INDUSTRIAL DESIGN

two dollars a copy December 1956

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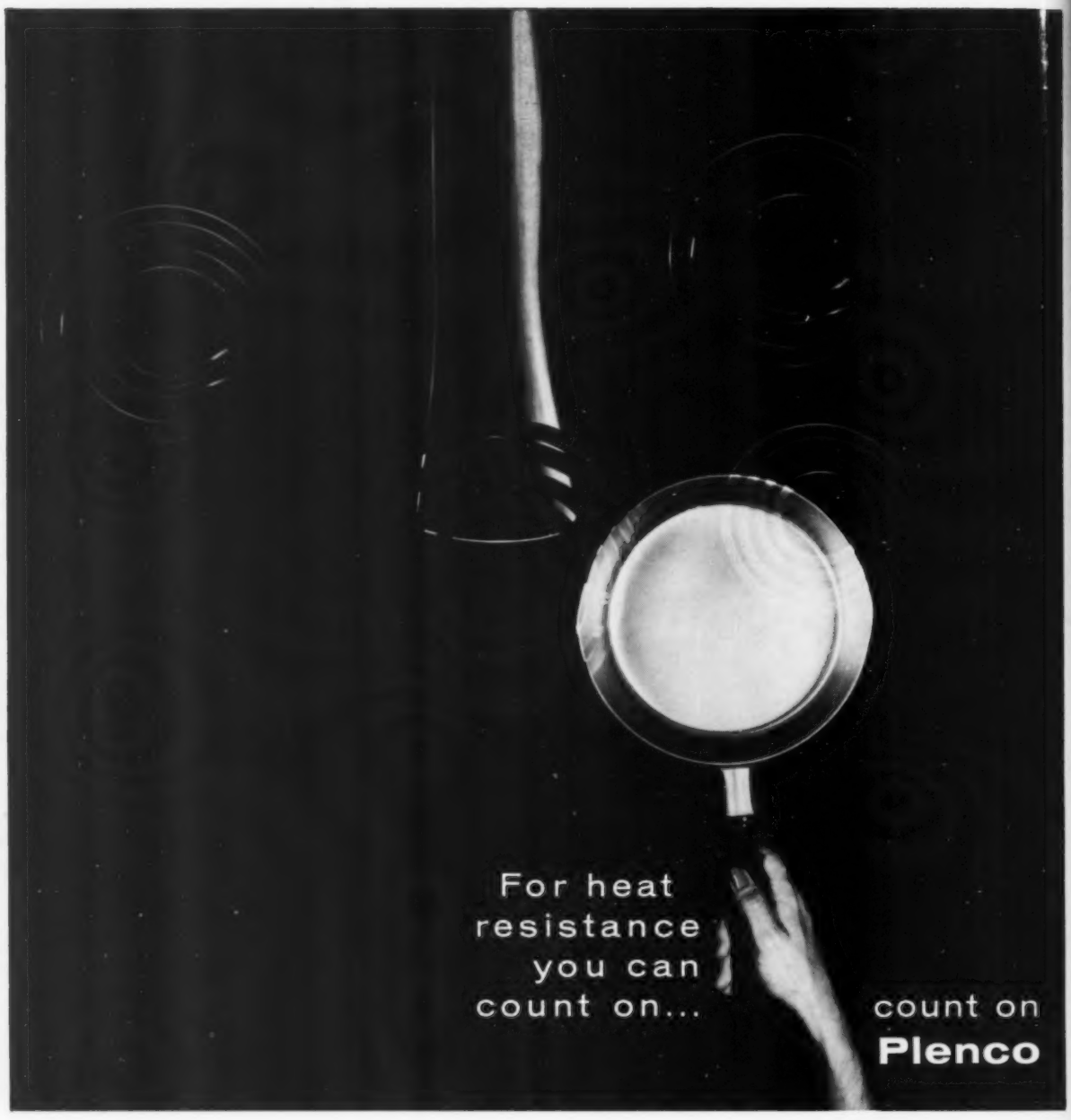

Soaring temperatures are no problem with today's marvelously practical kitchen utensils. In the home as well as industry, handles, lids, radio tube bases, etc., are shaped of quality phenolic molding compounds. These are compounds designed specifically by Plenco to resist heat in excess of 500° in some instances. For this and for other excellent properties assuring economy, ease of manufacture, and gleaming good looks . . . you can continue to count on Plenco.

Serving the plastics industry in the manufacture of high grade phenolic molding compounds, industrial resins and coating resins.

PLENCO PHENOLICS
FOR BETTER PLASTIC PRODUCTS

PLASTICS ENGINEERING COMPANY
Sheboygan, Wisconsin

DECEMBER, 1956 VOLUME 3, NUMBER 6

INDUSTRIAL DESIGN

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

CONTENTS

Frontispiece: Lighting, as Betty Rosenzweig's photograph glimpses, comes out into the streets at the end of the year as spiritedly as the season's consumer—Lord & Taylor spreads its lights in a giant tree, like a shining canopy above the shoppers' heads. →

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LETTERS

Chermayeff at I.D.

Sirs:
In reading INDUSTRIAL DESIGN's account of the history of the Institute of Design, I was amazed not only at how the five years under the directorship of Serge Chermayeff were completely bypassed, but at the strange way in which it was made to appear that these five years never took place.

The article says, regarding the difficulties surrounding the induction of the present director, that "the replacement of a beloved professional educator by a professional designer threatened the precious tradition of liberal design education." It is well known that Mr. Doblin is replacing Mr. Chermayeff and not Moholy-Nagy, since there has been no permanent director since Chermayeff resigned several years ago. If one's sympathy is to be given to anyone it should be given to Serge Chermayeff, who, in reality, faced the situation immediately after Moholy's death of replacing the unique personality of the founder. Certainly on that score the situation that Chermayeff faced was a far more sensitive one than at present when the majority of the staff consists of people recruited since Moholy's death in 1946. . . . Chermayeff managed to induce actual growth in an institution that was crumbling under the pressure of internal strife and as a result of the disintegration that sets in when inexperienced but ambitious people lose the collective security and self-discipline that emanates from a powerful leader. That the school underwent a serious loss of enrollment towards 1949 is not surprising. Every educational institution in the country with a predominantly male population went through the same thing with the graduation of veterans who had returned to finish their schooling under the G. I. Bill of Rights. To imply that this phenomenon was brought about at the Institute of Design solely as a result of the new leadership is a distortion. . . .

Robert Jay Wolff
New Preston, Connecticut

We regret very much the omission of Mr. Chermayeff's part in the history of the Institute's postwar years, during which he carried on in the face of the many difficulties Mr. Wolff outlines. The omission of many details of the school's history was in no way intended to implicate the new leadership, but only to suggest that the full and complex story of its development was not within the scope of a survey of design in Chicago. Space permitting, we might also have mentioned many former associates of the Institute who have, like Mr. Wolff and Mr. Chermayeff, influenced design education as teachers: Sibyl Moholy-Nagy, Al Szabo, Richard Filipowski, Roy Gussow, Emerson Woelffer, John Walley, Harold Cohen, Harold Krisel and Hin Bredendieck, among others.—Ed.

Mailbox

Sirs:
. . . Your article on the history of design in Chicago was a thorough piece of journalistic research and would be a credit to any historian.

Anthony R. Morrow
Design Research, Incorporated
Chicago, Illinois

Sirs:
The October issue of INDUSTRIAL DESIGN magazine looks wonderful. . . .

The night view of the city with the map overlay is beautiful. . . .

Jon W. Hauser
Jon W. Hauser Associates
St. Charles, Illinois

Sirs:
. . . I do want to express my congratulations to you and your staff on your INDUSTRIAL DESIGN magazine for the wonderful "Chicago Story." It has been interesting reading from beginning to end.

R. C. Sandin
Hotpoint Co.
Chicago, Illinois

Sirs:
We have read, thoroughly, the Midwest issue and must commend you on the very excellent job you and your staff have done. . . .

Jack and Carol Collins
Milwaukee, Wisconsin

Sirs:
Thanks for the mention of our firm in your October issue on design in the Chicago area. The name of our firm, since the first of May, 1956, has been Henry P. Glass Associates and *not* Glass-Heubner Associates.

Henry P. Glass
Chicago, Illinois

Corrections

Sirs:
Model HA Payloader of 1945 was done at Barnes and Reinecke and John Sherrer (see page 88) was the supervisor. The model HA-1950 as well as other models in the line were done by *Reinecke and Associates.*

Jean O. Reinecke
Reinecke and Associates
Chicago, Illinois

Sirs:
. . . On page 115, you indicate that we are still the designers for the Tappan Stove Company. While it is true that we are the designers of their Radarange and other built-in electric equipment, we are currently the designers for Cribben & Sexton Company, manufacturers of the Universal Gas Range. And while it is true that we have recently completed a design commission for the Johnson Wax Company on wax appliers, credit for the present design of the very attractive floor polisher should go to Mr. William Harris, Johnson Internal Designer.

Joseph R. Mango
Banka-Mango Industrial Design
Chicago, Illinois

Sirs:
LOST—A consultant design firm. Last seen at 605 N. Michigan Ave., Chicago 11, Illinois. Responds readily to the name of "Edward Klein," Industrial Design and Product Development.

This omission in your recent issue was our error and not yours, probably as a result of a recent relocation to our new address at the time your article was being formulated. . . .

Edward Klein
Edward Klein, Industrial Design
Chicago, Illinois

Sirs:
I was much interested in the article on Gerber Legendary Blades ("The Small Manufacturer as Designer-Craftsman") in your June issue, and grateful for the recognition given the designer. However it was something of a shock and disappointment to find this character referred to as Joe Pollock. The name is Dean Pollock.

Dean Pollock
Portland, Oregon

Drawers molded of plastics!

Plastics drawers are now a reality! Developed, engineered and custom-molded by General Electric's Plastics Department, these plastics drawers are moisture-proof—won't warp and stick. Seamless, jointless and round-cornered, they are easy to clean. They can be molded in any size or color, permitting the furniture manufacturer to combine the advantages of plastics with the warmth of wood. They afford an excellent example of how alert manufacturers are realizing their objectives—through plastics!

Let G.E. help you
fit plastics into your designs!

If you are contemplating a new product, or are seeking ways to improve a present one, why not design with *plastics* in mind? As one of the world's foremost custom-molders, General Electric has helped thousands of industrial designers realize the advantages that plastics offer. G.E.'s custom-molding service will be happy to help *you* in engineering and developing *your* products!

Write today, on your company letterhead, for a free copy of "The G-E Plastics Story," containing many case histories that show how G-E customers profit when they design with plastics. Just write: *Plastics Department, General Electric Company, Section 6P3A1, Decatur, Ill.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

—unlikely uses for Homasote

A beach towel

— it might be unwieldy to carry in a passenger car ... but the point is... an 8' x 14' sheet of weatherproof material is big; quite a number of people could sit or lie on it. When you need *size* — remember Homasote.

A sound-deadening canopy

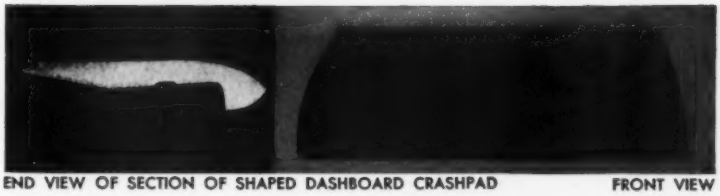
— over the speaker's rostrum — could often be a boon to the audience. The point is... this homogeneous fibre board has a decibel rating of 0.23 at a pitch of 512 — many times better than plaster.

Homasote Insulating-Building Boards are now available in five thicknesses (from $\frac{15}{32}$" to $1\frac{7}{8}$") and in a wide variety of sizes and densities... We have engineers and architects — long experienced with our products — whose services are available to you without obligation. May we cooperate on a specific current problem? May we send you literature broadly descriptive of Homasote in all its present forms? We invite your inquiry to Department M-7.

HOMASOTE COMPANY
TRENTON 3, NEW JERSEY

Molded-to-shape seats, arm rests of flexible urethane foam

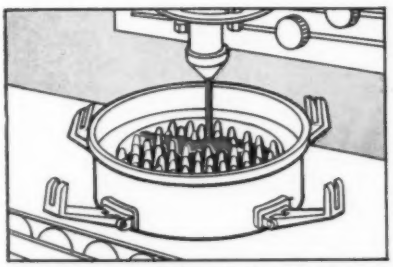
SIDE VIEW OF AUTOMOBILE ARM REST — END VIEW



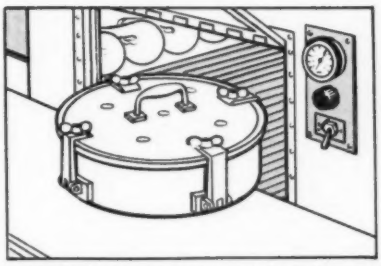
END VIEW OF SECTION OF SHAPED DASHBOARD CRASHPAD — FRONT VIEW

SIDE VIEW OF AUTOMOBILE ARM REST — END VIEW

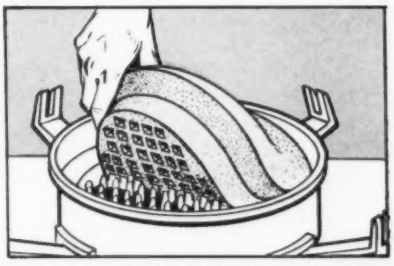
- *Cushion-y urethane foams in a wide range of densities, in varying degrees of firmness—can be custom molded by foam makers into shaped seat pads, arm rests, head liners . . . for automobiles, busses and street cars, planes, and into dozens of consumer products.*
- *The tough foamed part can then be hog-ringed to springs or bonded with adhesive to wood or metal. Foamed parts—molded to order—can simplify the manufacture of scores of products where comfortable seating or shock absorption is a major requirement.*



1. Pads for bar or kitchen stools can start as a measured portion of liquid that begins to foam within two seconds after pouring.



2. Original composition of liquid determines cell size and degree of softness. The liquid foams up to fill the mold's contours; can be foamed to shape with or without a surface skin.



3. After a twenty-minute, low temperature heat-cure—the flexible foamed part is taken from the mold—ready for use; can be "finished" with a colorful "leathery" gloss urethane coating.

MONSANTO

Monsanto does not make urethane foams, only the basic chemical raw materials. For your information on how molded urethane foams can serve you, write Monsanto for a list of manufacturers of urethane foam. These foam makers will be well-qualified to discuss your needs for molded foam products. Organic Chemicals Division, MONSANTO CHEMICAL COMPANY, Dept. ID-5, St. Louis 1, Missouri.

Where Creative Chemistry Works Wonders For You

The qualities of quality

PATTERN AND TEXTURE: *Sources of Design, by J. A. Dunkin Wedd. 96 pages, ill. The Studio Publications, London and New York,* 1956. $6.95.

A poor sort of skin, said the Hunter.
Inferior cloth, said the Craftsman.
Imitation, said the connoisseur.
A cheap substitute, said the Buyer.
But the Planner said:
The world has need of it.

With a delightful poem called "Prometheus" setting the stage for his presentation, Dunkin Wedd's random notes on the essence and manifestations of pattern and texture fall into place as one of the most winning, and oblique, books on design that has been seen in years. It ranges from familiar natural substances like woods to esoteric ones like molecular structures, and from such primitive cultural forms as children's art to such sophisticated ones as geometry. There is no argument here, only a collection of insight and wit, cartoons and photos (many of them striking enlargements) that somehow manages to assemble into a point of view.

On page 7 we read that pattern begins with man's ability—a power essential to survival—to pick out important objects against a neutral background. On page 49 the comment is dropped that "glass differs from other synthetic materials in relying on its texture to supply all the pattern." Finally, on page 65, these comments are brought together in a short history of man's sense of pattern and texture—from the use of animal skins, with no distinction between pattern and texture, to the weaving of pattern without texture—in chains of atoms, our synthetic materials.

This is the way we have to read this book, catching our perceptions as they come and returning finally to the introductory poem:

What a charming design, said the (bargain) Hunter.
It's man-made, said the (factory) Craftsman.
An interesting texture, said the Connoisseur.
It's Contemporary, said the Buyer.
But the Planner said: We shall need Further Inspiration.
He thought ten years ahead.

a. f.

Books received

THE COUNCIL OF INDUSTRIAL DESIGN, ELEVENTH ANNUAL REPORT, 1955-1956. *The Design Centre, London. 40 pages, ill.* 1s 6d. Review of the year's work, including the opening of the Design Centre.

ENCYCLOPEDIA OF AMERICAN ASSOCIATIONS. *A Guide to the Trade, Business, Professional, Labor, Scientific, Educational, Fraternal and Social Organizations of the United States. First Edition,* 1956. 306 *pages. Gale Research Company, Detroit.* $15, *including supplements.* List of 5,000 associations, societies and chambers of commerce, with officers, enrollment and address.

AMA MANAGEMENT BOOKSHELF. *A Catalog of AMA Publications and Films. 44 pages. American Management Association, New York.* Free to managers, members and non-members alike.

1956 MANUAL OF EXCELLENT MANAGEMENTS. *American Institute of Management, New York.* $20. Detailed descriptions of 409 companies designated as excellently managed.

Do-it-yourself in groups

HOW TO PLAN AND CONDUCT WORKSHOPS AND CONFERENCES, *by Richard Beckhard.* 64 *pages. Association Press, New York.*

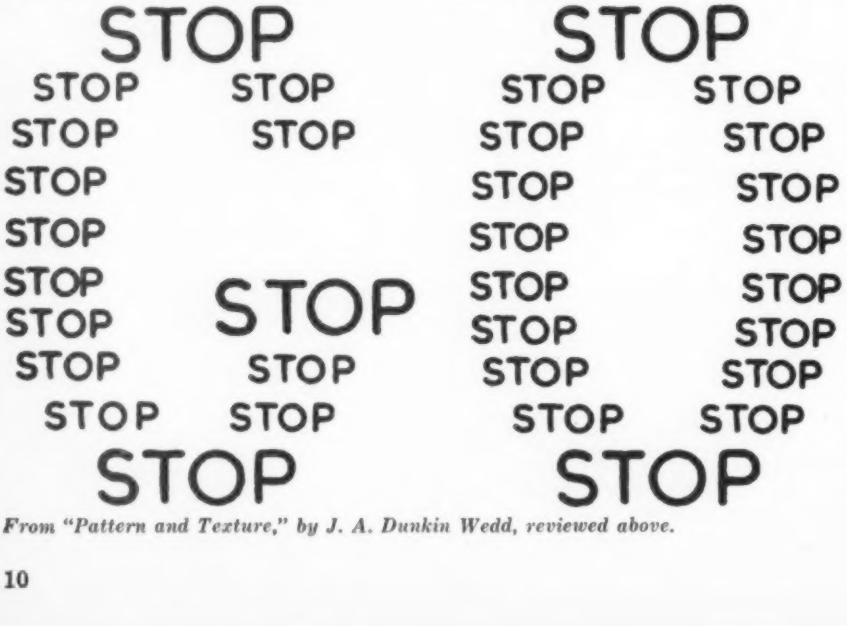
It is estimated that business executives spend between half and three-quarters of their time in meetings of one sort or another, and the word "communication" has become common parlance *ad nauseam.* "Conferences" and "communication" conjure up a problematic labyrinth, and our concern testifies to our doubt that individuals at meetings are properly affected, or galvanized into action. Meetings themselves, rather than the individuals who meet, are often thought to have the magical power of solving problems.

In this new business mythology, Mr. Beckhard's little how-to book has a wider reference than the set of useful instructions it provides. The author, a professional conference counselor and organization advisor, sets down rules for organizing before, during and after conferences that are sufficiently general to apply to a wide variety of meetings in a wide variety of groups—business, social and educational. They are comprehensive—down to planned bull-sessions—and are listed as alternatives and possibilities which are to be employed according to the problem at hand.

Between the lines, Mr. Beckhard's implication comes through: planning is necessary not only to get from the start of a meeting to the end of it, but in order to know what the meeting is *for*—what results are desired, or possible under the circumstances, and what is ultimately achieved. Planning and evaluation are not merely stressed but are identified with each other! "Build the planning for follow-up with participants right into the program plan," states the last of the summary rules. "Where it is possible to do so, discuss it and plan for back-home application during the conference itself, so that participants may move from the back-home culture to the conference culture, and back again to the back-home culture, with perspective." It is such psychological and sociological insight that makes the suggestions in this book continually relevant to *people,* why and how they operate in groups—rather than abstract or animistic notions of the power of discussion in itself.

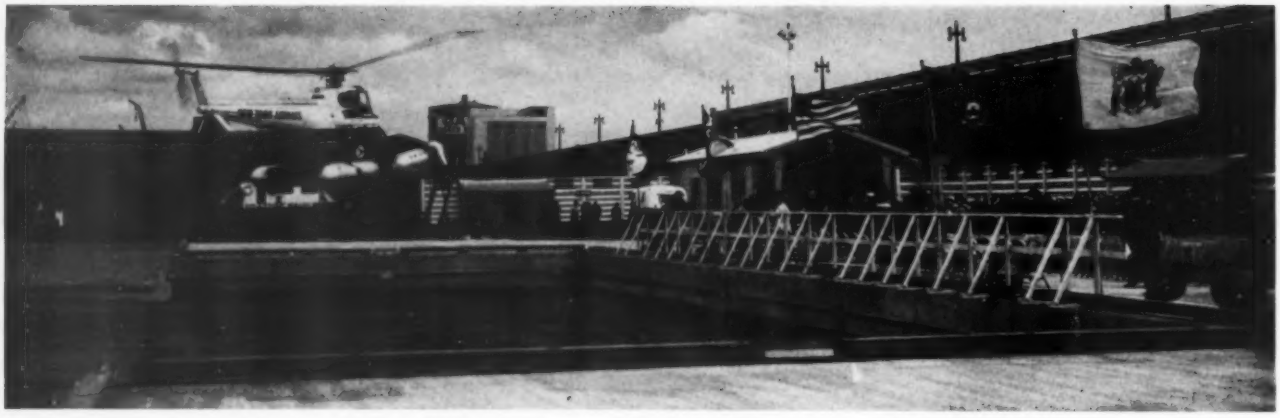
As designers get deeper into the managerial labyrinth of industry and as they conduct more meetings and symposia for communication in their field, they—as well as conference-bound executives—will find this book helpful in threading the way to better results through group activities.

(*continued on p.* 140) *a. f.*



From "Pattern and Texture," by J. A. Dunkin Wedd, reviewed above.

NEWS



Manhattan airlift opens

Manhattan's first commercial heliport was opened recently, a modest pair of 80′ x 80′ concrete touch-down pads, and with it were inaugurated the first commercial helicopter flights into the heart of the nation's most congested city.

About four years ago, New York Airways was licensed as a helicopter carrier of passengers, mail and cargo. The company initiated service between the three metropolitan-area airports— La Guardia, Idlewild and Newark. Scheduling enlarged from an original nine flights a day to 141 flights a day at the time when the Port Authority-West 30th Street Heliport opened. New York hailed a new kind of metropolitan transportation — direct airlift to and from the midtown area.

A Port Authority study to determine the volume and pattern of helicopter service indicated three important future fields of service: on routes between cities from 40 to 175 miles apart; on routes linking city centers with the suburbs; on routes linking the airports with each other and with downtown centers. Although the last-mentioned area is the only one even partially effected, all three are expected to be flourishing by 1970, when 5,000,000 passengers will enter New York by helicopter. The study serves as the basis of plans to construct a much larger heliport on the same site at a cost of $5,000,000, which will be undertaken as soon as the traffic warrants it.

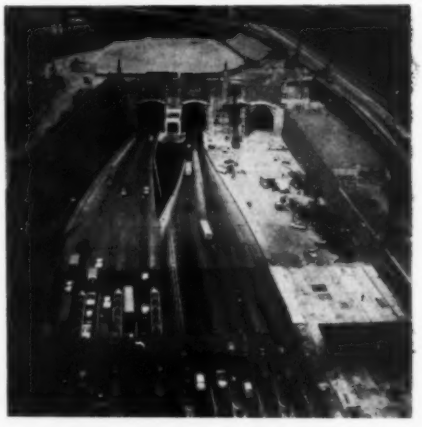
Robert L. Cummings, Jr., president of New York Airways, has already transacted with Pan American Airways to shuttle passengers to the city, and similar arrangements with other airlines are under negotiation. A fleet of five-passenger S-55 helicopters is now furnishing passenger service, with three 12-passenger S-58's expected early next year. With the imminent rush of traffic, equipment presents the most formidable problem. "Just as Capital went abroad to buy the Viscount," Cummings reports, "we may well do similarly in order to find appropriate equipment. In England today there is an aircraft called the Fairey Rotodyne which is well advanced in construction and will fly sometime next year." And beyond this development, Cummings looks to even larger, multi-turbined helicopters capable of carrying 40 or 50 passengers from, for instance, the center of Washington to Manhattan's new 30th Street base in an hour and a half, or less.

Call to design schools

Because of repeated requests, ID would like to compile a complete list of schools offering courses and/or degrees in industrial design. Since our coverage of degree-granting schools in June, 1955, there have been reports of new programs at other institutions, offering both credits and degrees in product design. We would appreciate it if teachers, alumni or students from those design schools in the United States which were not among the 25 we listed originally would send us catalogs and curriculum information to help us complete and up-date this educational listing. We would also like to be kept informed of curriculum changes in all the industrial design departments.

Third Tube for Lincoln Tunnel

On November 9, 1954, a 240-ton tunnel shield started driving the Third Lincoln Tunnel Tube from Weehawken, N. J. to West Thirty-eighth Street, New York. The shield was propelled under the Hudson by 28 hydraulic jacks and reached the New York shaft on June 28, 1956. The new $100,000,000 tube is expected to be in operation in 1957. The two-lane Third Tube will be operated in an eastbound direction, the North Tube, westbound. The middle or present South Tube will have a flexible operation depending on the direction of heavy traffic. The Third Tube exit portal in New Jersey will have a common plaza with the existing Lincoln Tunnel Tubes, as is shown below, while, in New York, the Third Tube will extend to a new portal at the northeast corner of Thirty-eighth St. and Tenth Ave.



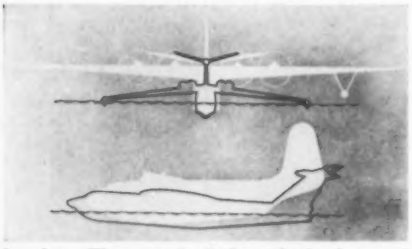
Tomorrow's mobile naval seaplane

When, in April 1951, the Chief of Naval Operations issued an operational requirement for a high-performance all-jet seaplane, the contract was awarded to Glenn L. Martin. The first SeaMaster made its initial flight in July 1955 and crashed the following December while on an evaluation and demonstration flight. The second model, the No. 2 XP6M flew for the first time on May 18, 1956. It also crashed a few months later as a result of a failure in the servo units in the control system. That these accidents did not shake the confidence experts have in the new seaplane is attested to by the fact that the Baltimore company has received an order from the Navy for six additional models of the so-far ill fated SeaMaster.

Years of research have made it possible for the SeaMaster to become the first high speed water-based aircraft comparable in all respects to a modern land-based jet

(▲) *Martin SeaMaster multi-jet seaplane.*

(▼) *The old and new in seaplane design.*



bomber. The speed of the minelaying and photo-reconnaisance, Allison J-71 turbojet-powered aircraft is 600 mph, its cruise altitude 40,000 ft., and payload 30,000 lbs. The plane's streamlined hull places the entire keel under water, eliminating the sharply curved contours of older, conventional seaplane hulls. The hull carries a water-tight rotary mine door which enables the aircraft to lay mines or drop bombs at low altitudes. Vice Admiral Thomas S. Combs, Deputy Chief of Naval Operations (Air), told Congress on May 31, 1956: "A seaplane striking force built around the P6M is a potent weapons system indeed. These forces will supplement the offensive power of our carrier striking forces."

In view of the fact that this new design not only incorporates contemporary techniques but also allows for foreseeable future developments, one wonders if the SeaMaster is perhaps the forerunner of the nuclear seaplane.

Automated grass growing

A machine that sprouts grass, oats, wheat, barley without sun or soil is available from Niamco, a Dallas firm who secured the rights from its Belgian inventor. Called the Herbagere, it consists of a metal-framed box with seven drawers. On the top drawer is the nourishing water mixed with a chemical which feeds down to the lower drawers; in each of these is a perforated basket holding six or seven pounds of pre-germinated seed.

Minneapolis-Honeywell supplied a temperature control unit which regulates the flow of electricity according to whatever temperature is required for different seeds. Temperature and irrigation are controlled automatically. Filled with 50 pounds of seed, one Herbagere is capable of supplying forage for ten cows and will produce daily 300 pounds of grass. Much faster than nature, the machine will grow grass six to seven inches high in six days. Developed as a source for an assured food supply, 10,000 of these automated growers are in use in Europe. Niamco hopes that American farmers will automate forage growing to the same extent that egg-laying has been put on a year-round production schedule.

Events

October 17 was proclaimed **Frank Lloyd Wright Day** in Chicago by Mayor Richard J. Daley.

The **Brooklyn Museum** opened the **Michelle Murphy Room** on Wednesday, October 17, a new study and conference room for the use of designers and students consulting the facilities of the Museum's Edward C. Blum Industrial Design Laboratory. This event enlarges the Museum's research facilities to include interior design and architecture.

The third **Building Research Institute Plastics Study Group** met in Chicago for a three day conference, December 5-7. Papers will be bound into a booklet which will be available through the Building Research Institute, 2101 Constitution Avenue, Washington 25, D. C.

The Institute of Design of Illinois Institute of Technology has opened a seminar in food packaging for the first time, this fall. It is an evening class, open to graduates.

The American Society of Industrial Designers sponsored a symposium "Design Directions and Influences—Forecast From Detroit" on December 5, before the opening of the Forty-Second National Automobile Show, December 8-16. Symposium chairman Nathaniel Becker arranged a comprehensive panel of speakers: Moderator, Dave Garroway; Introduction, Jay Doblin, ASID President; Opening Remarks, William H. McGaughey, Chairman of the National Automobile Show Committee. The Panel was composed of five Automotive Stylists: Edmund Anderson, Director of Automotive Styling, American Motors Corporation; Robert H. Maguire, Chief, Advanced Styling, Ford Motor Company; William L. Mitchell, Director of Styling, General Motors Corporation; Carl Reynolds, Assistant Director of Styling, Chrysler Corporation; William Schmidt, Vice President and Director of Styling, Studebaker-Packard Corporation. A full report will appear in January ID.

The Eighth National Plant Maintenance and Engineering Show will take place January 28-31, 1957 at the Cleveland Public Auditorium. 400 companies will exhibit and 62 discussions on maintenance problems are scheduled to run concurrent to the conference. Registration cards can be obtained from Clapp & Poliak, Inc., 341 Madison Avenue, New York 17.

The **12th Annual Technical and Management Conference of the Reinforced Plastics Division** of the **Society of the Plastics Industry, Inc.** will be held at the Edgewater Beach Hotel in Chicago, February 5, 6, and 7. The complete program, which will include a special exhibit of reinforced plastics products, as well as sessions on Strength-Time Behavior of Reinforced Plastics, Developments in Foreign Countries, Finishes, Engineering, Marketing, Premixes, etc., will be available from the SPI, 250 Park Avenue, New York 17, after December 26.

Libby-Owens-Ford announces a 16 mm. sound color film, "Futures Unlimited," on the subject of glass reinforcement in products ranging from aircraft radomes to furniture. A print may be obtained by writing to Sales Promotion Department, L. O. F. Glass Fibers Company, 1810 Madison Avenue, Toledo 1, Ohio.

Foreign and domestic manufacturers are preparing exhibitions for the **United States World Trade Fair**, which will be at the Coliseum for two weeks, April 14-27, 1957. Every important commodity and finished product which can be offered to the American market will be shown—organized into product groups rather than national lines.

Light, bright and carefree in Cyanamid plastics!

BUDD TRIMS WEIGHT in famous "Pioneer III," revolutionary railway passenger coach, with use of high-strength, fibrous glass-reinforced LAMINAC® polyester resin moldings. LAMINAC interior trim and appointments alone save some 7500 pounds! Double seats, step wells and washrooms are one-piece moldings and interior bays are reinforced LAMINAC from floor to ceiling. Tough, hard-wearing reinforced LAMINAC resists scuffing — is easy to clean, and integral color means no painting ever. If damaged, repairs are made easily on the spot and individual units can be replaced in minutes.

TO A LADY'S LIKING — the trim Remington Duchess electric shaver is housed in colorful, warm-to-touch CYMEL* melamine plastic, chosen for its resistance to heat, moisture and body lotions. It's a delight to look at in pastel pink or blue — and the color won't chip off or stain!

*Trademark

FAMILY 'INTERCOM'—that's the new Sylvania Phone-Radio. Cased in BEETLE® urea plastic in smart, molded-in colors, each unit is resistant to scratching, staining and warping... lightweight but strong. These are advantages in end use, in shipping and in manufacture.

There's a lasting, bright, carefree future for your product in Cyanamid plastics and resins. Take a new look at your problem; perhaps there's an answer in our melamine or urea molding compounds, polyester resins, synthetic adhesives or resins for surface coatings.

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Games


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Henrion


de Majo

Americans glimpse five leading graphic artists from Britain

A. I. G. A. exhibits group of posters, packages and photographs at Freedom House

Through the efforts of W. M. de Majo and Leo Lionni, the American Institute of Graphic Arts is presenting a British exhibition at New York's Freedom House through December 14. Five graphic designers—W. M. de Majo, Thomas Eckersley, Abram Games, F. H. K. Henrion and Hans Schleger—are represented by this selection of their characteristic work, 156 examples in all.

British poster art—to judge by Games' work for the British Railways, Henrion's for Punch and Eckersley's for Gillette—is a cheerful thing, marked by light-hearted drawings, visual puns, the use of the double image, and a general tendency to make faces out of the most unlikely objects, from a row of cigarettes to a chocolate bar. Games and Schleger also have their more sober sides, Schleger with some masterly abstract symbols (the superb marker for London Bus Stops) and Games in condensing an impression of Portugal into a deft line drawing. Henrion and de Majo, besides doing posters, engage in package design, sometimes jointly (see below). Henrion deals versatilely in complex and simple images; de Majo's are marked by a pleasing delicacy. The exhibit includes some of the latter's clever liquor packages—die-cut boxes which fold into protective and figurative forms. After acquainting American colleagues with its gay spirit, the show moves on to Ottawa.

Henrion

de Majo

Games

Eckersley

Schleger

Henrion, de Majo

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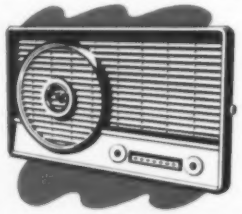

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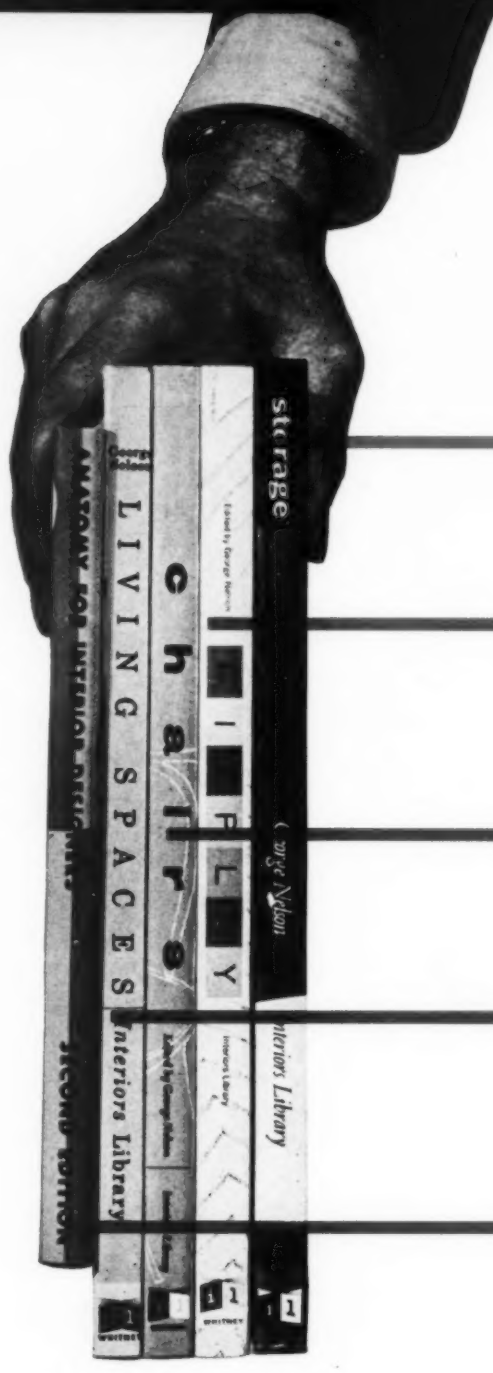

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Here are the problem-solving storage ideas of 138 leading designers for facilities that can be bought or built-in—shelf systems, storage walls, room dividers, unit furniture. STORAGE is edited with an introduction by George Nelson. *Bound in full cloth*: 176 *pages*, 9 *x* 12 *inches with* 303 *illustrations*. $12.50.

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Living Spaces

Contemporary interiors by 81 designers, including Finn Juhl, Le Corbusier, Mies van der Rohe, Richard J. Neutra. LIVING SPACES shows outstanding designs selected by the editors of INTERIORS. Edited, with an introduction by George Nelson. *Bound in full cloth*: 148 *pages*, 9 *x* 12 *inches, illustrated with* 232 *photographs*. *Price* $7.50.

Anatomy for Interior Designers

1321 essential measurements every designer needs, in clear dimensional drawings that can save you many hours of research. Measurements that relate to the human body to all interior furnishings and equipment. A second section HOW TO TALK TO A CLIENT tells how to study the prospect, make plans and talk about money. *Bound in full cloth*: 96 *pages*, 9 *x* 10¼ *inches, full of sketches and diagrams*. *Price* $4.00.

Perspective

Jay Doblin—Director of the Institute of Design, Illinois Institute of Technology and former chairman of the Evening School of Industrial Design at Pratt Institute—created this new development for his own use, expanded it for use in the classroom, and now presents it for the first time under the one cover. It is an unique development, not just another text on the subject, and makes a conribution in four areas:

For designers: PERSPECTIVE is the first system developed to solve the kind of drawing problem encountered by product designers. It eliminates the complex mechanical drawing that an architect, for instance, normally employs in his traditional way of working with plans and elevations; it offers a simpler method of visualizing any three-dimensional object accurately and quickly.

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Contests and Awards

Judging for the **Society of the Plastics Industry** Informative Labeling Contest will take place on December 11 by a group of editors and merchandisers. Winners will be announced in Chicago at the opening of the January Furniture and Housewares Show.

The James F. Lincoln Arc Welding Foundation announces a new machine design competition offering $25,000 in 26 awards for the best papers describing the design of industrial processing machinery. Rules and conditions are published by The James F. Lincoln Arc Welding Foundation, Cleveland 17, Ohio.

The Package Designers Council has opened headquarters at 12 East 32 Street for its annual contest, open to suppliers, designers, manufacturers and fabricators in the United States and Canada who are concerned with the packaging of consumer goods. Winners will be announced in February, 1957.

Closing date for entries in the 1957 **John Woodman Higgins Redesign Award** is January 15. A cash prize of $500 will be given for a design utilizing unique metal stamping techniques to produce a part previously turned out by another metalworking process. Entries should be sent to the John Woodman Higgins Redesign Award, Pressed Metal Institute, 3673 Lee Road, Cleveland 20.

Summer and Casual Furniture Magazine, 114 East 32 Street, New York 10, announced a design contest open to all students of accredited schools. A prize of $250 will be awarded for an outdoor or indoor-outdoor furniture unit, utilizing certain materials. Deadline is May 31, 1957.

Winners in **Koppers' Third Annual Design Competition** for plastic housewares will be announced on April 2, 1957. A production sample of each entry must be received by February 15, 1957, addressed to Administration Committee, Koppers Design Competition, 1313 Koppers Building, Pittsburgh 19, Pa. Scholarships will be granted in the name of the winning molder to a qualified college or university of his choice, for studies in industrial design.

The International Jury of the **Golden Compass** awards, established by "La Rinascente" store in Milan awarded its annual national Golden Compass to architect and designer **Gio Ponti**; the international award was given to New York's **Museum of Modern Art** for its efforts in encouraging contemporary art and design.

How to crash safely

A joint project of the Cornell Aeronautical Laboratory and the Liberty Mutual Insurance Company is the "crash proof" car now being built in a prototype at the Cornell laboratory in Buffalo. While outwardly the car resembles a conventional sedan, the interior is a new concept. The steering wheel is replaced by levers; the driver, seated in the center of the car, gets chest pad protection, and all the seats, which are bucket type and placed so as to brace the spine, have aircraft type safety belts. The doors fold outward; the windshield is said to give undistorted visibility. For protection against injury in case the car should turn over, metal stiffeners and roll bars brace the construction. The sponsors hope that the features of the experimental model will serve as an incentive to automobile manufacturers to give more thought to safety considerations in car design. The Cornell model (below) is based on four years of research.

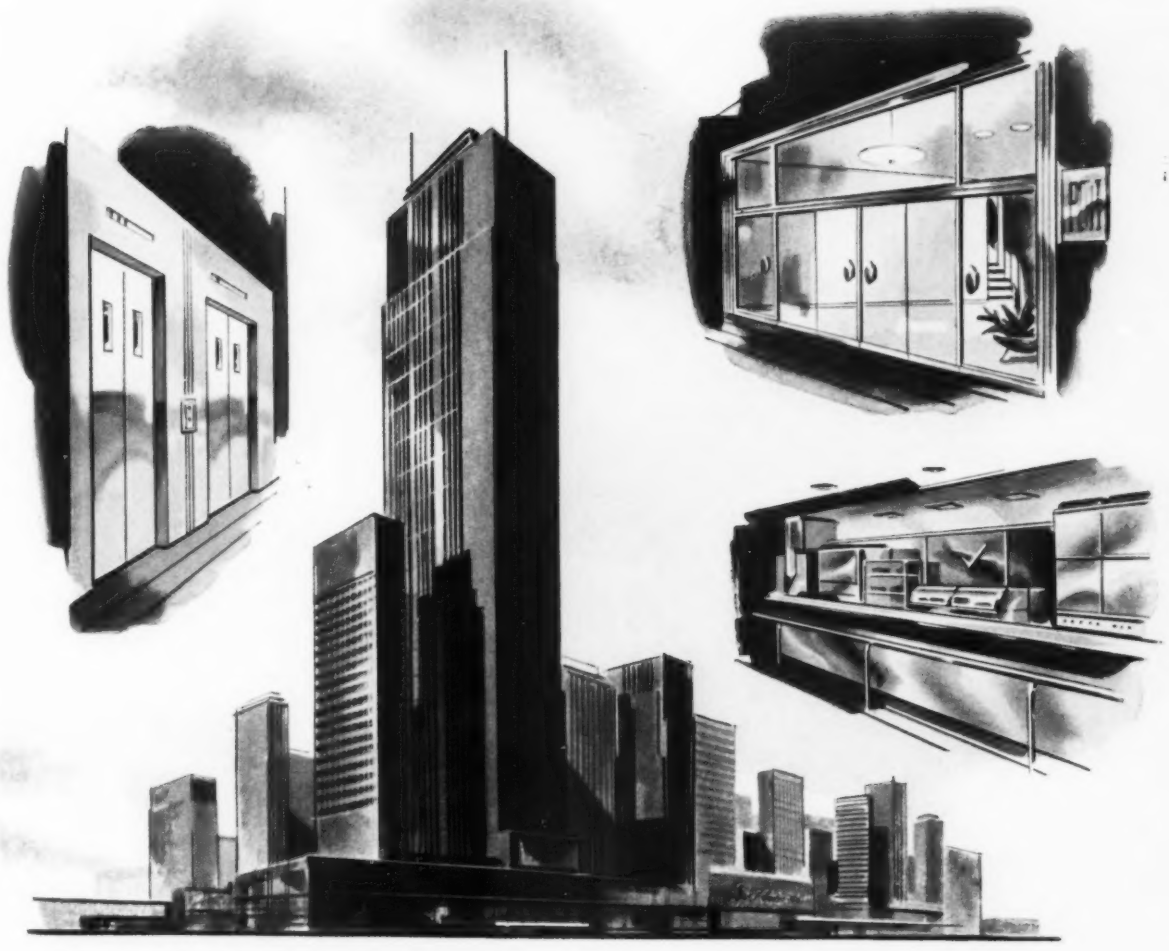
Margaret Mead speaks on design

Continuing a series which began at Syracuse University, a Third Annual Product Design Conference was held at Hunter College on Saturday, October 27. It combined a panel discussion on contemporary problems with a lecture by Dr. Margaret Mead, well-known anthropologist. The panel—Eric Rask, Typewriter Division, Remington Rand; Chester A. Gore, president of Gore-Serwer, Inc.; Ernest F. Thomson, Raymond Loewy & Associates; and Richard Koontz, Moderator—discussed the interrelationship of engineering, merchandising and industrial design in the planning of a new product, before a group of Syracuse design graduates.

Dr. Mead spoke on the problem of change and its impact on cultures, their ability to assimilate new patterns of living in particular, with reference to design and the arts. A simple culture may operate perfectly within its own traditional patterns, but if such people are exposed to alien techniques, woven bandages for example, their way of life and health are disrupted until a complete pattern—cleanliness, sterilization, etc.—is also imposed. They have little ability to assimilate new patterns into their own, and if radical change must be made, a primitive culture must be given a *whole* new way of life. The highly developed, more sophisticated culture, with a long tradition of education—involving, usually, a study of the "classics"—has the ability to assimilate new patterns and ideas without being destroyed, *if* these are sufficiently abstract. At neither extreme, our own culture is constantly in transition; it never affords a complete break to impose an entirely new pattern, and we are forced to assimilate the new into our known patterns. Related to these facts, design must have time-depth, a reference to what went before and to what may come, effecting, out of conflict, a harmonious statement. "We now suffer from the bad manners in design that insists upon abolishing the validity of everything that went before." To illustrate, Dr. Mead showed a collection of five bowls from her cupboard: an early American clay dish for sun cooking; an Arzberg plate; a black Indian plate; a wooden bowl from the South Seas; and a Meissen ware decorated plate, an heirloom. All of these objects, despite differences in origin and period, she pointed out, do not conflict with one another. In their use and modest spirit, they refer to a common source.

High-pressure swinging door

For the pressurized cabin of the DC-8 jet, scheduled to travel at 40,000 feet, Douglas has designed a special plug door, operable on either side, by handles on a common shaft. The act of turning the inner handle clockwise 180 degrees rotates the two hinges inward and swings the edge of the door both in and forward. As the handle reaches the furthest point on the clock, a safety notch is released to permit the door to swing fully outward. When the door is closed and latched, a hook on the bayonet latching cam locks it.



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ASID elects new officers

Jay Doblin, Director of the Institute of Design, Illinois Institute of Technology, was elected president of the American Society of Industrial Designers. Other elected officers represented different areas of the United States: **William Goldsmith**, Chicago, vice-president; **Francis Braun**, Cincinnati, treasurer; and **Kenneth Van Dyck**, Connecticut, Secretary.

At the 12th Annual Meeting of the ASID, when the new officers were announced, outgoing president **Arthur Bec-Var** announced that the Board of Directors had voted **Peter Muller-Munk** the 14th Fellow in the ASID.

IDI plans for national meeting

The Industrial Designers' Institute has named a planning committee for its national meeting: Chairman **James W. Kelso**, Los Angeles; Vice Chairman **Allen B. Johnson**, Los Angeles; and Eastern Chairman, **Carl Frederick Schaus**, GE, Schenectady. Art Center School will play host to the two-day gathering which will be held in Los Angeles on February 15 and 16, 1957.

People

Herbert Bayer, director of design at Container Corporation, is being represented in West Germany by a traveling exhibition of 33 years of work in painting, typography, graphic design, murals, exhibition design and architecture. The exhibit, 250 examples, will be shown later in Zurich, Milan, Amsterdam and other European cities.

L. J. Brandenberger (below, left) and **William B. Sklaroff** (right) have been named associates by **Joseph Carreiro.** Carreiro Design Associates have been retained by Esterbrook Pen Co. and Sani-Shell Corp. of Philadelphia.

Joseph M. Murtha has been appointed Account Manager at Lippincott and Margulies Inc. He will act as liaison between the firm's clients and its design departments, coordinating design projects with merchandising, marketing, and research. **Jack McDevitt** has been made Assistant to the President and **Kenneth Morrison**, Account Manager of L & M.

Sir Gordon Russell, Director of Britain's Council of Industrial Design and organizer of The Design Centre, visited New York the week of November 1. He was awarded the Bronze Medal of the Parsons School of Design on its 60th anniversary.

Paul Wrablica (left) was appointed director of industrial design for D. C. Smith, Inc., industrial advertising and public relations firm.

Morton Goldsholl has moved his offices to the Corn Products Building, 201 North Wells Street, Chicago.

Rita Howell has joined the staff of Peter Quay Yang Associates, who have recently been retained by the Signal Manufacturing Co. and the Shenango China Co.

Gerald Frisch (left) has been appointed assistant to the president of Jim Nash Associates, Inc., packaging design firm. **Jim Nash** has just completed a speaking tour which took him before the Bakery Production Men's Club, the American Pet Foods Manufacturers, the Canadian Display Designers and Builders Association, and the Pretzel Bakers Institute.

