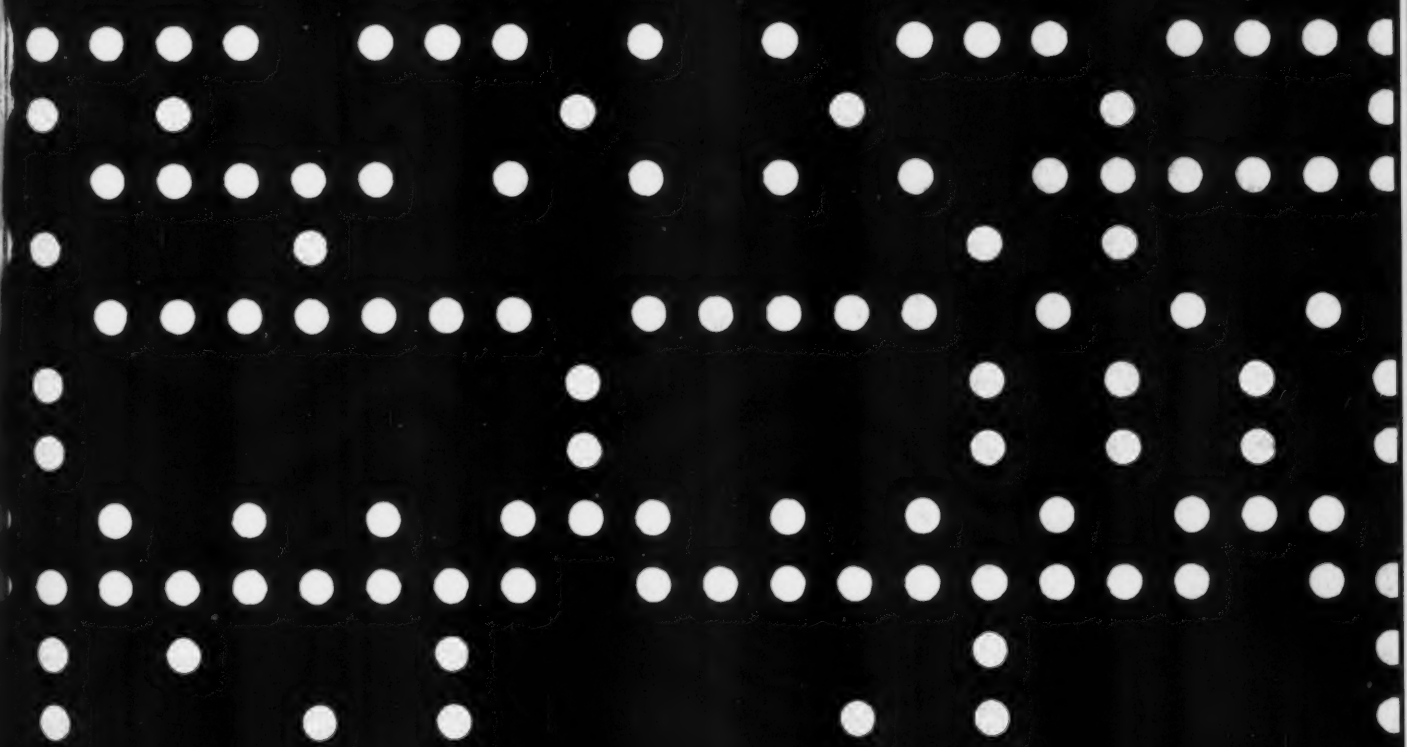
INDUSTRIAL DESIGN



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VOLUME 1, NUMBER 4

4

INDUSTRIAL DESIGN

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

CONTENTS FOR AUGUST, 1954:

Pratt & Whitney Aircraft's double wasp R-2800 engine, as symmetrical as a Tudor Rose, has been reproduced 120,000 times since it first went into mass production in 1940. The compact 2500 h.p. engine is used in many airliners, including the Douglas DC-6. ⟶

PUBLISHER	*Charles E. Whitney*
EDITORS	*Jane Fiske Mitarachi* *Deborah Allen*
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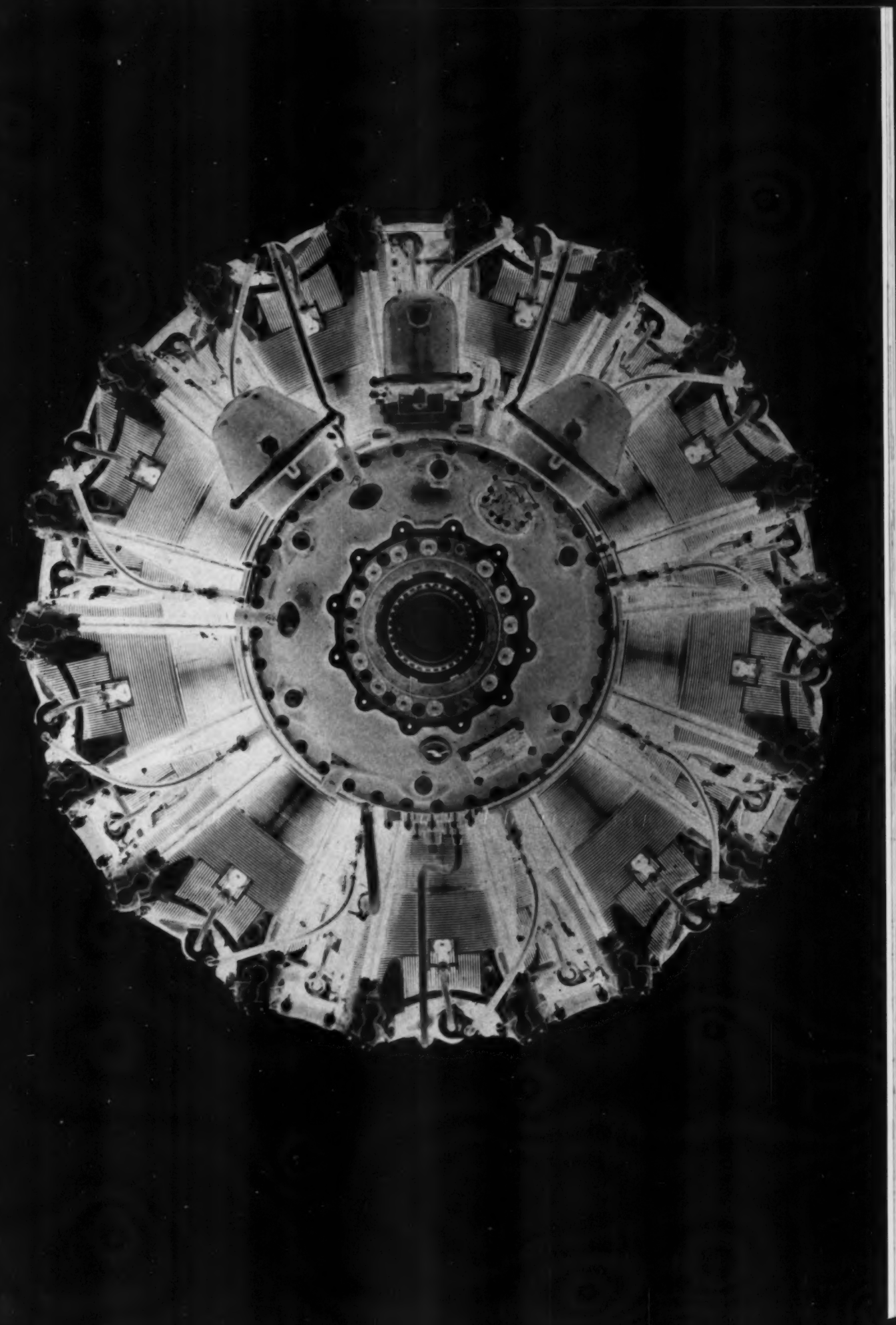

in this issue...

Peter Muller-Munk, who takes the designer's point of view on design at Bell and Howell (pp. 40-43), heads his own office in Pittsburgh. For ten years until 1944 he was associate professor of Industrial Design at Carnegie Institute of Technology.
Malcolm Townsley, who speaks for management on the same question, recently capped 23 years with B&H's engineering department with his appointment as Vice President in charge of the Engineering Division.

Harold Van Doren, prolific designer and author, discusses the important fee question (pp. 105-108). His varied career in the arts has included periods as lecturer at the Louvre, art editor of the New York *Survey Graphic*, and assistant director of the Minneapolis Institute of Arts. An industrial designer since 1930, his office in Philadelphia produces all the designs for Philco's appliances.

J. Gordon Lippincott, industrial designer, is an engineer, teacher, author, lecturer, and consultant for many corporations in the consumer goods fields.
Walter P. Margulies, the other half of L&M, was educated in Europe, and has designed everything from lipsticks to cocktail lounges to buildings for the World's Fair; his own house is furnished completely in plastics. The team of L&M is responsible for living quarters on the *Nautilus* (pp. 46-51).

Ada Louise Huxtable was trained as an art historian and teacher. Marriage to an industrial designer, four years as Assistant Curator of Architecture at the Museum of Modern Art, and a Fulbright for advanced research in contemporary Italian architecture and design (resulting in the Museum's current "Modern Movement in Italy" show) qualify her to speak on stainless steel flatware (p. 30).

Georgine Oeri, who reports the Aspen Conference (p. 109), has traveled widely through Europe doing free-lance articles on art, theater, and films for the newspapers and magazines of her native Switzerland. In 1947 she joined the staff of *Graphis*. For the past year and a half she has been on the staff of New York's Guggenheim Museum, doing research, lecturing and exhibition work.

100 uses already developed

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This material has **SIZE** . . . its Big Sheets — up to 8′ x 14′ — abolish many former size limitations.

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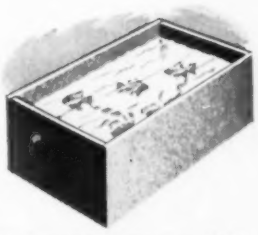

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LETTERS

Hi-Fi

Sirs:

I had the impression that INDUSTRIAL DESIGN was going to help solve design problems by discussing the various facets of a particular product or line of products and review what has been done in the past and the best work of the present, with an eye toward the future. Eric Larrabee's article, "Machines that Make Music," completely misses most of the vital aspects of high fidelity, certainly those of importance to the designer. There are many fixed elements of high fidelity equipment that place a tremendous burden on the designer, for example, the unusually massive magnet structures on loudspeakers. The enclosure, completely glossed over in your story, must meet certain rigid physical requirements to reproduce music properly. Only *after* the proper cubage and path for the sound have been supplied can the designer consider the appearance of his unit.

Don't misunderstand me. I found Mr. Larrabee's article tremendously amusing, but in introducing the industrial designer to the problems of our field, it falls far short of its goal. For example, you made quite a point of Raymond Loewy's design of Hallicrafter's radio receivers. Those are communication receivers, whose requirements are quite different from those for a piece of apparatus to go into a consumer's home.

Please don't lower our estimation of INDUSTRIAL DESIGN, which surely could be our favorite publication.

