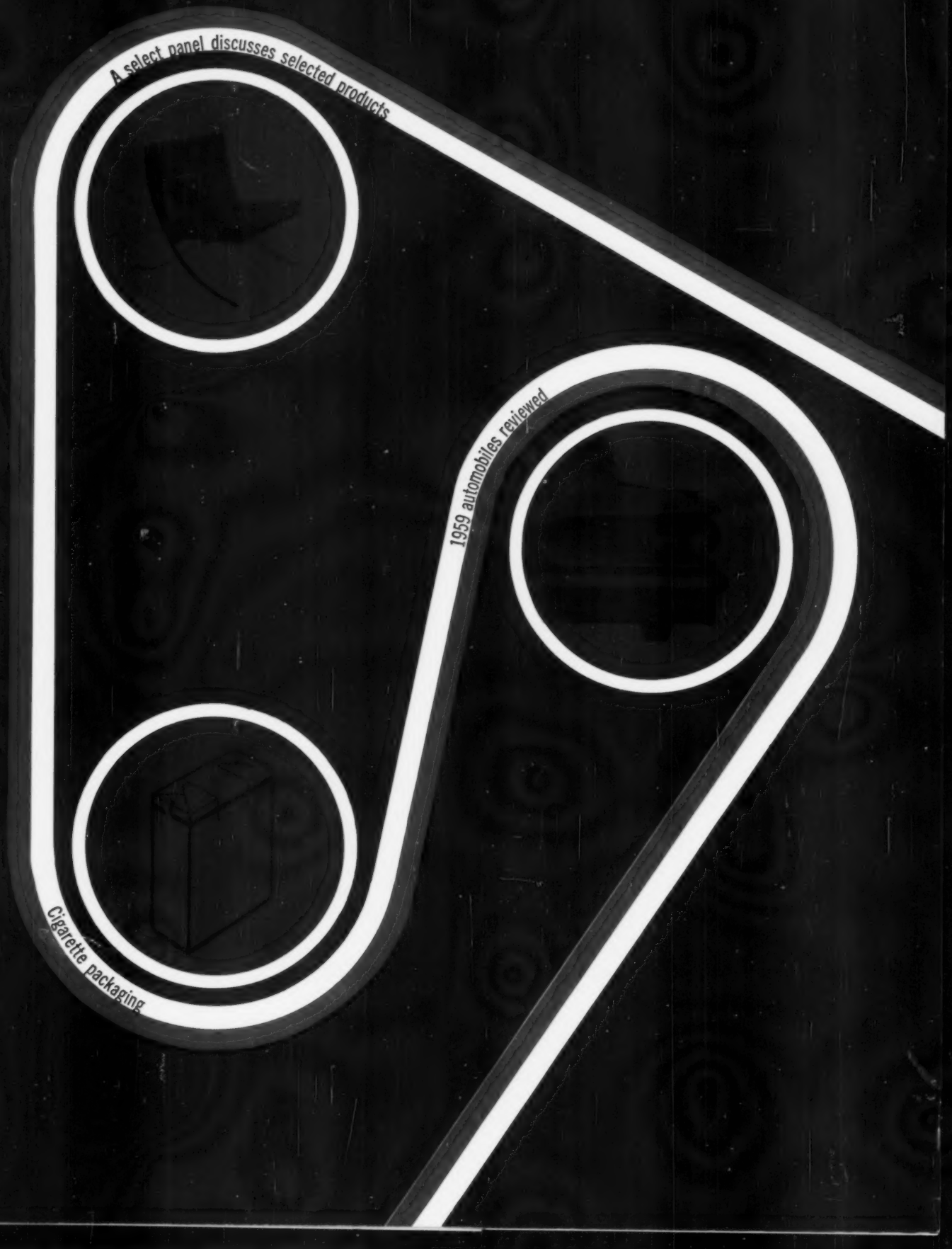
INDUSTRIAL DESIGN



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FEBRUARY, 1959 VOLUME 6 NUMBER 2

INDUSTRIAL DESIGN

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

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Coming

IN MARCH—Pan American's new redesign program; a review of major appliances for 1959.

IN APRIL—Controlled silicon rectifiers: a new semi-conductor device.

COVER: The classic form of the Miss Barcelona chair, a front view of the 1959 Pontiac, and a line drawing of a pack of cigarettes represent the subjects of three of this month's articles.

FRONTISPIECE: The bands of circles in Matilde Lourie's photograph, taken at the Anchor Plastics plant, are storage tubes containing samples of extrusions. An article on a versatile new production method begins on page 74.

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in this issue...

Montagu

Shapira

Israeli design team

Vassos

Drexler

Doblin

Snaith

Sundberg

Ferar

F. Ashley Montagu brings to ID's panel on design selections (page 54) the point of view of a physical anthropologist and anatomist, and the stage presence of an experienced television performer. He has taught anatomy at N.Y.U. and was chairman of the department of anthropology at Rutgers from 1949 to 1955. The titles of his books range from *Coming into Being among the Australian Aborigines* (1937) to, most recently, *The Cultured Man.*

Nathan Shapira, the designer of "Forms from Israel," (page 66), was born in Rumania and trained as an architect at the Milan Politechnico. He has held a Commonwealth Fellowship at MIT and the University of California. He is Co-Director of the Israel Institute of Industrial Design. Shown working on the exhibit model are some of Dr. Shapira's students at Israel's Technion, and other collaborators on the "Forms from Israel" project. The scene is an abandoned British Army bunker that the group used as a workshop.

Panel member **John Vassos,** ex-president of IDI and present chairman of the board of the Silvermine Guild of Artists, has lectured on design at Pratt, N.Y.U., Syracuse and Vassar. He is design consultant for, among other clients, RCA International. Part of his product-planning ability is currently directed to a kennelful of Llewellyn setters.

Arthur Drexler, who assembled the Museum of Modern Art's exhibition on 20th century design and is director of the Museum's department of architecture and design, is former architectural editor of *Interiors* and was once a member of the George Nelson office. He is co-author (with Henry-Russell Hitchcock) of *Built in U.S.A.: Post-war Architecture,* and is the author of *Architecture of Japan.*

William Snaith approaches the panel discussion with the insight of a painter as well as that of a designer—he has had four New York exhibitions and is represented in museums in New York and Pennsylvania. He has been with Raymond Loewy since 1936 and is now president of the Raymond Loewy Corporation.

Jay Doblin, who is a passenger on most planes between Chicago and New York, nearly missed being on the panel when his Electra was forced to turn back to Chicago on the afternoon of the panel meeting. He did finally arrive, however, and his contribution to the panel reflects the point of view represented in selecting the selectors of the "100 best" products of modern times.

The firm of **Sundberg-Ferar** (responsible for the Whirlpool kitchen on page 44) has been operating since 1934, when Carl Sundberg and Montgomery Ferar were fired from the GM Styling Section on the same day. Their first office was a converted coalbin; their present establishment in Royal Oak, Michigan, is somewhat larger.

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LETTERS

A new ingredient for paper?

Sirs:

I read your story about paper in the November issue with great deal of interest. It was a most fascinating and well-written article. There was one item, however, that I didn't see mentioned and I am curious to know if anyone else has been working on it. On page 63, Rayonier's recipe for papermaking indicates how only a minute change in the percentage of the ingredients can result in the different grades of paper. I read this and wondered if anyone had ever tried mixing in small percentages of any of the rare earths. (I suspect that they have, but if so, what effect does it have on the paper?) If no one has tried it yet, it probably would prove to be an interesting experiment, for minute particles of certain rare earths, when added to molten metal, have created amazing changes in the metal.

Richard Paulson
La Jolla, California

The IDEA conference at Atlanta

Sirs:

'Tis a pity you choose to fill your pages with inaccurate coverage that misleads the reader through the misinterpreted, shallow cub reporting exhibited in your December issue. The case in point is your coverage of the IDEA Atlanta conference.

'Tis a further pity that the sincere efforts of IDEA in striving to reach worthwhile objectives should be clouded by such incompetent efforts, particularly where national coverage is concerned, at a time when objective understanding and support of all sincerely interested in bettering the total lot of the designer and his profession is needed.

Apparently your reporter is more swayed by the hypnosis of a glib tongue than by the stimulation of mental gymnastics. His results are an unfair assessment of the accomplishments of the conference. Far too much emphasis was placed in the coverage on the report given by A. Lahti, which in itself was a complete farce. Neither Lahti's report, nor his preparatory survey, was ever authorized by the IDEA membership in any form, and after its presentation at the conference, the IDEA membership unanimously voted to bar the report or discussion of it outside of the IDEA, because of the vague, incompetent manner in which the information had been gathered and because of the incoherent and unrelated manner in which Lahti attempted to feign a reliable presentation of industrial design education. He was shot down quite thoroughly from the floor of the conference in attempting to make heads or tails out of his presentation. To my knowledge IDEA has not authorized Lahti to continue this survey as stated in your article.

Meat was on the bone in the afternoon discussion but apparently your reporter saw only the bone. The presentation of the committees is incomplete, inaccurate and misleading because of the incompleteness. No mention was made at all of the new officers who will guide and support these new working groups, or of the total objectives they are aiming for.

We ask little, except that you represent us fairly and as objectively as possible when you cover events that have a prime bearing upon the field of industrial design. You gender little respect for your publication or yourself when you fail to offer it to others, particularly when the guest of an organization. I would think it only just that you retract the article, present it again in a complete and objective manner, and offer apologies to the new officers of IDEA.

Leland C. Smith
Assistant Professor, Industrial Design Department
Syracuse University

Editor's note: We must agree that ID's report was "misinterpreted"—exclusively, so far as we know, by Mr. Smith himself. It's hard to tell just what Mr. Smith is objecting to, but to the extent that his complaints are concrete enough to understand, they are almost uncannily rooted in error. First, ID did not present an "assessment of accomplishments," but a news item; second, Mr. Lahti was asked by (then) President Carreiro to prepare the report, and by the program committee to deliver it; third, the names of the new officers and regional chairmen were not released to us in time for December publication (they appeared in January); fourth, ID's "cub reporter" was not a guest at all, but a reporter; fifth —but why go on? Mr. Lahti's brief answer appears below, as does a letter from IDEA President James Shipley, who—perhaps because he knows the facts—has unintentionally answered Mr. Smith for us.

Sirs:

I imagine that most of my colleagues in IDEA were as pleased as I was with your report of our second annual meeting at the Georgia Institute of Technology, reported in the December, 1958, issue of Industrial Design. I was favorably impressed that you touched upon most of the important aspects of the meeting, and considering that the main elements of the program were extremely general in character, it made reporting difficult. We are particularly grateful that you withheld any detailed summary of Professor Lahti's survey of schools of industrial design, inasmuch as the study in Professor Lahti's and the Association's view is at this stage incomplete and it would therefore be possible to draw erroneous conclusions from it.

On the other hand there were several omissions in the listing of the new standing committees and the respective chairmen. In all, eight standing committees rather than seven were appointed. One not mentioned was the Exhibits and Audio-Visual Aids Committee with Theodore Jones named chairman. Although the Industrial Liaison Committee was listed, the name of Joseph Carreiro, Chairman, was omitted. The Steering Committee is composed of the officers of the organization plus past president Joseph Carreiro, Philadelphia Museum School of Art, and the four regional chairmen.

Best wishes to your excellent magazine. It deserves the energetic support of everyone connected with industrial design and I hope this is reflected in a steadily increased circulation.

James R. Shipley, President
Industrial Design Education Association

Sirs:

I like Mr. Leland Smith's spunk! The day after giving my report at Atlanta I was elected vice-president of IDEA. Frankly I was surprised, pleased and honored. Incidentally a statistical committee was also appointed, of which I was made chairman.

Aarre K. Lahti
Professor of Design
University of Michigan

Errata

The December issue, page 10, incorrectly identifies Harold Cohen as a member of the University of Illinois staff. Mr. Cohen is chairman of the design department of Southern Illinois University.

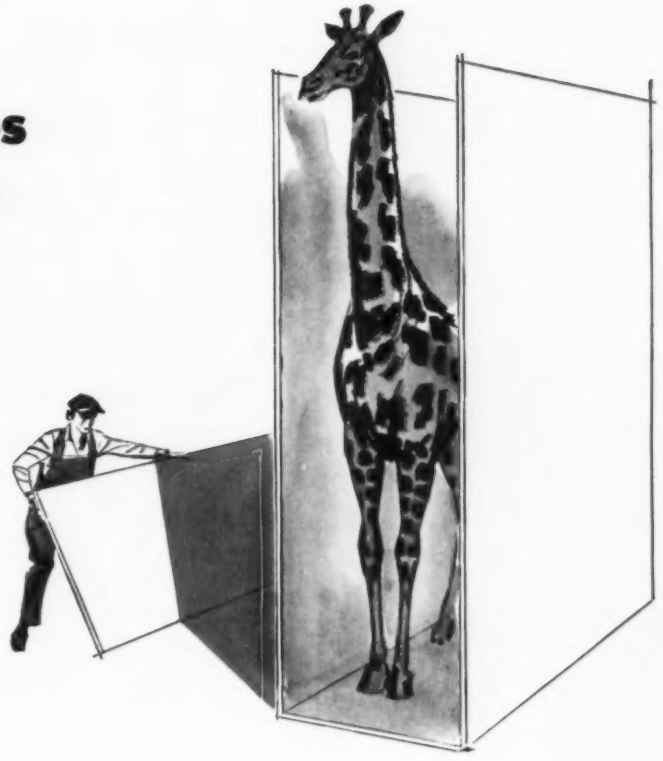
On pages 94 and 95 of the December issue, the captions for the Clark Equipment Company's fork truck and tractor-dozer were inadventently transposed.

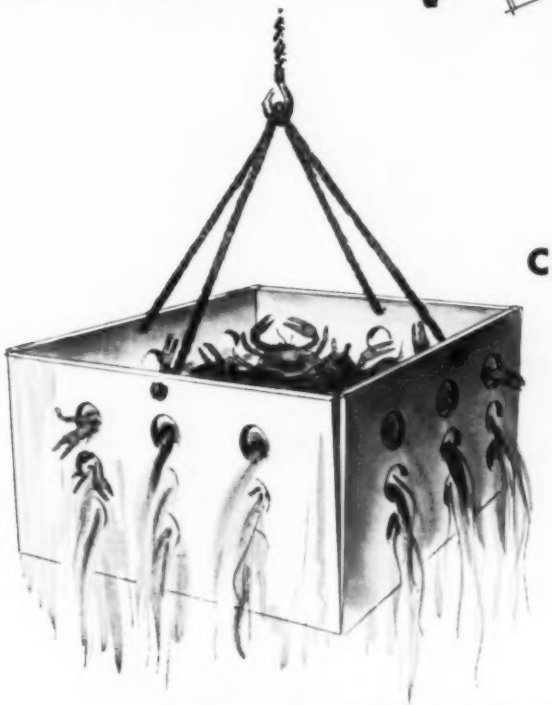
We have been notified that Stowe Myers was consultant designer for the Magnaflux testing unit shown on page 102 of the December issue.

—unlikely uses for Homasote

Packaging a young giraffe

The old ones run up to 18'—and more. Their four legs are all the same length. They have only seven bones in their necks—same as a man or a mouse. *More useful information*—if you need size and strength—Weatherproof Homasote comes in panels up to 14' x 8'.





Crab trap

It would work, but wire screening lets the water out faster. The point to remember is... Homasote has very low moisture absorption—only 4% by volume after aging—only 17% by weight after 20 hours of total immersion.

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NEWS

American Motors spawns midget

Whether it has anything to do with a small-car trend or not, the Marine Corps has just ordered 250 midget jeeps. The Mighty Mite (above), a 9-foot, 1,700-pound jeep, is made by American Motors Corporation, whose two pilot models are now undergoing tests before being turned over to the Corps. Designed for transport by helicopter, it has a 65-inch wheelbase, as compared with the conventional jeep's 85-inch wheelbase, and weighs nearly 1,000 pounds less than an ordinary jeep. Secret of the low weight is an all-aluminum body (with steel frame), first one to be used on a military vehicle. This is also the first time a V-4, air-cooled engine has been made of aluminum. It weighs only 303 pounds and measures about two square feet. The Mighty Mite can seat four passengers when the rear seats, which fold down from the tail-gate, are in use. In spite of its miniature dimensions, it can carry as much as the conventional jeep – 500 pounds of cargo plus 350 pounds for driver and passenger–and it is powerful enough to haul a two-wheel trailer with 1,500 pounds of cargo.

J. W. Eskridge, vice president of American Motors and manager of the special products division, is in charge of the Mighty Mite program. The Twin Coach Company of Buffalo builds the bodies, while vehicle assembly takes place at the old Hudson plant in Detroit.

AMA confers on plastic packaging

Current problems and future directions in plastic packaging came in for close attention at the American Management Association's three-day conference at the Biltmore Hotel in New York, January 21-23. Planned as an industry-wide progress report, the conference presented more than thirty specialists who described various aspects of plastic packaging – new machinery, methods, materials and merchandising techniques. Marshmallows and spark-plugs, socks and drugs – all in recently developed plastic packages–were exhibited to illustrate the reports.

On the final day Walter Stern, technical director of packaging for Raymond Loewy Associates, described a number of plastic packages designed to solve unusual production, display, and shipping problems. Other speakers who discussed design problems in plastics were Albert Yochim, Sears, Roebuck; Lyle Powell, Jewel Tea; and Jerry A. Lott, Charles Pfizer and Company.

ASID announces chapter program

In order to bring problems vital to the profession into sharper focus for ASID's next annual meeting – to be held in Asheville, N. C. next October 22-25–president Don McFarland, with a special committee, has developed a program of 12 chapter meetings introducing problems which will be further explored at the national meeting. The program will be aimed at three ASID groups: heads of offices and corporate staffs, employees of both, and educators and students. Each chapter will take three subjects as the basis for three meetings to be held during the year. Final reports will be given at the annual meeting.

Packagers to confer

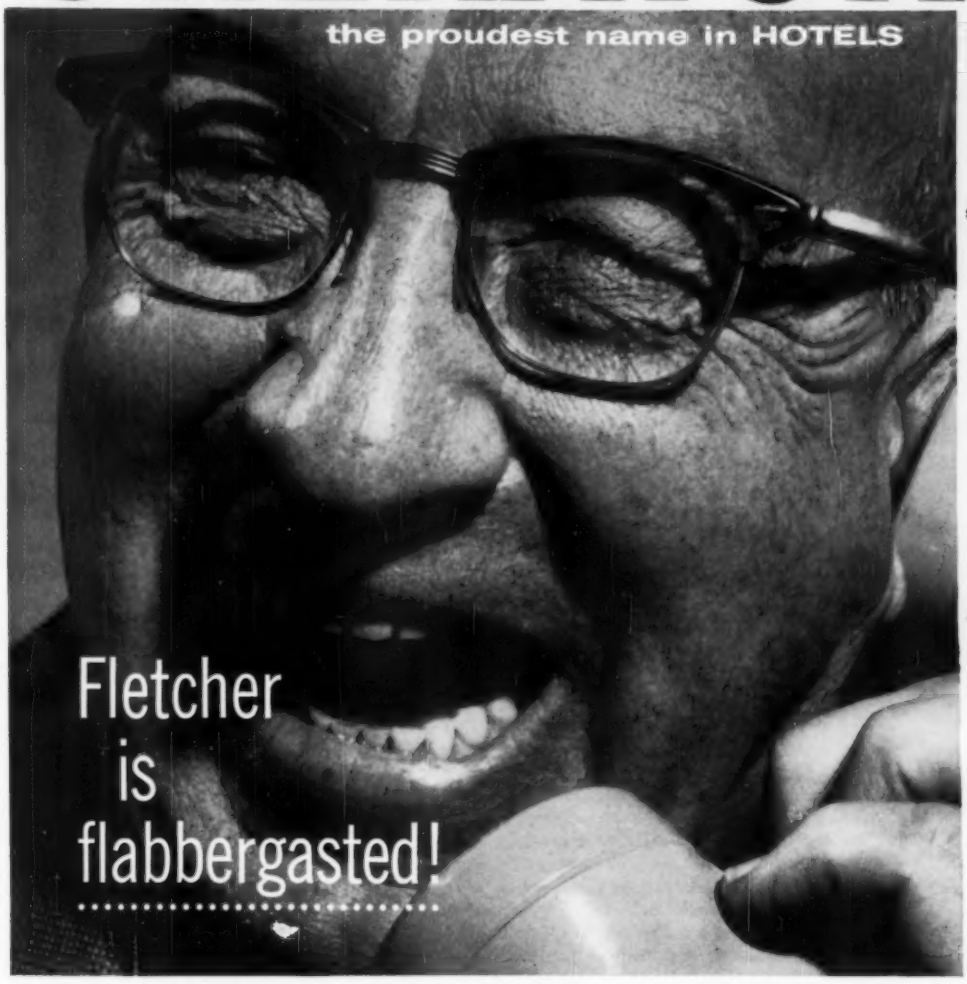
AMA's Package Design and Development Forum will take place in New York March 2-4 at the Hotel Astor. Speakers will include J. Gordon Lippincott (below), Lippincott and Margulies; C. W. Harper (below), Sears, Roebuck; Dr. Myron J. Helfgott (below), Package Research Institute; Albert Kner, Container Corporation.

Helfgott *Harper*

Lippincott

Everything involved in the integrated packaging operation – machines, equipment, material[illegible] methods—will appear at AMA's 28th National Packaging Exposition in Chicago, April 13-17. A packaging conference will run concurrently each morning at the Palmer House. Registration may be made through American Management Association, 1515 Broadway, N. Y. C.

SHERATON



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ROCHESTER
BUFFALO
SYRACUSE
BINGHAMTON, N.Y.
(opens early 1959)

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CHICAGO
DETROIT
CLEVELAND
CINCINNATI
ST. LOUIS
OMAHA
AKRON
INDIANAPOLIS
FRENCH LICK, Ind.
RAPID CITY, S. D.
SIOUX CITY, Iowa
SIOUX FALLS, S. D.
CEDAR RAPIDS, Iowa

SOUTH
LOUISVILLE
DALLAS
(opens early 1959)
AUSTIN
MOBILE

WEST COAST
SAN FRANCISCO
LOS ANGELES
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Boldt's timer for plastics show

Designs in plastic go to Britain

Twenty-four plastic products by American designers will be shown at the International Plastics Exhibition in London this June. Products from Canada, Finland, Denmark, France, West Germany, Holland, Italy, Norway, Sweden, Switzerland, and the United Kingdom will also appear at the bi-annual show, which is sponsored by *British Plastics* in cooperation with the Plastics Institute and the Council of Industrial Design of Great Britain.

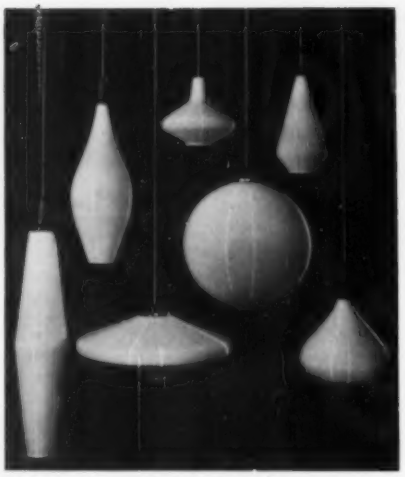
The following designers and design firms will be represented in the exhibition: Bronislaw Zapolski; Smith, Scherr, McDermott; Palma-Knapp Associates; Jon Hauser; Morton Goldsholl; Ward Rogers; Robert Munz; Edward Klein; Raymond Loewy Associates; Mel Boldt and Associates; Greenlee-Hess; Merendino, Greene and Associates; George Nelson and Company; and Yasha Heifetz.

Tucker Madawick served as chairman of the IDI group which was invited to select the products. Other members of the committee included W. B. Donnelly, Jens Risom, Bronislaw Zapolski, and John Vassos, who acted as advisor.

What the 1970 plane will look like?

A passenger airplane flying twice the speed of sound *could be* delivered by 1965—however, it will probably never be built, Convair vice president R. C. Sebold told an audience at the annual meeting of the Institute of Aeronautical Science last month. While such a ship would be "a good airplane in every sense," it would be outdated by Mach 5 planes (looking something like the sketch, right) by 1970, he explained. This makes producing such a plane economically impractical. "The commercial market is too small to justify development costs for Mach 2 transport," he said, but the Mach 3 to 5 transports should have an operational life of 15 to 20 years.

According to Mr. Sebold, these future planes will not be radically different in external form from today's advanced military aircraft, but structurally they will be sharply different because of the tremendous heat generated by aerodynamic friction on their skin surface. Pressurizing cabins for the 60,000 foot altitudes will also create problems and may lead to the complete elimination of all windows on these planes. The sketch below is one of hundreds of configurations developed by Convair in its studies of supersonic airliners.



Heifetz' lamps for plastics show

U.S. designers to exhibit in Tokyo

American product innovations and marketing principles will be shown to visitors at the Tokyo International Trade Fair this May in exhibits prepared by six leading design firms — Peter Muller-Munk, Raymond Loewy, Walter Dorwin Teague, Henry Dreyfuss, Dave Chapman, Inc., and the industrial design department of General Electric. Each of the displays will consist of a four-by-eight-foot rotating panel on which the design case history of a single product is presented.

The six panels will be included in the product development section of the fair, which has as its theme, "Innovation and Marketing are the Principles of American Business." Sponsored by the U.S. Office of International Trade Fairs, the exhibition is being planned by Welton Becket and Associates of Los Angeles. The same firm will be responsible for designing buildings for the Moscow Fair this summer.

Chapman begins Mideast ICA project

Craft design specialist Roy Ginstrom and furniture craftsman Sam Maloof will make up the Dave Chapman, Inc. design team for technical assistance in Lebanon and Iran under the current ICA Point Four program. The team, which begins operations in the middle of this month under a six month contract, will provide "technical aid for the local workmen so that they can help themselves and indirectly strengthen the entire economy of the nation," according to Mr. Chapman. "In many of these 'developing areas' we have found that basic craft skills have deteriorated so greatly that products made for local markets are not of sufficient quality to sell. If we can re-establish those skills and use our design knowledge to help improve products that can be sold in local and neighboring markets, the individual craftsmen will increase their incomes and consequently their standard of living," he explained.

This is the ninth ICA program for the Chapman office. His office has also worked in five Caribbean nations, in Pakistan, and Afghanistan. A five-man team is now winding up a program in Iran.

PDC studies variety store packages

The Package Designers' Council will hold a workshop meeting on designing packages for variety stores, on March 3. The meeting will take place at Kress's, Fifth Avenue and 39th Street, New York. Kress executives will conduct tours through the store, pointing out challenges offered by the variety store to package designers, and a panel of designers and variety store executives will discuss these challenges. The meeting is open to all package designers, chain store executives, and marketing executives of manufacturing firms and manufacturing agencies. The chairman of the meeting will be Robert Zeidman, head of Robert Zeidman Associates. Further details on the meeting may be obtained from The Package Designers' Council at 331 Madison Avenue, New York 17, New York.

A Convair sketch of what a Mach 3- to 5-passenger plane will look like.

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Loewy acquires Jon Hauser, Inc.

The well-known St. Charles design firm of Jon W. Hauser, Inc. has been acquired by Raymond Loewy Associates. Under the new arrangement, which went into effect last month, Mr. Hauser becomes executive vice president and general manager of the Loewy office in Chicago. Assisted by Robert Askren, Mr. Hauser will continue to serve such former clients of his own office as the National Brush Company, the Market Development Division of U.S. Steel, and the Committee of Stainless Steel Producers. Loewy's Chicago clients include Celotex Corporation, United Air Lines, the Formica Company, and Sunbeam.

An industrial designer for thirteen years, Mr. Hauser was educated as an aeronautical engineer at the University of Detroit. Some of his designs for the Hough payloader were described in an article in the October 1956 issue of INDUSTRIAL DESIGN.

Hauser

Craftsmen to meet in June

The third annual conference of the American Craftsmen's Council will be held at Lake George, New York, from June 19 through June 21. Under the general theme, "Exploring the Craftsman's World," the craftsman's product, his education, and the society of which he is a part will each be considered. An exhibition of craft objects will be on display during the conference. Designers, architects, decorators and others interested in the craft movement are invited to register through the American Craftsmen's Council, 29 West 53rd Street, New York.

Wegner retrospective in New York

A total impression of the work of Hans Wegner was created at Georg Jensen's recent exhibition (right) of nearly eighty pieces of both his hand- and machine-made furniture from more than two decades. A consummate craftsman, Wegner's understanding of materials and construction methods were fully reflected in the chairs and tables at the show. The exhibition, which Wegner designed himself, was divided into small room settings through the use of white draperies. Major pieces of furniture, such as his valet chair, were set on individual platforms for emphasis, and around the walls hung photographs of other exhibitions designed by Wegner. A discussion of Wegner's work will be featured in the March issue of ID.

ASID announces student competition

Entries for the annual ASID student competition will be accepted until May 1, according to George Payne, chairman of the competition committee. Each entrant should submit three projects—two in product design, the third in a related area, such as packaging or architecture. Method of presentation is up to the student, but the committee requests that no actual models be submitted. Each project should be individually identified (student's name will be masked during judging), and all entries sent to ASID Student Awards Competition, Industrial Design Department, Pratt Institute, 215 Ryerson Street, Brooklyn.

Ten students will be awarded a certificate and a medal especially designed by Rod Lopez of Raymond Spilman's office and struck by Sam Fahnestock of Alcoa. Three additional awards will be given in a special category for graduate students. Presentations will be made at the May meeting of ASID's New York chapter to which many industrial design students will be invited.

IDI chapter to survey education

Students', educators' and practicing designers' opinions of how to educate a designer will be brought together at the March 14 meeting of the Syracuse chapter of IDI. During the meeting a display of the work of 18 industrial design schools will be on view. In the afternoon members have been invited to tour Syracuse University's industrial design department, and after dinner chapter chairman Ted Clement will present slides on the Brussels Fair lent by the Art Center School.

Graphics exhibit opens in March

The 1958 Graphics in Packaging Show, sponsored by the American Institute of Graphic Arts, will open on March 24 at Institute headquarters, 5 East 40th Street, New York. Bottles, boxes, cartons, and cans which reflect the skill of the designer and manufacturer in solving packaging problems in terms of graphics will be on view. Work of designers from both Canada and the United States will be shown.

The jury, which selected the packages from several thousand entries, was composed of Dr. M. F. Agha, art consultant; Lester Beall, designer; Charles Coiner, senior art director for N. W. Ayer and Son; Karl Fink, president of the Package Designers Council; Charles Gerhart, Procter and Gamble. Donald Deskey, of Donald Deskey Associates is chairman of the exhibition. After a three-day stand in New York, the show will later travel through the United States and Canada.

Sales-aid show opens March 30

The seventh annual Advertising Essentials Show will be combined with the National Sales Aids Show at New York's Biltmore Hotel, March 30 through April 1. The show will offer more than 100 exhibits of the latest advertising techniques, products and services now available. More than 10,000 art directors, ad managers and agency executives are expected, according to Thomas B. Noble, president of the Advertising Trades Institute which sponsors the show. Further information on the show may be obtained from the Advertising Trades Institute at 135 East 39 Street, New York 16, New York.

Hans Wegner created individual room settings for the recent exhibit of his furniture.

MOLDED FIBER GLASS, *of course!*

MOLDED FIBER GLASS is the exclusive trade name for fiberglass reinforced plastic custom molded in matched metal dies by the affiliated Molded Fiber Glass Companies.

More and more of the largest, most important manufacturers in the United States are buying MOLDED FIBER GLASS parts to solve their cost and production problems. (MOLDED FIBER GLASS can be molded to almost any shape.)

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(The above MOLDED FIBER GLASS products are: planter, time clock housing, truck cab, sports car body, wastebasket, aircraft luggage container.)

At Eastman

the question of color in plastics

has over 39,000 creative answers

Eastman's Leadership in Color Creativity Has Produced Tenite Plastics in a Range of More than 39,000 Colors

To get an answer, you have to ask a question.

Users of Tenite plastics have asked enough questions since 1932 to make it necessary for Eastman color technologists to create formulations that will soon total 40,000 different co'ors and color effects.

While an untrained person may think of colors only in terms of the basic spectrum, his eyes usually are perceptive enough to detect even a minute variation when two colors are placed side by side. To such an eye, a new automobile interior would look disturbingly "wrong" if there were the least bit of difference between the color of its upholstery and its matched plastic appointments such as steering wheels, arm rests or control knobs.

Accurate color matches, therefore, are a vital concern to all manufacturers of plastic products that must be used in harmony with other colored materials of different surface texture, density or reflectivity such as painted wood, enameled metal, colored tiles or textiles. And, as color becomes more important in product design and merchandising because of its sales-stimulating effect, the attendant problem of proper color matching becomes even more critical.

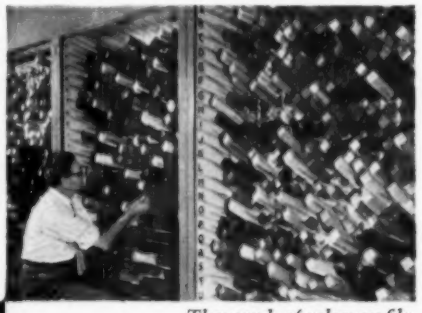
Since 1932, when Eastman began to produce plastics, it has developed and kept on file, formulations for over 39,000 colors. This experience, plus Eastman's pre-eminence in color photography and textile dye technology, makes it possible for customers to depend on Eastman for the broadest range of colors available in the entire plastics industry.

In many instances, of course, customers can solve their color selection problems merely by consulting the extensive files of color chips available at every regional Tenite sales office. More extensive research in color matching can be carried out at the Tenite Color Laboratory in Kingsport, Tennessee. Here, the user of plastics is invited to work out his color problems in cooperation with a trained staff of color technicians.

Every day, some 15 to 20 requests for color matching are received by the Tenite Color Laboratory. These are submitted through regional Tenite sales representatives in the United States and Canada and through numerous Eastman affiliates abroad. The color samples submitted for matching include almost every known material—textiles, metals, tiles, wood, rubber, other plastics, paint and many more.

Four days usually are sufficient for the color technicians to make the match. For highly critical applications, as in the automotive industry, where there are many complicating factors of texture and density, the technician often submits several tentative matches.