Leland Smith, **Lee DuSell** and **Douglas Cleminshaw** have been appointed to the industrial design department of Syracuse University.

Walter Granville was reappointed chairman of the IDI Design Award Committee for 1957.

Paul Laszlo, of Beverly Hills, **Robert Sidney Dickens**, Chicago, **Bernard A. McDermott**, Cleveland, and **Bernard A. Grae**, RCA, Camden, New Jersey, are new members of the ASID.

William Ward, senior designer at Melvin Best Associates, has joined the industrial design faculty at the University of Southern California.

Theodore Luderowski has opened an office at 102 Pierce Street, Birmingham, Michigan, offering industrial, architectural, exhibition, advertising and interior design.

K. Isaacs has been appointed Director of Design, Cranbrook Academy of Art, Bloomfield Hills, Michigan.

Jack Meeker has joined the design staff of Westclox at La Salle, Illinois.

Arthur L. Harshman has been appointed by Russel Wright to be his representative in Cambodia.

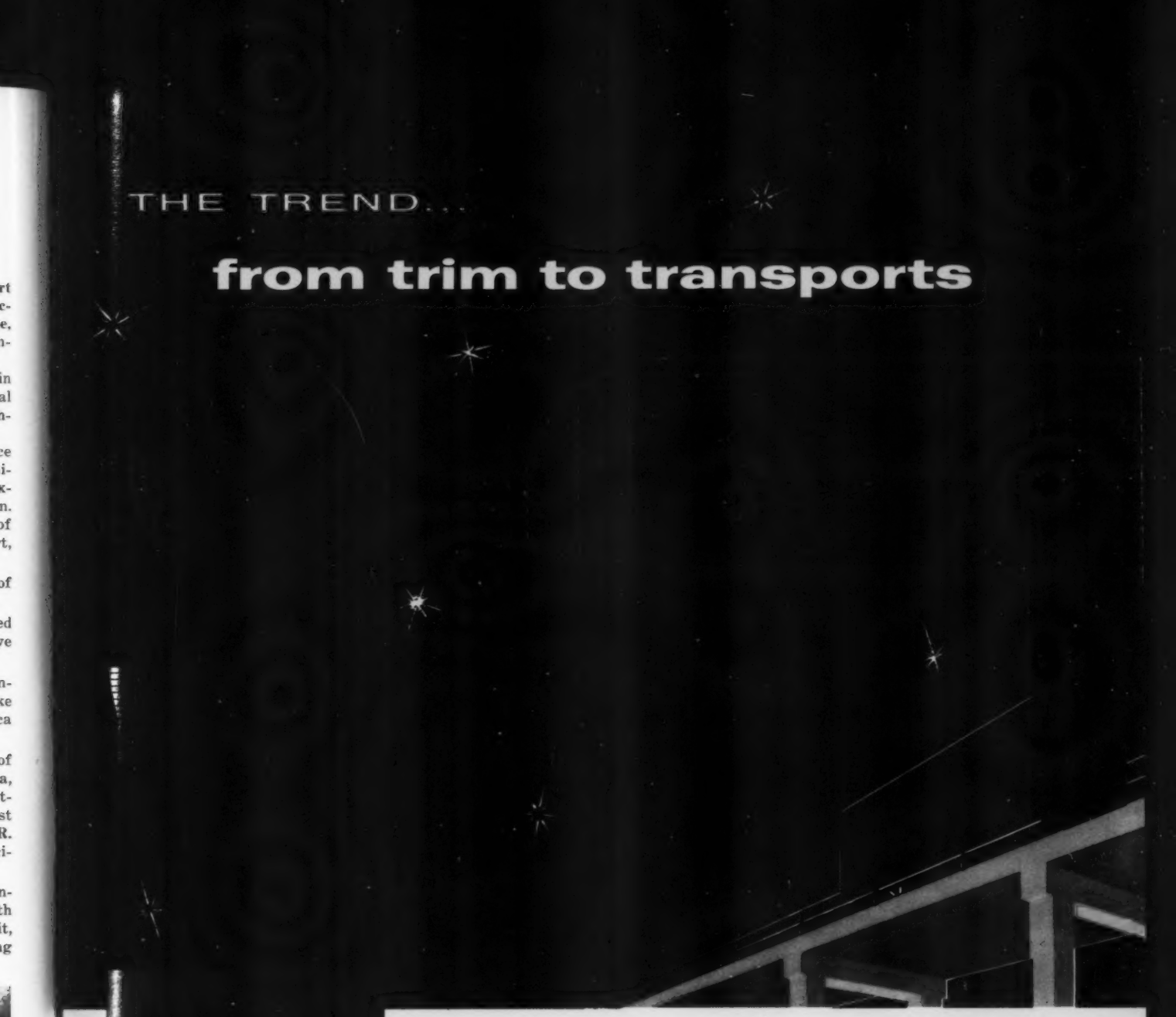
John B. Knight has been appointed manager of a new office opened by Reinecke and Associates at 3004 Santa Monica Boulevard, Santa Monica, California.

John Maguire announces the opening of his office of industrial design in Pasadena, Californa. Mr. Maguire was recently elected secretary-treasurer of the Pacific Coast Chapter of the ASID, and **Harry R. Greene**, of Merendino-Greene and Associates, as chapter president.

Count Sigvard Bernadotte, of Copenhagen, was introduced to the press, with his design of a new calculator by Facit, Inc., at a reception on October 9, during an extended visit to this country.

Largest tanker launched in Kure, Japan

In ten years, tankers have increased in weight more than sixfold. At the moment, the title of largest tanker afloat (and fifth largest ship of any type) is held by National Bulk Carriers' 850 ft., 84,730 ton Universe Leader.



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% sol. lost	D570-42	0.00–0.08
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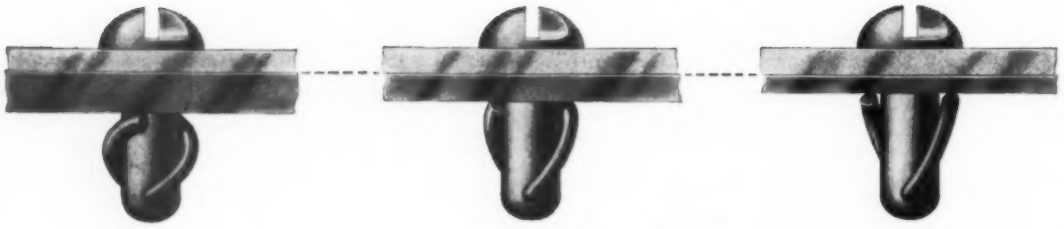

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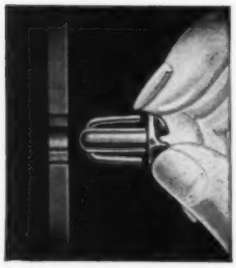

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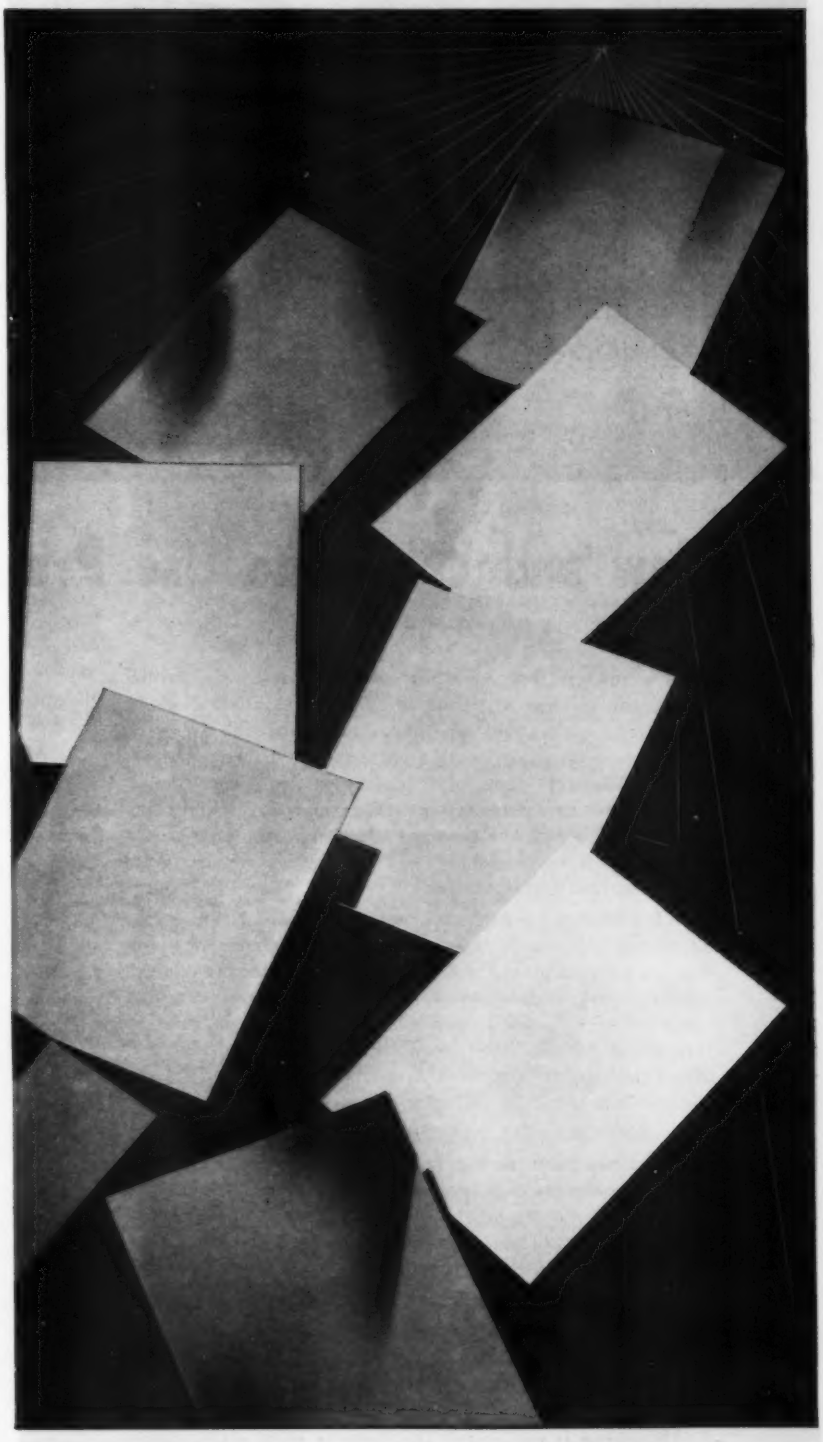
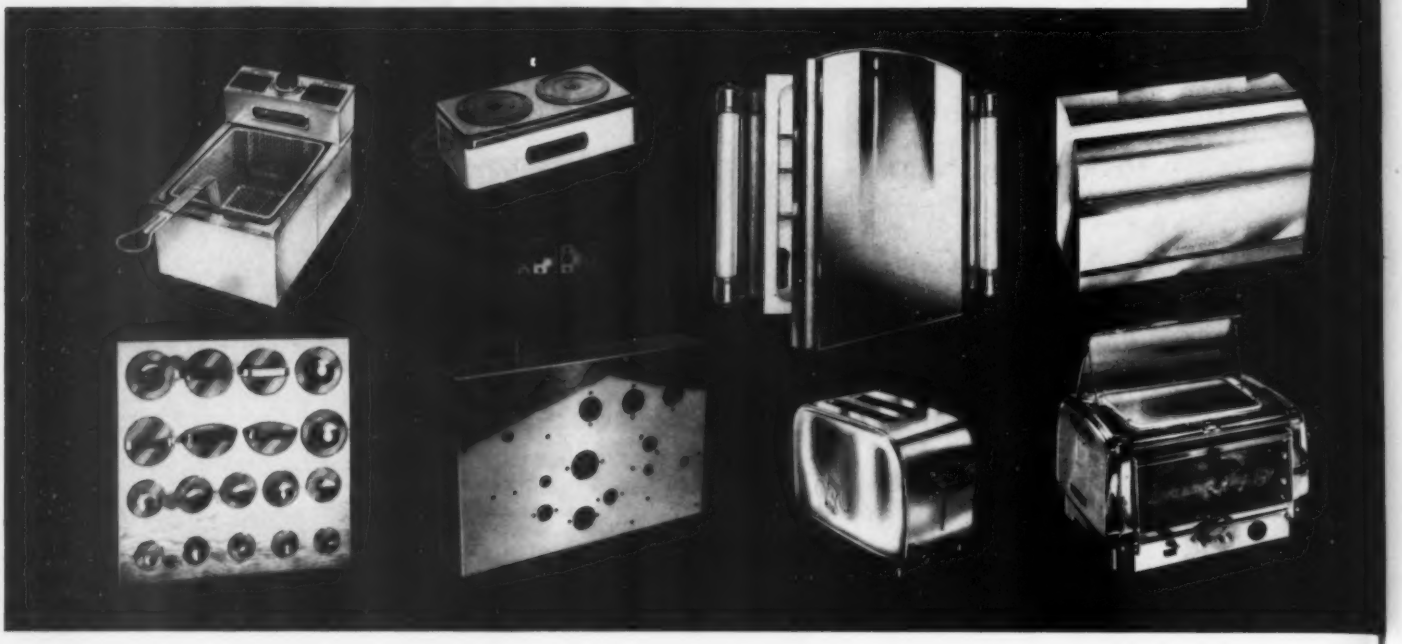
Administrative Office: Peru 7, Illinois

MILLS: Peru, Ill. and Walnutport, Pa.



Nickeloid Metals are available in sheets, coils and strips, with uniform pre-plated finishes of chrome, nickel, copper and brass on base metals of steel, zinc, copper, brass, aluminum.

Cost-Saving Applications Of Pre-Plated Metals



How and Where to Use Pre-Plated Metals

Because of their versatility and adaptability to various design and production techniques, any list of applications of pre-plated metals could run the gamut from door hardware, striker plates and fish lures to broiler-rotisserie wrap-arounds and cannister sets. Experience has shown that where the design engineer considers a pre-plated metal as his design material in the "pre-planning" stage, these modern *finished* raw materials perform admirably . . . both as eye-pleasing decorative trim and functional parts.

For small or complex parts — for small stampings — or where it is virtually impossible to polish interior and hard-to-reach surfaces and contours, pre-plated metals are ideally suited. Indeed, many design features are conceived "around" pre-plated metals . . . features which would be impossible without the pre-plated method of production. After the part is fabricated it can be assembled right into the finished product — requires no post-plating or organic finishing — no degreasing, washing, rinsing, drying.

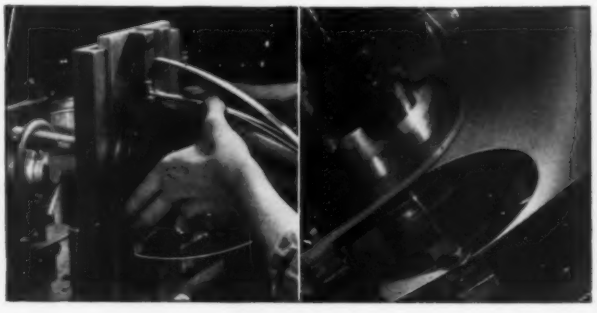
The resultant saving in time, manpower and equipment is considerable and quality of output is usually higher and more uniform. Your plating and finishing problems are reduced to merely selecting from among the many finish-to-base metal combinations, the pre-plated metal best suited to your application.

With reasonable care and good shop practice, pre-plated metals can be fabricated in much the same way as unplated metals. There is no need to invest in special handling and fabricating equipment.

Blanking is performed the same as with plain metals except that close inspection of punch and die is required to detect and eliminate rough edges.

In drawing, if the amount of draw is sufficient to cause a dulling or "orange peel" effect on an unplated metal it will cause the same effect on a plated metal. Hydraulic press operation is preferable to mechanical press.

Bends up to 90 degrees can be made with or against the base metal rolling grain without surface dulling, provided that radii are sufficiently large.



Pre-plated metals can also be seamed, welded, soldered, riveted and etched with excellent results.

Where severe forming is required, Nickeloid metals may be furnished with either of two kinds of protective coating, called, Mar-Not. One type is a strippable plastic film which is sprayed on and stretches when the metal is fabricated. The other is a pressure sensitive paper adhered to the metal by a special gum. Either can be easily peeled off after fabrication.

Assistance in designing and fabricating with pre-plated metals — working metal samples, too — is available from **AMERICAN NICKELOID COMPANY.** *See preceding page for free fabrication and design booklet.*

CORNING GLASS BULLETIN

FOR PEOPLE WHO MAKE THINGS

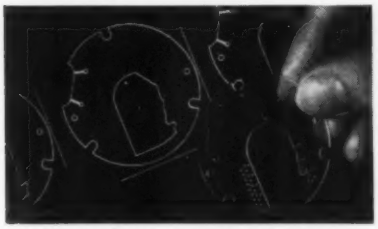
Etchings to excite exigent engineers

Next time someone says, "Make it small and accurate," reach for your file on *photosensitive glass*.

Using a process called "chemical machining," photosensitive glass now yields intricate and accurate components for both electrical and mechanical applications.

Starting with a Corning special glass, chemical machining makes it possible to achieve an intricacy never before thought possible. And it's all done *without* the need for costly grinding, drilling, cutting or engraving.

Let's take a look at some chemical machining in practice, a good example being this wire brush holder for a tiny airborne digital converter.



Made of glass by a combination of photo, heat and etch processes is this precision brush holder for a digital converter. In background are holders that have been exposed and developed but not yet etched.

As originally designed, this converter had 0.0065″ single wire brush contacts. Brush holders were of a glass fiber reinforced laminate. But, the smallest holes that could be drilled in this laminated material were 0.015″ in diameter. Result? Loose-fitting wires.

Turning to the miniaturization and precision offered by photosensitive glass, designers came up with a brush holder with *rectangular* holes, 0.0075″ x 0.015″.

Two wires (each 0.0065″) are inserted side by side in each hole. Holes are etched through the glass and have a conical cross section. The lip of this cross section serves as a reference point about which the free ends of the brush cantilever.

Spacing of the slots is held to a tolerance of 0.001″ over 1½″, making it possible to position the double brush contacts with close tolerances.

Etched glass also plays a role in assembly, with an alignment plate used to locate the free ends of the brush while fixed ends are cemented.

Behind this *accuracy-by-acid* is some quite ingenious exploiting of differential rates of etching glass. And there's also some interesting use of collimated ultraviolet light and heat.

You can learn a great deal more about photosensitive glass (including other uses) by writing for "Chemical Machining Photosensitive Glass," a reprint of an article that ran in *Materials and Methods*. Free with the coupon.

Viscosity, visibility and versatility

From the production lines of the Precision Scientific Company of Chicago comes this Transformer Oil Oxidation Test Apparatus.

This bit of precise plumbing is a second cousin to another Precision product, the Model "S" Kinematic Viscosity Bath.

Used profusely in both is PYREX brand glass No. 7740. First, there are PYREX brand jars (12″ x 18″) forming the main chambers of the test apparatus. Then you'll find an almost bewildering array of tubes and tubing, some of it quite intricate in shape. And there are also Erlenmeyer flasks and glass umbrellas.

Behind Precision's choice of glass is the need for visibility, plus *accuracy and precision*.

PYREX brand glass No. 7740 handles all these requirements admirably. It's known as the "balanced glass,"—balanced for chemical stability, heat shock and physical knocks.

No. 7740 demonstrates a remarkable reluctance to mix with, or be affected by, what you put *in* or *around* it. Among the usually destructive forces that bother it not at all are most acids and alkalies, as well as steam.

This *not adding to or detracting from* is one reason why No. 7740 is the favorite among those who must protect delicate flavors. That's why, for example, you'll find this glass in coffee makers, both commercial and household varieties.

And PYREX No. 7740 stands up to physical knocks. It takes thermal shocks in its stride, too, having a linear coefficient of expansion of 32.5 x 10^{-7} between 0° and 300° C.

A clear glass, it's available in economical quantities as blown or pressed ware, and in plates, panels, tubing and rod.

Even one-piece molding of fancy shapes has been done with this most popular of all glasses made by Corning.

Can some particularly knotty problem of yours find its answer in this or some other glass by Corning? Good way to start finding out is with our Bulletin B-83, "Properties of Selected Commercial Glassware." It details characteristics of many of the glasses sold under the PYREX, CORNING and VYCOR trademarks.

This basic reference volume is yours for the asking. You can get one quickly by using the coupon.

Still available . . .

"Glass and You," a profusely illustrated volume showing how many businesses and industries use glass profitably.

And there's Bulletin B-84, "Manufacture and Design of Commercial Glassware," a brief summary of design considerations in making glass by various methods; also data on sealing and assembling glass to metal.

Plus an invitation to consult with us via the written word, phone, or wire, on utilization and availability of *glass* as a basic material of design and construction.

With 105 years of experience in glass technology behind us, and with the formulas for some 65,000-odd different glasses on tap, we've acquired quite a bit of useful know-how.

You can make use of it at your convenience. And, if you're in the area, be sure to stop by at The Corning Glass Center. Here you will find both the oldest and the newest uses for glass. We would be glad to send you a preview of what may be seen. Check the coupon.

Corning means research in Glass

CORNING GLASS WORKS, 54-12 Crystal Street, Corning, N. Y.

Please send me the following material: Reprint, "Chemical Machining Photosensitive Glass" ☐; Bulletin B-83, "Properties of Selected Commercial Glassware" ☐; Illustrated Booklet, "Glass and You" ☐; Bulletin B-84, "Manufacture and Design of Commercial Glassware" ☐; "Your Tour of The Corning Glass Center" ☐.

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Company_____

Street_____

City_____ Zone____ State_____

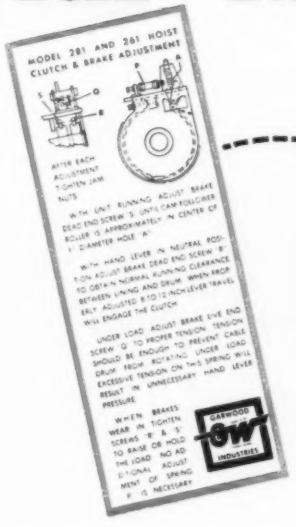
Here's something new now made

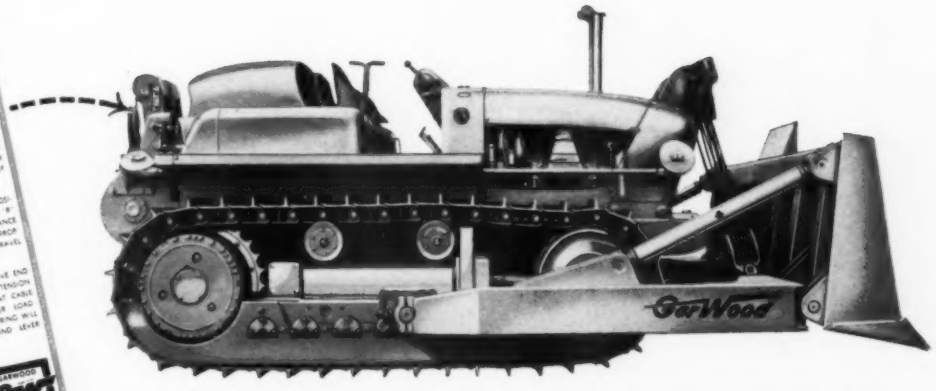
Brilliant emblems made from metalized "Mylar" have been used on fast-flying jets for over two years. During this time, these emblems have been subjected to snow, rain, hail and even dust storms without being affected. This remarkable resistance to the elements is made possible by the strength and abrasion resistance of "Mylar" which protects the aluminum particles —even in extremes of temperature and humidity.

"We have used nameplates made with 'Mylar' for over two years," reports the Toro Manufacturing Corp., Minnesota. The high abrasion resistance of "Mylar" *plus* savings in cost compared to metal and hand painting were the big factors in Toro's choice of signs made with "Mylar" for power mowers.

"Contrast between the metallic background and brilliant colors of our trade name provides us with an unusual eye-catching effect," reports Johnson Motors, Illinois. "Signs made from 'Mylar' provide a sizable cost saving—they're easy to apply...can stand up under all sorts of weather conditions."

in signs and nameplates with "MYLAR"





Operating instructions for Gar Wood Bulldozer Controls on heavy-duty tractors are printed on decals made from metalized "Mylar". Under the most rugged conditions of use, these decals resist abrasion from dirt, moisture, grease . . . stay bright and readable longer.

With the aid of metalized "Mylar"* polyester film, the printing industry has developed a "new look" in metallic signs for product identification, sales promotion and advertising. Already, hundreds of firms have added an extra dimension to the identification of their products or services by using lustrous signs and nameplates made with metalized "Mylar"... and with considerable cost savings!

What are the advantages of these new signs made with "Mylar"? Here are some of the high lights:

BRILLIANCE. Signs and nameplates, made by silk screening on metalized "Mylar", provide the high luster of newly struck metal signs. There's no need for polish because the metallic particles are completely protected from tarnishing by a sheet of "Mylar".

LONG LIFE. They're unaffected by moisture or harmful chemicals. Signs can give long years of rugged service while retaining their original luster.

STABILITY. Signs are dimensionally stable . . . unaffected by varying humidity and temperature changes between -80° and 300°F.

FLEXIBILITY. Because metalized "Mylar" is a tough, flexible material, these signs fit snugly to rounded or slightly irregular surfaces. Since most of these signs are backed with pressure-sensitive adhesives, there are no holes to drill—no screws or nuts to worry about.

EASE OF APPLICATION. Signs made with metalized "Mylar" frequently cost less than other types. But the most significant savings are lower cost of application, absence of maintenance, and long-lasting luster.

There are a number of firms now equipped to print lustrous signs and nameplates on metalized "Mylar" in a variety of shapes and sizes . . . including die-cut designs. Fill out the coupon—we'll send our new fact-filled booklet on signs, plus names of printers now equipped to create the "new look" in signs made with "Mylar".

DU PONT
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BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

NOTE. Signs and nameplates shown on these pages were printed by conventional letterpress process. Since it is impossible to show the effect created by metalized "Mylar" when printing on standard magazine stock, we'll send you a sample sign, when you send in the coupon on the right.

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MYLAR®
POLYESTER FILM

***MYLAR** is Du Pont's registered trademark for its brand of polyester film.*
In Canada, "Mylar" is sold by the Du Pont Company of Canada Limited, P.O. Box 660, Montreal, Quebec.

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Room I-12, Nemours Bldg., Wilmington 98, Del.

☐ Please send me information on signs and decals made with "Mylar" polyester film.

☐ Please send me your booklet on properties, types and applications of "Mylar" available.

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Beautiful in any form . . .

ACRYLITE, the fabulous new design element, so versatile—so adaptable—that its applications are as endless as your imagination.

Acrylite is a non-laminated thermoplastic sheet with embedments of real leaves, ferns, butterflies, spectacular gold mesh and other fabrics.

Available in sheets of 1/8", 3/16" and 1/4" thickness, Acrylite can be cut or drilled with the same tools you would use in working soft metals. When heated to approximately 325° F. it can be formed into an infinite number of three dimensional shapes. Write for literature.

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ALCOA'S UP-TO-DATER ON CASTINGS

Four new-development pages on super-strength impellers, uniform-wall castings, unusual permanent-mold castings, new high-strength alloys, and other meaty data for today's smart young men who will be supervisors tomorrow.

meaty data for today's smart young men

"Close Tolerances"—a Misnomer?

Precision, or close tolerance, casting saves a bundle on jobs that used to require much expensive machining. "Close tolerances" and "smooth finishes" are loosely used phrases. They mean anything tighter than the old sand foundry standard of ± 1/32″ and 500 micro-inches.

At Alcoa, by using plaster-mold processes, tolerances of 0.005″ are possible on certain jobs. Pattern smoothness and close tolerances are easily reproduced since the mold starts as a slurry of gypsum. And plaster molding is often combined with sand-and-iron molding to produce amazing castings.

Plaster molding, and its ability to be combined with other methods, add a new tool to the designer's toolbox. We'd like to explore the possibilities with you.

Sand casting, however, is still far from over the hill. It still is the cheapest method for a short run and certainly a widely used process at Alcoa. Occasionally, on certain small items we use match plate techniques and high-speed molding machines to knock them out faster and cheaper in sand than we can do in die castings or permanent-mold castings. Our sand castings run from a few ounces all the way up to a diesel engine cylinder block, 9′ x 6′ x 6′, weighing 7450 pounds.

Most Uniform Walls Ever Cast

Plaster castings with wall thicknesses down to .060″ are now being made at Alcoa. Tolerances are ± .005″ wall thickness. Right now, they're air scoops for the aircraft industry, made in both rounds and rectangles up to about 25″ long. Curved shapes present no problems. The process is more expensive but worth it because it cuts the weight of an air scoop in half. If your problem is thin, uniform walls, we'd like to explore the possibilities with you.

hopped on the new alloy band wagon to replace expensively machined and fabricated wrought parts

What Is a "Large Permanent-Mold Casting"?

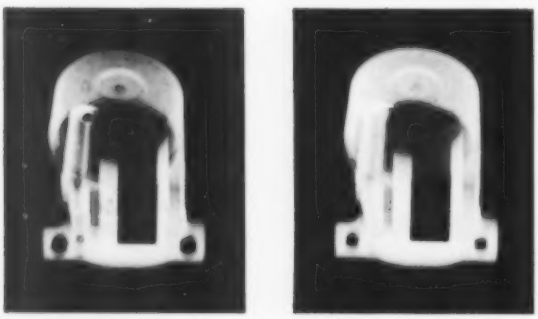
Not so long ago, permanent-mold castings larger than 12 inches and 2 or 3 pounds were rare as dodoes. Now we cast a cylinder of 800 pounds, 36 inches high, 30 inches diameter with 4-inch walls in permanent molds. The part is a rolling mill bearing. Others include engine pistons of 250 pounds, compressor cases for jets of 150 pounds.

We're now casting the entire bumper of a 1957 automobile . . . a routine permanent-mold job. These 28-pound castings are not only large but also are made in large quantities.

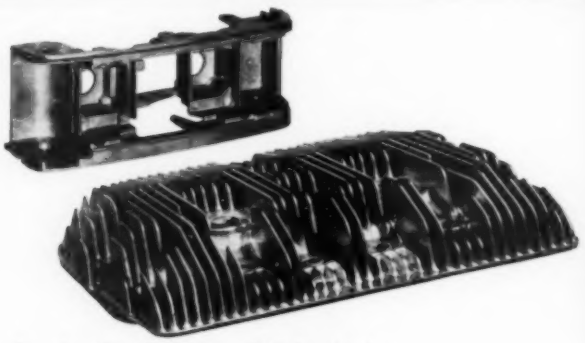
More than one designer has made himself a hero to his boss by looking into permanent-mold castings. Smooth and clean surfaces, medium-to-long production runs, tolerances of 1/64" plus .002" per inch (although 1/32" in 5 feet has been made), good mechanical properties and modest complexity usually indicate permanent-mold castings.

Super-Strength and High-Speed Impellers

Imagine an impeller, 9½" diameter, spinning at 60,000 rpm. Peripheral tip-speed tops 2500 ft. per second, 1800 mph. That's a casting recently turned out by a radical new manufacturing technique. Another impeller, to operate at 58,000 rpm, has delicate curved blades with the as-cast leading edges tapering to .020". These two examples are used for turbo-charging and weigh 3 or 4 pounds. Other super-strength impellers for industrial refrigeration weigh 400 lbs. This new process gives properties as high as 50,000 psi tensile, 35,000 psi yield, 5% elongation.



High-Density Process — At left, X-ray photo of casting made by conventional die-casting method. At right, X-ray print of same part cast by Alcoa's new high-density process — porosity virtually eliminated.



Complex Die Casting — Cylinder head and camera frame are interesting examples of modern Alcoa Die Castings.

Cost-reduction note: The super-strength process can be combined with ordinary *cast* properties in the same part and at substantial savings.

Die Castings—Greater Use and Growing Size

Just a few years ago, aluminum die castings were used mostly as shrouds or covers. Now they're used for many structural parts. Reason: As labor rates have gone up, so has the use of die castings —to save assembly and machining costs. New alloys have given aluminum die castings greater strength and ductility: For air-conditioning compressor parts, automotive transmissions, vacuum cleaners, cylinder heads, etc. Alloys with high endurance limits are responsible for the increasing use of die castings in highly stressed reciprocating parts. As to size, office chair swivel bases and rotary lawn mower enclosures are now being die-cast at Alcoa.

high-density method for small, chunky parts

Alcoa has developed a high-density casting method for small chunky parts. Now soundness approximating wrought materials is possible as examination of the accompanying X-ray photos shows.

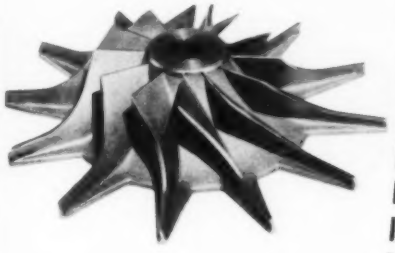
Need High-Strength Alloys? Here Are Three New Problem Solvers

Perhaps the toughest nut to crack in designing an aluminum casting is to pick the right alloy. That is, if you go it alone. Alcoa has over 40 standard casting alloys and each one is designed for a specific use. Your Alcoa representative is an authority on alloys. Use him.

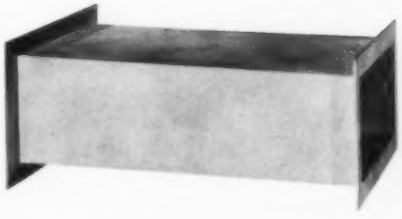
Several of the most recent alloys are worthy of special note: Two are alloys C355 and A356 *for permanent-mold work*. Being high-purity variations of the familiar 355 and 356, they require careful foundry handling but develop extremely high levels of strength and ductility. Shown, on the next page, are the properties for permanent-mold cast test bars for these new alloys in two tempers.

more than one designer has made himself a hero to his boss with permanent-mold castings

Super-Strength Impeller — Diesel engine turbocharger impeller spins at 58,000 rpm. Edges taper to air cleaving .020". Plaster-casting process.



Large Permanent-Mold Casting — Rolling mill bearing goes 800 lbs., 3 ft. high, 2½ ft. diameter, 4 in. walls.



Uniform Walls — Plaster-cast air scoop includes walls with thicknesses of .060", with wall tolerances of .005".

Mechanical Properties

In the die-casting field, alloy X364 is going to increase applications where strength in highly stressed parts is important. Its properties are roughly equal to those of alloy 218, but it's easier to cast and therefore cheaper. Its price will be slightly higher than 380 and 360 alloys so it shouldn't be specified as a replacement for those alloys unless higher strength, better elongation and impact resistance are needed. Shown is a chart giving typical properties (obtained with die-cast ¼" test bars) of this experimental alloy X364, as compared with 218, 360 and 380 alloys.

	Guaranteed Minimum			Typical		
Alloy & Temper	Tensile psi	Yield psi	Elong. %	Tensile psi	Yield psi	Elong. psi
C355-T61	40,000	30,000	3.0	46,000	34,000	6.0
C355-T62	47,000	40,000	1.5	52,000	44,000	4.0
A356-T6	32,000	18,000	10.5	37,000	22,000	15.0
A356-T61	37,000	26,000	5.0	41,000	30,000	10.0

Alloy	Temper	Tensile Strength-psi	Yield Strength-psi	Elongation %
X364	—F	41,000	22,000	7.5
X364	—T5	46,000	33,000	4.0
218	—F	45,000	27,000	8.0
360	—F	44,000	27,000	3.0
380	—F	43,000	26,000	2.0

Right now the ones who have hopped on the C355, X364 and A356 alloy band wagon are designers who are using these alloys to replace wrought structures which involved expensive machining and fabrication. But we expect real interest from designers faced with any part subject to impact. Stir up any ideas?

when a designer needs three eyes:
for costs, competition and performance

Straight Talk

In these days, when a designer needs three eyes, one for costs, one for competition and one for performance, he has often found the answer to all three problems in Alcoa® Castings. Many times, the solid technical help contributed by the Alcoa sales engineers and casting specialists has either cut costs or improved performance. And, *because Alcoa offers all casting processes their recommendations are completely unbiased.*

The nicest thing about this help is that it's free and waiting at your local Alcoa office, listed under "Aluminum" in your classified phone book. Better yet, write for your copy of Alcoa's new technical book, *Alcoa Aluminum Handbook*, 176 pages, 140 tables. ALUMINUM COMPANY OF AMERICA, 1994-M Alcoa Building, Pittsburgh 19, Pennsylvania.

Your Guide to the Best in Aluminum Value

ALCOA ALUMINUM CASTINGS

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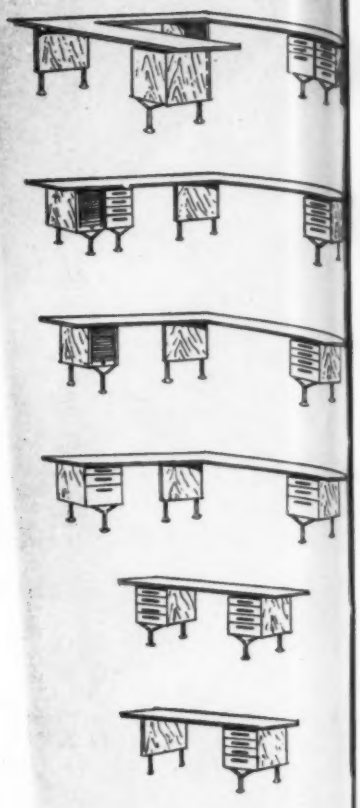
The PREDICTOR SERIES . . . combining the strength of steel with the soft, glowing beauty of selected American walnut . . . the steel components forming an integral part of the basic design. In the new hand-rubbed "executive" finish.



The all-wood drawers have steel drawer runners with fiber rollers. File drawers have exclusive Glide-Matic full suspension.

GREAT FLEXIBILITY
Combination of tops and cabinets to fit your individual needs.

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DESIGNING WITH ALUMINUM

NO. 22

This is one of a series of information sheets which discuss the properties of aluminum and its alloys with relation to design. Extra or missing copies of the series supplied on request. Address: Advertising Dept., Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California.

ANODIZING ALUMINUM

One of the most appealing characteristics of aluminum is the ease with which a variety of surface finishes may be applied to it.

Among these finishes is one that is used almost exclusively for aluminum: anodizing. It is the electrolytic formation on the metal of an oxide film which is relatively thick compared to the natural oxide film formed in normal environments.

The natural oxide film, which begins to form on aluminum surfaces as soon as they are exposed to air, provides a thin, transparent, protective covering for the metal. This film, which may be only a millionth of an inch thick, accounts for aluminum's resistance to corrosion.

The thicker film produced by anodizing provides still greater anti-corrosion characteristics, plus a hard, wear-resistant surface. This anodized film may vary considerably in thickness, hardness and porosity, depending upon the anodizing process used. These processes are similar in that, in each of them, an electric current is passed between the aluminum and an electrolytic bath in which the aluminum is immersed as an anode. There are also distinct differences among the processes, such as the variety of electrolyte baths which may be used.

Sulfuric Acid Process

The sulfuric acid anodizing process is used to create a relatively thick, porous coating.

Sulfuric acid anodic films serve as excellent mordants for certain classes of dyes which, when absorbed in the coating pores, give bright attractive colors to the aluminum surface.

However, because most dyes will fade in direct sunlight, they should not be used in outdoor applications where fading over a period of several years may become a problem.

Relatively low cost makes this anodizing process the one most widely used commercially. Virtually all decorative anodizing is done in dilute sulfuric acid baths. Coatings produced by this process provide effective barriers to many corrosive atmospheres. Thin films produced in sulfuric acid are excellent surface pre-treatments for subsequent paint, enamel and lacquer coatings.

Because of the corrosive nature of the electrolyte, the sulfuric acid process should not be used for anodizing assemblies wherein bath entrapment might be possible.

Chromic Acid Process

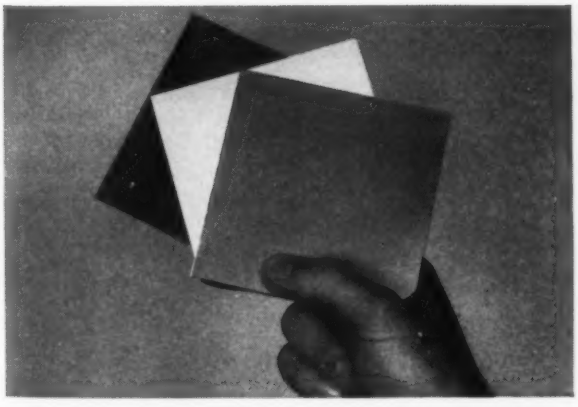
Anodic coatings produced in chromic acid baths are noted for their outstanding resistance to corrosion, which may be attributed to a lesser degree of porosity than sulfuric acid anodic films.

This reduced porosity limits the value of chromic acid coatings for dyeing, but they are widely used as base coatings for paints, enamels, etc. In fact, many armed services specifications include chromic acid anodic coatings as paint primers.

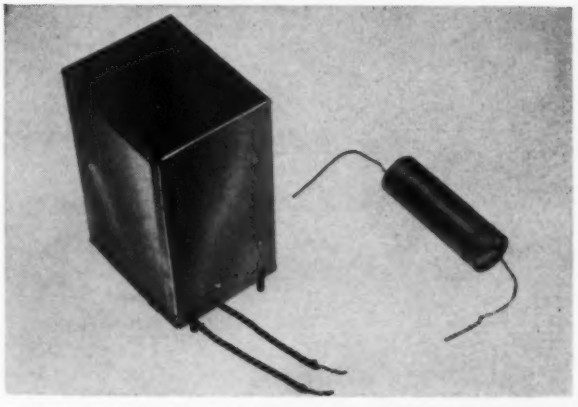
Although higher operating voltage requirements render this process more costly than the sulfuric acid process, it is frequently used for anodizing intricate shapes that are to be exposed to extremely corrosive environments. Because the bath acts as a corrosion inhibitor, there is no danger of corrosion being caused by bath entrapment in crevices.

Hard-Coat Processes

The hard-coat processes developed fairly recently are used to create heavy, highly abrasion-resistant films.



Anodized coatings can be formed in various shades ranging from colorless transparent to dark gray, depending upon the choice of aluminum alloy, electrolyte solution and anodizing conditions.



At one time, capacitors for use in electronic equipment were quite bulky (above left). Space and weight are now saved through use of anodized aluminum foil capacitors (above right) which are much more efficient.

With the added attribute of extreme resistance to corrosion, the hard-coats are especially useful in extending the service life of moving machinery parts. Hard-coats are currently being used on cylinders and pistons, hydraulic systems, textile machinery rolls and other applications requiring great wear-resistance.

To date, hard-coat processes are comparatively expensive. Both the voltage and current density used are quite high, and there is considerable expense connected with the refrigerating equipment required to maintain the bath temperature at about 30°F. or lower.

Boric Acid Process

Coatings formed by anodizing in boric acid solutions are nonporous, and have high dielectric strength.

Their use represents one of the specialized applications of the properties of anodic coatings. Etched aluminum foil, anodized in a boric acid solution, is now used in the production of electrolytic capacitors, or condensers. These are much more efficient and considerably smaller than earlier paper-wound capacitors. Their reduced size has had an important influence on the design of the compact radios, television sets and aviation electronic apparatus we use today.

Gold Coat Process

An improved anodizing process recently announced by Kaiser Aluminum makes use of a new decorative alloy to produce a striking gold color during anodizing. This gold color is remarkably lightfast —*far superior to dyes* in its resistance to ultraviolet light.

The anodizing processes that produce this gold color are low in cost and require only the standard equipment used in sulfuric acid anodizing.

Phosphoric Acid Process

Because the anodic oxide coatings formed in phosphoric acid are appreciably soluble in the anodizing bath, they are thin and highly porous—not sufficiently attractive to be used in decorative applications without subsequent finishing treatments.

An advantage of their thinness and porosity is in affording a good base for electroplating adherent layers of other metals, such as nickel, copper, silver and cadmium. In preparing pre-plating anodic coatings of this type, the anodizing characteristics of the individual aluminum alloys must be considered.

Desired results can be obtained by varying anodizing conditions such as bath concentration, temperature, voltage, etc. The most satisfactory plating solutions for use with phosphoric acid anodized coatings are those that are nearly neutral or only weakly acid or alkaline.

The processes described here are only a few of the many techniques used to create anodic coatings. There are many variables in each process, and specific control of all or any of the variables may be exercised to obtain certain desired effects. For further information concerning specific anodizing techniques, contact the Kaiser Aluminum sales office or distributor listed in your telephone directory. Kaiser Aluminum & Chemical Sales, Inc., *General Sales Office*, Palmolive Bldg., Chicago 11, Illinois; *Executive Office*, Kaiser Bldg., Oakland 12, California.

ANODIZING CONDITIONS

Process	Bath Composition	Voltage	Current Density Amp/Ft²	Special Conditions or Equipment
Sulfuric Acid	15% H_2SO_4	14–17[1]	12	.....
Chromic Acid	5 to 10% CrO_3	0–40	1–5	Bath temperature 95°F.
Boric Acid	12%	500	10.8	Bath temperature 210°F.
Hard Coats	10–20% H_2SO_4	23 to 120	20–50	Refrigeration equipment to maintain temp. 25 to 30°F.
Phosphoric Acid	17–43% P_2O_5	5–30	10–20	Bath temperature 60–95°F.

[1] Depending on the alloy

See "THE KAISER ALUMINUM HOUR." Alternate Tuesdays, NBC Network. Consult your local TV listing.

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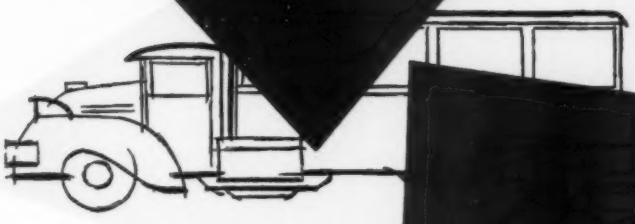

hi-lites on hi-fax

and other Hercules plastics

Specify a Hercules plastic and upgrade your toy products. Now Hi-fax, Hercules' linear ethylene polymer, offers a whole new range of properties for the design and production of better toys: greater strength and rigidity than conventional polyethylene, *plus* rich color and an improved surface finish.

For details on Hi-fax, and other Hercules plastics for the toy industry, please turn the page.

.....over.....

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hi-fax® for toys

Hi-fax, Hercules' new linear ethylene polymer, provides a combination of properties unmatched by any material previously available. That's why those who design or make toys are finding this completely new plastic ideal for a wide range of applications. Check these properties against your requirements and you'll see why Hi-fax means superior products.

Hi-fax is heat resistant—Now plastic toys can be immersed in boiling water, even washed in the automatic dishwasher. A real "plus value" for the mother who always wants baby's toys hospital clean.

Hi-fax is rigid and strong—You get four to five times the rigidity; twice the strength of regular polyethylene. Hi-fax is ideal for those toys that must take it.

Hi-fax withstands low-temperature—Impact strength remains even at low-temperature. Now plastic toys can go outside in winter.

Hi-fax is richly colorful with an attractive lustrous finish.

Hi-fax is easy to fabricate—Hi-fax toys can be molded by compression, extrusion and injection techniques and machined by conventional methods.

Whether your line is toys or housewares, industrial moldings or electrical insulation—whatever your product, you'll find Hi-fax offers a superior plastic to make the best even better.

® HERCULES TRADEMARK

hercocel® *from head to toe*

Betsy Wetsy, long a favorite of small girls, poses with her brand new big sister—The Revlon Doll—"The Most Beautiful Doll in the World." Both of these dolls have a lot in common. For one thing they belong to the famous Ideal Toy Corporation family. For another, they both rely in part for their long-wearing durability on Hercules Hercocel (cellulose acetate). Betsy's head is completely Hercocel as are the soles of her big sister's shoes. Many toy manufacturers have come to count on Hercocel for acetate's famed toughness, whether it is needed for a complete product or just a crucial part. (Dolls courtesy Ideal Toy Corp., 200 Fifth Avenue, New York 10, N. Y.)

Cellulose Products Department

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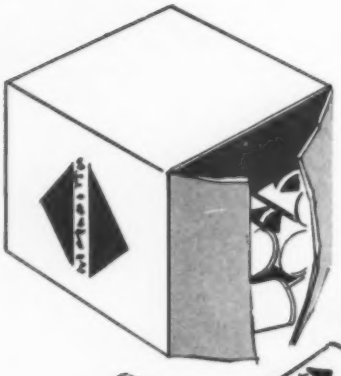
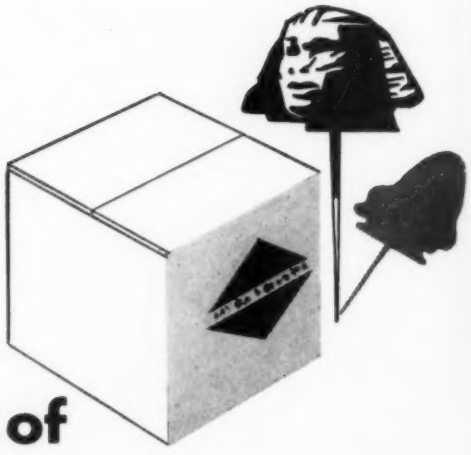


Not the cost, but the cost-saving of



SPECIFICATION ADHESIVES FOR YOUR CASE-SEALING OPERATIONS

Your product is made—and packaged.

