast production bonding operations. The adhesive is particularly formulated for metal-to-metal bonding and metal honeycomb sandwich construction.

Union Carbide demonstrated vinyl-coated fabrics by Haartz Auto Fabrics Company of Boston that were produced by extrusion coating rather than knife and roller coating, the conventional methods. Advantages of the new technique are said to be lower cost, elimination of the strike-through problem, little or no shrinkage, and better mixing of pigments and fillers, thereby raising the weather resistance of the fabrics.

Hexcel Products, Berkeley, California, explained how plastic tooling costs could be cut as much as 75 per cent by replacing solid laminates with lightweight, rigid aluminum honeycomb cores. For example, a specific tool, which normally might require 25 to 50 plys of laminating cloth to build, could be fabricated more cheaply and quickly by applying three plys of glass cloth impregnated with epoxy resin to each side of a one-half inch aluminum honeycomb.

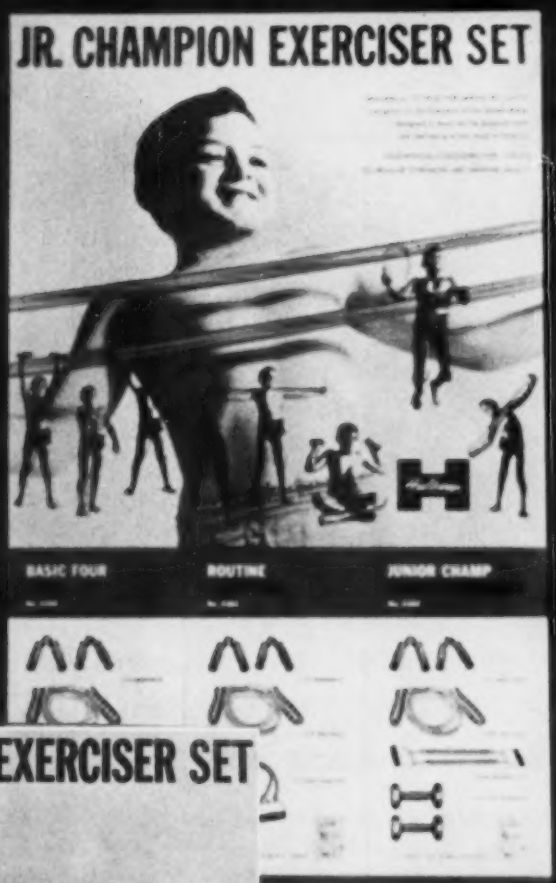
Alcoa, taking a nod from the steel companies, showed a new laminate of aluminum sheet and vinyl film for decorative applications. The material, trademarked Alcoa Vynalate, is available with an extensive range of coatings, embossed and printed with up to five colors.

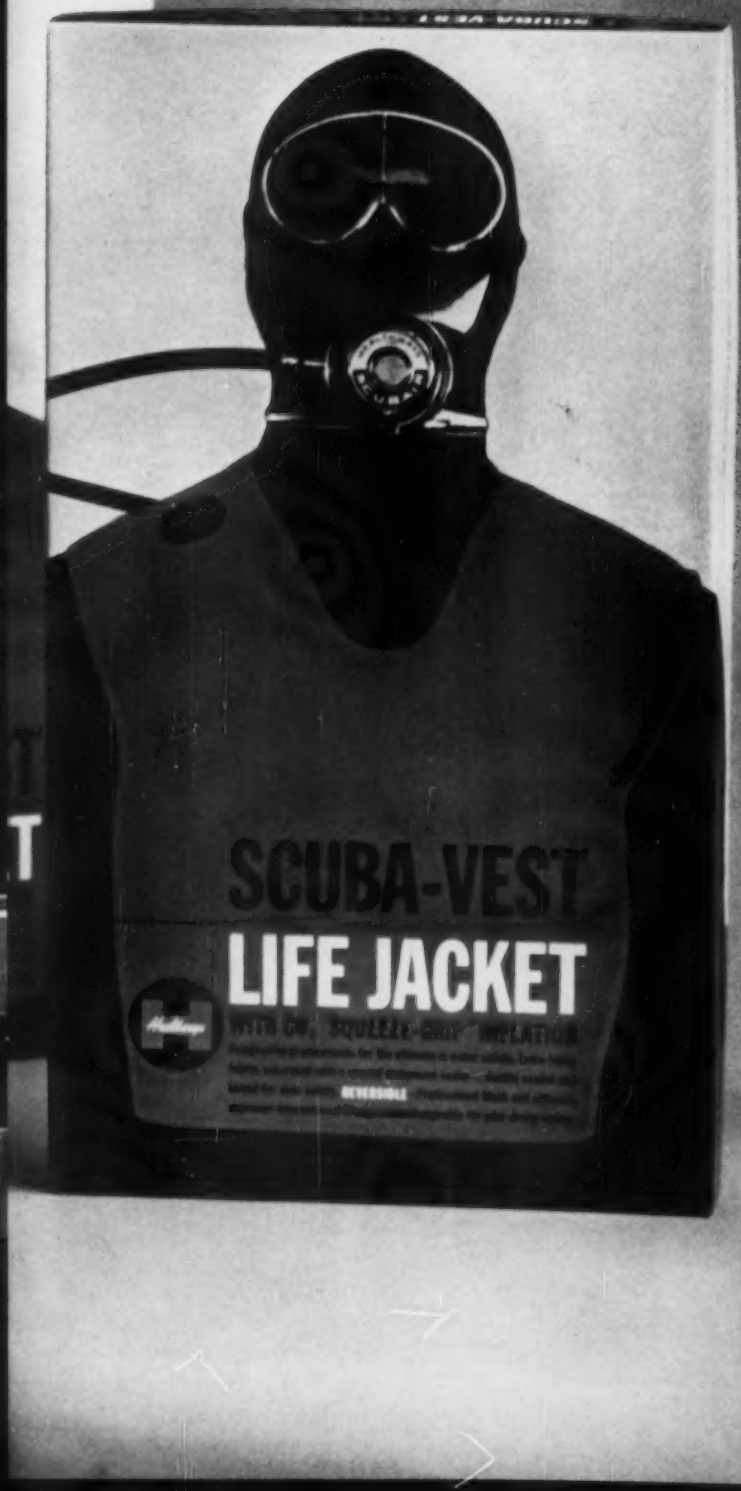
Among the new fastening devices that stood out was Standard Pressed Steel's self-aligning locknut, which holds at full strength even though the surface against which it is placed is as much as eight degrees out of perpendicular to its shank. This is accomplished by rounding the bottom of the locknut so that it swivels within the spherical seat of a precision alignment washer, set against the eccentric surface. The Ferry Cap and Screw Company, Cleveland, Ohio, displayed an externally wrenched screw for use in counterbored holes to replace the conventional internally wrenched screw. Gripping the outside of the screw head instead of the inside means that you can get much better leverage and there is no hole in the center of the screw head to spoil appearance.

U. S. Plywood showed their Glasweld wall material and stressed its application for interior walls where dust-free conditions are important, such as in hospitals and industrial cleaning rooms. Glasweld is an all-mineral-enameled, asbestos-cement panel that does not build up static and thus does not collect dust.

One of the most intriguing devices at the show was at the Battelle Memorial Institute booth. It was an operating model of a solar engine that converts solar energy into reciprocating or rotary motion; in the indoor demonstration a 350-watt light bulb was substituted for the sun. Known as the Stirling engine, it was invented almost 150 years ago to convert coal heat into mechanical energy. However, when the internal combustion engine was developed it was forgotten. Renewed interest is directly related to the current search for ways to use the energy of the sun and nuclear heat sources. Potential applications might be found in satellite auxiliary power sources, or perhaps in converting the sun's rays into mechanical power for irrigation.

PACKAGING *for muscle-builders and skin divers*





1-2

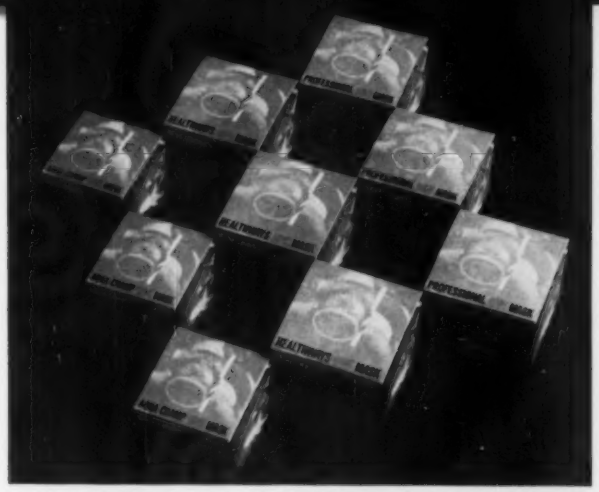
SPORTING PROPOSITION

A West Coast office brings keen marketing ideas to bear on packages that, for one client, nearly doubled sales

Every package-designer-turned-Walter-Mitty dreams of boasting, "Sales jumped 50 per cent when we redesigned their packages!" But in the case of the Healthways account of a young Los Angeles design outfit it turns out to be true. When Healthways invited Porter & Goodman Design Associates to consult with them on packaging problems in late 1958, their line of sporting goods had grown, since the company's establishment in 1944, from bar-bells and body-building equipment to skin and scuba diving items, rubber boats and mattresses, golf accessories, and exercisers. Healthways' packaging problem was a common one: how to impart a strong Healthways identity to each of some 65 packages yet distinguish one proliferating product line from another. Healthways' aim was also a common one: to boost sales. What is uncommon is the extent to which handsome design has paid off in terms of increased sales. Discarding Stillman's gym for Vic Tanney's, P&G reached a new middle-class market.