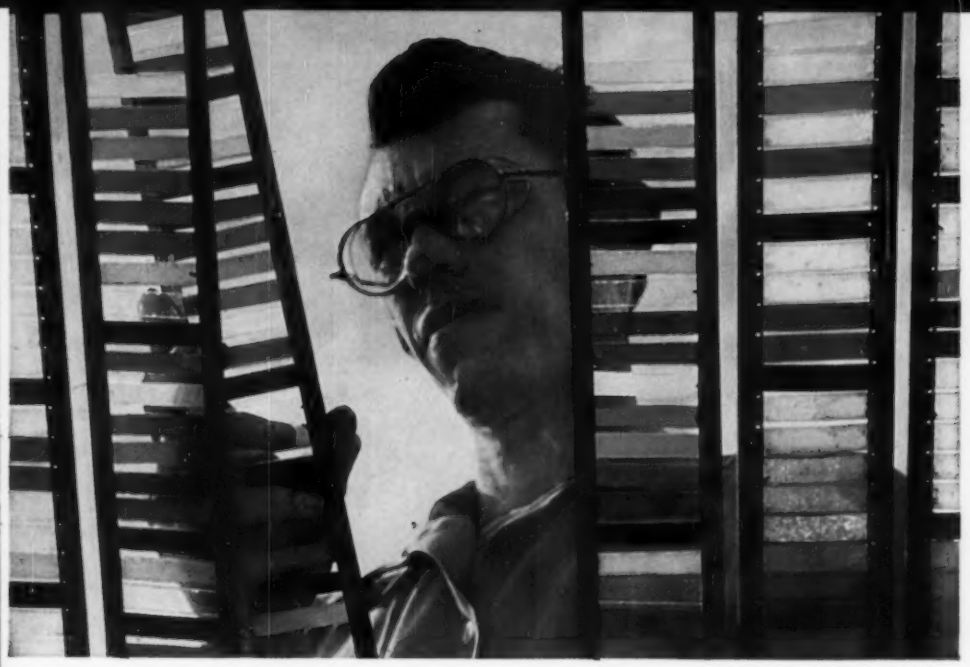
When a sample arrives at Kingsport, the first step is to search for a possible match among the color chips in the Laboratory file. Frequently, one of the more than 39,000 chips of Tenite colors already developed may match the sample perfectly. If a match is found, the next step is to supply a trial batch



Thousands of colors on file

Milling the trial color

Accelerated weather testing



Color creativity depends on color research

of colored Tenite pellets to the customer.

When no formulation on file permits a match, the Laboratory proceeds to create a new color formulation. The technician first takes advantage of Eastman's 26 years of past color creativity—by selecting existing color chips of the nearest color matches and noting their colorant formulations. These provide him with helpful references for which there is no substitute. Drawing on the performance of colorants in many previous tests and in their actual finished or processed state, the technician avoids time-consuming delays of trial and error. He is assured that the colorants are easy to disperse, are compatible with the plastic mass and the plasticizer, and that they possess the maximum resistance to migration and the attacks of time, light, weather and temperature that limitations of availability will permit.

As he weighs out the colorants to make the new match, the technician varies the formulations of the nearest matches, adjusting them to approximate the exact color needed. When variegated, pearlescent or metallic effects are wanted, the technician must deal with the result of combining the components as well as with the color match. Often, he relies on intuition—disciplined by years of experience—to create a totally new and striking effect for the customer.

In the next operation, components of the formulation are blended together on milling rolls to insure homogeneous dispersion. Color chips are then molded from this test batch, and evaluation begins.

If surface coloration is the only critical factor, visual or "eyeball" inspection usually suffices to confirm the match. But even here, the technician must bring his highly specialized judgment into play. He must consider the visual implications of the two textures and their psychological effect in determining acceptance of the color in plastic as the proper match for the color in another material. In addition, over-all size and shape as well as contour of the original sample complicate his color matching efforts.

When light transmission is to play an important role in the end-product, the technician turns for conclusive guidance to the spectrophotometer. This precision instrument measures the length of light rays, and its findings permit formulation of properly translucent colors when transmission ratings must be held within limits dictated by the end-use.

If the color fails to duplicate the sample either by "eyeball" or spectrophotometer testing, the matching process starts all over again.

Finally, when the color technician is satisfied that the color match is accurate and that it can be supplied in commercial quantities within the prescribed limits of commercial acceptability, he makes a detailed record of the new formulation in the Tenite Color Laboratory file.

Careful detailing of the formulation is one of the most important steps in the color matching operation—for the success of full-scale production depends upon the accuracy with which the formulation has been recorded.

With the writing and filing of the formulation, another customer has had his color question answered—*and another color has been created by Eastman.*

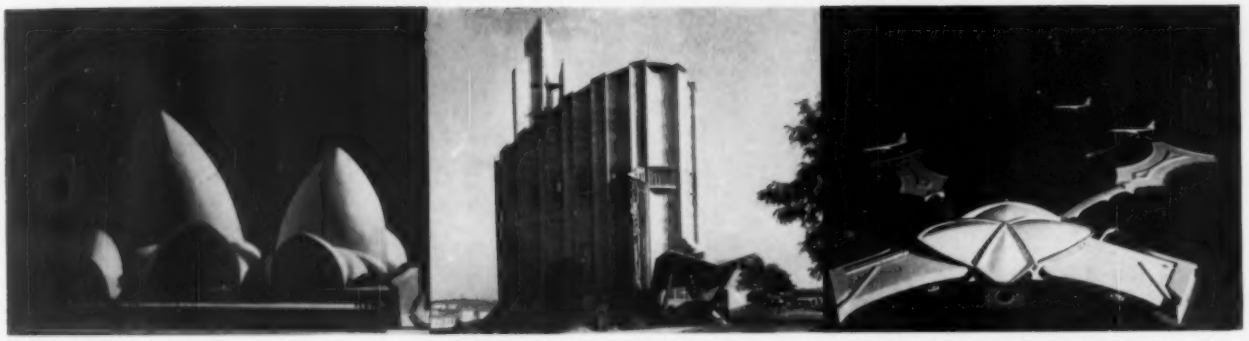
The full story of the color resources that back up the Eastman plastics—Tenite Butyrate, Tenite Polyethylene and Tenite Acetate—is told in a 20-page booklet, "COLOR." For your free copy or more information on these plastics, write to EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

Judging the match

TENITE

BUTYRATE • POLYETHYLENE • ACETATE

Colorful plastics by Eastman



Museum of Modern Art is now showing models of recent work by Jorn Utson (left), Guillaume Gillet (center), Eero Saarinen.

Imagery in buildings at the MMA

Four buildings which are similar only in the unorthodox way each expresses the use for which it was built will be the subject of an exhibit at New York's Museum of Modern Art through April 19. Through scale models and photographs, Arthur Drexler, curator of architecture and design, has created a full impression of four very different buildings: Guillaume Gillet's Notre Dame de Royan (above), in France; Harrison and Abramovitz's First Presbyterian Church in Stamford, Connecticut (ID, June 1958); Jørn Utson's Opera House in Sydney (above); and Eero Saarinen's TWA terminal at Idlewild Airport (above).

A museum text panel near the entrance to the exhibit comments on the contemporary architectural scene: "Most of the buildings we see around us use standardized windows, wall panels and structural frames. This repetition of identical units simplifies design and construction. The units themselves provide basic rectangular shapes with which the architect can organize even the most complicated design. But the development of this technique has often meant that the form of a building is determined not by its function but by the way it is built. Consequently buildings put up for quite different purposes tend to look more and more alike." Each of the buildings in the exhibit has dispensed almost entirely with standardized rectangular units, and, by suggesting a non-architectural form, has expressed some aspect of its function or location—the First Presbyterian Church, the early Christian symbol of the fish; the TWA terminal, the image of a bird; Notre Dame de Royan, the pipes of an organ; and the Sydney Opera House, the shells or sails associated with its harbor location.

Displays at Architectural League

The work (right) of sculptor Costantino Nivola and landscape architect Dan Kiley has been the subject of exhibits and discussions at the Architectural League of New York recently. The Nivola exhibit, which ran in December and will travel to the Triennale in Milan this spring, contained actual examples, as well as photos, of sculpture utilizing sand-textured forms for wall surfaces and as free-standing sculpture. In selecting Nivola for its first one-man show in 28 years (the last was Frank Lloyd Wright), the League has emphasized the importance of the collaboration between architects and sculptors.

The relationship of the landscape architect to the builder was discussed at the League's January meeting when Dan Kiley presented slides and models of some of his outdoor settings: at the Air Force Academy, the Detroit Civic Center, the Rockefeller Institute for Medical Research, and for Kitimat, a new town in British Columbia.

ICA announces design program

The Center for Design Studies, a division of the Institute of Contemporary Art in Boston, has announced its spring program of lectures and conferences on subjects related to industrial design. On February 13 the Center initiated a series of evening lecture-discussions on product development and design and package design. Dr. Donald A. Schon, invention group leader, Research and Development Division, Arthur D. Little, Inc. lectured on product development.

Photograph from the Nivola exhibit.

The second lecture, on February 25, will be given by Dilman M. K. Smith, of the Opinion Research Corporation. His topic will be "Market Research as a Guide to Product Development," with special reference to industrial products, major appliances, and the automotive field. On March 9, Walter J. Derenberg, Professor of Law at New York University and president of the Copyright Society of the U.S.A., will lecture on "Current Legal Problems in Design Protection."

Victor Pomper

The Center has also announced the speakers for its 1959 conference on "Integrated Design for Corporate Identification" to be held March 23 at the Sheraton-Plaza in Boston. The conference will concentrate on the practical aspects of integrated design such as budgetary implications, influence on advertising program, impact on sales volume and public relations, policing the program and maintaining top management's interest in the program.

Speakers and panel members will include Victor H. Pomper (above), vice president, H. H. Scott Company; Mrs. Jeanne Wasserman, Wasco Products, Inc.; Ralph Eckerstrom, Container Corporation of America; Herbert J. Zeller, Motorola; James Fogelman, CIBA Pharmaceutical Products; James Birnie, Reynolds Metals; C. Frederick Schaus, General Electric; and Robert Monahon, I.B.M.

Further information about the Center's program may be obtained from its director, T. S. Jones, at the Institute of Contemporary Art, 230 The Fenway, Boston 15, Massachusetts.

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Break (p.s.i.)	D638-52T	1900—5900
Elongation (%)	D638-52T	48—63
Flexural properties:		
Flexural strength (p.s.i. at break)	D790-49T	3300—10700
Rockwell hardness: (R scale)	D785-51	—15—106
Izod impact: (ft. lb./in. notch)	D256-43T	1.2—11.0
Heat distortion: (°C.)	D648-45T	51—70
Water absorption:		
% sol. lost	D570-42	0.00—0.08
% moisture gain	D570-42	1.5—1.8
% water absorption	D570-42	1.6—2.0

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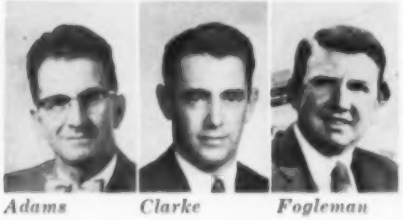
Competitions and Awards

Nominations are now open for the $500 **Doehler Award** for advancements in die-casting. Entries should be submitted before April 15 to the Award Committee, American Die Casting Institute, 366 Madison Avenue, New York 16.

HONORED: **Peter Muller-Munk** (right), as "man of the year" by Pittsburgh's Junior Chamber of Commerce . . . **Paul Rudolph, Victor A. Lundy,** and **Sanford Hohauser** as winners of the 1958 Corinth Fund awards for outstanding young architects . . . California architect **John S. Bolles** with a merit award from the Saudi Arabian government for his design of a complete university city in Riyadh . . . **Charles E. Zimmerman,** president of Consultants and Designers, Inc. with an outstanding public service award from Secretary of the Army Wilbur M. Brucker for his company's contribution to the successful launching of America's first satellite, Explorer I.



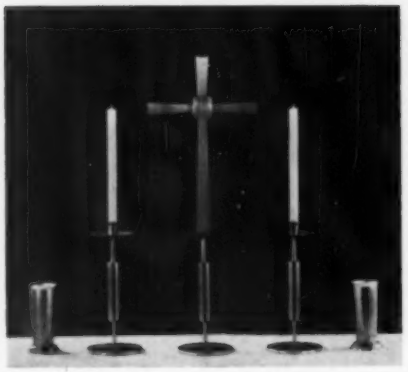
Adams *Clarke* *Fogleman*

Exhibitions and Meetings

An exhibition of the work of designer **George Tscherny** will be held at the East 28 Street Gallery in New York beginning March 9 . . . Designs of the Year, sponsored by the National Society of Interior Designers will continue at New York's Design Center for Interiors through February 21. . . . **Olga Gueft,** editor of *Interiors,* **Raymond Loewy,** and **Admiral Robert C. Lee,** vice chairman of the board of directors of Moore-McCormack Lines spoke aboard the Loewy-decorated S.S. Argentina on "Designing Ship Interiors" at the January meeting of the NSID.

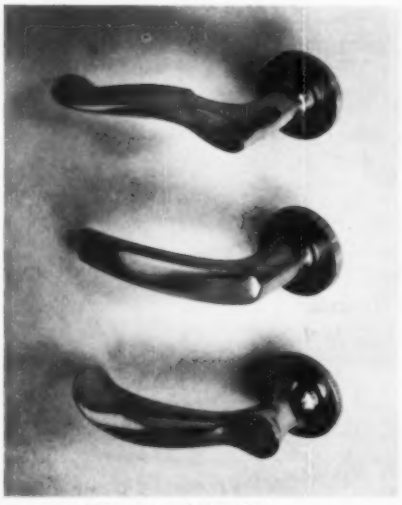
People:

APPOINTED: Design associates in the recently reorganized Harley Earl Inc., now to be known as Harley Earl Associates: **David Bishop,** head of graphics and packaging; **Craig Paul,** chief of the exhibits and interiors department; and **Samuel Highberger, Paul Petlewski** and **Dominic Saporito** product design studio heads. . . . **James K. Fogleman** (above) as administrative design director at CIBA Pharmaceutical Products Inc. . . . **Joseph W. Adams** (above), chief, and **Charles H. Clarke** (above), deputy chief, of the Design and Construction Division of the Office of International Trade Fairs . . . **Carl Otto** as design consultant for Schick Inc. . . . **Philip**



Rambusch's altar group for Alcoa

L. Stern (right) as director of the newly created interior design department at Jim Nash Associates . . . **Janet Sillen** as director of the newly created Women's Products Division of the Institute for Motivational Research . . . **Henry Jones** (right) as senior designer at Van Dyck Associates . . . **Arthur A. Treut** as associate director of residential and subdivision planning and home consultant services for Frank M. Valdex, San Antonio architectural firm . . . **Fred J. Brauer** as consultant designer for naval architects Gibbs and Cox. . . . **James Grote Van Derpool** as acting dean of Columbia's School of Architecture . . . **Gin D. Wong, James H. Langenheim, Jack L. Campbell,** as partners in the new West Coast architectural firm, William L. Pereira and Associates, 1231 West Fifth Street, Los Angeles. . . . **S. Warner Pach** as president of Paper Mate, a division of the Gillette Company . . . **C. B. Grove** as general manager of market development and **Gordon K. Billipp** as manager of new product development in the Industrial Division of Armstrong Cork Company . . . **William F. Saenger** as manager, advanced



Imported Hardware's hardware

design, at Whirlpool Corporation . . . **Robert M. Wolaver** as director of functional design, **J. M. Little and Associates** . . . **Raymond Loewy** as judge for the Fifth Annual Fibre Box Competition . . . **Frank E. Graf** as engineering manager in the southeastern United States for Designers for Industry, Inc.

RESIGNED: **John E. Alcott** as chairman of the Division of Industrial Production at Rhode Island School of Design. He will devote full time to educational consulting work and to his own and his son's design firm, Alcott Associates.

ELECTED: By the Society of Plastics Engineers: **Fred C. Sutro,** president; **George W. Martin,** first vice-president; **Jules W. Lindau,** second vice-president; **Frank W. Reynolds,** secretary; **Haiman S. Nathan,** treasurer.

DIED: **Edward Russell Swann,** for 28 years in design and engineering for the Hoover Company, on December 16.

Jones *Stern* *Muller-Munk*

Company News

RETAINED: **Sundberg-Ferar, Inc.** by Speedway Petroleum to work on a corporate identity program . . . **George Nelson and Company, Inc.** to launch a corporate image program for Abbott Laboratories . . . **Smith, Scherr and McDermott** by the Hoover company for product development and design.

ON THE MARKET: Alcoa's "Forecast" altar group (above), designed by **Rambusch Studios.**

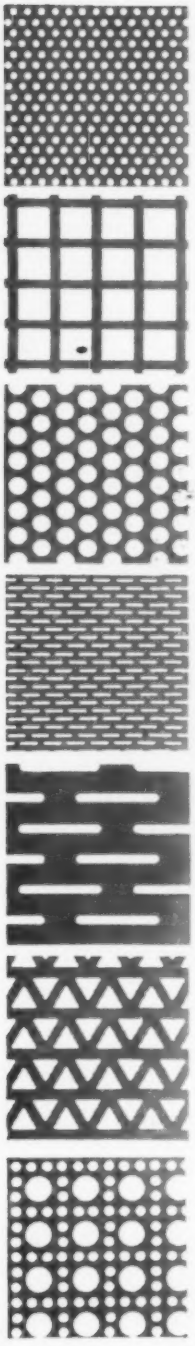
NEW OFFICES: **Jim Balmer** and **Bill Armstrong,** The Stevens Building, Maple Road, Birmingham, Michigan . . . **Donald Garvey,** 523 South Willow Road, Evansville, Indiana . . . **Joseph C. Cicchelli** and **James A. Howell,** architecture and interior design, 388 Benefit Street, Providence 3, Rhode Island . . . **Richard Neagle,** industrial design, Corso Sempione 33, Milan, Italy . . . **Imported Hardware,** Box 322, Bloomfield Hills, Michigan, specializing in importing fine German hardware (left) . . . **Sidney H. Weitz,** graphic designer, 17 East 48 Street, New York and 37 Bengeyfield Drive, East Williston, Long Island . . . **Design Associates, Ltd.,** 1 East 53 Street, New York, will now be known as **Francis Blod Design Associates** . . . **Domenico Design Associates,** 2387 Twenty Fourth Street, Long Island City 5, New York.

Idea!

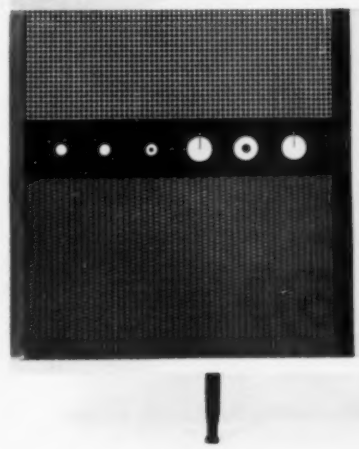
H & K perforated metals serve a function of design

The orientation of television, AM-FM radio and phonographic elements into one modular housing containing all mechanical, electronic and control devices is one function of the mock-up illustrated. Another is the utilization of H & K perforated Metal for the necessary ventilation and sound requirements of such equipment.

H & K Perforated Metal offers the Industrial Designer and other men of ideas, materials that are aesthetically interesting and functionally honest.



A few of the many H & K Patterns available.



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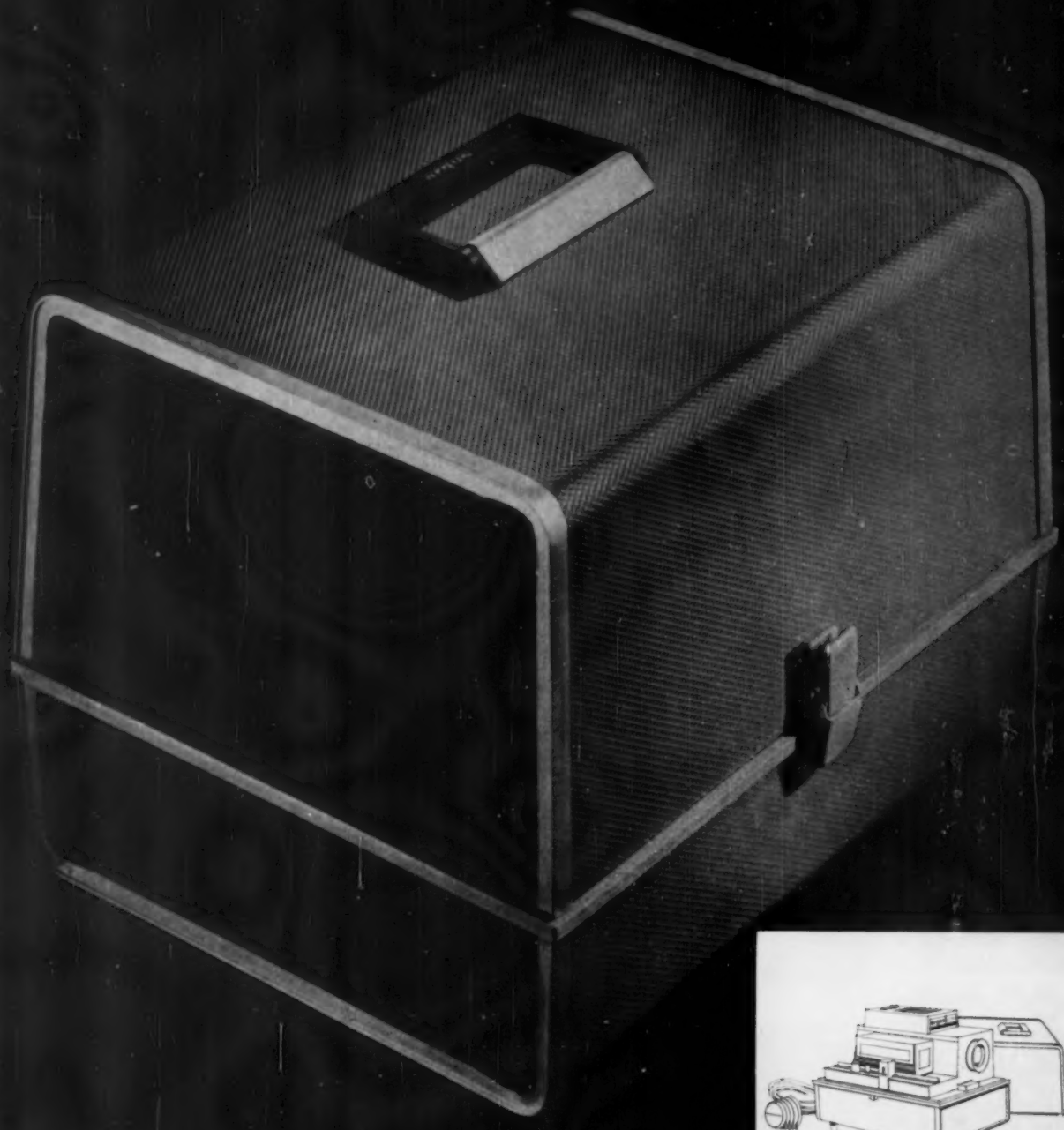
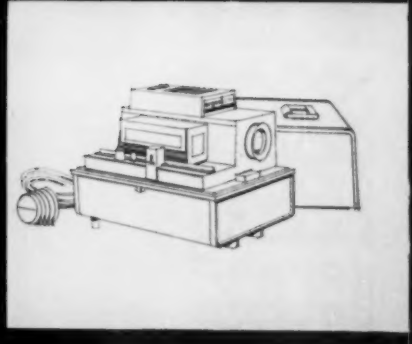




Design by Harley Earl Associates
Arvinyl and fabrication by Arvin Industries, Inc.

new world of product design

ARVINYL

This new metal laminate gives you endless opportunities for improved product life and looks. Arvin's fabricating skill and experience provide superior quality and cost saving in start-to-finish production.

Combining the durability of metal, the personality of fabric and cleanability of plastic—plus extreme resistance to abrasion, temperature and corrosion—Arvinyl offers a vast range of application to new-product design and existing-product improvement, with enormous advantages of styling, colors, texture.

Arvin "one-stop" fabrication facilities

To the inherent advantages of Arvinyl, Arvin adds a complete fabrication service unique in scope and thoroughness. For working with designers, Arvin has a prototype department and a plastic tool and die shop for building mockups. Through continuous research and experiment, Arvin has perfected techniques for deep-drawing Arvinyl into almost any form—with vinyl laminated to steel, aluminized steel, steel electrolytically coated with zinc, galvanized steel, aluminum or magnesium.

Cost savings

Arvinyl can save you money in consistent "finish-perfect" fabrication, simple tooling and virtually no trim scrap. Arvin's "one-stop" facilities save you materials-handling and other direct and indirect labor costs.

Exclusive Aluma-Lok* method

Aluma-Lok*, developed by Arvin, is a procedure for applying aluminum channels to Arvinyl sheets in the flat *before* forming—as in the Argus case described below. In addition, Arvin has methods for laminating both sides of metal, and for magnetic-force spot welding Arvinyl to light or heavier gauges of steel—without burning or marring the vinyl surface.

Let us consult with you—no obligation

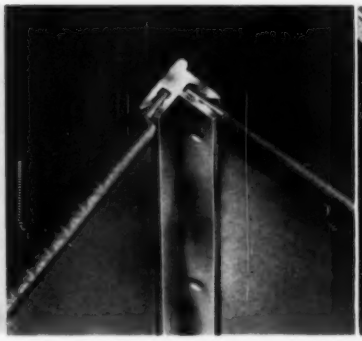
Besides the Argus projector case, Arvin has fabricated Arvinyl into a wide variety of products, including television and phonograph cabinets, portable radio cases, automobile console and seat panels—and Arvinyl has been supplied in sheets for many other products. It is a particularly useful material in the field of office equipment, for enclosures for typewriters, tape recorders, calculators, dictating machines, etc. Designers are invited to let their imaginations run and to bring to our consulting staff any projects which contemplate new design. No obligation. Write for descriptive brochure, Dept. AD29.

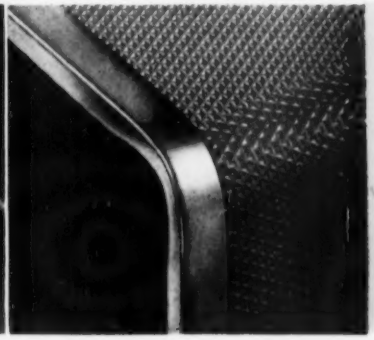
Arvinyl Division, Arvin Industries, Inc., Columbus, Indiana

**Patent applied for*

NEW ARGUS PROJECTOR CASE

Two-channel aluminum frames, extruded by Arvin, are applied in the flat to two edges of the wrap-around section, which is then formed by Arvin's Aluma-Lok* technique. End pieces are slipped into channels and mechanically locked into place. Interior is painted, latches and plastic handle (also made by Arvin) are applied and the case is complete. Tooling is simple and there is virtually no trim scrap. Result: A better-looking, better selling case, with greatly improved resistance to damage—and produced at lower cost than the previous pyroxylin-covered wood case.





Aluma-Lok* is ideally suited to almost any type of cabinet or enclosure for products such as:

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TYPEWRITERS

DICTATING MACHINES

RECORD PLAYERS

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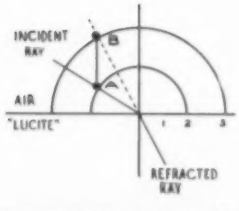
AN ENTIRE LENS SYSTEM molded in two pieces. Twenty-four lenses—precise, brilliant, economical—form the optical backbone of this digital read-out unit for computers and electronic instruments. Lenses of LUCITE have high dimensional stability and impact strength . . . are light in weight. (Lenses by Craftsmen's Guild, Hollywood, Calif.; display unit (patent applied for) by Industrial Electronic Engineers, Inc., North Hollywood, California.)



EASY WAY TO FIND THE ANGLES. The index of refraction of LUCITE is 1.49. Since this is practically a 1.50/1 or 3/2 ratio, it is easy to construct the path of a light ray through LUCITE. Draw two semicircles as shown, centered at the point of intersection of the incident ray. Draw a perpendicular from point A on the inner circle to point B on the outer circle. The continuation of the line drawn from B through the origin gives the path of the refracted ray.

EVEN if LUCITE did not possess its brilliant transparency, you would want to use it in your designs for its other valuable properties. LUCITE is a strong material—stronger in some respects than plastic materials that are known primarily for high strength. LUCITE is outstanding for resistance to sunlight, weathering and many classes of chemicals. The resin can be economically molded with a high degree of accuracy. With recent developments in LUCITE, the design possibilities are rapidly widening.

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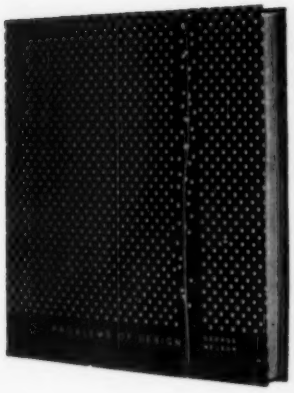

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by George Nelson

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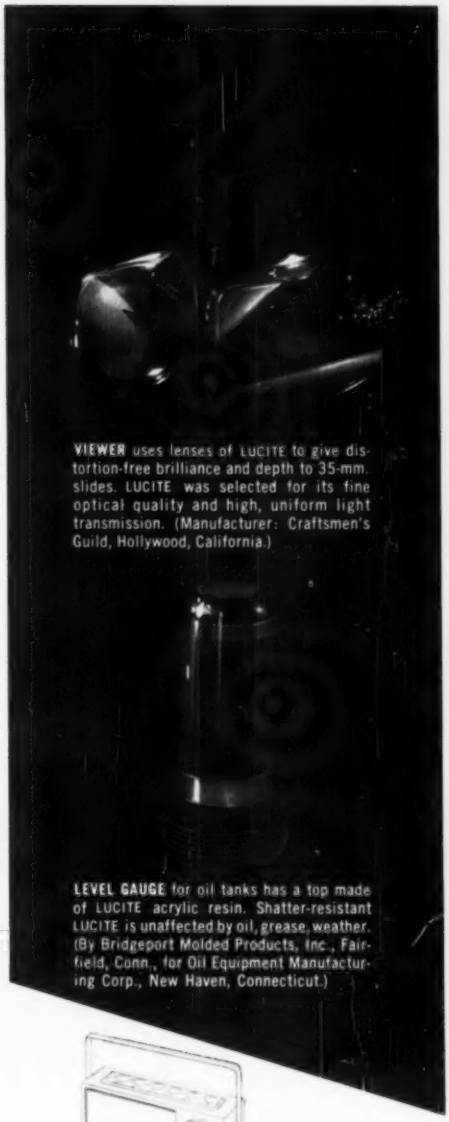

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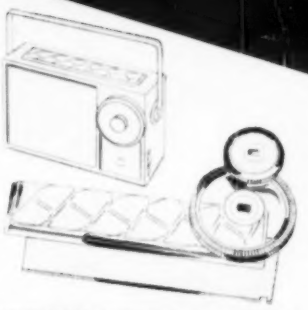

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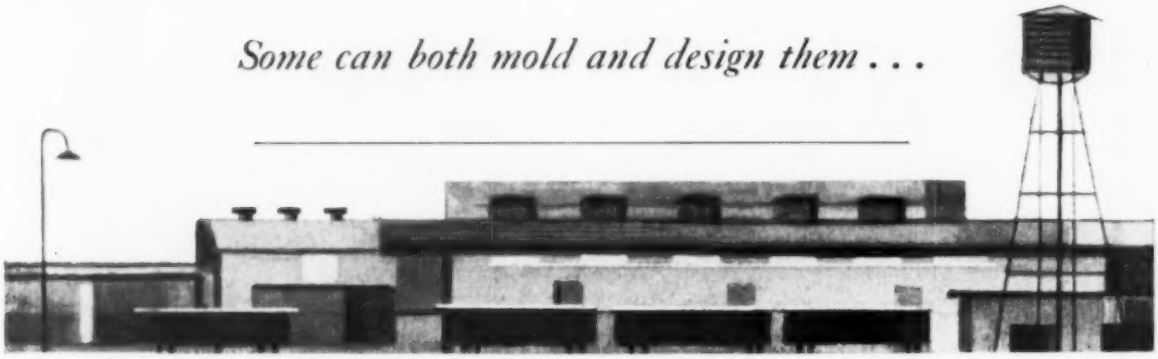

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Heat distortion temperature, °F	213
Molding shrinkage, in./in.	.0046
Specific gravity	1.02
Flexural strength (1 in./min crosshead speed)	12,500
Impact strength ft/lb/in. of notch (½ x ½ in. notched bar, Izod Test)	.30
Rockwell hardness	76M
Dielectric strength, short time, ⅛ in. thick volts/mil, 1/16 in. disc	890

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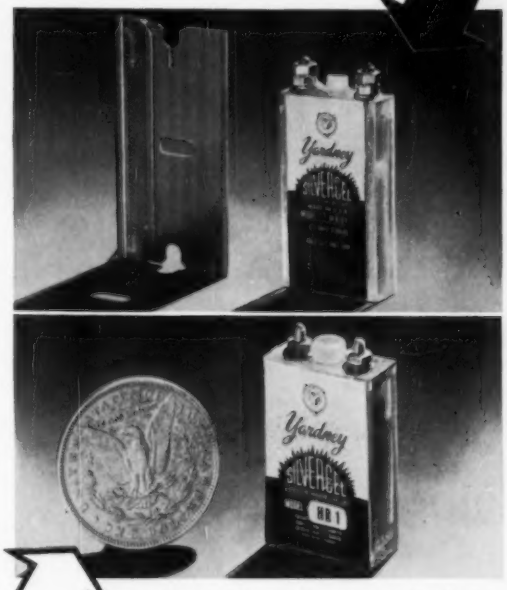
World's smallest and lightest rechargeable battery cell, shown here with razor blade, is Yardney Electric Corporation's HRO1 Silvercel®. Designed primarily for use in instrumentation and telemetering packages for missiles and rockets, it has a 3 amp peak pulse discharge and weighs less than one-seventh ounce – thanks in great part to lightweight molded CYMAC SUPER® 201 thermoplastic case and cover.

®Trade mark



Another Yardney silver-zinc cell is shown here with a silver dollar for size comparison. This HR1 Silvercel® delivers a 45 amp peak pulse discharge yet weighs only ¼ ounce. CYMAC SUPER 201 methylstyrene-acrylonitrile copolymer was selected because of its:

- Low specific gravity (1.06)
- Exceptional combination of high tensile (11,000 psi) and high flexural (16,100 psi) strengths
- Heat resistance (distortion point 211°F)
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New cordless electric shaver features light weight (two ounces), damage-resistant case of CYMEL® melamine plastic, designed by Raymond Loewy Associates. This smart-looking Universal shaver operates anywhere on ordinary penlight or transistor batteries. The CYMEL case is contoured to fit the hand, corrugated at the top for a natural, easy grip.

Battery and motor unit are secured by light press fit in housing compression-molded of CYMEL 1079 melamine molding compound. CYMEL resists breaking, chipping, scratching, perspiration, and corrosion from shaving lotions and battery chemicals. It provides a rich look and warm feel. Color, molded in, can't chip or wear off. Molded by Holyoke Plastics Company, Holyoke, Mass., for Landers, Frary & Clark, New Britain, Connecticut.

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Cyanamid's new polyester resin, LAMINAC 4106, is rigid in type, with medium reactivity and low thixotropic viscosity. It is made especially for application by dual-spray methods. When so used, the resin is divided into two portions, one containing catalyst, the other promoter, both of which are stable until mixed as converging streams enter the mold. Low viscosity and slightly thixotropic characteristics promote rapid wetting of glass fibers and freedom from sagging on vertical molded surfaces. Cure is rapid, permitting production of multiple parts per day from a single mold.