Lawrence LeKashman, Vice President, Sales
Electro-Voice, Inc.
Buchanan, Michigan

Awakened

Sirs:

I took INDUSTRIAL DESIGN home with the intention of lulling myself to sleep by looking at a few nice pictures, but I found that I got so interested in the articles that I stayed awake until 1:30 to read it through from cover to cover. . . . I like very much the rather sharp critical tone that you seem to have been able to maintain throughout . . . a very refreshing contrast to the usual editorial policy of "trade" magazines.
Harmon H. Goldstone
New York, N. Y.

Bettor Lettering

Sirs:

Your intriguing article in the June issue of INDUSTRIAL DESIGN on signs and lettering prompts me to send a common item handled by thousands daily. The attached betting receipt runs a close second to your New York lamp post standard for variety in lettering, yet surpasses it by far, as the reason for it all is to record a single transaction—a two buck bet on a nag.
Andrew Gillespie
Pillofoam Product Design
Dunlop Tire & Rubber Goods Co., Ltd.
Toronto, Canada

Suggestion

Sirs:

If you don't change drastically some of the aspects of your new magazine it will not last until the end of this year.

1. Get a good printer.

2. Get a good layout man. Study the layout of "Graphics," "Print," "Fortune," "Colliers" and CBS literature.

3. Publish more articles on technique, and stress the functional aspect of industrial design a little more. Beauty is only half of the story.

There is a great need for a magazine of this kind. You don't have to worry about having enough ads to support it if it is properly edited and DESIGNED.
No hard feelings. I just wish it would survive.
T. L. Wang
East Haven, Conn.

Perplexed

Sirs:

We were happy to see the fine editorial treatment which you gave our product, the new Linex Stereo Color Camera, in the June issue of INDUSTRIAL DESIGN.

We were quite perplexed to find, however, that you gave credit for its manufacture to a competitor of our parent company. We should like very much to inform you and the readers of your publication that the Linex camera and accessories are manufatcured by the Linex Corporation, a division of the Lionel Corporation.
Dan Tate, Vice President
Linex Corporation
Division of Lionel Corporation
New York, N. Y.

We hope that second mention of your product will in some way compensate for the unwitting editorial merger.—Ed.

Vindication

Sirs:

Your article "Can You Make it of Paper" should make a few former students of Mr. John B. Waldheim feel a bit apologetic.

Mr. Waldheim, now an Instructor at the University of Florida, spent at least a full semester jamming "paper" down our throats.

After five years "on the job", I find that many a past problem has proven its worth.
LeRoy F. Stertz, Designer
Badger Store Fixture Company
Marshfield, Wisconsin

Reference overseas

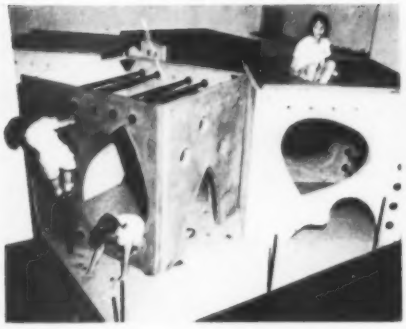
Sirs:

Congratulations on producing a journal which not only covers the design field more than adequately and in a most interesting way, but in itself is a good book to see on the shelf.

A periodical of this description is of immense value to designers in this country and will certainly provide a contemporary reference on American design.

On reading some of the letters you have received from readers in America this letter seems rather flat. My good wishes, however, are just as sincere.
Leslie J. Roberts
Industrial Design Section
The General Electric Co., Ltd.
London, England

NEWS



1st prize: Fantastic Village
Virginia Dortch Dorazio

2nd prize: Stalagmite Cave
Robert J. Gargiule

3rd prize: Tunnel Maze
Sidney Gordin

Sculpture for the playground

That children and art have a natural affinity can be seen in any museum gallery on a Sunday afternoon. Seldom, however, have they been so happily combined as in the winners of the recent Playground Sculpture competition co-sponsored by the Museum of Modern Art, Parents' Magazine, and Creative Playthings, Inc. Models and photographs of the award-winning designs will be on exhibition at the Museum through August 22, including full-size examples of the three top prize selections, by a painter, industrial designer and sculptor, in that order.

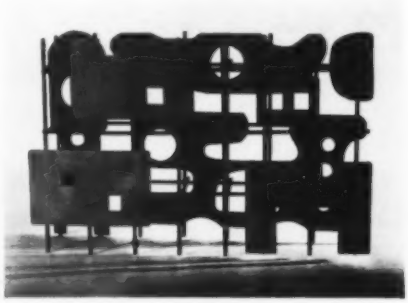
Three hundred and sixty entries, aimed at stimulating a new approach to the design of equipment in public playgrounds, offered infinite possibilities for climbing, jumping, swinging, crawling, hiding, or just making noise (below). The idea of making physical exercise stretch the imagination as well as the muscles has been carried out admirably through the use of abstract architectural and sculptural forms.

Many of the designs are versatile and flexible; the top prize winners are based on the use of one or more interchangeable, prefabricated units. A *Fantastic Village* by Virginia Dortch Dorazio (first prize) consists of four play houses, made of prefabricated reinforced concrete sections, in black, white, and terra cotta. A *Stalagmite Cave* by Robert J. Gargiule (second prize) uses an architectural unit of smooth, sculpturesque shape: a slender, spool-shaped column in various heights. The *Tunnel Maze* by Sidney Gordin (third prize) is a pattern of bridge-shaped sections.

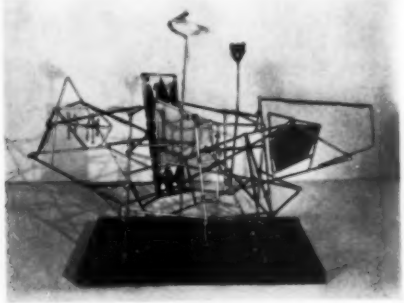
All of the successful solutions depend on the integration of the useful and the beautiful—a problem familiar to the industrial designer. To look at these pieces as pure sculpture would imply, unfairly, judging them as great art, but they do provide an adult delight as exercises in color, form, and pattern, quite apart from their merits as playground equipment.

The jury consisted of Frank Caplan, Director of Creative Playthings, Inc.; Philip C. Johnson, Director of the Museum's Department of Architecture and Design; Victor D'Amico, Director of the Museum's Department of Education; Edith Mitchell, Delaware State Director of Art; Mrs. Penelope Pinson of Parents' Magazine; Mrs. George D. Butler, Director of the Department of Research at the National Recreation Association. Greta Daniel, Assistant Curator of the Museum's Department of Architecture and Design, was Competition Director.

Citation: Ferrophone
H. Krisel and M. Rosenzweig



Citation: Double Climbing Wall
W. J. McLarty



Citation: Asymmetrical Jungle Gym
Harvey Weiss

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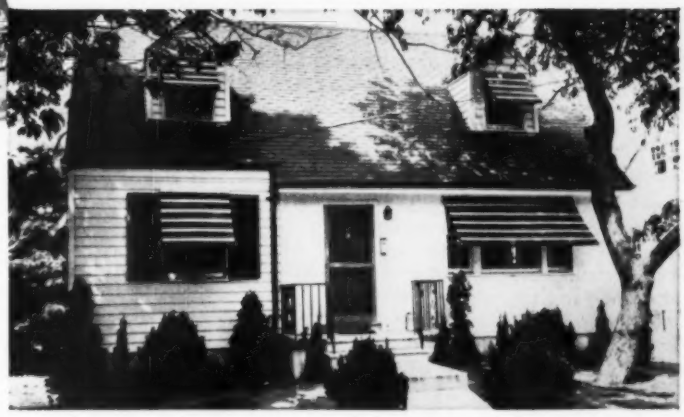

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Photographs by courtesy of Orchard Brothers, Inc., Rutherford, N. J.

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Good Design's student exhibits

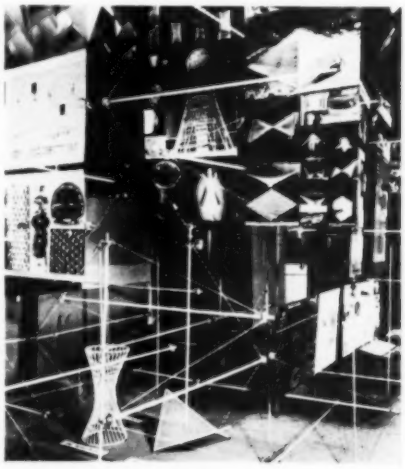
Rhode Island School of Design shows a plan and experimental model of a complete dwelling unit for a typical New England family, with chairs, tables, and even toys.

"What are the challenging potentialities of modern design? Where should we look for indications of the way design should develop— to new materials, new processes, new insights into the structure of the Universe, or into human behavior? How could these developments tend to affect the way of life and the homes people will establish in the United States in the next decade?" These are the questions that seven important design schools were asked to consider in special student exhibitions prepared for this year's Good Design show at the Chicago Merchandise Mart. If the questions are ambitious, so are the answering suggestions, ranging from higher mathematics to the simple prediction of a world saved by Do-it-yourself. Schools submitting exhibitions are Massachusetts Institute of Technology; the Cranbrook Academy of Art; the Institute of Design, Illinois Institute of Technology; Pratt Institute; the Rhode Island School of Design; the University of Georgia; and North Carolina State College.

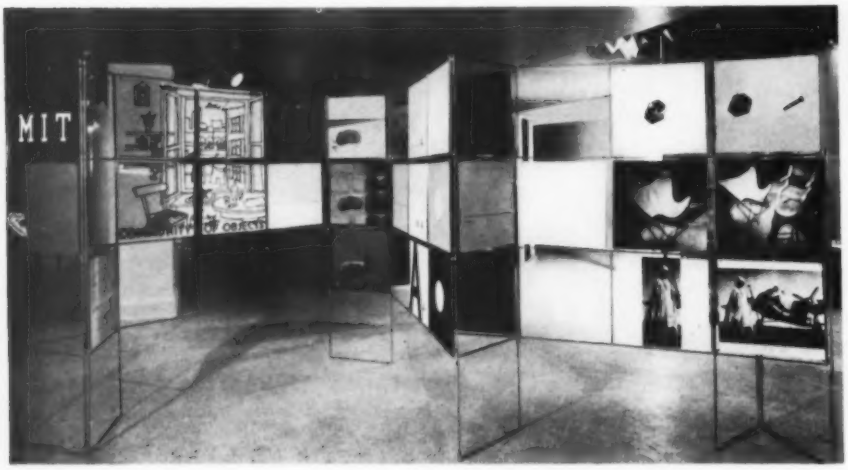
The most complex display, in both concept and installation, is North Carolina's dissertation on science and daily living. Engineering models and diagrams emphasize "an experimental or investigative approach to problems of design." In marked and interesting contrast, I.I.T. uses children's drawings for a simple illustration of the fundamentals of daily life, the home, and the familiar factors that shape it— people, space, objects, activities. Rhode Island devoted its display to a house intended for a typical New England family, with prophetic furnishings, including a portable kitchen that moves outdoors in summer, based on student designs. Pratt and M.I.T. give serious thought to design as an integral part of human existence. Pratt's examples range from abstract art to the redesign of household appliances; M.I.T.'s elegantly hung photographs and text panels stress that "to design an object in isolation is not sufficient. It must also fulfill its role in the larger context . . . functional, visual and cultural." Design is shown as the unifying element that binds, relates and enhances components which are evolved one by one to meet special needs and demands.