The trademark was the first Healthways packaging

Healthway's packaging program utilizes corrugated containers (1, 2, 4); folding boxes (3, 5, and preceding page); plastic bottles (6). Graphics show either products in use or trademark.



HEALTHWAYS PHOTOS BY ROBERT FISHER

3-4

problem that P&G tackled. David Goodman, who is in charge of the program, decided to retain the script logo that the company had been using, but to set it in a big, bold "H" whose simplicity makes it easy to recognize and remember. After Healthways accepted the new trademark, Porter & Goodman began a systematic evaluation of structure and materials on all packaging. By actually eliminating some package sizes and substituting more sensible materials for others, they have achieved substantial savings for Healthways. For example, the company was marketing inflatable goods in nearly 20 sizes and shapes in two qualities for a total of 40 different paperboard packages. P&G discarded the boxes in favor of a polyethylene bag which fits every size in the line (a deep side vent accommodates it to the larger rubber rafts). For the heavy gym bar, (top, left) Goodman substituted a corrugated container for the less sturdy folding box. And he transferred Rubber Dust (right), a skin diving product used near the water, to a plastic bottle to eliminate the rust that tended to form around the metal closure of the previous container. P&G also economized by consolidating package sizes. All eight of the company's dive masks (above) now go into boxes of two sizes instead of the previous four sizes. Altogether Goodman specifies nearly every type of packaging—folding and set-up boxes, corrugated containers, film bags, plastic bottles, and metal cans—each tailored to the specific needs of Healthways' products and each color coded to designate one of four product lines.

In printing, P&G have cut packaging costs as much as 50 per cent for some items. The dive mask packages, for example, are printed with the same plates, different shades designating different models. With Coronado Foam Neoprene Suit and Suit Kit packages (left) P&G keep printing plates to a minimum yet clearly distinguish one package from the other simply by changing the color on the background plate from blue for the suit to green for the suit kit, and by making a single alteration in type. For many of the packages, end-panel size and quality charts eliminate the need for printing changes on any of the other panels.

Advertising and point-of-sale displays have also come within the scope of Porter & Goodman's work for Healthways. Because of the company's $230,000 investment in repackaging, they decided to allocate only

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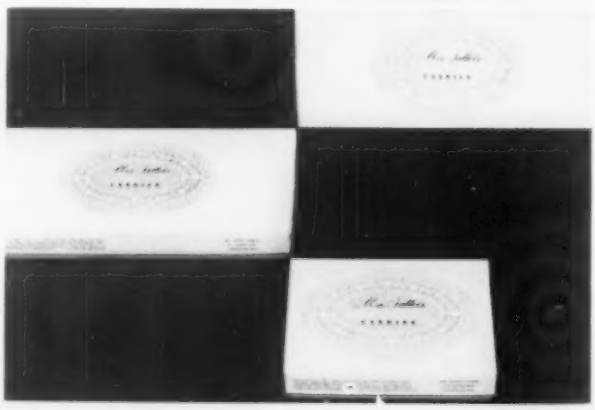


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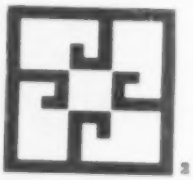
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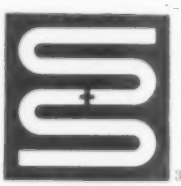
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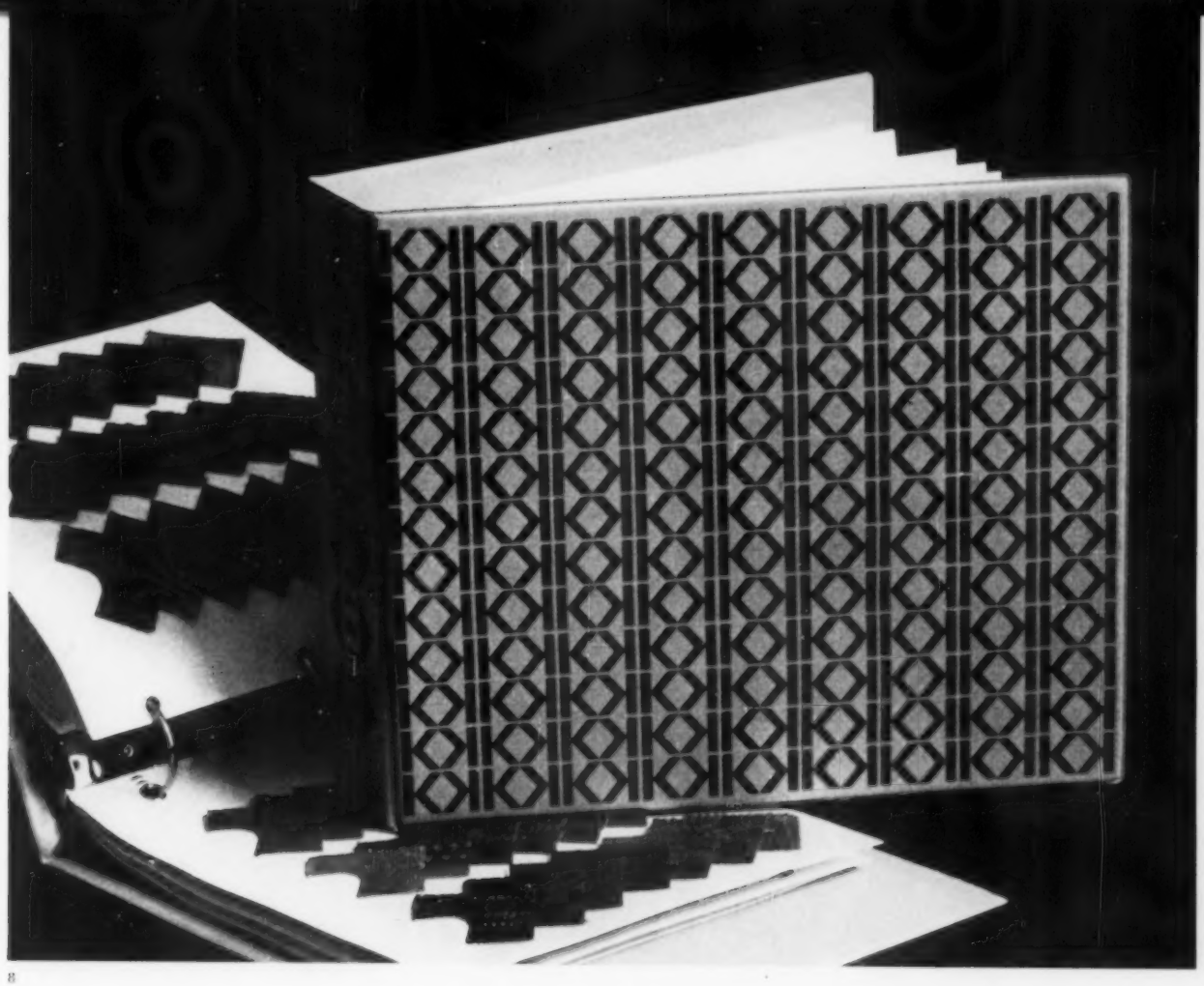
$35,000 for advertising. Then, working within this budget, they agreed to push the potentially popular skin and scuba diving line through *Skin Diver* magazine. The four color ads that P&G developed are also used for actual-size direct mailings and in poster-size store displays. Here again, P&G holds down costs by using the same color plates for several functions.

By the middle of 1960 Healthways was able to report that sales for its skin diving equipment had shot up 30 per cent. But Porter & Goodman are possibly more pleased with the sales increases for the exercise equipment line. They point out that although neither the products nor the prices have changed, sales on this line doubled after repackaging—*without* a company advertising campaign.

If Healthways is the most comprehensive of the P&G accounts, it by no means takes in the full range of their activities. Other clients of the young (four-year-old) partnership include furniture, toy, and appliance manufacturers, as well as museums, hotels, and architects. "The scope of our work," they say, "takes in almost every visual communications area." This means a considerable amount of work in trademarks, catalogs, exhibitions, posters, ads, and architectural graphics. A miscellany of these appears opposite.—*A.F.*



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Packaging and graphics for other Porter & Goodman clients include trademarks for Palmer & Krisel, architectural firm (1), Joseph Jordan, architect (2), Stone & Stone, developers and builders (3); packaging and trademark for Dashew Business Machines (4, 5, 10); packaging for Juniors, Inc. (6), Mrs. Sutter's Candies (7); kiosk for Allen Pharmacy (9); and corporate identity program for Kasparians, furniture manufacturer (8 and 11).