TYPICAL CHARACTERISTICS-LAMINAC 4106

Viscosity*	5 poises
Specific gravity	1.1
SPI cure characteristics	
Gel time	3½ minutes
Time to peak temperature	5½ minutes
Peak exotherm temperature	400°F

*Brookfield Model RVF, spindle #1, 10 rpm 77°F

Fairchild F-27, 300 m.p.h. propjet liner, was designed for executive appeal with emphasis on safety, passenger comfort.

"Urethane foam passed our tests with flying colors..."

says George C. Weaver, Group Engineer, Interior Design

FAIRCHILD Engine & Airplane Corp.

" 'Compromise' is the first word we discard when selecting materials for a new aircraft design," says George C. Weaver, design engineer for Fairchild. "Performance and durability are what we demand right down to the final rivet," he adds, "and materials have to be better than just 'good enough' to get past our testing lab.

"For example, take urethane foam, the cushioning material used in the seat adopted as standard equipment for the Fairchild F-27—first American-made, twin-engined, turbine-powered airliner to be placed in scheduled airline service. Tests conducted by Aerosmith Products, seat designers and manufacturers, showed that urethane foam, at one-half the weight of comparable cushioning materials, affords maximum seating comfort and service life. It is also very successfully used as bulkhead padding and carpet underlay."

The Fairchild Company, founded in 1925, is a pioneer in the manufacture of commercial aircraft and military transports. Fairchild has orders from 17 airlines and 18 major corporations for the propjet F-27 which is already in daily service with five airlines.

The seating of the Fairchild F-27 jetliner is latest proof of the preference for urethane foam cushioning among companies that have to put quality first. Write Mobay for evidence of how other industries are profiting by following this sound business principle.

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The misery of choice

As everyone knows (except New Yorkers, who had no place to read about it) New York City was afflicted in December by a newspaper strike that lasted 19 days. The experience was full of surprises: how much fun it can be to read *Variety* and *Women's Wear Daily;* how challenging it is to ride a subway each morning without the protection of a front page; and—biggest surprise of all—how easy it can become to get along without what normally passes for "news." One day the papers quietly reappeared, and it was hard to remember that they had ever been away: the same presidential candidates were disavowing their candidacy with the same mechanical fervor; neither Pogo nor the state department had moved an inch. It was as though the world—both Li'l Abner's and Mikoyan's —had stood still while waiting for labor and management to come to terms.

But if the world was at rest, Dr. Ernest Dichter, who practically invented Freud, was not: he was out taking a survey, and discovering that a "significant minority" were *happy* to be deprived of their daily papers, not because they are able to forsake the trivial, but because they are unable to cope with the significant. We live in a complex world, Dichter reveals, and reading news is a burden because it reflects the complexity, rather than relieving it. However, while news serves only to confuse the issues, "reading newspaper *ads* has become a pleasure." This is because they provide "concrete answers and definite instructions on how to think and act in a buying situation." Consumers indicate that "advertising plays an important role in resolving their misery of choice before they enter a store . . ."

As if that weren't depressing enough, the same week's mail included a gratuitous statement from the publicity department of a design office. The pitch was for "hard sell package designs," and it seems that the woman in the supermarket is no more anxious or able to think than Dr. Dichter's significant minority: "She has no time to spend making up her mind. She wants it made up for her — or, at least, decisions made easy."

It is hard to see how hard-sell packages or ads relieve anyone's "misery of choice," for although both give definite orders, they directly contradict the definite orders of competitors. (*Which department store Santa Claus is the real one, Mommy?*) It is even harder to accept the elimination of choice as the designer's goal. For in a free society, the designer's responsibility toward choice is not to bump it off with his little airbrush, but to enhance it by making products better, and to simplify it by making packages clear, honest, and attractive. He cannot make the consumer's decisions for her — no matter how many surveys reveal that (way down deep in spots touched only by 19th century poets and 20th century PhD's in marketing psychology) she would rather he did. Of course news of a complex world puts a severe burden on the mind; of course deciding which soap to buy is a chore. This burden and this chore are, to vastly varying degrees, part of a larger burden called thinking. It is a painful process that cannot be avoided in non-totalitarian states.

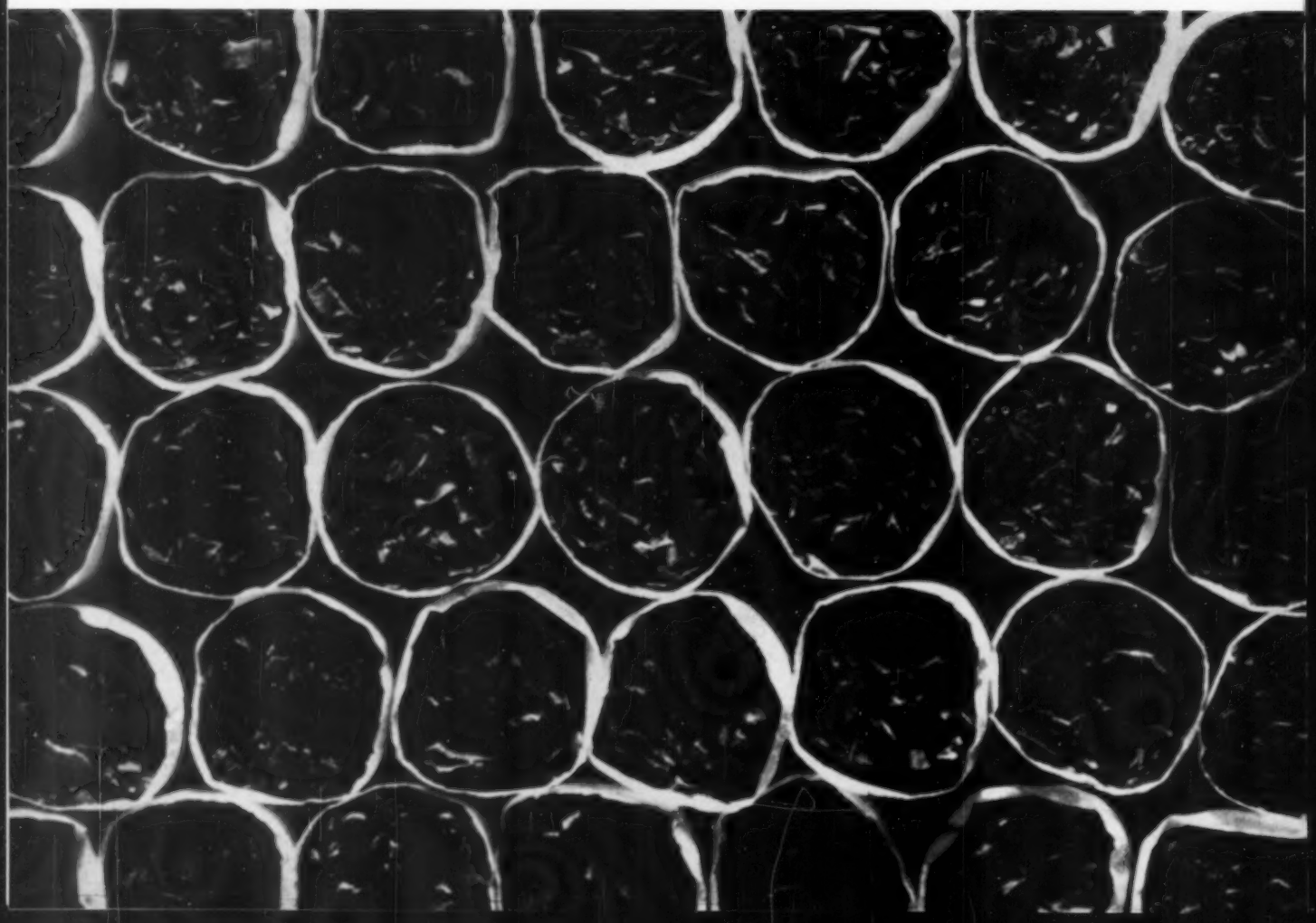
Publicity blurbs that speak of providing the consumer with pre-thought decisions, as though they were pre-cooked turkey dinners, are disturbing—especially for designers, whom they are likely, in the end, to harm. They are disturbing chiefly in their implied contempt for the consumer. Design—at least the only design worth bothering about—is motivated not by contempt but by something more like (of all things) love.—*R.S.C.*

A survey of

CIGARETTE PACKAGES

from roll-your-owns to filter tips

By GREGORY DUNNE



On February 2, Leonard Lyons of the New York *Post* ran the following item in his daily column: "South Dakota's House of Representatives just killed its Senate bill requiring a skull-and-crossbones emblem on all cigarettes."

If the bill had passed, the result might have been the decade's most spectacular graphic innovation in cigarette package design. For this is a field in which the sheer force of numbers makes any major change an event celebrated by national advertising—sometimes apologetic, sometimes coy, and sometimes (as when touched by the promotional genius of American Tobacco's legendary president, the late George Washington Hill) patriotic. But for all the advertising dollars poured into new brands and/or redesigned packages, it was not until Camel came a cropper with an attempted redesign last fall (page 38) that cigarette package design became a subject of lively national interest.

Last year, ten American tobacco companies packaged and sold an estimated 430 billion cigarettes domestically, or nearly 22 billion packages of forty different brands and sizes. Breaking these figures down further reveals that the national per capita consumption was 180 packs of cigarettes for every person in the country over the age of 15.

Although each of the tobacco companies proclaims the superiority of its various blends, many cigarette package designers work under the assumption that adherence to a particular brand is an emotional, rather than a palate, loyalty. "The cigarette industry," says one, "is an industry of promotion and not of cigarettes." In more imposing terms, Myron Helfgott, president of Lippincott & Margulies' research subsidiary, Package Research Institute, states that "cigarettes are anonymous; they derive their differences from the peripheral stimuli surrounding them." With im-

pulse buying a negligible influence in the purchase of cigarettes, the designer must strive to create a long-term brand loyalty in a package that is not only a portable advertisement dug out of the pocket or purse some twenty times a day, but a personal possession as much a part of daily living as a wallet or a set of keys.

The inadequate bulge

The package which daily becomes almost an integral part of this country's more than 40 million smokers presents a special set of problems to the package designer. He approaches his task with a dimensional statement of package size and shape already at hand. The available form is by no means the ultimate; it bulges in the pocket, inadequately protects the cigarette from drying out once the pack is opened, and tends to crumble with a resultant shriveling and tearing of the cigarettes. There has, however, been no apparent sign of revolt on the part of the habit-ridden smoker as he draws a wrinkled, crippled outrage from an all-but-finished pack, nor has there been any disposition among the tobacco companies to change the package form, a shape which has been almost inflexibly set by the convenience of the twenty-lot package to the pack-a-day smoker, and by the cost of the packaging machinery, most of which is furnished by American Machine & Foundry.

Furthermore, federal and state laws require the cigarette companies to pay their taxes in advance; the Pitney-Bowes machines which distributors use to affix state tax stamps on each package are adaptable only to existing package shapes. Moreover, the tax stamps (federal stamps are applied during the packaging operation) limit the effectiveness of two panels as brand-and-copy carriers. To nail down their argument on the cigarette pack's required stability of form, the tobacco companies point out that since vending machines, which account for an imposing percentage of annual sales figures, cannot take an odd-shaped package, a variation in shape would cut off a most effective avenue of sales and merchandising. To lend credence to their view, the companies point to the failure of P. Lorillard's Old Gold Pocket 40—a forty cigarette package of several years ago.

Before 1952, little attention was focussed on cigarette package design except for Lucky Strike green's enlistment in World War II, a patriotic gesture which the aforementioned Mr. Hill, no man to allow product patriotism to suffer in silence, had daily drummed into the unprotected homes of millions of families (many of whom were said to be more concerned with the drafting of a son, father, or brother) through the dulcet tones of radio's André Baruch. Several of the tobacco companies retained a consultant package designer who dressed up a logotype here and added an halation there, but who was not allowed to proceed with major package redesign. From 1947 to 1954, for example, designer Egmont Arens made studies for a radical change in Philip Morris' brown, cedarwood-grained namesake package. The company resisted these changes; the brand was the firm's best seller and represented an investment of countless millions of advertising dollars and nearly twenty years of building up a brand and corporate image. In 1952, however, Arens succeeded in getting minor changes in the package accepted: the logotype was shortened to read "Philip Morris" instead of "Philip Morris & Co., Ltd.", and a gold shadow was added to highlight the effect of the brand name.

The seven-word phrase "Lucky Strike green has gone to war" helped shoot Lucky sales up 38 per cent in six weeks in 1942. War shortages had cut into supplies of green ink, made color switch mandatory. Gold ink around bulls-eye became gray. Two years before, Raymond Loewy had redesigned the green pack, cleaning up the lettering, and putting the red bull's-eye trademark on the back as well as the front of the package.

"More doctors claim . . ."

One can hardly criticize the tobacco companies for their hesitance to accede to graphic changes in their cigarettes' packages as a matter of course. Industry figures for 1952 show that six brands—Camel, Lucky Strike, Chesterfield, Pall Mall, Philip Morris, and Old Gold—accounted for nearly 85 per cent of the total domestic cigarette output. Brand loyalists walked that mile for a Camel or heeded Johnny's shrill call with almost patriotic fervor as the have-not brands struggled over the dregs of the market.

Six years later, the Wooten Report (an authoritative roundup of cigarette consumption by brand) tells a different story. Six of the ten top selling brands are filter or filter-mentholated cigarettes—categories represented in 1952 only by Kool, which had dropped to number eleven last year. Four of these brands, Winston, L & M, Marlboro, and Salem, hadn't even been introduced in 1952, while a fifth, Kent, had made its debut only that spring. Today, filter and filter-mentholated cigarettes, which took up only 1.1 per cent of

These nine filter brands were not in production seven years ago. All are listed in the top twenty today. Proliferation of strong-selling new brands poses merchandising problem because companies can no longer rely on long term brand loyalty from their consumers who show a tendency to test smoke many new brands.

the market in 1952, account for nearly fifty per cent of the total consumption, a third of which is in brands less than six years old. Brand loyalty was sorely tried, and in many cases shattered, as the smoker forced the cigarette companies to add fourteen brands or sizes in the past six years.

Though several tobacco companies still indignantly deny it, the association of cancer and cigarette smoking is largely responsible for putting so many package designers to work. Charges, rebuttals, and the latest objective medical surveys have made sure-fire copy for the nation's press for the past six years. Batten, Barton, Durstine, & Osborn severed an 18-year connection with the *Reader's Digest* (1956 ad budget with BBDO: $1.5 million) rather than incur the wrath of another client, American Tobacco (1956 ad budget with BBDO: $17 million) after a *Digest* article scored American's Hit Parade filter for its high nicotine and tar content. The *Journal* of the American Medical Association barred cigarette advertising from its pages, and 1.5 million smokers stopped smoking as the cancer scare toppled sales.

But while the smoker ran scared, he did keep on running —away from the regulars (e.g., Camel, though still the top selling brand, nevertheless dropped from 105 billion to 65 billion cigarettes sold from '52 to '58) to the filters. Old Gold and Philip Morris tried a package change which, accompanied by promotion and advertising boasts, braked their headlong decline to a slow skid. Yet while new packages dot the top twenty brand list, there has been little cigarette package design work to stir the imagination. Philip Morris reincarnated Marlboro, a silk stocking brand which had found a niche among upper bracket women smokers, put it in a new red and white hard box, and sent it to the mass market in the hands of a tattooed man. Both the tattoo and the hard box caught on; Marlboro leaped into the top ten, and other competitive brands followed it into the cardboard jungle. By last summer, however, the trend appeared spent. Marlboro had added the cup package to its inventory as flip top box sales for all brands dropped 40 per cent.

No treat, no treatment

It is difficult to accuse the cigarette manufacturers of an adventurous spirit when it comes to package design. Baltimore's Royal Dadmun, designer of the Winston and Salem packages for R. J. Reynolds, succinctly says, "When you design a cigarette package, you lay a great deal of importance on what the successful competition is doing." There is a monotony in all the new packages, a bland amalgam of reds and whites and geometric shapes which Dr. Helfgott calls "the current design legitimacy." In a moment of candor, one tobacco executive called his company's new packages "sterile," and longed for the less standardized designs of the Omars, Rameses, and Home Runs (overleaf). But the contemporary rationale is that abstract forms create an easily retained image, even when competing against similar abstractions. The compulsive imitativeness of the cigarette companies seems to preclude the appearance of a really distinctive package backed by a major advertising budget. Therefore, on the following spread are presented package memorabilia from the early days of the tailor-mades—packages of color and distinction rarely found today.

Frank Gianninoto & Associates redesigned the old Marlboro pack for Philip Morris. Flip top box was an added merchandising gimmick to give the former silk stocking brand a big push in the mass market. Initial testing of new pack led to additional changes: the red background was intensified; a Philip Morris crest substituted for the cigarette; logo made less sophisticated by making "M" upper case; stripes were abandoned.

Flamboyant originality keynoted packages of the early tailor-mades

Strictly speaking, the Bull Durham package cannot be called a cigarette package, but it held our first national tobacco product. After the Civil War dozens of imitators sprang up like weeds all over the country, all of them borrowing Bull Durham's bronze-on-black label, and many of them using derivatives of its name: Sitting Bull Durham, Billy Boy Durham, etc. In 1881, James Duke went into the cigarette business, and two years later was turning out machine-made tailor-mades. By 1903, Connorton's Directory listed 2,124 brands of cigarettes, cigarros, cheroots with names like "Befoe de War," "Coal Smoke," "Total Eclipse," and "Jack the Giant Killer." Most of the brands were local, and a firm with national aspirations simply multiplied the number of its brands to get more business. But though brand consolidation was soon to begin, the precedent for flamboyant packaging had been set, and was to remain in effect until the twin nemeses of lung cancer and television.

Cheaply wrapped Hungarian brands, "5 Year Plan" and "Symphonia," reflect austerity of Iron Curtain.

Cigarette rolling in Turkey, c. 1890.

White tie elegance of Melachrino and du Maurier is a reminder of bygone decades.

Brown, gold, and green were purged from the above packs as result of declining sales, and wartime ink shortages.

Veiled ladies and female harlequins show lack of inhibition. Note vertical tear strip on Wings pack.

Splashes of blues, golds, and reds with varied graphic motifs indicate busyness of many old packages.

Names often had no tobacco connotation and packages were wildly imaginative.

Taste buds used to be a lot less conventional, and smokers would experiment with any flavor. Menthol is only one sold nationally.

Reynolds ate humble pie in papers across the country in this ad. It provoked a storm of controversy among designers who thought it disparaged their profession.

Though ad declared that no change was made in blend, new package (right) eliminated phrase "Turkish & Domestic Blend Cigarettes." Position of pyramids was reversed, the horizon was lowered, and the camel was given a youth pill. Major change was lowering the intensity of the brown, giving the whole package a washed out, bleached look.

R. J. Reynolds publicly demonstrates how not to make a best-seller better

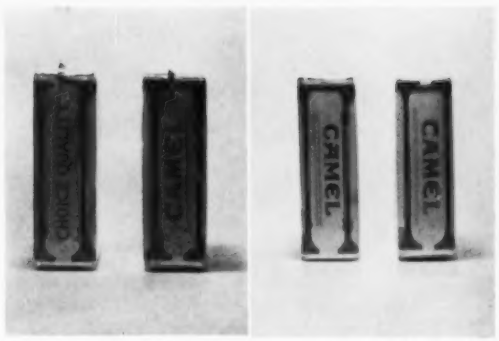
Early last fall R. J. Reynolds Tobacco Co. violated a basic gambling precept – never bet against the champion – and hedged a bet against the strongest brand in its stable, Camel, the country's top selling cigarette. A redesigned Camel package was put into national distribution in an attempt to head off the competition of the high-flying new filters with a more restrained, contemporary package. The test pack was a failure; Camel smokers all over the country wrote in to the tobacco company to protest against the anemic looking new package and its rejuvenated dromedary who looked as if he had stumbled into an oasis of youth. Reynolds, already jittery at the alarming decline in the sales of all regular cigarettes, publicly ate crow: in full page newspaper ads, the company apologetically assured smokers that it was "putting the pyramids right back where they were." Many observers have refused to accept such self-effacement, however, on the grounds that Reynolds merely used this device to still packaging insurgents within the official family.

For years the Camel package has been a thorn in the side of designers because, in steadfastly resisting major design change, it repudiated much of their argument that the competition of newer brands made the packages of older established brands stodgy, out-of-date, and consequently a drug on the market. The Camel pack has no real tobacco connotation: the camel is at best is an unappealing beast, and the implications of dryness and aridity in the desert background tend to make today's market researcher blanch. But as the brand was consistently in the first or second sales position, Reynolds saw no immediate need for a major redesign. For 45 years, the brand, backed by a huge advertising budget, built up its brash, masculine image which became all the more distinctive and nostalgic as its competitors' packaging began to veer toward the clean, controlled look.

But the cancer scare let a lot of air out of Camel's sales figures. "It is axiomatic," says Royal Dadmun, Reynolds' consultant designer, "that management is usually more receptive to a design change when sales are in a down trend. I don't think that this is always right, but it is often logical from the client's point of view." Yet, though sales had slipped, Camels still led the pack, and Reynolds was "nervous about fiddling with a winning combination."

The sound and the fury

Such natural reservations on the part of the tobacco company placed severe limitations on Dadmun, because "the client is simply not going to permit you to do some of the things that even he would agree would produce a far more effective package. Therefore, what can be approved in most cases is a compromise, as was the case with Camels. Sure, we had much, much better designs. You can be well assured that the design in question was not the one recommended by us as the designers, but it was the one the client felt would be minimal enough not to shake up the loyal customer." Reynolds did not intend to keep the new package in permanent distribution, but used it "as a compromise which they felt would give them some answers that they wanted... The test, from their standpoint, was a success." Consumer reac-



Dadmun cleaned up lettering and clipped the columns (above, right), added brand name while eliminating manufacturer's (left), and took off bottom strip front and back. Reynolds avers that market test was successful in that it gave them answers, apparently on the amount of change Camel smokers would accept.

tion indicated just how loyal the Camel smoker was, and how much redesign he would be willing to accept.

Reynolds' public confession that its test pack had met with disfavor triggered an immediate controversy. Lippincott & Margulies raced into print with a publicity release in which president Walter F. Margulies stated that the soon-to-be-abandoned package was "poor both as a design and marketing tool. 'We don't know who did the design,' he said, 'but it was obviously poorly conceived... It watered down the very design elements that has given Camel such a strong brand image... Properly conducted design research, in conjunction with thorough study of Camel's brand franchise, could have avoided what must have been a costly mistake.'"

L & M defends its press release on the grounds that the pyramid ad implied that package design is a sloppily conceived, off-the-top-of-the-head gimmick. "Let's not give the whole profession a black eye," Lawrence V. Stapleton, L & M's general manager, has since stated. "The Camel package might have been a complete failure, but don't let this reflect on all package design, or imply that the whole process is a bad step. It makes prospective clients hesitate."

Dadmun, an L & M alumnus, has refuted this argument in an open letter to Karl Fink, president of the Package Designers Council. "Reynolds is a valued client of ours. They prefer to do their own testing, in their own way. If the P.D.C., or some of its members, feel that this publicity . . . is bad for the profession, I regret this. But I cannot control nor would I want to suggest to either Reynolds or their advertising agency how they should conduct this phase of their business. It seems to me that those who would rush pell mell to the defense of the profession because of Reynolds' advertisement, betray a lack of faith in their ability, and create a situation where none exists."

Aftermath

Privately Dadmun explains that poison-pen letters are an expected hazard of any design change. "People write in saying you've changed the blend, or saying that you've loused up their whole life because they can't play their favorite parlor game of counting the number of 'E's' on the back panel of the package. You've wounded them deeply, and they're going to switch brands." Enough letters like this, he went on to say, make the client uneasy. But he added, it's "the guy with the compulsion to feed the old ego who is responsible for most of the mail. The satisfied customer–the majority–is too busy. He just buys the product and lets it go at that. But anytime you make a change and then hear nothing, look out. It means you haven't reached the public."

It is possible that Reynolds was too sensitive about the reaction to the new package. Recent figures from the tobacco company show that during the entire period that the experimental design was on the market, sales showed a mild uptrend in spite of the continued sales slide of unfiltered cigarettes generally. Nevertheless, the attention centered on the Camel package illustrate the problems faced by a "successful symbol of a past era,... a familiar landmark in a world of change."

CAMEL

LUCKY STRIKE

Chesterfield

Old Gold

PHILIP MORRIS

For two decades the five brands in the column at left ruled the cigarette industry. Cancer scare broke this hold, brought six new brands into top ten, left no brand secure.

The third revolution encourages scientifically justified imitativeness

The *era* is a convenient cliché that the historian uses to mean either a million years of creation or two weeks of a quiz show. Tobacco historians—no iconoclasts, they—have attached this easy handle to cigarette history, and have further broken the cigarette era down into three "revolutions": the introduction of domestic blended cigarettes in 1913, the Pall Mall outbreak during and after World War II, and the rebellion of the early fifties, attributable wholly to the cancer scare.

The jagged diagonal that has been Pall Mall's growth curve since the 85-millimeter king was introduced in 1939 presaged the sweeping trend to the longer filters some fifteen years later, while the brand's package established the precedent for contemporary cigarette packaging. Like its older brother, Lucky Strike, Pall Mall lost a color to the war (its gold crest was changed to the present white), but since the brand didn't rank so high in the affections of Mr. Hill, the change was effected with a dignified silence. Despite this rejection and the elimination of all advertising in 1944-45, Pall Mall moved into the top five brands, and is currently threatening to replace Camel in the number one sales position.

"Beating the cancer rap"

The most significant effect of the "third revolution" has been the loosening of brand loyalties, as smokers today—in a health-induced experimental mood—flit from filter to filter trying to find the brand which gives them the most substantial feeling of what one cigarette package designer calls "beating the cancer rap." For nearly seven years the cigarette companies have tried to placate smokers with newly-filtered defense mechanisms, whose references are the best an advertising budget can buy. As a result, drug and supermarket counters are overflowing with a plethora of brands, types, and packages of varying price and size. At a time when (because of the Depression sag in the national birthrate) there are relatively few new smokers, nineteen brands are selling over a billion cigarettes a year. The cigarette companies are forced to make extravagant concessions to the fragile loyalty of the smoker by attempting with every possible device to lure him away from competitive brands to their own.

Next to advertising, of course, the most obvious device is the cigarette package. At a time of fearful scrambling to make up for early losses to the cancer scare, the tobacco companies seem addicted to the old bromide that nothing succeeds like success. The success they had in mind was the Pall Mall package. (American Tobacco proudly footnotes in its company history that Raymond Loewy "took a look at the Pall Mall package, reported he could see no way to improve it.")

Pardon them while they change their dresses

The Pall Mall pack was the first major brand package to use decorator red as the principal background element. Previous to Pall Mall's intrusion into the upper brackets of the

Six brands pay tribute to drug counter merchandising. Epidemic of new brands stifled originality, made cigarette companies play it safe, more inclined than ever to copy more successful packages.

The heraldic motif can be found on most cigarette packages, one hardly more identifiable than another.

cigarette world, each of the big five had built its own special identification and loyalty on five distinctively different color combinations: Camel's brown and white; the green, then white, and red of Luckies; Chesterfield's white; Philip Morris' cedarwood stain; and Old Gold's gold. Furthermore, Pall Mall was (and still is) the only major two-color pack, and, with Luckies, has set the pattern for two-panel trademark and logotype.

Regal geometry

As the cancer scare took hold, new red-and-white packs began decorating retail shelves, all using front and back panels for logo and trademark, many—like Winston, L&M, and Marlboro—apparently influenced by Pall Mall's Bodoni-like type face. Others resorted to what Jay Doblin, designer of the Old Gold Straights package, calls "the most obvious and hackneyed heraldic devices—the rampant lions, crests, and crowns common to most cigarette packaging." Strong geometric forms—triangles, ovals, and rectangles—became the main graphic motif as package art veered toward the abstract, away from the minarets and beasts of burden of the solidly entrenched five-brand days. No innovation was sacred, as the cigarette companies openly copied from successful packages. Royal Dadmun had planned the new Winston pack so that the bottom panel formed two white arrowheads that pointed at the brand name which was often obscured by state tax stamps. Other brands, intrigued by the success of this distinguishing feature (and by Winston's impressive sales record), followed suit with arrows of their own.

Meanwhile, alert to every emerging nuance of the market, the tobacco makers nursed the mentholated cigarettes to maturity in order to take advantage of the smoker's newly sensitive taste. Salem, Newport, and Oasis joined Kool in the top twenty brands; all three new packs featured large fields of sea green relieved by white; two, Salem and Oasis used large rectangles to set off the brand name.

Heavyweight packages, lightweight wallop

Both designers and tobacco companies point out the necessity today of having a package with an easily retained, readily identifiable image. American influences—which one designer pinned down as the supermarket, and advertising space and time costs—demand bright colors and abstract forms which can be best remembered after a twenty-second spot or a brief glimpse from a speeding automobile. The current cigarette packages, according to the clients and designers, stress "merchandising wallop and distinctiveness." But a man of distinction can be distinguished only if everyone else isn't a man of distinction. In other words, by using the same colors and similar forms, the packages seem to cancel out each other's "merchandising wallop." Yet a number of designers object when the distinctiveness of foreign packages—many of which they designed—is pointed out to them. "We live in a streamlined age," says Frank Gianninoto; "they don't. It's like comparing the tobacco

Researcher (above) tests new Philip Morris pack for general visibility, comparing it to other brands. To get bigger share of filter market, Philip Morris slashed price of premium Parliament (right), had Egmont Arens design new pack. From over 100 designs, 20 were picked for research evaluation. Of these, three —red and gold, blue and gold, both with chevron, and a buff copy of old box—were tested with a new cigarette against old pack. Blue was selected to give maximum merchandising effect among all the red-packaged new filters.

Both American Tobacco and P. Lorillard used a package change to spotlight "re-engineered" cigarettes. The new Old Gold pack, designed by Jay Doblin, was intended to imply a milder and safer, albeit unfiltered, cigarette. Its gold medallion illustrating a farmer and tobacco plant and its white background give a feeling of both purity and tobacco. The word "cigarettes" was replaced by the factitious term "straights," and the logo was made smaller to give the package a more personal scaling. Lippincott & Margulies spent ten months and tried more than a hundred package designs on the dual-filter Tareyton. Vertical red stripes recall stripes of previous pack and remind smoker of brand's new filter. Vertical asymmetry, a rarity today, contradicts "necessity" of loud brand name and presents quickly identified image for color and black and white promotion.

shop to television. A busy, rococo package won't be accepted in this country."

Many cigarette companies have all but abdicated to the researcher whose findings, one designer says, "keep the client from biting his nails off up to the elbow." Hidden cameras, one way mirrors, electric eyes, tape recorders, and dictaphones track the consumer through retail stores, eavesdropping on and evaluating his purchasing habits. Color specialists dogmatically declare that white denotes purity (no minor discovery for the tobacco companies when they are acutely sensitive about tars and nicotine); and red, strong emotion. Blue, they say, is a psychological sedative symbolizing conservatism and reliability; yellow, though inherently sunny and cheerful, is associated with cowardice and deceit; and green, with immaturity and inexperience. (How George Washington Hill would have enjoyed that last dictum!) Philip Morris reportedly spent $250,000 on the redesign of the Philip Morris package, using research to test the color intensity and graphic visibility of test packages, to establish proper angles of recognition for cartons, and the best-retained cartouche forms. Even Johnny's bell hop uniform was redesigned to keep him in step with the new package. However, neither Johnny's size nor his piercing "Call for Philip Morris" was changed.

"Research defines the goals of creativity, the area of opportunity," says Lippincott & Margulies' Helfgott. "Any designer worth his salt doesn't have to be told that red is a dominant color on the supermarket shelf," replies Dadmun. "Research often does design a disservice," he adds, "because it researches today—which is already obsolete. Furthermore, isn't it prejudiced when it is done by the designer himself? This is controlling the reaction, giving the designer an extra sales tool with which to sell the client." Neither Dadmun nor Reynolds feels that research is a final answer for the highly competitive cigarette business; they believe that where a new brand is involved, research tips your hand to the competition. In a business where the first test usually gets the mostest, tipping your hand is a cardinal sin.

The unoriginals

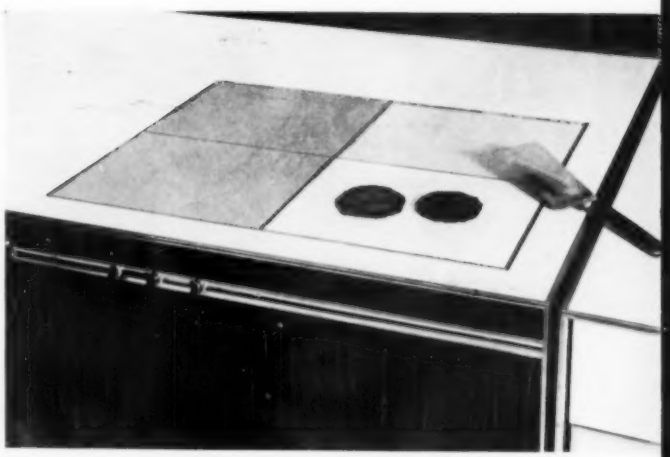
Today the packages on the retail cigarette counter are distinguished only by their varying degrees of blandness. There is no dominant new brand combining a contemporary blend with a distinctive package. If there were, it might break away from the merchandising habits which seem to grip the tobacco industry. While it is true as one designer has said that "no package change alone has helped the sale of a cigarette," it is also true as another has said that the "amount of cigarettes sold is directly related to advertising and promotion." But the continued indifference of the smoker to brand loyalty and the huge costs of wooing the public seem to have drained the spirit of adventure from the tobacco companies, who are in no frame of mind to test a promotably different package. What they seem to have forgotten is something designers have always known: no carbon is ever better than the original.

The graphic stalemate: tobacconist vs. supermarket

The Old Gold and dual-filter Tareyton packages show that even at a time when follow-the-leaderism is the rule, it is possible to design cigarette packages which are both different and compelling. Perhaps, as it has been said, each generation creates its own "design legitimacy," and perhaps, as the researchers say, our "graphic legitimacy" is a pastiche of reds, whites, and geometric abstractions. But a contemporary design vocabulary should not impose conformity on the package designer, nor should it imply that the brand which sells best is necessarily packaged best. Yet the fear of failure has all but paralyzed any sort of graphic creativity in cigarette packaging. No longer is the governing factor in a company's planning the nebulous promise of success, but the fear of a costly wrong guess. No company appears willing at present to commit the sin of being different, a sin which is, as often as not, the designer's virtue. One market researcher rationalizes that a leader can lead only as fast as his followers can follow, but in the absence of leadership, it is impossible to gauge following-speed. In the search for something different, it is of course a temptation to look back nostalgically at the cigar store Indian outside the old tobacconist, and at the richly-ornamented packages sold inside. But the cigar store Indian has been retired to the antique shop—a spot no tobacco executive is anxious to visit. The designer's challenge comes in an environment that is itself less rich at the moment—the supermarket; and the problem is to meet the demands of modern merchandising without sacrificing taste and beauty. But it is a challenge that the designer—however gifted and ingenious—cannot meet without his clients' permission and support.—*GD*

REALLY COOL, CLEAN, AND COOKING WITH GAS

In the third annual "Miracle Kitchen," RCA-Whirlpool asserts its new leadership in the gas appliance industry with promising experiments in gas-powered products as well as promises of motorized marvels to come.