It is stimulating to see, within the single framework of this big, fifth anniversary Good Design show, the best commercial examples of the past decade and an intriguing forecast for the future; these imaginative projects emphasize the importance of design training in America today.

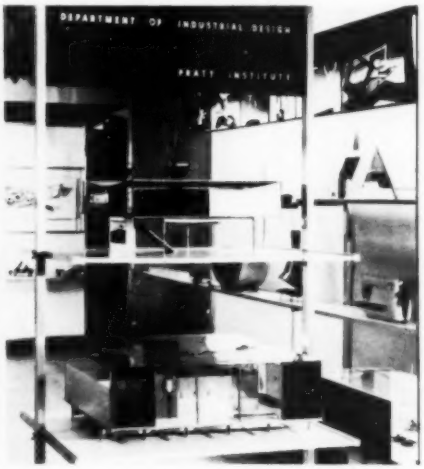
For further discussion of Good Design, and some of the selections made by the Museum of Modern Art over the past five years, see page 22.



North Carolina stresses the investigative approach to design, resulting in unconventional forms like the discontinuous compression frame holding the display.



M.I.T.'s project, a series of text panels and photographs on a folding metal frame, shows simply and lucidly the advantages of a community of objects and surroundings.



Pratt students' research has resulted in redesign of objects from cars to houses.

rosenzweig

Some of the exploratory articles
in the coming October 1954 *issue of*

INDUSTRIAL DESIGN

[redacted]

TRENDS: "The Tastemakers"
A selection from a forthcoming book by Russell Lynes on the history of efforts to form the public's taste.

TECHNICS: "Tooling Up with Plastic?"
A summary of the technical, economical and design considerations in using plastics for tools and dies.

HUMAN ENGINEERING: "Men and Machines"
Three studies in automation, exploring ways that design can create rapport between thinking machines and the men who must work them.

MERCHANDISING: "Number 1 Merchant"
What the world's largest store, Sears Roebuck, is doing about product research and industrial design.

EDUCATION: "The Georgia Experiment"
An account of how two designers "redesigned" a university art department for industrial education.

ID

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

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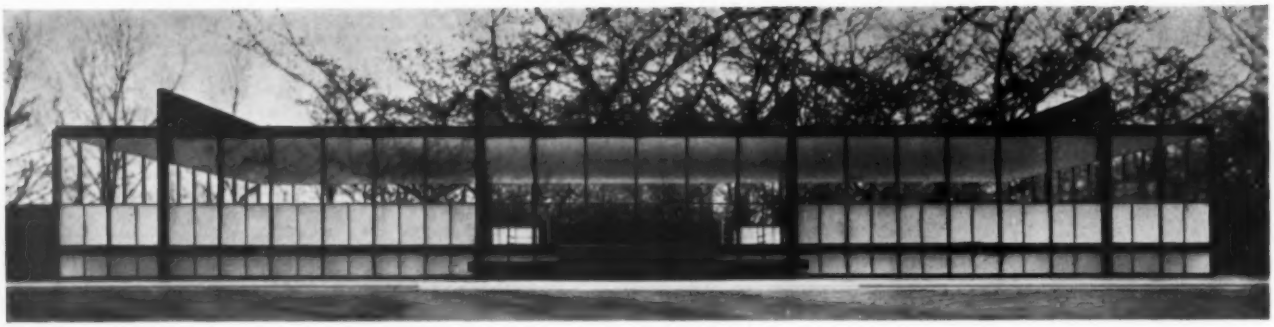


Mies van der Rohe's newest addition to the I.I.T. campus, in model.

News from I. I. T.

Speaking of design schools, at Illinois Institute of Technology plans are going full steam ahead for an enlarged department of architecture and industrial design, and the creation of a new department of city planning, all within the coming year. These departments will be administered as a new academic division of the Institute, and will be housed in Mies van der Rohe's latest projected addition to the I.I.T. campus, one of the severely simple, elegantly proportioned glass, steel and brick buildings that have become a Chicago landmark.

American design goes to Italy

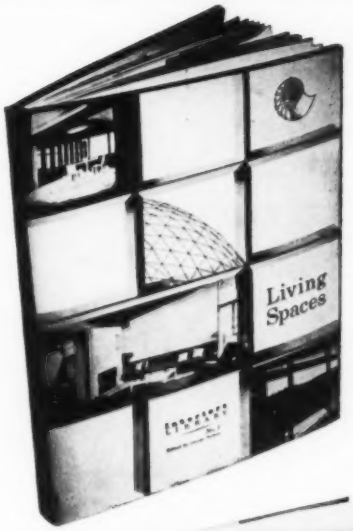
Although it looked for while as though American industrial design would be the orphan of the 10th Triennale Exposition of Milan, without the official sponsorship given to displays of other nations, the United States will be well represented. Two spectacular geodesic domes, made possible by the joint efforts of manufacturers and other well wishers, have been erected in the park under the long-distance direction of R. Buckminster Fuller; and the Society of Industrial Designers has sent over a selection of fifty American products, designed by Society members, which will be shown in the International Pavilion from August 28 to November 15, the duration of the Triennale. These will include such diverse items as kitchen equipment, power tools and automobiles, and should give both touring Americans and visiting Europeans a pretty good sampling of American industrial design. Since this year's theme is the relationship between art and industry, it would have been a sad comment on American design to be among those missing.

Italian design in transit

Not only is it Triennale year, but the *Cristoforo Colombo*, the sleek new 29,100-ton, 700-foot, air-conditioned sister ship of the *Andrea Doria* arrived on July 24, complete with three mosaic-tiled swimming pools one for each class an air conditioned garage, four special luxury suites that would do nicely as year 'round apartments, and a fancier than usual assortment of offices, banks, stores, and cinemas. The ship was built in Genoa's Ansaldo shipyards, using an unusually high percentage of electric welding in addition to the usual riveted seams. Bridges and funnel were completely prefabricated on shore and hoisted onto the hull by cable cranes. The design of the interiors, to quote the Italian Line, is "elegantly modern and soothing to tired nerves." It is regrettable, though, that the kind of design (far from soothing, to be sure) which made Italy a post war star is so little in evidence here. There are glimpses and suggestions: some furniture with good lines, excellent tables, cantilevered desks in a neat, small writing room, and beautifully detailed fine woods In first class there is lushness and confusion—those deathless standards of luxury travel—some surprisingly poor color, and an alarming tendency to overdesign. As air conditioning closes in the ship, it becomes more and more the grand hotel, this time in *style moderne*. Artists and architects didn't get together quite as well as on the *Andrea Doria;* silver plated copper reliefs by Romano Rui are unsympathetically installed in the ballroom; the architect of the Belvedere Lounge and Bar has hidden a bronze statue behind the door. Among the designers, all architects, were Alessandro Alessandri, Luigi Ciarlini, Angelo Crippa, Mario Gottardi, Attilio and Emilio La Padula, Matteo Longoni, Giulio Minoletti, Gustavo Pulitzer, Mario Tevarotto, Guglielmo Ulrich and Nino Zoncada; artists include Roberto Aloi, Enrico Ciuti, Renata Cuneo, Paolo de Poli, Felicita Frai, Toni Furlan, Dino Predonzani and Romano Rui.

Interesting facts: The ship, which carries 1,248 passengers in 3 classes and 580 crew, is powered by two groups of turbines, developing 50,000 h.p.; electric dynamos, including air conditioning equipment, total 6,500 kw. There are 1,800,000 feet of electric cable; 700 motors, ovens, radiators and special installations; 15,000 electric lights, 2,000 electric switches, 68 small drinking fountains, 6 electric elevators and four dumbwaiters.

S. S. Cristoforo Colombo, *newest addition to the Italian Line, has as its decorative theme the life and times of the discoverer. In the Main Lounge (left), marked by fine woods and inventive lighting, a marquetry panel designed by architect Enrico Ciuti depicts Columbus' coat of arms.*



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The witty, often provocative introduction and commentary are by George Nelson, noted architect and designer. The 232 illustrations were selected by the editors of INTERIORS, the professional magazine of the interior design field.

LIVING SPACES is a fine source of fresh ideas for decorators, architects, manufacturers, retailers — and home owners, too. ***Bound in full cloth: 148 pages, 9 x 12 inches illustrated with 232 photographs. Price $7.50.***

CHAIRS

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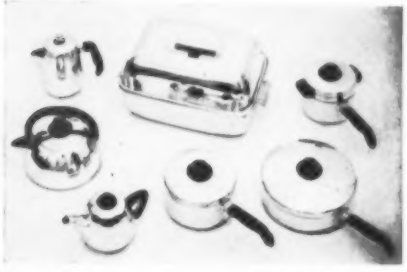
Canadian NIDC awards

Approximately 95 products of Canadian design or manufacture have been selected for the 1954 awards of the National Industrial Design Council of Canada. NIDC, an extension of the National Gallery of Canada, hopes, by means of these awards, to produce a greater commercial and consumer awareness of the accomplishments of the industrial design profession. Selections include home furnishings and appliances, office equipment, tools, toys, radio and TV sets, tractors and camping tents. Whenever possible—which is most of the time—the Canadian designer is credited. If the object is made or distributed in Canada, but the designer is not Canadian, he is simply designated as "foreign." Among several distinguished "foreigners" in this year's catalogue is Henry Dreyfuss, represented by his Honeywell thermostat and Hoover vacuums. Judging standards are form, function, good value and consumer acceptability. The objects, seen first at the Design Center in Ottawa, will also be on exhibition at department stores and display centers throughout Canada, and since all design roads lead to the Triennale this year, a selected group will be seen this fall in Milan.



Award-winning cookingware by Supreme Aluminum Industries, Toronto.

A new design review

Right in line with post-war European interest in industrial design (a phrase, incidentally, almost always rendered in the original English), is a new Italian publication, *Stile Industria*, put out as a sister periodical to *Domus*, the magazine that has been an international leader in the presentation of architecture and interior design for so many years. Edited by architect Alberto Rosselli, *Stile Industria* is divided into three sections: industrial design, graphic art, and packaging, with photo captions in Italian and English. The first issue, for June—it will come out four times a year—features three pages on American industrial design (Dreyfuss, Huxtable, and Painter, Teague and Petertil); an article on form, function and beauty by Max Bill; a discussion of automobile design; examples of Italian furniture and products; and a portfolio of French, Italian and American graphic art.

IDI Awards: Chapman Associates' Kim Yamasaki and Bill Goldsmith, and Brunswick's Howard Barber and Dick Reineman with their chair; at right, the winning Loewy scale designed for Borg-Erickson.