Into each package has gone some part of your careful planning, engineering, purchasing, processing . . . plus some of that love that so naturally goes with pride of workmanship and pride of achievement.

Each package is now ready to go out as one more salesman on your payroll . . . primarily the kind of salesman who builds *repeat* sales.

Your product is ready to be packed for shipment.

What experiences will it have on the way? With the same care, you have selected the type of shipping case that best serves your purpose. You've selected fine machines to help you do the packing. You've selected the labels or inks that establish and maintain your identifications.

Your filled shipping case is ready to be closed and sealed.

Are the adhesives you have selected worthy members in this line-up? Are they able to carry their full share of the responsibility for the safe, unimpaired, good-looking delivery of your product to satisfied customers?

This is the time to *know* that you have been *truly* penny-wise. Because the cost of adhesives (per thousand shipping cases) is measured in pennies. And the difference between run-of-mine adhesives and *specification adhesives* in fractions of pennies.

One damaged shipping case can create one dissatisfied customer. Two to the same customer could cost you one customer.

Adhesives can be specification-formulated for strength, for moisture-resistance, for packing in ice, for extreme aridity, for use on specific machines in rooms of any given humidity, for almost any sensible precaution. (In World War II many cases of food and medical supplies had to be floated ashore. Specification adhesives were used.)

We invite the opportunity to present the case for adhesives made to exact specifications – for each adhesives application in your plant. We are prepared to submit formulated samples–for tests to be made in your plant–under your particular working conditions. That is the one kind of testing that assures you of satisfactory results.

If we prove our case, you will find it comforting to know that fourteen Arabol plants and warehouses stand ready to serve you–as well as the facilities of four laboratories. In the event of economic or weather conditions forcing an interruption in the services of the plant or warehouse nearest you, you will immediately be served from the next nearest plant–with adhesives made to exactly the same specifications.

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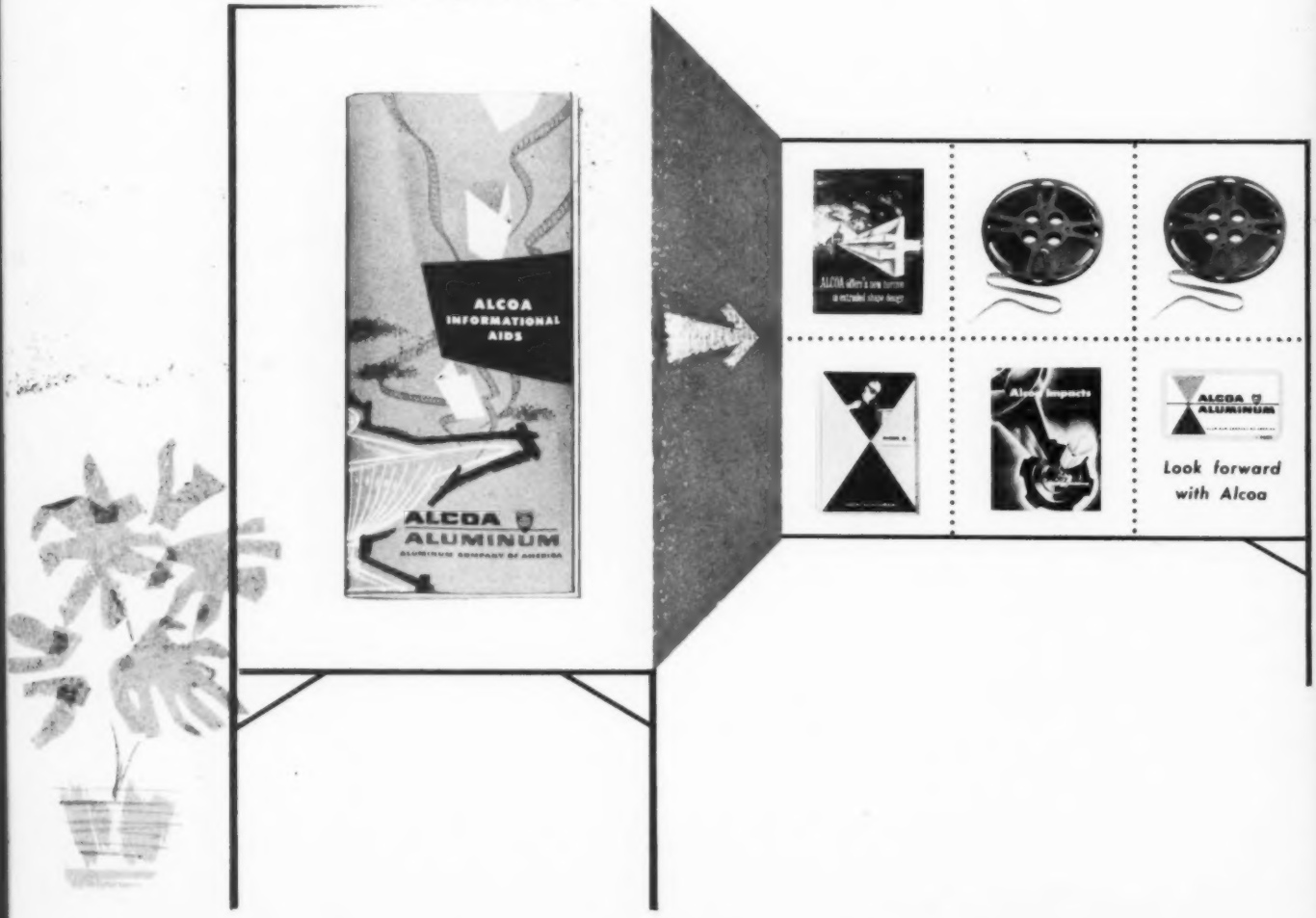

WHAT'S NEW?

WHAT'S NEW?

WHAT'S NEW?

WHAT'S NEW?

This favorite American expression is an apt opening to our Third Annual Design Review: it conveys a spirit of salutation, news, and activity—and symbolizes America's love for innovation and change.

INNOVATION IS THE SUBJECT OF THIS ISSUE.

Each December, when we publish our annual review, our problem is similar to the one faced periodically by many—probably most—American manufacturers: we *must* have something new to show. Fortunately, the manufacturer has solved this problem for us, and for himself. Industry knows that the American consumer believes in progress, expects new and better goods every year, and industry manages to provide those products. Change is the inevitable theme of this issue because it is the theme of our whole economy.

Even the pace of change is changing in this country. Since the war, the inventions that alter consumer products have come at an accelerated pace. Firms which once waited for the public to demand improvements now hurry them to the market as soon as they are perfected, confident that a better product will create the demand.

IS THIS EMPHASIS ON "WHAT'S NEW" A GOOD THING?

There is no law, of course, that change is always for the better. The word "new" has many meanings, and all too often it has meant a new high in fuel consumption or a new low in streamlining. Planned obsolescense—the policy of forcing goods into retirement to make room for new ones—is frequently, perhaps almost subconsciously, regarded as morally wanton and economically reckless. It is often said, too, that the addiction to frequent model changes can only result in senseless styling trends—since it is obviously impossible to go on improving things forever.

Yet our round-up of new products suggests that, for the time being at least, things are not so bad.

THE PRESSURE TO CHANGE MAY BE A POSITIVE FORCE.

Substantial innovations, most of them interesting and some of undoubted value, appear through the whole range of consumer products this year; some of the most promising ones turn up in products that have already undergone considerable change since the war. In presenting these innovations, we feel—for reasons described on the next 3 pages—that our Annual Design Review this year is more than a catalog of good designs: it is a progress report on the achievements of American industry.

How is it possible
for manufacturers to come up with
real improvements on a regular
marketing schedule?
In a country where everything changes
fast, there are many pressures for
changes in the products we live with,
and just as many opportunities
that invite change.
Here are the four big areas of activity

BEHIND THE INNOVATIONS

that have made news in this year's
consumer and industrial markets.

1. Technology. Industry's efforts to provide better, cheaper, more efficient products are bolstered by the basic research carried on in independent and government laboratories. Much of this research knowledge is being applied to consumer products for the first time this year, at the same time that already-familiar inventions are finding new applications.

By far the most exciting area of technological progress this year is power: solar power, in its first consumer use . . . experimentation with electronics for cooking, refrigeration, air conditioning, and lighting . . . continuing work on new types of fuel for planes, autos, ships . . . expansion of the list of products that use power to lighten work or enhance pleasure. Technological progress also shows up in unusual applications for modern materials like nylon and magnesium . . . in further exploration of uses for television and other modern systems.


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2. Changing habits. A constant inspiration for new products are the changing habits, tastes, and desires of the consumer. Since the war, these changes have been reflected in a tremendous number of new products and new product types.

Examples of the influence of changing habits on this year's products are these: more and better worksavers . . . a new modesty and adaptability in elaborate, fairly expensive equipment (portable TV, for instance, and even a stereophonic sound recorder) . . . unusual dignity in appliances and housewares (this shows up especially in built-ins) . . . easier upkeep built into traditional luxuries (new methods of upholstery, new materials for flatware).


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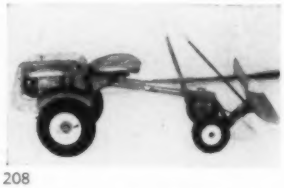
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3. Economy. For industry, cost-cutting designs and more efficient manufacturing methods are essential to offset rising costs and to help expand the consumer market. Though lower costs sometimes mean a cheapened product, they can mean a neater product, a more advanced solution. The pressure to trim costs has brought remarkable changes in traditional methods of doing things.

Economy was a factor in virtually all design in 1956. Some of the more striking effects were smaller products with fewer parts (radio, TV, even computers) . . . inventive detailing, simplifications and combined functions . . . and some unique approaches to old problems (comfort, for instance).

228


131

4. The inventive mind. Even if business did not depend on it, natural born inventors would continue to tinker and change and improve the things they find around them. This innate urge to find a better way of doing things inspires the inventor who makes a better building block or redefines the faucet or makes over the fan. The urge to improve is what stirs the true designer. His work on any problem is a new statement, and always, in a sense, obsoletes what has gone before.


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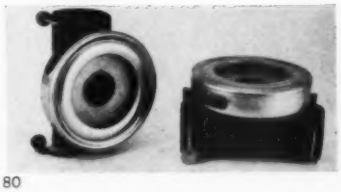
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This brings us to the question of **DESIGN**

In attempting to explore the question of innovation in this Review, the editors have played two roles: as judges we have sought, as always, to choose the outstanding designs of 1956; as journalists we have hunted down products that showed timely functional improvements. We suspected this might leave us with two groups of products—the beautiful but outmoded ones, and those that were brilliantly engineered but unappetizing. As it turned out, our two groups of products overlapped in most places. In other words, we did seem to find some relation between design and innovation.
Is this surprising?

CAN DESIGN SURVIVE THE CURRENT PACE OF CHANGE?

Now that the consumer's indiscriminate postwar hunger for goods has been satisfied, the manufacturer is beginning to find he cannot depend on high-pressure styling to rejuvenate a product and keep it selling. More and more, he is forced to keep the customer's appetite alive with significant improvements. At the same time, designers have tended more and more to consider the functional aspects of the products they work with. When too much responsibility for the success of a product lies with a "new look," design is overloaded with significance. To the extent that functional innovation has replaced styling as a major selling point, "design" has benefited.
Product design, after all, is not a pure art-form like painting or sculpture. Formal beauty doesn't take precedence over function when you are peeling potatoes, and an eggbeater that was *too* expressive could be pretty annoying. We probably are not risking our standing among the world's great cultures if we de-emphasize appearance in our products.
Nevertheless, even a schoolchild knows that a great work is one that lasts. In a country where things aren't meant to last, what hope have we of producing great design? This point of view argues that design and innovation are unrelated and even incompatible.
The answer is another schoolbook maxim:

GOOD DESIGN IS ALWAYS A NEW STATEMENT.

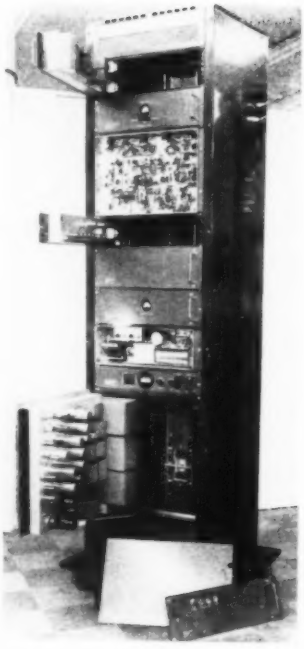
A designer cannot work without solving a problem, even if it is presented as the oldest problem in the world; our most influential designers are generally those who solve the whole problem—those who conceive a product afresh as well as shape it anew. In a mediocre product, design and innovation may seem totally unrelated, but in the finest work they are always found together. They are not separate subjects but two sides of the same coin.

Power, not simply to make machines — or people — move, or work faster, but to put them in touch with each other, is behind the news in

COMMUNICATIONS

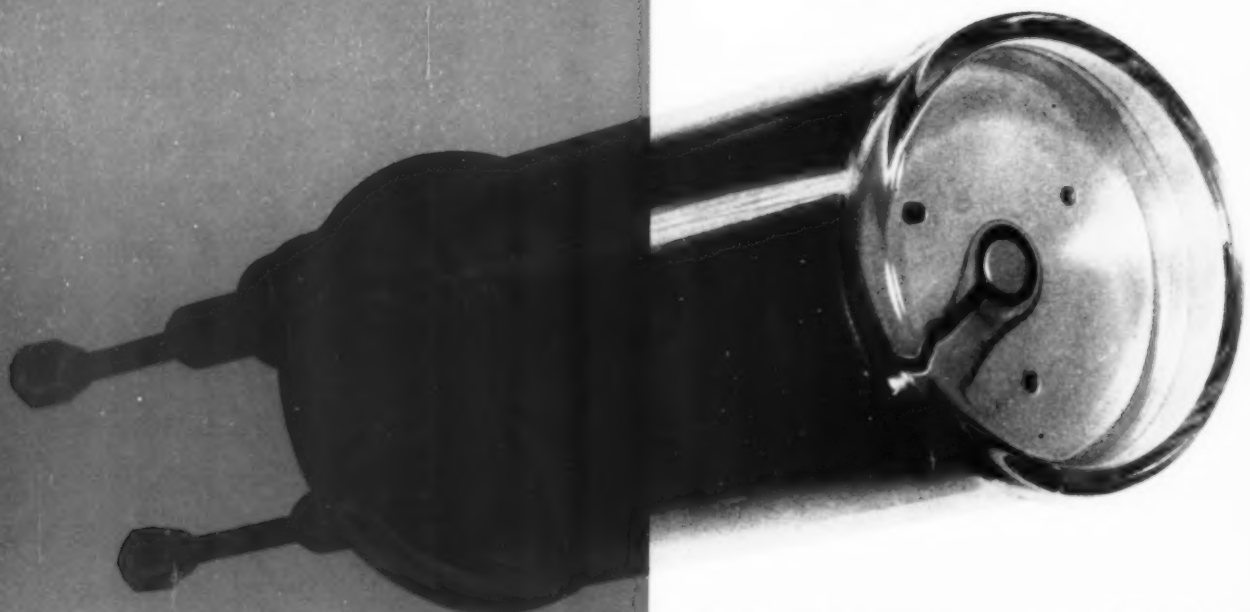
In business equipment as well as television and radio, the trend is to smaller packages — more compact, more portable, and often more economical. The first steps toward miniaturization — the transistor and its companion components – have been rapidly followed by new uses of power, and in some cases new sources of power, that help the small machine to do a bigger job, or a completely new job. The result is service in new places: dictation on a trip, computation in the air, microfilming on the site, television almost anywhere you want it. And the trend promises to be accelerated by three recent inventions described overleaf.

INVENTIONS of greatest significance in 1956 may not appear startling, yet their potentialities may change our lives, products, methods, outlooks. The atomic clock, world's most perfect timekeeper, is too accurate and costly to be needed for ordinary timekeeping, but it is invaluable in regulating precision instruments and controlling radio transmission more accurately than ever before, and promises future radios clearer signals, narrower bands and thus more stations. The wireless lamp explores a new source of power for all types of photo systems—radio waves generate intense cool light, and transmission wires are no longer needed. RCA's newest electronic light amplifier promises, among other things, more compact TV tubes with larger and clearer pictures.



1 Atomichron (atomic clock)
National Company, Inc., Malden, Mass.
Dr. Jarrold R. Zacharias, consultant

Using the pulse of the cesium atom, which vibrates at a frequency of over 9000 megacycles a second with absolute accuracy, this pioneer in commercial atomic equipment is the most dependable time measurer. It permits exact frequency calibration and enables a highly sensitive time interval and frequency control for communication and engineering systems. A largely increased number of stations on the broadcast band is now a possibility.



2 RF (Radio Frequency) lamp
Sylvania Electric Products, Photolamp Division

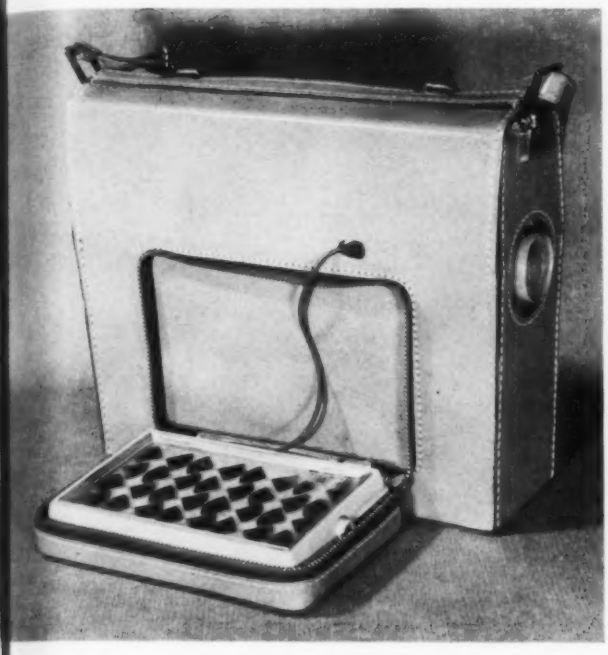
"Wireless" lamp, developed to improve printing of movies, shows principle of energy transmission by waves—first applied to sound, then sight—now transferred to light. Three elements are needed for operation, a high-frequency generator plugged in within range of lamp; bulb, requiring voltage connection for brightness tuning; energy itself, picked up by receiver without wires. Light may be tuned up brighter than any incandescent source.

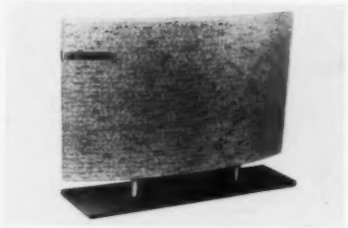
3 Electronic light amplifier
Developed at David Sarnoff Research Center of RCA, Princeton, N. Y., by Benjamin Kazan

Better pictures for TV, movies, x-ray, radar and photography may be made by projecting image with available light onto thin panel of electroluminescent and photoconductive materials that clarifies image and magnifies brightness 1000 times.

4 Sun-powered portable radio
Admiral Corporation, Chicago
Lawrence H. Wilson, consultant

Thirty-two silicon solar cells are offered as an optional attachment ($185), to energize all-transistor radio; battery-operated when no sun or incandescent light is available.





5 Isophase electrostatic speaker
Pickering & Company, Oceanside, N. J.

Virtually massless diaphragm converts electrical into mechanical energy, producing sound at constant level over entire surface without enclosure. Used in conjunction with woofer for low-frequency reception. (An experimental electrostatic speaker with full range reproduction was shown here by a British firm this fall.)

6 Two-way combat radio
Army Signal Corps Engineering Labs

Smallest two-way combat radio; earphones, batteries, sending and receiving station, thumb-sized mike weigh less than a pound, slip under combat helmet.

RADIO, competitively pressed by TV, can claim a very basic invention this year—the sun-powered cell, announced just two years ago, is already energizing a portable (4). Portability, in fact, appears to be radio's big competitive push as now-familiar inventions like transistors, printed circuits and miniature components are widely used for handy portables with big-set performance (6-9). Sound reproduction problems may be answered by a new drive in electrostatic speakers (5)—thinner, unenclosed elements that, when perfected, could alter the character of all sound systems—including radios.

7 Rambler personal portable
Westinghouse TV-Radio Div., Metuchen
Bronislaw Zapolski, consultant

Case of high-impact Styron (Dow), tapered at top, with wrist strap instead of handle, is designed to be held easily in palm of hand while walking.

8 Transistor portable radio
Motorola, Inc., Chicago
Herbert Zeller, Director of Design

Antenna integrated with styrene handle; steel housing, brass front, steel grille; 18 ounces.

9 Globetrotter portable radio
RCA Radio & Victrola Div., Camden
B. A. Grae, Manager, Styling

Anodized aluminum and high-impact plastic case. Wavefinder antenna on top rotates for best reception.

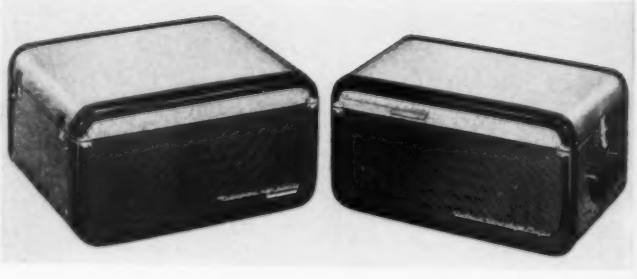
SOUND SYSTEMS are experiencing a revolution that is no longer purely technical. As special equipment becomes popular with the non-expert, manufacturers continue their effort to make new items acceptable by design. A portable tape recorder (10) and even an elaborate binaural system (12) look less professional and more like equipment that anyone can have fun with. Eames' new speaker enclosure is a unique achievement in this field of design: its vivid expression of the boxy enclosure and the circular speaker gives it a convincing and integrated character: it is clearly both furniture and sound equipment.

10 "Career" tape recorder
Ampro Corporation, Chicago
Morton Goldsholl, consultant designer

Wooden case with pyroxylin covering (Johanna Mills), perforated aluminum grille, injection-molded control panel.

11 331-B AM-FM stereophonic tuner
H. H. Scott, Inc., Cambridge, Mass.
V. H. Pomper, staff designer

Two separate tuners (AM and FM) in one chassis using planetary drive tuning for accurate binaural radio reception. Each has concentric knobs for quick sweep of band with outer knob, fine tuning with inner one.

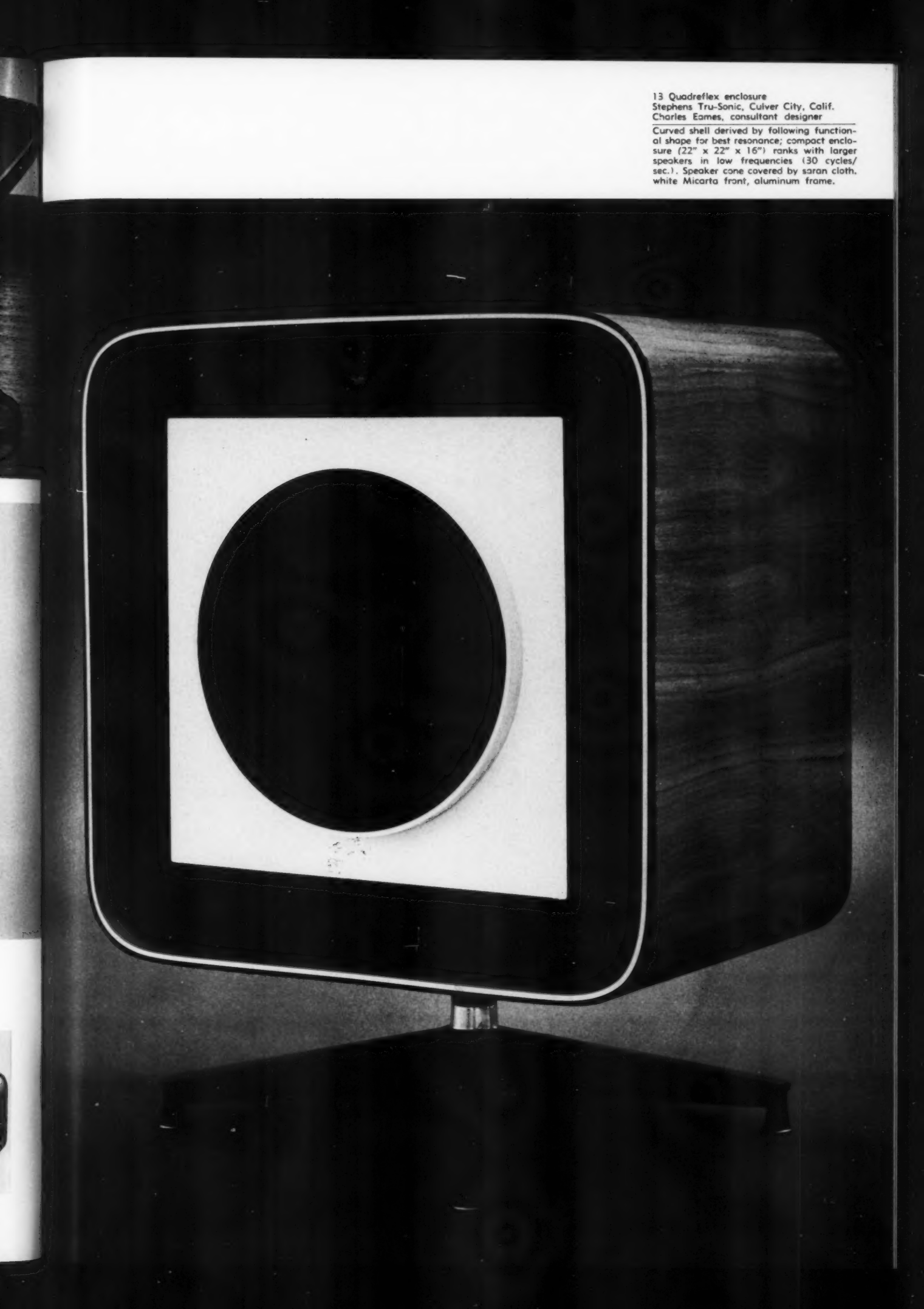


12. Victrola stereotape player
RCA Radio-Victrola Div., Camden
B. A. Grae, Manager, Styling

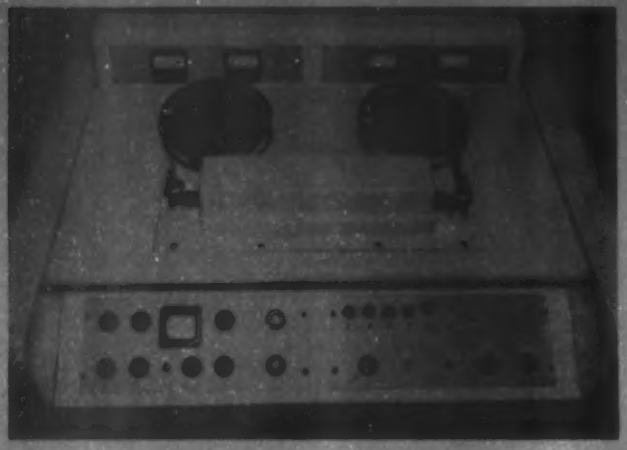
Playing two tracks with two amplifiers, player produces stereophonic sound from two Panoramic 3-speaker systems in matching luggage-type cases.

13 Quadreflex enclosure
Stephens Tru-Sonic, Culver City, Calif.
Charles Eames, consultant designer

Curved shell derived by following functional shape for best resonance; compact enclosure (22" x 22" x 16") ranks with larger speakers in low frequencies (30 cycles/sec.). Speaker cone covered by saran cloth, white Micarta front, aluminum frame.



TV The prospect of putting audio and visual images on a single tape for better recording and rebroadcasting of television—first explored by RCA—emerged this year as a commercial reality in the Ampex station console (14). A parallel development in "electronic photography" for the home is being developed simultaneously: RCA's sight-sound tape machine plays prerecorded tapes on the home TV—and color television shows may soon be sold as phonograph records are now. Elsewhere, the most pronounced trend in TV is toward smaller receivers—ranging down from the original 14" portable, trimmed down in weight this year by GE and Westinghouse (20), to the miniatures, like GE's 13-pound, 9" set (16) and RCA's 22-pound, 8½" baby (15). The goal of mobility can be achieved by compactness, by wheels, or by freeing the viewer from the set (18, 19), and Emerson demonstrates that what you deduct in bulk can be replaced by new features (21). The handiness of small screens notwithstanding, new techniques in tape recording and image amplification (17, 3) hint at large-screen and 3-D projection television.



14 Videotape recorder/reproducer
Ampex Corp., Redwood City, Calif.

Complete in one console, the first commercial audio-visual apparatus makes tape-recording and rebroadcasting of programs possible for TV stations.

15 "Personal" television receiver
RCA-TV Division, Camden, N. J.
Henry Rundle, Manager, Product Dev.

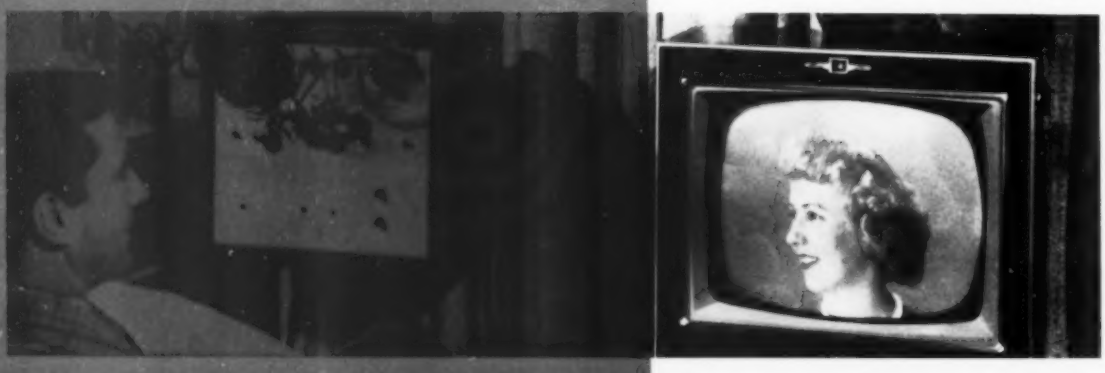
Smallest-screen set on the market (8½"), weighs 22 lbs., collapsible antenna; swivel base on 4 legs to adjust viewing angle.

16 9-in. portable TV
General Electric TV Division, Syracuse
George Beck, Manager, Appearance Design

Series-string circuitry eliminates power transformer, permits aluminum case. 13 lbs.

17 Home "Hear-See" tape player
Radio Corporation of America
Dr. Harry Folsom, Director
Acoustical & Electromechanical Lab

Player reproduces pre-recorded TV programs on standard home set from ¼" magnetic tape. Attachment to record incoming programs for repeated viewing is under development.



20 14 in. portable TV
Westinghouse Radio-TV Div., Metuchen
Raymond Loewy Associates, consultants

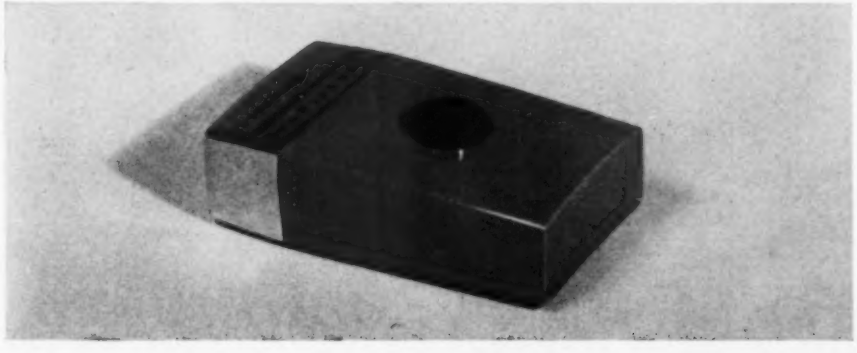
Stamped and formed aluminum housing, two-tone combinations; tapered top, side tuning at rear. 27 lbs.

18 TV remote control
Packard-Bell Co., Los Angeles
Gene D. Vedder, staff designer

Knobs control tuning, brightness, as well as stations, from a distance. Butyrate plastic injection-molded case.

19 Wireless remote TV station selector
Motorola, Inc., Chicago
Herbert Zeller, staff designer

Battery and transistor-powered transmitter sends signals to receiver in TV set to select stations; styrene case is size of cigarette pack.



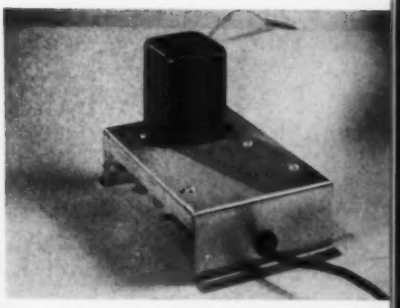
21 Port-o-Rama 5-way TV-radio
Emerson Radio & Phonograph Corporation
Monte Levin, consultant designer

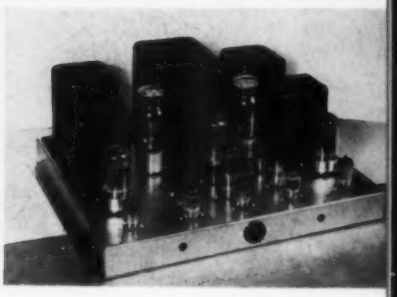
Combination TV and radio, with phonojack, personal listening attachment, auto plug-in, weighs 23 lbs., tied for smallest screen.

BUSINESS MACHINES In a field where technical advances come even faster than in consumer entertainment instruments, the designer is continually faced with the problem of translating engineering wonders into products designed to sell and serve. One of the most interesting design as well as technical advances made this year is IBM's Ramac. Its new principle of recording data on stacks of records allows it to expose its operations as invitingly as the familiar juke-box, yet it is housed with refinement equal to its importance in the modern business world. While systems grow larger and larger, many individual and almost personal instruments are being offered to bring business methods to a wider audience, and for greater usefulness. Portable compact machines show a general neatness of appearance that is appropriate to the office you can all but put in your pocket. Simplification (carbonless copies), new applications (TV in banking) and new designs (one-piece phones), shown in these pages, keep business abreast of itself.

22 Ramac (random access memory accounting)
International Business Machines, Inc., New York
Eliot Noyes, consultant design director; Sundberg-Ferar, consultant designers

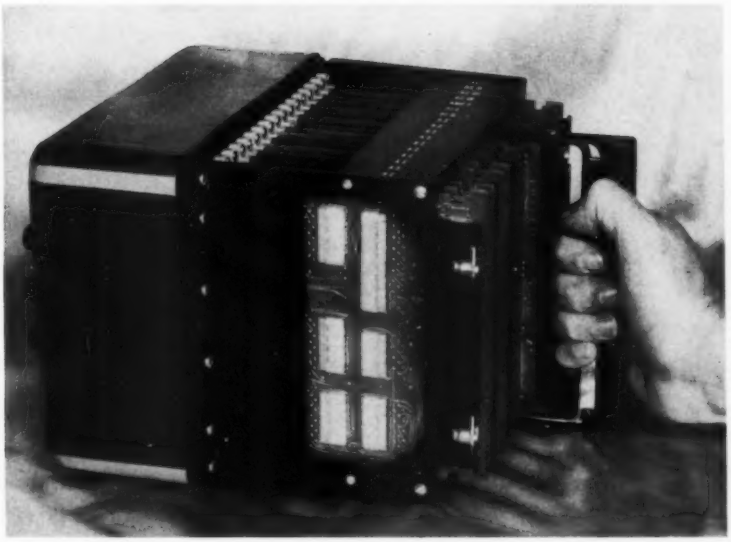
Two machines, using new method of electronic data processing, record 5 million facts on both sides of 50 metal discs to keep accounts constantly up to date. Memory is operated by punch-card input and output machines, high-speed printer, automatic typewriter memory processing unit and control console. Electronically controlled arm moves between grooved discs rotating at 1,200 rpm to compute new data as new entries are made.





23 Electronic analog computer
Heath Co., Benton Harbor, Michigan

Do-it-yourself computer to meet need for low-cost electronic computation in industry and schools; assembling prepared components according to detailed instruction manual cuts cost in half. Relay power supply (upper right) and amplifier power supply (lower right) are two of seven major components; cabinet with control panel is shown above.



24 Transac arithmetic control unit
Philco Corp., Government & Industrial Div.

Transistorized automatic computer designed for use in navy bombers may be further miniaturized for use in fighter planes, solves typical aircraft problems in 1/30 second, occupies 1/3 cubic foot, weighs 12 lbs.

BUSINESS MACHINES

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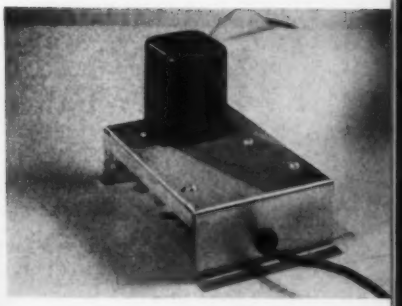

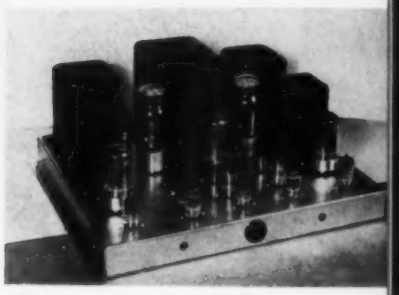

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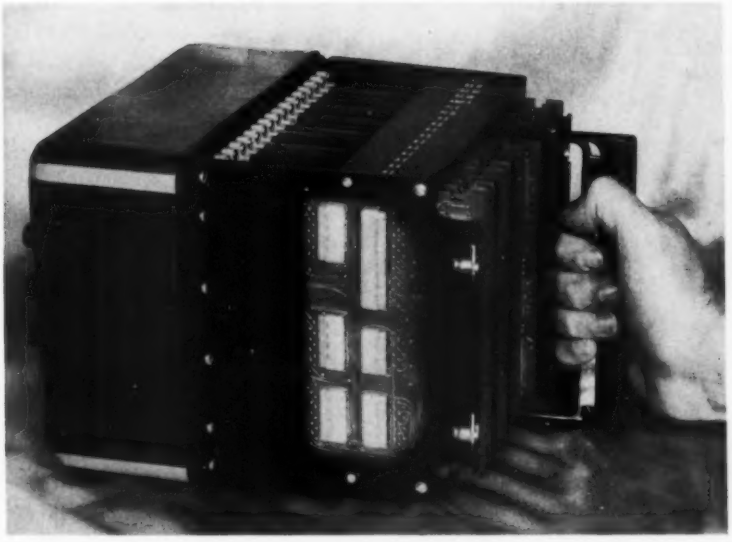

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25 Dictet recorder
Dictaphone Corp., New York
Gordon Florian, consultant designer

Battery powered, transistorized miniature tape dictaphone is about 4" x 6", 2½ lbs.

26 Sound Scriber
Soundscriber Corporation, New Haven
Maurice Libson, consultant designer

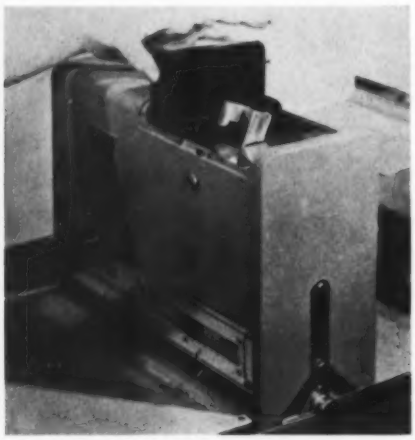
Aluminum housing and printed circuit in new 6 lb. unit with strap and integral carry case.

27 Transcriber
Infra-Electronic Corp., Roseland, N. J.
Lippincott & Margulies, consultant designers

Playback instrument used with dictating machine; Plexiglas (Rohm & Haas) case tilted toward user.

29 Verifax Signet copier
Eastman Kodak Co., Rochester, N. Y.
R. B. Husted, staff design

Smaller than previous models, low-cost machine uses matrix and developer, works in room light.



28 Flofilm portable microfilm camera
Diebold, Inc., Norwalk, Connecticut

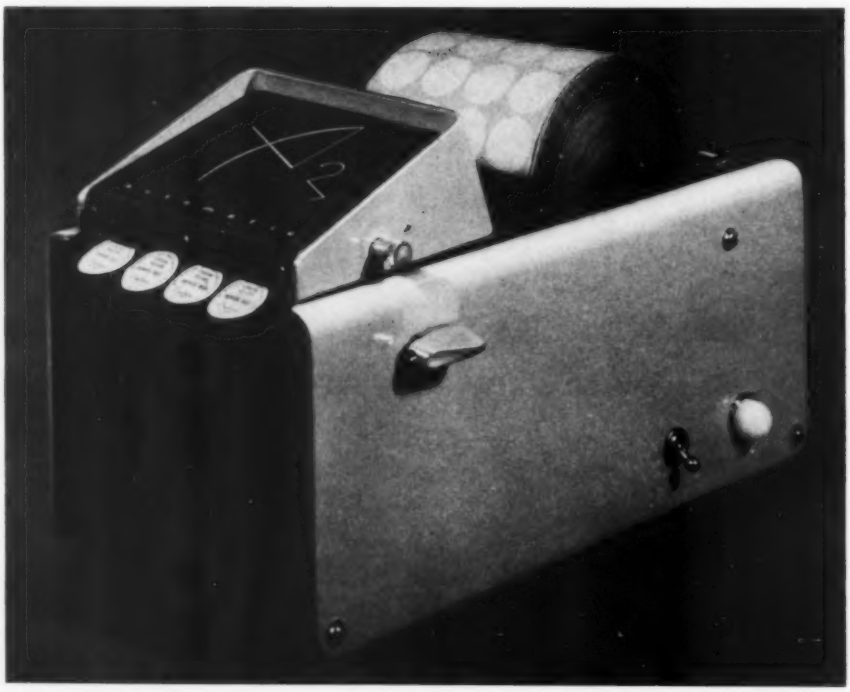
With stainless steel and aluminum housing, this small (20 lbs.) microfilming camera folds into an integral carrying case.

30 Automatic label dispenser
Avery Adhesive Label Corp., Monrovia, Calif.
Tor Petterson, designer and inventor

Preheats and dispenses labels automatically in rows; removes labels from backing material.

31 Automatic electric duplicator
The Heyer Corporation, Chicago
Reinecke & Associates, consultant designers

Additional automatic devices (starter bar, shut-off); new feed mechanism moves in forward direction only, rather than reciprocating motion of previous drives; nylon gears for smoother, quieter operation.

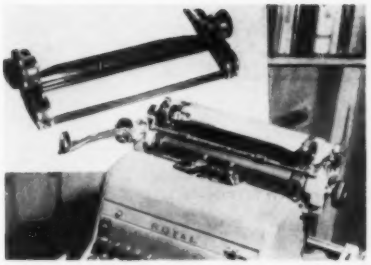


32 Royalite portable
Royal Typewriter Corp., Port Chester, N. Y.

Weighing 8 lbs., 3" high, Royalite is most compact, sculptured of portables yet offered by American firms. Heather green lacquer paint finish on steel, simulated leather carry case.

33 Electric portable typewriter
Smith-Corona, Inc., Syracuse, N. Y.

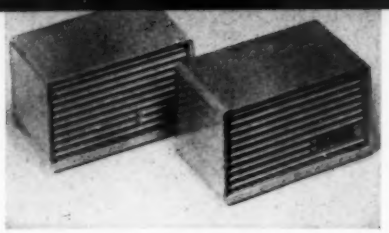
First of its kind, retains features of standard electric model, except automatic carriage return. Weighs 23 lbs. Four colors, oleo resinous wrinkle finished steel and aluminum case.



34 Mul-t-typer
Mul-t-typer Corporation, Miami, Fla.

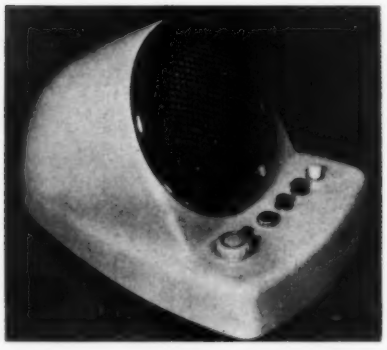
Duplicating accessory ends need for carbon paper: self-inking ribbons produce ribbon copies; fits major standard typewriters without screws, attachments, adjustments.

INTERCOMMUNICATION equipment is expanding its market and its usefulness by applying established methods from other fields, both aural and visual. TV devices give a broader base to banking methods (39), and to business control operations (40), while the telephone promises to become a two-way sight as well as sound communicator (35). Simpler machines in new shapes (36, 38) also offer us new choices in a once limited area of equipment.



37 Portable intercom Set
Teletronic Laboratories, Inc., Gardena, Calif.

Home intercom used as baby sitter, messenger, second radio, plugs into any standard wall outlet. Urea housing (Barrett Plaskon). 50 feet of wire, six colors.



35 Picture-phone system
Bell Telephone Laboratories, New York
W. E. Kock, F. K. Becker, R. Miller, inventors

Still in development stage to reduce size and cost, phone uses additional telephone wire to send new picture every 2 seconds (30/sec. in TV), in less detail than TV.

36 Loudspeaker-telephone
Electro-Vox Intercom Corp., New York

Soon to be put in production, intercom eliminates the handset, employs an amplifier, leaves both hands free.

38 Ericofon
North Electric Co., Galion, Ohio
L. M. Ericsson, inventor and designer

All components in one-piece phone housed in styrene receiver-transmitter, with dial and switch that opens and closes circuit on bottom. Weighs 15 oz., same as conventional handset.

39 TV Snorkel banking device
Mosler Safe Co., Hamilton, Ohio
Henry Dreyfuss, consultant designer

Curbside banking uses closed circuit TV, underground pneumatic tube; permits teller 100 feet away to do business with motorists.

40 Vidar (visual data readout)
International Business Machines, Inc.
Eliot Noyes, consultant design director

Envisioned for 1970, experimental electronic computer with TV screen shows business data at touch of button, for production, inventory, payroll or sales facts.

Major innovations are in the offing, or on hand, in almost every group of

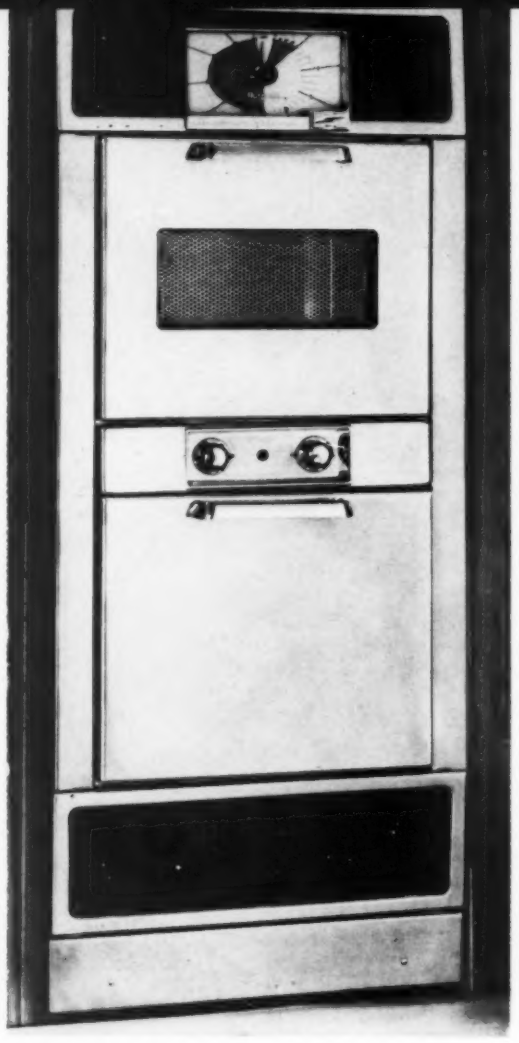
APPLIANCES

They bring the market a kind of excitement not only because they are new but because they are mysterious: it is part of their magic to eliminate many familiar chores, accomplishing their work quickly and invisibly — cooking food without heat, washing clothes without motion, cooling without refrigerants. Among the new features that are found everywhere in standard appliances, the trend to greater design flexibility portrays a new function of appearance: designers of built-ins, from refrigerators to mixers, are now working not primarily for an individually striking product, but for one that is pleasanter to live with in the total environment of the kitchen.

COOKING has been stirred up this year by the introduction of the domestic electronic oven which, like color TV, has manufacturers competing even before public demand is pronounced. Its promise appears to lie not only in speed but in convenience: food can be cooked in good serving dishes that don't get hot or sticky and even in paper plates, which opens new vistas for disposable utensils. Other approaches to cool, clean cooking appeared in Frigidaire's experimental marble slab over induction coils (41), and Westinghouse's thermistor surface units that offer accuracy of heat control that has always been needed in electric surface cooking (43). The standard ranges shown here illustrate innovation through a continuing stream of new features: most companies manage to produce an original feature or two every year, some of them small but real improvements in the art of electric cooking.