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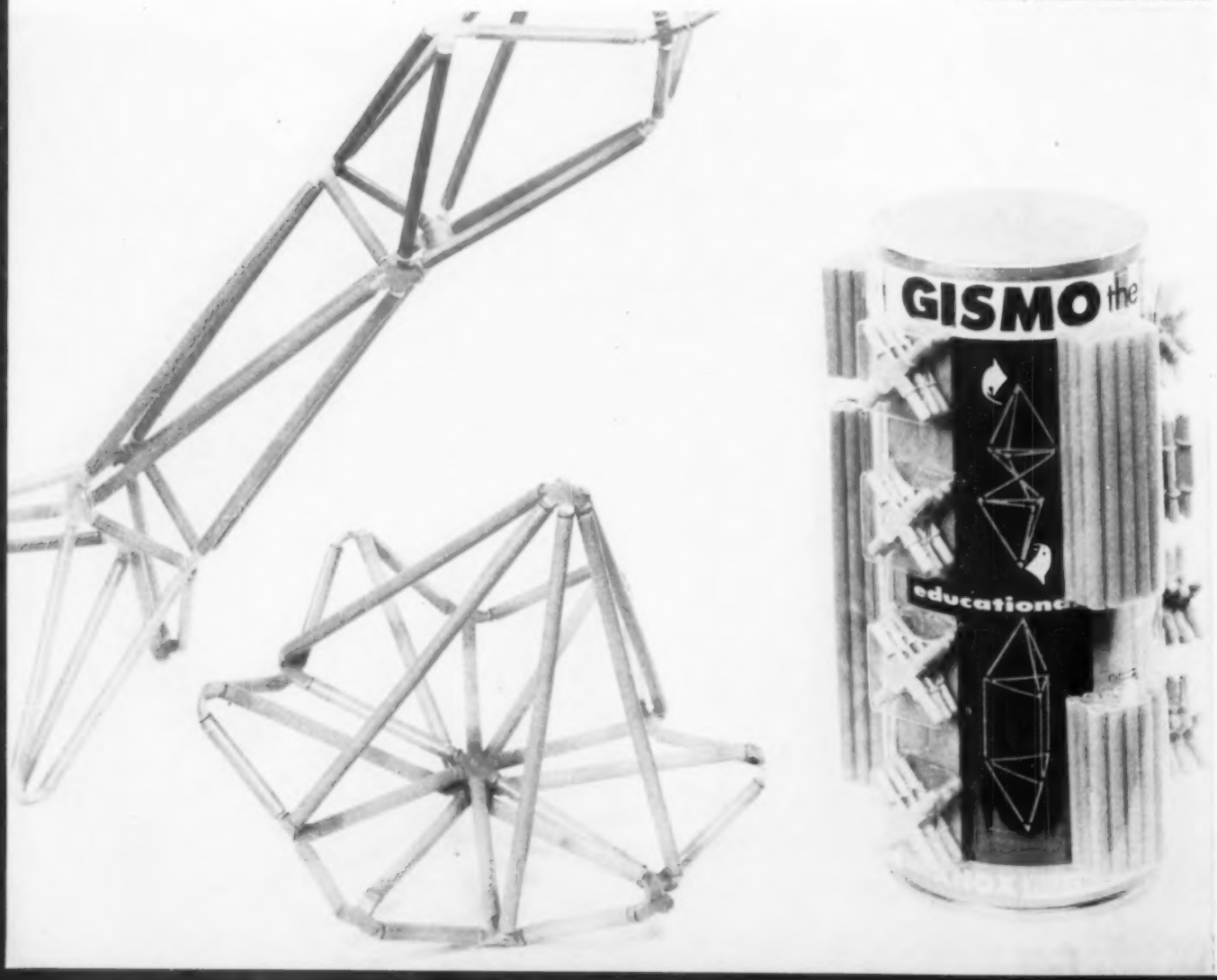
11

DESIGN REVIEW *Toys*

American megalomania has hit toyland with giant building blocks, towering stuffed animals, and dolls the size of four-year-olds. Favored subjects, popularized by tv, politics, or the calendar, are Huckleberry Hound, dinosaurs, outer space and the Civil War. Following a real-life predicament, the HO railroads are meeting tough competition from the automobile and the newest craze is model highways, streets, and racing tracks. Water toys abound, spawned by the backyard swimming pool and a new unsinkable, punctureproof material—closed-cell polyethelene foam. Educational toys, still reacting to the Russian challenge, concentrate on the physical sciences (see ID March, April '61) at the expense perhaps of the arts or social sciences, although Playskool's Village and Comic Corner claim to acquaint even the three-year-old with the rudiments of city planning and traffic problems.

1—Gismo, William Knox Products



2—Comic Corner, Playskool

3—Playskool Village, Playskool

4—Chancellorsville, Avalon Hill

5—Captain Kangaroo, Colorforms

6—Notchies, Halsam Products

PHOTOS 2, 3, 6 COURTESY TOY GUIDANCE COUNCIL

Construction and board games

1—Knox "Gismo" resembles a Buckminster Fuller construction. The parts are made of pliable plastic; hollow tubes fit various types of joints, and the final product can bend and change shape.
Designer: William Knox

2—Playskool "Comic Corner", a pre-school game, familiarizes the child with a street corner environment: the traffic light, hydrant, lamppost and corner gang. Parts are stored in Playskool house.
Designer: Playskool staff

3—Playskool "Village" is a modern and much more elaborate version of the old "Village" bag. The canvas layout has a basic street plan, but the rest is left to the child's whimsy or sense of social order. Package weighs 10 pounds and contains over a hundred pieces: roofs, steeples, first floors, second floors, trees, etc.
Designer: Playskool staff

4—Avalon Hill "Chancellorsville," inspired by the Civil War centennial, has a unique grid system using hexagonals instead of squares. Players can move in six directions covering the same amount of ground, thus eliminating the unfair advantage of the diagonal move.
Designer: Charles S. Roberts, Bernard C. Schramm

5—Colorforms "Captain Kangaroo" is a "complete the picture" game. Missing objects are dialed and corresponding vinyl pieces are placed on laminated board. They adhere but are reusable.
Designer: Jerome Kuhl

6—Halsam "Notchies" are wooden blocks with intricate tongue-and-grooves so that they interlock lengthwise or crosswise.
Designer: Halsam staff

1—Tramplette, American Transistor Toy

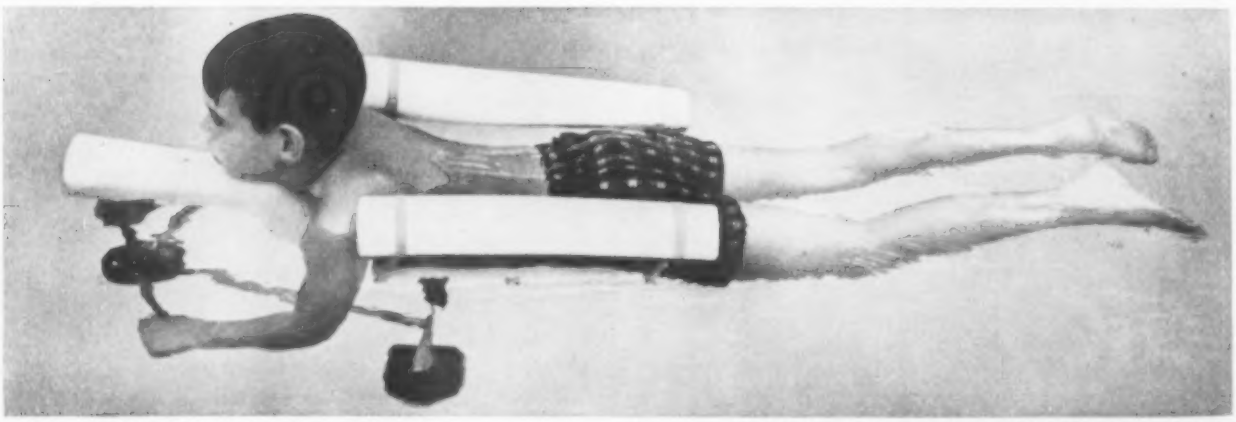
2—Inflatable dinosaur, Kestral

Water and locomotion

1—American Transistor Toy "Billy the Bounce" is an ingeniously simple canvas cover which converts a regular inner tube into "tramplette" to be used indoors or in the water.
Designer: Charles Smith

2—Kestral ferocious "Paddlepuss" takes the current rage for dinosaurs back into the watery world dinosaurs came from. Made of vinyl, he is 47 inches long, 25 inches high—large enough to make you sit up and take note.
Designer: William Desjarlais

3—Argo's "Water Jet," one of many contraptions flooding the swimming market, is made of closed-cell polyethelene foam and aluminum. Bather moves by turning handles which operate side propellers.
Designer: Bob Gottlieb



3—Water Jet, Argo Industries

4—Chanal walking dolls stand 40 inches high, and wear the clothes of a four-year-old. Legs and torsos are made of light blow-molded Petrothene polyethelene, making the dolls maneuverable despite size.
Designer: Staff of Plated Moulds, Inc.