Innovations in the Miracle Kitchen revolve around the "power burner," which achieves instant combustion in a closed space with little flame or heat loss. Its effectiveness is dramatized by the small under-sink water heater, which continuously and instantly heats water in coils. Other improvements derive from use of Pyroceram surfaces one inch above silicon carbide power burners, to form gridless surface units (right). Thermostatically controlled rectangles provide cooking range of 150° to 650°, and wipe clean.

$250,000 model of '59 Miracle Kitchen, 18'x32', was unveiled in Atlantic City, will be shown to consumers coast to coast during the year.

Since RCA-Whirlpool took over the facilities of defunct Servel, Inc. to become a full-line manufacturer of gas appliances, the cries of alarm from competitors in electric products have been matched by wild cheers from gas utilities—who immediately began predicting a renaissance of gas as the home fuel, as research in gas utilization has a practical outlet. Making the most of recent developments, RCA has fully exploited its position as Gas Giant by turning its '59 Miracle Kitchen into a collection of gas marvels. The result, designed and constructed by Sundberg-Ferar, would appear to be fortunate for both the company and the industry behind it, combining showmanship with the flavor of futurism, and promising product ideas.

Any "Wonder," "Miracle," or razzle-dazzle dream kitchen designed for showmanship in 1959 inevitably shows traces of its trail-blazing ancestors—of GM's series of Kitchens of Tomorrow, of experimental units by GE and Frigidaire of the past five years. And the "Miracle" of '59 has such ancestral marks in the form of motorized shelves, appliances that glide up and down, a smoothing away of appliances into work surfaces, myriad automatic dispensers, and indoor-outdoor arrangements, all varied for the particular kitchen at hand. Nevertheless, this year's Miracle Kitchen makes its own contribution in the form of two new applications of gas. First is the "power burner," which premixes gas and air under pressure and feeds the mixture to a specially constructed burner, where combustion takes place in a closed space without secondary air. With the flame all but eliminated, burners become heating elements almost like electric ones. The power burner offers 83% fuel efficiency (against a normal 49%) that adds up to lower gas bills, cooler kitchens, and cleaner appliances. With these burners, the appliances are self-energizing, requiring no pilot, and they consume no oxygen from the room. RCA has exploited two new materials in applying the power burner to this Miracle Kitchen. The first is silicon carbide, which looks like carborundum grinding stone but is porous; when the gas-air-mixture is fed into it it burns directly on the surface with an almost flameless incandescence. And covering the burner is a square of Pyroceram, Corning's new heat-resistant glass material, which makes a smooth non-stick heating surface that takes little more than a damp cloth for cleaning. With this material, some grilling and frying may be done directly on the surface unit (left). Portable gas-powered appliances are also made of Pyroceram (page 46).

The second innovation is the gas center, where heating, cooling, ventilating and refrigeration are all processed by a single mechanism. Aside from potential economies, this part of the display kitchen does a big promotion job for gas as the all-purpose home fuel.

The manufacturer claims that these, and other innovations in Sundberg-Ferar's dream kitchen, are not far from commercial reality. Some of the highlights are shown on the next four pages.—*J. F. McC.*

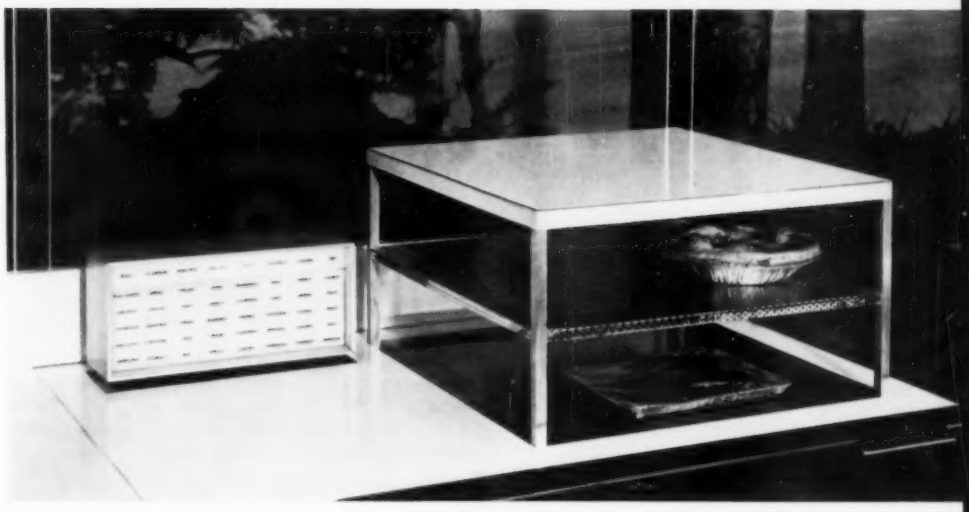
POWER BURNER PRINCIPLE

Heart of the kitchen *is the Gas Center, a combination heating, cooling, and energy-supplying unit. This one device heats and cools the entire house, purifies the air, and provides refrigeration for several food preservation centers. The entire mechanism fits into a single base cabinet section, with remote control throughout the house provided by one control panel.*

Portable plug-in *cooking utensils—fry pan, coffee-maker and casserole—are individually powered by gas in the Miracle Kitchen: each has its own power burner, enclosed by vented metal strip, that is activated when connected to convenience outlets. Made of Pyroceram, they are described as virtually indestructible and easy to clean.*

Portaburner (far right) also attaches to gas outlets throughout the kitchen, giving the housewife a chance to perform heating and cooking operations at various locations. Portaburner is a disc of porous silicon carbide about 8" in diameter, with Pyroceram "feet" to hold cooking utensil the proper distance from the burner.

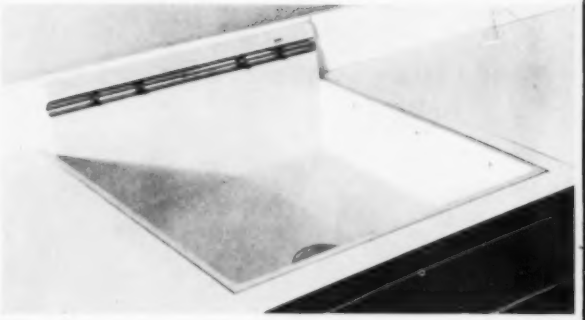
TAKES THE FLAME OUT OF GAS'S FUTURE AND PUTS EFFICIENCY AND ECONOMY BACK IN

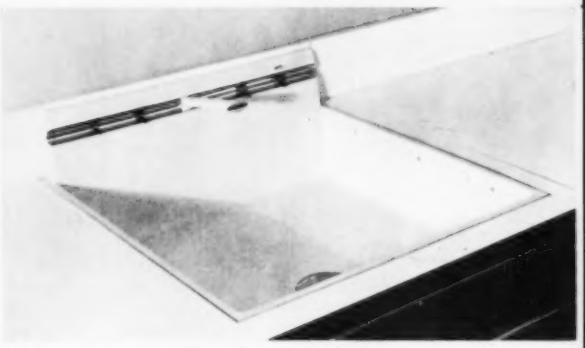


"Magic Meal Maker" *adapts to gas appliances the idea of automatic preparation of frozen meals. Freezer and oven are adjacent beneath the counter. Selector buttons on counter-level control panel act on frozen packages, which are moved automatically into oven at predetermined temperature. After proper cooking time, oven shuts off and rises automatically with meal.*

Vertical rotisserie cooks *with infra-red heat produced by power burner. Gas and air mixture is pumped through the silicon carbide panel, which becomes incandescent with heat and produces infra-red rays to cook food on spit. Rotisserie is set into rotating base, so that it may be used in the kitchen, where the cooking center is an island, or on the adjoining patio.*

Convertible laundry center *conceals 1959 model washer-dryer behind rosewood doors. After washday it revolves out of sight, is replaced by beverage bar with automatic ice-cube maker, drink and ice dispensers.*

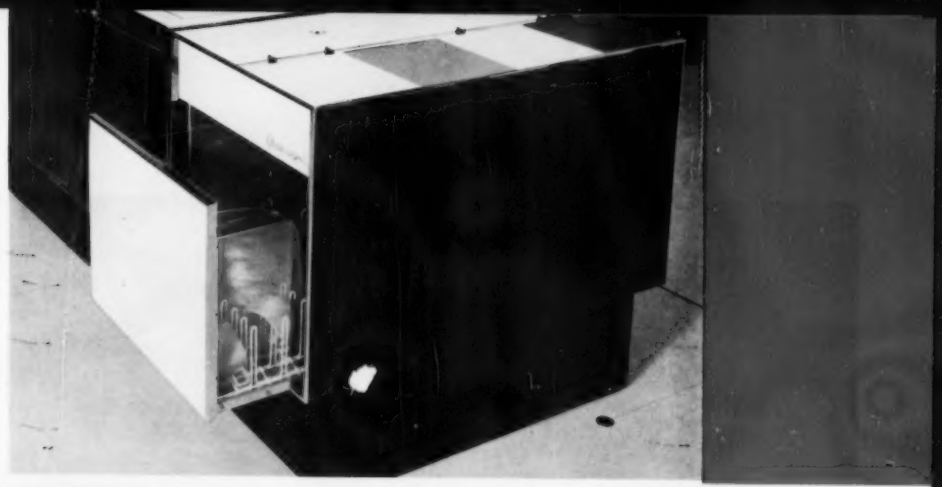


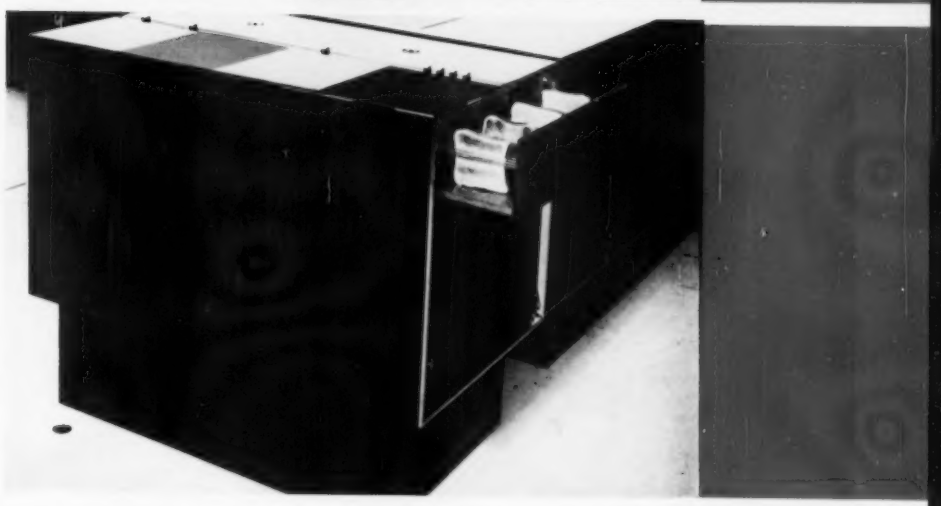


Sink *aims to simplify cleaning with retracting faucet arm and four push-buttons (to control water volume and temperature) and sink-flushing mechanism with holes around rim. Water heater is below.*

PRACTICAL INNOVATIONS APPEAR AMID MECHANIZED GIMMICKS

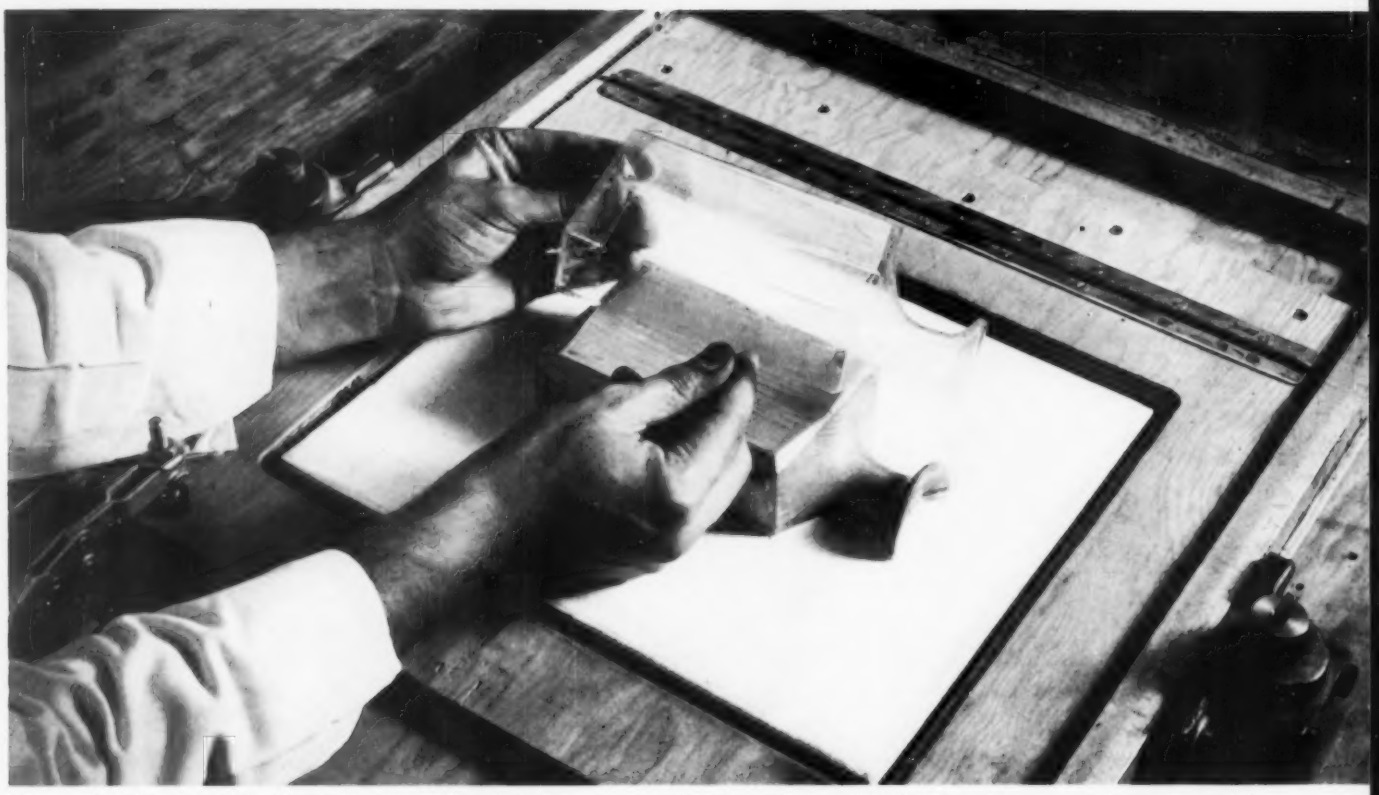
Dining table, *neither gas nor automatic, features heavy plate glass top held on chromed steel base. Frame also supports legless stools that fold under table when not in use, simplifying floor care.*





Self-propelled Servacart is virtually a traveling kitchen. It houses a movable dishwasher that also dries and stores dishes. At the opposite end, a multiple-slice and pull-out rack holds bread for toasting under surface units. Below toaster is a tilt-out cold-storage compartment for beverages. Under four vari-colored top panels, four casserole units store and transport warmed food. Connected to a floor track, Servacart may be automatically summoned to positions near the table, sink, or patio, where it attaches to special gas outlets.

Dead corner space in Miracle Kitchen is utilized by gas Rotofreeze, a kind of cold undercounter Lazy Susan. Compromise solution to the conflict between window-wall and wall-hung appliances is found in descending refrigerator shelves and companion descending oven (below), which leave an open glass panel above counter for light, if not for view. Refrigerated shelves include moist cold storage compartments, a cold shelf cooled by convection, conduction and radiation, and rotary egg racks. All refrigerated units utilize a piped-cold no-coil principle that eliminates need for defrosting. In sink area, dry storage shelves and mixer also descend from wall at the wave of a hand near proximity switch.



Vacuum-forming is used by Walter Landor & Associates to put out multiple container models for the price of one solid acrylic model.

A supplement to the modelmaking series shows how bottle design can be tested by

Vacuum-forming multiple models

A bad model is bad for both designer and client. It means that the designer cannot fully communicate his design ideas, with the result that the client—unable to visualize the final product—cannot act with the conviction he needs to approve or reject a new design, or to suggest changes. This is usually no problem in modelmaking for furniture, radio, tv or other appliances. As was pointed out in ID's series on modelmaking (1957), very accurate product simulation is possible for product housings, or for special items where exact models are essential regardless of cost. But in simulating packages—bottles, decanters, glass food containers, etc.—there are certain obstacles that make an exact visualization of the marketed product very difficult. An exterior likeness is, of course, possible when models are sculptured from acrylic. These are not only expensive but—since they are solid—do not provide a close approximation to the filled product. A further—and a major—disadvantage is in the fact that these models do not lend themselves to market research to determine consumer response. To test a new design in various market centers does, of course, call for a series of identical models whose total appearance is a realistic portrayal of the actual selling line.

The San Francisco design firm of Walter Landor & Associates has introduced a new method for producing packaging models on a multiple basis which solves the problems posed by the single, solid model. The process they use —vacuum-forming—has, of course, been employed for some time to fabricate bodies for volume production as well as models. But the Landor group is making use of this technique in a unique way. By forming sheets of vinyl or styrene around a wood or plaster mold, craftsmen in Landor's modelshop can fabricate hundreds of identical models which can be filled with the actual content or can be sprayed to simulate it. At first, Landor designers used outside vacuum-forming facilities. But they found a lack of uniform quality, and decided, finally, to install their own equipment in order to control the process. Many of their models for new designs of bottles and food containers are now turned out on a multiple model basis in their own shop. How this method is used is discussed on the next page.

Models come off the vacuum-forming process in halves. Since most bottles and containers can be divided into identical halves, the fabrication run for a series of models of a given product is rapid once the mold has been made (in the Landor workshop from mechanical drawings) and embedded in a plaster matrix (opposite page). Wood or plaster is generally used as the mold material—the choice depends on the shape of the design and the surface texture intended. Shapes which can be formed in round plane are turned in plaster on a potter's wheel; square or rectangular shapes which are regular in form are, for the most part, patterned in wood on a lathe; asymmetrical shapes are usually molded in clay and then cast in plaster. In all cases, refinements are "sculptured" into the molds by the designers themselves before the mold is set in the plaster bed of the vacuum-forming equipment. The model halves are formed of heated sheets of plastic placed on the mold and drawn tightly around its surface by evacuating the air around the mold. The shaped halves are then

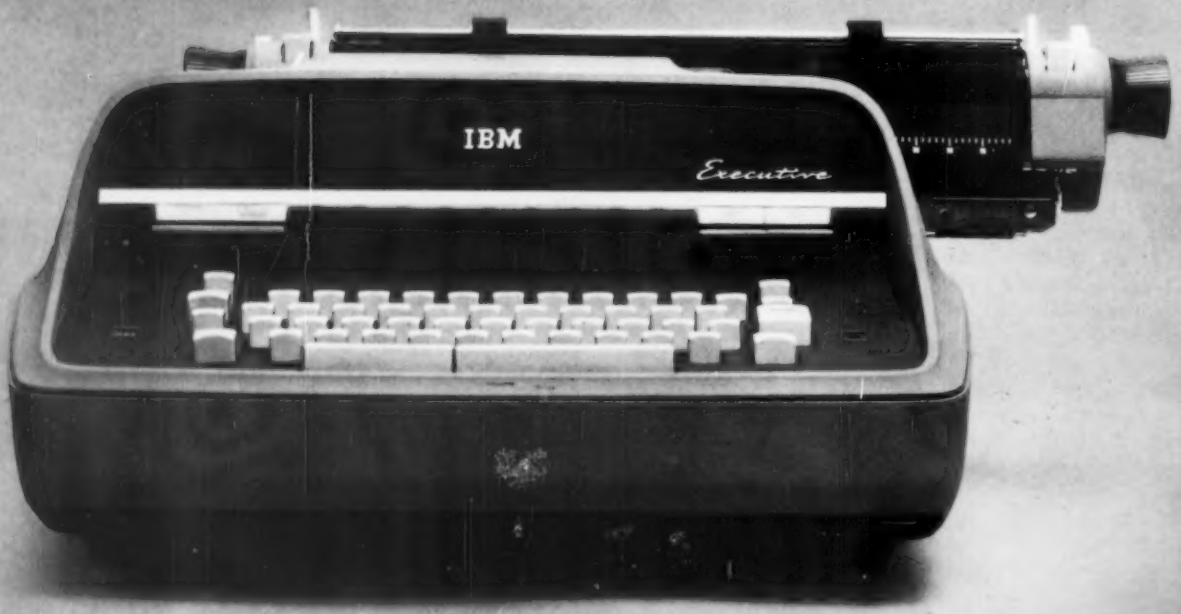
1

2

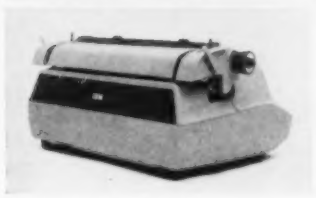
3

sprayed (**1**) to simulate the finished bottle (texture, color) and are joined (**2**) by sealing them with an appropriate solvent (methyl-ethyl-ketone for vinyl or styrene). Once the halves are joined, the product can then be "dressed up" to come close to the actual selling item. The vacuum-formed vinyl model (**3** left) for the Old Fitzgerald 1958 holiday whiskey decanter (**3** right) — given a stopper and a platinum neckband—becomes convincingly real. Where desired, it is, of course, possible to fill the model with the contents of the actual product. The forming and "dressing-up" process is repeated for as many multiple models as needed; these can then be tested at a number of market centers.

IBM has just presented its new electric typewriter---the somewhat romantic machine below, which bears the very unromantic name of "Model C." Although each industrial design project is likely to be a kind of prediction, the typewriter shown here represents a longer-range prediction than most: it took five years from model to Model C.



Model B, 1954: earmuffs conceal the ribbon reels.



Model C, with its interplay of form and its contrast of material and texture, displays many of the characteristics of a piece of sculpture that is meant to be regarded in the round. (The body is die-cast aluminum alloy; the darker, corrugated panels are plastic.) The back panel, repeating the motif of the front, has no function but ornament.

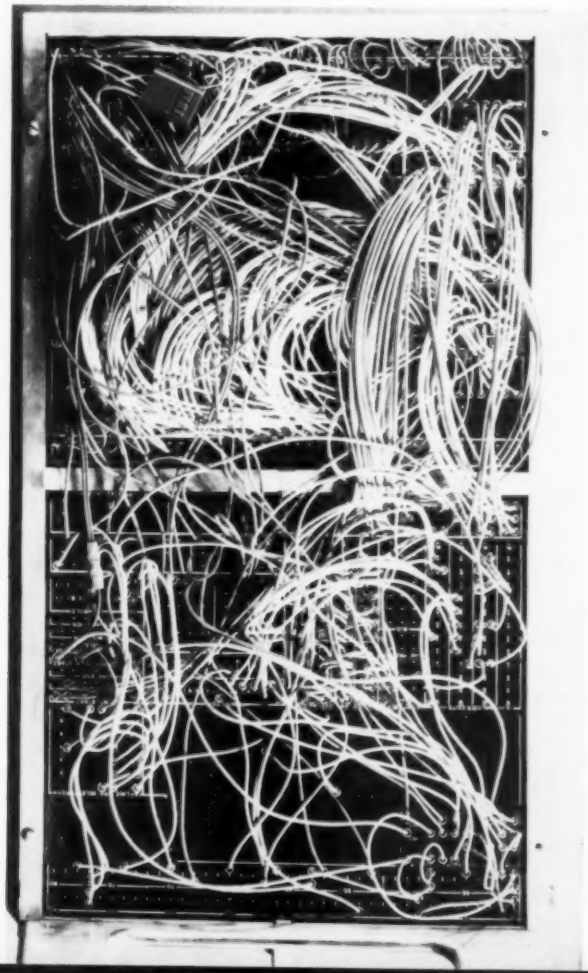
IBM plans its typewriters to follow a cycle of approximately five years, and in 1954, when it commissioned Sundberg-Ferar to redesign its electric typewriter, Model B, designed by Eliot Noyes, had just been released. The assignment was therefore to design a machine that would look contemporary years after it had been conceived. The designers worked out a number of solutions during the summer of 1954, and that fall came up with a solution that was essentially the same as the actual typewriter just released.

The new machine is the first major design change since 1947, when Model A came out of the Norman Bel Geddes office—a model that served as a prototype for the subsequent modifications. The most obvious change is the pronounced horizontal organization of the machine and the articulation of the front panel. The typewriter is wider than the former one: the body has been extended to enclose the ribbon spools that stuck out like ears to trouble the blocky symmetry of Model B. (The increased width has the further advantage of providing a wider carriage: 13 inches instead of 12 inches. With a writing width of 12⅜ inches, the new carriage will accommodate a legal-sized sheet of paper inserted sideways.) The designers gave particular attention to the back of the machine—the side most often exposed to public attention.

Except in the case of the ribbon spools, the new engineering elements did not materially affect the design solution. (The whole mechanism, in process of improvement almost up to the date of release, was inserted in the final prototype that the designers delivered more than three years ago.) One new feature is the decelerator now used instead of an air cushion to soften the shock of the carriage return and the operation of the tabulator. The decelerator consists of spring clutches mounted on the shaft which work with a centrifugal governor to absorb the shock of impact gradually —the force of impact has been lowered from 100 pounds to 15 pounds. Other than that, the new engineering elements in the Model C are refinements rather than innovations.

Technical improvements have produced a machine that requires less physical effort to operate. The keys and the space bar can now be adjusted to the individual touch, and the margin-set mechanism, although still manual, demands one-fifth of the force previously needed to set it.

Above, ITT's Doblin, MMA's Drexler; below, IIT's Bell 500, MMA's Ramac circuit, two products discussed by the panel.



DESIGN AS COMMENTARY

PANELISTS

Arthur Drexler
Director of the Department of Architecture and Design, Museum of Modern Art

Jay Doblin
Director of the Institute of Design, Illinois Institute of Technology

F. Ashley Montagu
physical anthropologist

William Snaith
President, Raymond Loewy Corporation

John Vassos
consultant designer

Moderator
Jane Fiske McCullough, Consulting Editor, INDUSTRIAL DESIGN

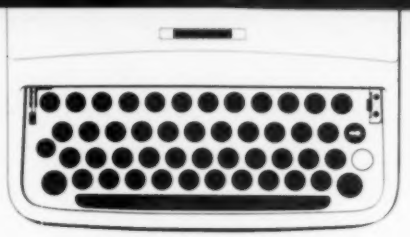
There is, for better or worse, a lot of commentary on design —so much as to obscure the fact that design is itself commentary. Often a given form is described as "a statement." And while the phrase is not usually applied literally, there is certainly a sense in which it can be: the product can be seen as the designer's comment on its relevance to his time.

A statement, however, usually refers to what one designer has "said" in the formal solution to one problem. There is another kind of design statement worth considering—the kind of editorial point made collectively by objects of one period that have been gathered, or listed, and that can be understood to stand for something. Macy's is such a statement, anonymously made, and so are many museum shows. And there is no time like the present for examining this kind of statement, for two influential institutions sponsored good examples last month.

New York's Museum of Modern Art has been strongly associated with design for the past twenty-five years. Yet the exhibition of "20th century useful objects" that closed this month marks the first time in the museum's history that it staged an exhibition entirely given over to products from its permanent design collection.

The significant gaps

Selected by Arthur Drexler, director of the museum's department of architecture and design, and associate curator Greta Daniel, the exhibit is divided into the following six sections: "Art Nouveau," "Classical form restated," "The Bauhaus School," "Machine Art," "Industrial Design," "Useful Objects." The exhibit is not a complete picture of design in our time, nor is it intended to be. And in the intro-



Olivetti Lettera 22 keyboard

duction to the show Drexler states firmly what he's after:

"A thousand years from now the Design Collection, we may hope, will constitute an invaluable record of what seemed to be the most beautiful artifacts of our time. Many of them do indeed rival in beauty and significance the best that survives from previous civilizations. But there are gaps in this collection. It includes very few of those mass-produced objects supposed to be characteristic of our 'high standard of living.' There are no television sets, no refrigerators, no telephones, and only a few mechanical appliances —not because such objects are intrinsically unworthy but rather because their design seldom rises above the vulgarity of today's high-pressure salesmanship."

The "industrial design" section of the exhibit consisted of twelve items, including Nizzoli's Necchi sewing machine and his Olivetti office typewriter; Peter Schlumbohm's electric fan; and Max Braun's transistor radio.

Charles Knox jewel box, c.1900

Wedgewood's black basalt tea service

The "ten best designs"

At about the same time as the museum show's opening, Illinois Institute of Technology's Institute of Design announced the top ten of its list of "100 best designs." Unlike the objects in the museum show, those on the IIT list were selected by polling 100 "experts," most of them practicing designers. Each was asked to choose ten products. From the resultant 1000 selections, the 100 most frequently listed were chosen and collectively labeled as "the 100 best-designed products of modern times." The top ten designs chosen were: 1) the Olivetti Lettera 22 typewriter; 2) the Eames plywood and steel side chair; 3) the Mies Barcelona chair; 4) 1953 Studebaker hard-top coupe; 5) Parker 51 pen; 6) Lincoln "Continental" 1939-41; 7) Edison voice-writer "VP"; 8) Frigidaire's 1957 "sheer look;" 9) 1947 Hallicrafter radio; 10) Bell "500" telephone.

Museum Show: display of chairs

Museum Show: machine-art items

What does it all mean?

The question that emerged from the fact of two simultaneous "value collections" of designed objects (a third opens in April at the Albright Gallery in Syracuse) was: what do these groups of products say about the world we live in? If the MMA's show is really representative of the most beautiful 20th century artifacts, what conclusions can we draw about the esthetic of the 20th century? If the list of objects compiled by the IIT are really the "best designs of modern times," what does this suggest about modern times? And what about the discrepancies between the two selections?

These are the most interesting questions—the unanswerable ones. But although unanswerable, they are worth asking, particularly if posed to people who have some authority for trying to answer them. The editors invited such people to grope jointly for meaning in the two collections mentioned above. The point, as the moderator stated at the beginning, was "not to burn Christians, or even to put anyone on the carpet, but to exchange viewpoints on design as commentary." Some of the viewpoints exchanged appear on the following pages.—*R.S.C.*

1

Drexler and Doblin explained their respective collections, the general purpose and the criteria for selection. The panelists examined what the Museum's collection has to say about design in our time, and what IIT's list says about the design profession.

MODERATOR: Mr. Drexler, can you tell us about the Museum's permanent design collection? When did it begin, and why?

DREXLER: Actually, when the Museum was charted as an educational institution it was proposed that we define 20th century standards for design, architecture, and typography, as well as painting and sculpture. But the first design objects were assembled in 1934. That was for an exhibition called "Machine Art," done by Philip Johnson on the kind of object that was machine-made, or looked machine-made—that was precise, geometric, highly finished, and operated within a very limited vocabulary of shapes. Over the years there were a series of exhibitions and competitions, and the collection was added to largely on the basis of material assembled for these. For instance, Eliot Noyes' Organic Design competition that called forth the molded plywood furniture of Eero Saarinen and Charles Eames; the whole series begun by John McAndrew for useful objects under $5, and then useful objects under $10, and then under $100. It was out of McAndrew's shows that the Good Design program grew. But because of space limitations the present show is actually the first time the public has seen a cross section of the Museum's complete collection. It represents, we think, two standards: qualitatively the best—which means the best of its kind —

MODERATOR: In a particular area?

DREXLER: In a particular area. And historically significant, in that it may have had a tremendous effect historically and that it may have provoked other designers to go and do something like it but better. In other words, there are many objects in the collection that are not necessarily beautiful, but that have a great interest and significance in the history of design.

MODERATOR: What's the mechanism of acquisition aside from a show you're working on directly?

DREXLER: The curators and directors of each department are responsible for bringing to the Acquisitions Committee the material which we think should be added to the collection.

MODERATOR: But they question it?

DREXLER: They question it indeed! It is not simply wheeled in on a tray and wheeled out again.

MODERATOR: You have to justify?

DREXLER: Yes indeed. The same people pass on design acquisitions who pass on paintings and sculpture and all the other parts of the museum collection.

MODERATOR: What are the practical limitations of acquiring objects that are too large to store?

DREXLER: We do not collect automobiles, pianos, refrigerators. We've shown all these things but we do not collect them for the simple reason that we do not have storage room. All of the collection is stored outside the Museum proper.

MODERATOR: Do you ever *acknowledge* the larger objects —say, by showing photographs of them, even if the rest of the exhibit is 3-dimensional?

DREXLER: As a matter of practice I don't like to exhibit pictures of objects if I have the object itself.

MODERATOR: But in the case of the larger things you can't have the objects.

DREXLER: No, we have had an automobile, we have had automobile exhibitions. We've had many exhibitions that included heavy equipment, large appliances. And when it comes right down to that, if there were a refrigerator I wanted to have in the collection, we would have it.

MODERATOR: What about the things that are left out? The IIT list, for example, has the Olivetti Lettera.

DREXLER: We have the Lettera in the collection, and we show the office typewriter and the adding machine. We like them all, but we took the office one for this particular show because we thought the problem of designing a larger typewriter was more complicated and interesting, and the Olivetti is a much more successful solution than any other I know of.

MODERATOR: Does the division of material in your show — let's say furniture, lamps, industrial objects, small useful objects—represent their proportion in the entire collection?

DREXLER: No, no. As it happens, what's shown is a fraction of what we actually own in some categories — furniture, for instance, and dinnerware. But an exhibition is after all, in a way, an editorial comment, an interpretation. One wants to call attention to certain things.

MODERATOR: Would you say then that some of the objects are there, not for their intrinsic interest, but because they make a point?

DREXLER: Well, the effort is to make sure that what makes a point is also good, understanding, of course, that the point may be of historical significance. An example is the Rietveld furniture, which in a way is as ugly as sin, yet had an enormous effect on Bauhaus (and one learns recently that Rietveld himself was deliberately imitating Frank Lloyd Wright, so that you get Bauhaus from Rietveld through Wright). It also has intrinsic merit. I'll put it differently. We don't show objects as bad examples: we've never collected or exhibited poor design.

MODERATOR: Do you have things you feel might be good but not excellent?