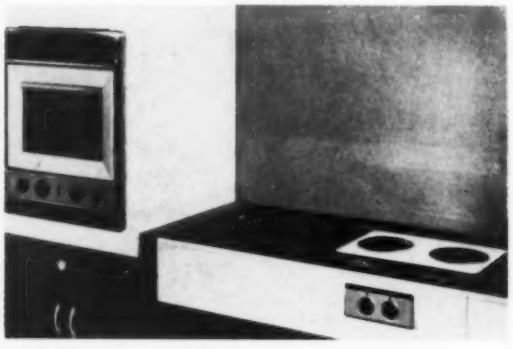
41 Astradome oven and induction coil cooker from "Kitchen of Tomorrow"
Frigidaire Division, GM, Dayton
GM Styling Section, Product and Exhibit Studio; George Pollard, Project Head

Induction coils beneath marble counter set up electrical fields that heat iron or stainless pans by disturbing molecular structure. Plastic feet keep pans from conducting heat to marble. Oven is heated by quartz lamps.



42 Electronic cooking center
Hotpoint Company, Chicago
Visual Design Staff, R. C. Sandin, Manager

Two-compartment unit, built-in or on roll-around base, contains microwave oven with stainless steel walls, standard oven below with calrod bake-broil units. Special controls include large timer (15 sec.-35 min.) with color-lighted segments.



43 Electronic cooking center (demonstration model)
Westinghouse Appliance Division, Mansfield, O.
Staff design

Stainless steel microwave oven; electronic surface units contain 1/16" thermistors to control heat applied to bottom of pan; 3 cooking zones (warm, boil, fry) each have infinite range of control. Surface units to be available on 1957 ranges.

44 Electronic range
Tappan Stove Company, Mansfield, O.
Tappan staff; Banka-Mango, consultants

First domestic microwave oven includes coil element for browning; temperature controls replaced by 2-speed indicator and timer. Anodized aluminum viewing screen, stainless and aluminum (Reynolds) exterior; molded Bakelite and Lucite knobs, inserts (Keeler Brass). $1195.

45 Built-in electric double oven
Thermador Electrical Mfg. Co., Los Angeles
Norris-Thermador Development Laboratory

Two ovens mounted in unifying frame. Formed stainless panels (U. S. Steel), satin finish.

46 Deluxe electric range with roast meter
Philco Corporation, Philadelphia
Harold Van Doren, consultant

Roast meter on control panel connects to protected wire ending in probe containing a thermistor. Probe is inserted in roast, and oven door closed; meter registers end of cooking time when proper meat temperature is reached.

47 Futura electric range
Norge Division, Borg-Warner, Chicago; Staff design

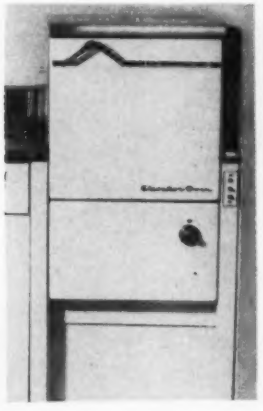
Vertical grill compartment broils meat scientifically — both sides at once.

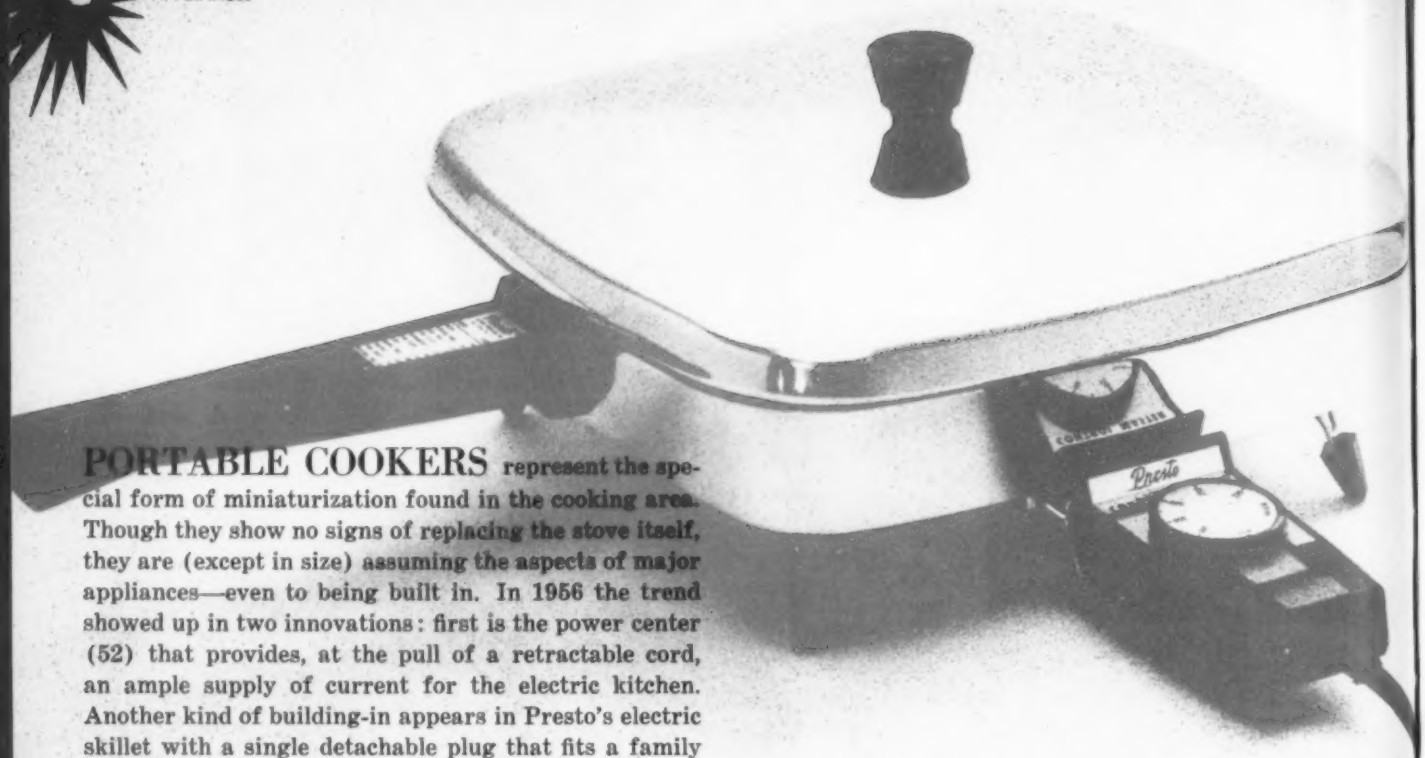
48 Wonder oven
Frigidaire Division, GM, Dayton
Staff design

Broiling and baking at different temperatures done simultaneously with stainless divider containing heating element.

49 Elevator oven
Philco Corporation, Philadelphia
Harold Van Doren, consultant

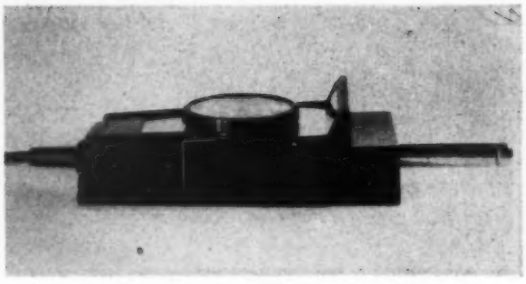
Switch raises oven 15" above counter to facilitate loading.





PORTABLE COOKERS represent the special form of miniaturization found in the cooking area. Though they show no signs of replacing the stove itself, they are (except in size) assuming the aspects of major appliances—even to being built in. In 1956 the trend showed up in two innovations: first is the power center (52) that provides, at the pull of a retractable cord, an ample supply of current for the electric kitchen. Another kind of building-in appears in Presto's electric skillet with a single detachable plug that fits a family of pans (50). Here the plug itself becomes a kind of appliance, leaving each pan not only easier to wash but lighter, cheaper, and more like an ordinary pan.

The group of electric housewares here and overleaf indicate how power is being applied to new product types—meat grinders, automatic coffee dispensers, teamakers. It also indicates one of the sales advantages of miniaturization: it can create a market for a handier version of a product one already owns—not only in television, but in vacuum cleaners as well.

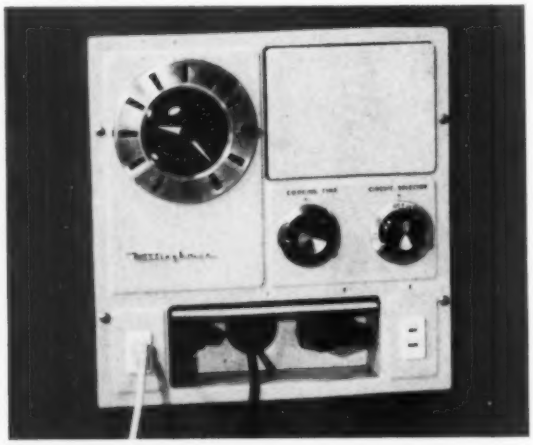


50 Electric skillet
National Presto Industries, Eau Claire, Wisc.
Mel Boldt Associates, consultant designers

Detachable control plug fits family of various size submersible pans. Cast and machined aluminum body, stamped aluminum cover, black phenolic fittings. Anodized foil labels (Park Nameplate).

51 Electric bean pot
Regal Ware, Inc., Kewaskum, Wisc.
Nolan Rhoades, consultant designer

Brown glazed vitrified pot (Hall China) sits on aluminum base containing heating element; base also serves as separate hotplate.



52 Automatic Appliance Center
Westinghouse Appliance Division, Mansfield
Staff Design

Foot-square unit, 9" deep, installed in kitchen cabinets to provide current for 5 housewares in use simultaneously: 3 retractable plugs, 2 outlets, automatic timer, circuit breaker panel.

53 Automatic teamaker
Westinghouse Appliance Div., Mansfield
Staff Design

Water is heated to correct temperature in lower section, rises to upper bowl, brews for controllable time, returns to pot to be kept hot. Bowl removable for serving. 6-cup capacity.

54 Koffee-kit
Jack Keefe Mfg. Co., St. Louis
Jack Keefe, designer

Portable coffeemaker for office, travel, also heats food and bottles. Polished aluminum body (Fairmont Aluminum), black molded Bakelite base, lid, handle.

55 Automatic instant coffeemaker
Charles Newman Company, Northfield, Ill.
Latham-Tyler-Jensen, consultant designers

Rotation of Bakelite dispensing head deposits powdered coffee, tea, etc., in cup, activates element that heats cold water to boiling and meters it into cup. For restaurant, office, home use, makes up to 120 cups/hour.

56 48-cup coffee urn
West Bend Aluminum Co., West Bend, Wisc.
Painter, Teague & Petertil, consultant designers

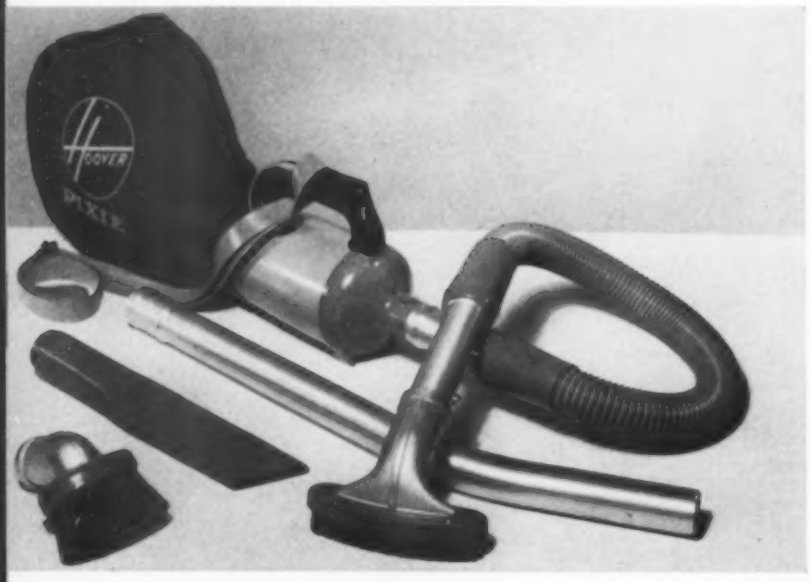
For club use or social functions, 48-cup urn designed to incorporate functional simplicity of familiar commercial units.

57 Toast-R-Oven
General Electric Company
Housewares & Radio Receiver Div., Bridgeport
Paul Rawson, John Russo; R. H. Koepf, Manager, Industrial Design

Toaster with built-in warming oven. Single longitudinal resistance unit heats both compartments, reflected up or down by knob-controlled flippers.

58 Pixie cleaner
The Hoover Company, Canton, O.
Henry Dreyfuss, design consultant

4-lb., 18" quick clean-up vacuum; adjustable sling through handle slips over shoulder, allowing two-hand operation. Die-cast aluminum nozzle, molded Bakelite handle.



60 Electric meat grinder
John Oster Manufacturing Co., New York
Staff design

Electric grinder chops raw or cooked meats without mashing. One-piece zinc die-cast housing with integral prong legs and rubber feet eliminates clamps. One-piece cast aluminum grinder head (Federal Die Casting); baked enamel finish.

61 Wheeled rug and floor nozzle
The Hoover Company, Canton, O.
Russell Swann, Brandt Ziegler, designers

To reduce effort required to push attachments on carpet, polyethylene wheels under steel carriage support pushing force, prevent nozzle from burying in carpet pile. Die-cast aluminum nozzle, molded vinyl guard, extruded vinyl flexible connector.

59 Small rolling vacuum cleaner
General Electric Company, Housewares & Radio Receiver Division, Bridgeport
R. J. Reading, Arthur Felske, Carl Johnson, and R. H. Koepf, Manager, Industrial Design

12" version of Roll-easy vacuum has 12⅜" wheels, vinyl tires, flexible vinyl tube with aluminum extensions, 2-in-1 floor tool attachment. GE aircooled 720 watt AC motor.

62 Open handle dry iron
General Electric Company, Housewares & Radio Receiver Div., Bridgeport
John Shalvoy and Rudolph Koepf, Manager, Industrial Design

Thin body produced by new soleplate design (folded sheet steel with calrod elements flooded into position on inner surface with molten copper) achieves faster heat up and cool down, more delicate ironing.

63 Mrs. America steam iron
Proctor Electric Co., Philadelphia

New features include repositioned thermostat for thumb control, heel rest without overhang, enlarged steam chamber with 17 vents, handle and cord for right or left hand operation. Black Durez handle, die-cast aluminum base (Alcoa); black and red lithographed dial.

64 In-Built mixer
NuTone, Inc., Cincinnati
Waltman Associates, consultant designers

Single control power drive and recessed beneath stainless steel plate operates revolving beater, juicer, 6-speed blender, knife sharpener. Stainless and aluminum.

REFRIGERATION too, felt the impact of electronics this year when RCA unveiled an experimental unit with no moving parts (65). Its motorless cooling method could have long-range effects on the design of convenient and economical cold storage for the home—which is what the refrigerator, no longer a status symbol, has become. In addition to built-ins and more adaptable, space-saving uprights, the industry continues to promote sectionals: These allow the owner to influence the organization of her equipment with a kind of design flexibility that appears most strongly in furniture, but is also apt in the kitchen.

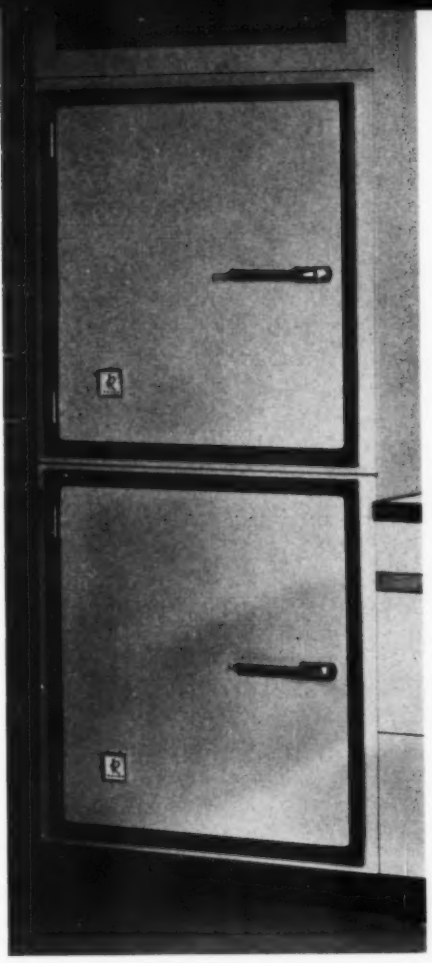
The interiors of refrigerators continue to be organized and fancified—sometimes in overly specific schemes that becomes the very opposite of flexible. The examples here find some inventive ways to make all space usable without tying it down to 3 dozen eggs.

65 Electronic refrigerator
RCA Laboratories, Princeton
Nils E. Lindenblad, research engineer

Noiseless refrigerator, with no moving parts, cools by "Peltier effect" using panels of newly developed thermo-electric materials. Passage of direct current through thermojunctions mounted on outside wall of aluminum cooling compartment dissipate interior heat through air-cooled fins. Larger than first model built last year, this unit has 4" walls around 4 cu. ft. compartment, 30 cu. in. ice tray. Open top shows rectifier that converts household AC to DC current.

66 Built-in refrigerator-freezer
Lindemann & Hoverson Corp., Los Angeles
Norris-Thermador Development Lab.
Ken E. Rawald, designer

Unobtrusive character of built-in exterior carried out in simple interior organization.

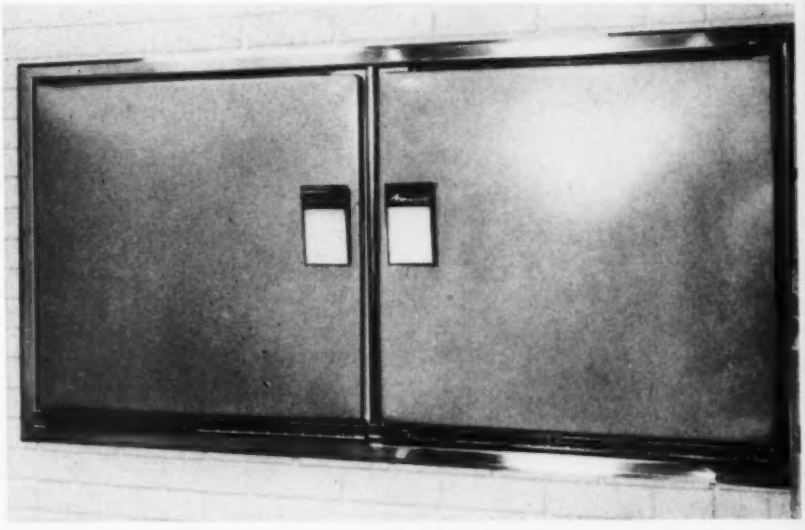


67 Built-in refrigerator and freezer
Revco, Inc., Deerfield, Michigan
Harold S. Boutin, designer

8.4 cu. ft. custom refrigerator for foods requiring moist cold; 6.3 companion refrigerator or freezer; undercounter freezer also available. Stainless doors (Republic Steel), and frames (Pyramid Mouldings), die-cast zinc handles (National Lock) chrome-plated. Stainless, copper, or custom colors.

68 Built-in refrigerator-freezer
Amana Products Company, Amana, Iowa
Amana engineer staff; Reinecke & Associates, consultant designers

Designed to allow multiple arrangements; bottom grille with top vent assures moisture-free outer case. Die-stamped steel doors (U. S. Steel), die-cast zinc handles (Jervis Corp.) and grille (National Lock); stainless moldings (Pyramid Mouldings).

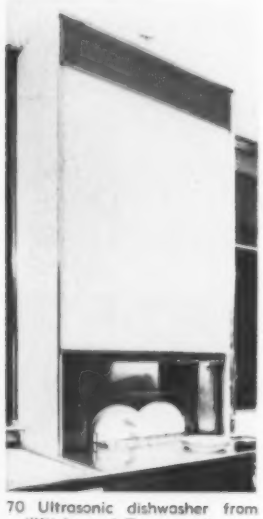


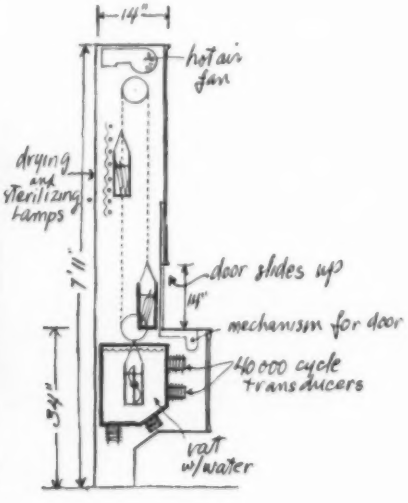
69 Coldspot refrigerator
Sears, Roebuck & Co.
Sundberg-Ferar, consultant designers

Interior organization features sliding vertical basket, tilting bin baskets, divided adjustable door shelves. Ice cubes may be emptied into "Auto Cube" compartment plastic container for storage.

WASHING without agitation, using high-speed sound vibrations in place of hot water and strong soaps to remove dirt from clothes and dishes, is a promising technique, still costly, that has seen scattered experiments here and abroad. Frigidaire's ultrasonic dishwasher (70) used a cold bath and conveyer system that magnified the dishwasher into a storage area. A small disc-like supersonic vibrator, marketed in Britain last year (71), showed that the clotheswasher could be miniaturized into something you store in a drawer.

In production models this year, there has been an effort toward innovations that make washing machines take up less space: built-ins with furniture flexibility (74), and boxy units with crisp elevated controls that line up in a kitchen like built-ins (73).





70 Ultrasonic dishwasher from "Kitchen of Tomorrow"
Frigidaire Div. General Motors
GM Styling Section,
George Pollard, Project Head

Conveyor moves 6 baskets through cold bath; bombarded by 40,000 cycle transducer, dishes are dried by lamps, unloaded or stored.

71 Gnome Vibrator clotheswasher
G.I. Developments Ltd., London

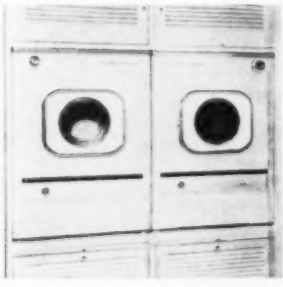
10" top-like electric vibrator is placed on laundry in sink of soapy hot water, 10-30 minutes; 6000 cycle p/m vibration presses soap through fabric without motion. 7 lbs.

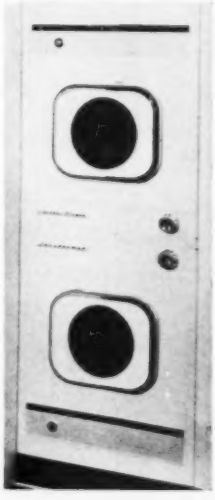
73 Filter-Flo washer and dryer
Major Appliance Division,
General Electric Co., Louisville
Appearance Design staff

Pedestal-mounted control panels, simplified control for two wash and spin speeds. 27" square.

74 Laundromat built-in laundry
Westinghouse Appliance Division, Mansfield, Ohio
Staff design

25" automatic washer and dryer with front opening and controls permit vertical installation as free-standing or built-ins, also side-by-side placement.





72 Mobile Maid dishwasher
Major Appliance Division,
General Electric Co., Louisville
Appearance Design staff

New power-scrub impeller action "scrapes" before detergent wash to eliminate hand rinsing. Special drain pump liquefies, eliminates food particles. PVC plastic interior to cushion dishes.

A revealing contrast of design attitudes is highlighted by a review of equipment for

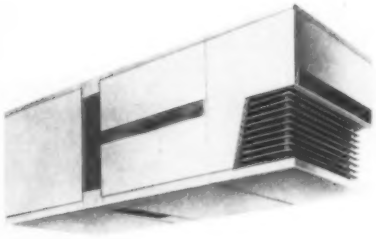
HEATING AND LIGHTING

During the year, important technical advances in both fields indicated that all of our mechanisms for environment control might become less conspicuous products and more like invisible services. Heaters, ventilators and air conditioners are already growing slimmer and plainer and more modest, befitting the fact that their job is a primarily practical one. But in lighting for the home we see evidence of the fact that designers, as opposed to inventors, do not always regard function as the only problem, or invisibility as the only goal.

ENVIRONMENT CONTROLS, our means for conditioning air and dispensing light, took notable strides in 1956 toward more refined appearance —and even disappearance. Carrier's air conditioner design (78) moves in the direction of reticence rather than flamboyancy, and G.E.'s Thinline (79) has been reduced to a flush vertical box. For commercial use, G.E. produced a ceiling-slung model that saves floor space (76), while another new design (77) erases the air conditioner completely from sight. Two further designs (75, 83) carry the air conditioner and the light fixture to perhaps supremely logical conclusions—flattened until no bulk is left to package, they *become* the wall.

75 Electronic air conditioning system
Radio Corporation of America, Camden
R.C.A. Laboratories; Nils Lindenblad, project head

Demonstration system comprises two large wall panels with surfaces consisting of an array of two-inch metal squares each backed by a small cylinder of thermo-electric material that produces either cold or heat under the influence of direct electric current. System operates in complete silence, has no moving parts. Photo shows cooling fins at back of panel.

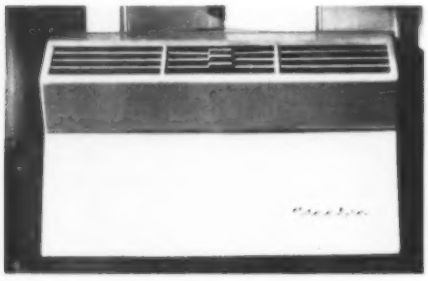


76 Ceiling-mounted horizontal air conditioner
General Electric Company, Bloomfield, N. J.
Staff design

Packaged air conditioner can be hung from ceiling or shelf to save floor or window space, can operate on air where water is not feasible. Formed steel cabinet.

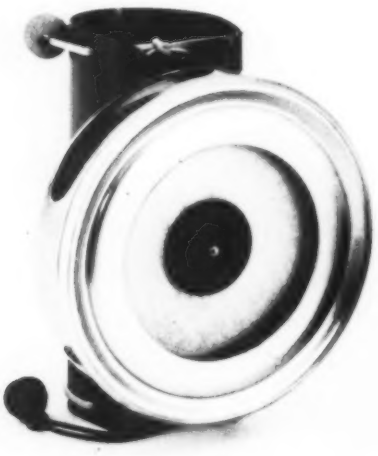
77 Multi-vent Trofferlite
Pyle-National Co., Chicago, and Benjamin Electric, Des Plaines, Ill.
Jointly designed by staffs of two companies

For commercial or industrial applications, light fixture doubles as a medium for diffusing conditioned air. Ducts in ceiling fixtures completely eliminate visible air-conditioning equipment, economically combining two separate requirements.



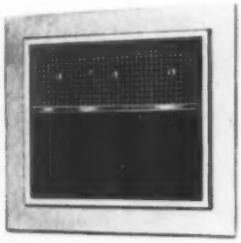
78 International room air conditioner
Carrier Corporation, Syracuse
Lurelle Guild, consultant designer

New engineering plan with air intake beneath unit and output on top permits plain uncluttered surfaces across face of unit. Body injection-molded (Nasco) of high-impact polystyrene (Dow). Molding was done from rear, leaving the front free of blemishes.



80 Electric fan
Chemex Corporation, New York
Peter Schlumbohm, inventor and designer

This 8½" fan replaces blades with five plasticized paper discs that filter and then throw out air tangentially, at 320 cu.ft./min. Royalite stand.



79 Thinline room air conditioner
General Electric Company, Louisville
Staff design

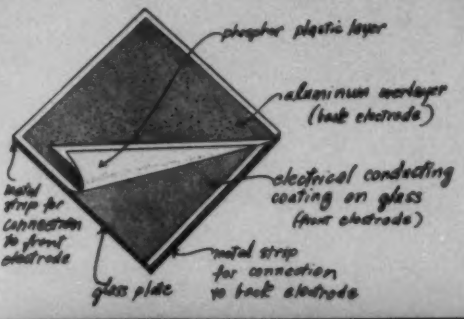
Only 16½" deep, 49% reduction over earlier models, conditioner can be installed in the upper sash, completely outside the window, or flush with room wall.

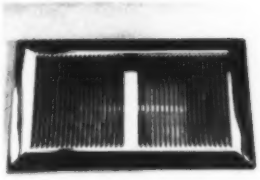
81 High-output fluorescent lamp
Sylvania Electric Products Inc., New York
Engineering Laboratories; Erwin F. Lowry, Manager

Cathode assembly, shown below, is the heart of new lamp which provides 2½ times as much light as conventional fluorescent lamps. Higher intensity allows replacement of cumbersome fluorescent fixtures by much smaller ones.

82, 83 Electroluminescent flashlight, wall and ceiling panels
Westinghouse Electric Corp., Pittsburgh
Research Laboratories; E. G. F. Arnott, Director

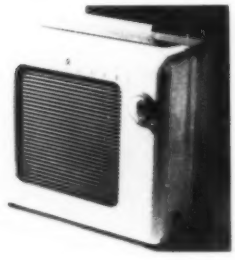
Bulbless illumination for flashlight and room installation created by panels containing phosphor powders embedded in an insulator. Alternating current creates fluctuating electrical fields, causing the phosphor to glow. Transistors step up and convert direct current of flashlight battery. Wall panels, which are ⅛" thick, open up possibilities of "area" light, in flat or curved planes.





84 Dual blower exhaust fan
Pryne & Co., Pomona, Cal.
Harold H. Ford, staff designer

Motor unit is housed inside one of two blower wheels, providing room for greater air intake and therefore greater delivery than conventional models of same size. Grille is steel (Bethlehem).

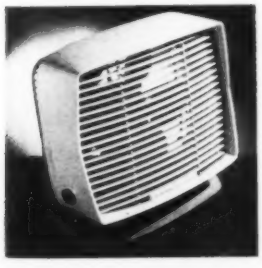


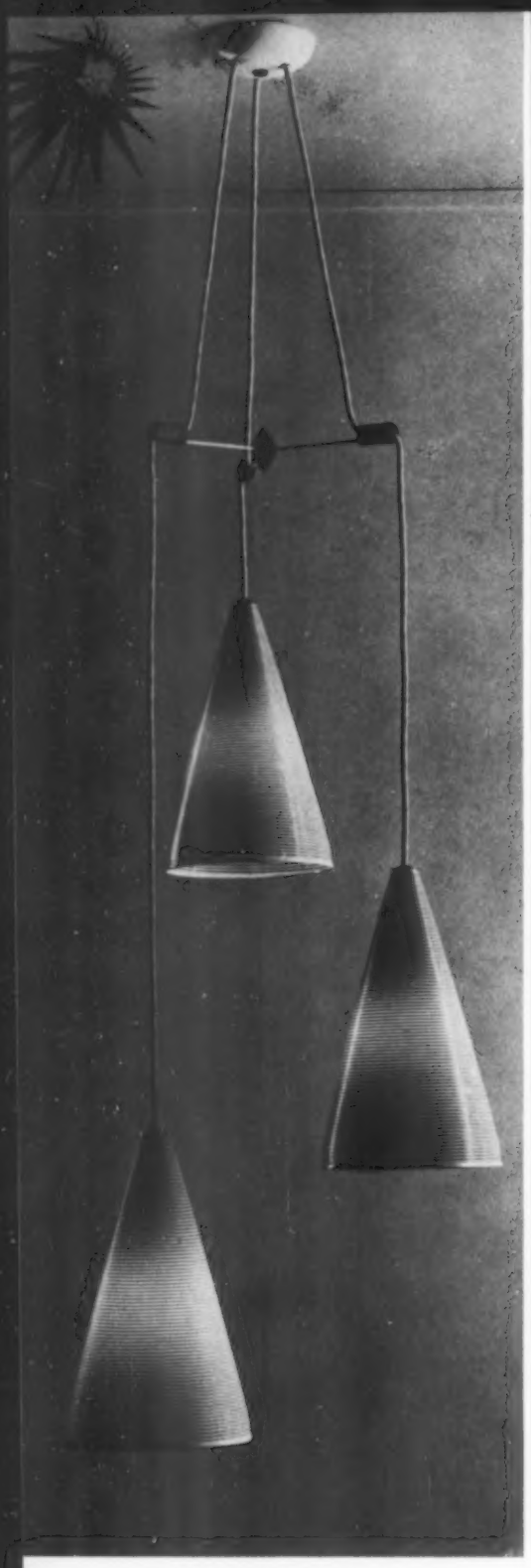
85 Portable space heater
Electromode Div., Commercial Controls Corp., Rochester
Frederick S. Grover, designer

Cast aluminum heating element; motor-driven fan for air delivery; thermostatic temperature control; die-stamped steel housing and grille; brake-formed steel handle; plastic knob.

86 Cabinet fan
General Electric Co., Bridgeport
Staff designed by R. J. Reading, C. E. Johnson; R. H. Koepf, Manager, Industrial Design

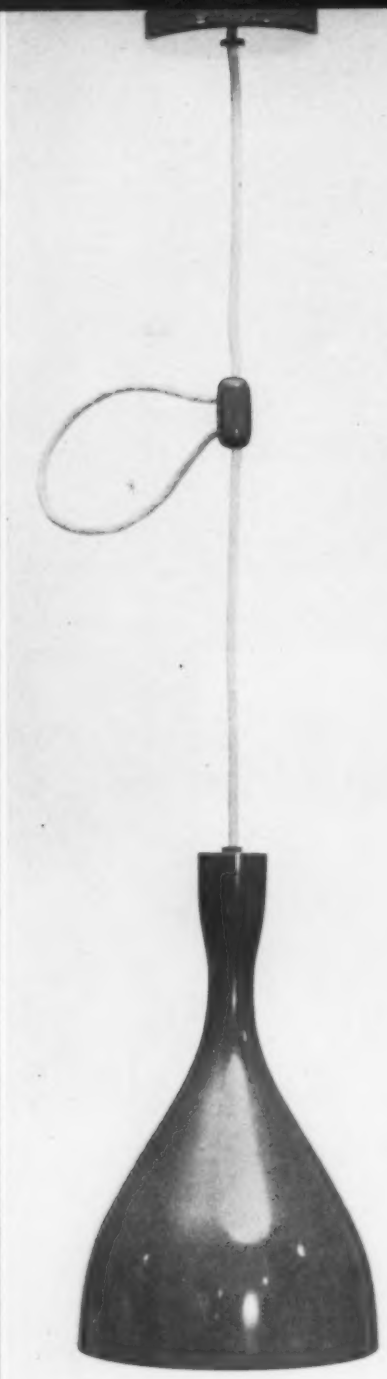
Front guard of high-impact polystyrene (Koppers); steel wire back guard; drawn steel stand.





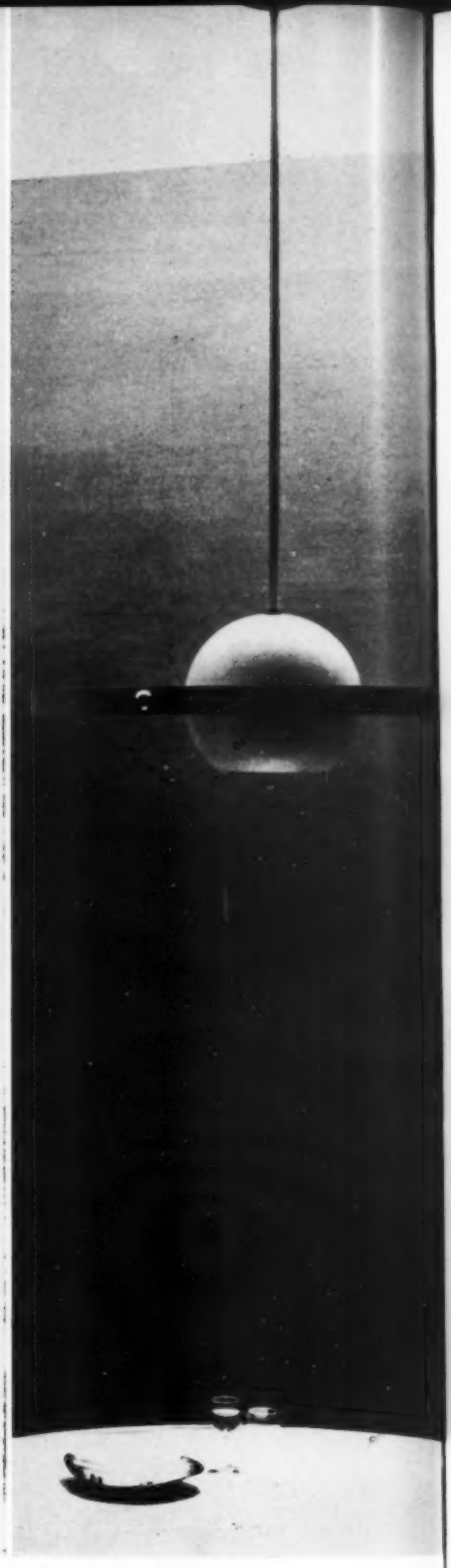
87 Triple pendant ceiling fixture
Heifetz Company, Clinton, Conn.
Yasha Heifetz, designer

Plastic (Rotaflex) shades in one or two colors; white lacquered aluminum holder; white lacquered steel rods, walnut connecting pieces.



88 Bell-shaped fixture
Koch & Lowy Manufacturing Co., New York
Ernest L. Lowy, designer

Spun aluminum (Alcoa) shade, 12" long, in colors, satin-finish aluminum, satin or polished brass finish; wooden loop holder in same color as shade; white pulley cord.



89 Saturn ceiling fixture
Kneedler-Fauchere, San Francisco
Harry Lawenda, designer

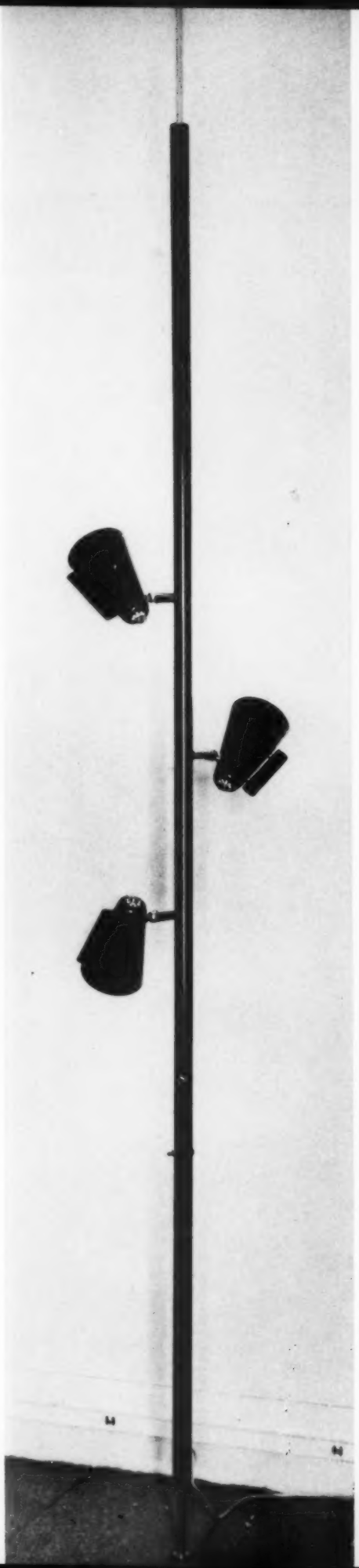
White or custom enameled globe, 8", 10" or 12" diameter; white enameled or solid brass ring studded with brass balls; white enameled ceiling mount and suspension rod.

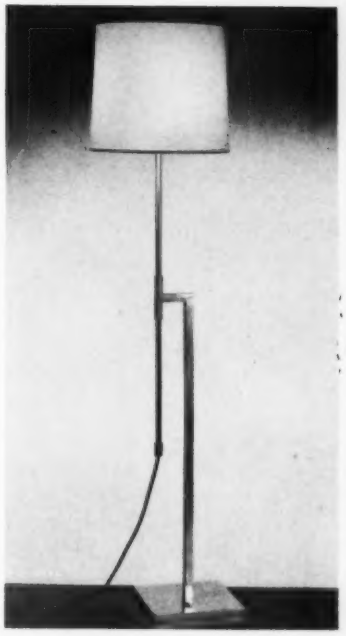
LAMPS Although fluorescence is established as a light source and electroluminescence is on the verge, the best of this year's lamp and fixture designs are concerned with housing the traditional incandescent. In this area, efficiency is subordinate to effect, to the aura created by the light and by the sculptural qualities of the container from which it emanates. Particularly where specific forms are not dictated by specific function—i.e. to provide a daylight condition for detailed work, an optimum intensity at three feet for reading, etc.—the container for light is designed in terms of all that an inquisitive eye will seek. An air conditioner has no inherent obligations to the eye—its business is air and its obligation is not to be seen at all—but a device for dispensing light, a primarily visual phenomenon, may, if the designer chooses, be approached as a statement of color and line, of volume and texture.

In an almost wholly decorative idiom, this year's lamps and fixtures are essays in substance and shadow, individual expressions of what light can be. Hanging or standing or sitting or skyrocketing, they are alike in attempting, as designs, to convey the simple — and subtler — pleasures of light. And their appearance in this Review brings us to a whole new category of products—devices whose function is to create pleasure more than to perform any specified task.

90 Lampole
Stiffel Company, Chicago
Raymond Loewy Associates, designers

Aluminum poles, designed to stand free, extend to ceiling heights from 7'10" to 9'3"; finished in black, oyster, green and brown with brass details; adjustable shades have walnut handles.





91 Adjustable floor lamp
Laurel Lamp Manufacturing Co., New York
Max Weiss, designer

Brass base and stand, white Silkan vinyl shade; adjusts from 42" to 66".

92 Wall night table lamp
Lightolier, Inc., New York
Maurizio Tempestini, designer

Plexiglas shade with rotating black metal shield; polished brass tubing; 18" walnut shelf swings from side to side.

93 Japanese paper lamps
Jason Harvey, New York
designer and producer

Japanese paper over Vinylite. Two larger tiers of table lamp are white; top tier, yellow; middle tier, ocean blue. Bottom tier of hanging light is white; intermediate tier, ocean blue; top tier, yellow.

94 Chain lights
Howard Miller Clock Co., Zeeland, Mich.
George Nelson & Co., designers

For atmosphere lighting, multiple units are suspended on cord from ceiling, each unit lit by two 15 or 25 watt bulbs wired in series; each unit consists of two halves, milk-white translucent vinyl shells that unsnap from each other for easy relamping; bottom stem is turned cherry wood.

Is it good or bad?
Do we need less of it, or more?
Do we believe in it or not?

OBSOLESCENCE by George Nelson

Have you heard of the wonderful one hoss shay,
That was built in such a logical way
It ran a hundred years to a day.
It went to pieces all at once
All at once, and nothing first
Just as bubbles do when they burst . . .
The Deacon's Masterpiece by Oliver Wendell Holmes

Is this what we mean by obsolescence?

We have bombs, and we have disposable tissue, but in our total industrial inventory there appear to be very few other products that can match the perfectly planned disintegration of Dr. Holmes' little fantasy.

Yet we believe in obsolescence. We support it the way we support the multi-party system, pasteurized milk, and a free press. We also talk quite a lot about "planned" obsolescence. At the same time, the implications of the word make us uneasy; they even provoke some people to equate obsolescence to commercial conspiracy and social degeneracy.

The way our practices impress visitors from abroad tends to reinforce the discomfort of this conflict. Recently a British designer observed that if present trends here should continue, manufacturers would presently be issuing certificates guaranteeing that if by a certain date the article purchased had not fallen apart, the customer would get his money back.

Spoofing in the standard British manner, of course, but is this what we mean by obsolescence?

A dozen years ago the air used to be full of tales about products deliberately made so that they would become useless after a predetermined period of time; razors which lost their edge after a single shave, light bulbs designed to flicker out after too few hours, stockings treated to encourage fatal runs after a couple of wearings. One hears little of this kind of talk any more. It appears to be generally agreed today that whatever we may mean by obsolescence, the customer's interests are also supposed to be served by the process.

What Oliver Wendell Holmes meant by obsolescence was that the product be so perfectly designed that its utility within a given time-span approached 100 percent. Dr. Holmes was a pretty good representative of the 19th century in America, a time and place responsible for a number of optimistic ideas.

The fact, alas, is that with a technology beyond any possible imagining of Holmes and his contemporaries, we are still a long way from being able to contrive a product so delicately that the almost infinite number of variables involved in its use can be balanced out to produce an equal rate of wear on all its parts. Nor does it seem likely that we will ever be able to do so.

Perhaps we can agree that this bubble that bursts perfectly is *not* what is meant when we talk about obsolescence.

The truth of the matter is the question is not as simple as it looks. This is not to say that it is impossibly difficult to cope with, but rather that it is complex. What an exploration of this kind appears to turn up is a rich and interesting variety if implications and concepts, all of which have an intimate connection with the attitudes of manufacturers and the behavior of designers.

Two years ago a small group of Americans, in Germany on the invitation of the Bonn Government, sat down to a lunch given by the Mayor of Frankfort. The guests consisted of artists, architects and designers, and they were mixed in with Germans whose English was impeccable and whose knowledge of things American was remarkable. Inevitably, as the lunch progressed, the talk veered to the phenomena which seem to fascinate all Europeans; U. S. production, superhighways, jazz, automobile design—and the incredibly wasteful behavior of Americans. Especially the wasteful behavior of Americans.

The European attitude towards our habits, especially where the use of products and services is concerned, is a blend of appalled curiosity, downright disbelief, righteous indignation and envy. How can a people have so little interest in the permanence of possessions? On what comprehensible basis does a nation throw away its cars when the ashtrays are full and trade in its TV sets before the tubes are fully warmed?

In middle-class European hotels and apartment houses the hall lights are on time-switches: you have to keep moving to make the top of the stairs before total blackness descends. European cars have reserve fuel tanks because practically no one can bring himself to buy gas until the last possible moment. Anyone who shops for food has to come prepared with her own bag: string, wrapping paper and paper bags are not willingly dispensed to the customer. To anyone conditioned in this atmosphere, American behavior ranges from incomprehensible to immoral. I had heard these expressions of exasperated wonder so many times in Europe that they had become part of the scenery, so to speak, rather like the cathedrals. Yet the attitude reinforced a vague sense of guilt about the impermanence and wastefulness of the American system.

Then at the Lord Mayor's excellent lunch, for some reason, a question suddenly suggested itself:

Let us assume that all Europeans are totally efficient in their thrifty use of products and services.

Let us further assume that all Americans are utterly wasteful in these matters.

Question: Then why is America so rich?

The point of the story is not the triumph of Waste over Thrift, or of Us over Them. The point is a question. Why do we seem to get richer as we get more "Wasteful?"

Which, of course, leads to other questions. Is it possible that what our transatlantic neighbors describe as "waste" may actually be something else? In nature there are certain procedures which could easily (though incorrectly) be described as wasteful: a fish lays immense numbers of eggs, few of which reach maturity; an oak tree drops a prodigious quantity of acorns, but only a minute percentage develop into trees. Is it possible than in a highly developed industrial society a rapid rate of obsolescence plays a somewhat similar role in furthering the society's unconscious aims? Evolution in nature has involved immense destruction, in terms of entire species, and to a dinosaur no doubt the process must have seemed "wasteful." Is there an analogy here? Rapid, large-scale consumption certainly accelerates the replacement of plant and tools, and this renewal is always at a higher technological level. Does an industry-based society reach a point where the highest efficiency is reached through what superficially appears to be waste?

It certainly seems likely that we can become unduly—and quite unnecessarily—concerned with what the rest of the world arbitrarily describes as waste. It also seems desirable to recognize that our present pattern of obsolescence is by no means uniform. We do trade in cars after a relatively short period of use, but cars, while perhaps our most conspicuous product, are still only one product. We do not consider a 15-year-old refrigerator obsolete. Watches are worn as long or longer. We do not trade in the furnace every three years. And as far as cars are concerned, trading in does not mean throwing them away. As the economist Peter Drucker points out, "In the automobile industry the annual model is our vehicle for making it possible for everybody in the country to have a car. Without it we would simply not have a national car market but would, like European countries, have only a new-car market confined to a very small upper income group which then hangs on to a car forever. What we actually have is a system under which the purchaser of a new car, by taking an immediate major loss on 'planned obsolescence' subsidizes the car purchasers of the lower income groups and ensures that even the sharecropper still gets a fairly serviceable car at an amazingly low price, both absolutely and in relation to the sharecropper's annual income. This is not 'waste'."

It is too easy to observe the procedures we have developed and to dismiss them as "American," as if this were somehow an explanation. Up to World War I there was relatively little difference between consumer behavior in the U. S. and abroad. Thrift was a major virtue here, also, not merely because of a Puritan inheritance, but because the country needed every spare nickel for investment in capital goods. In other words, "thrift" and "waste" are not absolutes by definition, and they are less a reflection of national temperament and resources than a logical consequence of the prevailing industrial level. The U. S. S. R., larger than we and possibly even more richly endowed with natural resources, has beggared itself for thirty years, not because Communists object to seeing people walk around in shoes, but because there was no way other than extreme "thrift" to create a huge industrial base in a hurry.

The U. S. is unique at the moment because of the scale on which it can make and sell consumer products while at the same time investing between $20 and $30 billions annually in capital goods and even more in the military establishment. Most of our attitudes regarding obsolescence rates in consumer products stem from this unprecedented situation. The attitudes are "American" only in a relatively temporary and accidental sense. As other societies reach a comparable level, similar attitudes will emerge.

In any discussion of obsolescence, therefore, it would seem that the problem is not so much a matter of comparing our practices with those of our neighbors as of isolating those factors which are real.

What does obsolescence eliminate?