5—Structo "Ready Mix" concrete truck has a drum which turns as the truck moves, makes mixing noises, and raises to unload. Made of steel and plastic.
Designer: Structo staff

6—Aurora Plastics HO "Model Motoring" has 2 1/2-inch cars made of plastic and four lane track with nickel silver conductor strips. Each track has a speed control with scale speeds up to 120 mph.
Designer: Aurora staff

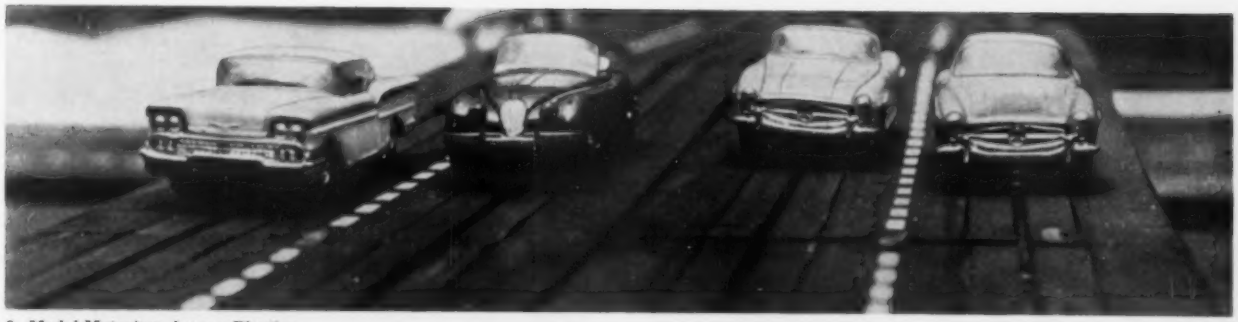
7—Sekur-All "Super Skates" eliminate straps, sole clamps, and skate key. Steel skate has a knob for length adjustment and toe piece has additional spring to hold shoe firmly in place.
Designer: Robert Goodman

8—Rempel rocking horse is made of natural soft latex covered with urethane. Metal stand prevents bucking, floor wear, and noise.
Designer: D. G. Rempel

4—Walking dolls, Chanal Plastics

5—Ready Mix concrete truck, Structo

PHOTO COURTESY TOY GUIDANCE COUNCIL

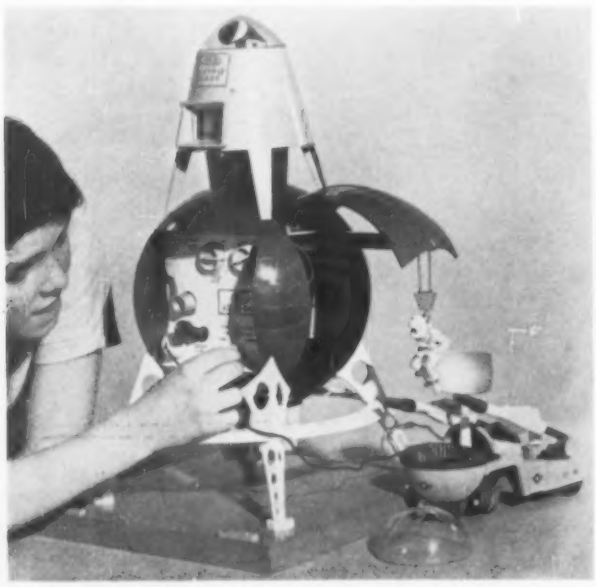


6—Model Motoring, Aurora Plastics

7—Super Skates, Sekur-All

8—Flying Cloud, Rempel

1—Tic Toy Clock, Hubley



2—Astro Base, Ideal

Science and science fiction

1—Hubley "Tic Toy Clock" is made of plastic parts color-keyed for easy assembly. Driven by a spring, it will operate continuously for 14 hours and gives a rough idea of how a clock works.
Designer: Marvin Glass

2—Ideal "Astro Base" opens, ejects a space man and parts of a space car by means of derrick, operates the car by remote control, fires rockets, flashes lights, and makes appropriate noises. A radar antenna revolves on top, and, on the rotating screen below, the child can take aim at imaginary target.
Designer: Ideal staff

3—Ideal "Mr. Machine," the epitome of the industrial revolution, is concocted of plastic parts, screws, and gears numbered for construction. When wound up it walks, swings its arms, rings a bell, opens and closes its mouth, and sounds a siren every 15 seconds.
Designer: Marvin Glass

PHOTOS COURTESY TOY GUIDANCE COUNCIL

3—Mr. Machine, Ideal

4—Scoot Air Car, Victor Stanzel

4—Victor Stanzel "Scoot Air Car" travels over hard surfaces or water on a cushion of air, demonstrating one of the more recent methods of travel. Made of red and yellow plastic and operated by battery.
Designer: Stanzel staff

5—Infrared "Astro Phone" is one of several walkie-talkies that have come out this year. This one sends messages via light rays and can be used by two people anywhere within line of sight. The high impact styrene case is red and aqua with grey trim.
Designer: Gunther Kleeberg

6—Ideal "Robot Commando" is a tank-like monster that moves, fires rockets and missiles by voice control. Made of high-impact styrene and powered by a flashlight battery.
Designer: Marvin Glass

5—Astro Phone, Infrared Industries

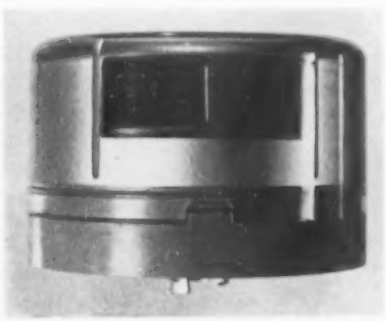
6—Robot Commando, Ideal

Redesigned photoelectric control

Better photoelectric control

New control is speedier and more efficient than existing units; utilizes simplified components

A photoelectric control with a very rapid response time has been introduced for the control of outdoor lighting applications. Because of its speed of response, the control is not intended for use where extended time delay is desired. The control unit consists of a cadmium-sulphide photoelectric cell combined with a new, simplified printed circuit and a minimum of electrical components that, according to the manufacturer, assure trouble-free operation. The control has an externally adjustable shield for light level setting; it is capable of switching up to a 1,000 watts incandescent or 1,800 volt-amperes mercury vapor or fluorescent load. *Manufacturer: General Electric Company, Schenectady, N. Y.*



Photoelectric control assembled

Versatile new chemical

Recently developed chemical offers unusually wide range of industrial applications

A versatile new chemical, introduced in developmental quantities, promises to have an extremely wide range of industrial uses. Trademarked Baymal, it is a white, free-flowing powder consisting of clusters of minute fibrils of boehmite alumina (AlOOH) and small traces of other chemicals. The fibrils are so small that if one pound of them were laid end to end, they would make 25 round trips to the sun.

Used in various forms, potential applications for Baymal include: making synthetic fabrics stain and moisture resistant and improving their dyeability; binding color pigments in water-based paints so that the paint can be sprayed on almost any surface without smearing or dripping; increasing heat resistance of many materials such as firebrick by as much as 500 degrees; and, in cosmetics, as an anti-perspirant and for improving the smoothness of lotions and creams. Furthermore, Baymal can be made hard enough to machine steel and glass. *Manufacturer: Du Pont de Nemours and Company, Wilmington, Del.*

New film-forming resin

Plastic resin forms temporary protective coating; resists boiling water, yet washes off

Development and production of a new resin that forms a clear protective coating on a variety of products has been announced. It is called Carboset 511, and is an acrylic that resists boiling water, yet can be removed easily with soap and water. The manufacturer expects it to be used in such products as hair spray and paper coatings, and as a temporary protective film for highly polished metal sheet, precision engine parts, metal toys, mirrors, and metal furniture during assembly and shipment. *Manufacturer: B. F. Goodrich Chemical Company, Cleveland, Ohio.*

Improved paperboard

Plastic-coated paperboard offers economy and high resistance to moisture, grease, solvents; wide packaging applications forecast

An economical method of obtaining superior resistance properties on paperboard has been developed, enabling paper to compete in packaging applications heretofore limited to plastic, metal, and glass. The extension of properties is made possible by using polyvinylidene chloride in a relatively thin, hence inexpensive, film. The coating, trademarked Daran, has high moisture resistance and can be scored and folded as waxed paperboard cannot; it provides better abrasion resistance than polyethylene. In addition, its high impermeability to grease, gases,

and chemicals gives paperboard a property that could be had heretofore only with more expensive laminates.

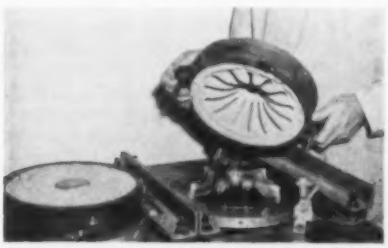
In many applications the coating is less expensive than glassine or greaseproofing. It is cheaper than polyethylene because it is laid down in a thinner film weight. Initial production is expected to be limited to bakery boxes, meat trays, and picnic plates and cups. Other potential applications in the food industry include packages for dehydrated soups, fresh and frozen foods, mustard, syrups, and milk. For general industrial use, the range is from motor oils to cement, fertilizer, seed, chemicals, and pharmaceuticals. The manufacturer claims that for all of these applications Daran will save money and do a better job than comparable materials. *Manufacturer: Potlatch Forests, Inc., Lewiston, Idaho.*

High production casting

Reclaimable ceramic-faced sand mold permits automating casting production, cuts costs

A new mold-making development permits the mass production of high-quality, high-precision metal castings at costs said to be competitive with the simplest of foundry techniques. The new process is an improvement of the Shaw process (see ID, January 1960, page 41), which has been used for specialty precision casting.

The central feature of the new process is a composite mold consisting of a low-cost sand backing with a special ceramic facing, both reclaimable, which substitutes for the solid ceramic mold previously used. With the solid mold, the baking step required as much as four to five hours to remove all the volatiles; however, since the new composite mold has only a thin ceramic facing layer, it can be dried out in less than five minutes.