IDI awards

Awards at home: On June 24, the Industrial Designers Institute announced its fourth annual Gold Medal Awards for outstanding industrial design achievements of the previous year. Dave Chapman Associates were honored for their line of school furniture for the Brunswick-Balke-Collender Company, and Franz Wagner, Richard S. Latham, and Don De Fano of Raymond Loewy Associates, Chicago, received an award for the design of the Flight scale for the Borg-Erickson Corporation. Both designs were cited as representing a departure from tradition. The school furniture (see ID April), using tapered tubular steel and molded plywood, is the first application in America of modern design standards and techniques to mass-produced school equipment. The scale, slimmer and lower than any previous model, still accommodates the necessary accurate weighing mechanism. Some previous winners have been Carl Otto's Ediphone and his Schick razor, the Eames chair, Don Dailey's Servel Wonderbar, and a fan by Don McFarland for General Electric. Chairman of the IDI Design Award Committee this year was Paul MacAlister.

Italian design award

One final word on Italy: La Rinascente, the Macy's of Rome and Milan, has announced the establishment of a design award for achievements in industrial design in Italy, or, in literal translation, "for the esthetic of the product." Twenty "Golden Compasses" will be given to the manufacturers of the selected articles and twenty "Plaques of Honour" with 100,000 lire (about $150) to each of the designers. Objects will be selected on the basis of a competition open to Italian manufacturers and designers in industry and handicrafts, covering every conceivable branch of design from packaging to *haute couture*. The results, which should be interesting, will be exhibited at the Triennale, August 28 to November 15.

Ford Foundation grant

The Ford Foundation has given a grant of $132,000 for a three year period to the graduate School of Industrial Administration at Carnegie Institute of Technology for an investigation of the organization of business firms. The grant expands a previous award of $35.000, made last year for an "inventory" of existing knowledge of how organizations operate. The research group, headed by Professor Herbert A. Simon of the Graduate School faculty, will study the ways in which human beings communicate and work under different types of organizational arrangements, with special consideration of the problems of adaptation to changes in business and in organizational set-ups. Says Professor Simon: " . . . we know far less about how such organizations operate under various conditions than we know about the inside of an automobile engine. It seems possible that the results of the survey may help prevent future failures, and enable us to approach the efficiency of the ants and the bees."

Design and the Law

The whole question of design protection came in for an afternoon's discussion at the annual meeting of the American Bar Association in Chicago, on August 16. On the symposium, which dealt with the question from both the legal and design standpoint, were Milton Immerman of Teague Associates, discussing problems of protection from the designer's standpoint; Dr. Walter J. Derenberg, covering the place of industrial design in the law of trademarks and unfair competition; A. A. Goldman of the Copywright Office in Washington giving *their* point of view; and Albert C. Johnson with a general summary of the principal proposals now being advocated for legislation. Finally, the Committee on Protection of Industrial Designs gave its report, followed by a general discussion from the floor.

"...through a person-to-person canvass..."

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President
Northern Pacific Railway Company

"Combine a good product with enthusiastic salesmanship, capably directed, and favorable results are reasonably certain. This winning combination through a person-to-person canvass recently added more than 8,000 employees of the Northern Pacific Railway to the Payroll Savings Plan for purchase of U. S. Savings Bonds. It is gratifying to me that the organized efforts of Northern Pacific personnel not only have resulted in substantially increased systematic saving and a greater investment in America's future by our employees, but that the Treasury Department is using our campaign as an example throughout the railroad industry in its efforts to step up regular purchases through payroll deductions."

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A good Person-to-Person Canvass is an organized employee effort that puts a Payroll Savings Application Blank in the hands of every man and woman in the company. There is no pressure, no drive to "sign up." Every employee is free to make his own decision. That's all there is to a Person-to-Person Canvass, but in literally thousands of companies, as on the Northern Pacific, a high percentage of employees *want* to build their personal security and are quick to join the Payroll Savings Plan when its availability and many advantages are brought to their personal attention.

Upwards of 8,000,000 employed men and women are enrolled in the Payroll Savings Plan, most of them as a result of Person-to-Person Canvasses. Each month these Payroll Savers invest more than $160,000,000. The 1954 goal is 9,000,000 Payroll Savers. It can be reached if you and other executives will take a personal interest in the Plan and what it means to your employees, your company and your country.

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INDUSTRIAL DESIGN

News

Air conditioning scrutinized

The air conditioner, "the fastest growing major appliance," has been coming in for some acute study and significant experiment. In Austin, Texas, an air-conditioned village of 22 houses, sponsored by the National Association of Home Builders along with some 70 manufacturers of air conditioning and home-building materials, is serving as a live laboratory for study of the many questions—engineering, design, medical and psychological—raised by the increasing use of air conditioning in medium priced homes. Perhaps the principal question concerns operating and maintenance costs. Thus the houses include practically every kind of single-level design commonly found around the country, with some new twists (such as a white-pebbled roof to reflect the sun), so that engineers can observe the effect of such factors as the siting of the house in relation to the sun and the prevailing window; the location of the air conditioning unit; the type of distribution system used; intermittent versus continuous operation; various kinds and thicknesses of insulation materials; and the heat-absorption qualities of various shades of paint. All reports will be released through the NAHB Research Institute; the first will be available at the close of the summer.

The Talgo, Spanish version, rounds a curve near Madrid.

Talgo

On June 29, the New Haven Railroad gave a press run to the pilot model of the Talgo, a rocketing little train which promises to make the Super Chief look like the Toonerville Trolley. A version of the Talgo has been in operation in Spain on the Hendaye-Madrid run since 1950; this model is experimental, being worked out for American rail conditions. Built by ACF Industries, the Talgo's speed rests on three major design or engineering innovations: a low center of gravity, light weight, and guided axles. The Talgo's center of gravity is two feet lower than on conventional equipment; the passenger rides between, rather than over the wheels. The train consists of short (1/3 the length of average cars), articulated units with two rear wheels each, the front end resting piggy-back on the unit ahead. The axles and wheels are automatically guided through curves, rather than having to fight the rails; this allows high speed turns and eliminates the need for "ballast" to prevent derailing. Light weight (75% less than standard equipment), made possible by the design of the cars, is the key to increased speed and lowered production and maintenance costs on train and rails.

Manufacturers and Designers:
You are invited to submit material for **INDUSTRIAL DESIGN***'s first*

ANNUAL DESIGN REVIEW

which will appear in the December 1954 *issue*

WHAT IS IT?

A major feature in our December issue, the first Annual Design Review will be a portfolio of the year's most interesting developments in industrial design.

WHAT WILL BE INCLUDED?

The collection will cover every facet of industrial design: new and redesigned products, packaging, materials and components, professional and industrial equipment, as well as consumer products. A comprehensive review of this calibre, highlighting the ideas and accomplishments of an entire year, should be a valuable permanent reference for designers and manufacturers alike.

WHO CAN SUBMIT MATERIAL?

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

HOW DO YOU PARTICIPATE?

From designs placed on the market since September, 1953, choose those which you would like included in this annual review. These designs should represent the most significant work of your firm or design office. Perhaps a design has made a particular contribution in its field, has overcome special practical problems, offered unusual features or merchandising ideas. Send us one or more reproduction photos of each product (unretouched if possible), labeling each photograph clearly with the names of the product, the designer, staff member, or department in charge, and the manufacturer. *On the same label please include a brief note stating what you consider is unique and distinguished about the product you have selected.*

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

1. notable solutions to familiar problems
2. designs without prototypes; that is, designs for objects never manufactured before, which embody new approaches to unfamiliar problems
3. inventive designs: solutions based on new practical improvements in function and operation
4. engineering developments
5. apt and unusual use of materials, components, finishes
6. packaging design
7. new ideas for merchandising products

There is no restriction on the number of photographs of designs submitted. Closing date for contributions is October 1, 1954.

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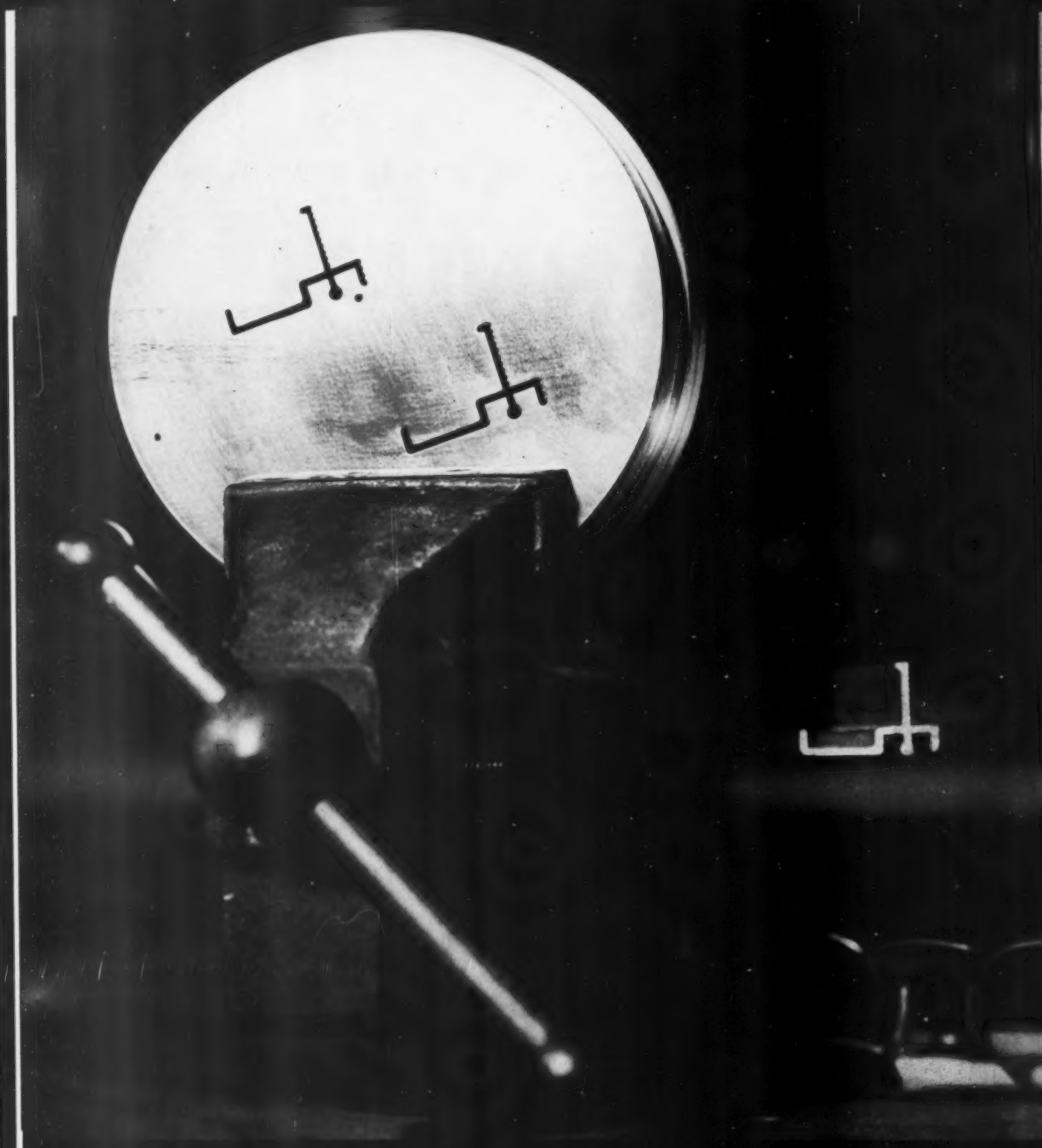
INDUSTRIAL DESIGN



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You can improve product quality and cut costs with extrusions.