A product or procedure is obsolete, presumably, when something emerges which is better. Admittedly, "better" is not always easy to define. The clearest examples are more often to be found in capital goods than in consumer products. The diesel locomotive obsoleted the steam locomotive in a thoroughly unambiguous way. Turbines are driving the internal combustion engine out of the air and may presently do the same on the ground. Automation has superseded manual operation in oil refineries. These examples are widely known and admit of no argument.

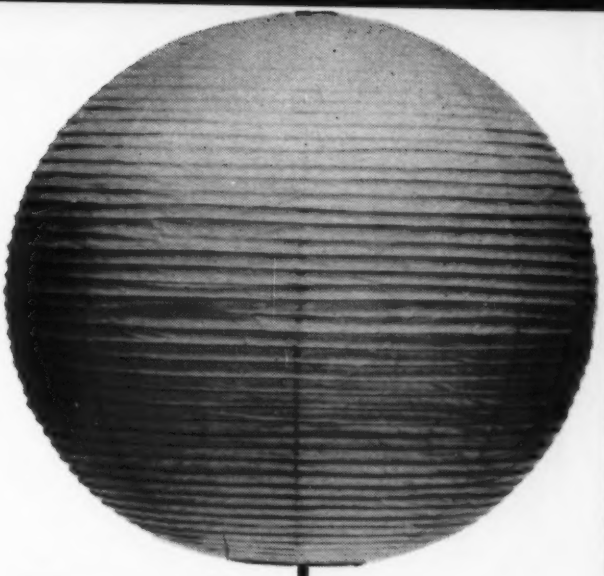
Obsoleting a product does not necessarily eliminate it. It may, and it may not. In a great number of instances it seems merely a way of extending the number of available tools. The carpet sweeper, for example, introduced a kind of performance the broom could not match, and it in turn was "obsoleted" by the vacuum cleaner. All three products, however, are still to be found in the average household. Housing offers a somewhat different kind of example. Most U. S. dwellings could be described as "obsolete" by any reasonable standard, but this does not mean they are uninhabitable.

The automobile is so frequently taken as a case in point that it might be treated as a special example. Actually, however, it is more conspicuous than unique; the industry brags more about its "planned obsolescence" than it really does. The advent of a 1957 car *is* supposed to make possession of a 1956 model less gratifying, but it does not obsolete it. In fact, it is part of the industry's scheme of things *not* to obsolete it, for this would raise hob with the existing trade-

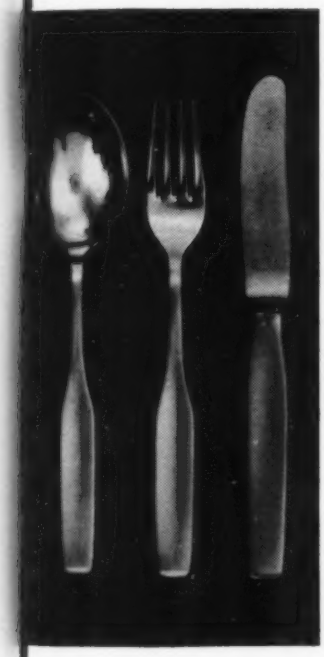
FOREIGN DESIGN CLASSICS → A group of unchanging designs—consistently popular on the American market, all imported from abroad—shows that the pressure for rapid change is not universal, and reminds us that even in America the consumer appreciates a product that cannot be improved. Some of the products on the next 3 pages are recent designs based on traditional techniques, others have been in production for years, or decades or even centuries. All have a classic perfection that is as forceful as a trademark — so distinctive that it is always recognizable, always vital, and almost unmatchable.

Credits: Lobmeyr stemware © A. J. Van Dugteren, from Georg Jensen; Arzberg dinnerware © H. Lauffer & Co.; Venini glass and Chiavari chair, © Altamira; Akari lamp, Matheson chair, © Bonniers; Milano and Form stainless, © Georg Jensen; Luxo lamp from Edward Roffman Associates. All suppliers in New York City.

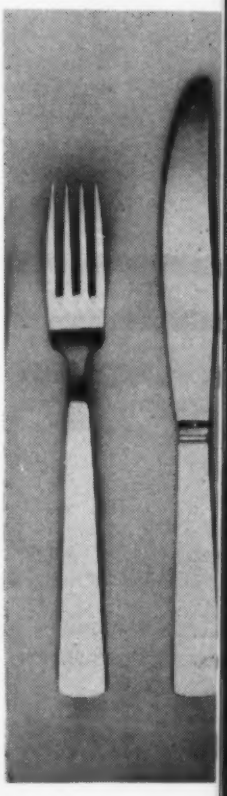
Blown glass bottles, Venini Glass, Italy — Dr. Paolo Venini, 1955



Portable typewriter, Olivetti Corp., Italy — Marcello Nizzoli, 1949



"Form" stainless flatware, WMF, Germany — Wilhelm Wagenfeld, 1951



"Milano" stainless flatware — Gio Ponti, 1934

Rear-engine car, Volkswagen, Germany — Ferdinand Porsche, 1936

Paper lamp, Akari, Japan — Isamu Noguchi, 1955

Leica III, E. Leitz & Co., Germany — Oscar Barnack, 1933

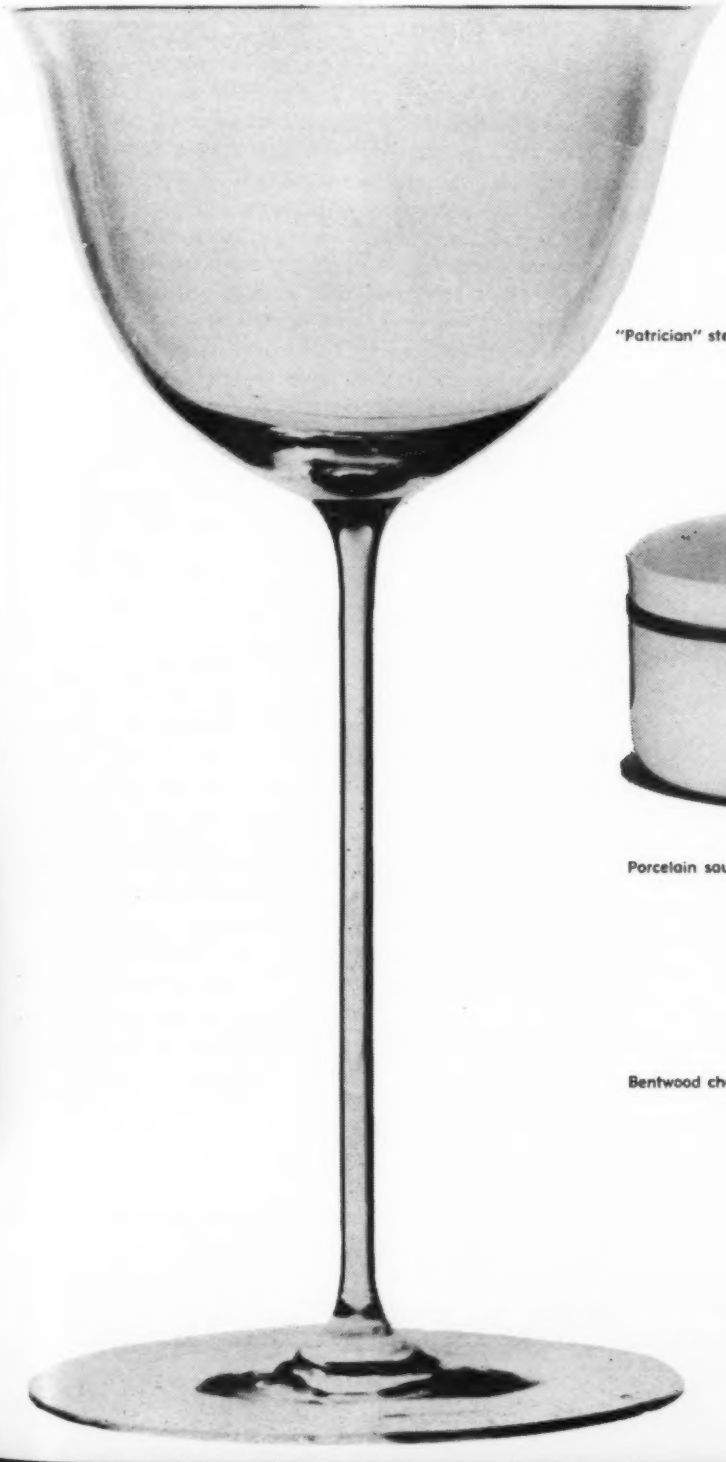
Molded wood chair, Sweden — Bruno Mathsson, 1940

Dinnerware, Artzberg Porcelain Works, Germany — Hermann Gretsch, 1930

Chair, Chiavari, Italy — anonymous design, c. 1800, modified c. 1930

Adjustable lamp, Luxo Lamp Corp., England — prewar design

Black Basalt dinnerware, Josiah Wedgewood & Sons, England — Josiah Wedgewood, 1768



"Patrician" stemware, Lobmeyr of Vienna — Prof. Joseph Hoffmann, 1917

Porcelain saucepans, Limoge Porcelain Works, France — from traditional molds

Bentwood chair, Thonet Brothers, Vienna — Michael Thonet, 1876

in procedure, infuriate all 1956 customers, and so on. Annual styling and mechanical changes are designed to create a gradual increase of discontent in the customer until, after two, three or four years, he becomes willing to accept the loss involved in a trade. This annual piling up of changes will undoubtedly sometime render obsolete a car of a given vintage, but the date is hard to pin down. There are still 1935 automobiles on the road.

It is just possible that the established trade-in process works so well for cars simply because they have wheels. There is a minimum of difficulty involved in taking the old car to your dealer and driving off in a new one. Major appliances, the producers of which look to Detroit with such envious admiration, enjoy no such facility of exchange. If an increase in the rate of obsolescence is part of the policy of these manufacturers, one would think they would be less active in fostering the current trend towards more built-ins.

What makes a product better?

Actually, it takes more than ease of exchange to establish a pattern of rapid obsolescence. The fact that certain products combine high cost with a high degree of conspicuousness also leads to their acceptance as status symbols, and a desire to look well in the eyes of one's neighbors can constitute a more powerful pressure than either economics or technology. The rapid increase in the acceptable size of a television screen is a good illustration of this. One might have assumed, from the sales curves, that the larger screen was more desirable because of greater ease in viewing, but the phenomenal success of portables in 14- and 17-inch sizes suggests that many purchasers of consoles were ashamed to be found with less than the largest. Portables, on the other hand, are supposed to be small. Ownership of a 14-inch screen (in a portable) therefore does not diminish the owner's status. An 8½" screen may even enhance it.

Thus it is possible to evaluate the obsolescence process in terms of pressures. All of these pressures have to do with wants and/or needs. These, however, are of many kinds, some economic, others quite irrational and difficult to measure. The most significant of all pressures is performance.

If performance were always measurable and demonstrable, obsolescence rates would be higher than they are now. The classic example, as we all know, is the military, where the latest technological miracle is usually presented with the comment that it is already obsolete—obsolete because what was learned in building it provided the knowledge needed to build a better one.

In the military area, what is "better" can usually be defined with a minimum of confusion. A bomb has a force of a megaton, or less, or more: "more" equals "better." A ceiling of 60,000 feet is better than 50,000. When performance can be evaluated so directly, product design becomes very pure and the appearance of the product, highly satisfying esthetically.

But performance cannot always be so evaluated. When the long-playing record came out it showed so many obvious advantages over the older types that these were quickly obsoleted. However, the machines on which these records are played do not compete entirely on performance, because people vary in their ability to judge the quality of sound.

One might state as a rule that *the more accurately performance can be measured, the higher the rate of obsolescence.* Like all rules, this one has its exceptions, but it is important because of our uneasiness about the increasingly rapid rate at which we change things. It happens to be my opinion that this is nothing to feel guilty about.

Imagine a theoretical social situation in which the entire population was committed to the idea that the best was none too good for the consumer. Imagine that no manufacturer had any other motive for making things and that all tax legislation was designed to further this concept. The result would then be much as it is in the military: great beauty and perfection of product combined with a very fast rate of obsolescence. If rapid change comes from a continuing demand for the best possible product, then why do we look on accelerating obsolescence as if it were fostered by a conspiracy of stupid consumers and irresponsible manufacturers?

It seems probable that we will reach this theoretical situation about the same time we learn how to build the one-hoss shay, but it does no harm to realize that what we are doing with our technology is not entirely stupid or wasteful.

There is one very special aspect of performance which does provide a very handy yardstick for both designer and manufacturer. It has to do with an interesting characteristic of people in our time: we tend to accept without question *anything that will do more with less.* We find suspension bridges more satisfying than truss bridges. The transistor moves in to replace the vacuum tube and we react favorably to the idea of smaller radios. The slim turbines on the Viscount suddenly make piston engines look old fashioned. And so on. Again, there are exceptions, and important ones, but designs which result in reduced weight, bulk, or both, tend to have a significant effect in speeding up obsolescence. For a manufacturer, "speeding up obsolescence" can be translated as "strengthening the competitive position."

What a survey revealed about obsolescence

Business competition is perhaps the most obvious of the pressures affecting the process of obsolescence, but how it operates is anything but obvious. It is in this area that one begins to hear about "artificial" obsolescence and a variety of other brands; all, by the way, being described as "bad" in one way or another. It is here, too, that the accusations of "waste" can most easily be made. Recently this magazine undertook an informal survey to explore some of the current business practices and attitudes toward obsolescence. One fact that the survey indicated was that this element of competition that spurs obsolescence also ties in closely

How far ahead do you work on new products?

Now	1946	1936	Manufacturer replying
3 yrs.	1 yr.	6 mos.	Appliances
5 yrs.	5 yrs.	1 yr.	Watches
3 yrs.	1 yr.	1 yr.	Carpet sweeper
3 yrs.	2 yrs.	2 yrs.	Vending machines
3-5 yrs.	3-5 yrs.	3-5 yrs.	Cameras

with performance as a factor. For instance, the sharp increase in industrial budgets for research is a reflection of intensified competition, but the objective of research is generally some kind of improvement in performance. The survey also indicates that advance planning for product development looks considerably farther ahead than was the case only a few years back. (See box, p. 86.)

The same survey contained questions about the factors leading to major tool changes, and the answers indicate with a high degree of unanimity that sales requirements have much more to do with tool life than does the condition of the tool.

If a basic change or invention were available in your field, how would you decide whether to alter your production? Give relative weights:

	Manufacturer replying				
Factor	Furniture	Radios	Carpet Sweepers	Appliances	Watches
Saleability of features	1st (100%)	1st	1st	1st (80%)	1st (75%)
Investment in current stocks		2nd	5th		4th
Fear of lagging behind competition		4th	2nd	2nd (20%	3rd
Cost of tool change		3rd	3rd		2nd
Advertising cost		5th	4th		5th

For instance, in a number of product categories the life of a major tool averages out at around 1,000,000 pieces. One might assume that when the tool becomes "obsolete"—that is, wears out—a major design change might be expected. This does not appear to be the case at all. Tools are not obsoleted by normal wear, necessarily, but by the sales department's picture of the condition of its market. In a strict sense, scrapping a tool before it wears out is a waste of capital goods, but whether this adds up to waste in a broad social sense is a question that could hardly be answered without an immense amount of economic data.

What this adds up to is that somewhere outside the producing plant itself there is pressure to change—not necessarily to change for the better, but simply to change. This pressure can be generated by the sluggish response of the customers, by the complaints of dealers, by a styling spurt in competitive lines. Such pressure is extremely difficult to isolate and measure, and the need to do so keeps a great many marketing organizations busy.

Now the problem of how to change a product which seems to be perfectly good as it is, is quite a problem. It is one thing to demand that a plane's speed, range or ceiling be increased by so many units: such a problem can be broken down into its components and solved. But it is a very different matter merely to say "make it different." It is this demand which keeps so many designers occupied, and it is this aspect of our social behavior which baffles or irritates so many foreigners. And yet it is not easy to dismiss the obsolescence which occurs as a result of this pressure as "artificial." At least two factors complicate matters.

Every society lives out its span in the grip of certain ideas which are so powerful and so widely held that people are scarcely aware of them. These ideas come to a focus in what might be described as a "master area" and they spread out from there to give the entire community its character. Such an area, in the 13th century, was the Church. Today, in America, it is business. Business is based on a gigantic industrial complex, and the heart of industry is in the area of capital goods. Science and technology exist to service this complex, and they are supported by it. In this whole area the idea of change is dominant. Progress, improved techniques, all the things we are striving for come through change. Change, in this area, is always acceptable. Its benefits can always be demonstrated.

The idea of change as something beneficial, something desirable, has moved out from the "master area" to color the thinking of the whole society. It is absolutely inevitable that we should succumb so easily to the lure of "the new" in many areas where the fact of change could not possibly matter less. The power of the concept—completely valid in capital goods—is so great that we tend to apply it all the way across the board. It seems perfectly reasonable that this should be so, but for a number of people in industry, including the designer, this creates the first area of complicating problems. These all have to do with the acceleration of obsolescence at secondary levels, that is, levels at which basic pressures are not operative.

The second complicating factor is fashion. Fashion is an expression of people's habit of getting tired of things, and it constantly obsoletes things (jewelry, clothing, etc., etc.) long before they are worn out. In a society so subject to fundamental change as our own (and so well equipped to disseminate information rapidly) fashions change swiftly. The essential characteristic of fashion is that it is cyclical, and it therefore has little to do with obsolescence of a basic kind. The newly old is always unfashionable, but let enough time pass and the old seems new again.

True obsolescence is a process put in motion by genuine improvement. The direction, generally speaking, is one way. It is not likely that it will ever again be fashionable to believe that the earth is flat. The active element in the process is design. That is, someone restates the problem at hand using new information, and comes up with a better answer. Design, to put it a little differently, is an attempt to make a contribution through change. When no contribution is made or can be made, the only process available for giving the illusion of change is "styling."

Styling is what most designers have to do most of the time. In a society so totally committed to change as our own the illusion must be provided for the customers if the reality is not available. This emphasis on the distinction between styling and design is not made to suggest that one is nice and the other nasty. For industry they represent two entirely different tools, and there is considerable practical value in being able to distinguish one from the other.

Consider, a firm making prefabricated houses. The aim of such a company today is to turn out a product which cannot be identified as a factory-made house. Now an industrial product which has to be indistinguishable from the handmade product cannot pass on many of the benefits

of industrialization. In other words, there is no design problem. Design involves a contribution. Styling, therefore, is what has to be done. Roofs, wall textures, door knockers, shutters and all the rest have to be diddled with to produce an appetizing ensemble that looks "different" but not different enough to frighten the customers.

Prefabrication today is a large business, but not an industry—not, at least, in any developed technical sense. Yet it has to become an industry, and it can only do this by obsoleting the handmade product. It can only obsolete the handmade product (to which the general public is deeply attached) by using industrial techniques to step up the performance of the product (for instance, it would be a distinct step-up in performance if houses didn't burn down quite so readily). And it can do all these things only if it resorts to design rather than styling. In such a situation, the ability to distinguish clearly between these two types of activity can have a profound effect on company planning.

Design implies a designer. The designer does not have to be an identifiable professional. Anyone who plays a key role in product creation and development has a design function. The designer has a good bit more to do with obsolescence rates than one might at first think, because he is temperamentally unable to leave things alone. In the survey mentioned earlier, a question given to both manufacturers and designers was "Do you consider your present product obsolete?" The manufacturers, almost to a man, rejected the suggestion. But not the designers.

In terms of new possibilities of which you are aware, do you consider your current product obsolete today?

All products in use today are obsolete. The only question is when they can be replaced economically and satisfactorily to both the consumer and the manufacturer. **Raymond Spilman**

Most products are to some extent "obsolete" within months after they have gone into production, because of the time between "locking up" and market release. Technology catches up and so does design during tooling-time—and often it passes a dated product development. **James Balmer**

There are always opportunities to increase value, add features and reduce costs in the redesign of most products. . . . **Jean Reinecke**

. . . The ranch-type home, the utility room, the kitchen of tomorrow, the built-in washer-dryer, the wall refrigerator, and the central cooking center appear at first to be the ultimates in modern living. However, in 1902 Ransom E. Olds, designer and builder of the fabulous Oldsmobile car, formed a new company and produced the Reo car, his initials making up the name. He announced it to the American public and to the world as the greatest accomplishment in automotive engineering and design that could ever be attained. He called it "My Farewell Car." . . . **Brooks Stevens**

To a designer, anything that is, is obsolete.

This attitude, of course, is part and parcel of the makeup of the creative individual, but it has been greatly enhanced by the American tradition, just as the entire process of obsolescence has been accelerated by it. Couple a deeply-ingrained social attitude that the best is good enough until something better comes along, with the rapid increase in competitive business behavior, and the influence of the designer is not hard to see. When the design process takes place within the framework of a furiously expanding technology, the results can be explosive.

It might be stated as a general rule that *the rate of change in any area of activity is directly proportional to the number of possibilities.* There was a time when the only way a man could light a fire was by rubbing two sticks together. The number of design opportunities, so to speak, was greatly limited by the technology. We have comparable situations today, and it is one of the major functions of research to enlarge the number of opportunities.

Dishwashing is a fairly good example. You can wash dishes by hand in a sink, using water with soap or a detergent, or you can put them in a dishwasher, where they are washed with water and a detergent. The rate of change in both sinks and dishwashers has been slow because the limited number of "washing options" has put a ceiling on the possibility of change.

"Planned obsolescence," a subject about which a great deal has been said, must of necessity include a plan for increasing the number of design opportunities. If you want to try out some planned obsolescence on dishwashers, for instance, you have to find ways of handling the dish problem other than by the use of soap and water. Otherwise, all you can do is make mechanical changes which may improve the product, but will hardly obsolete it rapidly. Planned obsolescence is not necessarily a problem in technology. One could "solve" the dishwashing problem by dumping the dishes into the garbage grinder along with the food.

Is our obsolescence planned?

Another way of describing planning for obsolescence is to call it "advance planning." It would seem evident that the farther ahead the designer can see, the better the chance that obsolescence will occur by intent rather than by chance. As such planning takes over, the problems of the designer increase, for information needs to grow geometrically. Extrapolation is one of the most useful methods for looking ahead, but it is not scientific and hence risky. The inspired "leaps" made from time to time in this way have to be buttressed by increasing quantities of information, not only technical, but scientific, metaphysical, economic, social, psychological. If we really want to plan our various kinds of obsolescence, it means a lot of work for somebody.

Actually, for all the talk about it, we have precious little to show that can be properly described as *planned* obsolescence. The traditional city has been obsoleted, in a very real way, by the automobile. But what has happened just happened: there was no planning.

This is where the real waste occurs and this is what we are gradually beginning to realize: obsolescence as a process is wealth-producing, not wasteful. It leads to constant renewal of the industrial establishment at higher and higher levels, and it provides a way of getting a maximum of goods to a maximum of people. We have learned how to handle obsolescence as a prodigious tool for social betterment in those areas where we have both knowledge and control. The waste occurs where obsolescence is both too slow and too haphazard, where adequate information and adequate controls and systematic elimination are lacking. We do not need fresh technologies to show us how to upgrade housing—but we do need a continuing method for getting rid of the production we have outmoded. The same holds for the cities.

What we need is more obsolescence, not less.

Our acceptance of change as a dynamic method of achieving security has to be extended beyond the limits of industry.

The design of structures, and the equipment and accessories that go into them, is encompassed in

BUILDING

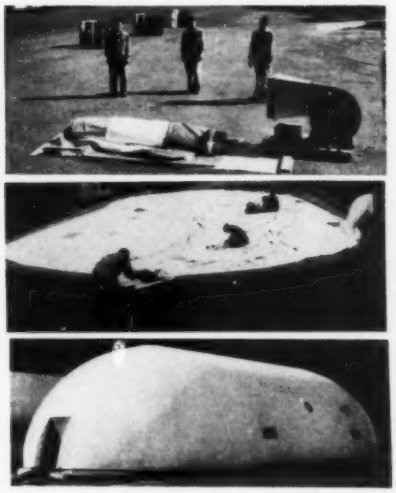
as a problem in product design. Past efforts to design a really simplified structure as a self-contained product have largely benefited the military; this year produced a new industrial structure that is basically a balloon as well as a plastic house conceived as a legitimate "mass-produced" item. We also find the idea of prefabrication spilling over into building equipment and even the furnishings that go into buildings.

Change in this area has a special character because of the relation of innovation and design: a good solution in one area almost always means success in the other because inventor and designer are generally one and the same.

BUILDING comes within the scope of this survey of product innovation because it is being significantly influenced by industrialization. There are two examples of almost total prefabrication on this spread —the one-piece inflatable warehouse (95) and the molded house with light, modular factory-formed panels (96). This is not to suggest that prefabrication of the whole is anywhere nearly a general trend yet—the majority of buildings are still individually designed and constructed—but their point of departure is more and more one of prefabricated parts. In fact the question of whether prefabrication is really workable with design seemed to get some realistic answers this year in sectional wall systems (97, 99). Based on a few preassembled components, they are easier to erect; but more important, they give the architect a choice of combinations that allows him to create not only a building, but architecture.

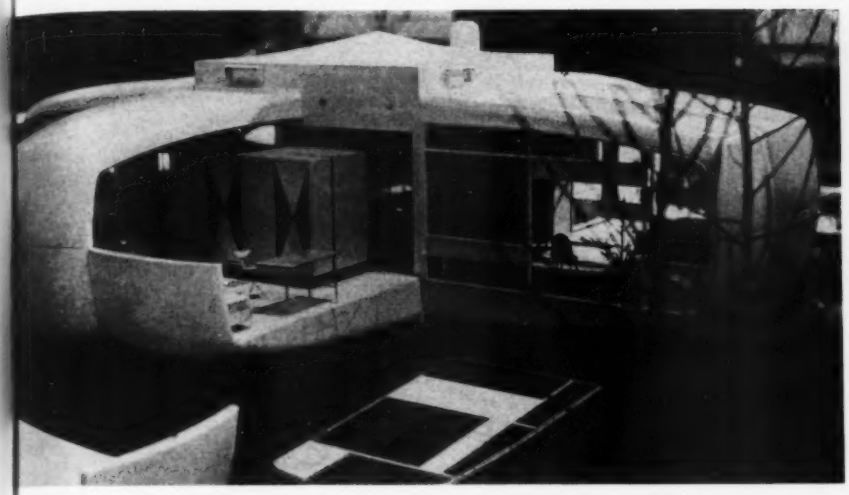
95 Air-supported portable warehouse
Calumet Industrial District Co., Chicago
Developed by United States Rubber Company

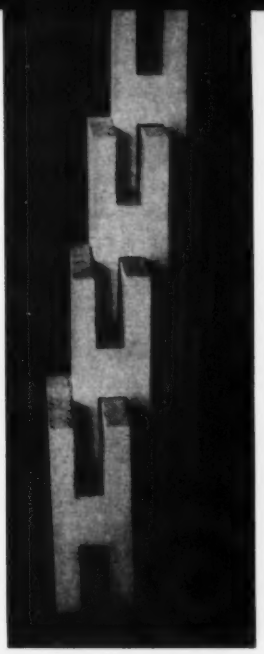
3 men and a blower can, in one hour, inflate a double thickness of strong thin vinyl-coated nylon (Fiberthin) into an enclosure 80' x 40' x 20' high. Material weighs 400 lbs., costs $2000 for 64,000 cu. ft. of all-weather storage space. Supported by low pressure, without rigid supports, dome is anchored to water-filled Fiberthin tube.



96 Experimental molded plastic house
Monsanto Chemical Co., Springfield, Mass.
Developed by Monsanto and MIT Research Group

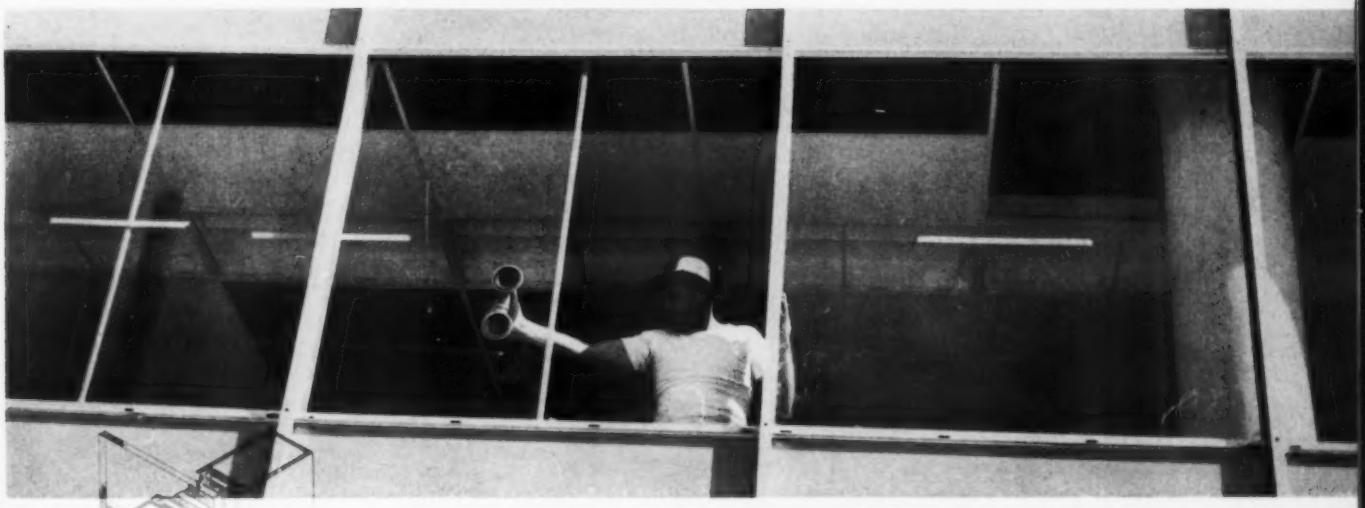
Four modular panels of reinforced plastic form each wing, cantilevered from central core in numerous combinations.

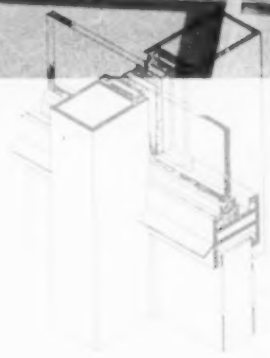




98 Interlocking building block
Paul Priestley, Institute of Design, IIT

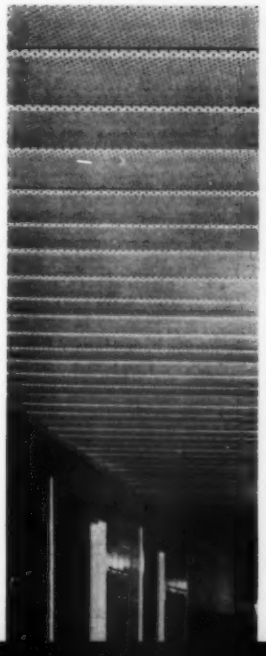
Student project for "H" shaped blocks that interlock to form rigid wall or fence in several patterns without mortar.





97 Gridwall sliding curtain wall
Glide Windows, Inc., North Hollywood
Abe Grossman, designer

Invisible side-sliding sash achieved in thin grid frame (1½" face) by design of split mullions: overlapped edges of sliding glass are sandwiched between halves of mullions with spring-loaded weatherstripped seal. Extruded aluminum grid.



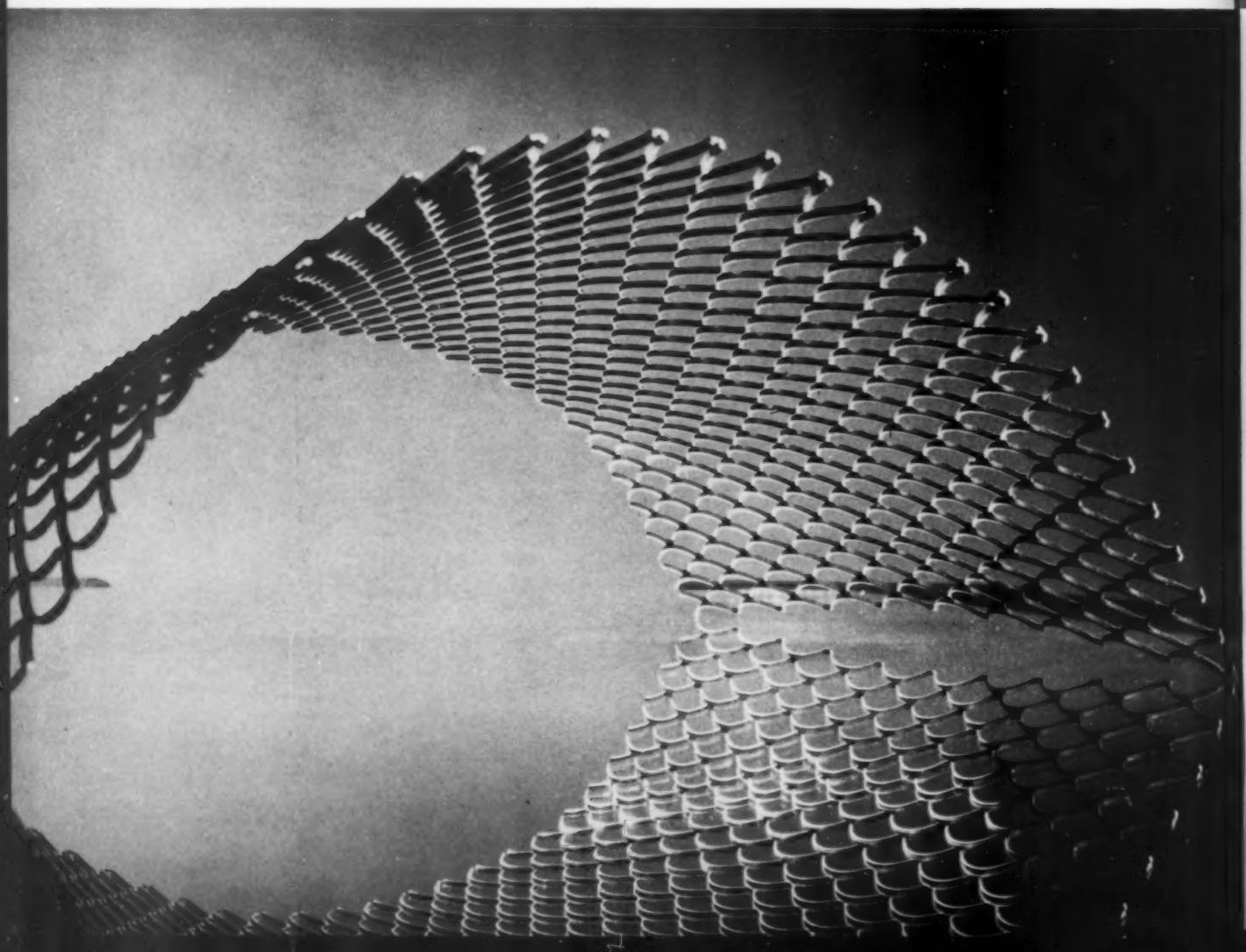
99 Unit wall modular system
Kawneer Company, Niles, Mich.
J. M. Roehm, Director, Research & Development

Prefab wall units offer variations of design and color with few standard components. Aluminum panels, honeycomb core, with colored porcelain finish; alumilite-finish mullions, frames.

100 Fenestra TAC (Troffer-acoustical) panels
Detroit Steel Products, Detroit
George Shultz, architectural consultant

Panel package for ceiling construction integrates concrete formwork, acoustical and lighting systems, air-conditioning ductwork. One of several multi-function floor-ceiling panel systems.

BUILDING EQUIPMENT once pretty much happened by chance, tradition, or the ideas of the manufacturer or contractor, but it has been as much affected by a new era of architecture as larger structural products. One mark of this is the serious competitive effort by suppliers to design equipment to please one of the most exacting of customers, the architect. As a result the architect—who is still at the mercy of suppliers' catalogs in outfitting building—is now heavily dependent on the product designer to create equipment that fits his structural and spatial objectives. The sampling of building products here and overleaf highlight a few of the areas in which industrial design is making a contribution. Door hardware, a small but conspicuous item in any room, is tending to assume a more decorative character (105, 112, 113, 114), in contrast to control mechanisms (109, 111), which emerge less conspicuous, easier to use, and sometimes suavely rich looking without losing their essentially architectural personality.



101 Norwich lavatory
The Crane Company, Chicago
Henry Dreyfuss, consultant designer

Chrome-plated brass legs and hardware; cast glazed and fired vitreous china. Metal or ceramic legs, or wall hung.

102 Single handle kitchen faucet
Moen Valve Co., Elyria, Ohio
A. M. Moen, chief engineer

New black plastic control knob on heat-treated stainless shaft, polished to eliminate plating.

103-4 Institutional drinking fountains
Haws Drinking Faucet Co., Berkeley
Channing Wallace Gibson, consulting designer

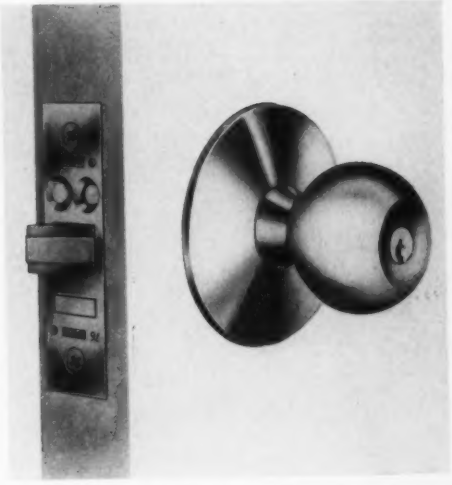
Light molded Fiberglas basin, sandcast brass hardware, chromed (Mueller Valve, Scoville Brass), in four colors; right: sculptural fountain in fired vitreous china.

106 Decorative expanded metal
U. S. Gypsum Company, Chicago
George Nelson & Co., design consultants

One of 4 new patterns in expanded metal for functional and decorative use, anodized or painted in numerous colors.

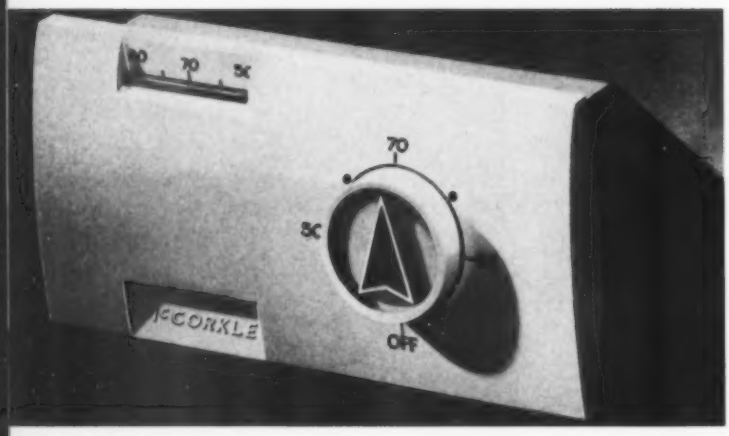
105 Tempo door knob
American Hardware Corp., New Britain
Leo J. Maffei, designer

One of line of decorative designs for cylindrical lock hardware combining components in brass, aluminum and bronze with exotic woods and ceramic.



107 Integralock with nylon latchbolt
Sargent & Co., New Haven

Molded nylon insert projects beyond latchbolt head, offers quieter, easier closure, longer wear of insert and metal parts.

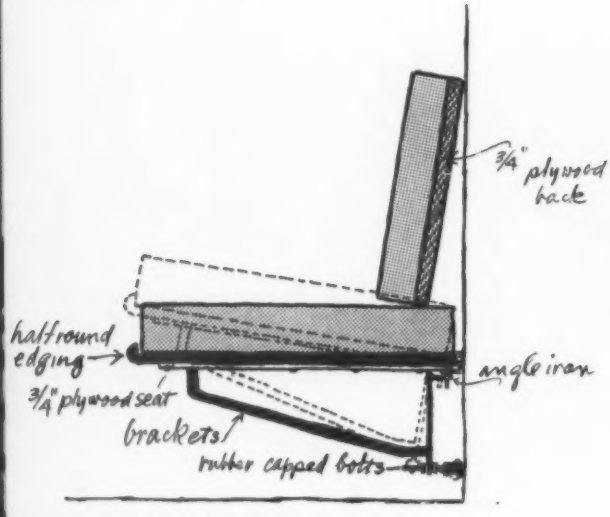


108 Wall thermostat
D. H. McCorkle Company, Berkeley
Hunt Lewis, consultant designer

Redesign of vertical thermostat isolates thermometer and dial on high-impact styrene (Dow) wafer mounted on box behind; light gray, low polish finish.

110 "Taplite" light switch
Minneapolis-Honeywell Regulator Co.
Henry Dreyfuss, consultant designer

Easy tap of single button actuator makes or breaks contact. Concave clear Plexiglas switchplate takes color inserts to match wall, can be snapped off for cleaning.



109 Wall-hung bench brackets
L. A. Darling Company, Bronson, Mich.
Al Parke, Product Design Director

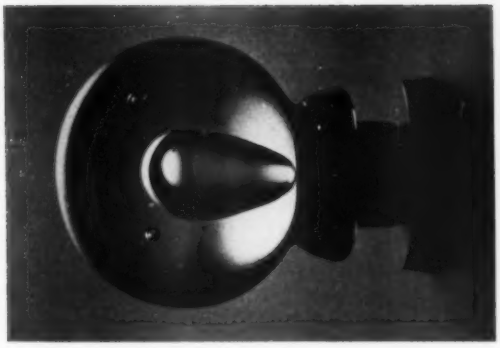
Built-in seat hangs from horizontal metal angle bar mounted on wall at seat level. Brackets on underside of seat panel hook into bar; seat angle is adjustable.

111 Marine hardware
Atwood Brass Works, Grand Rapids
Peter Muller-Munk, consultant designers

Examples of full line of redesigned marine hardware available in chrome or 24-carat gold plate.

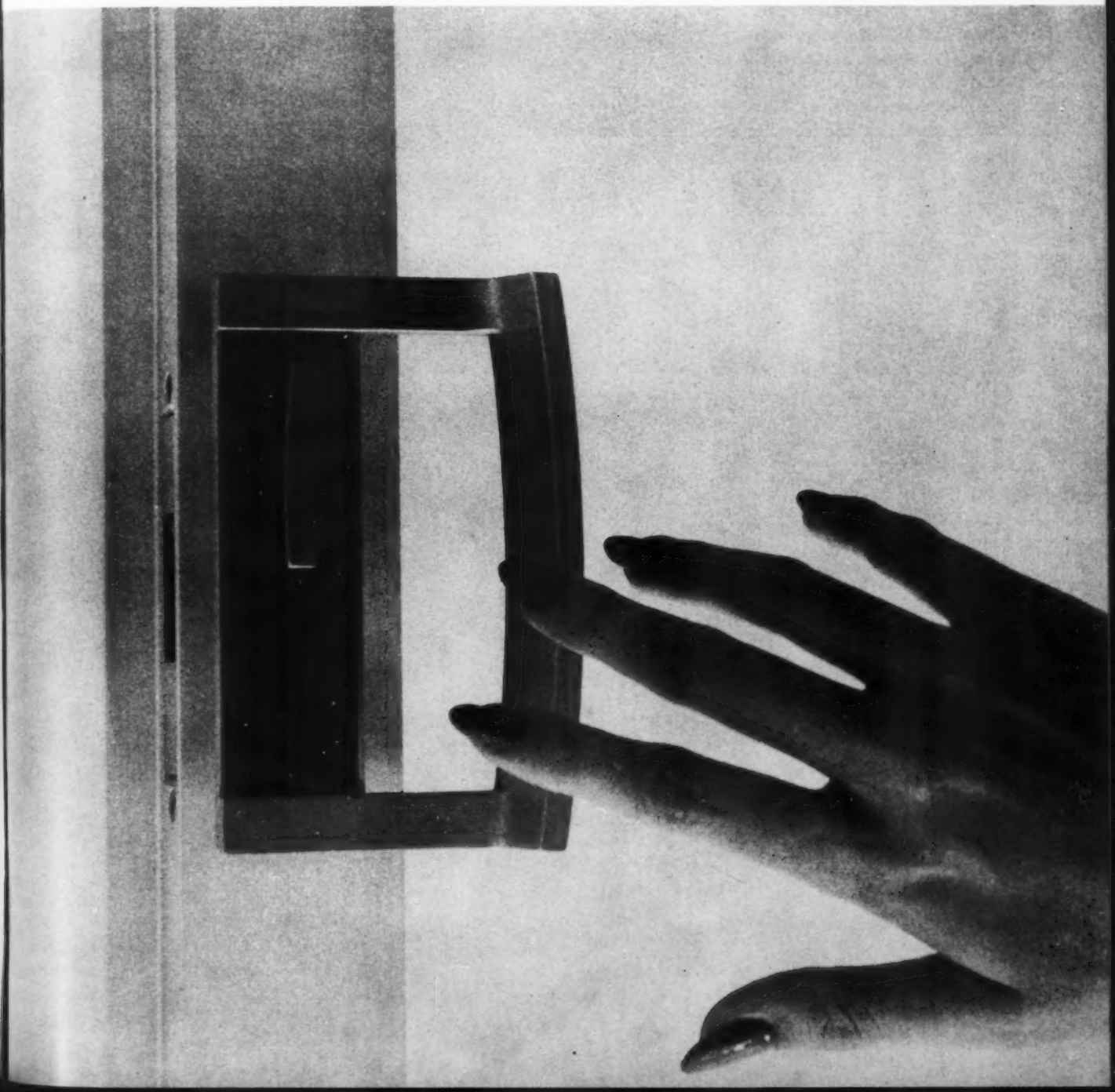
112-13 Decorative door pulls
Yale & Towne Mfg Co., Valley Forge

From group of demonstration custom designs, multi-color glass knob by Venini (above), clear glass by Corning Glass.



114 Sliding glass door hardware
Arcadia Metal Products, Fullerton, Calif.
Merendino-Greene, consultant designers

Aluminum pulls in chrome, bronze or black dull finish. Construction allows decorative insert in choice of colors and materials, easily changeable.



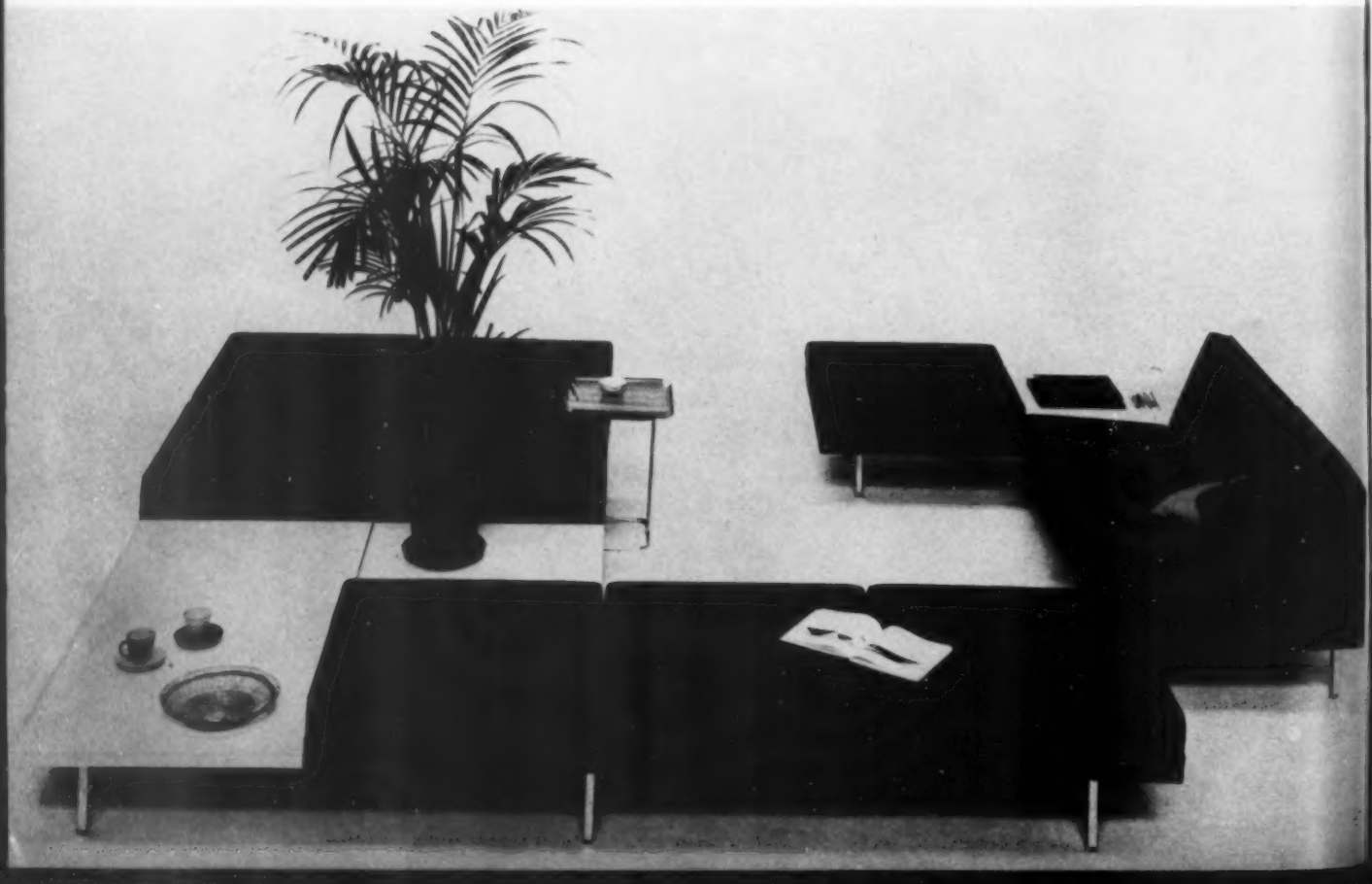
FURNISHINGS on these pages provide a bridge between architecture and furniture: they show that some kind of furniture is becoming more like building equipment—more like a component in the design of a room than like something you insert later. The neat linear storage pieces (118, 121) are the most familiar expression of architectural design in a free-standing form. Other storage pieces are actually built in (119), or designed as components that add up to a wall (120) and offer a perfection of storage space that is unique in mass-produced items. The modular concept has moved this year to carpets (116), and to its least expected extreme, seating. The Miller group (117) sums up the idea: these are not individually designed, shapely pieces of furniture, but the simplest of all-purpose components; though standing alone the parts may not look impressive, they add up to furnishings that have richness and style and variety; thus they make it possible to equip a room or a house using just one basic kind of seat, or table, or cabinet.