Mold is lifted off pattern

To take advantage of this substantial time saving, Shaw process engineers have developed an automatic molding machine that will produce molds at the rate of 120 per hour. As a result, it is claimed that Shaw molds, with their smoothness of surface and accuracy of dimension, can be produced for less cost than conventional sand molds. The manufacturer believes that the process will be able to compete economically with die casting, without the alloy, size and design limitations of die casting. *Manufacturer: Shaw Process Division, Avnet Electronics Company, Port Washington, N. Y.*

High-strength carton

Chemically-rigidized corrugated board cartons withstand extremely heavy loads

A heavy-duty tote box has been developed that supports a load up to 200 times its own weight. This great strength is achieved by chemically rigidizing a double-wall corrugated board structure and reinforcing the rims. The one-half cubic foot box weighs four pounds and costs $1.25. It is produced in various box styles including stacking, vertical-sided, bin front, hopper front, and nesting. *Manufacturer: Convoy Inc., Canton, Ohio.*

Two cartons support car front

Machines that talk

Computer uses information from punched cards to synthesize speech; it sings too

A computer can now be programmed to accept phonetic speech sounds from punched cards, process it, and synthesize intelligible speech or song. Although the first sounds are said to be slightly "mechanical," further refinements of the computer program are expected to result in sounds indistinguishable from human speech. Sound comes out of the computer in the form of a digital magnetic tape which is then converted into a magnetic sound track for playing on an ordinary tape recorder. Costs are quite high, however, because it takes up to 25 minutes of computer time to produce one minute of synthetic speech.

Research in speech synthesis is being undertaken to devise ways of transmitting spoken information more efficiently over communications systems. Thus, in the future, it may be possible for a person sitting at a keyboard to operate a talking machine across the country. Or a blind person may be able to have a machine read to him from books which have been previously encoded on punched tape. Another possibility is a typing-actuated talking machine for mute people. *Manufacturer: Bell Telephone Laboratories, New York, N. Y.*

Built-in graphics

Glass fiber-reinforced polyester sheet carries integral custom message or decoration

A rigid, glass fiber-reinforced polyester sheet is being marketed with a custom graphic element as an integral part of the material. Designated Patnel, the material is suggested for parts that carry a communication, either decorative or literal, such as direction signs, operating tables, warnings, and trademarks. Patnel is not surface printed and is not laminated; the graphics are formed at once with the stock. It is custom made and can be formulated to meet specific customer's requirements for size, thickness, rigidity, and other physical properties. *Manufacturer: Kemlite Corporation, Joliet, Illinois.*

Adhesive-back asbestos tape

New tape available for industrial applications where asbestos is needed for assembling purposes

Asbestos tape with a pressure-sensitive adhesive backing is now available for industrial assembling applications. Called Besto-Tak, the product may be used for services up to 500 degrees F. in commercial grades and up to 900 degrees F. in other grades. Its use in unsupported structures, however, is limited to 275 degrees F., the point at which the adhesive begins to lose strength. It is marketed in various thicknesses and lengths in widths from ⅜ to 6 inches. *Manufacturer: Johns-Manville, Backings and Textile Division, New York, N. Y.*

Burlap wall covering

Burlap fabrics now come with pre-pasted paper backing for easy installation

Installing burlap fabric on walls for decorative purposes has been simplified by adhering a pre-pasted paper to the

back of the burlap. The paper-backed burlap is hung simply by wetting it and pressing it against the wall. The wet burlap slides on the wall for easy handling and matching of edges, and requires no additional coating underneath.

Trademarked Burlon, the fabric is available in eight different colors, and is specially processed to assure odorlessness. It retails for $2.50 per yard, and is supplied in 25 and 50 yard rolls, 37½ inches wide. *Manufacturer: Van Arden Fabrics Company, Inc., New York.*

Aluminum foil protection

Transparent coatings protect colored foils from fading caused by sunlight, chemicals, alcohol

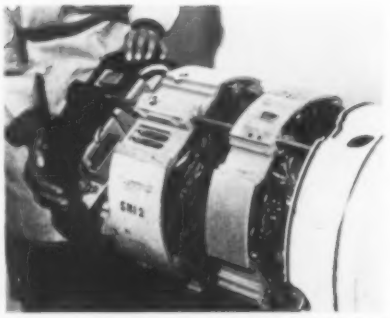
The problem of maintaining the lustrous colors of colored aluminum foils in the presence of sunlight and chemicals is said to yield to a new line of transparent coatings, trademarked Stromisets. The pre-coated foil is available in a wide color range. So far, Stromiset-coated foil has been used primarily in tiny precision-cut chips embedded in other materials for floor coverings, outdoor displays, greeting cards, and decorative tile. Cutting the coated foil is said not to disturb the bond; likewise, creasing and other forming operations are also reported not to affect the bond. *Manufacturer: Revere Copper and Brass, Inc., New York, N. Y.*

Missile electronics packaging

Wheel-shaped packages provide functional nutshell for components, serve as integral part of airframe

Missile electronics components are now being fitted into wheel-like packages which conform to the shape of the cylindrical missile. The wheel package provides a functional nutshell for the components and is also a strong and integral part of the missile structure: the stacked wheels constitute the entire airframe of the electronics section, requiring no additional support structures.

Early missile airframes were constructed like those of airplanes—a hollow shell to enclose and support the various chassis required to house subassemblies. The chassis had to be strong enough not only to support the electronic components against acceleration load during take-off, but also to resist the effects of vibration. Access doors, requiring cut-



Missile packaging

outs in the airframe structure and extra reinforcements, were needed for installation, removal, and servicing of the enclosed components. There was also wasted space between the individual modules and between the modules and the missile airframe.

The wheel design concept eliminates all this. It also offers significant reductions in weight and size, increased structural rigidity, and ease of production, because the basic structure of the wheels can be identical. The wheel packages are supported by four tension bolts extending through the entire electronic section. Alignment is facilitated by guide holes and shear pins on each wheel. *Manufacturer: Convair Division, General Dynamics Corporation, Pomona, Calif.*

Square fluorescent lamp

Fluorescent light now available in square panel with face plate in waffle-pattern configuration

Previously supplied only in point, linear, and circular light sources, fluorescent light now comes in a new square panel design. The lamp is designed to fit into a module 12 inches square, and can be used singly or in groups in built-in, surface-mounted, suspended, and free-standing applications. The face plate has a waffle-pattern configuration with one and three-quarter inch squares. These facilitate use of the lamp in fixtures with louvers of an identical grid spacing for control of the light. The face plate also diffuses the light, concealing the path of the arc. Terminal connections are positioned behind an outer rim at adjacent corners, and are entirely within the overall depth and other dimensions of the panel.

The lamp is made by molding two individual squares of glass; one serves as a configurated face plate, and the other as a trough which loops back and forth six times across the lamp, and contains a five-foot-long arc path.

The lamp is designed to operate at either 80 or 50 watts. At 80 watts, it emits 10 per cent more light than four conventional 20-watt fluorescent lamps. The rated life of the lamp is 7500 hours; it costs $6.95. *Manufacturer: General Electric, Large Lamp Division, Cleveland, Ohio.*

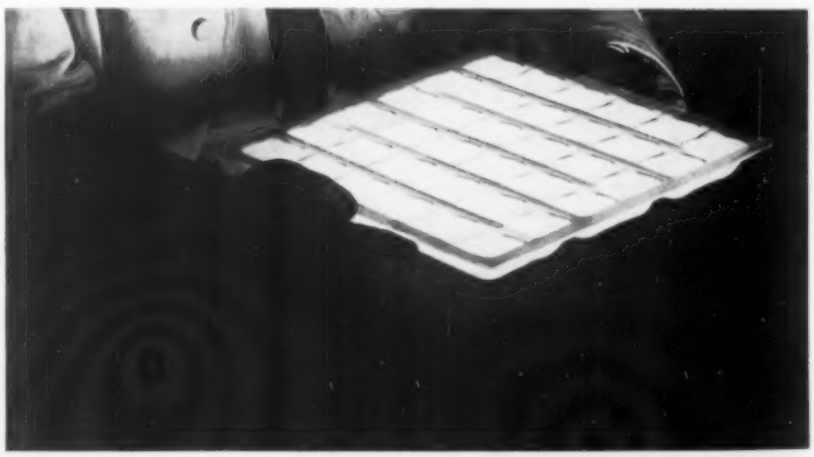
Slide projector with built-in sound

Slidefilm programs can now be produced with sound derived directly from the filmstrip

Instead of using a separate source such as magnetic tape or disc recording for the sound portions of a sound slidefilm program, a new system has been devel-

Slide and sound projector

oped that puts the sound directly on the filmstrip. The sound for each picture frame is recorded photographically on the adjacent frame. As each picture is projected on the screen, its related sound



New square fluorescent lamp

message is scanned optically and reproduced through a built-in amplifier and speaker. Each sound message can be up to 18 seconds long, and at the end of each message advances automatically to the next picture and sound frame.

The projector is called Soundstrip. It includes features that permit the operator to interrupt the program at the end of any recorded message to add further comments, or to repeat any picture frame and its related message. It is also possible to skip portions of the film not required at the time of showing. It can also be used to show existing single-frame filmstrips.