DREXLER: We do indeed. We have a parallel collection, a "study collection," for things about which we can't make up our minds. One has a different view of destiny and history every six months. Objects get transferred back and

forth between the two as our estimation of them changes. There are some things in this show that are still in the study collection.

MODERATOR: Are you adding to the collection at about the same rate as you did at the beginning, or do you now collect more or less than you did?

DREXLER: I think that we collect more today. But that's because we decided at one point that we really wanted to cover the history of 20th century design, and we are now acquiring Art Nouveau, Bauhaus, de Stijl, to round it out.

MODERATOR: At this point I think we should let Mr. Doblin introduce his collection. Mr. Doblin, I think we would like to know what your motives were for selecting this list of "bests;" do you really believe design can be graded in this way, and technically how did you carry it out?

DOBLIN: Well, it started in discussions among the faculty. When you teach design you must have some measuring stick in order to say, even in the haziest terms, which is good and which is bad design because students are continually asking this question. So we decided to find out from the experts.

MODERATOR: How did you find your 100 experts?

DOBLIN: The first way we did it was just to go around and ask, but then we decided to set up some criteria for whom we should ask. That included Fellows of ASID, men who had received outstanding awards, the heads of major design schools, IDI Fellows and President, men who were in charge of design departments in major manufacturing companies — and the list seemed to come out rather well on that basis.

MODERATOR: I think it's possible to argue with your selection of practicing designers as judges.

DOBLIN: They were not all designers. Many of them are critics, some architects, some authors. Their names kept reappearing when we asked people who they thought should be judges for something like this.

MODERATOR: Were the judges given any criteria, or did they supply their own?

DOBLIN: The letter said in effect: we are trying to select the most outstanding mass-produced objects of all time, and we would like you to select products that have been produced in quantities of 10,000 or more. This immediately chopped out things like the Queen Mary. Now a few of these items, I dare say, haven't been produced in that quantity, but these people think of them as being mass-produced because there is more than one object in existence.

MODERATOR: Roughly, what's the voting on the first ten?

DOBLIN: I have those counts exactly. Olivetti Lettera, the leading selection, received 57 votes. Down at about number 10, it goes down to about 37 votes.

MODERATOR: How many judges were represented with products in the show?

DOBLIN: I would say that of the 100 final products, probably 75 of them are done by members of the jury.

MODERATOR: Does this seem to you to invalidate the list in any way as a list of 100 best products?

DOBLIN: Not at all. After you get through your first three or four products you can't make it too obvious. If a man voted for his own product, it's only one vote, which is negligible.

MODERATOR: Do you think the list makes a point, as a collection of things selected by professionals? As to types of things, size of things, style of things?

DOBLIN: What we were after basically was a list of what could be called "classical" products. It's a little hard to do this with something that's upon us, or something so close behind us. But we thought it would be worth the try anyhow, because we needed such a list to be able to teach intelligently.

MODERATOR: Now that you have it, do you think you have some sort of touchstone?

DOBLIN: I think so. I think you can go over these products and realize why each of them was selected, and I think they were selected for widely different reasons. But let me point out one thing I feel about this, that every one of these products is intended to be an operating product that is supposed to perform some sort of service, be it a high service like an electronic device or a low service like a chair. I think the thing that comes out of this is that the appearance of every object on this list, or most objects, is in exact harmony with what the object does. I think that is why they have been selected. For instance, the first three — the Olivetti typewriter, the Eames chair, and the Barcelona chair — were all designed by artists of the highest calibre and yet they are highly functional, and there is no disharmony between the design and the function. Consequently they become classical pieces. Some of these things are hoked-up American design; others are restrained things that look highly engineered; some are extremely intellectual in their approach to a problem; some were obviously done with the idea of increased sales as the governing consideration. But they have one important thing in common. In every piece on this list the visual aspect is in complete harmony with what the mechanism does. This is why they are classical. These are the things that find themselves in museums, because they hold up regardless of their time, their age, their color or anything else.

MODERATOR: Do you think that was why they were selected?

DOBLIN: I think they were selected for a number of reasons, including—in many cases—the kind of promotion and publicity they got.

DREXLER: I think you're all too much preoccupied with publicity. There are many objects that get fantastic amounts of publicity but never find their way into anything.

MODERATOR: True—unless it happens to agree with what the designers like too; for instance, it isn't just that Arthur Godfrey is plugging it—it's an image—an image that appeals to designers particularly.

DOBLIN: Who could care less? The Godfrey kind of publicity would do more to *unsell* something to designers than to sell it.

"We are living in a very heavily goods-oriented society, a society whose whole modus operandi is built around goods."

William Snaith

DREXLER: When the judges were asked to submit a list of the hundred best, was there an accompanying list of definitions of what constituted "best," aside from the limitations of design?

MODERATOR: Well, we have a judge here: Mr. Vassos, when you saw the final selections, what was your feeling as a judge? Were you startled by the company you found your selections in?

VASSOS: No, but I had many disappointments. I was surprised, for example, at finding the Lincoln Continental in the first ten. I felt it didn't belong there. I think too that the IBM machine is better than the Olivetti; I voted for the IBM, yet when the image of *typewriter* came into my mind, "Olivetti" was like "Coca Cola." But I checked myself immediately, and I said, "I think the form of the IBM is better," and I voted for it. On the other hand, in the exhibit here, I miss more. I wanted to see this nice telephone which we have now, because it's a part of our life; it expresses our age; it's a nice thing; and it contains a lot of machinery. The whole visual aspect, the dialling and all, were taken into consideration in the design; and yet the MMA did not select it.

MODERATOR: Is it even in your collection?

DREXLER: No. But only because we don't think it's a nice shape. I've just been going over this IIT list, to check those objects which we either have in our collection or have now in our exhibition downstairs. Of the hundred on the IIT list, the MMA has more than thirty in its permanent collection, and about twenty of them are in the current exhibition. The degree to which the choices on the IIT list and those in the MMA exhibition overlap is worth noticing.

2

The panel considered the objects in both collections, their common and differing points of view on esthetics, function, and the designer's contribution to society. The preponderance of furniture in both collections was discussed.

MODERATOR: One question that occurs to us about both these selections has to do with *design as commentary.* Even if the Museum show isn't representative of the whole collection, the fact that these items were chosen must mean something. As a matter of fact it probably means various things, and I think the same would apply to the IIT collection. The question is: what sort of commentary do these products make on society?

MONTAGU: This is a very good point. As I looked at the collection one of the first things that struck me was the beautiful tea and coffee set designed by Josiah Wedgewood

"We pay too little attention to actual needs and too much attention to ideal needs as conceived by whoever conceives these needs."
Ashley Montagu

in his black basalt of which he was so proud and which, when I saw it in London a number of years ago, I bought a set of—primarily for myself, but presented to my wife, who thought it was horrid because it was so black. We then proceeded to use it. Of course I worked on all our visitors to elicit their admiration, and I still think it's among the most beautiful things I've ever seen. But when we came to wash and dry it we found that it took a considerable period of time to dry, and that when it did dry it left stains of all sorts of hues on the exterior of the basalt. Furthermore the lint came off the drying cloth and adhered to the surface of the basalt. Then it struck me that of course this thing was created at the end of the 18th Century for a class who could afford at least six servants who would, as the Wedgewood people advised me to do, brush it; and you had to brush each one of these things in order to clean it. I mention this because it underscores an important point to me: A beautiful object can be efficiently designed in one age and retain its beauty enduringly in all time, but nevertheless may become inefficient when the structure of society changes.

DREXLER: As a household hint, if you use a damp plastic sponge you don't get lint. And you can also get rid of the scratches by rubbing them with your thumb.

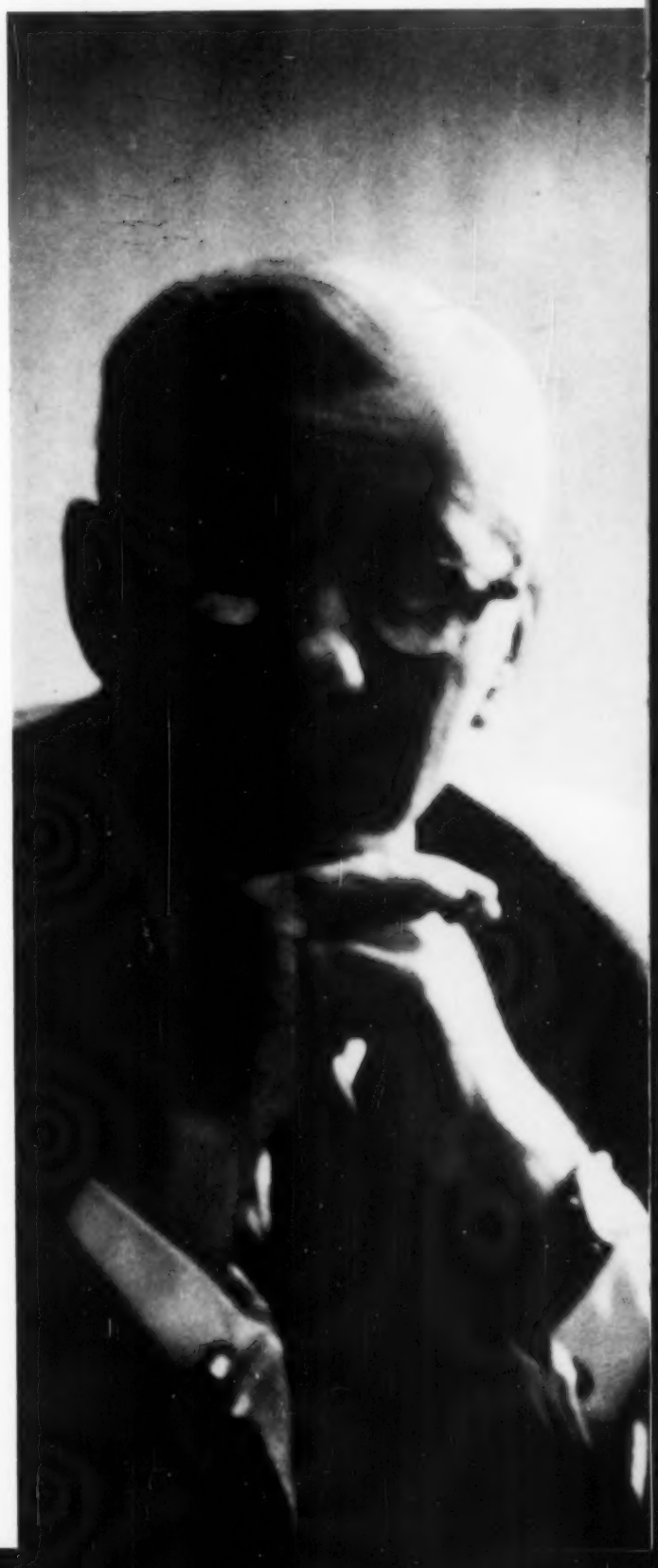
MODERATOR: Dr. Montagu, suppose you were excavating several thousand years from now and you ran across two piles of things. One was a pile of things from the "best products" list and the other from the museum show you've just seen. What conclusions would you draw about the people who had made these? What do they seem to tell you about our useful objects?

MONTAGU: I think this is the hardest question I've ever been asked. Talking off the top of my immediate experience with these objects, I would say that what they tell me about the society is quite clearly that the manufacturers of these objects are trying to sell something to someone. As an anatomist and anthropologist whose interest is in the actual functional efficiency of the human organism in relation to the object to which the organism is exposed, I think that most of these objects are functionally inefficient. They tell me that in our society we pay far too little attention to the actual needs, and too much attention to the ideal needs, as conceived by whoever conceives these ideal needs.

MODERATOR: You really think this is borne out by these two selections, and that you're not simply describing marketing conditions generally?

MONTAGU: Yes, I think this is borne out by these selections, and also by my personal experience with many objects into which, if not consciously then unconsciously, obsolescence is too frequently being in-built—and inefficiency—as part of the general attempt to make the object look more designed.

SNAITH: I think that in both of these selections it is very difficult to realize that we are living in a very heavily goods-oriented society, a society whose whole modus operandi is



built around goods. I'm not holding any brief, at the moment, for our economic system. I'm just describing what is. And when goods are as important to a society as they are to ours, I feel that whatever social comment they make should be made by the goods that are generally used by that society, and that play the greatest part in making it move. Now I find in this show at the Museum, and in great part on the IIT list, a heavy proportion of arts and crafts goods, rather than those things which are made and sold to give people pay checks.

MODERATOR: You mean personal work tools?

SNAITH: I mean possessions. Possessions for function, for status symbols, for whatever. People buy an enormous amount of goods for a number of reasons, more goods than they need. We have figures that show that at least 40 per cent more goods are used than are functionally required. Now this is a moral comment, and maybe we ought to examine our morality. Maybe our morality was built around an agrarian society that had such a need for protection that it built into material a particularly sinister importance. If we say it is a sin to consume a great deal of goods, (I find this idea often underlying the use of the word *obsolescence*) then we must recognize what this judgment means from an economic and social basis.

MODERATOR: The two are mutually exclusive?

SNAITH: They can be. There is a very heavy recognition of furniture in both the selections, yet furniture is a small part of what is generally termed design. Perhaps it comes from the fact that people are more immediately concerned with how they live, where they live, their possessions. But the thing that comes out of the IIT list is that a great many of these objects are up there because of their age and the amount and kind of publicity they had. I would challenge the Olivetti as the best design. As a designer, and knowing the problem, I would say the Necchi sewing machine was a better design. But I know the amount of magnificent graphics that went behind the promotion of the Olivetti. And it's that composite picture that you get.

MODERATOR: You think it's impossible for a jury to stand apart from that?

SNAITH: How can anybody stand apart from his influences? As you look down the list you see that these are the ones that have had an enormous amount of publicity. It doesn't mean they're bad, it just means they've had public recognition.

MODERATOR: Mr. Vassos, what do you think?

VASSOS: The thing I found missing downstairs, and a little better represented on the list, is any emphasis on the mass-produced unit which is intrinsic to our society and our objective—the thing that is well-designed with a feeling for the machine behind it. I don't see any applications of mechanistic and electronic concepts. And even the historical comment was lacking. It's an esoteric exhibit, an exhibit dealing with likes and dislikes of form. In a way I almost felt it was a chair exhibit. The stress is so much on seating that one wondered if it weren't a scientific demonstration of the body's comfort in various sitting positions.

MODERATOR: Mr. Drexler, how do you account for the emphasis on chairs, not only in your show, but in general, as a design problem?

DREXLER: I would like first to speak to the point Mr. Snaith raised about the consumption of goods. I would agree with Mr. Snaith that we live in the most goods-oriented society we have ever known, but my own moral conviction is that there is nothing wrong with consumption, as such, of a great many material objects. I think it's O.K. for people to use lots of products. The real moral question is not only in the manufacture but in the distribution of goods, and it centers in Dr. Montagu's remark that both these collections reveal someone's image of what people ought to want. To me there is a critical distinction here between the exhibition and the list, as between an image of what a product ought to be and what people ought to want. The Museum's collection is *not* concerned with persuading people to use objects, to buy them, to consume. Our interests are concerned primarily with art. That takes pre-eminence over function, for instance. We could make a fascinating collection of objects on the basis of how they perform, but then we would be a museum of science and industry. We are interested in the individual or groups who invent forms, or modify traditional forms, because they find them terribly beautiful or compelling. They may rationalize them as being more functional or more economical. It seems to us these arguments very seldom hold up in fact.

MODERATOR: Do you make any investigation of function? For instance, you have a round cookie cutter that cuts in a different way. Does someone try it?

DREXLER: No. We are not *Good Housekeeping*. What I'm interested in is that someone thought that such and such was a nice shape to make a cookie.

MODERATOR: Is it possible that you can isolate the concept of the cookie cutter from its pleasure to you as an object? This is a cookie cutter that goes around and around and not bang, bang like other cookie cutters. Doesn't this affect your judgment of the object?

DREXLER: Of course it does; it make the object much more interesting. But that's not the decisive point.

MONTAGU: I came here with a concept of design that apparently differs somewhat from yours—which I think is a perfectly legitimate one, a highly desirable one to maintain for the purposes and aims you have in view. But part and parcel of my conception of design would be functional efficiency, and I would have to judge the success of a design by this criterion.

DREXLER: Well, we would not put into the collection an object, no matter how beautiful, that we had reason to believe was simply useless. To take this functional thing a

"This exhibit shows the guts of a thing, while we designers are more concerned with arranging it so it will work and be pleasing."
John Vassos

little further, and with special reference to chairs, which as someone pointed out are so much in evidence that the exhibition tends to be a comment on chairs: the idea that furniture should be comfortable is a late 19th century idea. An anthropologist might be able to make out a fairly good case for the fact that the high art of any culture aspires toward the ritual object which, almost by definition, imposes obligations on its owner. And these obligations do not include comfort.

MONTAGU: People are still buying furniture, not because it's comfortable, but because it helps them realize Veblen's principle of conspicuous consumption.

DREXLER: Many people buy furniture because they think it's beautiful, regardless of what status may accrue; but it's certainly true that millions accumulate objects because of the values associated with them. I was asked earlier this evening why there are so many chairs in the show. Well, because in the 20th century several major design ideas were originated by architects. And the architects often designed furniture for their own buildings. They also tended to design the function of the wardrobe, the storage box, into the architecture, leaving chairs and tables the only free-standing elements in a room.

SNAITH: I think you put your finger on something very important. A chair is the only piece of furniture in which design does not become a prisoner of function. With a chair, as you say, one can forget comfort and function, and design a sculptural object.

DREXLER: A chair is also one of the most complicated and difficult things to design.

SNAITH: One of the things I was happy to see in the show, although I wondered why it was there except as a delightful oddity, was the Guimard piece. To me this piece makes an extraordinary comment on esthetics, and that is this: Esthetics is metaphysics, and if you are convinced of the rightness of a particular object or direction you can develop any kind of metaphysic you like to prove your point.

MONTAGU: I suppose that I am very innocent of these fine distinctions between design and craft. I gather that the craftsman belongs to a lower order.

DOBLIN: He belongs to a different order. The designer supplies one operation in the whole complex series of events that go to make a mass-produced product. Sometimes, very innocently, he doesn't know what he's doing.

MONTAGU: This seems to me a highly immoral occupation. Quite clearly it transpires that the designer is in no way really concerned with the functional efficiency of the object he is designing. His job is to produce a design which is calculated to appeal.

SNAITH: You have just made a great moral judgment out of ignorance. (Laughter). The designer very often improves function, changes function and makes it more applicable to the object. He does not simply put an overcoat on it.

DREXLER: This is true. The industrial designer, as a specialist, has improved the functioning of certain objects.

But the first problem you mention is not altogether untrue. It is a common enough experience in the 20th century that we lose contact with the total picture, that everyone is in a more or less limited and limiting position. In the ideal case, the designer may be able to tell the manufacturer what he ought to do to make his product work better and look better. But I think that more often than not the designer is told what to do by the manufacturer, his sales promotion people, or his technicians, each of whom has a valid point to make, organizationally. But the trick question asked is the question of moral issue—Would the design be better if people consumed fewer objects and the designer were less preoccupied with creating a memorable personality? I doubt it. I think myself that a more profitable investigation would be into the fundamental errors of technology itself.

SNAITH: If art has any function other than to be sequestered by acquisition—or to be looked at for 75 cents—if art is to be enjoyed, if art is to communicate and to permeate our society, then it must permeate and communicate *immediately.* I hold that the only artist who is doing this is the industrial designer. What the others do is magnificent and influences society one way or another. But the industrial designer is a popular artist working in direct contact with society. He responds to it, and it responds to him.

DREXLER: I agree with Mr. Snaith that this is an art form.

MODERATOR: Mr. Drexler, the art magazines are not reviewing this show on the grounds that it's outside their domain.

DREXLER: Obviously I think they are wrong.

MODERATOR: Their stand is that they would be justified in doing it only if they consistently covered industrially designed objects.

DREXLER: I think they should.

MONTAGU: I agree with Mr. Snaith most wholeheartedly that the objects the individual in our society most frequently comes in contact with are the objects he uses in his daily life. The tools you use in your everyday life, your objects, are meaningful to you esthetically as well as functionally. But this is a very fundamental form of art. It is the art of non-literate cultures, so-called primitive cultures.

DOBLIN: The primitive idea of tools and the idea of tools today are identical. An Eskimo carves a whalebone knife and decorates it for a simple purpose, to identify it.

MODERATOR: Mr. Vassos, what is your reaction as a designer to the IIT list as a whole? How do you feel this stands up as a representation of the work that's being done today?

VASSOS: The list, I feel, is very satisfactory. It would make an exciting and very representative exhibit of design, and of the direction in which we can expect it to go.

MODERATOR: Do you, therefore, think that an exhibit of items on this list might be more representative than the museum show, since it would stand for the choices of more people, most of them practicing designers at that?

VASSOS: I don't really think the two exhibits have anything to do with one another.

MODERATOR: They do overlap.

DREXLER: They overlap to the extent of 38 pieces.

VASSOS: The IIT list would give a more complete picture of what actually is happening.

MODERATOR: Of course what actually is happening might not be good.

SNAITH: But the only choices you have, unless you want to be not a critic but an artist, is to choose from what *is.* You just can't sit down and be the critic and artist at the same time. If your function is to choose, then you choose from what is.

MODERATOR: You mean it's inevitably representative? But look, here you've got products chosen by a hundred judges, no one of whom, quite possibly, believes that these are the best products.

DREXLER: There are whole categories of things that do not appear on this list that are neither the Orrefors or the art luxury objects, but simply, say, glass, as millions of people use the stuff. A 25 cent Woolworth tumbler, for example.

SNAITH: Obviously they seemed unimportant to the judges.

DREXLER: Well, that's a very interesting thing.

3

Certain objects in both collections raised the point of what constitutes design: Can a zipper and a two-by-four be considered design? Is it valid to abstract an electronic circuitry panel from a complex machine and display it out of context, as if it were a work of art?

SNAITH: Mr. Drexler, it is my belief that the objects you choose have a direct resemblance to the things you come in contact with most often, painting and sculpture; and that your affection for these motivates your choice. You have several objects that are not design at all, but that are hung on the wall as paintings. I think that you don't recognize our time as well as we do.

DREXLER: There we have an honest difference of opinion.

SNAITH: I simply mean there are two points of view here. You can look at an object as a piece of sculpture, or you can look at it as a machine that has to fulfill certain purposes.

DREXLER: You can describe any of these objects as popular art, and I think that is perfectly valid. That is fine. But the exhibition or collection that one might make of popular art is a very different proposition from an exhibition or collection that attempts to weed out decisive and original ideas.

MODERATOR: What do you mean by popular art?
DREXLER: Let me make a comparison that might suggest what I'm getting at. There are a number of chairs on this list. Here, for instance, is Finn Juhl's carved wood chair which received much attention all around the world. It's a reasonably good chair. It has a certain originality. It has stylistic coherence in the body of his work, and I think it has some significance in itself intrinsically, and in the larger range of his work; and still beyond that, in the effect it has had on Scandinavian furniture design; and finally, in the effect it has had on the buying habits of "young moderns" in America. But in no way does it offer technical innovations. It is not original, it is not very beautiful, it is not a great design. What it does do is fill the middle ground of sculptured furniture with a certain kind of joinery, a certain degree of finish. It is *popular* in the perfectly dandy meaning of this term, but I would not say it was one of the decisive chair designs of the 20th century.
MODERATOR: On the other hand, what is the printed circuit you displayed? Is this design?
DREXLER: I can only tell you why it was put in. It symbolizes the changing sense of what constitutes an object, the move from the finite geometry of the 20's and 30's which seemed to mark the ultimate development of the machine, to what has happened since the war with the development of electronics: the dematerialization of objects, the reduction to parts. Premonitions of this kind of object, the printed circuit, the parts of the Ramac computer, the Ramac relay panel, the wire assembly, all occur in chair design for instance. You go from the Barcelona chair—which is a study in the most refined relationships of finite parts—to Harry Bertoia's wire chair, which could have more or less wire and does. It comes in several different models.
MODERATOR: I wouldn't challenge these things for their interest as form. What I ask is, do these things belong in the same collection with objects that are concerned with the designer and his specific statement at a given time? These things are not made by designers. They're not even made with any consciousness of being viewed.
DREXEL: This is not true. They *are* made to be looked at. In fact, being looked at is a very important part of their function. On some IBM equipment, for instance, the wires are colored for specific reasons.
MODERATOR: Yes, but not to be esthetically pleasing.
DREXLER: This depends on who you talk to.
MODERATOR: I'm not asking whether they *are* esthetically pleasing, but. . . .
DREXLER: I know, but whether anyone had any intention. . . .
DOBLIN: The needle hovers right off the scale when you start talking like this. You show things which go from crafts which are developed in an evolutionary process, to things like the airplane propeller, which just *turned out* to be magnificent. Our list represents the intention of a man to produce a beautiful object to do a particular job. It's deliberate design, not accident or invention.
DREXLER: And the zipper?
DOBLIN: The zipper doesn't belong there, but it got the votes. We tried to reject all the generic products. We didn't want a golf ball, or a two-by-four, or a circular saw blade. We were able to keep most out by couching the questions in a certain way. We were talking about a whole product that could be identified with a person or a manufacturer, and that was intentionally designed to create a certain idea.
MODERATOR: Mr. Drexler, when you take a propeller and you put it on a base like a Brancusi, it just seems to me to undermine certain other premises that you were operating on in doing this show.
DREXLER: To me it doesn't.
MODERATOR: Would you put it in a sculpture show?
DREXLER: Certainly not in a sculpture show, but I would indeed put it in a design show. If you're telling the history of design, you ought to show what has influenced it.
VASSOS: I think museum directors and lecturers—people who are not actively designing things—have for some time been comparing the design of our age with Kandinsky, and all the abstract movements, and so forth. And that's what has happened at your exhibition. And it's all very well and good, but it's another story.
DREXLER: But isn't it our task at the Museum to point out to people such relationships?
MODERATOR: If you were talking about influences in design, yes. Then it would be valid to take a series of printed circuits out of the case that was designed to conceal them, and to show the complex of color-coated wires because they interest you and suggest, as you say, the disintegration of forces. But in the context of this show, isn't it inconsistent with the other things?
VASSOS: It's not a design project.
DREXLER: It *is* a design project. I maintain one thing, and this is exactly why the circuit is in the show. It is humanly impossible to do anything without esthetic consideration. Now even at this narrowest end of the spectrum where the designer is not sitting down to make these wires look beautiful, sooner or later he has to make a choice: Will I make these wires red or blue or yellow?
MODERATOR: Is this narrowest end of the spectrum the province of a museum of art?
DREXLER: Why not? If one is trying to find out what the mainstreams are? Technology dominates most of what we do. It would seem the logical place to look for hints of what is happening in ideas. One of the most devastating views on how to think about an object comes out of the laboratory, out of the technician who has to redefine the nature of an object. What actually constitutes an object? When is an object an object? When is it finished? There is a very great difference between the machine art of IBM and the machine art that produces pistons. A new image is beginning to form, largely through electronics. This is to me a

very fascinating thing. It contains many clues for the designer of tomorrow.

VASSOS: But that is the approach of a painter or sculptor looking at the things that industry makes which have some meaning as forms, and are exciting. You show the guts of that device, you see, while we are more concerned to place everything so it will work and will be pleasing as a whole.

DOBLIN: In educating the young designer, the first thing we try to do is indoctrinate him to see in modern forms the beauty of modern form. The beauties that can be made from wire, the beauties that can be made with turning metal, the beauties of transparent materials in themselves. Such a show in a museum would be magnificent. And what you're telling me about objects, Mr. Drexler, is something I love. I live at an institute of technology, and the most beautiful place there is the hydraulic laboratory. You walk in and it's a mass of pipes and valves and colored coatings, things going through holes in the floor, glass tubes with colored liquids in them. And I take our students there and say, just interpret plumbing the way that this is done. Forget about style, forget that it must be "designed up." I wish the Museum would do a show in this spirit.

MODERATOR: Mr. Drexler, why didn't you show the whole Ramac?

DREXLER: It was just physically impossible.

MODERATOR: Would you want to show it?

DREXLER: What *is* the whole of Ramac?

MODERATOR: The three basic units.

DREXLER: There are more than three units, and they are meaningful only in conjunction. This is what I mean about the new concept of what constitutes an object. It isn't just the three consoles that make Ramac. It's all the other machines that work with it, that make it possible to do the operation that Ramac can do. You would have to move the whole damn floor of IBM on 60th Street, or wherever, to exhibit it.

MODERATOR: But would you want to show it in its entirety? This is all I'm asking.

DREXLER: If I could take some of it out of the case, yes. I'd be fascinated with showing it. In many sections the case is not a functioning part.

MODERATOR: There is one unit that has a glass case with the wiring visible. You reject this one in favor of the one you have?

DREXLER: No, I don't reject it, I just thought the one we have is more interesting.

MODERATOR: Did the fact that it was encased in something you didn't like rule it out?

DREXLER: No. no. I would have chosen any part, whether it was in a case or not. If I had liked the case I might have chosen the case alone.

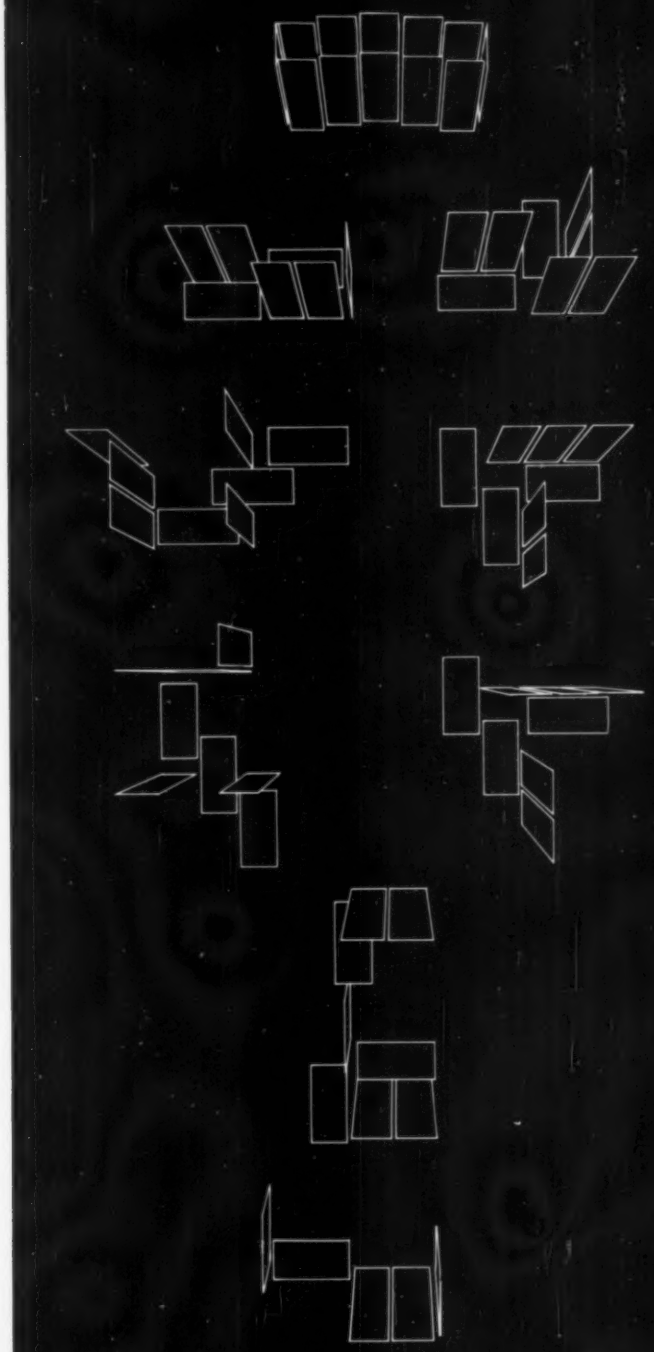
MODERATOR: Dr. Montagu, have you any concluding statement?

MONTAGU: Only that industrial designers are apparently inexhaustible.

Portrait photos: J. S. Ward

forms from

ISRAEL



An exhibit of common objects
from an uncommon culture
is designed for two years
of travel across the United States

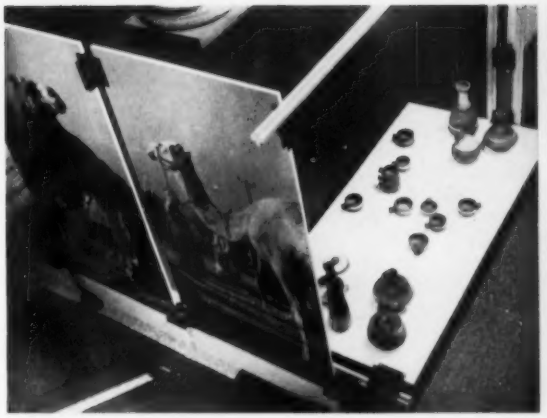
"A state, to be valid, must articulate a people."

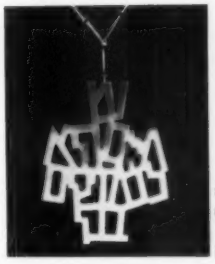
Waldo Frank, *Bridgehead: the Drama of Israel*

Israel has figured so prominently in the world press as a strife center that Americans see it almost exclusively in terms of cliché newspaper photography: the pretty teen-age girl armed with a machine gun; the lone Sabra patrolling a barbed-wire border; the group of refugees setting tired pioneer feet on the promised land. Consequently the public image of Israel has tended to look not so much like a state as like a state of tension. Now Americans have a chance to see another image, in "Forms from Israel," a traveling exhibit sensitively conceived and designed by Nathan Shapira, a young Israeli architect and industrial designer.

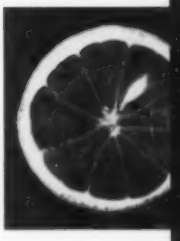
The exhibit is sponsored by the Government of Israel, in cooperation with the America-Israel Cultural Foundation, and Crafts From Israel, Inc. It was produced by the Israel Institute of Industrial Design, in consultation with the American Federation of Arts, which is circulating the exhibit in this country for the next two years. Installed at present in the Hartford Museum of Art, it will open May 13 at the Museum of Contemporary Crafts in New York.

The principle behind the design of this flexible exhibit is what Abba Eban has called "the cardinal theme of Israeli life—the cultural and spiritual ingathering of a dispersed people seeking the restoration of its national personality." What designer Shapira sought to build into the exhibit was a sense of how the artifacts of Israel express the curious mood of a new people with an ancient culture. Since his aim was to express the spirit of a nation, rather than to present information about it, the approach is poetic rather than factual, intuitive rather than documentary. The result is an attempt to summarize visually the first decade of a nation that was a nation two thousand years before the decade began. This sounds bewildering and complex and paradoxical; and because it *is*, the logic of the exhibit (arranged in seven groups described on page 68) may not always be apparent. But it doesn't really matter, for what sustains the show is a poetry of texture, form, and movement all too rare in museum exhibits today. Avoiding the strident and the sentimental, "Forms from Israel" communicates, in both two and three dimensions, a sense of how a varied people is designing a culture in a land that is itself varied in tradition and geography. This selection of designs in ceramics, metal work, textiles, wood, plastics, graphics and typography comes across most powerfully as a formal interpretation of a nation's creative vigor.—R.S.C.