116 Karpet Squares
Allen Industries, Detroit

18" adhesive-backed carpet square of tufted cotton laminated to its own carpet cushion. Do-it-yourselfer peels off protective paper and pats square onto floor. 12 solid colors.

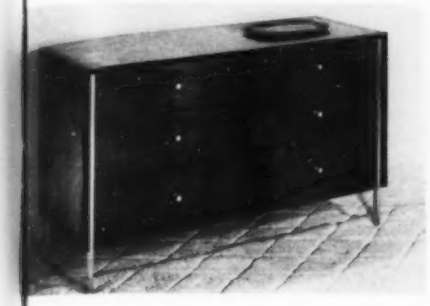
117 Modular seating units
Herman Miller Co., Grand Rapids
George Nelson & Co., designers

Numerous in-line and grouped combinations possible from components based on 30" square module: bolster, seat with back, Formica-finished slabs combined in any lengths on chrome-finished steel.



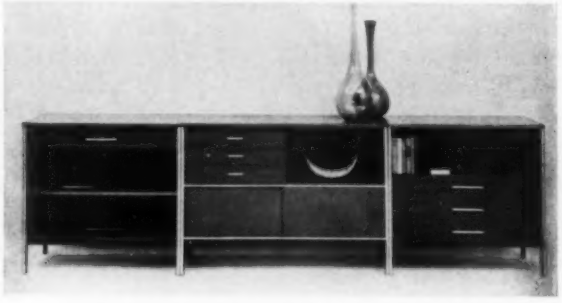
118 "Index" storage unit
Mengel Furniture Co., High Point, N. C.
Latham-Tyler-Jensen, designers

Square aluminum extrusions with hardwood core used structurally; legs continuous with top, screwed to inside of applied end panels. Walnut, silver pulls.



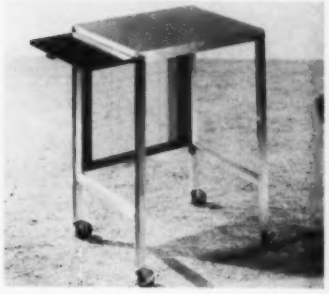
121 "Linear" group cabinet
Calvin Furniture Co., Grand Rapids
Paul McCobb Associates, designers

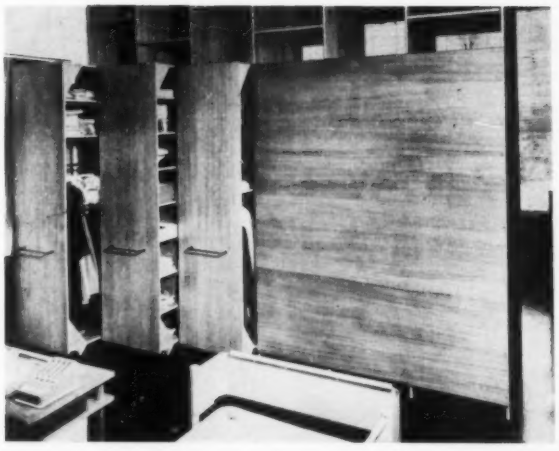
Walnut panels and structure, with aluminum veneer on frame. Die-cast pulls, dull chrome finish (Chatauqua).



122 Typing table
Mueller Furniture Co., Grand Rapids
William Macowski, designer

Magnesium frame in natural silver tone, gold or colored finish; walnut-framed cane panel; pull-out tablet, white Formica top. Desks of similar construction.





119 Clothes filing system
Saginaw Furniture Shops, Chicago
Henry P. Glass, designer

Installed prototype of new storage system eliminates drawers, using compartmentalized pull-out sections with hangars, shelves, bins for wardrobe.

120 Steel storage wall
St. Charles Manufacturing Co., St. Charles, Ill.

Using numerous special-purpose storage bins, trays, racks, revolving shelves for any kind of kitchen equipment, custom storage wall can be assembled to fit given space (right). Wide, shallow sliding trays store linens unfolded (above).

FURNITURE One kind of innovation that has been going on for sometime in the furniture field has been the creation of "double purpose" pieces. Although the doubling of function has meant, all too often, a grotesque doubling of bulk, there is now clearly a trend to solve the problem as simply as possible. In this group we see some of the ways designers have integrated several functions gracefully and economically: a sofa that becomes a bed without an overstuffed announcement of the fact (124); tables that unfold or nest without laboring the point (125, 126), and that even turn the trick into a design plus (123).

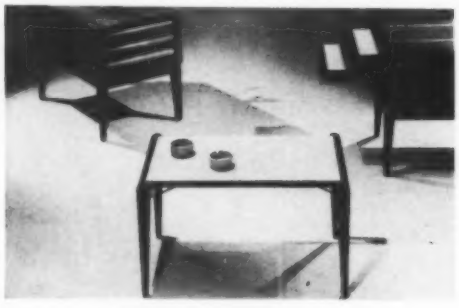
The convertible idea in chairs (127, 128) shows a new twist on amateur economics: the pleasure and profits of being able to change or clean upholstery easily at home.

125 Card-dining table
Jens Risom Design, Inc., New York
Jens Risom, designer

Hinged flip top, 34" square, opens and slides to center over base to seat 6. Felt-lined silver storage under top.

123 Folding nest tables
Brown-Saltman Furniture Co., Los Angeles
John Keal, designer

"Mother table" of Philippine mahogany stores 3 snack tables with white tops.



126 Nesting tables
Selig Manufacturing Co., Leominster, Mass.
James & Marie Howell, designers

Designed for American market to be made by Danish craftsmen; 50" overall width, nesting tables 16" high.

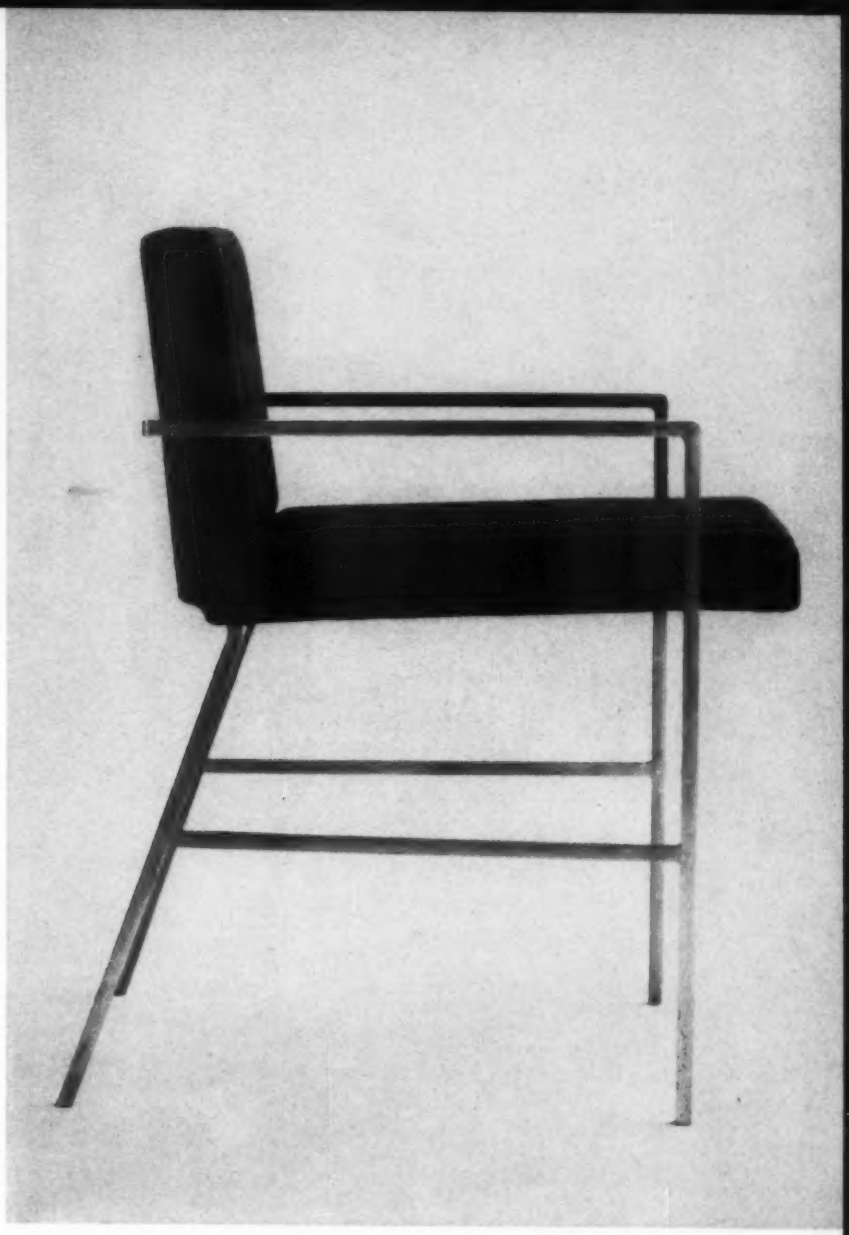
124 Sofabed
Jens Risom Design, Inc., New York
Jens Risom, designer

Dual-purpose unit with new flat spring construction; sloped sofa seat slides forward in one motion to flat bed.

Tom Yee

127 Molded chair, removable cover
Thomas Furniture Co., High Point, N. C.
Pierre Debs Associates, designers
H. V. Thaden, inventor

Removable one-piece cover held to molded seat by concealed zippers, and by tucking under patented pressure lock lip around perimeter of frame. Many shapes possible.



128 Low back dining chair
Harry and Marion Zelenko, Inc., New York, designers and manufacturers

One-piece upholstered foam rubber seat is removable for re-upholstery; adaptable to brass or steel frame, with clip-on seat for outdoor use.

129 Adjustable posture chair
Do/More Chair Company, Elkhart Ind.
Raymond Loewy Associates, designers

Fully adjustable to full range of physiques, chair features tension-spring back with patented mechanism compactly integrated with design suited to contemporary offices.

130 Drafting stool
Knoll Associates, New York
Eero Saarinen, designer

Companion piece to adjustable secretarial chair (left), stool uses same cast aluminum base, foam rubber seat and back. Brushed finish, rubber casters.

COMFORT is news when it's engineered in wood, steel and foam, in forms that are also trim and elegant, as in these three studies in the comfort function of modern seating. The motion of the rocking stool parallels the flexible shifting of balance that the spine itself affords the body. The Marshmallow sofa is production-oriented: by dividing the cushion into its largest common denominator (a bar stool pad) it is easy to mass-manufacture "upholstery" for seats of any length. Eames' lounge chair harks back to the traditional idea of comfort —a soft pad that the body sinks into—but achieves its resilience with the trimmest of means on a plywood shell.

131 Marshmallow sofa
Herman Miller Furniture Co., Grand Rapids
George Nelson & Co., designers

18 mass-produced foam rubber cushions with heat-sealed vinyl cover (Elastomer Corp.) attached to chrome-plated mountings on steel tub base. Bases will be offered in any desired length.

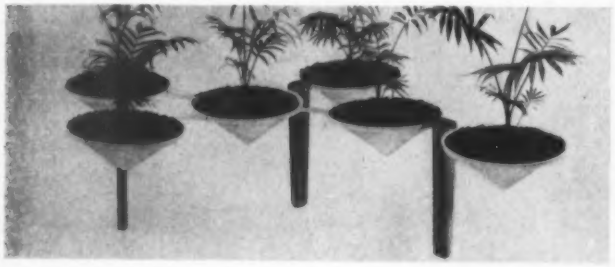
132 Lounge chair and ottoman
Herman Miller Furniture Co., Grand Rapids
Charles Eames, designer

Molded plywood sections on swivel-tilt base upholstered with special snap-on cushions: fabric or leather top zippered to vulcanized fiber base; inside is foam rubber envelope containing feathers.

133 Rocking Stool
Knoll Associates, New York
Isamu Noguchi, designer

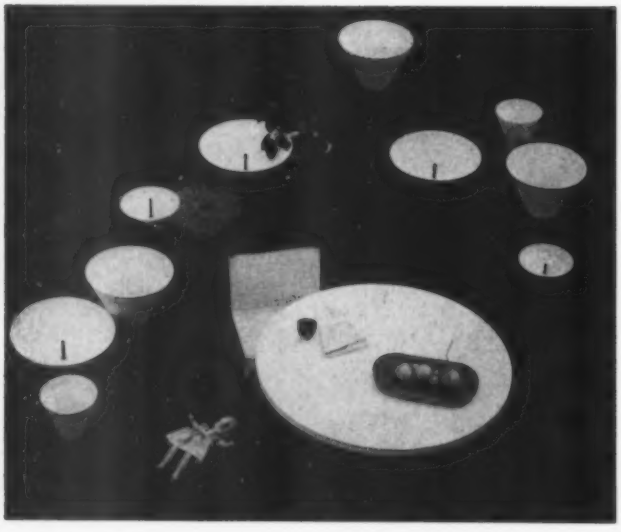
Hardwood top and base on chromed steel frame. Curved bottom allows rocking action.

ACCESSORIES pose a problem that is often regarded as a primarily esthetic one, as it is in lamps. Take ashtrays, for instance: there is obviously a need for an object that scientifically holds a smoldering cigarette, but because of the pronounced place occupied by the ashtray in today's interior, it seems equally important to have an agreeable looking object; many designers choose to concentrate on solving the latter problem by designing sculptural bowls that please the eye and hand and also catch ashes. In the fire grate (136), on the other hand, innovation is achieved by adding a function: it doubles as a grille and stands as a permanently decorative object. The planters (134, 135) with dripless construction and variable arrangements demonstrate that it is still possible to improve something as basic as the flower pot.



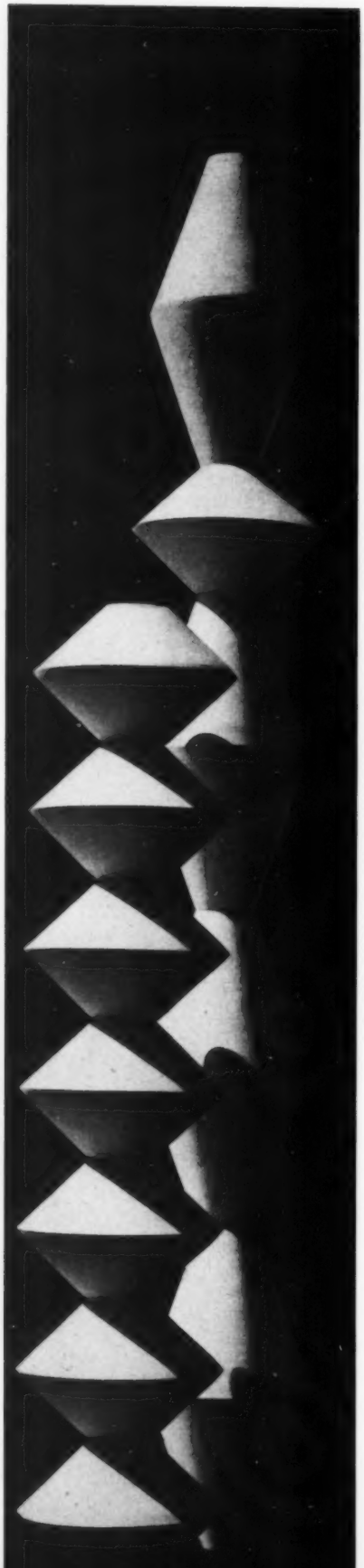
134 Random planter
Howard Miller Clock Company, Zeeland, Mich.
George Nelson and Co., designers

For indoor area planting shallow cones are arranged in fixed wire frame on tapered birch posts. Pebbles in base of grey or white plastic shells provide adequate drainage.



135 Architectural Pottery
Architectural Pottery, Los Angeles
La Gardo Tackett, staff designer

Spiked frames support a portable garden in high-fired yet porous terra cotta (above). Hourglass forms in sculpture (right) create integral dripless bases for planters indoors.

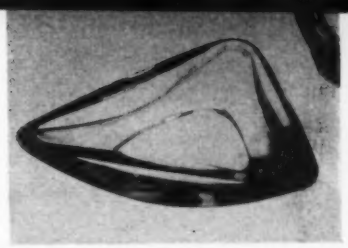


136 Fireplace grate-grill
Howard Miller Clock Company, Zeeland, Mich.
George Nelson, designer

Sculpture in the fire place, cast iro grate with steel grill for indoor cha coal broiling. 22¼ x 14½ x 10 Grill and supports are removable

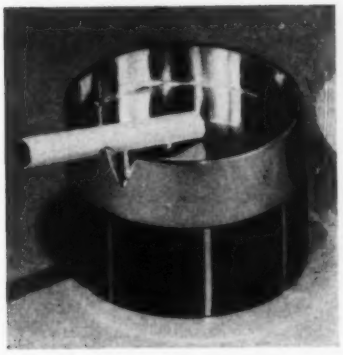
137 Candelabra
George Koch & Sons, Evansville, In
Don Dailey & Associates, designers

Candlelight casts novel pattern through perforated metal plaque, i die formed steel, black bake enamel; candle cups of drawn d steel, brass plated.



140 Glass ashtray
Val St. Lambert, Liege
Vogue Ceramics, New York, distributor
Peter Muller-Munk Associates, designer

American-designed crystal for fabrication by skilled Belgian artisans.

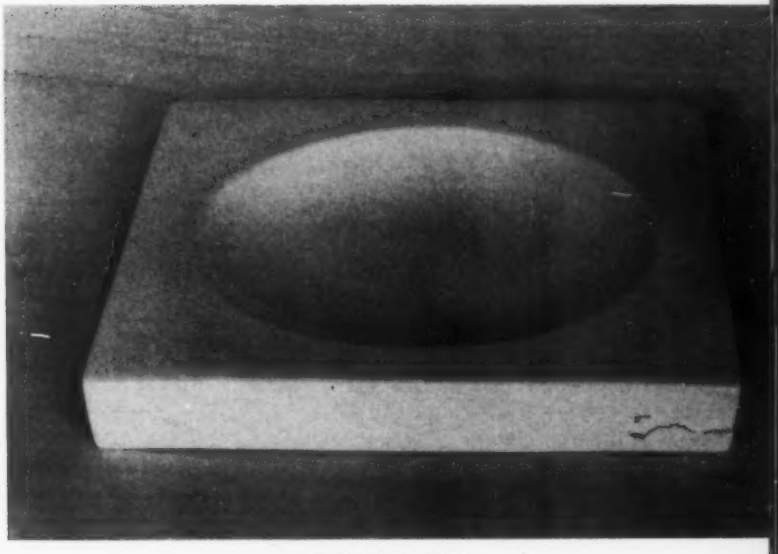


141 Wood and pewter ashtray
Haberge Inc., New York
Paul Evans, consultant designer

Pewter is embedded into turned wood by machine process; metal accents hand inlaid. Gray cast of oil rubbed mahogany blends with polished and buffed metal. Removable tray 3" diameter.

138 Salt and pepper shakers
Towson Craftsman, Inc., Towson, Md.
John Morton, designer

Inner insert cylinder of 1" cold drawn steel of fine tolerance (Superior Tube Company); fitted with stamped punch base and top; no welding or adhesives. Stainless case.



142 Porcelain ashtray
Sitterle Ceramics, Croton Falls, N. Y.
Trudi and Harold Sitterle, designers

A simple slab with dry pond shallow enough to keep fallen cigarette lighted. High-temperature white glazed porcelain.

139 Ashtray
Lieberman Pottery, Philadelphia
Jack H. Lieberman, designer

Fluting serves as holder for a community of cigars, cigarettes, and as sole decorative enhancement. Slip-cast white burning clay fired to earthenware temperature. Matte finished ash trays double as bowls.

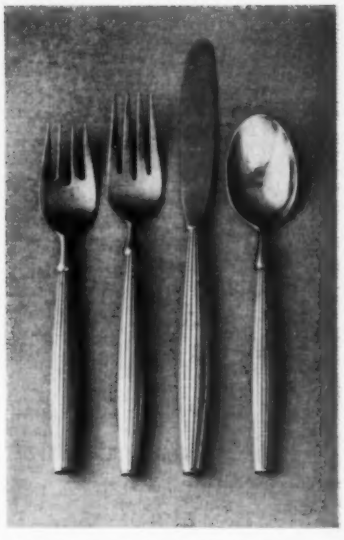
144 Lucent melamine dinnerware
J. & I. Block Corp., New York
Raymond Loewy Associates, designers

Thin, light moldings (Plastimold Corp.) of translucent melamine (American Cyanamid); shaped bases elevate pieces from table; in white, pale yellow, pink or turquoise—plain or three patterns.

145 Carvel Hall "Leisure" flatware
Charles D. Briddell, Inc., Crisfield, Md.
George Nelson and Co., designers

"Steelsm.th" quality stainless formed from pre-polished blanks. Butter spreader has palette blade, soup spoon is an elliptical bowl, dinner knife is short and arched.

TABLEWARES Changes in the way materials are used and combined set a new style for the table this year: utility is being built into traditional luxury materials, while practical materials assert their own kind of elegance. Melamine dinnerware, for instance, seeks its own fine-table quality in new translucent formulations and china-thin forms (144), and medium-priced stainless flatware takes on a distinct luxury polish (145). Silver, on the other hand, is combined with less traditional materials—nylon (148) and stainless (146)—indicating a new effort by that industry to design silver that is as practical as it is elegant.

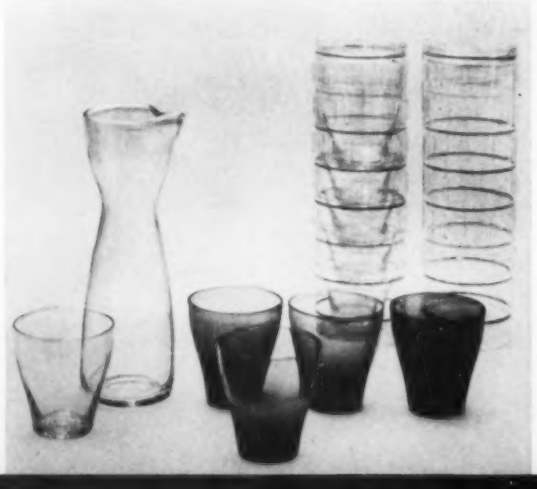


146 Contempora House, Steel 'n Sterling
Towle Manufacturing Co., Newburyport, Mass.
William DeHart, Director of Design

Stainless steel tines, blades and bowls for utility, combined with hollow sterling handles for elegance. Turquoise vitreous enamel tips in "Jade" pattern.

147 Sterling tea and coffee pots
Allan Adler, Los Angeles
Charles A. Piper, designer

Hand-spun silver body, with handwrought spout and handle, shows no solder seams. Ebony pistol grip handles have concave sterling top piece for rigid support. 8-10 cup capacity. Currently custom only.

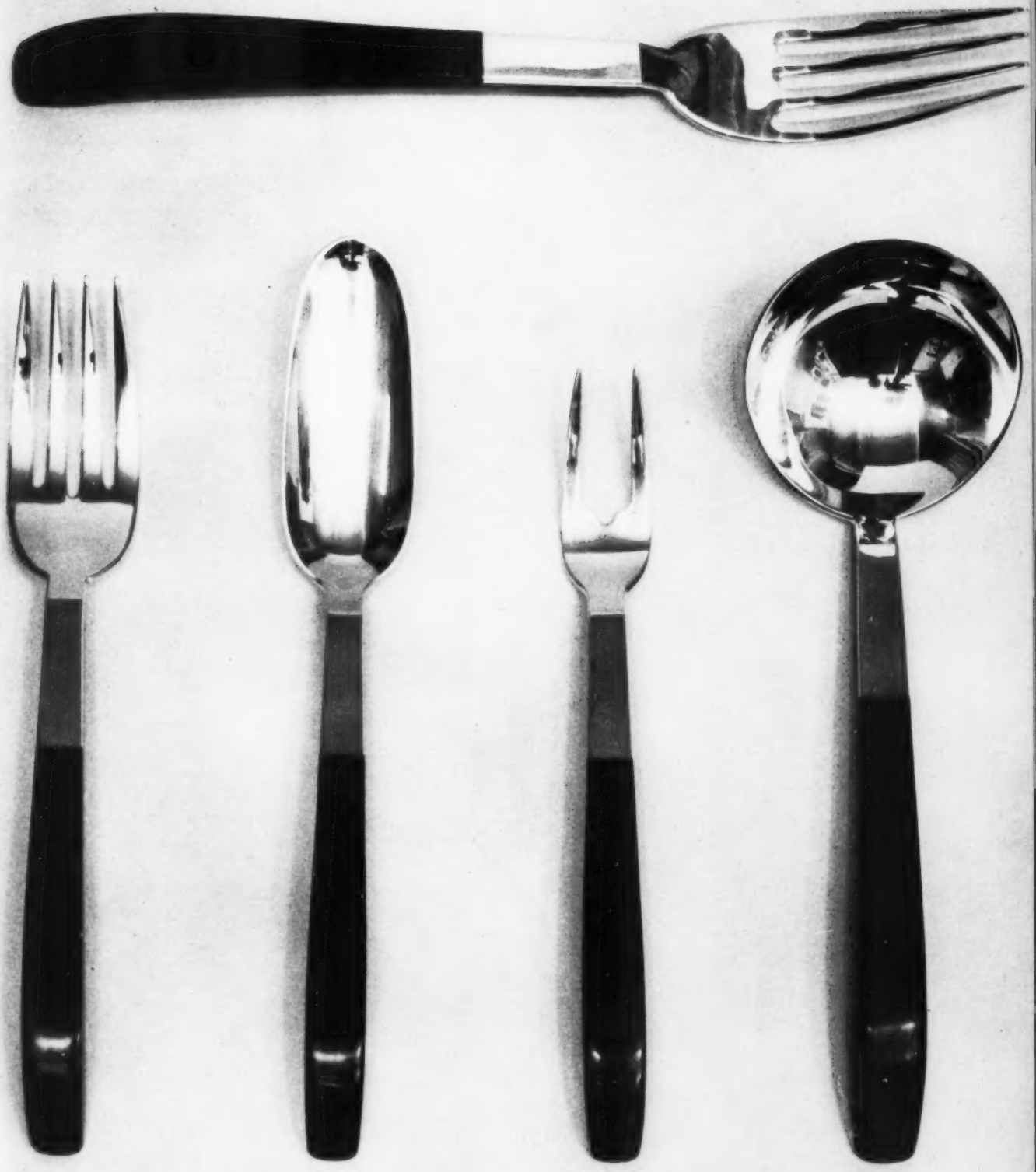


143 Beverage set
Fostoria Glass Company, Moundsville, West Virginia
Raymond Loewy Associates, designers

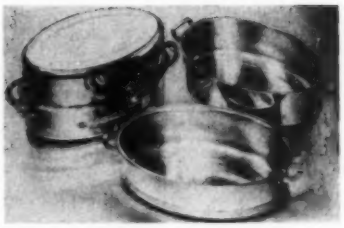
Boxed in clear plastic tubular stack (Plaxall) six tapered tumblers have circled bases, the handleless cocktail mixer, a narrow waist for woman's grip. Clear crystal, six colors.

148 "Contrast" flatware
Lunt Silversmiths, Greenfield, Mass.
Nord Bolen, staff designer

Handles of durable Zytel nylon (DuPont) in soft dull black, combined with sterling; luxury pattern can be put in dishwasher. When cleaned like silver, matte nylon surface of handles acquire patina.



HOUSEWARES and household gadgets this year, as usual, saw a host of novel ideas and a few entirely new ways of doing things. In the process of improvement, refinement of the product's appearance was a not unimportant result. Cal Dak's collapsible cart (155), that counterpoints the squareness of a wire basket with an arched pipe handle, represents an approach that reconsiders design and function with a single inventive idea. A cake pan with integral legs (160) and a simple method of hanging up hose (164) are typical of the fact that no product in this field is too humble to warrant the application of ingenuity. The Vulcot hamper (166) marks not only the first major application to consumer use of an economical industrial material, but, for the first time in many years, a significant redesign of a basic household product.

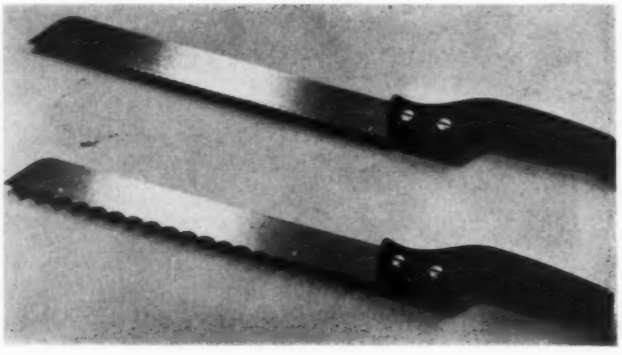


150 Bakeware
Ekco Products Company, Chicago
Ekco Product Planning Dept., designers

Thick copper-bottom for luxury cooking action in oven. 16-inch ovals, also available in all-steel. Top doubles as extra roaster.

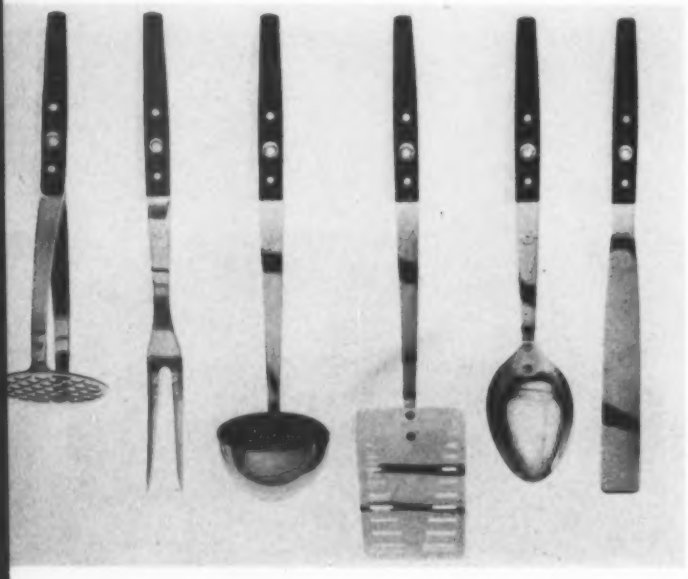
151 Frost Twins
Millers Falls Co., Greenfield, Mass.
L. Garth Huxtable, designer

Compression-molded black phenolic handle, step-shaped for better leverage, comfortable grip in flush cutting with board. Replaceable stainless blades saw bone, frozen food.



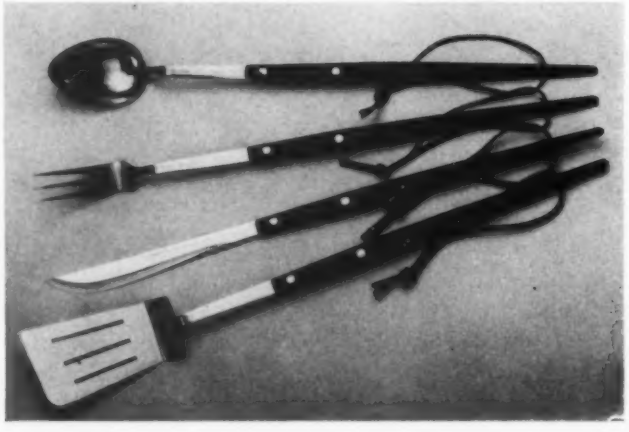
152 Barbecue tools
Robeson Cutlery Co., Perry, New York
Jerome Moberg, staff designer

Long cool handles of black Stratawood Fibron have silver rivets to hold polished steel prongs. Natural cowhide thongs wrap around wrist.



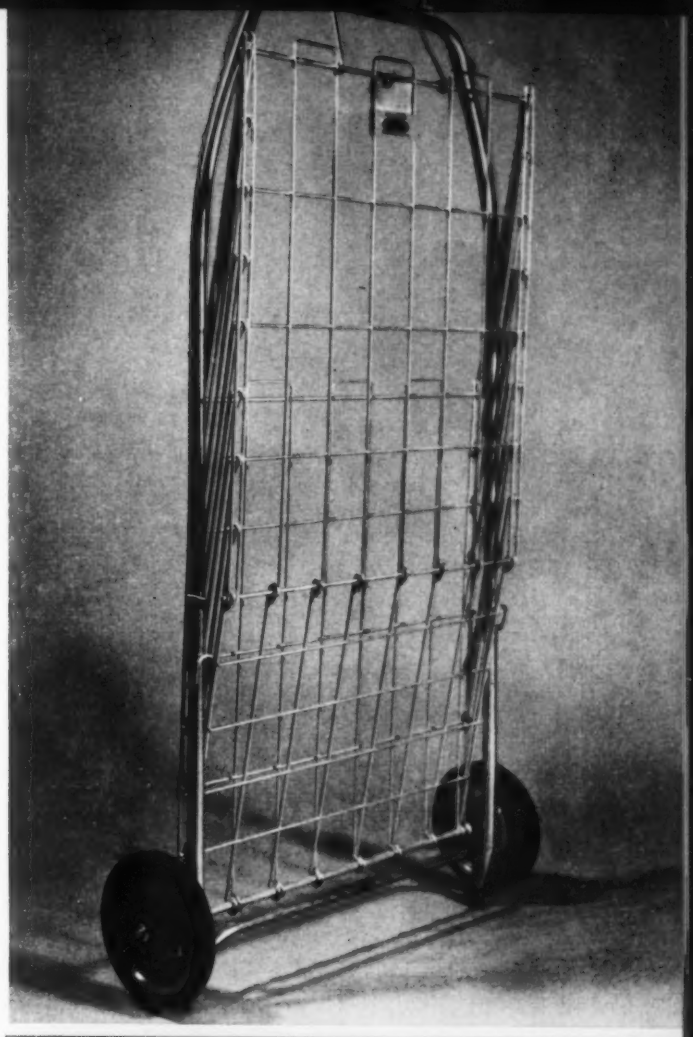
149 Flint continental kitchen tools
Ekco Products Company, Chicago
Ekco Product Planning Dept., designers

Tapered handles and stalks pulled extra long, hang up holes punched low on handle for ease in hanging exploit decorative effect of screw heads. Stainless steel.



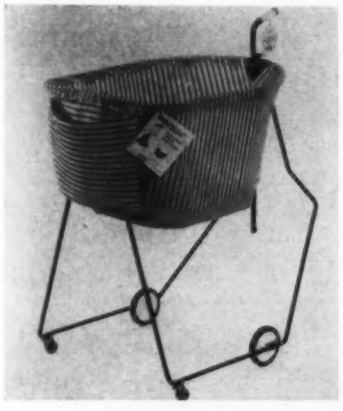
155 Shopping cart
Cal Dak Mfg. Co., S. Gabriel, Calif.
Melvin Best Assoc., consultant designers

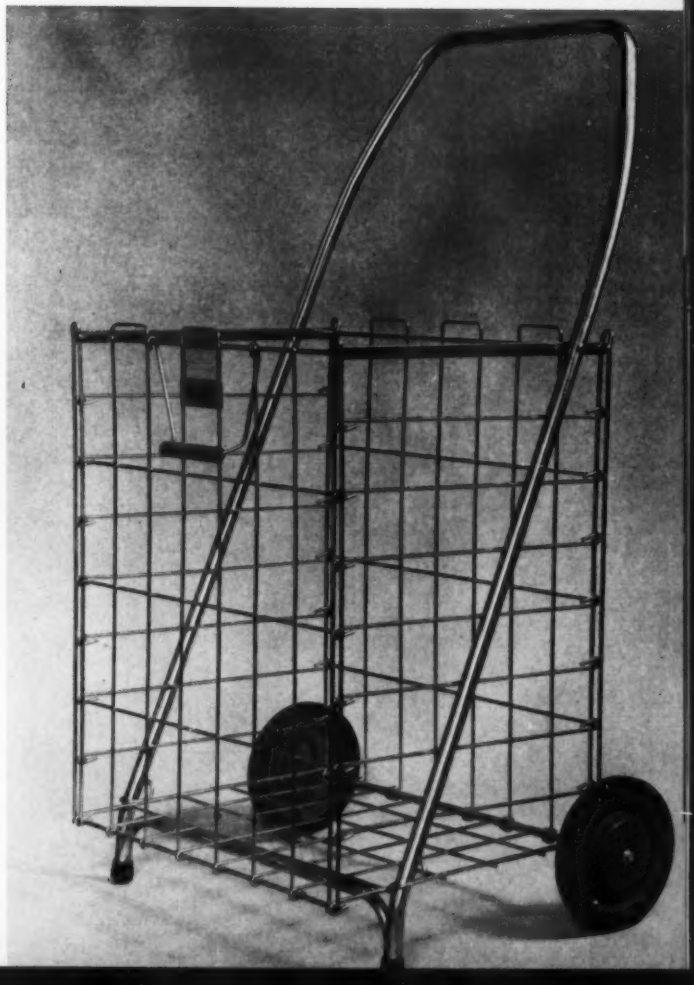
New lift-up closing action: front lift handle latches over pulling handle to fold basket in narrow parallelogram. When closed, front rubber feet are on floor, wheels lifted above floor cannot slip in storage. Low center of gravity adds to maneuverability.



153 Gipsy Kart
Padbloc Company Inc., Wichita, Kans.
Harry G. Lankford, designer

Flexible laundry cart folds to 4" width, is drawn by plastic grip handle, adjustable to varied heights. Basket is washable denim; frame, wire painted black; rides up stairs on "outdoor" rubber wheels, swivel casters.



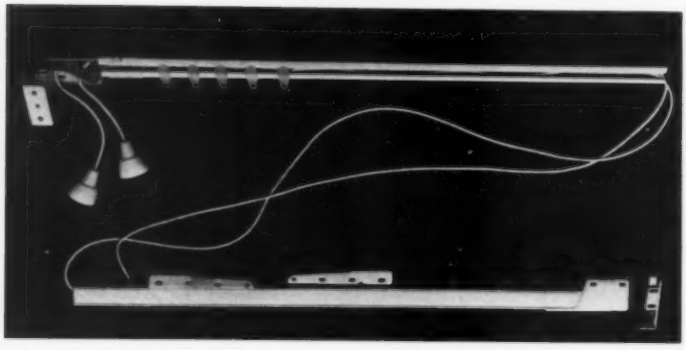


154 "Ringlet Clothespins"
Ringlet Clothespins, West Boylston, Mass.
Roger Nowak, designer

Springy one-piece styrene clothespins (Monsanto Lustrex) are easy to hold, clean, self-adjusting to fabric of any thickness.

161 Traverse rod
Kirsch Company, Sturgis, Michigan
Lippincott and Margulies, consultants

Redesigned curtain rod fits spans from 32" to 18'. Carriers, pulley assemblies, brackets emphasize sculptural shape.



156 Mary Proctor laundry cart
Proctor Electric Co., Philadelphia
Harold Van Doren, designer

Baskets on capacious laundry cart nest; toe pressure collapses frame for hanging. Vinyl-impregnated cloth liner.

158 "Pour-Easy" vacuum bottle
Landers, Frary & Clark Co.,
New Britain, Conn.
Sundberg-Ferar, consultants

Spout lip design prevents spilling. Cup has few threads, is easily cleaned. Cases open on bottom.

162 Flour sifter
The Washburn Company, Rockford, Ill.
J. Richard Lawrence, staff designer
Raymond Spilman, consultant designer

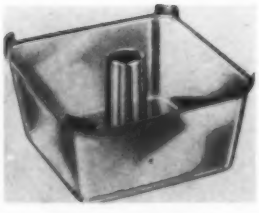
One-cup sifter small enough to hold and operate with one hand. Copper-tone steel with enameled spring handle; also lithographed patterns.

157 Rubbermaid dustpan
Wooster Rubber Co., Wooster, O.
Joseph Brenneman, Mgr. Product Development; Smith, Scherr & McDermott, consultants

First new model of original Rubbermaid product has smoother sculptural forms, slight ridge to hold in dust.

159 Sponge rubber "Biddy Broom"
Wells Specialty Co., No. Liberty, Ind.
Richard Gewetzki, staff designer, Good Design Associates, consultant designers

Used damp or dry on hard surfaces and rugs; styrene frame.

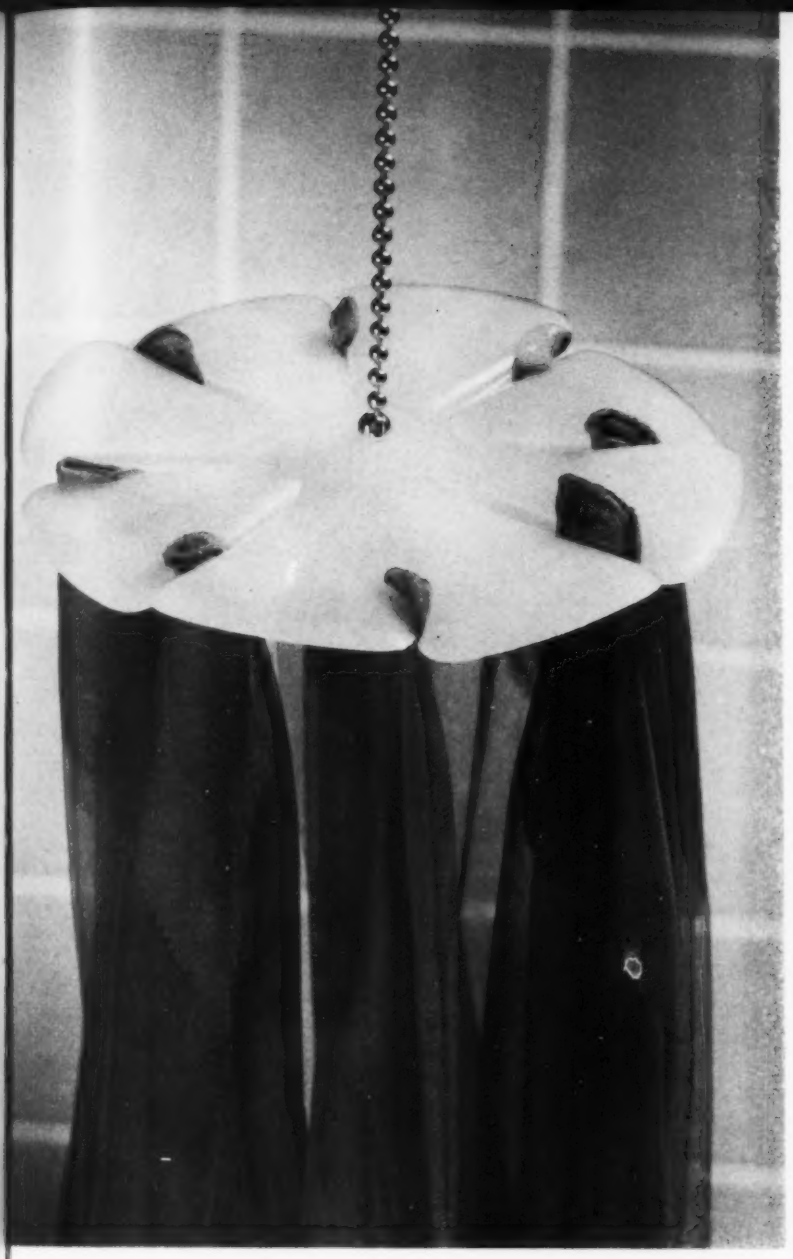


160 Square angel food cake pan
Wear-Ever, Div. of The Aluminum Cooking Utensil Co., Inc.

Integrally-formed feet on square pan help cake drop out when pan is inverted. Loose bottom insert.

163 10-gallon garbage can
Plas-Tex Corporation, Los Angeles
Robert J. Willis, staff designer

All-polyethylene can, injection molded, has cover easily secured by "Lock lift handle." In bright colors with chrome bail, black handles.



164 Toe-hold hose dryer
Cosom Industries Inc., Minneapolis
Ed Burchell, designer

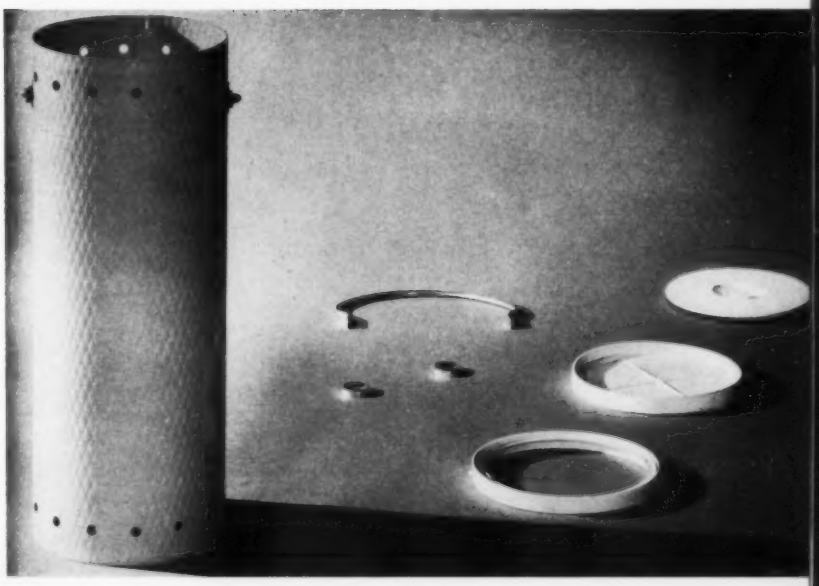
New idea for hanging washed hose, dryer consists of single piece clear polyethylene, soft yet firm, pinching toes without damaging. Chain for portable attachment.

165 Carpet mates
Childlore Co., Kansas City, Mo.
Victor F. Ehrgott, consultant designer

Concert piano can rest on three C-11 carpet grips without bending them or marking rug pile. Injection molded Bakelite matches furniture colors in clear, blonde, and brown.

166 "Vulcot" hamper
National Vulcanized Fibre Co., Wilmington
Donald Deskey Associates, consultant designers

Low-cost hamper reduces parts to three components: vinyl-coated embossed vulcanized fibre cylinder, high impact styrene top, plus top ring and bottom molded as one unit.



CHILDREN present a special sort of challenge to the designer: their reasoning is a very special one, and they are usually most at home with a simplicity and directness that, though it also delights the grown-up, is not easy for the adult mind to recreate. A good toy must also appeal to the adult, the real customer, who in making his selection tends to apply his own values: he will prefer a toy that instructs as well as delights, and in the best designs this takes the form of what the child wants too: a toy that is flexible enough to allow him participation and imagination and accomplishment (170, 171). On top of it all, any juvenile product must be constructed to endure the ordinary affectionate abuse of our roughest and most demanding group of consumers (167, 168, 169).

167 Alaskins mittens
Air Baby, Inc., New York, N. Y.
Dr. J. Winson, designer

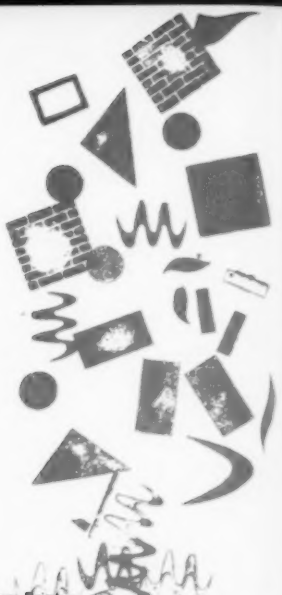
Waterproof orlon - nylon - cotton blend, electronically sealed; double cap construction for durability.

168 Straight chair
First Furniture, Lancaster, Mass.
John Peter, designer

Basic ready-to-paint hardwood chair with storage space beneath lift-up seat 13" x 13" for 2-7 age group.

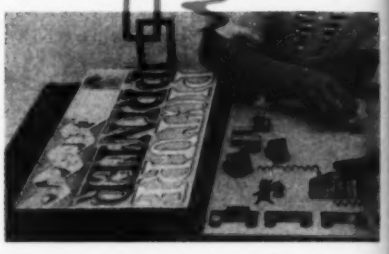
169 Youth bed
First Furniture, Lancaster, Mass.
John Peter, designer

Hardwood bed pre-sanded for paint, stain or varnish; crib mattress and spring can be used.



170 Picture Printer
Chaspec Manufacturing Co., Greenwich, Conn.
Arnold Arnold, designer

Series of rubber stamps with various patterns and colored ink pads for printing and composing of pictures or random images.