A program can be produced from existing sound slidefilm visuals and recordings as well as from newly created program materials. Sound strip works by using a special optical recorder to transfer sound onto a 35 mm film negative which is then printed in combination with the picture frame. *Manufacturer: Kalart Company, Plainville, Conn.*

New ethylene plastic

Material offers unique combination of properties that should solve some current plastics problems

A new ethylene plastic compound is said to equal rubber in flex-cracking resistance, and polyethylene in resiliency and elongation. The compound is easily injection molded, blow molded, and extruded in conventional equipment, and it contains no plasticizer, which suggests applications where conventional plasticized vinyl materials cause problems of paint lifting off adjacent surfaces or of fogging of glass surfaces in the vicinity of the vinyl.

Other applications for the product, designated Bakelite DPDB-6169, include industrial bellows, diaphragm pumps, moldings, gasketings, and thin-walled or inflatable toys. *Manufacturer: Union Carbide Plastics Co., New York, N. Y.*

Mobile cargo lifter

Highly maneuverable cargo lifter operates on pneumatic rubber tires; lifts 70,000 pounds

A cargo lifter, now in service in Alaska, is reported to be the largest and most mobile vehicle of its type operated on pneumatic rubber tires. With a load capacity of 70,000 pounds, the unit is being used to load and off-load cargo containers from ship-side to storage and from storage to flat cars and highway trucks. One man, seated as driver in the cab, handles the complete operation. The fork carriage can be rotated 12 degrees back and 90 degrees down from vertical, and it can lift cargo to a height of 17 feet enabling it to store loaded containers two units high. Its forward reach at ground level is just over six feet. The unit has an 11-foot wheelbase and is 12 feet 2 inches high. *Manufacturer: Transitier Truck Co., Portland, Ore.*

Cargo lifter

Lining for reservoir

Huge sheet of plastic, fabricated to exact size in one piece, used to line raw-earth reservoir

The largest sheet of aluminum-coated polyvinyl plastic material ever fabricated into one piece for industrial use went into service recently as the water-tight lining in a surge pond for a copper mining operation in Arizona. Construction of reservoirs by lining excavations in the earth with plastic sheets is becoming a widely used method; in this instance, it provided a cost saving of $24,000 over other methods.


Building a reservoir

The surge pond installation covers 36,500 square feet—nearly one acre—and is used to hold a dilute solution of sulfuric acid, copper sulphate, and water. Total installation time for the lining was about four hours, representing a tremendous saving of time over other reservoir lining methods. The accordion-folded sheet was delivered to the site and laid down along the middle length of the reservoir; the outside edges were then picked up and walked to the side of the excavation. *Manufacturer: Polyvinyl material was manufactured by B. F. Goodrich Industrial Products Company; fabricator was Globe Linings, Inc., Long Beach, Calif.*

Reading numerical tapes with air

Numerical control tapes for metal-working machines now read by air pressure rather than electronics

A new type of numerical control tape reading system for automating machine tools is now commercially available. Called Hydra-Point, the system requires no complicated electronic controls common to conventional tape reading devices; instead, it uses air pressure to read punched tape, and hydraulic pressure to position the actuators that move the work table. Advantages of the new system, the first of its kind, are said to be simplicity of design and maintenance (practically maintenance-free operation is claimed), speed of operation, and low cost.

It can position the work table at speeds of from 350 to 700 inches per minute with an accuracy of plus or minus .0005 inch. Hydra-Point is presently being sold with the Bridgeport milling machine; it may also be used on existing drilling, tapping, and boring machines. *Manufacturer: Moog Servocontrols, Inc., East Aurora, N. Y.*

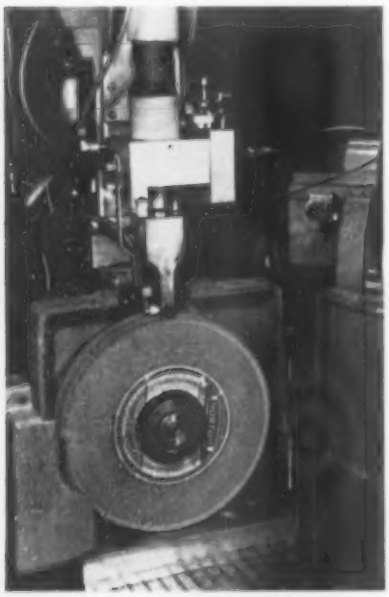
Longer life for grinders

Ultrasonic energy prevents buildup of metallic debris on grinding wheels; reduces wheel wear, cuts operating costs

Ultrasonic energy, familiar in the cleaning of delicate electronic parts and also used to drill teeth and to seal plastic films and sheets together, is now being used in the metal grinding industry to prevent metallic debris from building up on the grinding wheel.

Contrary to popular belief, grinding wheels do not wear down. Actually, their limits are reached when the material being ground fills up the spaces between the abrasive grit. When this happens, the wheel becomes smooth, and loses its cutting power and must be "re-dressed," a process that exposes a fresh and rough grinding surface. Use of ultrasonics substantially increases the productivity of the grinders by preventing them from loading up over long periods of time.

The ultrasonic energy is supplied from an accessory device which attaches to the production grinding equipment. Known as Ever-Grind, the device is said to reduce losses caused by down time as much as four to ten thousand dollars.



Protecting grinding wheels

Ever-Grind also permits use of harder grinding wheels, assuring a finer surface finish and greater dimensional stability.

The device consists of a transducer, to supply the ultrasonic vibrations, and an aluminum tool head attached to the transducer and positioned a few thousandths of an inch above the rotating grinding wheel. A liquid coolant flows in the gap between the two. The ultrasonic energy causes thousands of bubbles per second to form within the coolant which implode against the grinding wheel and blast off any debris caught between the abrasive grits. Ever-Grind has already been used by Remington Rand in the grinding of electric shaver heads and by Avco in the production of gas turbine engine parts. *Manufacturer: Cavitron Corporation, Long Island City, N. Y.*

Heavy-duty cushioning

Animal-hair-and-latex packaging material offers high energy-absorption capabilities

A cushioning material for packaging applications, made from permanently set curled animal hairs with a special latex binder, is said to have the highest energy absorption characteristics of any known cushioning medium including urethane foam, foam rubber, and molded rubberized curled hair. Trademarked X-Firm Super Hairflex, the product is claimed to have 65 per cent more efficiency than any other cushioning material. In addition to its high shock absorbency, the material is lightweight, durable, reusable, and moisture-, flame-, and fungus-resistant. It is available in sheet and special die cut forms, and can be fabricated to cushion products of various sizes, shapes, and weights. *Manufacturer: Cushioning Products Division, Armour Alliance Industries, Alliance, Ohio.*

Fuel cell

Experimental fuel cell, the size of a wrist watch, may point way to silent power applications

An experimental fuel cell, not much bigger than a man's wrist watch, uses sodium amalgam-chlorine for fuel and can produce an open circuit voltage of 3.3 volts. The device may have an important future in various military applications such as an emergency power source for missile bases or on submarines, according to the manufacturer. For its size, the cell is twice as powerful as the common flashlight battery. It

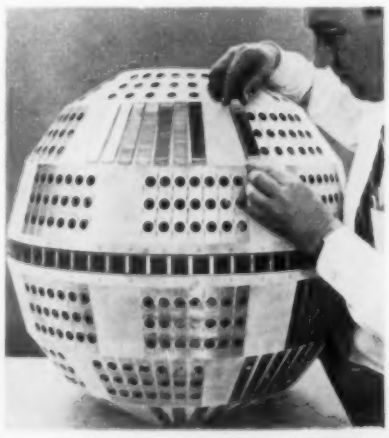
Experimental fuel cell

yields one watt of power and can operate indefinitely because it can be continuously recharged. *Manufacturer: Hoffman Electronics Corporation, Los Angeles, Calif.*

Communication satellite

Man-made sapphires to protect communications satellites from space meteorites, radiation

Thousands of pieces of man-made sapphire will cover the surface of the communications satellites now being developed by Bell Telephone Laboratories. The sapphires are expected to protect solar cells (which convert the energy of the sun to electrical energy) from the adverse effects of space radiation for as long as ten years. The advantages of sapphire are: it conveys heat, thus preventing the solar cells from being overheated in long periods of continuous sunlight; it overcomes the effects of very rapid and extreme changes of temperature in space; it resists erosion by micrometeorites. Furthermore, sapphire costs compete with functionally equivalent materials. *Manufacturer: Bell Telephone Laboratories, New York, N. Y.*



Sapphire-studded satellite

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

Materials—Metals

Coated steels. Sharon Steel Corporation, c/o Arthur Schmidt & Associates, 342 Madison Ave., New York 17, N. Y. Ill. Brochure presents industrial applications of Sharon coated strip steel including Galvanite, Bright Zinc, special alloy coat, electro-galvanized and painted and printed steel. Also included is information on forming, welding, soldering, cleaning, chemical treatment, and temper classifications of the various steels.

Patterns in steel. Sharon Steel Corporation, c/o Arthur Schmidt & Associates, 342 Madison Ave., New York 17, N. Y. 20 pp. Ill. Handbook contains complete information concerning sizes, pattern designs, product uses and fabrication of Sharonart, the surface-rolled patterning of steel.

Colored aluminum foil. Ekco-Alcoa Containers, Inc., Wheeling and Hintz Roads, Wheeling, Ill. Booklet contains 15 samples of decorative and protective color coatings currently available on company's line of foil containers.