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do

you

carry

your own

reptile?

W. C. Fields always bears twice-telling.

The item we have in mind was rendered, in the usual peccable diction, some years back, and recorded on an obscure label that is now as inaudible as the man himself. It was The Temperance Lecture, a string of crocodile pearls on the virtues of abstaining from *spiritus frumenti.* ("Don't tell me you can't swear off liquor —I've done it a *thousand* times.") When the scratchy old 78 was re-issued recently, one special pearl was dropped out, and we think it is worth salvaging. If memory serves, it went something like this:

"So I washed it down with some snakebite remedy which I always keep handy — only, however, because I had just been bitten by a snake, which I also keep handy."

After a nasal pause, he went on philosophizing: "Those who over-indulge always have serpents handy — in fact, some helpless souls are burdened with them as constant companions. In my time I can remember the company of many assorted reptiles."

Funny, but in or out of saloons the old snake trick never dies. We've noticed that some people tote very large serpents that constantly hiss, "That's-what-the-public-liked-last-year." Others are wrapped around by reptiles whispering, "That's-what-everybody's-designing-this-year," alternately with, "Don't-forget-we've-got-a-lot-tied-up-in-those-tools."

Now don't give us the excuse that you can't get rid of those old serpents. We've done it a thousand times.

the editors

drawing by Martin Rosenzweig

In June, as Good Design reached its fifth birthday, its joint sponsors—the Merchandise Mart (Chicago) and the Museum of Modern Art (New York)—celebrated with a retrospective exhibition. Since ID's readers have a more than ordinary interest in Good Design, we borrowed the occasion, and the title, for a round-table discussion of the subject:

Five Years of Good Design

The guest of honor, of course, was

Edgar Kaufmann, Jr. Director of Good Design

His interrogators were:

Eliot Noyes architect and industrial designer

Louis B. Goodenough Editor, Retailing Daily

Don Wallance industrial designer

William E. S. Griswold, Jr. President, W. & J. Sloane

Charles J. Jaworski Manager of Industrial Design, IBM, Poughkeepsie

George H. Kress Industrial Design Director, IBM

Donald L. McFarland Manager of Product Planning, Small Appliance Division, GE

We met beside a tape recorder at the Museum on the afternoon of July 7. Mr. Noyes consented to moderate. His first question was this:

Mr. Kaufmann, can you tell us something about the reason for Good Design?

Kaufmann: The general purpose of the Museum, without getting technical about it, is to provide education for the general public. If we can help the public efficiently by working with and through a special audience, there's no reason that I know of why we shouldn't. But it's very important to remember that the education of the public is the main end. In the field of design, we felt that the general public was more personally involved with the things that they used and enjoyed at home, than with any other kinds of products, except possibly clothing and personal accessories. An enormous number of new items come on the market at regular intervals, among them good things, bad things, new ideas that really have not been tested, and old ideas in new forms. It is very difficult for the general public to find reasonable guidance through this flood of material, with two exceptions. The consumer magazines discuss and analyze new products in their editorial pages and shopping columns. There are also reports like consumer digests, which attack a very specific angle. Second, but by no means less important, there is the guidance provided by retail outlets. Particularly after the last war, a group of little shops sprang up which did a job of guidance that had not—and I think Mr. Griswold will agree—been very aggressively undertaken by the larger stores. Today it's pretty hard to find a major city in which one of the big stores isn't doing a pretty good job of selecting progressive design in home furnishings and presenting it with some degree of coordination.

Nevertheless, what these magazines and stores do has an inherent commercial bias. It did seem to us that something beyond this particularly influenced kind of guidance could be provided. Take the simple example of glass ashtrays. Obviously the interest of the magazines and the stores both will necessarily be weighted toward the guy whose ashtray has the advertising campaign built in. We felt that the people who bought the ashtray had something that deserved to be considered not only from the point of view of how well it sold, or how well it was advertised, but what it was like to live with — how useful it was, how beautiful, and how sensibly priced. We thought it would be wise to give more than objective weight to the factor of appearance, the one that was the least effectively stressed through all the other channels. We felt similarly about ingenuity and inventiveness: many times new ideas came into the market through new, weak or minor channels of production or distribution, and were not given a thorough scrutiny before they were discarded.

We felt that if any of these aims were to get anywhere, we should take our stand at the most crucial point we could find—where all the things that are made come together before they become all the things that are sold. That point is, of course, the wholesale market itself. Then all of a sudden we were facing a highly special and highly specialized public We realized that it behooved us to fit the varied structure of our show, the timing of our show, and the manner of showing it to this special audience. We decided to do it not only by meeting them on their own ground, and at their own season, but also by trying to heighten and accentuate the points we wanted to make to harassed and busy people, by putting the things which seemed good to us together in one spot, and in a very dramatic presentation. We were lucky to find our spot and our support in the Merchandise Mart.

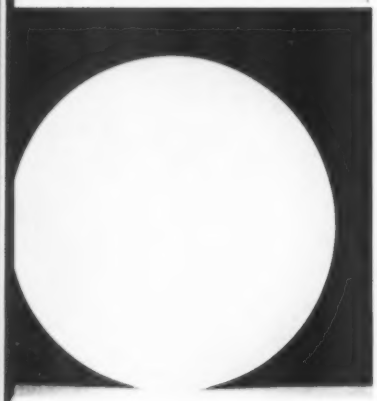
drawing by Martin Rosenzweig

Is it the purpose of Good Design to raise the level of public taste?

Kaufmann: No, our aim is to raise the level of public information, and let them make their own taste.

McFarland: Would you say the general design level of your exhibition is quite a bit in excess of the average American's taste?

Kaufman: I don't believe I know what average American taste is. If you mean, "Are the selections made for Good Design more advanced, and in my opinion better, than what is generally sold around the country?" all I can say is, Why not? Why in the world would we be doing the show? Otherwise you would have a Good Design show every time you walked through Hearn's.

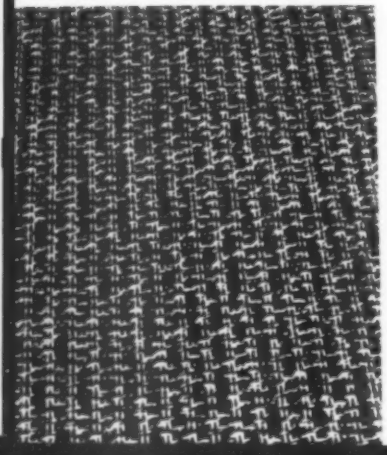


Is there any measure of the success of the program?

Kaufmann: Nothing has happened in the five years of Good Design that I would be inclined to trace back to Good Design alone. I do think that during these five years there has been an appreciable rise in the level of design of consumer products generally. Good Design has been one feature of a moving situation. It has kept its place in that situation, which, according to the nature of the museum, is properly in the forefront of experimental opinion and production.

Goodenough: We sent a questionnaire to all Good Design winners requesting them to list their best sellers in order, and asking for comments. It's amazing how many people took the trouble to comment about the success of Good Design. For example: "These items (decanters, creamers and sugars) were in our line three months before receiving the Good Design award. After receiving the award they not only increased in sales, but became our best dollarwise sellers." Another interesting point is the number of designs selected back as far as 1950 that still remain top sellers. That's very significant.

Kaufmann: I think such records are found most often in smaller firms. Bigger firms have access to much publicity beyond Good Design, and it's very hard for them to determine which of their various forms of publicity have pulled up sales.



Is a Good Design label a definite impetus to sales?

McFarland: If there is an appreciable pick-up in sales because of the Good Design label, then it is equivalent to a Fashion Academy label and that is not good.

Kaufman: I don't think the Good Design label does it. I think that the public has agreed with our selections, that's all.

Griswold: Although the specific pieces sell well, I don't think a Good Design label on a piece ever clinched the sale. The fact that the piece qualifies for Good Design means it has characteristics which generate a keen sense of appreciation and curiosity among people. Perhaps in the smaller communities a certain aura of prestige attaches itself to pieces that are labeled, but I don't think our records would show that pieces carrying the Good Design label outsell those that do not. It's the intrinsic merit of the piece, after all, that determines its popularity.

Kaufmann: At first I would not submit to the idea of labels, but I finally agreed the arguments against me were stronger than the ones I could put up. Now that we have had about three years' experience with it I feel it has done us more good than harm. It does us some harm, though, and I would like to find a better technique.

McFarland: As I see it, when the Good Design label is used as an award it begins to come into the category of fashion.
Kaufmann: Oh, I agree with you. That's why we have fought against the use of the word "award." But the consumer press has not been aware that this is a rather crummy word. Actually all we do is exhibit or not exhibit. All the ticket does, is say that the thing has been in the show. It's not an award.

Would the exhibitions be more effective if the judges published the reasons for their choices?

Kaufmann: This information is available in the press release, and is usually given some dissemination by the press. It might be quite sensible to include it in the show.
Noyes: One designer I have talked to suggests that you cannot talk about good design unless you talk about bad at the same time.

Kaufmann: I don't really know that the reasons for selections are as important to the general public as we are assuming. Their principal interest is in knowing what we think is good looking, and agreeing or disagreeing with our judgment on their own basis. Everything new that is really good changes the meaning of good. There is more in those objects than there is in the Committee's reasons for selecting them. And this wholeness of statement is much bigger and more important, even though it doesn't happen to be made in words, than the analytic generalizing statement which might be made to explain our choices.

Noyes: Isn't there some risk of starting fads instead of emphasizing design? If, for instance, there were a great many objects on wire legs, the public might gather that the Museum thinks wire legs are a good thing.
Kaufmann: The Museum, through its Committee, has publicly stated that these wire legs are good things. The show has nothing to do with anything in general. It is a show of selections. I think that far more people understand the general drift of the show when we put it on with very little statement, than if we try to educate them towards some abstract, impossible, and absolutely ridiculous authoritarian set of verbal standards.

Noyes: Mr. Goodenough, have you any thought about this business of explanation?
Goodenough: I think that goes back to what the Merchandise Mart does with the actual merchandise. Some stores have done a fairly good job of putting on a Good Design show and explaining to the public what this is all about. I don't think the majority of them have done a very good job. But even the stores don't explain how the selections are made.

How can the trade back Good Design?

Griswold: It's awfully difficult to put across the Good Design story at the retail level other than as a public service, which we are not in business to perform. The selections are based on good design, not good merchandising. They do not offer a good balance in terms of price lines and general style characteristics, such as size, color, materials, etc. Furthermore, a retailer who wishes to cooperate may find that certain competitive lines are tied up against him. We try to do our part to keep the ball rolling, but in the end you can only highlight the show.

But in a broader sense, I think the recognition, the education, the encouragement Good Design effects at the industry level is its very significant contribution. Obviously the thing that is well designed sells better. This organization has a piece of machinery to select outstanding design ideas and encourage them, put them under the spotlight so that people will consider them and study them, and for those purposes its work is just the finest.