171 Magic Mirror Movies
Childhood Interests, Inc., Roselle Park, N. J.
Morgan Development Laboratories, designers

Musical toy produces songs and 3-dimensional colored movies on any 78 rpm player. 16-sided plastic Magic Mirror projects animated images, inscribed on record, in time with music and words.

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Experiments in space travel, mechanical inventions, and new kinds of power all have special implications for the field of

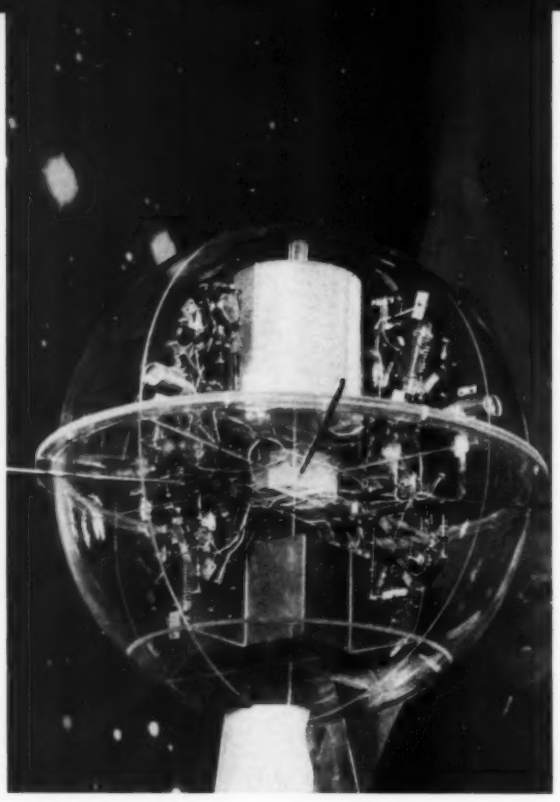
EQUIPMENT

whether it is for travel, production, or personal enjoyment.

This year brought glimpses of how some kinds of transportation equipment might look and work when atomic power is as common as electric power, and how others might function through the application of jet power and turbine engines, new wing and even no-wing principles.

Meanwhile designers and manufacturers of production equipment and instruments find there is still sufficient room for mechanical improvements in the way they are used, serviced, or fabricated, to justify even radical changes in the face of high investments.

TRANSPORTATION'S big news is space travel—the "man-made moon" to be rocket-launched as the outstanding event of the International Geophysical Year. As the first of 5 steps that will lead to a new approach to travel, data collected from the satellite will pave the way for a permanent space station. On a more earthly plane, jet power made news in production this year; Russia flew its new jet liner to London shortly before Boeing's 707 jet airliners began moving on the assembly line in Seattle. Meanwhile inventions and power developments are already stirring new outlooks in transportation. Convair's "towing locomotive" is a new air-transport system well adapted to the special characteristics of atomic power. Collins Radio is moving toward a different frontier—a plane that will have no wings at all—while continued research in anti-gravity devices at Glenn L. Martin could eventually obsolete all our concepts about air travel.

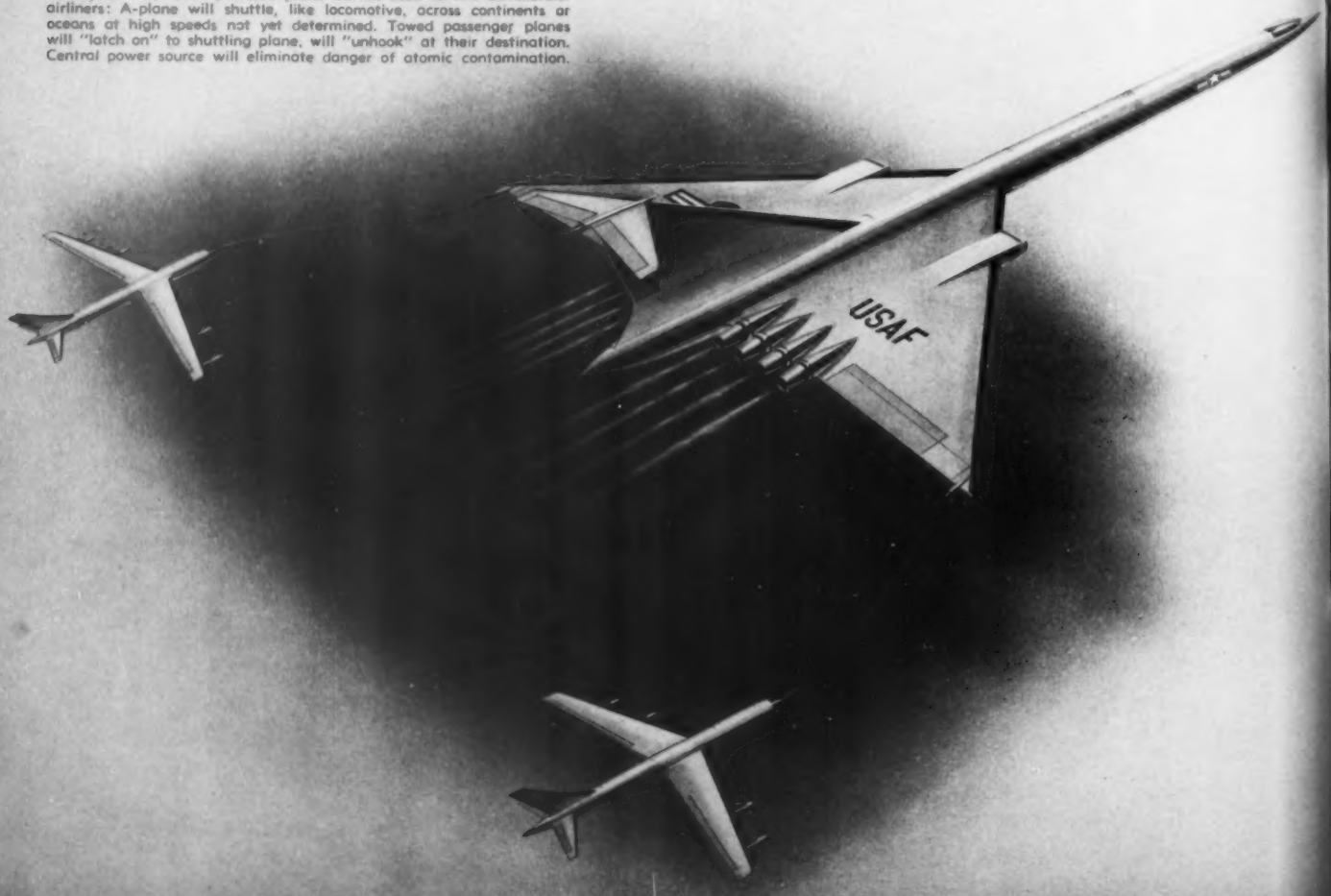


173 Artificial satellite
Brooks & Perkins Inc. for Office of Naval Research

Model of satellite, to be launched from Cocoa, Fla., is 4-lb. magnesium sphere — 20 lbs. with equipment — 20 in. diameter. It will travel around earth in elliptical orbit at rate of 18,000 mph in 90 minutes; will rise by three stage rockets, and radio back to listening posts data man has never had.

172 Atomic powered plane
Northrop Aircraft, Inc., Hawthorne, Calif.

Concept of how atom-powered plane will be used to tow commercial airliners: A-plane will shuttle, like locomotive, across continents or oceans at high speeds not yet determined. Towed passenger planes will "latch on" to shuttling plane, will "unhook" at their destination. Central power source will eliminate danger of atomic contamination.



174 Rubber-body plane
Goodyear Tire and Rubber Company, Akron, Ohio

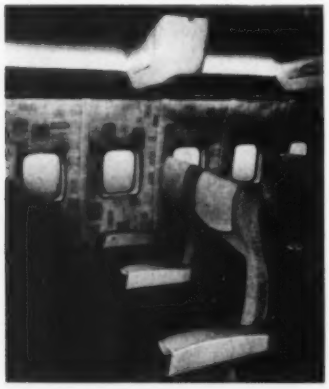
Inflatable plane can be deflated and packed in trunk of family car. Air pressure needed to pump up plane is less than that for car tires. Body and wing forms created by internal cross-strands of varying length. Wings, tail assemblies, pilot's seat of Airmat (Goodyear), 2-cycle, 40 hp engine. Quantity production not planned.

175 Aerodyne wingless aircraft
Collins Radio Co., Cedar Rapids
Dr. A. M. Lippisch, Director, Aeronautical Research

Aerodyne will use internal lift-inducing propulsion system to take off and land vertically, hover like helicopter and cruise like conventional airliner. At left—Dr. Lippisch operating a laboratory model; below, artist's conception of Aerodyne.

176 F-104A Starfighter
Lockheed Aircraft Corp., Burbank, Calif.

Today's fastest fighter plane—about half of standard weight and able to climb as fast as it flies straight and level—features exchangeability of electronic equipment for each flight.



177 Jet airliner interior (Boeing 707)
Boeing Aircraft Company, Seattle
W. D. Teague Associates, designers

First complete interior for commercial jet includes window design with glare filters, overhead passenger service unit adjustable to seat spacing.

photo London Daily Express

178 Tu 104 Russian jet liner

Russia introduced its first "medium sized" jet when it flew Kremlin heads to Britain in less than 3¼ hr. at average of 484 mph. Length—120 ft., wingspan, 118 ft.; has thin tail.

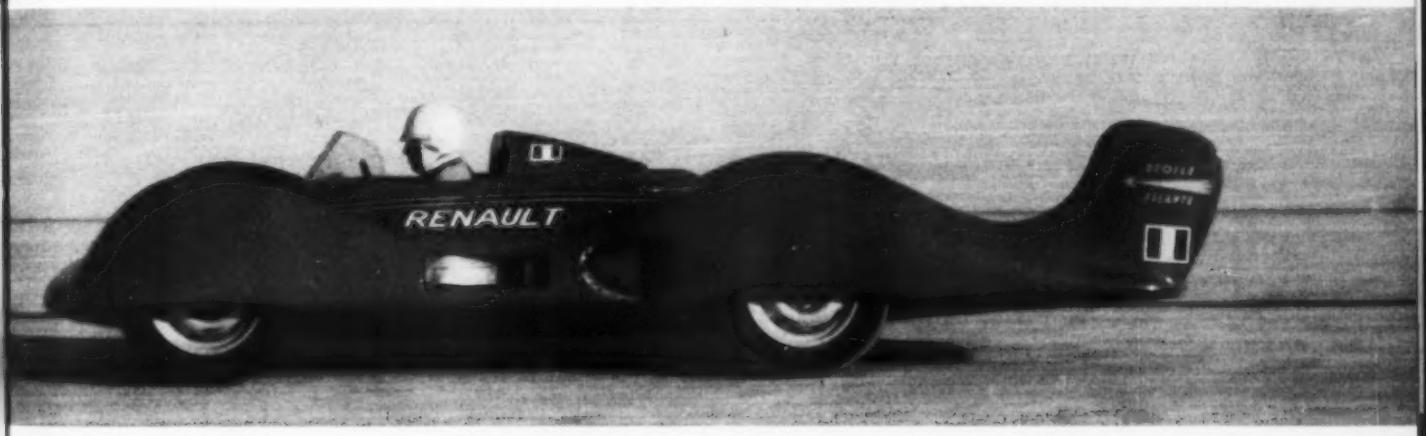
CARS are normally slower than craft of sea and air in utilizing new power sources. Yet technological advances never fail to rouse ideas as to how different cars *might* be. Experimental jet-powered cars have been tested successfully—GM combines high speeds with safety in its experimental gas turbine car (181) —but the chances that they will be turned into a family car are distant at best. Detroit seems less concerned with marketing basic improvement in operating details than its European competitors, who are adventuresome not so much in leap-frogging to the future but in making measurable strides toward realizable improvement. The simple air-cooled engines of the Porsche and Volkswagen are examples and England's Ferguson promises another revolutionary engine design. This year Citroen of France startled the industry with its first new model since 1932, the remarkably well thought out new DS 19 that is full of innovations and which experts here have modestly called "the car that's five years ahead."

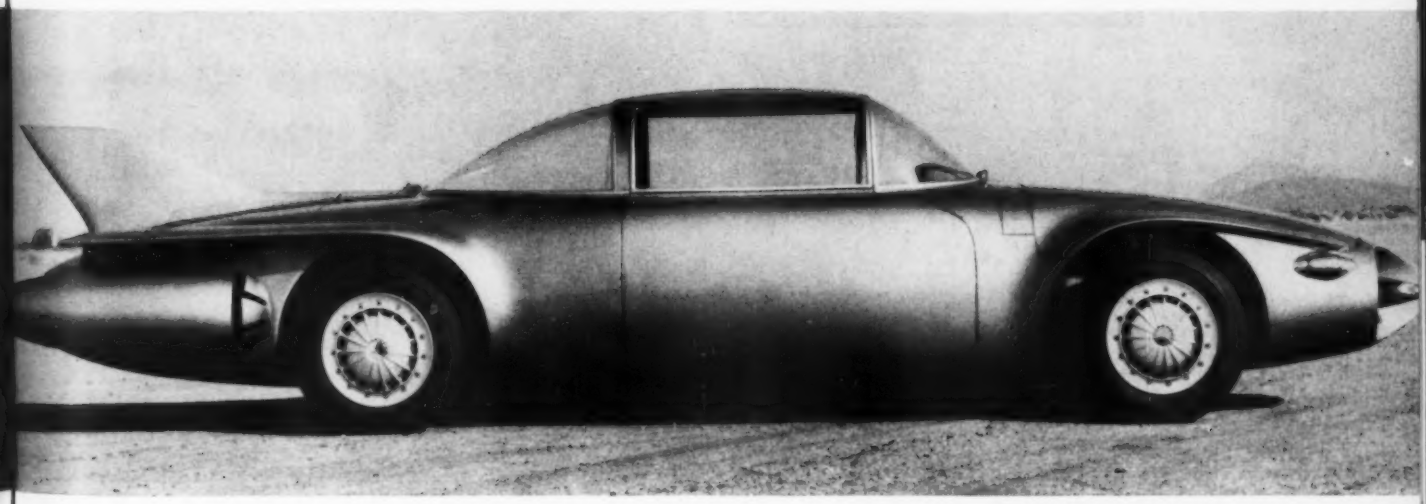
179 DS19—4-door sedan
Citroen Car Company, Paris

Thoroughly redesigned car notable for unique comfort and performance. Heart of engineering innovation: central hydraulic system with hydro-pneumatic suspension to equalize shock, with hydraulic boost to raise and lower car for different road conditions, or for changing tires.

180 Shooting Star jet turbine car
Renault of France
Albert Lory, designer

Major advance in car use of airplane jet turbine. Speed: 191 mph. Advantages of new engine: saving of weight, elimination of vibration, more torque at low speeds.

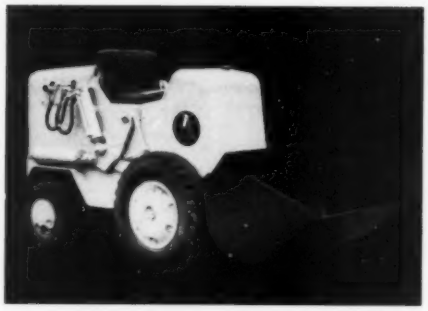


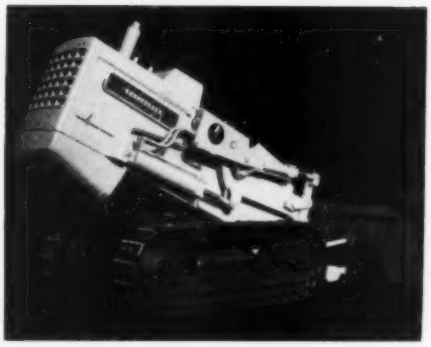


181 Firebird II gas turbine family car
General Motors, Inc., Detroit
Harley J. Earl, Vice President of Styling

Experimental car for "electronic highway" that will control direction, speed and spacing interval of super-speed cars. Body of titanium.

CAPITAL EQUIPMENT is sold primarily on its functional value—how well it yields results or income for the man who invests in it. Since traditionally this value has been measured with an engineering yardstick—power, capacity, economy, durability—it is interesting to find many more designers working in this field. It implies a growing awareness of design as value, and of the designer as interlocutor between producer and purchaser, machine and operator. The designer's contribution may be in operating improvements that make a machine easier to use and faster to service (182, 184), or inventive design changes that cut costs for the manufacturer (187, 188). It will usually be, in addition, in appearance; creating a visual character that convinces the customer that a machine has the value he seeks.





183-4 Payloaders HA (top), H-12
The Frank G. Hough Co., Libertyville, Ill.
Ralph Beyerstadt, Vice President, Engineering
Jon Hauser Associates, consultant designers

HA, smallest Payloader, modifies original bucket loading principle to give operator greater safety and visibility. Side armlift works hydraulically on series of pivots, reduces load loss. H-12, large crawler tractor, has been redesigned for easier repairs. Weight of bucket can pull entire top structure forward to expose engine, brakes and hydraulic system without disassembling hood.

182 Fork-lift truck
Clark Equipment Co., Battle Creek, Mich.
Harley Earl, Inc., consultant designers

Materials-handler has auto-like controls, complete access to engine by raising hood under seat.

185 Switchmobile
LeTourneau-Westinghouse Co., Peoria, Ill.
Painter, Teague & Petertil, consultant designers

Light machine to switch railroad cars in city areas replaces heavy switching locomotive. Rubber tires are quiet, save wear on streets.

186 Harvester-Thresher combine
International Harvester Co., Chicago
Theodore H. Koeber, chief staff designer
Design Research, Inc., consultant designers

Small, self-propelled combine, simplified for greater operator safety and comfort.

189 Keylift baggage handling truck
Keystone Engineering Co., Los Angeles
Emerson-Johnson-Mackay, Inc., designers

Transports and lifts 3500 lbs. of baggage to plane loading door. Designed for maneuverability and low silhouette; reinforced fiber glass fenders.

187 Door and door frame
Kenworth Motor Truck Corp., Seattle
Gideon Kramer, consultant designer

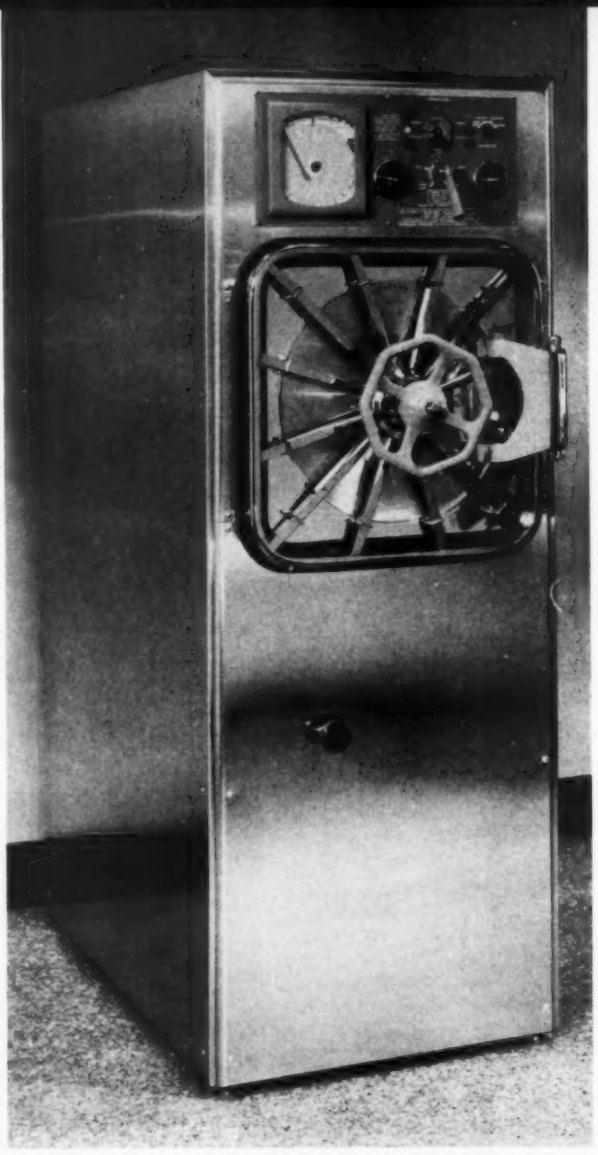
One-piece aluminum extrusion method reduces 83-part construction to 25 parts. More glass area, better closure provided by door redesign; structurally continuous frame is stronger.

188 Truck hood
Cook Bros. Equipment Co., Los Angeles
Emerson-Johnson-Mackay, consultants

Refinement of original hood shape and use of drop-hammer forming saves 18 hours, lowers cost $40 per unit in production, gives more uniform fit.

The rate of change in industrial and hospital equipment bears little relation to the cyclical pattern in consumer goods. Nonetheless change does go on, and small improvements, invention and new designs continually obsolete what is already in use. Despite the high investment, this process is not as costly as it seems because of the value factor: the price of new equipment to the buyer can be tangibly measured in terms of the value of the improvements it offers.

With this incentive for basic innovations, manufacturers of producer goods are finding that industrial designers can improve efficiency in a major area: human productivity, which is now considered as critical as a machine performance in the production process. In these examples, designers have contributed such benefits as easier handling of controls (192), simpler setups (193), quicker reading of essential charts (192), easier maintenance (195), all of which add up to production savings, fewer rejects, and increased output.

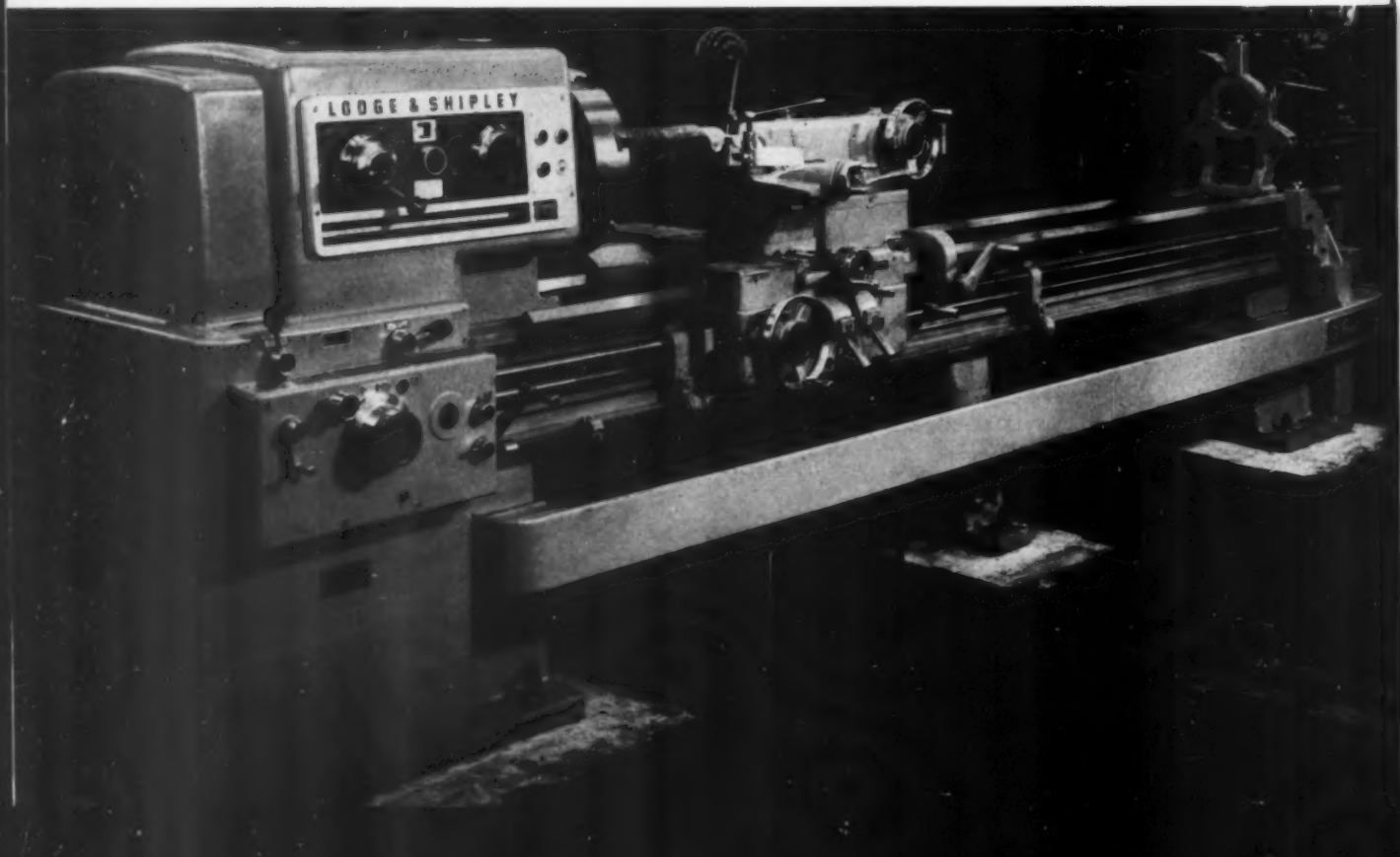


190 Sterilizer
American Sterilizing Co., Erie, Pa.
Wilbur Henry Adams, consultant designer

Hospital instrument sterilizer; welded exterior, stainless steel; solid brass door, chrome plated.

191 Toolmaker lathe
Lodge & Shipley, Cincinnati, Ohio
Peter Muller-Munk Assoc., designers

Incorporates new, simple method of computing and setting cutting speeds. Redesigned for ease of operation, centralization of controls.



192 Rapiduction Jr.
Oster Mfg. Co., Wickliffe, Ohio
Onnie Mankki, designer

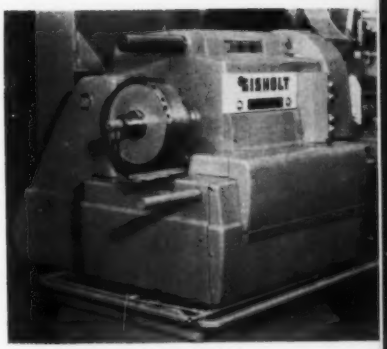
Redesigned pipe and bolt threader with fewer protruding levers; concentrated controls are more easily handled.

193 One-ton Multipress
Denison Eng'g Co., Columbus, O.

Small versatile power unit, simple to set up, cuts production costs on assembling, punching, riveting, etc. Electrically controlled hydraulic press is a removable unit.

194 Welding gun
A. O. Smith Corp., Milwaukee, Wisc.
Jack Collins, designer

Adjustable following guide located below head is exclusive feature. Removable metal shield reflects heat from operator's hand.



195 2-F Fastermatic lathe
Gisholt Machine Co., Madison, Wisc.
J. M. Little, consultant designers

Redesigned lathe, mounted on existing castings, provides safety housings where required: guards made of glass-reinforced moldings.

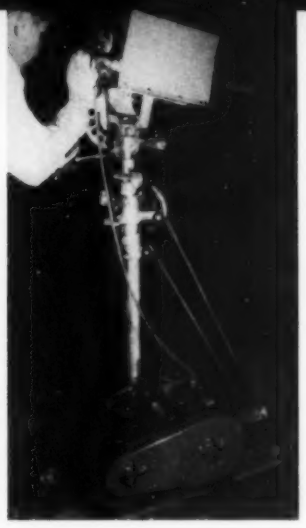
196 "Holler" baking oven
Mallett & Company, Pittsburgh, Pa.
Peter Muller-Munk Assoc., designers

Bakery oven. Top, bottom panels removable for maintenance. Lights on panel show operation setting.

197 Utensil washer-sanitizer
American Sterlizing Co., Erie, Pa.
Wilbur Henry Adams, designer

Self-contained time-saving unit washes and sanitizes hospital utensils in automatic 7-step operation that eliminates unhealthy scale deposits found in boiling sterilizers.

INSTRUMENTS for highly specialized functions almost always look unique and interesting to start with, yet this year they show increasing attention from designers: all but one of our selections were developed by designers working together with engineers. The designer's role clearly has not been to streamline these instruments, but rather to increase their efficiency by their own brand of expertness—relating the product to its fabrication and to its use. The results are better-looking instruments in an appropriately serious idiom. Because design in this area is inseparable from human engineering, we find this exemplified in simplifying controls for greater accuracy in reading data (200, 204, 205), in reshaping products for easier handling (203), in miniaturizing complex equipment (202, 206), and in solving critical problems of safety and portability on the front-lines of research (198, 201).



198 "Eva" evaporograph
Baird Assoc., Cambridge, Mass.

Infrared heat detection device for electronic research. Camera makes record of visual image of radiation. Used in any light conditions, darkness.

199 Disc-type thermostat
Metals and Controls Corp., Attleboro, Mass.
Paul Wrablica, designer

Redesign of silver-plated brass terminals (Bridgeport Brass) reduce size, improve function and quality look for better handling.

200 Frequency meter
Hewlett-Packard, Palo Alto, Calif.
Carl J. Clement, Jr., staff designer

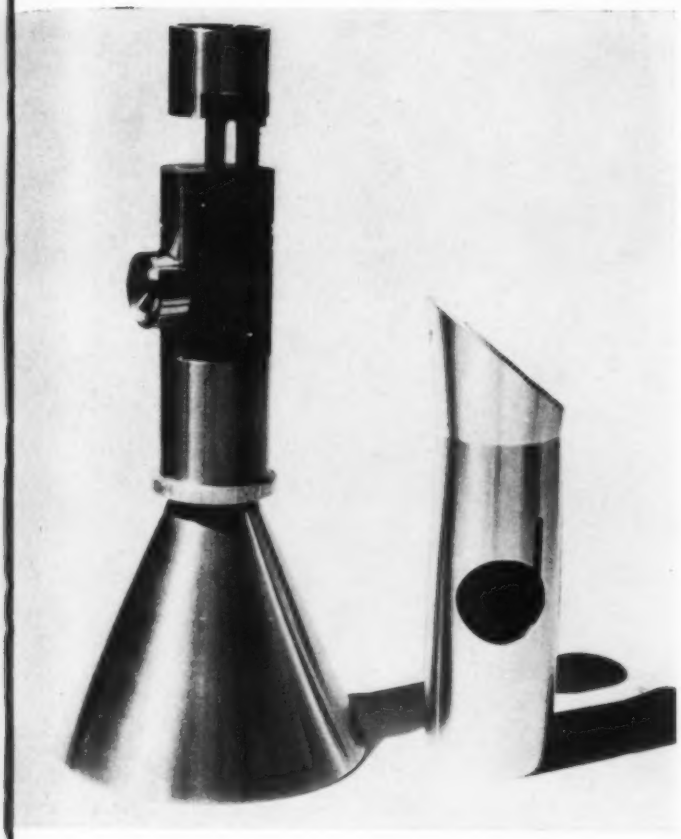
Accurate measurer of microwave frequency; positioning knob turns calibrated cylinder for direct readings.

201 Kel-ray projector
Metal & Thermit Corp., N. Y. C.
Becker & Becker, designers

Portable (75 lbs.) atomic projector that sees through solid objects for industrial testing. Interior lead safe protects operator from gamma rays.

202 Portable x-ray machine
Barnes Co., Rockford, Ill.
Nolan Rhoades, consultant designer

Flashlight-size x-ray for research may be used as field medical tool.

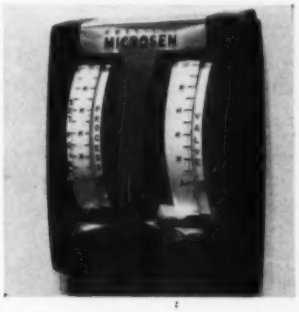


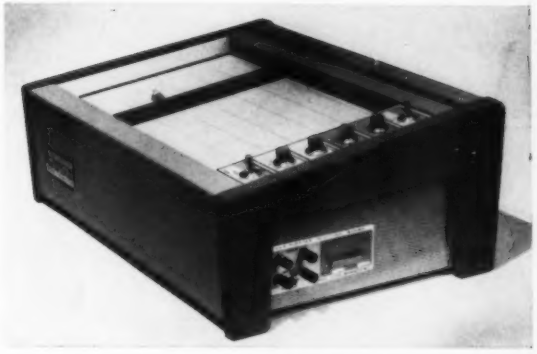
203 Well-head choke
National Supply Co., Pittsburgh
Henry Dreyfuss, consultant designer

Aluminum handle painted yellow, light scale and arrows on dark ground for visibility, recognition.

204 Microsen electronic controller
Manning, Maxwell & Moore, Stratford, Conn.
Ken Van Dyck, design consultant

Electronic indicator and controller for industrial processes.





205 Variplotter board
Electronic Assoc., Long Branch, N. J.
Raymond Spilman, design consultant

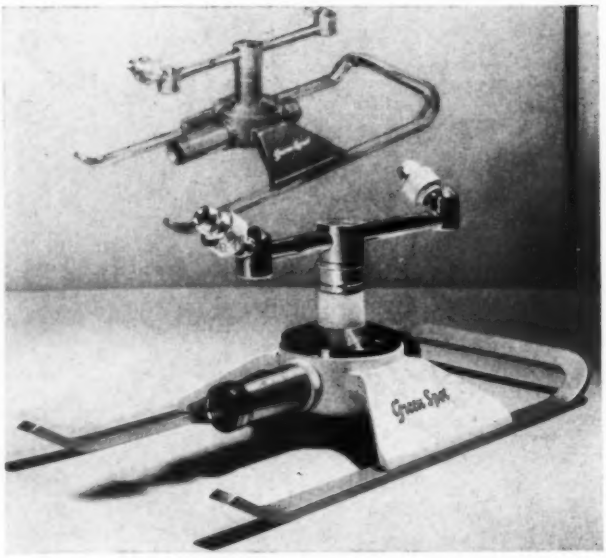
Plotting board with electronic pen graphs answers from analog computers; controls simplified at side.

206 Electronic probe
Hewlett-Packard, Palo Alto, Calif.
Carl J. Clement, Jr., staff designer

Voltage divider probe contains resistor and capacitor to regulate power flow to all types of electronic components.

PERSONAL EQUIPMENT

Products in this area must do sometimes complex mechanical jobs in an efficient way, and also have to be designed to fit in with our habits of work and play. Since leisure has become a serious business of working at something we like to do, it prescribes products that are simple enough for the everyman in his own back-yard, and also have a sense of quality that inspires dedication to the work and to the tool. This year's equipment continues to reflect pride in home-keeping, in craftsmanship, in leisure itself. Equipment for hobbies (photography, 209-11), for chores (gardening, 207, 208), and even for sports (212, 213) seem to be getting as serious attention from designers as they do from the people who use them.

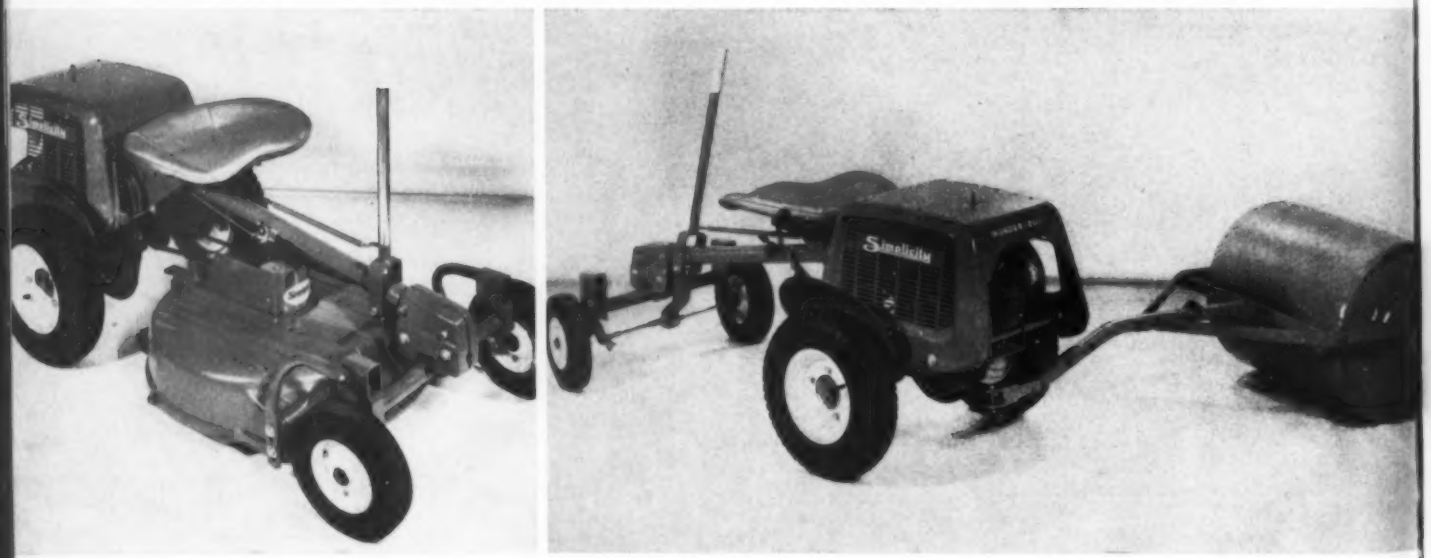


207 Lawn sprinkler
Scovill Mfg. Co., Waterbury, Conn.
Dave Chapman Industrial Design, designers

Nozzle controls radius of spray; base ends curved for easy dragging, low base for stability. Baked enamel on die-cast zinc base, chrome-plated brass head.

208 Wonder boy riding tractor
Simplicity Mfg. Co., Port Washington, Wisc.
Igor Kamlukin, staff; Nolan Rhoades, consultant

Small, versatile lawn-garden tractor for home market with grading, mowing, many other attachments.



209 Brownie turret movie camera
Eastman Kodak Co., Rochester, N. Y.

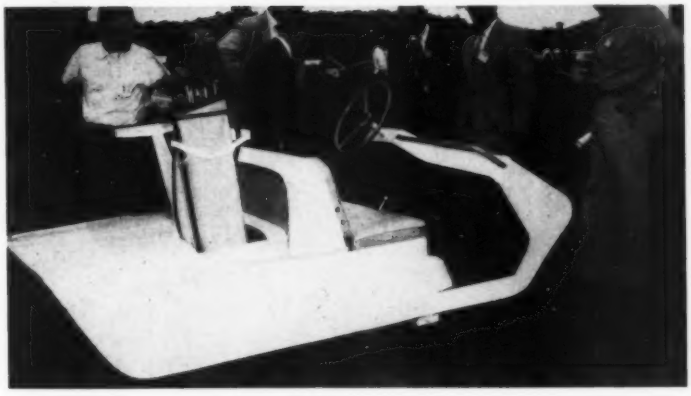
Adapting accessory lenses for telephoto (pinpoint) and wide-angle focus are built into low-cost camera ($79.50). Primary lens is adapted by turning accessory lens mounts.

210 16mm. movie camera
Bell & Howell Co., Chicago
Mervin W. La Rue, Jr., design engineer

Combination of movie camera and photo-electric cell forms new product with automatically controlled lens opening. Cell measures changing light and adjusts aperture.

211 Robomatic slide projector
Bell & Howell Co., Chicago
Frank Badalich, Chief Engineer
Dave Chapman Industrial Design, designers

Automatic timer shows 30 slides without operator, remote control varies speed at will.



212 "Sportster" golf cart
Atwood Vacuum Machine Co., Rockford, Ill.
Jon W. Hauser Associates, consultant designers

Low center of gravity, wide, low pressure tires prevent tipping; front tilted up to take hills.

213 Golf cart
Eldon Mfg. & Eng. Co., Milwaukee, Wisc.
Donald V. Foerster, designer

Cadmium plated frame and handles (Nikoh Tube), aluminum wheels (Gleason) shipped knocked-down; telescope assembly.

214 World-time traveling clock
Semca Clock Co., New York

Compact leather traveling clock, brass trim, gilt finished.

215 Pen and desk stand
Parker Pen Co., Janesville, Wisc.
Don Doman, staff designer

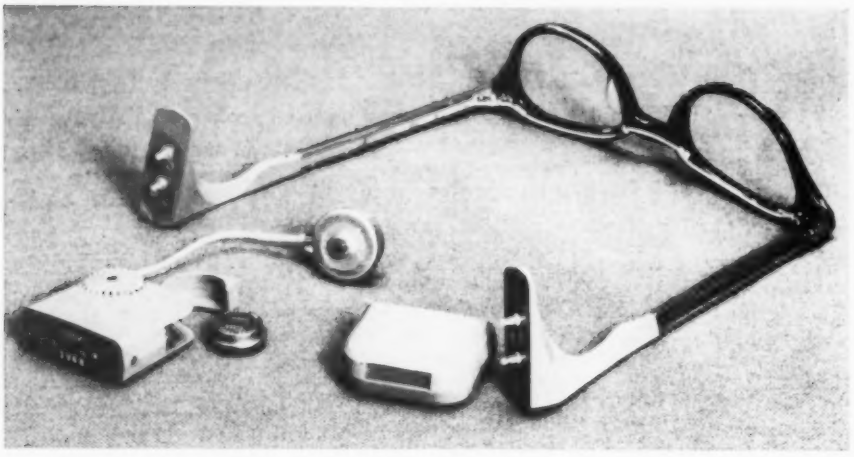
Black Bakelite, stainless steel trim.

216 Retractable ball point pen
Streamer Pen Co., Culver City, Calif.
Merendino-Greene, designers

All body parts molded nylon; 49c.

217 Pocket itemizer
Clemens-Joyce Products, Chicago
Painter, Teague & Petertil, designers

Grey styrene (Dow), nylon gears and dial; adds, subtracts for home use.



218 Hearing aid
Radioear Corp., Pittsburgh
Peter Muller-Munk Assoc., designers

Weighing 1-ounce complete, hearing aid with aspirin-size battery, high-sensitivity mike and transistorized amplifier, fits on eyeglasses.

219 Vanitory
Bilt-rite Linoleum Products, N. Y.
W. Paul Breckley and Paul A. Witte

Sink in storage piece of plywood construction, Formica surface that accepts standard bowls, has built-in hamper.

In the frantic merchandising
bouts of 1956,
wrapping up a product seemed to be
just the beginning of a package's
many responsibilities.
This closing section is called

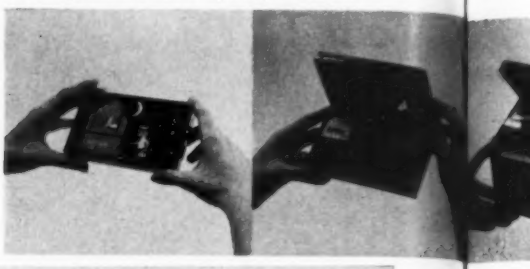
SELLING

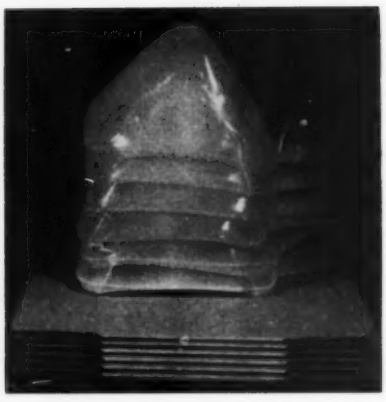
to convey the expanding role of what
was once simply called package design.
Most of the packages shown here are
not only visual salesmen,
but perform such multiple roles
as point of sale display,
storage and shipping case,
permanent container, dispenser and
even ornaments for the home,
and trustee of company personality
and product quality. In assuming
these many duties, package
design is often as functional
and three-dimensional as it is
graphic, and in fact
frequently becomes product design
in a different medium but
in its own right.

PACKAGE DESIGN is an ever enlarging sphere, and the package designer in serving industry is finding it helpful to become increasingly versatile. The items here show the designer moving from simple graphics into the invention of package services, for the average manufacturer would no more walk home barefoot than put a product into today's crowded market without exploiting the package in several ways—for protection, for display, for bonus services related to the product or even, in the more frivolous cases, services entirely unrelated to the product. Just a few of many such services are here represented: mechanical novelty (220); space and weight saving in shipment (222); reuse (221); display (223, 224); permanent storage (225); and, in a field where decorative art is a long-standing tradition, incorporation of the product into a highly decorative design (226). Carrying versatility a further step, we will see on the next spread how the designer, by the skillful and imaginative use of a commonplace technique like die-cutting, can turn packaging into an actual three-dimensional entity that is a product in its own right.

220 Reversible Doriden package
Ciba Pharmaceutical Products, Summit, N. J.
Harry and Marion Zelenko, consultant designers

Physicians' sample package contains tablets of two strengths for daytime sedation and nighttime hypnosis. Walter P. Miller Co. created assembly of two set-up boxes, plus two lids hinged oppositely, making box completely reversible.



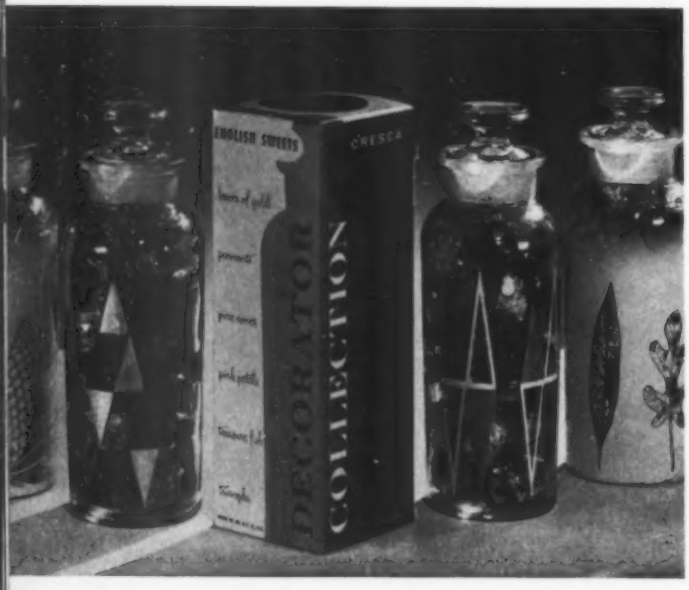


222 Cubitainers
Hedwin Corp., Baltimore, Md.

Designed for single-trip shipment of almost any liquid, semi-liquid or powder, Cubitainer consists of semi-rigid cube-shaped polyethylene insert (Bakelite) in a handle-equipped outer carton of corrugated board (Inland Container Corp.). Inserts shipped nested, cartons flat.

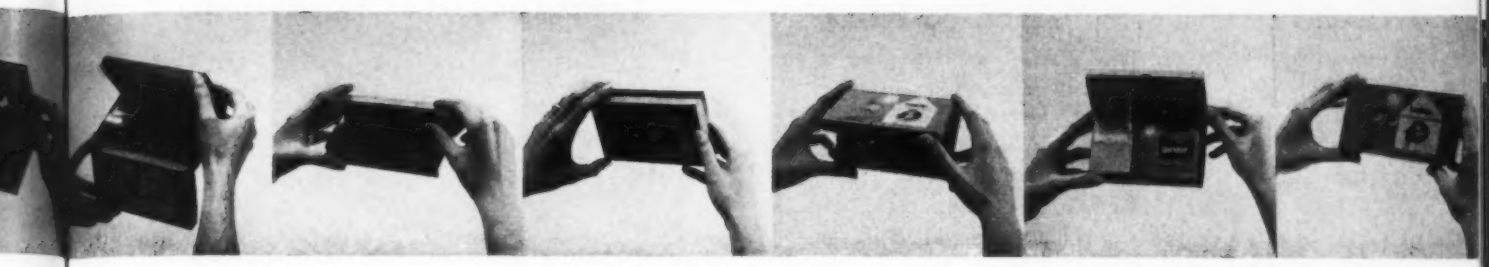
221 Candy jars
Cresca Company, New York
Robert Zeidman Associates, consultant designers

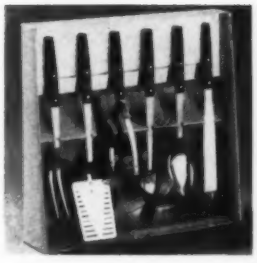
Collection of six different candies in apothecary jars (Wheaton Glass Co.), keyed by names and decorative designs in colors that are silk-screened and fired into glass. One folding carton (Franklin Folding Box Co.) for all six jars.



223 Sponge mop package and display
O'Cedar Corp., Chicago
Warren Wetherell, consultant designer

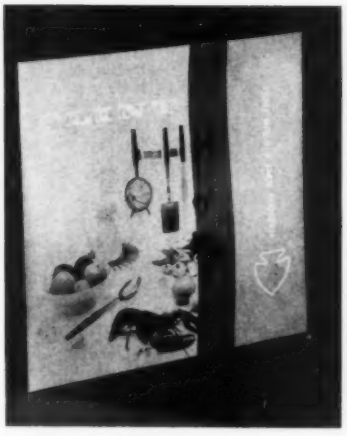
New self-squeezing principle of mop's design necessitated illustration on package of mop in action. Package by Cooper Carton Co.

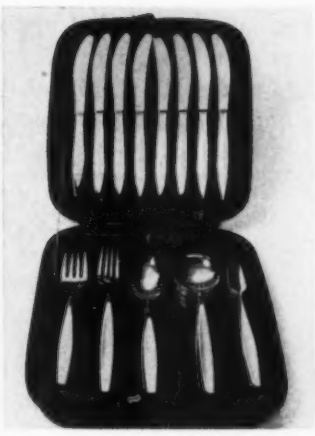




224 Flint display box
Ekco Products Co., Chicago
Container Corp., box design;
Latham-Tyler-Jensen, graphics

Complex die-cut box is designed for stand-up display.