Sintered titanium. Mechanical Research Division, Clevite Corporation, 540 E. 105 St., Cleveland 8, Ohio. 4 pp. Ill. Bulletin 100 presents basic design information and properties for sintered titanium. This material has a strength/weight ratio up to 300 per cent higher than stainless steel and offers a 200 per cent reduction in thermal expansion over aluminum, excellent environmental resistance, and prices competitive with other engineering materials.

Materials—Plastics

Epoxy laminate. Taylor Fibre Company, Norristown, Pa. Bulletin No. 51-5-20 gives property data on a new glass-base, epoxy laminated plastic that is said to combine self-extinguishing properties with high mechanical strength, good electrical properties, and high interlaminar bond strength. Called Fireban 600, the material is particularly useful for making printed circuits.

Polyethylene. Eastman Chemical Products, Kingsport, Tenn. Technical Report 5 describes a new weathering inhibitor which is said to prolong the life of unpigmented Tenite polyethylene used in film for greenhouse and agricultural applications.

Teflon stock shapes. Cadillac Plastic & Chemical Company, 15111 Second Blvd., Detroit 3, Mich. 8 pp. Ill. Catalog lists available shapes and sizes of Cadco Teflon plastic; properties and end-use applications are also described.

Methods

Reducing glare. Libbey-Owens-Ford Glass Company, 811 Madison Ave., Toledo 1, Ohio. 6 pp. Ill. Brochure contains information on special glass that helps reduce glare, brightness, and solar heat.

Pressure blasting. Norton Company, Worcester 6, Mass. Report describes pressure blasting with manufactured abrasives. Pressure blasting is a method of cleaning or preparing a surface by forcibly propelling a stream of blasting material at it, using either air or liquid as the propellant.

Precision investment castings. Midwest Precision Castings Company, 10703 Quincy Ave., Cleveland 6, Ohio. Ill. Booklet describes the investment casting process and discusses in detail many design principles as they apply to the process.

Dip brazing. Precision Dipbraze, Inc., 12031 Vose St., North Hollywood, Calif. 8 pp. Ill. Brochure describes dip-brazing, a method of joining numerous aluminum segments into a complex, or elaborate assembly. Also described are the factors that must be considered when designing a unit that is to be assembled by the dip-brazing method.

Plastic tools. Smooth-On Manufacturing Company, 570 Communipaw Ave., Jersey City 4, N. J. Technical bulletin describes a system of creating laminated tools that retain strength in continuous operation at temperatures up to 350 degrees F.

Custom forging. A. Finkl & Sons, 2011 N. Southport, Chicago 14, Ill. 4 pp. Ill. Bulletin 400 describes, step-by-step, the firm's forging production; e.g., a ram for a forging hammer.

Vacuum de-gassing steel. A. Finkl & Sons, 2011 N. Southport, Chicago 14, Ill. 4 pp. Ill. Bulletin 300 describes the vacuum de-gassing process which removes unwanted gases from molten steels.

Components and Machines

Area floodlighting. Crouse-Hinds Company, Syracuse 1, N. Y. 16 pp. Ill. Bulletin 2719 gives reference guides for selecting incandescent or mercury floodlights, and for determining how many floodlights are needed.

Portable electric tools. Porter-Cable Machine Company, Syracuse 1, N. Y. 34 pp. Ill. Catalog describes 72 portable electric tools for builders, carpenters, automotive shops, and home craftsmen. Tools include electric saws, sanders, drills, planes, routers, shapers, grinders, and garden equipment.

Thermoplastic processing. Modern Plastic Machinery Corporation, 64 Lakeview Ave., Clifton, N. J. 16 pp. Ill. Catalog describes features of thermoplastic processing equipment including extruders, roll-casting equipment, blow-molding machines, and other special equipment.

Tapping screws. Parker-Kalon, Clifton, N. J. Chart presents various features of tapping screws such as concentricity of head, accuracy of slot, position and depth of Phillips Recess, thread formation, screw hardness, and functionability.

Computer lights. Raytheon Company, Industrial Components Division, 55 Chapel St., Newton 58, Mass. Folder describes light indicator modules for computers and other instruments.

Switchgear. I-T-E Circuit Breaker Company, 1900 Hamilton St., Philadelphia 30, Pa. 20 pp. Ill. Bulletin 3200-1A provides comprehensive information on low voltage power circuit breakers and switchboards, ranging in unit ratings from 225 to 4000 amps.

Pneumatic tubes. Lamson Corporation, Lamson St., Syracuse 1, N. Y. 40 pp. Ill. Brochure describes various pneumatic tube communication systems for office memoranda.

FREE LITERATURE *continued*

Lap grinding. Speedlap Corporation, Skokie, Ill. 8 pp. Ill. Bulletin describes production features of lapping and grinding machines.

Metal lath and plaster standard. Metal Lath Manufacturers Association, Engineers Bldg., Cleveland 14, Ohio. Bulletin RS-60 contains the revised metal lath and plaster standards. Specifically described include those for all types of diamond mesh expanded metal lath, rib metal lath, as well as accessories.

Instruments and tools. L. S. Starrett Company, Athol, Mass. 480 pp. Ill. Catalog presents complete line of more than 3500 instruments and tools including hand measuring tools, dial indicators, dial gages and instruments, hacksaws, hole saws, band knives, and precision ground flat stock.

Air diffusers. Anemostat Corp. of America, 10 East 39 St., New York 16, N. Y. 8 pp. Ill. Catalog describes a new architectural straight-line air diffuser.

Transfer films. Ampto, Inc., subsidiary of Anken Chemical & Film Company, Newton, N. J. 4 pp. Ill. Pamphlet describes various diffusion transfer (photocopy) films for the engineering and graphic arts fields.

Plastic tubing. Cobon Plastics Corporation, 44 Lafayette St., Newark 2, N. Y. 12 pp. Ill. Catalog describes a range of tubing and fittings for industrial, medical, and laboratory use.

Marine insulation. Pall Corporation, 30 Sea Cliff Ave., Glen Cove, N. Y. 4 pp. Ill. Bulletin F107 describes thermal and acoustical marine insulation made of fiberglass.

Pressure-sensitive papers. Mask-Off Company, Box 585, Monrovia, Calif. 6 pp. Ill. Brochure presents line of pressure-sensitive protective papers, available in a variety of thicknesses, adhesive backings, and roll lengths and widths.

Light dimmer. Kliegl Bros., 321 West 50 St., New York 19, N. Y. 38 pp. Ill. Booklet describes a U/L-approved, silicon-controlled rectifier dimmer for use in theatres, television studios, and school auditoriums.

Tapes for graphic layouts. ACS Tapes, Inc., 217 California St., Newton 58, Mass. 26 pp. Ill. Catalog presents line of self-sticking tapes for various graphic and drafting requirements.

Hose assembly fittings. Aeroquip Corporation, Jackson, Mich. 6 pp. Ill. Brochure describes the Iron Mike, a reusable, low cost fitting for high-pressure hose assemblies. The product is said to be the first one in the industry that combines reusability with low cost.

Miscellaneous

Contract research in industry. Battelle Memorial Institute, 505 King Ave., Columbus 1, Ohio. 4 pp. Brochure describes the relationship between the sponsor of a project and the research institute engaged, under contract, to conduct the study.

Research. AMP, Inc., Harrisburg, Pa. 24 pp. Ill. Brochure discusses the role of the research laboratory in the growth of a manufacturing company. AMP manufactures electrical and electronic equipment.

Carbon-graphite materials. National Carbon Company, 270 Park Ave., New York 17, N. Y. 8 pp. Ill. Brochure describes the company's 18 grades of carbon and graphite available for mechanical uses such as bearings, bushings, and seals. A list of properties are given for each grade.

Electro-mechanical capabilities. McKiernan-Terry Corporation, Harrison, N. J. 6 pp. Ill. Booklet presents company's capabilities in varied electro-mechanical fields covering radar, sonar, missiles, marine products, and bulk-material handling equipment.

Concrete admixture. Master Builders Company, Cleveland 18, Ohio. 48 pp. Ill. Brochure features 25 reports on major dams built in this country and abroad, and discusses the role played by Pozzolith concrete admixture in their construction.

Hardboard. American Hardboard Association, 205 West Wacker Drive, Chicago 1, Ill. 16 pp. Ill. Booklet presents the story of hardboard from forest to end uses in industry. Included are basic definitions of hardboard, and a step-by-step description of the processes in its manufacture.

Sheet metal fabricators. Malkin-Illion Company, 400 Coit St., Irvington, N. J. 4 pp. Ill. Brochure describes services, facilities, and products of this company which specializes in fabricating sheet metal products such as cabinet racks, instrument and control cases, and panels and chassis.

Glass. Corning Glass Works, Corning, N. Y. 8 pp. Ill. Brochures describe properties and applications of Vycor brand industrial glass. This 96 per cent silica glass is typically used for infrared heat transmission, in germicidal lamp applications, for heat resistance, and to absorb moisture from electronic components.

Electro-optical capabilities. FMA, Inc., 142 Nevada St., El Segundo, Calif. 24 pp. Ill. Brochure outlines company's research, development, and production capabilities in the electro-optical fields.