Jaworski: I have been in a somewhat provincial area, where the only medium for good design has been some furniture stores. The general public to whom I have mentioned Good Design doesn't know what I'm talking about.
Kaufmann: I guess you don't read the woman's pages. I think the Good Design idea has very wide dissemination. Not very deep, but very wide.
Goodenough: I see woman's pages from the strangest small places that give importance to Good Design.

Is there any other way to develop greater interest in Good Design?

Wallance: One possibility comes to mind. Could you set up regional selection committees to screen objects and send them on to the final committee? Then they could set up their own Good Design shows locally, with the idea of presenting a local or regional point of view. It might suggest that if four regional committees agree that so and so's ashtray is the best one, it's sort of worth taking seriously.

Kaufmann: It's a good idea, and I believe somewhere in that direction — having more people do research, and more people voice opinions — there lies an excellent possibility. However, I think that regional committees as such tend to filter out as many good things as they filter in, because they have not only local knowledge but local prejudice. One set of prejudices is about as much as a show can bear.

Wallance: But that needn't take away from the initiative of the central committee, which would still make the final selection after giving due weight to the recommendations of the regional committee.

Kaufmann: You would have a hard time getting cooperation from your local committee if you didn't give them some power. But my real objection to this idea of regional committees leading up to a central committee and a final judgment is that it tends to assume the purpose of Good Design is to find the ultimate best, whereas our purpose is to survey the market. We are not setting up eternal values. We are not buying things for a permanent collection.

Jaworski: I should think the Museum might encourage independent regional shows.

Kaufmann: We have always been happy when people wanted to do them, and we give them whatever help we can. Conversely, we find a great deal of material in other shows.

Noyes: The first local good design show I know of happened in a class Alfred Barr had at Wellesley. Each girl had to bring in a well-designed object, which was then discussed in class. I would say somehow this program is a continuation of that, and now it is spreading so that many museums and schools are doing this kind of thing.

Is there any bias in the selections?

McFarland: You have nothing traditional in your show. Is there no such thing as good traditional design or do you just choose not to put it in?

Kaufmann: Oh, there's excellent traditional design, but it was all made in the days when that was modern. There is no good reproduction traditional design, in my opinion.

Wallance: One impression I have of all the shows is the overwhelming extent to which the objects come from small industry, or even craftsmen. I see only two objects among these photographs that I would clearly recognize as coming from large-scale industry.

Kaufmann: We are only interested in what people use in their homes — we don't care who makes it, how it is made, or where it is made.

Wallance: By small industry, I don't mean a craft shop, or a few people working in a basement. I think the U. S. Census of Manufacturers defines small industries as those with up to 100 employees. I think 100 to 500 is intermediate and over 500 is large.

Kaufmann: Most of our stuff would probably come not from small but middle, according to that statement. However, it's to be expected that there should be some weighting in favor of the small industry because of our interest in experiment. The large industry tends to keep its experiment within its own walls until it's through the experimental stage.

Wallance: It's a reflection of a national situation—what we consider good design comes by and large from small and medium-sized industry.

Noyes: Have you ever had a designer from a large company as a jury member?

Kaufmann: No, because we don't think the standards they must use would be applicable to our problem. These men are trained to compromise, and our job is not to compromise.

Why don't more big company products make Good Design?

McFarland: We have never submitted any small appliances because I don't believe they were designed for the same public. I would be very surprised to see a manufacturer who produces in relatively high volume selected for Good Design.

Kaufmann: GE qualified, and they probably will again.

McFarland: We made it with one refrigerator — a design with individual letters across the front. They were later replaced with an integrated name plate. It was a very simple design. Is that why it was chosen?

Kaufmann: It was not only the simplest refrigerator design I can remember, it was also the most consistent. The lettering and the trim bore some relation to the surface of the box.

McFarland: If you took that upholstered chair and put it next to fifteen ordinary chairs, would you expect that chair to outsell the others?
Kaufmann: I really have no idea. I'm not in the selling business.

Griswold: The specific pieces selected for Good Design are generally exploratory or selective of new ideas or better ideas, and the immediate sale reaction obviously would not equal that of some old chestnut. However, they will have their time, and they will probably be recognized sooner because of the initial send-off, publicity, and descriptive material of Good Design.
McFarland: I believe the level of taste shown by this collection is not good sales material today. So when you say good design sells, I agree if you qualify good design. I think *fairly* good design sells. The volume product will sell better if it has some aspects of good design. But I don't think this kind of good design will sell in volume, particularly at the moment it appears.

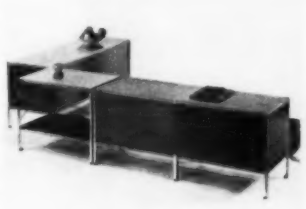
Noyes: I imagine everyone here would agree if we said that good design in its most acute sense is the thing that breaks the path for sales.
Kaufmann: Oh sure, everyone knows that what's advanced today is going to be volume in a deteriorated version.
McFarland: Well, should we say "deteriorated" or just made possible for mass production?
Kaufmann: You may say it that way. I must say deteriorated.

Kress: I could have thrown the problem of producing a typewriter to Mr. Noyes and said "Now you don't have to worry about what is an undercut and what is not in this die casting," and I'm sure he could have come up with a beautiful sculptured form that was entirely different from a typewriter.
Goodenough: Mr. Noyes, if you were judging a Good Design show would you want to include the IBM typewriter?
Noyes: You bet.

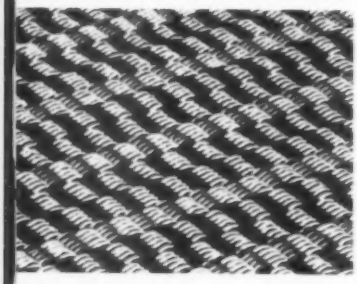
Does volume production imply compromise in design?

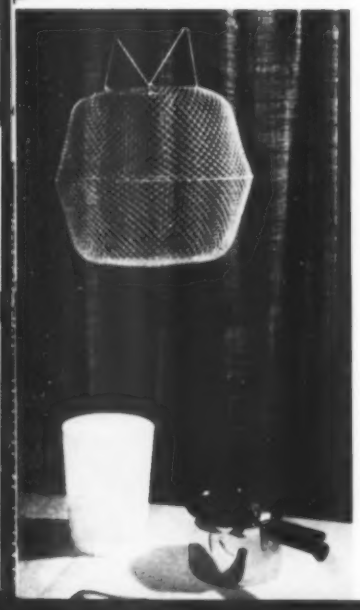
McFarland: If you're designing a cooking pot and there is a light-colored, heat resistant plastic that is very expensive, you may have to design for the very dark phenolics for cost reasons. I don't consider this a compromise.
Kress: If a designer cannot operate within this range then the designer is not equal to the challenge.
Jaworski: Our greatest ingredients of design are limitations.
Kaufmann: Too many designers are intent on some outside abstract idea instead of starting with the materials available and the market and the other elements—and then doing a good design.
Kress: Mr. Kaufmann, I would like to say that I don't think that these objects have always achieved that goal. I think they are fine as an inspiration, but the designer for a big company cannot take the liberties that these people have taken.
McFarland: I know you've heard all these things a million times, but the designer of mass produced articles also designs for point of sale. It's just as important as the home. I think it's too bad things have to work this way, but the product has to fight with its fellows on the showroom floor, and the very simple device doesn't always attract attention. The use of colorful interiors and gold and chrome does go in cycles, though, no question about it.
Kaufmann: Now you are going through the paces that all industrial designers go through. You really ought to forget the idea that your difficulties of production are greater than other people's. They are merely different. They are greater only in their dollar implications. They are not greater in their technical difficulties. I am sure it's just as hard for Nakashima to find a piece of wood that he considers spiritually eligible as it is for you to find the proper plastic.

McFarland: I'll buy that, except I think the difference is, and the difficulty is, the market it is intended for. The industrial designer is designing a product that he hopes will represent the taste of 80 percent of the people. That's not the same as designing a piece of furniture that he hopes to sell to 5 percent of the people.
Kaufmann. That's true. But we've discovered in Good Design that designers tend to run in shoals, working out one design problem while loads of others lie untouched.
McFarland: I don't think you can always blame it on the designers. It's the manufacturer who often says "Look, these things are selling. So and so was successful last year—let's go over to that ground." And the designer has the objective of designing within these limitations. Of course, the designer is at fault if the objective is bad and he can't sell the right one.
Noyes: Do you think Good Design would be more effective if the standards were less rigid?
McFarland: No, I thoroughly agree with Edgar's choice of material. I don't believe we should have the "best" refrigerator if there isn't a good one by the standards he has set. I have only one criticism. I often see furniture that is badly constructed. Eames, for instance, is represented quite a lot. He has put big screws into plywood edgewise in his casegoods—somebody sits on it and that's the end. Good Design has pieces like that from time to time that are esthetically nice but functionally doubtful.



Kaufmann: I'm awfully glad you picked on them, because some of the others I couldn't defend at all. I think we were quite consistent in putting those casegoods in, in spite of their very serious shortcomings. I think when a thing really breaks new ground, and does so with some indication of good looks, if not without flaws, then we ought to bring it to the attention of the public. Eames' casegoods represented a concept which has continued to have its place on the market. Ours is not a show of perfections; it is a show of excellences.





What do you like about Good Design?

Noyes: The thing that interests me in the show is the new ideas that are expressed in it —not because I'm looking for a chair or an ashtray to buy, but because I see that somebody has found that you can do something with leather that I'd never thought of. The show is loaded with ideas of how things go together, or spatial ideas, or textural ideas, simple structural systems that are very obvious but never occurred before. So I find a stimulus in a kind of pure design sense that pushes me on a little bit even if it doesn't relate to the problems I am working on. Is this understandable to the general public?

Kaufmann: I think they are stimulated in a different but parallel sense.

Noyes: If they see a chair hung in the air, they must think, "Gee, I never thought you could do that."

Kress: I am not so closely related to the public as I am to the designers, and the greatest contribution I see for the Good Design show has been an effect on designers. At least it has stimulated their ego, or their feeling of designing toward and possibly meriting a Good Design label of approval on their work.

Griswold: I think that the Good Design program is one more very wonderful and sound contribution to the whole momentum of education and understanding, not only at the public level, but very interestingly at the manufacturer's level. We also find it is useful in stimulating the thinking of store people.

Has there been much response from the manufacturer?

McFarland: I'm afraid the answer is a flat No. I don't think you will find a sales manager who will come around and say "Why don't you guys win a Good Design award?" But I'll tell you one thing: we have found in recent years that tie-in merchandising is a good thing. We sell to our trade first, and if you have something that will get their attention and make them buy, we certainly are interested in it. And Good Design will do that. We put out a kitchen clock that had linoleum on the face to match your floor. I think as designers we felt it wasn't a good idea, but we sold one pot-ful of clocks. We talked the linoleum company's merit and we talked kitchen floors, and what more can you say about a clock after you have talked about your design and the fact that it tells accurate time? I hope maybe Good Design will be a good tie-in thing. I'd like that better than linoleum.