Elmer Budin

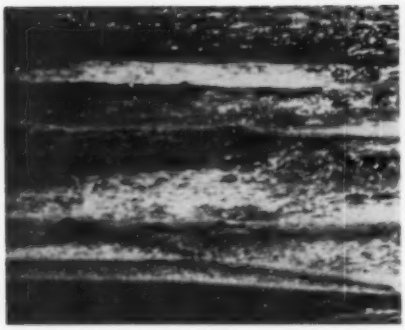


Seymour Mednick

Gabriel Klein

The top picture shows how the Israeli exhibit combines both photographic and shelf display techniques. The others —a Torah breastplate, an ancient water bottle, and a cross section of an orange—represent some of the categories of form included in the exhibition.

Forms of the Desert: traditional camel saddlebags, Bedouin.



Forms of Nature: the sea around.

Forms of the Land: ceramic figures designed by Pnina Harel.

THE EXHIBIT SHOWS SEVEN WAYS OF LOOKING AT A PEOPLE

The exhibit is organized in seven categories: Forms of Nature, Forms of the Desert, Life on the Land, Continuities (the traditional, working its way through the modern), Forms of the Word (graphic design), Forms of Faith, and Forms of Life. Natural forms, like the seascape above, are integrated wtih still vital traditional objects like the Bedouin camel saddlebags, and with such contemporary solutions as the famous Hebrew University synagogue in Jerusalem. According to Shapira, "the layout of the exhibition follows the spirit of the Mediterranean urban communities, where streets running into open squares attract the eye and invite movement, through perceptive anticipation, to the next point of interest. A study of the relationships between sections made it possible for us to vary arrangements according to the requirements of various museum buildings without interrupting the continuity of the contemplative experience."

Forms of Faith: Hebrew University synagogue in Jerusalem. Heinz Rau, architect; O. Resnic, associate architect.

Continuities: plexiglass plate by Zahara Schatz; produced by Ya'ad in Jerusalem.

Photos, except seascape and saddlebags, by Catriel Klein

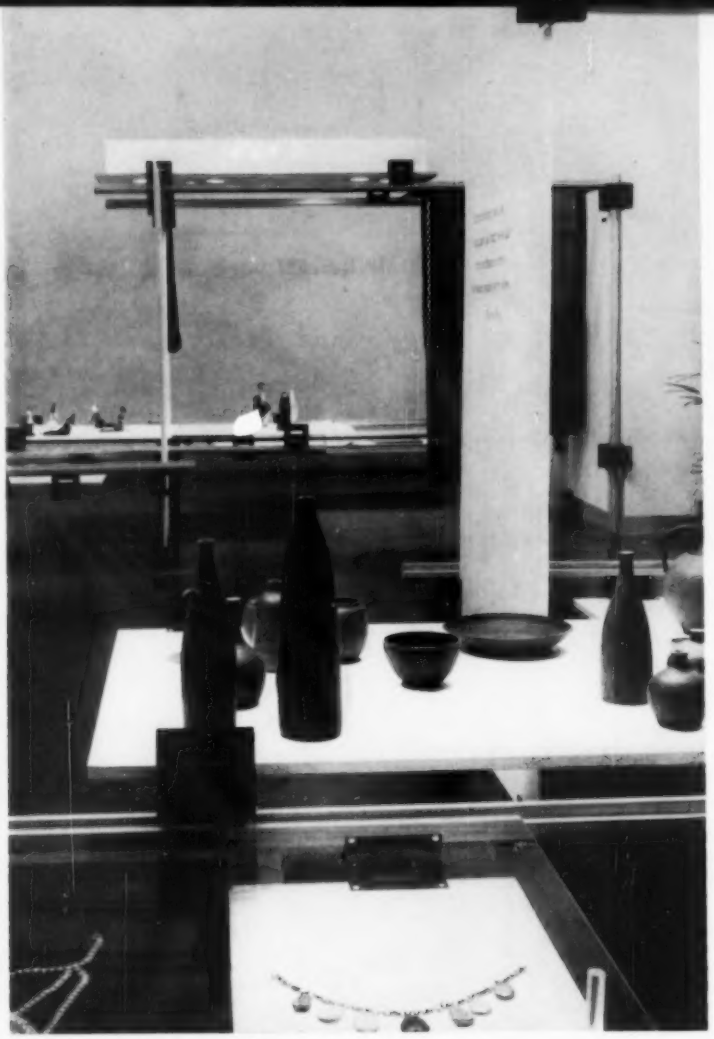
Forms of the Word: calligraphic textile design by Erica Kluger.

Forms of Life: Phillip Murray Hall, a social and cultural center in Eilath. Aryeh Elhanani, architect.

All installation photos by David Sousa

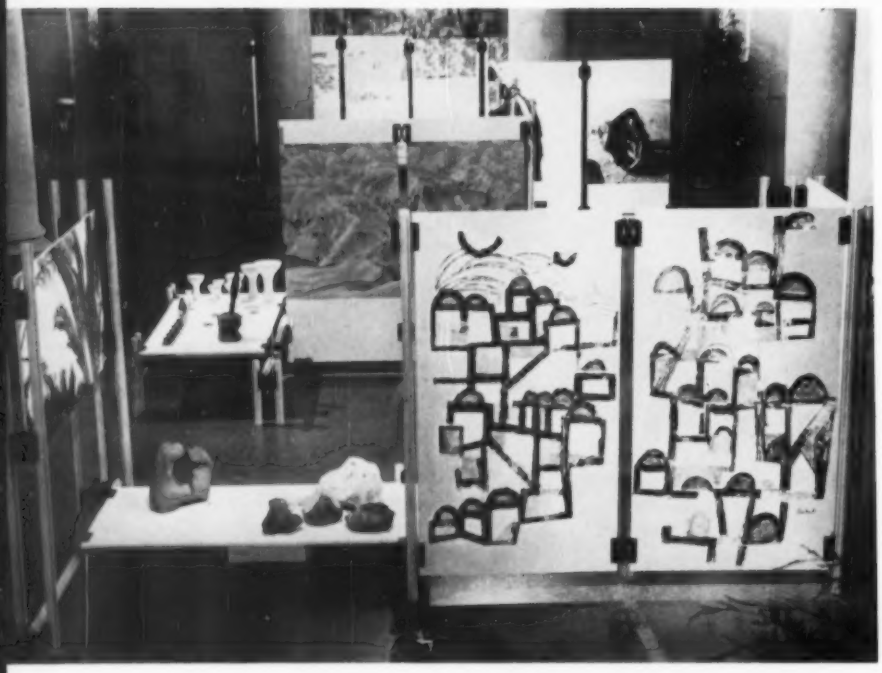
The section shown here represents "Continuities," and the text from Tsung Ping, reproduced on the panel at left, expresses the sense of continuing relationship among ideas removed from each other by centuries. All texts for the exhibit were chosen by Dorothy Norman, and the objects are intended to function as "captions to the text." This picture shows the extreme flexibility of the six-way joint which is the basic fastening element of the entire exhibit: it supports (acting as legs) and joins upright panels, horizontal display boards (at various levels) and the overhead lighting unit, which is integrated into the individual display units.

Turkish coffee set was designed in earthenware by Nehemia Azzaz, and produced by Harsa, Ltd. in Beersheba. Olive wood dolls were designed by Batiya Shaltiel and are distributed by Maskit, Tel Aviv.

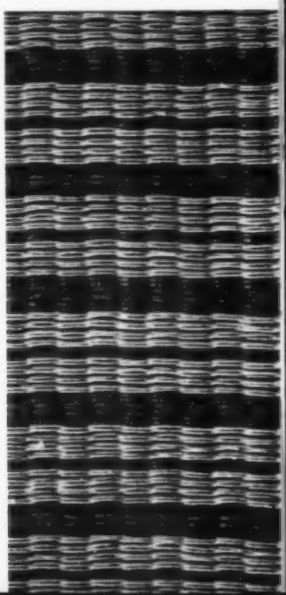


Continuities: a silver pendant with Negev stones is seen under glass in the foreground; olive wood dolls sit informally in the background.

Jean David's decorative panel introduces "Forms of Nature," and serves as part of the prologue to the entire exhibit.

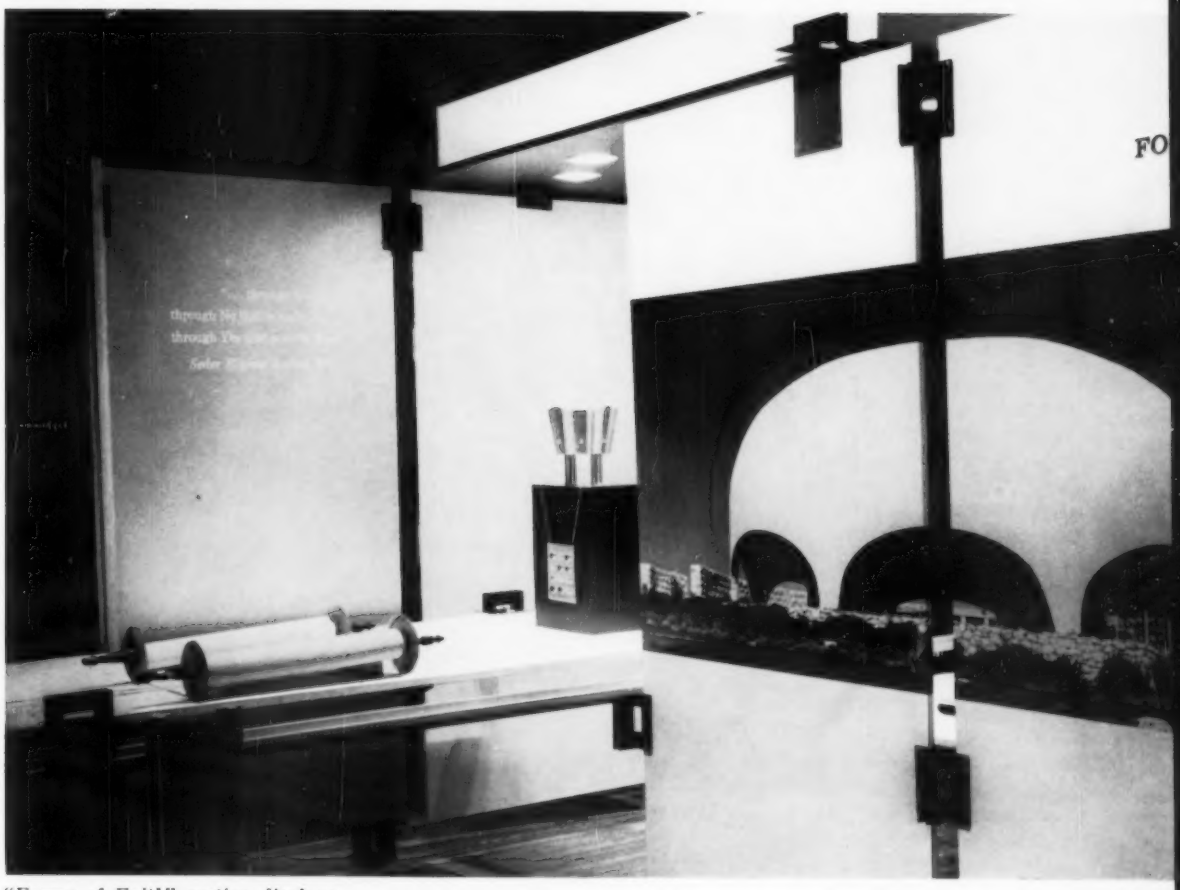


Julia Keiner's design in jute on linen is one of a variety of textile patterns shown.

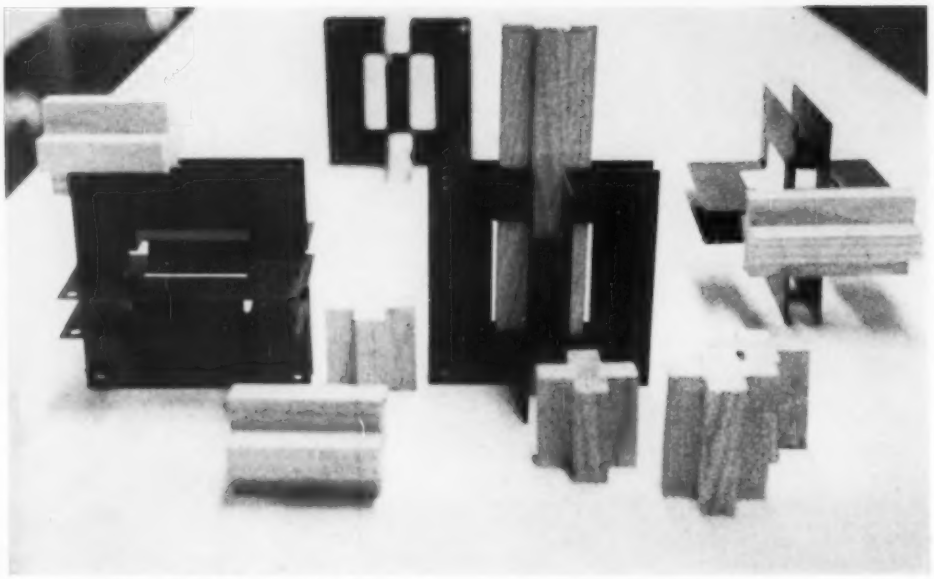


Nahalal, a cooperative farm community. Richard Kaufman, architect. Photo by Keren Hayessod.

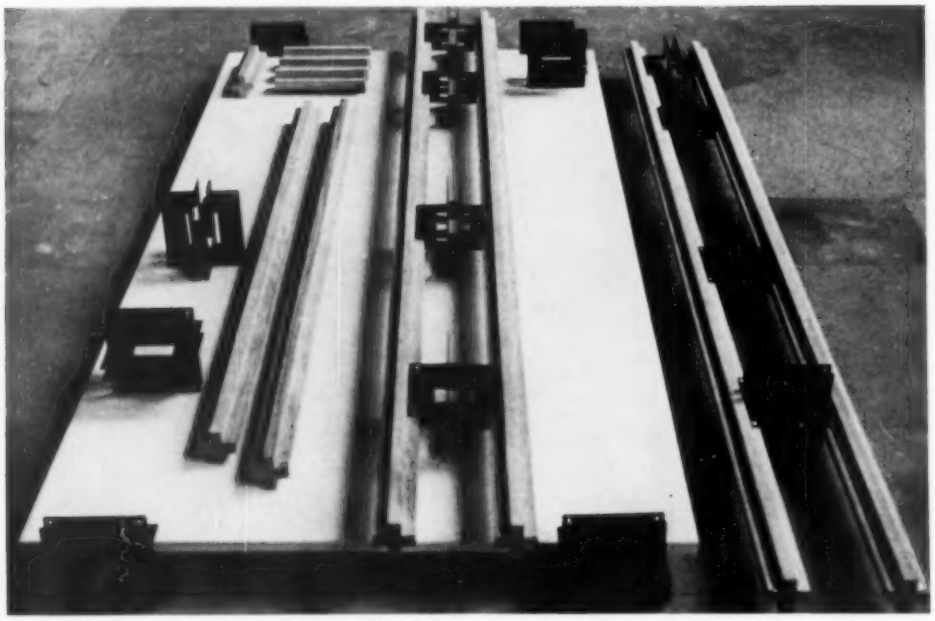
Yemenite-inspired necklace. Silver, colored paste with pieces of Roman glass.



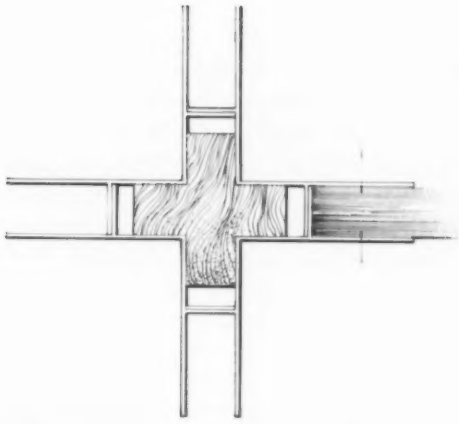
"Forms of Faith" section displays scrolled Torah, and large photograph of Hebrew University synagogue. Both the Torah crown and the breastplate in background were made by Bezalel school students.



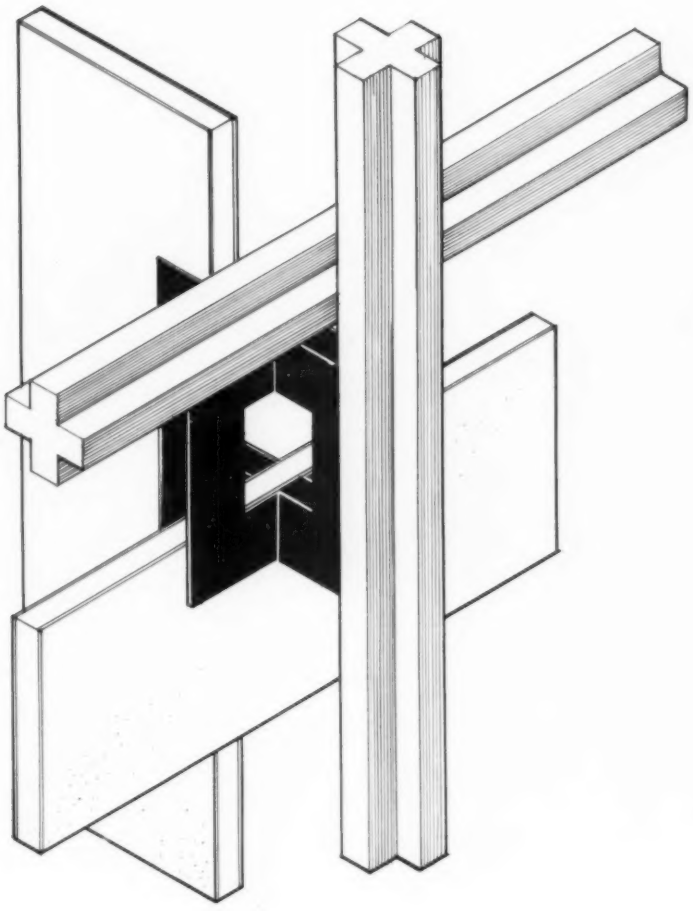
Joints are of punched and break-bent sheet steel. Picture above shows variety of connecting positions used in the exhibit system.



Spread out here are the three basic components: post, plane, and joint. The exhibit was built by Compo Photocolor, New York.



NEW DISPLAY SYSTEM CONSISTS OF POST, PANEL, JOINT



Since the "Forms From Israel" exhibit is scheduled for two years of travel, it had to be unusually sturdy. And since it will go to more than twenty museums unattended, it had to be simple enough to be assembled by unskilled men who had never seen it before.

The structure consists essentially of three standard elements: the post, the plane, and the joining device — an arrangement of components that makes for the most extreme simplification. Perhaps the simplest joining method possible is the lap — placing one flat on another, then spiking it. The joint shown here provides a compound six-way lap that clutches everything it comes into contact with, allowing post and panel to be joined merely by bolting through the drilled holes. This joining device is the element that makes it possible for the other two components to be varied. A one-inch module of joint channels, post splines, and panel thickness, provides for post attachment on any one of six sides of the joint, or at its center. Similarly, it permits panel connections at any of the six sides, so that panels may be positioned horizontally, vertically, and at corresponding right angles. The joint does not vary in construction, nor do the holes drilled in it vary in position; but both posts and panels are individually fitted for permanent setup in the show.

The posts are made of cypress. While wood may not seem to be the most practical material for use in a long-term traveling show, it was chosen in this case because of its traditional qualities, which seemed important enough to warrant some sacrifice of practicality.

For set-up ease, all units are color coded and keyed to their respective locations. Although the show has been designed as a flowing unit, Shapira recognizes that museums have varying space restrictions, and that final arrangements must in some cases be left to the discretion of the museum director. However, to make the latter's job easier, he has included not only step-by-step assembly instructions, but also a movable model that travels with the exhibit.

PS
Production Specialties
5

Making full use of a versatile production process, Anchor Plastics Company, Incorporated, Long Island City, is turning out a wide range of hollow, solid and complex extruded moldings for an even wider range of applications. The "oddness" of some extruded parts—rings used as high-voltage insulators, tracks for sliding doors, "metallic" plastic for decorative trim — indicates a manufacturing facility capable of

SHAPE-VARIETY IN PLASTIC EXTRUSIONS

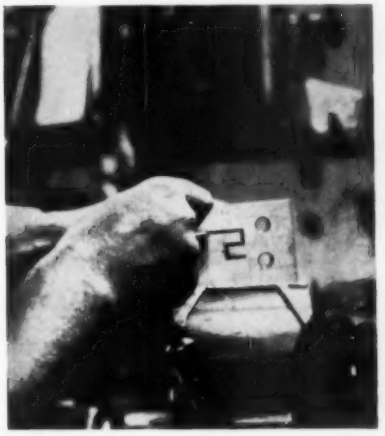
Richard A. Fisch, president of Anchor Plastics Company Incorporated.

In 1941, Richard A. Fisch (above) installed an extruder in a loft in New York City and, with the help of three employees, began to fabricate plastic tubing. A few years later, the company occupied five floors. To the original extruded products (barrels for pens, ferrules for pencils, plastic wire for book bindings) many others had been added—toothbrush handles, custom jewelry, sleeves for aircraft tubing. And by the time the company moved to its present location in Long Island City in 1952, hundreds of products were being extruded out of a large variety of thermoplastics.

There were two reasons for Mr. Fisch's immediate success: first, his experience in extrusion technology, which he had gained in his native Germany; second, there was great need for parts made of a material that could replace metal, which was restricted at the time for use in products essential to the war effort. But there is a further reason for rapid expansion of this fabrication technology in post-war years. The importance of plastic extrusions today is no longer in their use as substitute products. Extrusion technology has advanced enough to give rise to a line of products which have grown out of the process itself. To the designer the special feature of the process is a practically unlimited shape-flexibility in thermoplastic rods, strips, tubes and moldings.

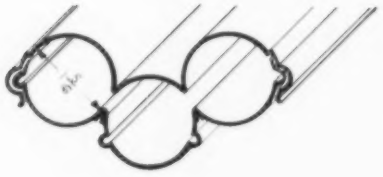
Since the two fundamental "tools" in the extruding production cycle are the die and the extruder (see production sequence at right), the most evident advantage in this process is the almost unlimited design of the cross-section. Taking advantage of this enormous production versatility, Anchor Plastics has — with some adjustments in the production process — developed some highly unusual products: extrusions around a solid core; extrusions filled with foil; and probably the "oddest" of the lot, *curved* extrusions.

The cross-sectional variety is exemplified in even the standard products: "T" moldings, U-shaped parts for structural joints, E-shaped tracks for sliding glass-panel doors, and many others used for decorative trim on tv-sets, air-conditioners, as shade guides, handles and spacers on card holders, etc. But a far greater variety of shapes is possible. The design features of other Anchor products, the more "special" production aspects of this very popular fabrication technology, are discussed on the next two pages.

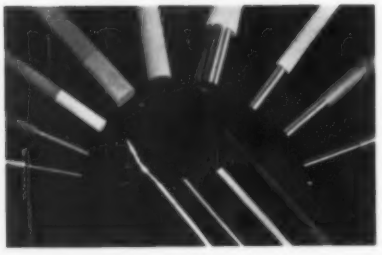


Fabricating an extrusion to customer specification begins in Anchor's tool and die shop where dies are made (above). Actual shaping takes place in extruder (below). The raw material is mixed with pigment and—where color is specified—dye, is dried in an oven, and then fed into the hopper of an extruder where it is heated. As it leaves the dies the extrusion passes through a trough filled with water which cools and solidifies the plastic. Automatic shears cut the extrusion to a desired length.

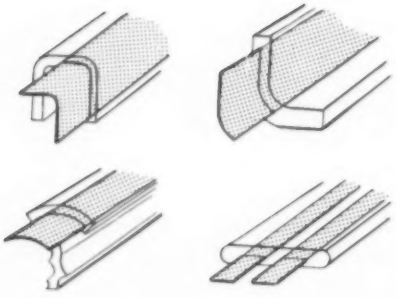
Extruded parts can be drilled, punched, and combined with various materials



COMPLEX, INTERLOCKING forms such as this battery holder for portable transistor radios, can be extruded and assembled with mounting rods. The two halves, designed to interlock, are made of high-impact styrene, which also acts as insultator. The thickness of shapes made into moldings may vary from 0.010 to 0.125 inch. Surfaces can be plain, ribbed, fluted and can be glossy or matte.

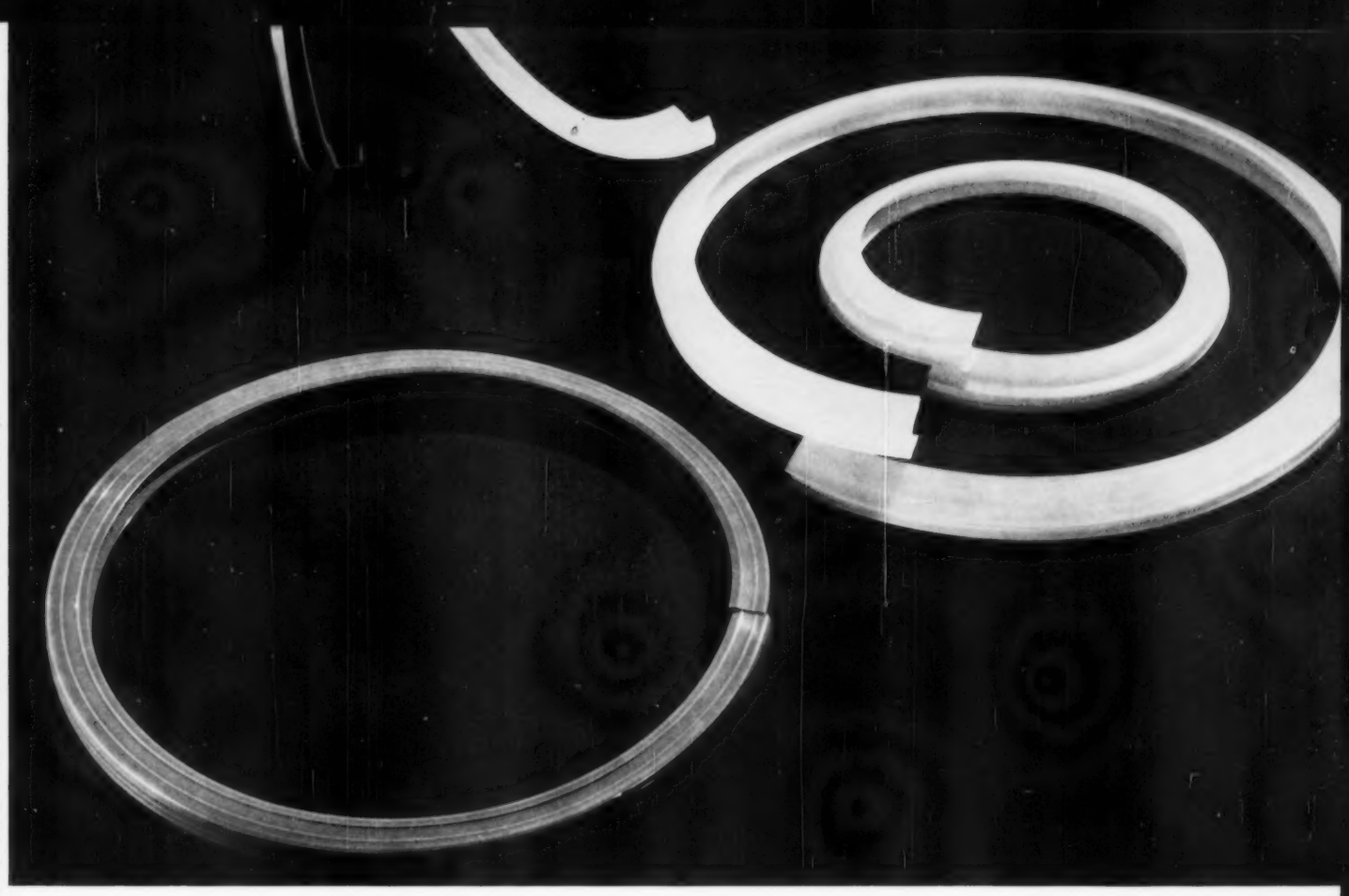


CORED EXTRUSIONS point up the availability of material combinations using standard extrusion equipment. Thermoplastics can be formed over cores — rods, tubes, wires — made of wood, fabrics, copper etc. for industrial and decorative use. Regardless of the core material, it is securely embedded within the extrusion, which can be drilled, bent, etc.



FOIL-FILLED EXTRUSIONS have special advantages for decorative trim. A process similar to the one used for cored extrusions makes it possible to form a number of different shapes around a strip of foil; polished metal foil, for example, embedded in plastic gives the appearance of polished chrome. A gold, copper, brass, or other metallic finish can also be specified.

POST-FORMED EXTRUSIONS. Trim as the one Philco uses around the viewing area of a tv cabinet, can be shaped into curved sections, provided the cross-section is not complex and the channel narrow. This is possible with foil-filled extrusions because Anchor has a method for bonding the foil within the extrusion. This means that the foil does not wrinkle when bent and extrusions can be permanently swaged, bent, or drawn by post-forming. Color can be incorporated in this and all other types of extruded shapes. Where specified, pigments or dye can be mixed with raw thermoplastic.



Cross-sections in curved extrusions remain undistorted

The pliability of this fabrication technique — the raw material is fed into the extruder in loose form (pellets or granules) and design specifications and production precautions can be "built" into the process — is best indicated by Anchor's special product type: the *curved* extrusion.

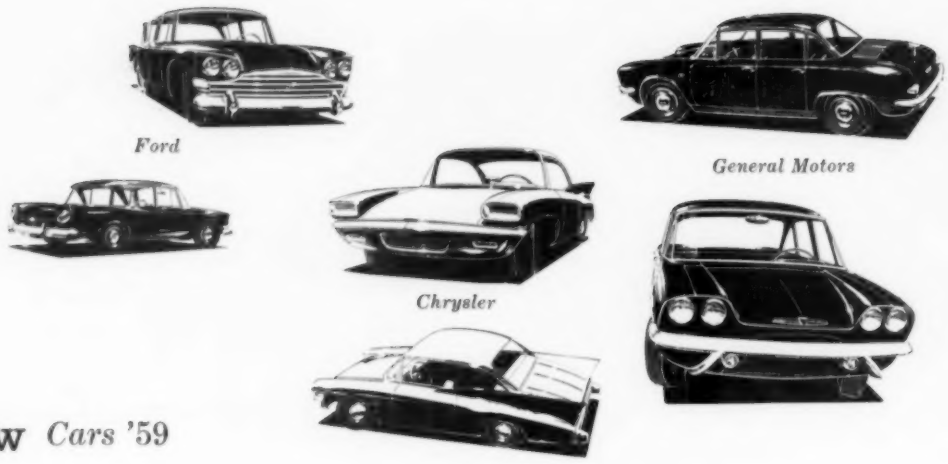
It is not possible to curve extrusions of complicated cross-sections once the thermoplastics have been formed; the shape would be distorted and a uniform radius could not be obtained. For undistorted curved sections of "U," "L," "H" and other channels (above, the drawing shows a cross-section of a curved extruded part), the curving process must be an integral part of the total extrusion production cycle, and the finished extrusions must leave the machine not in a straight line but in loops. By incorporating auxiliary machinery within the fabricating process, Anchor has been able to extrude curved plastic channels in diameters larger than 4 inches in elliptical or circular sections. These have been used on tv-sets (around color tv tubes for high voltage insulation) as well as for decorative moldings on furniture, consoles for business use, etc.

Although the designer is not limited by shape restrictions when making out his specifications for extruded parts, there are three limiting factors he must bear in mind: *cost, tolerance, materials.*

For parts made to specifications a special die must, of course, be made. These are not expensive—Anchor's charges range from $45 to about $200—but the production run must be sufficiently large to amortize this investment for a reasonable per-unit cost. Anchor makes the dies, and a client is charged for the die as well as for the manufactured part. Curved extrusions require additional tooling which can run to about $300; the parts themselves are about 10% more than standard parts.

Designers must allow for adequate tolerances when dimensioning their drawings. Since extruded shapes are semi-liquid when they leave the die, they shrink as they cool; and shrinkage is not uniform for a non-uniform cross-section. But this can be anticipated by the designer and controlled by the extruder. A tolerance of ±1% can be held on most cross-sections, and is a safe guide for preliminary design.

Most shapes can be extruded from any of the standard thermoplastics. But since more difficult materials can also be used with special production fixtures, the designer can select his material on the basis of actual environmental and operating conditions. Cellulosics, polyethylenes and styrenes are easiest for extrusion; polyamides are more difficult.



DESIGN REVIEW *Cars '59*

This way to the new American "small car"?

With domestic small cars imminent, this year's standard models reveal the auto industry's inner conflict: Will it achieve a change of heart, or just another change of face?

The 1959 automobiles are fascinating and depressing, as designs and as harbingers. The '59's are being called up to win at the front lines where their sires lost, to protect the rearguard values of Detroit, and also to act as the advance guard for a reserve corps of midget fighters that will—if absolutely necessary—be called in as reinforcements. On February 19, the *New York Times* revealed Ford plans to market a small car next fall; the next day, Henry Ford flatly denied any release plans for its "ready" car "until the market is ready." As the market waits for industry news to catch up with press speculation, it hears many nervous wails: "'59 sales indicate a consumer resistance to small cars." "Can small cars really capture a justifiable slice of the market?" "Will new models beat out their expensive brothers?" etc.

Mugwumps and midgets

It's hardly surprising, then, to find that the '59's are stylistic mugwumps. Some sport basic big-car body changes (particularly GM models), yet make their outspoken appeal to the small car state of mind. Some models are shorter (though wider), and economy, compactness, and lower gas consumption are noised about. One car is actually visibly smaller—the Studebaker Lark. And the Big Three are less ashamed to promote the economy cars that each imports (pages 82, 84, 86) to fill a gap never before admitted.

Yet economy-touting Detroit is also shouting out of the other side of its mouth. It has effected a substantial price boost by dropping former low-priced models entirely, demoting middle-bracket models to the low end spot at no drop in price ($2300-$2400), and adding new models at the top—all on bold faith in the ability to sell the average customer the same product for more money, while narrowing his choice economically and stylistically.

So the $1500-$2200 slot is more of a target than ever, Ramblers ($1835)* and Larks ($1995) notwithstanding. Though GM and Chrysler will no doubt follow Ford's muffled opening shot, the Big Three clearly have a bad case of battle fright and have literally waited to be ambushed. Why? Perhaps because the small car is the first new product in this decade to require an industry-wide appraisal and perhaps a violent shift in philosophy. To square away the corporate conscience, the Big Three look for condonement in externally-directed queries: Does the public really want small cars?