Computer programming. Minneapolis - Honeywell Regulator Company, Electronic Data Processing Division, 60 Walnut St., Wellesley Hills 81, Mass. Brochure describes the EASY (Efficient Assembly System) automatic programming aid that permits computer instructions to be written in elementary symbolic tags and codes. The system is designed for use with the Honeywell 400 computer.

Container linings. Bradley & Vrooman Company, 2629 S. Dearborn St., Chicago 16, Ill. 50 pp. Ill. Manual describes various plastic materials used for lining containers for shipment of corrosive and other chemicals, and the testing procedures for their evaluation.

Shipping containers. Olin Containers, division of Olin Mathieson Chemical Corporation, West Monroe, La. 34 pp. Ill. Booklet presents a broad range of basic corrugated container designs required for various shipping purposes. Also described are special liners: Scuff-Master, an interior linerboard to protect against scuffing; Humi-Gard, a moisture resistant linerboard; and Skid-Master, a linerboard with non-skid properties.

Research in physical sciences. General Mills, Inc., 1620 Central Ave., Minneapolis 13, Minn. 30 pp. Ill. Booklet presents discussion of company's research in physical sciences. Areas of concentration include electro-hydrodynamics, particle technology, plasma, upper atmosphere phenomena, and electron mirror microscopy.

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CALENDAR

Through July 16. An exhibition of three models of the Newton Richards Medical Research Building designed by Louis I. Kahn for the University of Pennsylvania. Museum of Modern Art, New York.

Through July 16. "Japanese Vernacular Graphics." An exhibition including maps, illustrated books, etc., done in the past 250 years. Museum of Modern Art, New York.

Through the summer. "Color in Prints." An exhibit of prints which use color, ranging from the 15th century to the present. Metropolitan Museum of Art, New York.

Through September 10. Exhibit of work of European artist-craftsmen. Museum of Contemporary Crafts, New York.

Through September 11. "Musical Instruments of the Five Continents." Metropolitan Museum of Art, New York.

Through September 12. "Futurism." A comprehensive survey commemorating the 50th anniversary of the movement. Museum of Modern Art, New York.

Through October 31. "Italia '61," a fair commemorating Italy's centennial, includes the International Labor Exposition with exhibits from 25 nations, among them the U. S. Turin.

July 1-September 5. "New York Crafts—1961." Munson-Williams-Proctor Institute, Utica, New York.

July 7-29. Russian Trade Fair will display capital and consumer goods. Earls Court, London, England.

July 9-15. New York lamp and home furnishings accessories show. Hotel New Yorker and Trade Show Building, New York.

July 10-14. Housewares exhibit of the National Housewares Manufacturers Association. Merchandise Mart, Chicago.

July 10-14. Fourth annual institute in technical and industrial communications. Colorado State University, Fort Collins, Colo.

July 10-21. A short course in structural sandwich design and fabrication, another in fluid power control, and another in analysis and design of airborne pressure vessels sponsored by University of California Extension, University of California, Los Angeles.

July 16-21. Fourth international conference on bio-medical electronics and 14th conference on electronic techniques in medicine and biology sponsored by the Instrument Society of America, the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the International Federation for Medical Electronics. Waldorf-Astoria Hotel, New York.

July 23-August 4. A short course in structural engineering aspects of atomic shelter. Pennsylvania State University, University Park, Pennsylvania.

July 25-August 10. 1961 Chicago International Trade Fair sponsored by the Chicago Association of Commerce and Industry. McCormick Place, Chicago.

July 30-August 11. China, glass and gift market. The Merchandise Mart, Chicago.

August 7-10. Eastern housewares show. New York Coliseum.

August 18-27. 1961 Health Exposition sponsored by the New York City Department of Health and the Medical Society of New York State. New York Coliseum.

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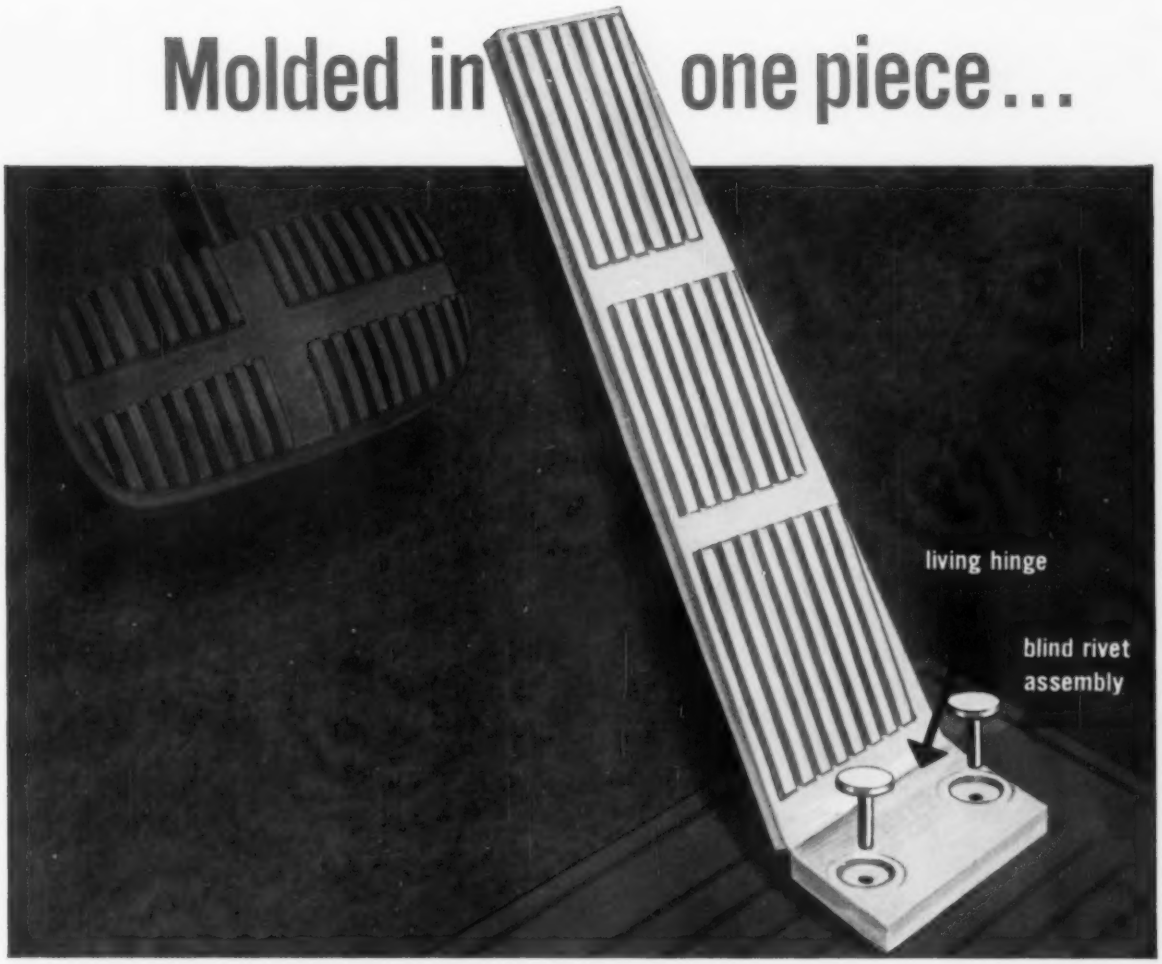

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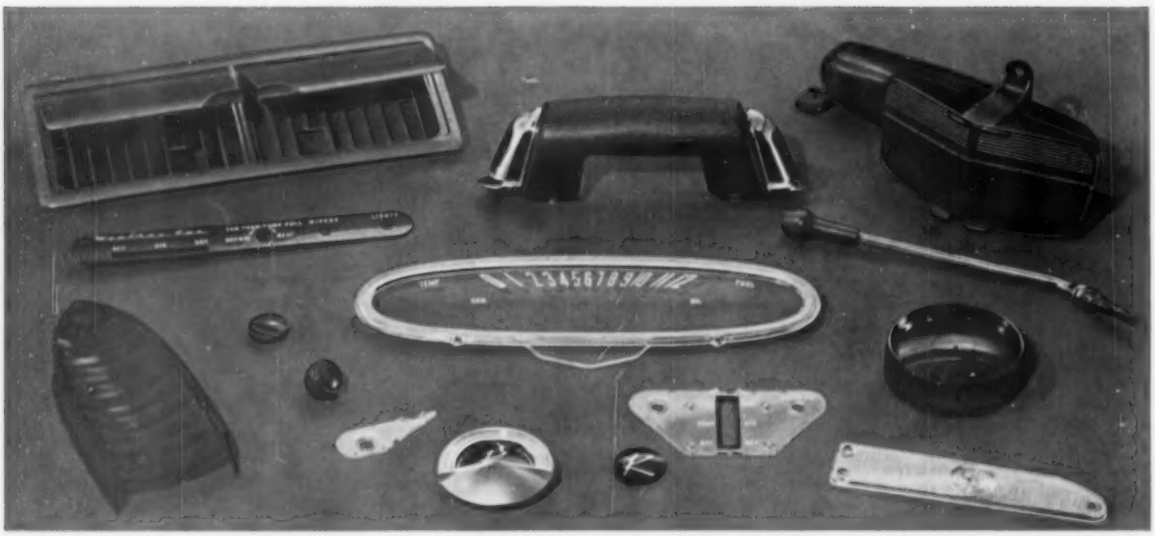

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