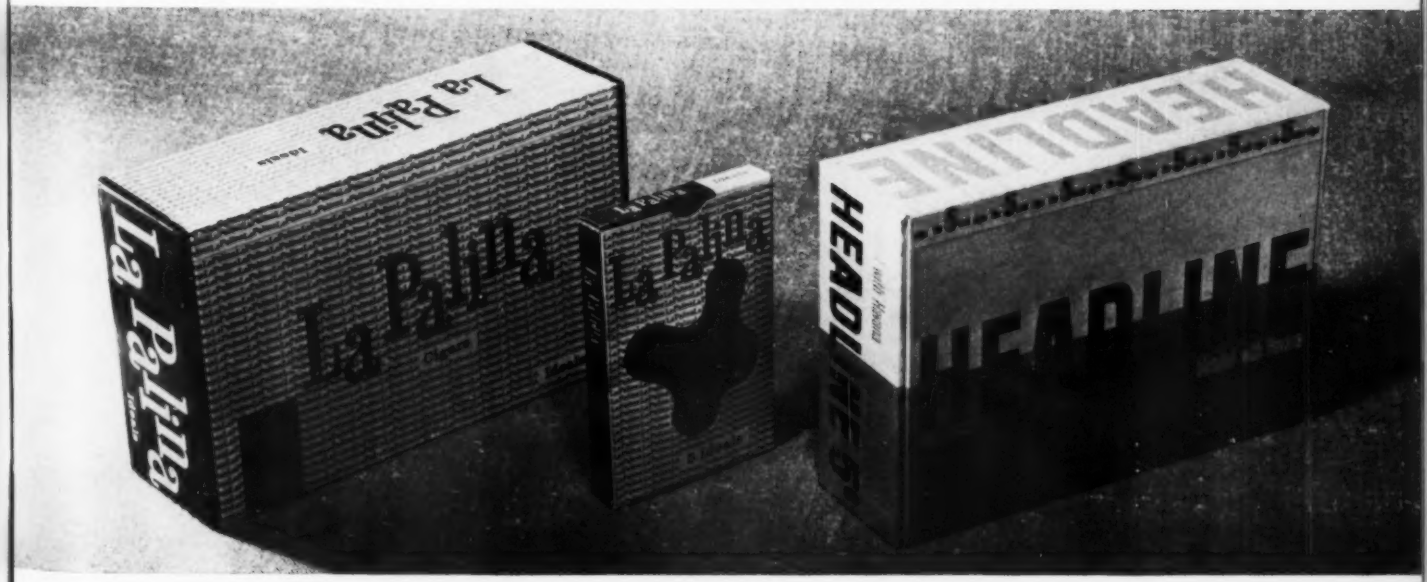


225 Flatware case
Chas. D. Briddell, Inc.,
Crisfield, Md.
George Nelson & Co.,
designers

Pressure-molded (Plaxall, Inc.) of two black Geon vinyl sheets, one for pocketed interior, top and bottom, other for exterior.

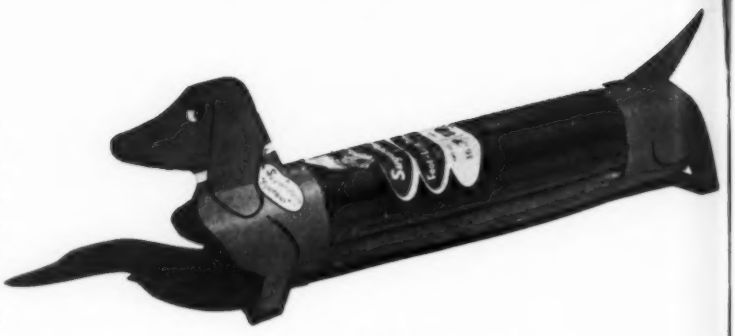
226 Cigar boxes and cartons
Consolidated Cigar Corp., New York
Paul Rand, consultant designer

Printed in two colors as against the six or eight usually used in cigar-box printing.



DIE-CUTTING is the customary method of creating a conventional eight-cornered paperboard box. Recently, designers have begun exploiting the technique to make something more—packaging, promotional and purely decorative devices whose three-dimensional forms are a far cry from the conventional. They clearly indicate that cutting bold silhouettes out of paper is more than the pleasure of small children, although to be sure, most of the prop-ups and pop-ups to date have been for the small fry. There is nothing small, however, about the range of possibilities—Saul Bass' unique table-top model train layout (228), for example, shows what delight (and sales advantage) can be wrought with little money—and much imagination.

The section of "Selling" (and the entire Annual Review) concludes on the following spread with a selection of more traditional designs for merchandising—boxes and labels, cans and even service stations which convey simply and interestingly what there is for sale.

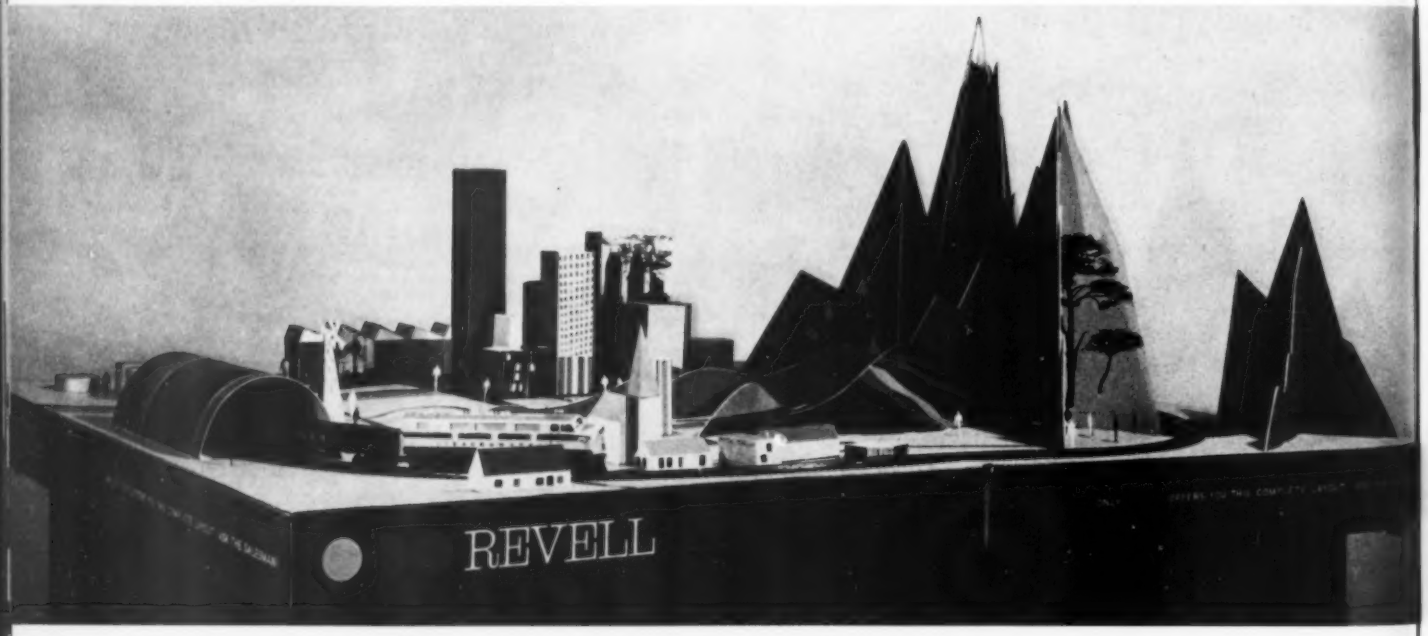


227 Hot dog package
Sugardale Provision Co., Canton, O.
Smith, Scherr & McDermott, designers

Foot-long novelty package of die-cut chip board (A. L. Garber Co.), printed in red and black and wrapped in cellophane (Dobeckmun Co.).

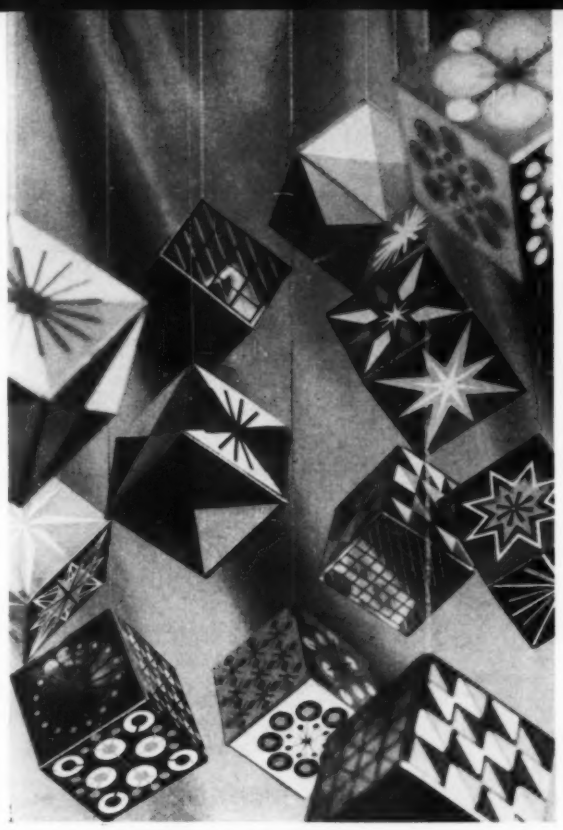
228 Model train layout
Ray Keeve Revell, Inc., Venice, Cal.
Saul Bass, designer

Scenery of heavy cardboard of pre-cut, pre-scored construction, sets up by bending and locking. Available for $2.00 with HO gauge model train.



229 Child's menu
Meier & Frank Department Store, Salem, Oregon
Norman & Pat Gollin, designers

Three-dimensional give-away menu stands on table in department store restaurant. Printed in gray, pink and black by silk-screen process.



230 Christmas ornaments
Norse Craft, Inc., New York
von der Lancken & Lundquist, designers

Aluminum foil laminated on 16 pt. chipboard (Robert Gair) and printed by four-color gravure. First use of foil to make a seemingly "solid" ornament.

231 Stork box
Hoffman-La Roche, Inc., Nutley, N. J.
Harry and Marion Zelenko, designers

Box for vitamin drops bottle, offered to pediatricians as sample give-away to new mothers; printed in four-color offset and engineered to be produced on available folding-box machinery. Folds flat to ship.

232 Give-away sun glasses
Standard Oil Company of Ohio
Smith, Scherr & McDermott, designers

To be given away at large outdoor gatherings such as fairs and sporting events, glasses are die-cut chip board and acetate.

233 Beer packaging
Goetz Brewing Co., St. Joseph, Missouri
Lippincott & Marguiles, designers

Entire brewery packaging redesigned in blue, cream and gold to express wet, cool characteristics of beer.

234 Detergent package
Topco Associates, Chicago
Penson Tuttle, designers

Simple wave motif suggesting washing action and bold lettering provide forceful configuration.

235 Surform plane package
Stanley Tools, New Britain, Conn.
Lester Beall, designer

Simplified drawing illustrates type of cutting edge; stippled area repeats pattern of cutting edge decoratively.

236 Detergent cans
Lever Bros., New York
Lippincott & Margulies, designers

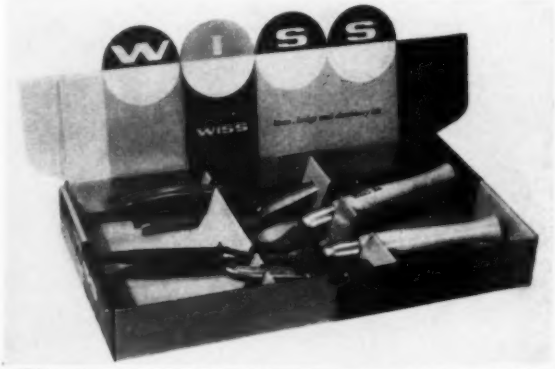
Pt., qt., ½ gal. steel (U. S. Steel, Bethlehem) cans (American Can, Continental Can); fitted with polyethylene (duPont) spout and polystyrene cap with specially angled serrations.

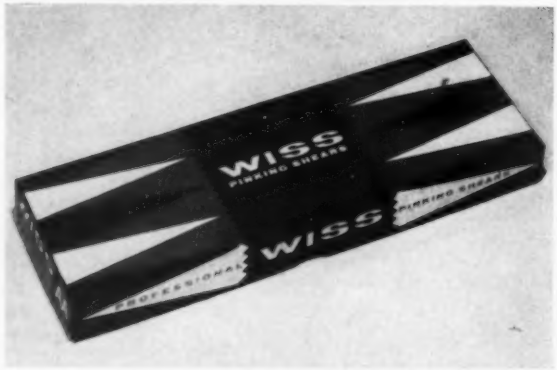
238 Paint can label
Gelvatex Coatings Corp., Anaheim, Cal.
Louis Danziger, designer

Clean 4-color reproductions of Kodachrome nature scenes associate paint with the beauty of color in our environment.

237 Potato chip bag
Crispie Potato Chip Co., Stockton, Cal.
Walter Landor & Associates, designers

Colorful, sharp-edged daisy motif suggests freshness, holds recipes on back of bag.



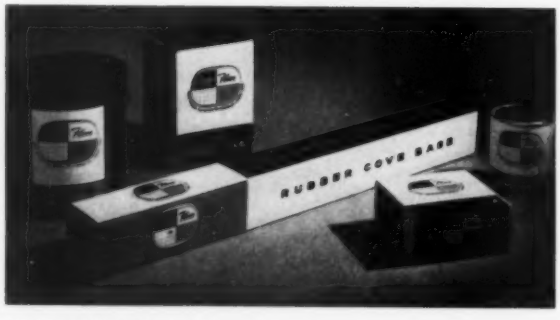


240 Packaging program
J. Wiss & Sons Co., Newark
Lester Beall, designer

Family of shears and clippers packaged to assert characteristics of each product within pattern of whole company line. Die-cut cover (top) folds back for display.

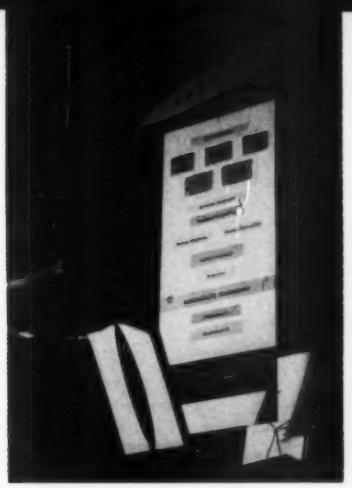
239 Record sleeves, cartons
Dictaphone Corp., Bridgeport
Robert G. Newbauer, designer

Corrugated cartons (Hinde & Dauch) printed in three colors—blue, red, white.



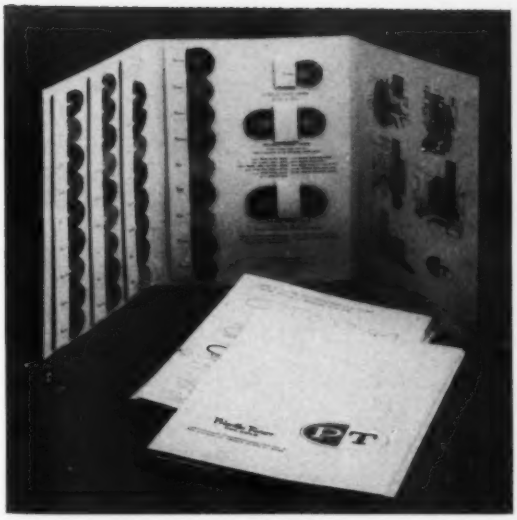
241 Vinyl tile packaging
Bolta Division, General Tire & Rubber Company, Akron
Smith, Scherr & McDermott, consultant designers

Logotype, trademark and complete package design program.



242 Recruit-mobile
Lockheed Aircraft Corp., Marietta, Ga.
Frank H. Stephens, Jr., designer

Heavy Strathmore paperboard silk-screened and hung to attract college seniors to Lockheed job opportunities.



243 Gasoline pump island unit
General Petroleum Corp., Anaheim, Cal.
Merendino-Greene, designers

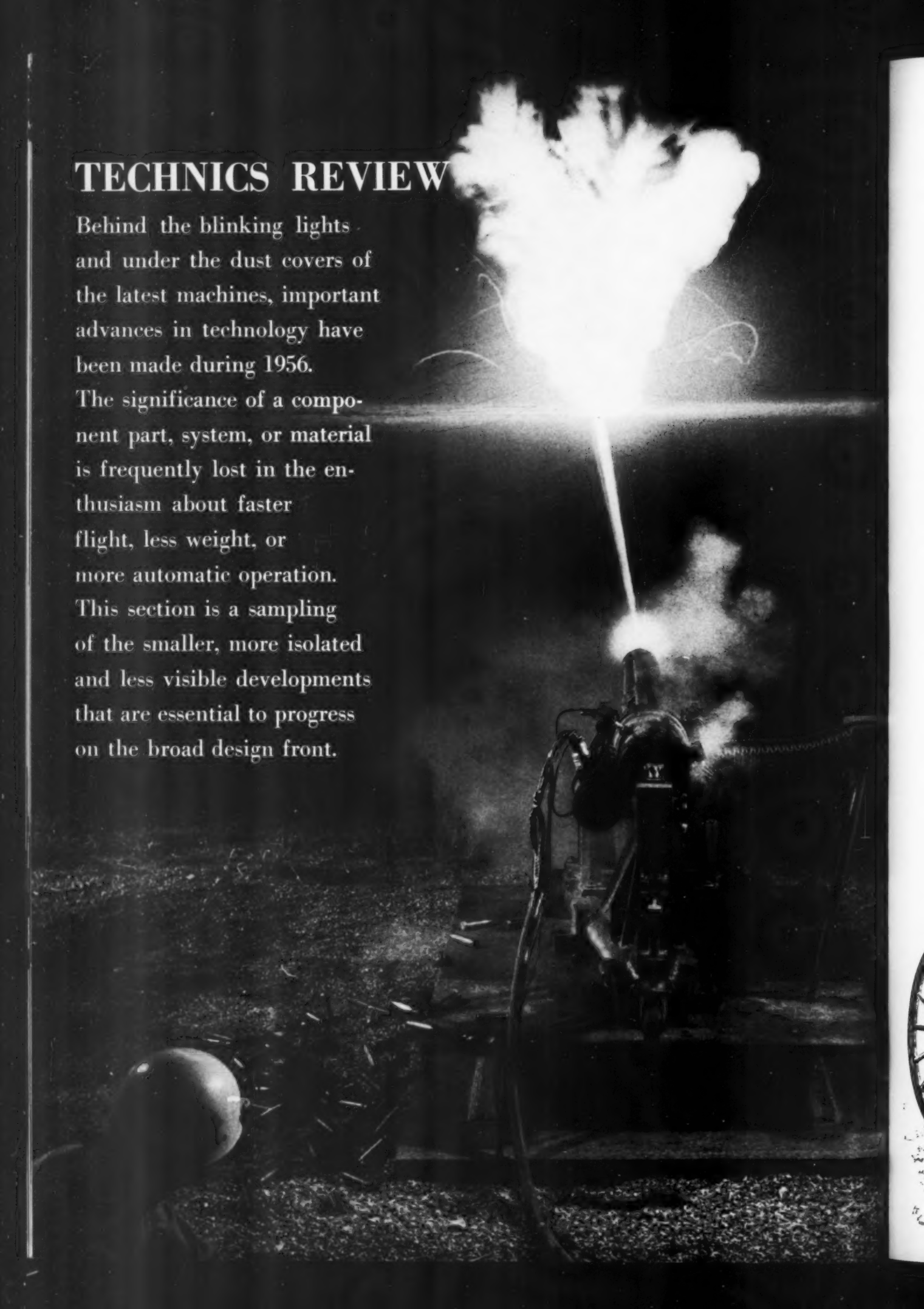
Unit for experimental station reduced to three elements: combination overhead sign and fuel dispensers; combination cash box and storage facility for miscellaneous equipment; storage box for bulk oil bottles.

244 Rug brochure
Priscilla Turner Rug Guild, New York
Peter Quay Yang, consultant designer

Folder tells customer how rug is made, shows actual yarn samples, illustrates custom-made rugs in various settings.

TECHNICS REVIEW

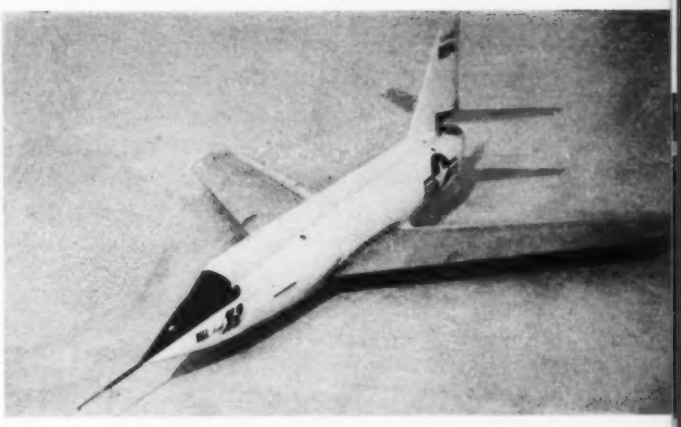
Behind the blinking lights and under the dust covers of the latest machines, important advances in technology have been made during 1956. The significance of a component part, system, or material is frequently lost in the enthusiasm about faster flight, less weight, or more automatic operation. This section is a sampling of the smaller, more isolated and less visible developments that are essential to progress on the broad design front.



MATERIALS

The Vulcan Gun on the opposite page was designed to cope with a very new problem—supersonic speeds. The way it works, however, is based on a very old principle. The new gun, developed by General Electric for the Air Force, is a potent weapon which fires at the fantastic rate of 3,000 rounds a minute, making it effective in today's supersonic aircraft which give flyers only a split second to shoot at a fast-moving target. What gives the Vulcan its tremendous rate-of-fire is the very principle that made the Gatling Gun (below), patented in 1862, revolutionary during the Civil War. Both guns have a cluster of barrels that are rotated by an external power source—electric or hydraulic in the Vulcan, man power or electric in the Gatling. The Vulcan is not untypical of what we find in the technological news of the year: Even in a period of rapid development, for every *new* machine or material we have many innovations—smaller steps that alter or improve an established principle.

In 1956, here were some of the areas of concentration: the *heat barrier*, a problem even more recent than the sound barrier, created a whole new set of conditions that materials must meet; the importance of *weight reduction* did not lessen; the rash of international crises emphasized the problem of the *availability* of critical materials. There were solutions to each of these, but never to all of them. There was the first large-scale production of stainless steels with a low content of critical nickel; there were unusual applications of traditional materials where, despite obvious drawbacks, they were still best for the job: solid gold for boiler linings in certain nuclear reactors because it is the cheapest material with the necessary corrosion resistance, heavy ceramics and glass to resist heat in jet exhausts and missile noses, and stainless steel for jet bodies. And there was greater production of many agents to alter the properties of metals: molybdenum and vanadium to give stainless steel alloys greater strength and heat resistance, beryllium for more corrosion-resistant copper, and a trick on old and new metals—a nonmetallic magnet.



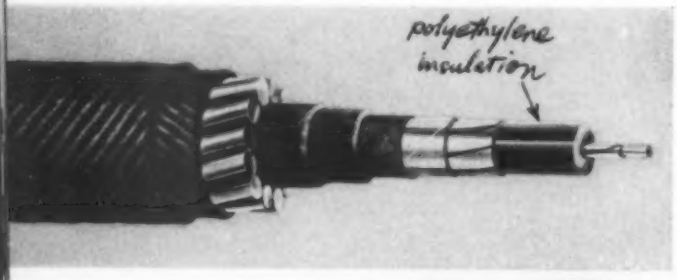
Weight loses to heat resistance
Amidst the hue and cry for lighter materials for aircraft, the Bell X-2 experimental plane, clocked at 1900 miles an hour, had stainless steel wings and tail surfaces rather than lighter aluminum, which loses strength and shape at temperatures generated by friction at such speeds.

Non-metallic magnet
Patented this year by American Philips Co., Inc., the new ceramic material Ferroxdure is non-metallic, electrically non-conductive, yet can be permanently magnetized. Easily molded and light, it eliminates critical cobalt and nickel for magnets in loudspeakers, TV, motors, generators, etc.

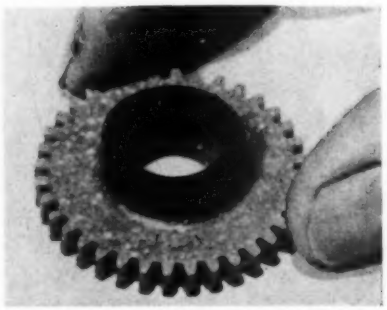
Aluminum with built-in pipes
Aluminum sheets, flat on one side with a tubing pattern on the other, are a development of Reynolds Metals Company. Possible applications include household appliances (refrigerators, air conditioners), automobile radiators, radiant heating units. For aircraft that reach the heat barrier, smooth side would be skin, cooled by refrigerant flowing through tubes.

PLASTICS The new transatlantic cable, put into service last September 25, was not hailed primarily as a great accomplishment in cable laying. There are some twenty others linking this continent with Europe, the first having been successfully completed in 1866. The new umbilicus, however, is important to the plastics industry: it represents, perhaps, the position that many plastics are earning on the roster of all materials. 3,300,000 pounds of Bakelite polyethylene molding compound make up the primary insulation in the new cable, joining a group of other materials that are all traditional (jute, copper, steel, pitch, cloth)—materials that have been used in cables since Morse tapped out his first message.

1956 was a more than usually spectacular year for the plastics industry in technical development, production, and increased acceptance as more and more of the field's limitations were conquered. Boiling water, for example, is no longer fatal to some styrenes, and new polyethylenes, too, can now withstand the common household test of sterilization; low volume and low speed, the bugaboos of large reinforced plastic moldings, are being scared away by automatic methods; polyethylene has greater rigidity as well as heat resistance because of a new and practical method of synthesis; and synthetic fibers are more dyeable. These and other developments on this spread represent the increasing scope of the family of plastic materials.

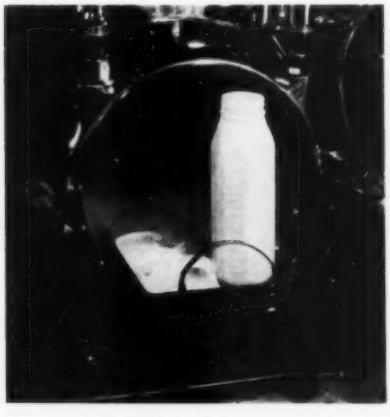


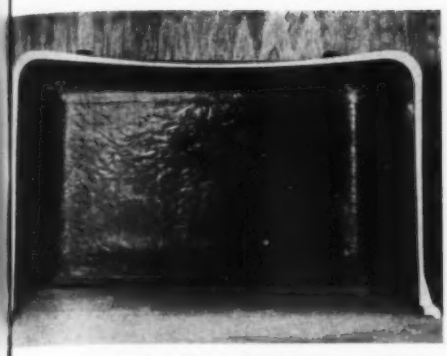
Scope: large nylon molding
Vegetable juicer and grinder attachment was molded of du Pont's "Zytel" nylon by Plastakel Mfg. Co., for the Marvel Juicer Co. Development of new molding methods for large parts of hard-to-handle nylon gives this application advantages inherent to the material of strength and resistance to abrasion and fruit and vegetable juices, as well as simplification of fabrication and assembly, and ultimate economy with a costly resin.



Technique: powdered nylon
National Polymer Products, Inc., using powder metallurgy techniques, cold presses and oil sinters finely divided nylon powders, known as Nylasint, economically and in quantity to make gears, bearings, bushings, cams with high wear resistance, low surface friction, thermal expansion and deformation under load.

Heat resistance: Marlex
250°F. leaves Marlex thermoplastic unaffected while ordinary polyethylene collapses. Heat-resistant Marlex is an olefin polymer produced by Phillips Petroleum Co.

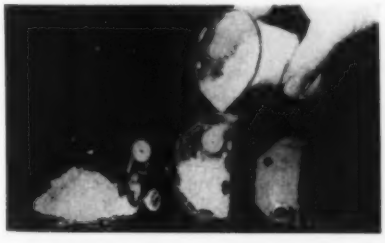




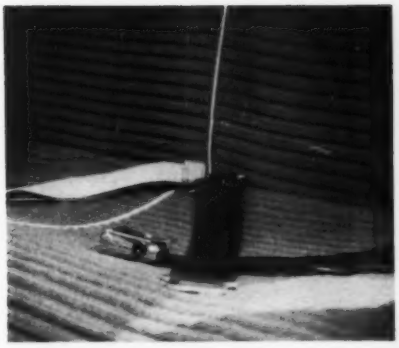
Speed: big market for moldings
High-speed production techniques, involving a continuous and automatic molding procedure developed by Pressurform Container Corp., makes reinforced plastic containers for electronic equipment competitively priced with metal containers.

Coatings: plastic dipped on
One development in the growing field of plastic coatings is the "Whirlclad" process by Polymer Processes, Inc. Heated part is dipped into a tank of finely divided plastic (nylon, polyethylene) powder which is "fluidized" by ascending gas or air. Powder melts and adheres, leaving a uniform coating on irregular shapes.

Foams: parts embedded
In a big year for exploration of foam materials, Eccofoam GL, a combination of phenolic and epoxide foam powders, was one new arrival. It can be used to embed electronic equipment: a mold is filled with the powdered material surrounding the part. When heat is applied the particles weld together into a foam structure. Emerson and Cuming, Inc. is the manufacturer.

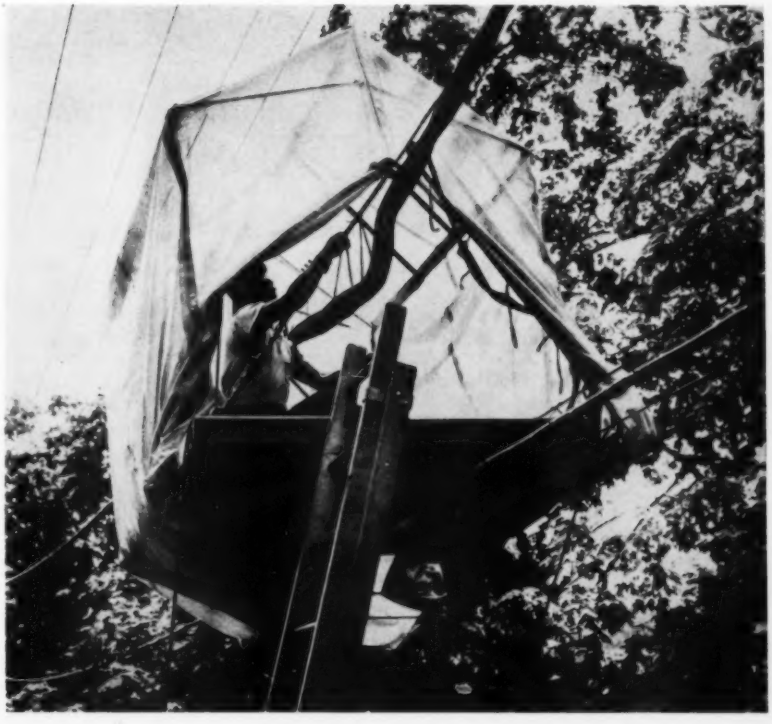


Size: a quiet trash can
A year of research and experimentation by Loma Plastics went into the mold for a one-piece (without lid), 20-gallon, unbreakable, rustproof, noiseless trash can—the largest housewares item ever molded in polyethylene.



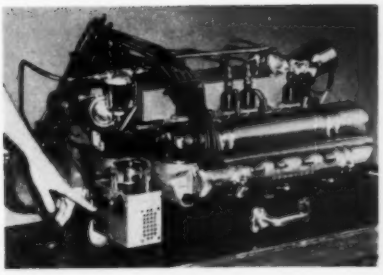
Trilok: a trick for texture
U. S. Rubber takes advantage of polyethylene's tendency to shrink and turns it into an asset by weaving it with a traditional yarn and dipping the fabric in boiling water. The polyethylene shrinks and a new fabric with a three-dimensional texture, known as Trilok, balloons forth.

Strength: non-tearable tent
Herculite Protective Fabrics is producing a new material that lives up to its name. A combination of nylon and another special plastic (unnamed) produces a fabric ten times stronger than canvas. It is also light, noncombustible, 100% waterproof, and unaffected by acids, grease, oils, etc.



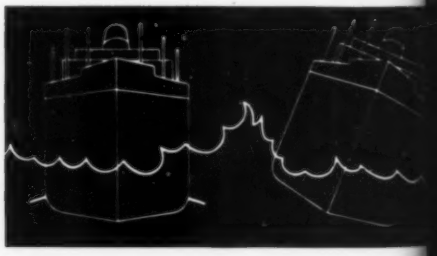
SYSTEMS The pictures below both show girls operating pneumatic systems which use tubes as conveyors. Here the similarities cease; the top picture of "cash girls" was taken at Macy's around the turn of the century, while the bottom picture was taken in 1956 just after Standard-Vacuum Oil Company's new headquarters were completed. The real difference is not time but the principle of the systems: one requires two separate tubes to connect any two stations in the system, while with the other an operator can send a carrier to any station simply by dialling the destination. The innovation in the new system, developed by International Standard Trading Corp. of New York, is electronics, the common denominator of every system on this spread, and the key to the development of many such complex systems that control *and* navigate aircraft, keep office records, predict conventions, run factories, even sort lemons by color. Electronics enables a group of connected devices not only to control but to be self-controlling, becoming "automated" when they "feed back" information to interrelate their separate functions.

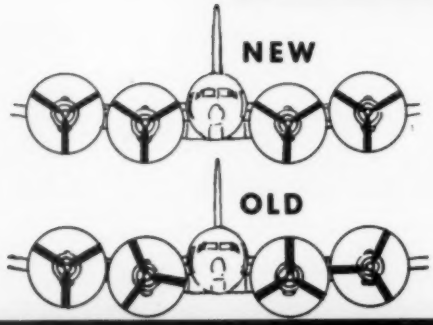
photo courtesy Macy's, New York



Electronic fuel injection
Electronics is credited with a major breakthrough in the automotive industry with the introduction of a completely transistorized fuel injection system, developed by the Bendix Aviation Corporation and called the Electrojector. An electronic modulator sorts out constantly changing data from devices, such as a thermistor, that sense fuel and mixture needs under varying driving conditions. The results are increased power, fuel economy, quicker starts and warm-up.

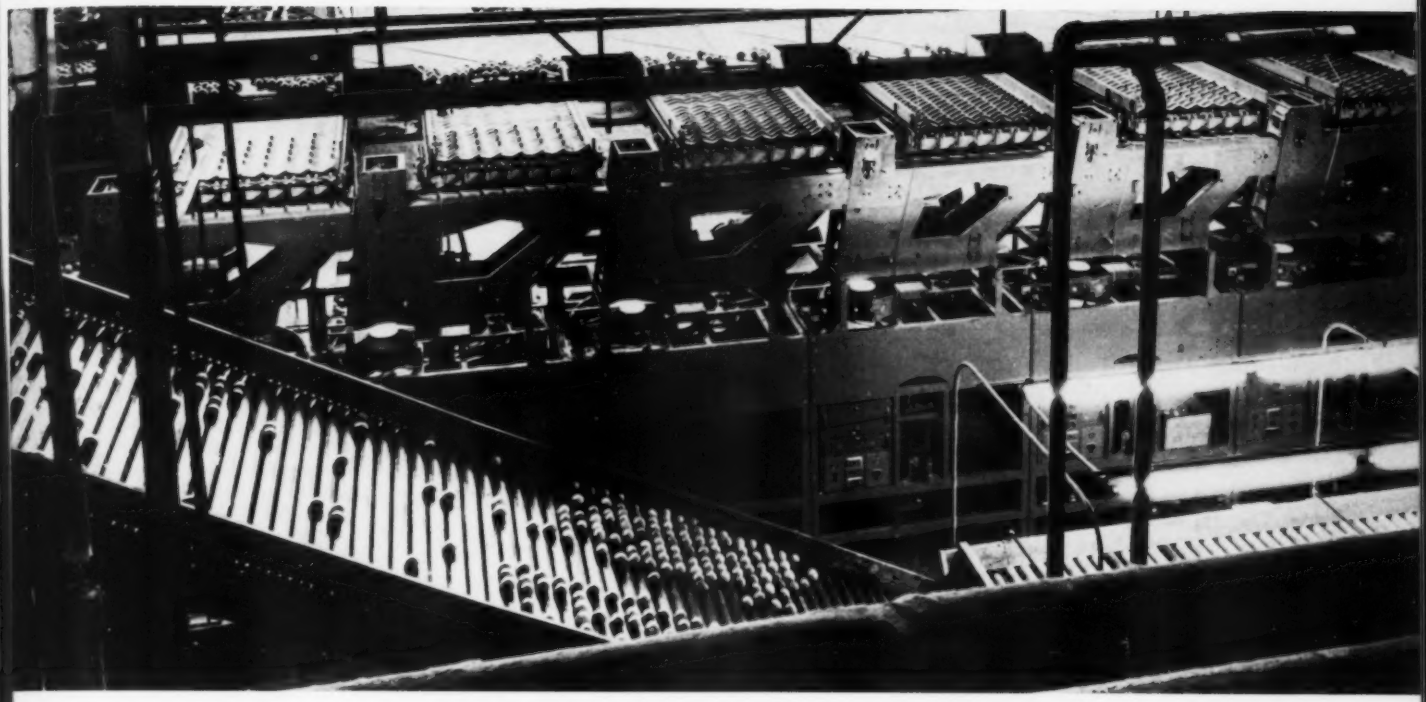
Passenger comfort via electronics
At sea the Sperry Gyrofin Ship Stabilizer reduces the rolling of a vessel in heavy seas by underwater fins, one on each side of the hull; compensating motion is controlled by gyroscopic instruments. In the air synchrophasing, developed by Hamilton Standard, division of United Aircraft Corporation, brings the revolving propellers of an airplane into phase by way of electronic control and reduces noise and vibration within the plane (below).

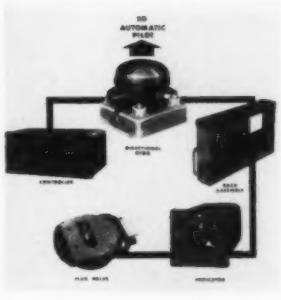




Nature automated

California lemons are being sorted electronically in the Somis Lemon Association plant at Oxnard. Precision sorting of lemons is accomplished by electronic discrimination among five color groups ranging from dark green to tree ripe.





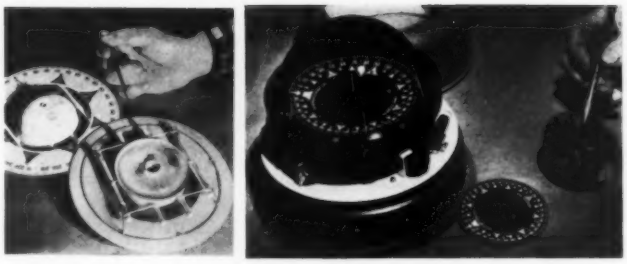
For more accurate steering

The picture at left shows key components of the Sperry Gyroscope Co.'s new C-10 Gyrosyn Compass System which features automatic compensation for earth rate drift of the gyro. Starting at the lower left hand corner, transistorized components are: the flux valve, indicator, rack assembly, directional gyro and controller. The navigation set, below, which permits completely automatic navigation, is also made up of a system of electronic components.

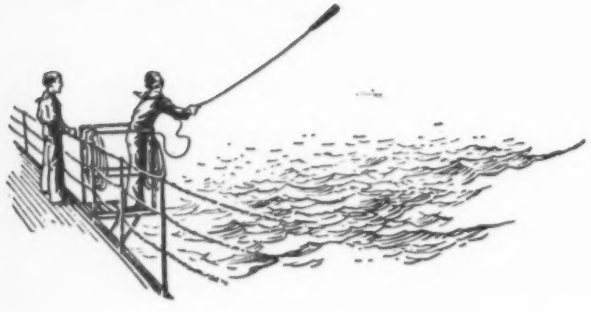
Floating laboratory

The Wanderer is Sperry Gyroscope Company's floating test laboratory for a variety of electronic equipment. Deep sea testing experimental ship controls and navigational systems is done under conditions of actual use. The ship was originally owned by the Navy.

COMPONENTS "Swinging the lead" was the accepted way to determine the depth of water long before Samuel Clemens adopted his nautical *nom de plume*. Many ships avoided running aground by this method, but all too frequently disaster occurred between the call of "Mark twain!" and striking the rocks. The small, easily-read meter below is an inexpensive instrument made by Raytheon Manufacturing Co. which will keep an amateur sailor out of dangerous waters, tell him the kind of bottom he is over, and even detect fish. Such flexibility, as well as dependability and simplicity of operation, is expected from most of today's machines. To give them these qualities, countless component parts, some on these pages, were improved and developed this year. Size of complete instruments, so vital as speeds increase and systems become more complex, is determined by components like the tiny springs, transistors, and power supplies that are coming along with greater regularity. A system is, of course, only as reliable as its weakest component: failure of a tube in a home television set might mean missing an evening's diversion, but when TV is used in industry and in national defense, failure can be expensive —even dangerous. Developments like the experimental "fuel cell," are the parents of components that probably will make tomorrow's machines more reliable, more automatic, more efficient and less bulky.



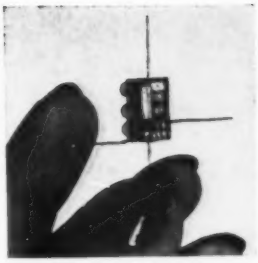
More compact nautical compass
Alnico permanent magnets make possible a much smaller nautical compass which is also less expensive and more accurate. The new design (right), developed by the Marine Compass Company and E. S. Ritchie and Sons Company, has a Plexiglas dome which magnifies the smaller compass card for easy reading. Old style is shown left.



Tiny springs
The reality of the miniaturization trend is dramatized by this picture of ninety-seven Connecticut Spring Corp. precision-formed springs on the face of a dime—and room for more.

Sub-miniature M-1 transistor

This tiny amplifier, perhaps the world's smallest, is made possible by Philco's midget M-1 transistor. It is designed for use in computers, hearing aids, missiles, portable radios—wherever miniaturization is a necessity.



Battery with unlimited shelf life

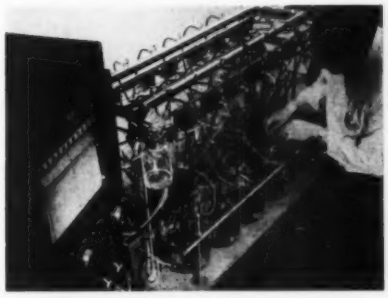
Storage deterioration is no problem with the small solid electrolyte battery developed by National Carbon Co. because it is not dependent on liquids, gases, or vapors for operation. Completely "dry" construction give the inch long, ¼ ounce, 95-volt battery theoretical infinite life when not in use. Several decades' continuous service are expected in applications.

New type power supply

The need for a new type of power supply for electronic systems has been met by Universal Atomics Corp., who used transistors as the major component in their new line of completely electronic units, which are tiny, yet able to produce high voltage or power.

TV at work on land and off

Closed circuit TV gives scientists at Brookhaven National Laboratory a radiation-free view of the pattern made by a high-energy proton beam on a sodium iodide mosaic. For airborne reconnaissance, the Navy has installed TV sending stations in helicopters (bottom).



Electricity from gases

Hydrogen and oxygen gases have been used as a source of electricity in a laboratory model of a "fuel cell' developed by researchers at Union Carbide and Carbon Corp. The new principle is the same as in ordinary batteries, with gases taking the place of metals. Still experimental, the "fuel cell" has a potential as a standby power supply and for submarine propulsion.

Books, continued from page 10

THE EXECUTIVE LIFE, *by the editors of* **Fortune. 223** *pages. Doubleday,* **1956. $3.50.**

Coming as it does from the editors of a magazine that attempts to be broadly analytical without being academic, to be practical as well as profound, *The Executive Life* is both a "how-to" book and a sociological description. Oddly enough, designers, engineers and managers coming to live the executive life stand to learn more from chapters whose titles begin with "How . . ." ("How Executives Delegate"), than from those which begin, "How to . . ." ("How to Become an Executive"). For it is basic definition that is needed and, as the introduction acknowledges, "The executive life is so far from being defined, in fact, that even those who perform all the major executive functions do not agree on the definitions of their work." Tentatively—using admittedly inconclusive studies and surveys—the authors add much toward the formulation of general principles in this obscure area of business operations, while in making a pastiche of anecdotes on job-hunting, firing tactics and the like, they are amusing and even engrossing but rarely challenging.

On the other hand, the use of broad concepts makes possible their occasional flashes of genuine insight—and demonstrates the utility of "academic" theorizing. Thus, after they have boiled down data from questionnaires, interviews and other researches to arrive at a short sketch of the median executive man, their study is transposed into a larger context: "In many industries the modern corporation is becoming more and more a subject of group management, with strong emphasis on the development of new products and processes that will create new markets and new capital in the future. It is therefore significant that managerial man, as revealed by statistics, most closely

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CHARLES E. WHITNEY,
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Sworn to and subscribed before me this 12th day of September, 1956.

ANNE HARMSE
(My commission expires March 30, 1957.)

resembles executives from industries in which the new manner of group development enterprise predominates—e.g., chemicals and oils—and that he less closely resembles executives from more slowly changing industries, such as textiles and steel."

There are no doubt many points like this one at which the reader will find evidence to support his impressions about his own role in industrial managements, from the emergence of a "profession" of management to replace the traditional idea of "running a business" (and the corresponding emergence of a professional caste whose mores embody this viewpoint), to the special tendency of engineers and other technological specialists to suffer nervous breakdown when placed in positions of general management responsibility; from the decline of the individual ego in group-oriented managements, to the survival of the "many-hatted" executive whose influence is felt throughout the organization—despite the dispersion of responsibility under decentralization (the influence of General Motors' President Harlowe Curtice on auto styling is used as an example of such omnipresence).

But in the crucial chapter, "How Executives Make Decisions," the editors of *Fortune* do little more than quote the resistance of many men of action to analysis of their activities. They spottily survey the attempts made by mathematicians to compare the decision-making brain to a digital computer, and the application of the theory of games to the pondering of business gambles. Though such problems will have to be investigated elsewhere by those who wish true control and information ("Control is the art of decision and information is the measure of decision," says cyberneticist Norbert Weiner), the reader's limited objectives may be realized by use of *The Executive Life*. It will, as the authors state their aim, "broaden the ideas about executives held by those who have only recently started up the management ladder." This applies not only to bright young men making their way, but also to specialist groups that are being incorporated into management—the industrial designer eminent among them.—*a. f.*

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For Your Calendar

December 4-5. Seventh Society of the Plastics Industry Film, Sheeting and Coated Fabrics Division Conference. Commodore Hotel, New York.

December 8-16. National Automobile Show. N. Y. Coliseum.

January 1-23. American Jewelry and Related Objects, Indiana State Teachers College, Terre Haute, Indiana.

January 1-30. Fifty Years of Danish Silver. Dallas Museum of Fine Arts, Dallas, Texas.

January 3-24. American Craftsmen Exhibit. The School of Art, Syracuse University, Syracuse, N. Y.

January 7-18. International Home Furnishings Market, Merchandise Mart, Chicago.

January 16-18. Thirteenth Annual National Technical Conference, Society of Plastics Engineers Inc. Hotel Sheraton-Jefferson, St. Louis, Mo.

January 17-February 10. Contemporary American Glass. The Philadelphia Art Alliance, Philadelphia, Pa.

January 17-February 10. Finnish Crafts, The Montclair Art Museum, Montclair, New Jersey.

January 17-February 10. Recent Work By Harry Bertoia, Indiana University, Bloomington, Indiana.

January 19-27. National Motor Boat Show. New York Coliseum.

January 20-25. New York Home Furnishings Accessories Show, New York Trade Show Building.

January 28-31. Plant Maintenance and Engineering Show. Cleveland, Ohio.

February 4-8. National Auto Accessories Exposition. New York Coliseum.

February 4-6. The First Annual Home Improvement Products Show. Hotel Statler, New York City.

February 5-7. 12th Annual Technical and Management Conference of the Reinforced Plastics Division of The Society of the Plastics Industry, Inc. Edgewater Beach Hotel, Chicago, Ill.

February 5-26. American Jewelry and Related Objects, Art Gallery, Memorial Library, University of Delaware, Newark, Delaware.

February 7-8. American Management Association Conference on Nucleonics in Industry. Hotel Statler, New York.

February 7-28. European Glass Design. The Wichita Art Museum, Wichita, Kansas.

February 10-March 3. American Craftsmen Exhibit. College Center, State University Teachers College, Geneseo, New York.

February 15-16. National Meeting of Industrial Designers' Institute. Los Angeles, California.

February 16-24. National Photographic Show. New York Coliseum.

February 19. 13th Annual Quality Control Clinic, Rochester Society for Quality Control, War Memorial, Rochester, New York.

February 24-March 17. Contemporary American Glass Exhibit, Duke University, Durham, North Carolina.

February 25-March 1. Thirteenth International Heating and Air-Conditioning Exposition, Conrad Hilton Hotel, Chicago, Illinois.

March 4-10. National Mobile Homes Show. N. Y. Coliseum.

March 11-15. The 1957 Nuclear Congress, Convention Hall, Philadelphia, Pa.

March 18-21. Radio Engineering Show. N. Y. Coliseum.

March 18-21. Pacific Coast Plastics Exposition, Los Angeles, California. Also the convention of The Society of the Plastics Industry, Inc.