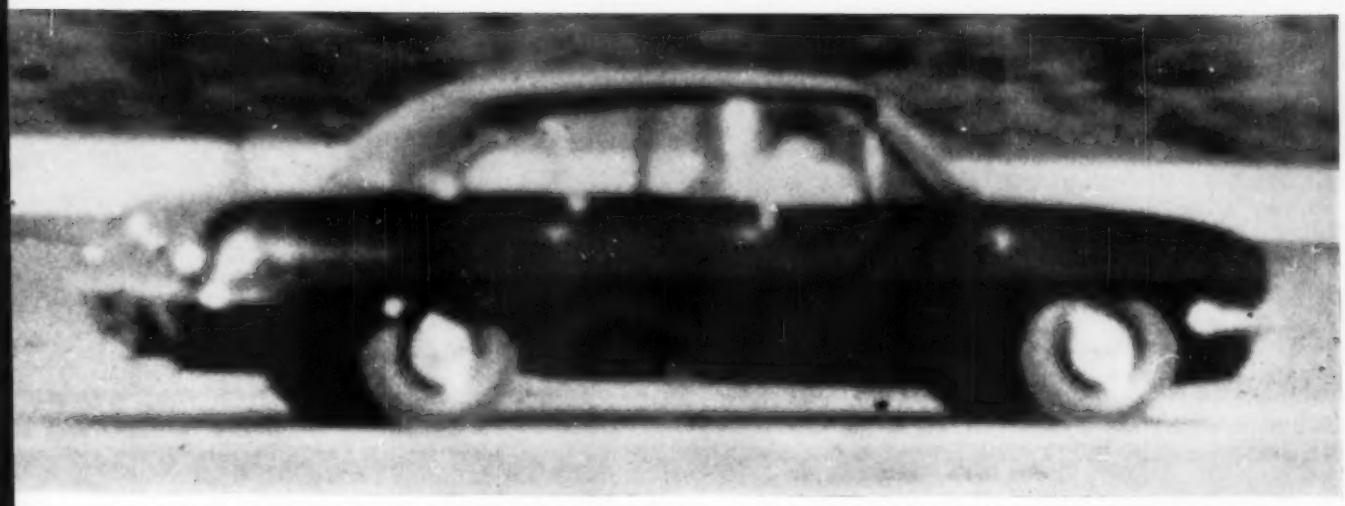
We submit that the industry should begin to focus the inquiry on itself: Can Detroit really *design* a small car?

The point of interest is not the much-discussed woe that Detroit has heaped on the consumer, but the ills inflicted on itself. One more diagnosis won't provide a cure—only the invalid can do that—but perhaps it won't hurt.

The graven image

What's happened to cars since the war has been dubbed by Eric Larrabee "homogenization;" they have been reduced from a family of products satisfying many tastes and needs to an inbred group of first cousins aping each other. With the acceptance of the full-line policy of basic-to-deluxe models in each division, homogenization is complete; there is some cream in every quart and fewer visible ways to tell Grade A from Grade C. The process occured, Larrabee points out, because of one basic belief: that there is such a thing as A Mass Market and some single car that will

** All domestic car prices are manufacturers' list prices which include federal tax and dealer handling, but not freight or local taxes. Imported cars are rated at port-of-entry prices.*



Left: forecast sketches and comments from Motor Life *magazine on some of Detroit's coming small cars. Ford: unitized construction, 107-109-inch wheelbase, styling similar to Ford's English Zephyr. GM: 100-inch wheelbase, front window vents incorporated in windshield. Radical rear engine de-emphasized with inconspicuous louvers on rear deck. Chrysler: 104-inch wheelbase, unitized body. Swept-back styling will give longer lines. Above: GM's small car prototype snapped in recent field tests.*

appeal to The Majority. Not content to reach just a slice of the market, each major producer engages in all-out competition to "cover" all the features any other might offer. So car personalities have blurred and distinctions have dwindled as all design is shaped around a hypothetical median point. Inevitably, this has produced the "big package," not only in outline but in detail: more power, more length, more chrome, and more money.

Now this total commitment to bigness is not just a whim. It is, as any stylist will tell you, an accurate image of postwar value immortalized in chrome and steel. It is also—as they won't tell you—a system of design beamed at a *nouveau riche* mentality, a term that pretty well sums up this whole socially mobile society. Dollars and collars, of course, have less to do with being *riche* than with the ability to demonstrate a *change* of rank, and western steelworkers, northern Negroes, and eastern account executives have found themselves equally able to show off their achievements in a booming economy.

And automakers, too, struck it rich after the war by providing a kind of motorized magic carpet on which social egos could ascend. It is not to be underestimated that as a result many of its own leaders also ascended to new heights of security and prestige, and to a degree were doling out symbols they instinctively understood. Perhaps the fatal flaw was to sell themselves too well on the single-minded image of success that seemed to work wonders with the customers: not only did they come to believe in the goodness of bigness, but they banned other values—smallness, for instance—on principle. By definition, in Detroit, "successful" and "small" must be antonyms. Perhaps another flaw was allowing themselves to be seduced by self-satisfaction into a closed-minded chamber. The newly rich stylists comfortably viewed a dynamic social transition as an eternal verity, and one day glanced up from their drawing boards to find that the image graven in chrome and steel no longer jibed with several million realities.

The falling out had several causes, by now generally understood. The drive for social change inevitably brought about a change in values as well. A carpenter who may once have driven an orange Oldsmobile from his semi-slum home to work, having progressed to a middle-class tract house, settled into a new set of values that, oddly enough, might condone his driving a Ford. As more aspirations were realized, fewer needed the substitute satisfaction of an automobile. Those that remained found other channels for both assertion and satisfaction—pools, holiday homes, outboards, hi fi, etc. And at just this point, the car's appeal as a symbol dwindled because designers eliminated by degrees the most status-satisfying thing about it: differentiation. The increasingly obscure frivolity of yearly changes, and the mass-minded insistence that a fat, frilly car is everyman's right and necessity dampened the incentive of many individual buyers.

Enter the option

The most incredible aspect is not that the car's prestige has slipped, but that it comes as a shock to Detroit. Change is of the essence for status symbols! Similar evolution has been seen in sewing machines, refrigerators, ranges, and tv, to mention only a few, so why not cars? Back when a refrigerator owner was a proud possessor, its form was sufficiently gross to call attention to itself—and who complained? Today the objectionable bulk of the commonplace

refrigerator and freezer are designed out or built in. And as prestige dwindles, disappearing products are forced toward *greater functional differentiation.* Refinements and features make a continuing appeal to the consumer's special needs—i.e., the sizes, types and prices of refrigerators are almost as diverse as the basic improvements that have come along. Apparently, innovation and differentiation always have a market justification if they *really* satisfy a growing awareness of individual preference.

Consumer's retreat

Some years back, a devoted Chrysler owner of our acquaintance—a gentleman of a not unusual 6'4" height—wrote to the company to voice a view: his new car, claimed to be the best-engineered vehicle of the year, had a seat and roof height that were woefully cramped, dangerously reduced his visibility and maneuverability. A reply from a high official consoled him: "I too stand over 6 feet, and appreciate your concern. But you and I are exceptions, and must understand that cars are not designed with us in mind." The man finally made a forced retreat to the only available car he could still hold up his head in—the radically-re-engineered Citroen DS-19. It is the lowest sedan on the road, yet allows him 4" of headroom, unequalled visibility, comfort, and roadability from its hydraulic-powered front-wheel drive. He reports no desire ever again to risk life or limb in an American car.

The case simply dramatizes what happened when Detroit defied the rule of differentiation: It reduced the purchase of a car from a choice among options to a minimum necessity. When foreign cars came along they simply brought back an alternative, and however limited and beset with risks it was, quite a few Americans needed it desperately. What specific appeal helped the VW, Hillman, Borgward and Fiat make inroads on foreign soil? A new outbreak of snobbism? To a degree. But common elements in the best of small family cars suggest some non-snob axioms: Often they are cheaper to buy and to run; usually they are intelligent cars for their purpose, agile and engineered for economy; and certainly they are succinctly designed as small cars. They are simple without being crude, small not by default but by ingenuity. They appeal to that center of reason that responds to what is appropriate. Small cars cannot be all things to all people. They make a specialty of being special.

To design a real small car, Detroit will have to reshape its image of success, and cease to repudiate the values—diversity and individuality—that threaten the old image. This is not to imply that Detroit's projected small cars lack all of the "special" virtues, or that these virtues take precedence over the comfort and convenience that American drivers—perhaps rightly—expect. Information on the new Ford (page 78) suggests that it will be least radical of the small cars—in fact, just a small "big" car. But there are hints, at least, of ingenuity in the *Motor Life* reports on the other small cars—a new body construction system at Chrysler, a rear-engine model on a 100-inch wheelbase at GM. It would be unfair to make judgments now on speculation alone, except in terms of a speculative question: Will the new products represent the most advanced technology and profound thinking a billion-dollar city can muster?

Failures and feedback

The big danger is not that the projected small car might not sell—however costly that might be—but that Detroit might fail to size up such a failure. If the midgets do not go 'n go, we might well see the small car relegated forever to that special Siberia inhabited by the Airflow and the Edsel. (The usual bromide for the Airflow's failure, "too advanced," has never been openly refuted by the obvious explanation for public resistance: too ugly.) The little-lamented Edsel failed, according to one view, because it presented the wrong image of progress. The buyer refused to believe that the newest of new cars could only be more absurdly shaped, more powerful, and more gimmicky.

No doubt the Edsel's big flunk was as painful to its competitors as to Ford, for it exposed one more critical breakdown in the industry's failing communications apparatus. One can only wonder if the "faulty interpretations of feedback" blamed for the Edsel affair has been finally understood. Has it become evident that the faulty feedback can be traced to incomplete signals? The message was beamed "A to B," the reply came back "A to B," and this was taken as a directive to ignore C to Z. This is the theory of the dream car approach to design: ask only the questions you want answered, and you'll get at least some of the answers you want.

By the same token, Detroit's live product experiments have always had an accidental quality to them. It is jarring to recall that the success of the experimental Thunderbird was just an unplanned as the failure of the much-researched Edsel. Both "just happened" to them. If one wants to be indignant at Detroit in 1959, it should not be for anything so simple as absurd cars. It should be for the frightening failure to plan some sort of learning process into its costly input-output system. For not only misunderstanding its success but wasting its failures. For valuing only blacks and whites, bigs vs. smalls, successes vs. failures, and disregarding the real information content of shady gray alternatives. For having no confidence in the ability to reason, explore, and plot a way through good and bad moves to a healthy plan for sustaining its productive capacities.

The biggest danger of small car failure might well come not from radicalism but conservatism. Its success could hinge on its being exploited as a planned experiment, a purposeful and welcome break with tradition that would chart new exits from the current stylistic impasse, and yield valuable data on the consumer's new assertion to the right of choice. Perhaps it will turn out that it isn't just a small car he wants, but a different kind of car. Perhaps the initial models won't go like hotcakes. But must they? Is immediate profit the only justification for experiment? Is fear the only spur to originality? If you ask us, the Big Three will have to keep at it until they find small cars that *will* sell. Because a new product in each line could have the only lasting effect that counts: it could rekindle the consumer's desire to buy *some* new American car—maybe even a big, fat middlepriced car. Not because he has to, but because of all the alternatives it suits him best. *J. F. McC.*

Rambler American

Rambler Ambassador

RAMBLER AND LARK: THEY GOT THERE FIRST

Formerly - ailing Studebaker - Packard joins the American Motors camp this year by putting out the country's second small economy car, the *Lark*. Despite the implications of its name, the Lark DeLuxe lists for only $1,995, about $160 more than the Rambler American, lowest-priced car produced in this country. The new Lark combines such luxury features as seat-beds (optional) and cup-containers inside the glove-compartment door with hard-sense economy features like removable fender panels to cut repair costs for dented fenders. By reducing front and rear overhang to a minimum (overall length is 175 inches), Lark maintains a "big car" interior, sets rear-seat headroom at a comfortable 35 inches, reduces rear-seat width to only an inch below average. With a similar grille, Lark looks like an economy version of Studebaker's classy Hawk. So far the public seems to like what Studebaker is giving it; January sales hit 15,526, Studebaker's best January since 1952.

American Motors enters 1959 with close to the same line it offered in 1958 and sound hopes for another record year. At 27,151 units, December sales considerably more than doubled 1957 sales for the same month. Styling trends diverge curiously at American Motors, where the conservative, square-ended *American* (at $1,835 the lowest priced in the line), outsells the gaudier, finned *Ambassador* ($2,587), changed only in trim since last year.

Lark

The English Consul, $2034

FORD SPOTLIGHTS ECONOMY TO BOOST SALES

Ford, whose total passenger car sales dropped nearly 700,000 in 1958, has made certain gestures toward economy in its '59 models. On the two standard V-8 engines, compression ratios have been lowered to increase gasoline economy; and in the lowest-priced Custom 300 ($2,391), horsepower has been cut for the same reason. But in spite of a new interest in saving the consumer's money, Ford does not really offer a low-priced car this year. Like Chrysler and GM, it must rely on its foreign imports, the Anglia ($1561), the Prefect ($1661), and the Consul ($2034) to fill the gap.

The company has not kept its promise of a complete model change each year. FORD uses the '58 Mercury body shell, and returns to the huge single tail light for its major style innovation. EDSEL celebrated its first birthday without fanfare. When sales in '58 reached less than 37,000 instead of the predicted 200,000, the company quietly "repositioned" Edsel into the $2700 to $2800 bracket, where it now competes against the luxury lines of Ford, Plymouth and Chevrolet. It has dropped its much-publicized push buttons and, bidding toward a lower market, offers many items as standard which were extra-cost last year. Edsel retains the same humor-inspiring grille, but has lowered front head lamps and horizontal tail lights.

MERCURY'S twentieth anniversary models are the third largest in the Ford line. Wheelbases have been stretched from 122 to 126 inches on the Monterey and Montclair and from 125 to 128 inches on the top-priced Park Lane. With wider front and rear exits, and a 50 per cent lower front floor-board transmission tunnel, its interior is among the most comfortable. Headlights have been lowered into the grille, but the wedge-shaped tail light and concave rear fender form have been retained. Like other Ford Company cars, Mercury's parking lights are located on the bumper, where they are susceptible to damage in the slightest accident.

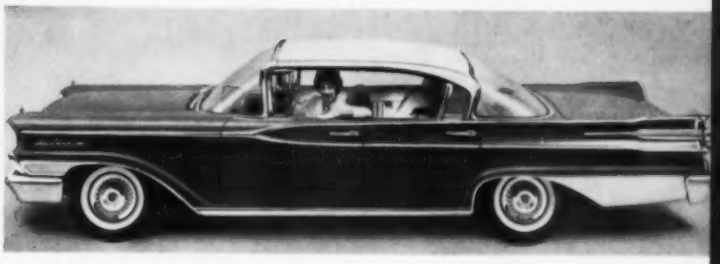
Ford

Bright reflectors circling Ford's big tail lights make them seem even bigger. Back-up lights have been positioned high into rocket-like fins. Low coaming on Ford's big trunk makes access easy.

Edsel

Edsel, more refined than in '58, five inches shorter, 150 pounds lighter, borrows Ford's engine, chassis, and body this year. Rear window trim leaves curious pyramid of chrome when door is opened.

Mercury



Mercury this year has more glass area all around and a full 60 per cent more in the windshield, which inches into the roof line. To clean the big window, Mercury offers 16-inch wiper blades which work in a parallel movement to clean the center area of the windshield, for first time on this car.

Lincoln

Mark IV Continental

Top-price twins in the Ford line this year are the Lincoln ($5089) and the Mark IV Continental ($6845). Twins is certainly the word: except for the most minor styling differences—chrome strip on Lincoln's back fender, reverse slope on the Continental's rear window—they look identical. They also share the same statistics—same overall length (at a whopping 227 inches, the longest cars on the road), same horsepower (down from 375 to a modest 350). What really separates the Mark IV from the Lincoln is nearly $2,000 worth of accessories which it offers as standard equipment. Ford is in the curious position of marketing a second luxury car, the Mark IV Continental, without having bothered to maintain a distinct personality for it.

The French Simca, $1645

AT CHRYSLER, STYLING STANDS PAT FOR THIRD YEAR

Chrysler Corporation, quietly contradicting the theory of the annual model change, is offering the public essentially the same styling in all its lines for the third year. What Chrysler (like Ford and GM) *has* done by way of change is a little subtle down-grading of high-priced cars to disguise the disappearance of low-priced ones. For instance, last year's botton car, the $2300 Plaza, has been dropped. The $2404 Savoy, about the same price as last year, now sells as the bottom of the Plymouth line. Like Ford, Chrysler offers no genuinely low-priced car with the exception of its French import, the Simca.

As a concession to the difficulties of getting in and out of increasingly lower cars, PLYMOUTH, with the rest of the Chrysler line, offers swivel seats this year. Otherwise, it is essentially the same car that was introduced in 1957. A wide air scoop, borrowed from Chrysler, has been added below the grille and the tail lights shifted out of chrome-capped tail fins to run parallel with the bumper.

This year DODGE cut its length by 3½ inches and decreased horsepower slightly. It continues the jet-tube tail light, different from DeSoto's only in that it sports two instead of three lights in each fin. To get away from a grille which looks too much like Plymouth's, Dodge has circled it with chrome and stripped chrome bars across the center; the result is a conflicting movement of lines that leads the eye in three directions at once.

The thirtieth-anniversary models of DESOTO — lower, wider, and more massive than last year's — are a full 7½ inches longer in the medium and higher priced line. Its forward styling resembles the Oldsmobile's; rear styling, the Dodge's.

Like Lincoln and Mark IV at the top of the Ford line, CHRYSLER and IMPERIAL are separated by price, but very similar in styling. Dropped headlights contribute to the lower look in both cars.

Plymouth achieves "big car" look with massive rear end treatment — simulated rear deck wheel cover, Cadillac chrome-capped fins. The wheel cover was introduced by Imperial in 1957 to cover a spare, but on the Plymouth is merely decorative. Spare tire is actually stored in the trunk.

Plymouth

Dodge

Chrysler **DeSoto**

Imperial

The Imperial retains last year's roof, but now offers a brushed stainless steel treatment in the forward area. A contrasting, textured vinyl paint which simulates black grained leather covers the rear of the roof.

English Vauxhall (top), and German Opel, both $2400 (both 2-door models, $1987).

GM SLIMS DOWN TO SHARPER LINES FOR NEW MODELS

The only one of the big three whose sales did not drop last year, General Motors is also the only one of the top companies to offer a completely restyled line this year. GM's familiar rounded lines—and much of its chrome—have been discarded in its new, sharp-lined, projectile-like bodies; and as windshields climb into the roof and rear windows extend into the rear deck, GM leads the pack with the greenhouse look. To save exposed rear seat passengers from sunstroke (and to emphasize the thinness of the roof), some models shade big rear windows with a few inches of roof overhang.

The big CHEVROLET, (close to two inches longer than Plymouth or Ford), most radically changed of all the new cars, still holds top place in sales—largely because of, or in spite of, the new styling. The tortured sculpturing of its horizontally flared bat wings make it unmistakable from the rear; in front, low-placed head lamps and narrow park lights run parallel to the bumper to accentuate its lowness.

PONTIAC, like other GM cars, sets a very thin roof above huge areas of glass (37 per cent more than last year). Extremely slender roof posts emphasize the sense of airiness, also decrease roof protection in a roll-over accident.

A more clean-lined OLDSMOBILE has dropped much of last year's chrome and developed a linear look which runs from its thin roof line to the sharp-edged rocket sculpturing along its rear fender.

Characteristic rounded lines and massive forms have been discarded by BUICK in favor of a more agile, graceful form this year. Great delta wings flow smoothly out from the gently sloping rear deck, but upward-moving fender lines—emphasized by diagonally placed headlights—give Buick a disturbingly open, diffuse look in front.

CADILLAC, which couldn't add any more to its length, made its addition in other areas this year. There are *two* tail lights in each fin, *four* headlights, and the grille has been horizontally divided to look like two instead of one.

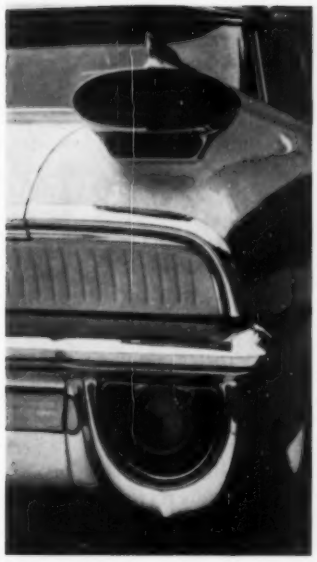
Chevrolet

Oldsmobile

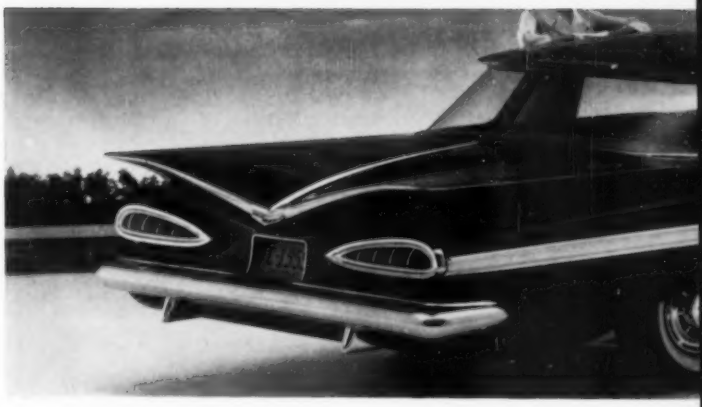
Buick

Cadillac

Pontiac accompanies its new wide-track wheels with a three-inch wider body which the slenderness of the biaxially symmetrical grille emphasizes. The wider wheel track reportedly improves stability, gives better cornering. December sales ran more than a quarter ahead of last December's, for Pontiac's best month since March, 1956.



Oldsmobile (above) has its own more modest version of the famous GM tail fin. Below it the lines of the clearly sculptured tail light are crisp. The faces often imagined on auto grilles this year pop out on rear designs too. Chevy's "angry bird" (right) takes the personification prize. The trunk behind the face looks big, but actually holds slightly less than the Ford or Plymouth. Each piece of luggage that goes in must be lifted over a metal coaming which runs from a foot to a foot and a half on some models. Same problem comes up in other GM cars, like Pontiac, where barrier is over a foot high. Chevrolet's extra-large tail lights, more than adequately visible, are expensive to repair when damaged.



Face away from car . . .

Sit down . . .

Pivot to right . . .

"As simple as A-B-C. No one will have any difficulty getting into the low-designed cars if they follow these three easy steps. First, face away from the car, second, sit down, then pivot to the right lifting legs up under the wheel." From a Chevrolet announcement of correct entry procedure with the new but non-swivel-seated product.

SINCE LOW-LOOK STYLING LEADS TO TRAPS, DETROIT MUST DESIGN ITS WAY OUT

Average car height has dropped 10 inches in the last 10 years, and the new, low bodies—undeniably sleek and racy—confront Detroit designers with some tough problems, especially where interior dimensions are concerned.

Even though GM has developed a two-section drive shaft to cut drive-shaft tunnel height, it still comes up so high that center passengers in front and rear seats must straddle it. Ford, by redesigning the rear-end gears, has reduced the drive-shaft height at the rear axle, and offers the center passenger a somewhat better deal (except on its Thunderbird, right). The $4,424 Chrysler New Yorker, called a six-seater, inserts a wide arm rest over the transmission tunnel, sculpts rear seats to hold only two people.

To conform to lower dimensions, stylists have lowered steering wheel height, too. Now, especially in the GM line, it is difficult for a full-sized man to slip under the wheel comfortably. Dodge and Imperial offer slightly elliptical wheels which ease getting in and out, improve vision.

Although Ford styling director George Walker recently expressed the idea that the consumer *likes* the new, low silhouette even though "it knocks his hat off a few times a day," current door dimensions *do* require the passenger to jack-knife into the back seat, shovel-duck into the front. As a solution, Chrysler offers swivel seats this year, but Chevrolet simply provides a detailed set of instructions, a kind of how-to-do-it course to prepare the occupant for getting in place. It requires less skill than skiing.

In spite of the problems the low look has created, stylists such as Elwood P. Engel at Ford predict even lower cars next year. No one has predicted one obvious improvement: a tunnel-less front wheel drive.—*A.F.*

Five-seater Thunderbird has tried to turn its seat-level transmission channel into a virtue by covering it with leather and putting ashtray, radio speaker, temperature and window controls on it. Oldsmobile (right), like other GM cars, provides foot wells for better leg room. But the step-down wells make entry awkward, and a high drive-shaft tunnel cuts high into seat upholstery, nearly eliminating the man in the middle.

Chrysler leaves nothing to the acrobatic skills of its buyers; instead offers swivel seats on all its lines. The seats lock into normal position, then at finger touch of release lever they turn 40 degrees on nylon bearings. Though convenient, the seats cut down on space for front center passenger and crowd or mangle legs of rear seat passengers when the seats have been turned to the outward position as on the Plymouth, right.

Ford's Ranchero (top) and Chevrolet's El Camino (bottom) are hybrids which offer the buyer city-slicker styling on a pick-up truck whose chief virtue, until now, was sufficient ruggedness in engine and body to take any kind of treatment. The interior finish and appointments have also been designed to duplicate those of a passenger car. Both take 34 cubic feet of cargo.

Fuel elements of the reactor are kept at the bottom of the thirty-foot pool (left) and manipulated remotely from platform. Circular crane above pool has 12-ton capacity.

Technics: Development news

A cooperative nuclear reactor at Plainsboro, N.J.

"Beehive" structure is home of reactor. The 87-ft. aluminum dome is center of jointly owned Industrial Research Labs, Inc.

Ten industrial firms have found a way to be realistic about the application of nuclear energy to basic and applied research in their respective fields of interest. The ten companies (American Machine & Foundry, American Tobacco, Atlas Powder, Continental Can, Corning Glass Works, National Distillers & Chemical Corp., National Lead, RCA, Socony Mobil Oil, US Rubber) have applied good sense to foresight by building a nuclear reactor laboratory facility on a joint basis. Named Industrial Reactor Laboratories, the four-and-one-half million dollar research facility functions as an independent enterprise. At the start of its operation last month, its president, Mr. H. L. Hilyard, had this to say about the laboratory's importance to industry: "... It offers the possibility of further contributions to the basic scientific knowledge upon which all of our future technical progress depends, as well as the opportunity of developing radically new or improved products." He went on to say that the joint reactor project is "a dramatic solution to the problem of the increasing complexity and cost" of scientific tools required for advanced research today. The new power source will bring to light data on the growth process of leaf tobacco, for example, will help develop stronger, more durable glasses and ceramics; and will in each case make available research information that cannot be obtained with any other power source, and for which this type of facility is essential.

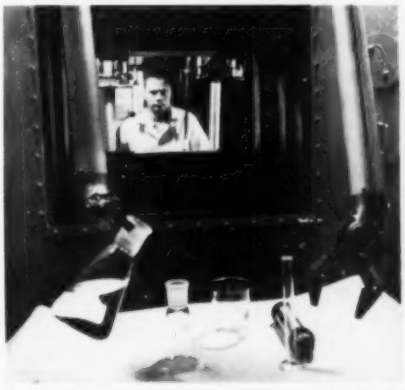
The "swimming pool" (opposite page) where the uranium fuel is kept and the nuclear reaction occurs is housed in the 87 foot high aluminum-sheathed concrete dome "beehive" seen above. Within the dome, the pool rises thirty feet from ground level. Circulating water at the bottom of the pool where the uranium is stored performs a dual function of providing additional shielding and removing the heat from the nuclear reaction. A reactor control room from which the uranium is handled by remote operation is situated on a platform around the top of the pool (opposite page). A number of facilities for experimental work are located around the base of the pool.

In addition to the "beehive" facility which provides the energy for all experiments—the reactor will operate at a power potential of five million watts—the ten participating companies have individual facilities consisting of a laboratory and adjoining office. Each company keeps its own research staff in its laboratory, which is equipped with all essential utilities and special equipment installed by each of the participants for the various types of experimental work to be done.

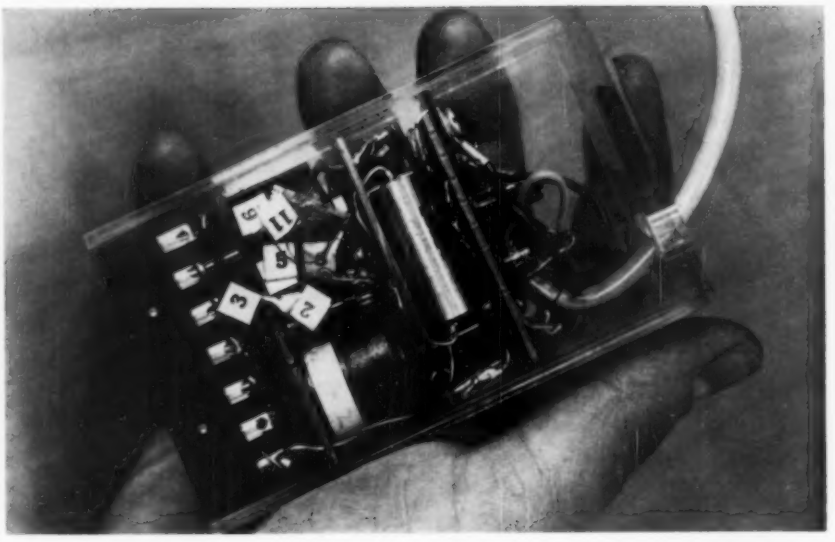
The remote handling and storage of radioactive materials takes place in shielded rooms adjoining the "beehive" reactor. Among them are the "hot cells" (bottom, this page) equipped with mechanical manipulators and special windows three feet thick. From outside these cells, scientists can observe and handle radioactive specimens remotely with special manipulators.

The Industrial Reactor Laboratories Center is situated on a 300-acre site at Plainsboro, in the vicinity of Princeton, N.J. The main contractor for the design and building of the facilities including the reactor was the American Machine & Foundry Company. The architectural firm was Skidmore, Owings and Merrill, New York; the builder, the Turner Construction Company, New York.

The walls of the "swimming pool" reactor are made of magnetite concrete. Experiment facilities are located at base of pool.



Radioactive materials are tested in "hot cells." Special manipulators perform experiments, operator is shielded by window.



Bell develops data-handling unit for remote transmission

The Western Electric Company, the manufacturing and supply unit of the Bell System, has announced the development of a new device, as yet unnamed, for use with the Bell System's Dataphone service. Dataphone uses telephone lines to transmit data directly from one processing center to another (see ID, December 1957,, page 71). The new invention uses a small, low-cost transmitter in conjunction with a telephone as an input source for data inquiry and transfer to a data processing center. Moving data input from the processing center to many originating points would improve efficiency and speed up all phases of filling orders, inventory control, and accounting.

The development is the result of Western Electric's search for a better way for Bell System employees to order supplies from the company. Western Electric receives about 500,000 large and small orders a month from telephone companies for thousands of items carried in stock. By using the new transmitter, manual duplication of orders telephoned in by the employee can be eliminated, and data cards formerly mailed in can be transmitted with a great saving of time.

In the first of the pictures shown at the top of the page the user has made a telephone call in the usual way. When he is connected, he can send data by either punched cards or push buttons. If, for example, he is a telephone company employee using the service, he inserts his identification card, containing code punch marks, in the card reader. This automatically establishes his authority to order materials and specifies delivery information. He then inserts punched cards corresponding to the items he wants to order. The quantity of each item is transmitted by pressing numbered keys.

The next photograph shows the transistorized multifrequency oscillator: in effect, a miniature Dataphone unit. This plugs into the card reader and forms the connection with the telephone lines. The information travels through the telephone central offices to the receiving point (third picture), where another miniature Dataphone set transmits the information from the telephone lines to the standard business machine card punch in the background, which will record the information on cards, for direct use in data processing machines.

The Bell System is considering other applications of the device, and an experimental model is being demonstrated to several Federal agencies and to 35 business machine manufacturers to interest them in manufacturing and marketing the transmission device for general public use. The company is planning field tests in New York and Illinois this spring to substantiate the findings based on preliminary tests of the device.

It will be several months before the new facility, now in the process of perfection, can be made available by business machine manufacturers. When it is available, however, it can help justify the use of large and expensive computers in a great number of business problems. Information to be assimilated by the computers is usually assembled, reprocessed and then checked manually for insertion into the data processing center. Until now, there has been a problem in keeping the computers, which work at very high speeds, supplied with enough information to make their use economical. Western Electric's new invention means a multiplication of automatic input sources . . . as many sources as there are

miniature transmitters.

Laurin L. Sevebeck of Western Electric, and his assistants, Philip J. Grunfelder and Michael V. DiIorio, worked with Bell Telephone Laboratories and the American Telephone and Telegraph company in developing the new unit. Manufacturer: Western Electric Company, New York.

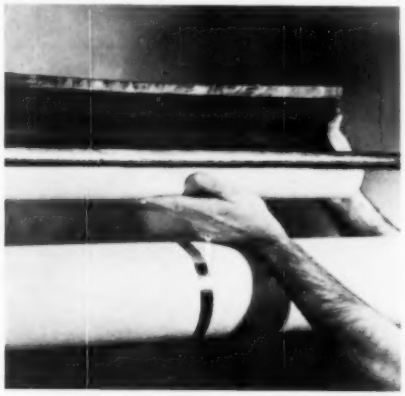
Almost-impervious floor coating

A fast-setting plastic floor compound, Metacrete—a mixture of epoxy resin and hardener—is said to resist abrasions, chemicals and grease that ruin conventional metal, wood and concrete surfaces. It is used primarily to patch inferior industrial floors that have cracked, pitted or chipped. Depending on the extent of the wear, the coating costs between $.75 and $1.00 per square foot, including labor. Metacrete will bear heavy trucking without cracking or breaking up. It can be mixed with sand for a non-skid surface. Manufacturer: American Metaseal Corporation, 607 West 65 Street, West New York, N.J.

Vapor-barrier pipe covering

Shown below is an example of Pittsburgh Corning's new line of low-cost rigid cellular glass insulation for hot and cold commercial piping applications. The Foamglas insulation is made up of millions of tiny glass cells (each an insulating air space), acts as its own vapor barrier and is completely impervious to water; this protects the pipe against rust and corrosion. The insulation, called Foamglas "Stay-Dry," is intended for commercial piping in a temperature range of 35° to 350° F.

Because of the high compressive strength of Foamglas, Pittsburgh Corning engineers say, hangars can go around a fully insulated pipe section without compressing the insulation, thus eliminating rusted hangars and saving the time of fitting insulation around the hangars. The pipe need not be primed before the Foamglas covering is



applied The 24-inch section opens lengthwise and fits around the pipe, as demonstrated in the picture above. The overlapping longitudinal seam of kraft-foil laminate is then sealed with lapping cement and banded on 12-inch centers. End joints are sealed with factory-furnished 3-inch vapor barrier strips.