Noyes: I work for a fairly enlightened company and I have found on several occasions that when the typewriter aroused interest at the Museum or somewhere else, and I called this to the attention of people in the company, they were terribly pleased. Now I think there is a real awareness of design that some of them didn't quite have before. I sent the president of the company a copy of ID. He was very pleased to see the new typewriter in it. The next time a design question comes up I am sure his interest in design will be sharpened up a little bit.

Kaufmann: General Electric went to Finn Juhl and George Nelson. Was Good Design an influence on their selection?

McFarland: Art BecVar should answer that one. I imagine Good Design contributed to an awareness of the kind of work they do, but it wasn't the only factor. Their purpose, like that of any good designer, was to stimulate the design department with their own kind of thinking.

Jaworski: I think Good Design has been the poor man's Finn Juhl for a lot of companies.

How can Good Design help the designer make his point with the manufacturer?

Noyes: I think the most important effect of Good Design is that it supports the designer in relation to the manufacturer, even if his design doesn't sell.

McFarland: I don't know how Good Design can help us. Our designers have to balance all their ideas against other departments, and millions of ideas are compromised. If Edgar leads the market by 100%, we lead it by 25%. There is a market for Good Design, but it isn't our mass market. I don't believe our efforts are bad design or behind the times. The kind of good design we are talking about here would put us out of the market. People are not that far advanced. If we were a Studebaker or a

Herman Miller then I would be all for this, but unfortunately we are appealing to 80% of the people. Our designers would like to design for more progressive tastes.

Noyes: He's right. To do better design he must educate 165,000,000 people. Change them, and then design for them.

McFarland: Our advertising slogan is "More goods for more people at less cost." GE has no top level policy of trying to educate public taste. Our obligation is to our stockholders.

Noyes: Could anyone rush your long range program?

McFarland: I don't know. Good Design is a step in that direction, but I doubt if they have a big enough budget. If we spent our advertising budget trying to change taste I don't think we would get much of a return on our money.

Kaufmann: This would indicate that one can't be much of an influence on the market.

McFarland: You can push people just so far. Design-wise we're doing the best job we can. Who are the companies that are growing? Wouldn't they be the ones that are appealing to the taste of the people?

Kaufmann: Yes, if growth is based on percent of dollar increase.

Wallance: Perhaps you're oversimplifying the question of public taste. The level of public taste isn't just a matter of its being so much ahead or so much behind. The range of design expression which is acceptable to a mass market is probably fairly broad. Within that range the designer can do a sound design job, provided he chooses an item that the public will respond to.

Kaufmann: Studebaker was a pioneer in fashion, not in design. Maybe you could design a Chevrolet that would be better and sell better.

McFarland: True. Nothing has pulled Ford up as much as an improvement in their approach to design.

Kress: Look at the Fiberglas car General Motors put out. Whether we think it's good or bad, it's an experiment. It wasn't intended for the public but the public surprised them so they had to step up production.

McFarland: A Netherlands design team went around this country last year and predicted that General Motors is destined to go out of business because their design is so bad.

Kress: The public's taste is ahead of what management is giving them. This is only personal observation, but I think the key to cultural uplift is not educating the public, but rather getting to the man who decided that this or that is not what the public wants. The people making such decisions are responsible to the stockholders, and just don't have the background to make a decision that isn't based on the past. Good Design should help them. Why shouldn't it be safe to produce good design?

Noyes: Mr. McFarland, in your line of clocks is there no room for a clock, just one, that is excellent design-wise, that might turn up in Good Design —say a prestige item?

McFarland: Sure. I actually believe there can be a good market for good design in clocks, because the competition is all whipped up high at the middle of the road. We just introduced a new clock in this direction. Of course it will be $34.95, and at that price it won't break records.

Noyes: That's a fancy clock. I am talking about a direct simple little clock for $3.95.

McFarland: Another company brought out a clock that's very simple, very modern. It's in a class by itself, and it's finding a very good market.

Kaufmann: Why can't you do something that isn't simple and "very modern," that is still good design?

McFarland: We're talking about people at the top of the market. There is also a bottom There are people who want clocks that look like frying pans.

Kaufmann: You can design for such taste and do a good job. People too rarely attempt to see if they cannot satisfy a larger market and still do a good job. The importance of keeping the existing market is so serious that too few risks are taken. We should do anything possible to plow the field up a bit and get that market loosened up.

Noyes: Is there any possibility of a Good Design annex, to cover different fields? Or a separate organization?

Kaufmann: We'd love to do it, of course. It's just a matter of money.

Jaworski: Good Design should be the basement on which a bigger and greater design organization should be based.

Kress: Isn't the problem to reach the people who design what will be produced?

Kaufmann: That's my business. That's why we are lucky to put the show on in Chicago.

Kress: As a matter of fact, every designer should give a goodly proportion of his money to the Museum of Modern Art to educate the people he has to sell — if he's sincere in his profession. I still feel that the people's taste is ahead of the manufacturers that are producing for them.

Postscript

Kress: Mr. Kaufmann, do you feel that if we get into a recession we will have products of better design?

Kaufmann: Design is always better in a recession. When companies have their backs to the wall, when advertising, engineering, etc., have been reexamined, and they hit rock bottom in their explorations, design is where they finally concentrate.

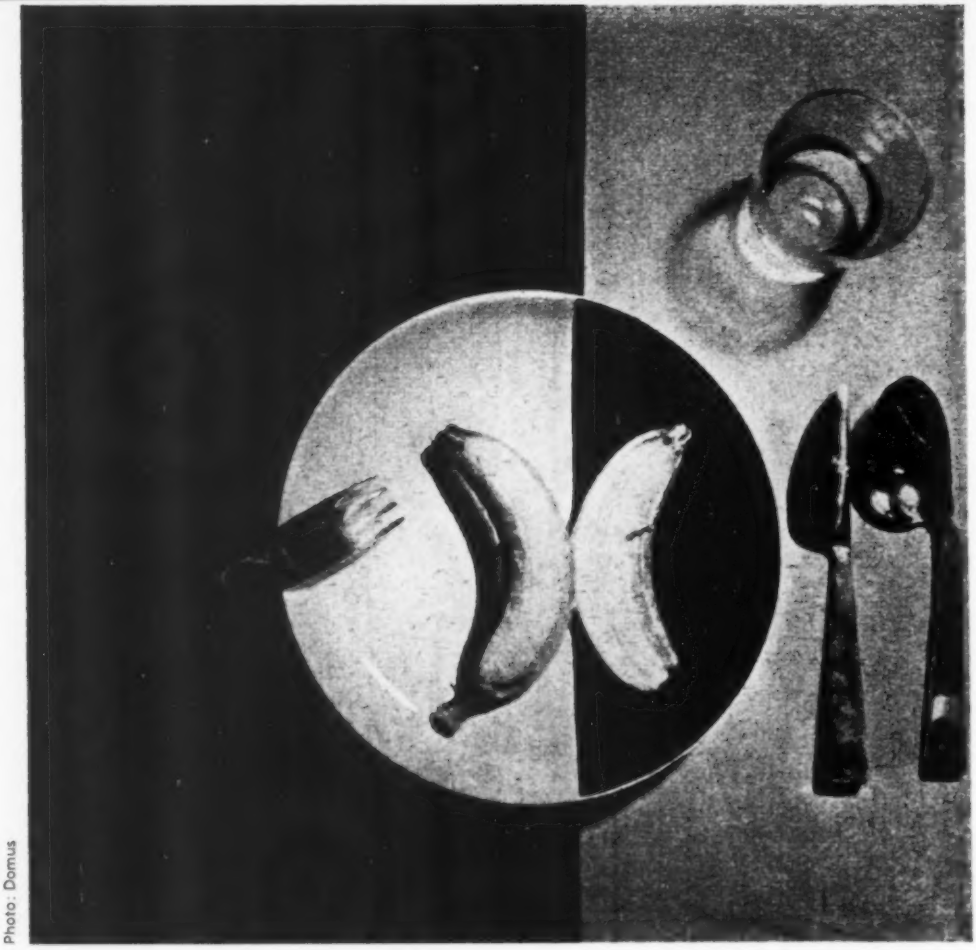
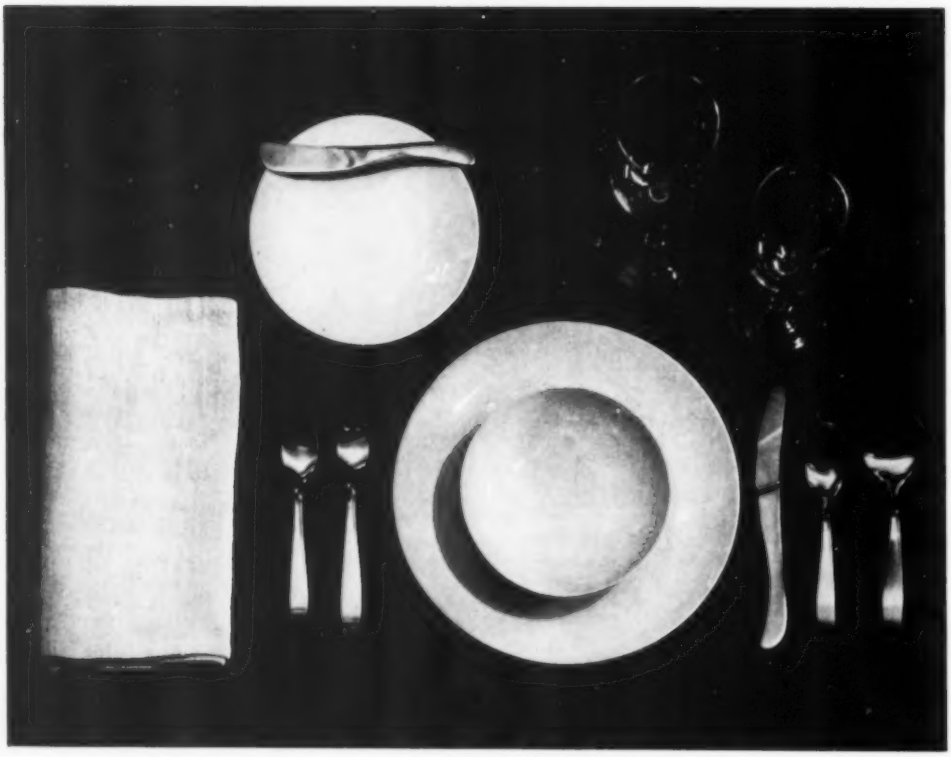


Photo: Domus

Ponti



Wallance

There are two approaches to the design of stainless steel flatware: a simplified reinterpretation of traditional shapes, as seen in both luxury and economy grade spoons, right and far right, or a reconsideration of function and form, illustrated above. These new place settings by Italian architect Gio Ponti (top) and American designer Don Wallance (bottom) have identical aims and startlingly different forms

A modern material inspires two designers to suit an ancient function with bold new forms

by Ada Louise Huxtable

STAINLESS COMES TO DINNER

Stainless steel has some rather remarkable properties. It is strong, hard, corrosion-resistant, easy to keep clean. The invisible protective film that forms on its surface when it is exposed to the air cannot be destroyed unless oxygen is removed from it completely for some length of time. A poor conductor of heat, its chemical resistance is equaled only by platinum. Unlike platinum, it is reasonable in cost.