An inorganic material, the new insulation cannot burn, which eliminates the necessity for fireproofing around it. This feature makes it useful for hotels, schools, office buildings, and other commercial and institutional structures.

The new material is shipped in 24-inch lengths, factory-wrapped by specially designed equipment with a kraft and aluminum foil laminate, chosen for its protective qualities and its appearance. It can be painted with a water-based paint if desired.

Fabricated shapes fit around flanges, valves, and fittings. The pipe covering is available in 1-inch and 1½-inch nominal thicknesses for pipe or tubing of from ½-inch to 6 inches in size. It can be installed for roughly the same cost per foot as other commercial pipe insulation. Manufacturer: Pittsburgh Corning Corporation. Pittsburgh, Pa.

Printing integrator

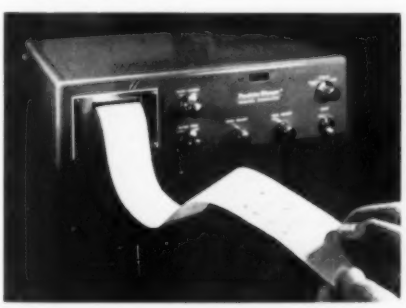
A new integrator — an instrument that calculates areas bounded by curves on a graph—prints out at rates up to 6,000 measurements per minute. Typical uses include: integration of stress-strain curves for determining cyclic and rupture energies in material-testing; continuous process weighing, where the integrator gives the total amount of material supplied to a conveyor belt; integration of rocket thrust in conjunction with transducers to obtain propulsion efficiency; and obtaining daily totals of a process plant flow.

The instrument, called Model 194 Printing Integrator, gives printed numerals on standard adding-machine tape, and may be operated manually or automatically. It is designed for use with self-balancing potentiometer recorders. In automatic operation, digital integrals are printed whenever curves or peaks appear on a recorder chart. The tape travels at the same rate as the chart paper, so that tape and chart can be compared side-to-side. On manual operation the printer will give an integral at any point, when the operator wants it.

The printer is actuated by a sensing mechanism installed in the recorder. Figures are printed when the recorder pen moves up-scale after a down-scale movement, and when the pen passes through a minimum point of inflection. When the recording is completed, the final integral is printed manually.

Because the integrator prints often, relative and percentage areas are easy to calculate. At a chart speed of ½-inch per minute, the integrator produces 1,263 counts per square inch of recorder chart, permitting very precise measurements.

An amplifier in the integrator drives a servomotor coupled to a tachometer generator and to a shaft-turn counter. The amplifier compares the voltage produced by the tachometer (which is proportional to shaft speed) with that from a potentiometer installed in the recorder, and continuously regulates the servomotor's speed so that it corresponds to a definite input voltage value. The integrator, except for the signal potentiometer and valley sensor, is enclosed in a case 4½ by 17 by 12 inches. Manufacturer, Perkin-Elmer Corporation, Norwalk, Conn.



Vibration-proof remote tv camera

There is now on the market a closed circuit tv camera which can operate in noise environments up to plus or minus 145 db without an acoustical housing. With a housing the camera—the KIN TEL model 1986CN has been successfully used where the sound level was above 190 db.

The immediate application for the new camera is on rocket or jet-engine test stands. Previous cameras have suffered from microphonics caused by the engine's roar, from which the Model 1986CN is essentially free. It features a video-signal amplifier with subminiature tubes, mounted in a unique heat sink. The result is a damping out of sound vibrations, as well

as full thermal protection. In addition, it can withstand atomic radiation, heat, cold, and hazards of accidental explosion.

The 1986CN provides full 600-line resolution. Picture circuits have a bandwidth of 20 cps to 8 mc plus or minus ½ db, which insures a picture of unusually high definition, according to the manufacturer. When used with a KIN TEL camera control unit, the camera automatically adjusts to changing light conditions over a 2000.1 range.

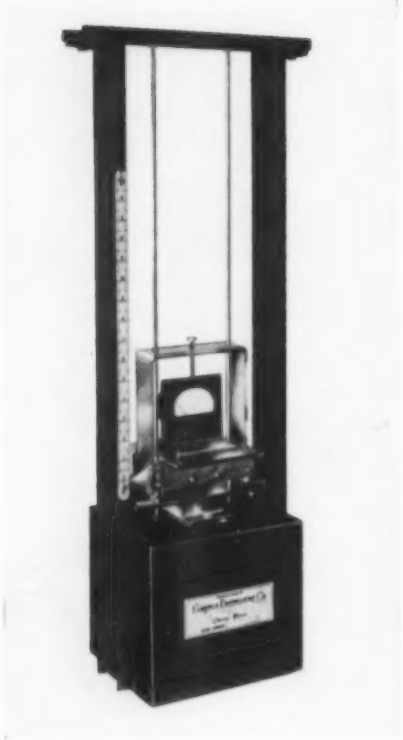
The camera weighs seven pounds, and can be used with a great number of attachments and accessories made by KIN TEL. Manufacturer: KIN TEL Division of Cohu Electronics, Incorporated, San Diego, California.

Steel tubing extremely strong

According to a report by the Formed Steel Tube Institute, round welded steel tubing will carry a greater torsion load, weight for weight, than any other section.

Round tubing is particularly suitable for long columns, where changing stresses can cause materials with different sections to buckle.

In a test conducted in Germany, similar towers were erected of welded tubing and of riveted angles, and subjected to the same lateral pressures. A 20-foot tubing tower withstood 107 percent more loading than a 20-foot angle tower. Source: Formed Steel Tube Institute, 850 Hanna Building, Cleveland 15, Ohio.



Moderate-strength shock tester

A tester for electrical and electronic parts and instruments, which reproduces the mild shock of being dropped on a hard surface or jolted in a moving vehicle, has been introduced by Gaynes Engineering Company. It will determine the suitability of parts for use in mobile equipment, and in the field, where they will be subjected to rough handling.

The tester consists of a one-piece cast-iron base to which channels are bolted to support a movable carriage assembly. The carriage rides on two rods attached to the base and to an upper cross channel. A stiff spring mounted on the underside of the carriage assembly transmits the shock to a test sample on the stationary anvil.

Forces up to four pounds can be applied. The tester is equipped with all accessories for samples of 2½- and 3½-inch diameters, and additional accessories for different-sized samples are available. The unit is 8 inches by 10 inches by 33½ inches high. All of its finished parts are plated for protection, and it is calibrated after assembly. Curves for weights of two sizes are supplied. The tester is manufactured in accordance with United States Government specifications JAN-S-44 and MIL-STD-202A. Manufacturer: Gaynes Engineering Company, 1642 West Fulton Street, Chicago, Illinois.

Seal for Plastic Bags

"Chipp-a-Weld," flush seal for polyethylene bags eliminates the dust-catching lips of conventional skirt seals, and brings the strength of the seal up to that of the bag itself. The developer of the seal, Chippewa Plastics, expects its use to decrease bag breakage considerably, since seals are characteristically the weakest parts of bags.

Heavy-gage polyethylene bags with the new seal can be used in a variety of ways for bagging materials that have to be protected from moisture, such as detergents, sugar, and many deliquescent chemicals.

The company is currently working on equipment to produce a seal similar to "Chipp-a-Weld" on users' filling lines. Manufacturer: Chippewa Plastics, Inc., Chippewa Falls, Wis.

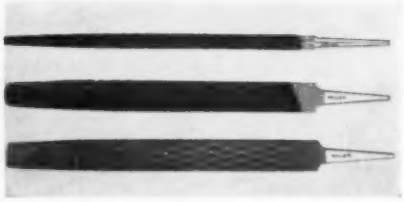
Precise Compression Springs

Two new kinds of compression springs, designed expressly to meet precision requirements of instrument and control designers, have been developed for applications where conventional springs are inadequate. The springs are so constructed as to eliminate completely the twist or turning moment

between faces that can produce shifts. They are machined, heat-treated and ground to offer square ends, tight control of free length, and exact matching of specified spring rate, according to the manufacturer.

Another advantage which the new springs are said to have over coil springs is the uniformity of spring rate from zero load up, since the effective length of turn does not change with load; and the symmetrical application of force output at points diametrically opposite on the ends effectively eliminates any tendency of the spring to cock.

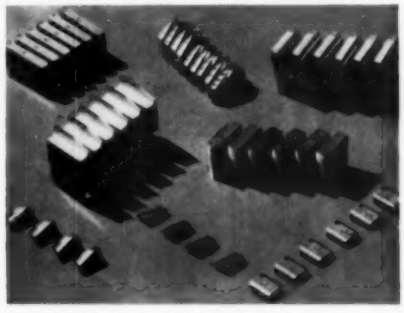
The "Herringbone" design is the more difficult to manufacture, but for equivalent characteristics it occupies less space than the "Gimbal" construction. Manufacturer: Consolidated Controls Corporation, Bethel, Connecticut.



Double-Action Files

A new line of files, the "CRISS-CROSS Multi-Kut," has been produced for roughing metal parts to size, with fewer strokes. The new design incorporates teeth of varying length and criss-cross grooves. Less pressure is needed on tough, dense metals, and there is less loading on soft metals. Widening teeth hog off metal in chunks, which are broken up by the action of the grooves and teeth of varying lengths. Narrowing teeth finish the work to specified smoothness.

The files are available in flat, half-round, and square shapes, and in sizes of 8, 10, 12, and 14 inches. Manufacturer: Heller Tool Company, Newcomerstown, Ohio.



Hardening bath adds life to tools

The Hy-Speed Case process is a chemical bath that gives greater wear-resistance and increased surface hardness to high-speed steels and high carbon, chrome alloys, after they have been hardened, tempered and ground. The bath supposedly increases the life of tools such as those shown above, making it possible for them to be used in the production of from 200 to 1,000 per cent more parts than unbathed tools.

For best results in using the bath, it should be aged 12 to 14 hours before use. The tools to be treated should be cleaned thoroughly, and left in the bath for a period of time varying from 5 to 90 minutes, depending on their size and application. The bath operates between 950 degrees and 1150 degrees F. To maintain it at efficient operating level, it is necessary to replace only 5 per cent of the pot for each 40-hour period of use. Manufacturer: A. F. Holden Company, Detroit, Mich.

Manufacturers' Literature Supplement

A bibliography of currently available technical brochures dealing with materials, methods, components, and machines

MATERIALS—METALS

1. **Resistance Thermometer Wire.** Secon Metals Corporation. Graphically shows resistance versus temperature from 0° to 500° C for various pure metals and alloys used in thermometry. Includes the various types of enamel that can be applied to the wire best suited to your particular wiring requirements.

2. **Reusable Metal Shipping Containers.** Smithcraft Fabrication Division, 8 pp., ill. Manufacturers with an interest in volume fabrication will find the Smithcraft Fabrication Division catalog helpful in presenting the facts and figures on Smithcraft as a subcontractor and production manufacturer.

MATERIALS—PLASTICS

3. **Vinyl Metal Laminate.** O'Sullivan Rubber Corporation. 6 pp., ill. Describes physical and chemical properties of Sullvyne-Clad Vinyl Metal Laminate. Also gives recommended uses for production savings, showing colors and textures.

4. **Polyester Glass Laminates.** Continental-Diamond Fibre Corporation. 4 pp. Describes the various grades and properties of CDF polyester glass Dirlecto and suggests applications. It also describes custom molding available with CDF Celoron Polyester Glass.

5. **PTFE Tubing.** Irvington Division, Minnesota Mining & Manufacturing Company. 4 pp., ill. Contains prices, tolerances, sizes and application information on polytetrafluoroethylene tubing. A chart list electrical, mechanical and thermal properties of the high temperature tubing, and a full page of purchasing information such as price, color packaging and terms is included.

METHODS

6. **Hardboard Ideas.** Silvatek, Weyerhaeuser Timber Company. Describes uses of hardboard in home interiors, for new construction and remodelling. Product specifications are included for all items in the line: Standard Weytex, Tempered Weytex, Weylite, Perforated Weytex, and Weybase.

7. **Testing Facilities.** United States Testing Company, Incorporated. 6 pp., ill. Bulletin 5801. Describes the complete line of laboratory and field testing facilities and services available. Includes detailed description of the company's engineering facilities and services, which cover a broad range of subjects, from environmental studies to electronics, instrument calibration, and reliability testing and failure analysis.

8. **Internal Gear Rotary Pumps.** The Deming Company. Bulletin No. 1550. Presents typical application data, specifications including rotor, pump casing and head, bearings, bearing housing, axial rotor adjustment, stuffing box, and shaft specifications. Also covers features of construction and operation plus an operating conditions table.

9. **Staining Tendencies of Waxes.** Department of Industrial Research, L. Sonneborn Sons, Inc. This is a technical paper outlining the factors influencing the staining tendencies of waxes. It indicates the importance of the staining tendency as a property of waxes—with special emphasis on those used in lamination.

10. **Dyeing of Creslan.** Allied Chemical, National Aniline Division. Technical Service Circular 18, 51 pp. Deals with procedures for applying various classes of dyes to this new acrylic fiber. Brochure shows the fastness properties of National dyes when applied to Creslan, including results of tests conducted for washing, acid and alkaline perspiration, rubbing and light fastness.

11. **Aluminum for Heat Exchangers.** Reynolds Metal Company, Dept. PRD-2. 16 pp., ill. Summarizes technical information needed by the heating engineer, fabricator and industrial purchases, and covers aluminum heat transfer rates, temperature properties. tensile strengths, pressures and dimensional tolerances. Charts provide information on aluminum stress values, working presures, thermal expansion and conductivity and friction factors.

12. **Roller Gravity.** Lamson Corporation. 48 pp., ill. A reference book for the enineer who uses conveyors to solve unit load-handling problems.

13. **Tool and Die Steel.** Universal-Cyclops Steel Corporation. 12 pp., ill. Contains complete technical data on machining, heat treatment, mechanical and fatigue properties of the new Lo-Air Tool Steel.

14. **Shock and Vibration Measuring.** Columbia Research Laboratories. 14 pp., ill. Describes and illustrates three commercially available shock and vibration measuring systems.

15. **Acoustical Treatment.** Columbia Acoustics and Fireproofing Company. Bulletin S-10. 4 pp., ill. Gives complete specifications for Cafco Sound-Shield including noise reduction coefficients, light reflection values and flame spread classifications.

16. **Rotary External Gear Finishing Machines.** Denham & Company. 4 pp., ill. Close-up photos illustrate the underpass, modified underpass and transverse gear shaving methods possible with the Michigan 870 and 870-A machines. A short discussion on crown shaving is presented. Complete

mechanical and physical specifications are contained in the two-color brochure. Illustrations of automated setups and other optional equipment are also included.

17. **Resilient Flooring.** Building Research Institute, 145 pp., ill., $5.00. Publication No. 597. Contains tips from top men in the business on both the installation and the maintenance of all of the various types of resilient flooring on the market today.

18. **Glass-Reinforced Polyester Molding Compound.** Atlas Powder Company, Chemicals Division. 4 pp., ill. Tables provided detailed data on the physical, electrical, and chemical properties of Thermablow 105. The folder also contains recommended molding conditions for both compression and techniques.

19. **Ampco Welding News.** Ampco Metal, Incorporated. Featured in this fourth quarter, 1958 issue is information regarding the over-laying of steel pipe expander rings with Ampco-trode 250 electrodes to eliminate excessive wear and to prevent scratching and galling of the pipes. Other articles describe the repairing of a 3000-pound board drop hammer ram; the fabricating of bearing liners and the welding of those liners to 26-foot propeller shafts; and the overlaying of drawing dies used in forming automobile bumper guards.

PRODUCTS AND COMPONENTS

20. **Aircraft Seats.** Flight Line Corporation. Folder pictures a variety of luxury, standard and tourist seats designed for airline use. It also displays a choice of executive and crew seats for utility aircraft in both propeller-driven and jet categories.

21. **Semi-automatic Lathe.** Carl Hirschmann Company, Inc. 4 pp., ill. Brochure for Kummer high precision semi-automatic lathe (MR-6020) for applications in the field of electromechanics, instrument manufacture, ordnance, optics and fine mechanics in general.

22. **Twist Drill Grinding Machine.** Carl Hirschmann Company, Inc. Brochure describes the Meteor Small Twist Drill Grinding Machine's capabilities; gives technical data, listings of standard equipment and special accessories.

23. **Precision Tube Benders.** Wallace Supplies Mfg. Co. 20 pp., ill. Shows the critical bending of thin wall high strength alloy tube for applications in missile and jet plane work requiring bending machines of a high order of precision.

24. **Industrial TV Cameras.** Kin Tel Division, Cohu Electronics. 4 pp., ill. Bulletin describes Kin Tel's line of industrial television cameras and gives complete specifications for two cameras in the line. Also describes camera accessories, such as remote-control pan-tilt and iris-focus units, an auto-zoom lens, and acoustical and weatherproof camera housing

25. **General Purpose Computer.** Royal McBee Corporation. Gives specifications, basic features, illustrates major components and lists applications.

26. **Reducer and Nonreducer Motors.** Bodine Electric Company. 12 pp., ill. Lists and describes 300 standard stock Bodine reducer and non-reducer motors of various types and sizes.

27. **Pulls and Knobs.** Furniture Hardware Division, Faultless Caster Corporation. Shows nearly 500 designer-styled pulls and knobs for both modern and traditional furniture. They are all available in basic bright finishes of brass, chrome and nickel, and can also be supplied in satin finishes as well as in pewter and porcelain finishes.

28. **Overhead-Valve Engine.** Hercules Motors Corporation. Bulletins No. E-301-A, E-303-A and E-305-A. These bulletins describe, respectively, 4-cylinder, 6-cylinder and 8-cylinder models of new interchangeable Hercules engines designed for use with gasoline, kerosene, LPG or natural gas.

29. **Maintenance and Construction Products.** L. Sonneborn Sons, Inc. 4 pp., ill. Covers products designed for floor treatment, water proofing and damp roofing, roof coating, as well as paints and protective coatings.

30. **Space Age Contract Manufacturing.** Farwell Metal Fabricating. Included are photos of missile and guidance systems components, electronic cabinetry, jet engine parts and special handling equipment produced to customer specifications along with plant photographs demonstrating the latest types of equipment and production facilities available in the Farwell plant.

31. **Ceramic Capacitor.** Centralab, A Division of Globe-Union Inc. 16 pp. Cross-Reference Guide. Lists all units that are stocked and available for immediate delivery from Centralab distributors. The guide lists over 600 ceramic capacitors by type and and rating.

32. **Terminal Block Connectors.** Camblock Corporation. Bulletin explains Camblock's principle of operation, cites test results and gives performance data and other specifications for terminal blocks.

33. **Soft Blank Chuck Jaws.** Gahr Machine Company. 6 pp. Contains complete specifications and data on soft blank chuck jaws for all makes of chucks, including air chucks, hand or power-operated geared-scroll chucks, two and four-jaw independent chucks, and combination chucks. The brochure is arranged to show interchangeability of chuck jaws between different make and models of chucks and to simplify ordering.

34. **Alzak Processed Reflectors.** Aluminum Company of America. 12 pp., ill. Brochure tells how Alzak Processed Reflectors control artificial light with maximum efficiency and contains complete information on finishes, service, specifications and performance.

35. **Thermoplastic Knobs.** Waterbury Companies, Inc. 6 pp., ill. Photographs, diagrams and dimensions of twenty-eight different knobs are contained in the catalog. The knobs range in size from 5/16" to 2-7/8" diameter and include types suitable for a wide variety of application.

36. **Wires and Cables.** Chester Cable Corporation. 6 pp., ill. Lists coaxial cables, military hookup wire, multi-conductor cables, appliance wire, miniature and audio wires and cables, high voltage and frequency wires, antenna loop, rvc-300 apparatus and annunciator (bell) wire, also television transmission lines—primary and secondary lead-in cable, "parallead" and "airsac" lead-in wire and TV rotor cable.

37. **Power Capacitors.** General Electric Company. 8 pp., ill. Bulletin GEA-6662A. Describes the features of GE's corrosion-resistant 50- and 25-Kvar power capacitors for high voltage applications. Includes pictures, cutaway and dimensional drawings, ratings and weights.

38. **Truck Batteries.** The Electric Storage Battery Company. Describes a new line of storage batteries which boost the work capacity of present-day electric industrial trucks by as much as 44 per cent. Also shows how the engineering advances involved have made it possible to design shorter and more maneuverable trucks through use of smaller, yet equally powerful batteries.

39. **Rigid Plastic Fans.** Atlas Mineral Products Company. Bulletin No. 8-20. Describes the centrifugal fans featuring sizes from 1-1/2 to 35 inches. Bulletin No. 9-21 details the twin-flow fans available in sizes from 12 to 48 inches.

40. **Cable Assemblies Catalog.** H. H. Buggie, Incorporated. 12 pp., ill. Covers standard molded-type cable assemblies as well as field, special and coaxial types. Thirty-four standard types are illustrated utilizing common connector ends and standard molded terminal ends.

41. **Precision Gears.** General Electric Company. Bulletin GEA-6430. 24 pp., ill. Describes precision gears from less than one inch to over 200 inches in diameter and with tooth-to-tooth spacing accuracies of two ten-thousandths of an inch. Also describes allied products such as various gear testing devices and high-speed flexible couplings which are manufactured by GE.

42. **Thin-section Instrument Bearings.** Split Ball bearing Division, MPB, Inc., 24 pp., ill. Catalog describes a complete line of thin-section ball bearings made in precision and ultra-precision grades to dimensions of the AFBMA B-500 series.

43. **Torq-Air-Matic.** Thomas C. Wilson, Inc. 6 pp., ill. Gives data on the expanded line of torq-air-matic automatic tube-expander drives for virtually every tube rolling job.

44. **Transistorized Digital Test Equipment.** Digital Equipment Corporation. 4 pp., ill. Folder provides specifications and prices for transistorized digital test equipment.

45. **Transistor Servo Amplifiers.** Librascope, Inc. Bulletin 501-2 consists of two-page illustrated brochure that describes the complete performance specifications and application data of ¾ watt, lightweight amplifier model 501-2 which uses silicon transistors to provide reliable performance over a wide temperature range.

46. **Transmitting Tubes.** General Electric. 8 pp., ill. Comprehensive listing of all the company's electronic tubes currently available for transmitting and allied applications.

47. **Twenty-one Industrial Lighting Problems Solved with Power Groove.** General Electric Company. Technical publication gives case histories of the effect of power groove lamps on a complete range of industrial operations.

48. **Ultra-Reliable Annunciator.** Panalarm Division, Pannelit, Inc. The folder contains information on Pannelit's new static-magnetic annunciator, recently developed for monitoring complex automatic machines and continuous process operations. The annunciator uses the static-magnetic controls instead of conventional relays.

49. **Voltage Starter Bulletin.** Allis-Chalmers Manufacturing Company, 10 pp., ill. Design and construction features of A-C's reduced-voltage starters are described. Bulletin covers the range of automatic reduced-voltage starters from 50 to 1200 hp, 600 volts.

50. **X-ray Instruments.** Phillips Electronics, Inc. 12 pp., ill. Covers the latest X-ray instruments for element analysis and structure determinations.

MISCELLANEOUS

51. **Alcoa Report to the Building Industry.** Aluminum Company of America. 32 pp., ill. Theme of new publication is that installed cost economy is creating major new markets for electrical applications of aluminum in the building industry.

52. **ALCO's Research and Development Facilities.** 16 pp., ill. This brochure describes in detail the company's research and development organization active in sixteen areas of technology. Projects undertaken by the company for government and industry are stressed.

53. **Ansco Films.** Ansco Division, General Aniline & Film Corporation. Five compact exposure guides on Ansco products. In all, they cover each of the following products: Super Hypan, Anscochrome, All-Weather Pan, Super Anscochrome.

54. **Annual Ford Body Builder's Layout Book.** Ford Division of Ford Motor Company. 84 pp., ill. This annual book lists specifications and designs for 370 Ford truck models, and is particularly helpful to body manufacturers and distributors in installing their equipment on Ford chassis. The book contains chassis dimensions for the full Ford truck line.

55. **Engineering Booklet.** General Transistor Corporation. A fifty-page booklet entitled "The Unwritten Laws of Engineering," the publication is a refresher course in management techniques for engineering personnel.

56. **Engineering Field Services.** Hoffman Laboratories. 16 pp., ill. This brochure outlines the company's field service capabilities available to industry on a world-wide basis in the areas of field engineering, overhaul and repair, test equipment standards, etc.

57. **Film Chemicals.** Ansco Division, General Aniline & Film Corporation. Ansco folder details and charts the use of chemicals for processing this company's films.

58. **Film Folder.** Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company. Booklet "Film Reviews" lists the various industrial and educational motion picture films available from Eastman. The films described show how Eastman plastics are manufactured and where they are used.

59. **Goodyear Catalog.** Goodyear Tire & Rubber Company. 94 pp., ill. Booklet called "Rims" contains information and engineering data on rims, wheels, tools and rim accessories.

60. **Guide to Dow Corning Silicones.** Dow Corning Corporation. 16 pp., ill. This recently issued guide describes what silicones can best meet the needs of a great variety of problems, ranging from adhesives to release agents, resins to rubber, dielectrics to water repellents. Also contains a list showing where silicone products are currently being used.

61. How To Select Display Stands. Hinde & Dauch. 36 pp., ill. This book answers questions on how to give products more impact at the point of sale. The booklet is a revised edition and appears as one of the Little Packaging Library series published by the company. It illustrates how display stands can introduce a new product, can tie in with national advertising and sales themes, increase unit of sale, etc.

62. Industrial Aerosol Spray Products. Crown Industrial Products Company. 16 pp., ill. Booklet contains detailed information on the history of aerosol spray products and their industrial applications today. Among the subjects covered are the history of aerosol packaging, development of pressure containers and valves, methods of filling, and principles of operation.

63. Industrial Textiles. Paulsen-Webber Cordage Corporation, Industrial Textiles Division. Brochure illustrates the varied applications Paulsen-Webber has found for industrial textiles in a number of different industries. All the products shown in the brochure were specially designed and fabricated to meet the needs of clients in the aviation, trucking, shipping, contracting, and material handling industries.

64. Nuclear Equipment Handling. Mechanical Division of General Mills, Inc. 20 pp., ill. Booklet describes new devices for remotely handling radioactive, toxic or highly flammable materials. Also described are the organization of the Nuclear Equipment Department, and the engineering and manufacturing facilities as well as the technical services available to designers, engineers and architects in the nuclear industry.

65. Photo Books. The Macmillan Company. Folder reviews 11 technical photographic books offered by this publisher.

66. Self-locking Set Screw Selector Chart. Set Screw & Manufacturing Co. 28 pp., ill. Catalog includes a set screw selector chart which shows over 1,000 combinations of metals, locking actions, and points, and suggested applications.

67. Silicone Fluids for Mechanical Applications. Dow Corning Corporation. Bulletin #3-112 is a compilation of information essential to selecting the most suitable silicone fluid medium when designing for reliable, uniform performance. Typical applications cited show how silicone fluids are used to advantage in damping, springing, coupling, and related mechanical applications.

68. Six Fabric Books by Color. F. Schumacher & Company. Schumacher is now offering its Chromoscope® collection of books. This series consists of six books, each of which features a definite color series. The series are reds, blues, greens, beiges, blacks and whites.

69. Summer-Fall Issue Of The ALCO Review. ALCO Products, Inc. 28 pp., ill. This periodic company magazine features articles on portable atomic power, a new automatic tape-control method for precision machine drilling, and electric control for oil and gas-well drilling.

70. The Story Of Technology. E. I. du Pont deNemours and Company. 36 pp., ill. The book discusses the large corporation as a principal element in technology. To coordinate the many specialists and to raise the capital needed for major scientific and engineering accomplishments, there must be organizations of substantial size and experience; the book points out the role of this company in this capacity.

71. Time Zone Map. Ohio Seamless Tube Division of Copperweld Steel Company. This map showing standard time zones of the United States and Canada is available on request. The map is printed in three colors, on 8½" x 11" card stock.

72. Tool Engineering. American Society of Tool Engineers. 16 pp., ill. This new booklet is entitled: "A Better Life Through Creative Manufacturing" and is in large part a transcript of remarks by the commentator Alex Dreier on the program "America On The Go". Also contained in the book are a brief definition of tool engineering, the origin and history of the profession, and a discussion of the influence and responsibility of tool engineers.

73. Transport Facts and Factors. Automatic Transportation Company. 16 pp., ill. The book illustrates the operational features that make the company's walkie-type truck suited for work in congested areas and for short hauls.

74. Adjust-O-Feeder Proportioning Pump. B-I-F Industries, Inc. Bulletin Ref. No. 1106.2QA-1. Contains photographs of the Simplex and Duplex models, and a Capacity Table listing Capacity in GPH, Maximum Discharge Pressure in PSIG, Type, Plunger Diameter in inches, Stroke Length in inches, and Strokes per Minute.

75. Soluble Oil Mixer. Force-Flo, Inc. 2 pp., ill. Explains how the Force-Flo Soluble Oil Mixer inserts into a drum to accurately and uniformly mix soluble oil and water in the exact proportion required.

76. Mill Motor Couplings. Koppers Company, Inc. 4 pp., ill. Brochure points out that these couplings are especially designed for use on table rolls, conveyor drives, skew tables, screwdowns, and other auxiliary drives, and can be used on direct-connected feed rollers. A table showing mill motor ratings and dimensions is included.

77. Hydraulic Constant Speed Drives. General Electric Company. Publication GEA-6890. 4 pp., ill. Describes power transmissions in 9- to 60-kva ratings for lightweight airborne electrical systems.

78. Office Photocopy Process. Peerless Photo Products, Inc. Folder. Describes new Quick Silver process that uses only a single sensitized sheet and can make either one copy or a hundred economically at the rate of four copies per minute.

79. Low Voltage Power Protector. General Electric Company. Bulletin GEA-6527. 8 pp. Provides detailed information on the application, features and operation of Type LB-1 Power Protector designed for heavy duty commercial building applications, 480 volts AC and below.

80. Auto-Torque Driver. Dixon Automatic Tool, Inc. 4 pp., ill. Shows the various models, how parts are handled by the newly developed feeder, and gives specifications.

81. Flexible Couplings. Lord Manufacturing Company. 6 pp., ill. Describes standard and specially engineered bonded rubber flexible couplings. Contains detailed specifications for three standard shear-type flexible couplings, 1/50 to 100 hp at 1750 rpm. The formula for selecting the correct standard coupling for other speeds is given. Necessary data for designing or choosing any coupling is listed.

82. Shim and Gasket Material. General Gasket Company. A color-coded chart to facilitate selection of Color-Plast shim and gasket material, also color-coded to eliminate need for micrometers or calipers.

MANUFACTURERS' LITERATURE

This popular service for INDUSTRIAL DESIGN's readers makes available copies of technical literature of wide interest.

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Manufacturer's Literature

83. Facilities Brochure. Pacific Scientific Company. 20 pp. Lists and describes firm's engineering and production facilities, which includes testing laboratory, instrument assembly, field service facilities, heat treating division.

84. Induced Draft Fan. Fuller Company. 4 pp. Describes characteristics of induced draft fan. Includes schematic drawings, dimensioned diagrams and photographs.

85. Pollution Control Papers. 64 pp. Includes papers delivered at seminar on air stream pollution control in 1958. Seminar sponsored by U. S. Public Health Service, New Jersey Department of Health, Rutgers University and Cyanamid.

86. Manifold Installations. National Cylinder Gas Division of Chemetron Corporation. 28 pp., ill. Booklet entitled "Industrial Piping Equipment" describes production, space and cost benefits in continuous distribution of industrial gases by custom-built manifold installations. Duplex, simplex and portable manifold distribution systems piping oxygen, hydrogen, nitrogen, helium, argon, acetylene and other gases for welding, cutting, heating, flame hardening, flame blasting and oxygen lance operations are detailed.

87. Pallet Handling in Narrow Aisles. The Raymond Corporation. 24 pp., ill. Handbook describes the principal types of trucks available for narrow aisle operation and shows on-the-job pictures of the equipment in use. Also points out labor saving advantages of unit load handling.

88. Mash Welding. Sciaky Bros., Inc. 6 pp., ill. Brochure deals with Sciaky type MP 1 Air Operated, Press Type, Single Phase Seam Welder. Brochure also includes illustrations of machine with dimensional drawings. Machine data is tabulated to indicate KVA range, throat depths, welding capacities, etc.

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Index to Advertisers

For Your Calendar

Through March 8. Ceramic International to celebrate the 20th anniversary of Ceramic National. Metropolitan Museum of Art, New York.

Through March 31. European Glass Design. Commercial Museum, Philadelphia.

Through April 19. "Architecture and Imagery—Four New Buildings." Exhibit of models and photographs at the Museum of Modern Art, New York.

February 23-25. American Management Association's conference on planning, producing and promoting new products. La Salle Hotel, Chicago.

February 25. "The Conflict between Town Planning and the City." Lecture by Jane Jacobs, Associate Editor of *Architectural Forum.* Yale Art Gallery, New Haven.

February 25. "Market Research as a Guide to Product Development." Lecture by Dilman K. Smith at the Center for Design Studies, Boston.

March 1-4. Second National Lighting Exposition, New York Coliseum.

March 2-4. American Management Association's forum on package design and development. Hotel Astor, New York.

March 2-4. American Management Association's Fifth Annual Electronics Conference and Exhibition. Statler-Hilton Hotel, New York.

March 3. Package Design Council workshop meeting. Design needs in variety stores. S. H. Kress, Fifth Avenue & 39th Street.

March 9. "Current Legal Problems in Design Protection." Lecture by Walter J. Derenberg at the Center for Design Studies, Boston.

March 23-26. Institute of Radio Engineers' National Convention and Radio Engineering Show. New York Coliseum.

March 26. Fourth Packaging and Materials Handling Conference, sponsored by the Society of Packaging and Handling Engineers and the American Materials Handling Society. Stanford University, Palo Alto, California.

March 30-April 1. Advertising Essentials and National Sales Aids Show. Biltmore Hotel, New York.

March 31-April 1. 28th Annual Meeting of the Inter-Society Color Council. Statler-Hilton Hotel, New York.

April 4-12. International Automobile Show, New York Coliseum.

April 5-26. Smithsonian Institute, travelling exhibits:
"Twelve Scandinavian Designers." Fort Wayne, Indiana.
"Fulbright Designers." Pittsburgh, Pennsylvania.
"Designed in Holland." Jacksonville, Illinois.

April 7-8. Building Research Institute's Eighth Annual Meeting. Penn-Sheraton Hotel, Pittsburgh.

April 13-17. American Management Association's National Packaging Exposition and Conference. International Amphitheater and Palmer House, Chicago.

April 18-22. American Society of Tool Engineers' Annual Meeting. Hotel Schroeder, Milwaukee.

April 26-30. American Institute of Decorators' National Conference. Plaza Hotel, New York.

May 18-19. Third Annual U. S. World Trade Fair. New York Coliseum.

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