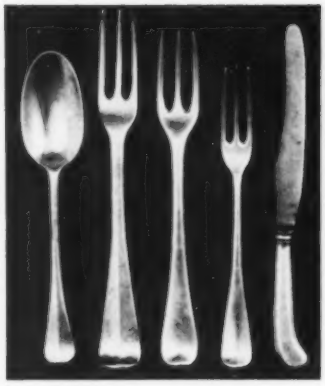
For all of these reasons, stainless would seem to be the perfect metal for table use. For the American woman, however, economy and serviceability, while entirely desirable, have never been quite enough. Even the prospect of all-out practicality fails to persuade her to sacrifice standards of gracious living—one of which is fine flatware for her table. Nevertheless, today stainless is moving out of the kitchen into the dining room to compete with silver and silver plate. Since there is no sign that the consumer has lowered her standards, the change is obviously in stainless flatware. The difference, a significant one, is in design and finish. The potential market for well-designed high-grade stainless steel has been suggested by the popularity of post-war luxury imports. Although these imports have been bought by a relatively small part of the great American public, there are figures to indicate that quality stainless may be the answer to today's tableware requirements.

It may come as something of a surprise that the flatware on 30%, or almost one third, of all American tables is stainless (including both inexpensive and quality ware). The remaining two thirds are equipped with sterling and all grades of silver plate. A 1950 survey indicated that 53% of flatware users had stainless on the table at family meals. Obviously customer acceptance of the metal for table use is very high, though what the customer accepted, until recently, was ordinary kitchenware. The important change, and the significant one for the future of the stainless flatware market, is in the increased demand for the better grade "dining room" stainless. This new market is a difficult one to define, but its growth is indicated by the fact that stainless flatware, which used to be sold with hardware, is now found in jewelry stores. Perhaps its greatest sales potential is in the two-thirds of the market that has always bought silver plate, particularly the better grade at approximately $8.00 a setting; good stainless, which has the advantage of being a solid metal, is in the same price bracket. It offers, at moderate cost, a quality product for both daily and company use, with the advantages of easy upkeep and in many cases superior styling.

Stainless steel is another name for chrome or chrome-nickel steel, an alloy of steel and chromium (at least 11½%), usually with the addition of nickel. There are many grades and varieties, including high carbon stainless for cutlery, and the economy, electro-polished stamped steel found in institutional ware. It is surprising that, though this inexpensive institutional ware has been mass produced for restaurants and kitchens for twenty-five years, it has created no prejudices against the metal for home use. The idea of a quality stainless flatware was pioneered in Europe in the '20's, by architects and designers who worked consciously with forms and materials related to the machine. The "good design" publicity

Spoons Georg Jensen

Although processes are similar in all flatware manufacture, the hardness of stainless steel requires precise dies and powerful machines. Pictured here: the metal blank and the forming of a spoon bowl.



Emphasizing form instead of pattern, these timeless silver designs are precursors of stainless flatware: left, 18th century English; center, modern Italian by Caccia Dominioni and Castiglioni. Right, a more informal transitional design, Swedish ware by Kay Bojesen, made first in silver, now in stainless.

received by recent Scandinavian imports (and by Dutch, Italian, and German examples as well), has helped to give stainless new prestige.

The manufacturing process is a familiar one. In America, most stainless is made by the large silver companies with the same basic techniques that produce almost all flatware: rolling the metal to the necessary thickness, die-cutting the shapes by stamping or forging (many designs combine the two), and finally hand buffing, to produce a fine finish.

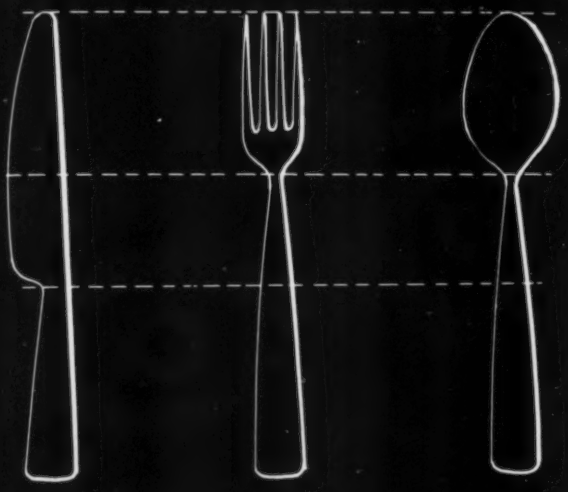
Designing Stainless steel flatware

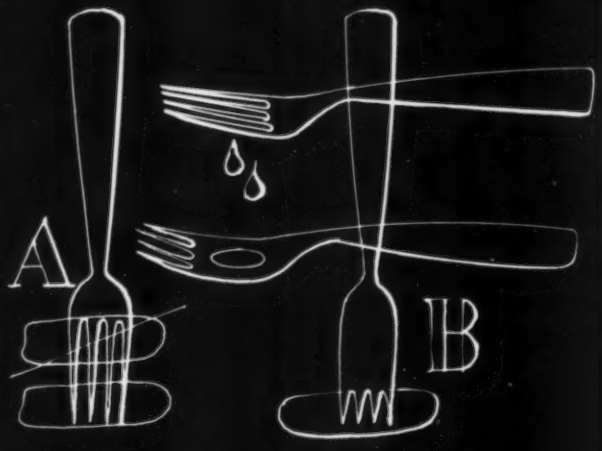
The design of flatware has always been a challenge. Few forms have evolved more slowly and surely than those of the fork, knife, and spoon, and their redesign involves both dependence upon tradition and an invitation to esthetic freedom. Because stainless, an upstart among quality tablewares, is closely allied with modern interiors and design, it has abandoned most of the clichés of silver and silver plate. The best of it has been wiped clean of all ornament, and emphasizes form and finish with happy results.

There are two approaches to form in flatware. One is refined and reminiscent, the other experimental. Of the forty to fifty patterns selling widely in America at present, approximately thirty are of domestic design and manufacture, and the majority of these are conventional. Only a few, foreign or domestic, show a serious reconsideration of form. The variety of form that a bold designer can discover within the strict limits of function is shown in the two designs here: one by an American designer, Don Wallance; the other by an Italian architect, Gio Ponti.

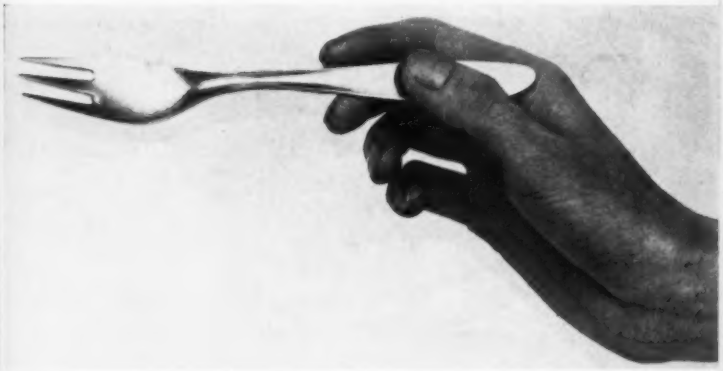
Wallance and Ponti: a special approach

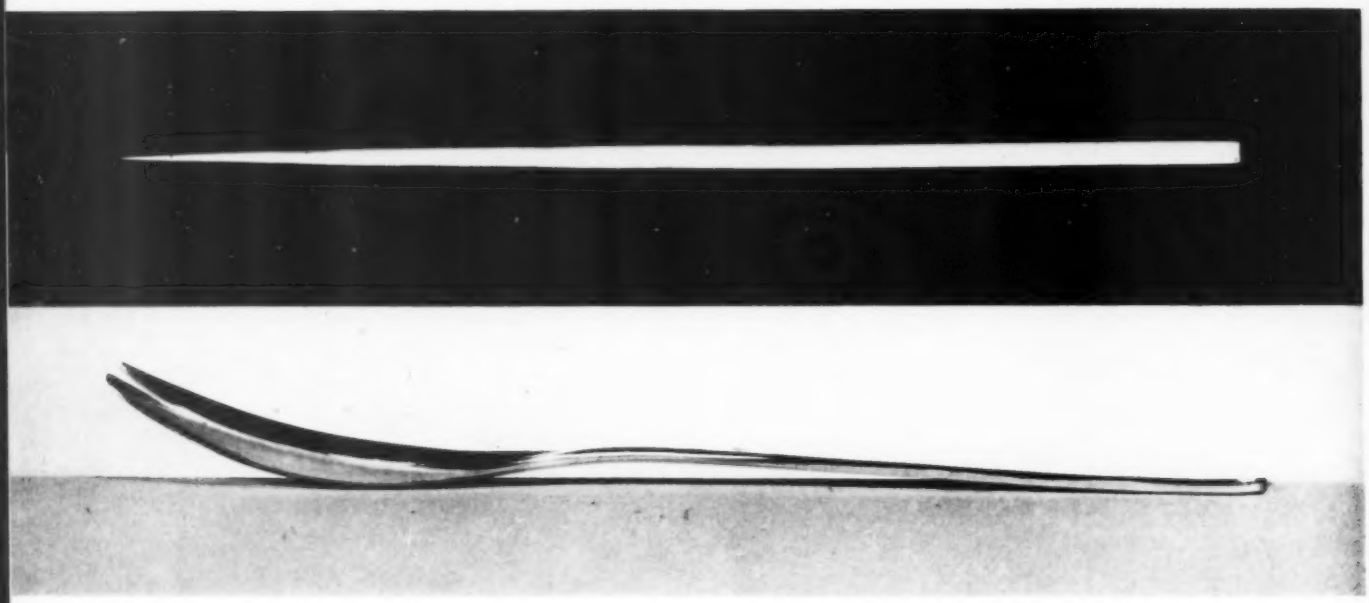
Both Ponti and Wallance set out to give tableware a thorough reworking, evolving new forms to take account of four centuries of change in our eating habits. Though at first glance the two designs seem totally dissimilar, the conclusions on which they are based are almost identical. Both designers decided that the tines of the fork are too long; both felt that there should be a depression behind them for the liquids that form a part of so many dishes — the lost, marvelous sauces for which Mr. Ponti's old-fashioned fork weeps, and that are so joyfully caught in his revised "forchetta-cucchiaio," or fork-spoon. The knife blade is also much longer than necessary for use on anything less than a side of beef. Both designers shorten it, and Wallance slants it for a more effective cutting angle. He also gives special thought to the soup spoon: an oval bowl, placed unconventionally at right angles to the handle, acts as a ladle; its curved shape lets it rest comfortably in the hand and the plate. Both place settings express the processes by which they are made, the precision of the metal, and a sensuous awareness of abstract form. And yet, with all the similarity of preliminary reasoning, the two designs could not be more different. Comfort and conscious pleasure in sculpturesque shapes mark Wallance's design, while Ponti is preoccupied with finding the most basic forms possible for fork, knife and spoon. To further emphasize these differences, the subtle contours of Wallance's design have a soft, brushed finish, while Ponti's almost primitive shapes are polished to a hard, high gloss.





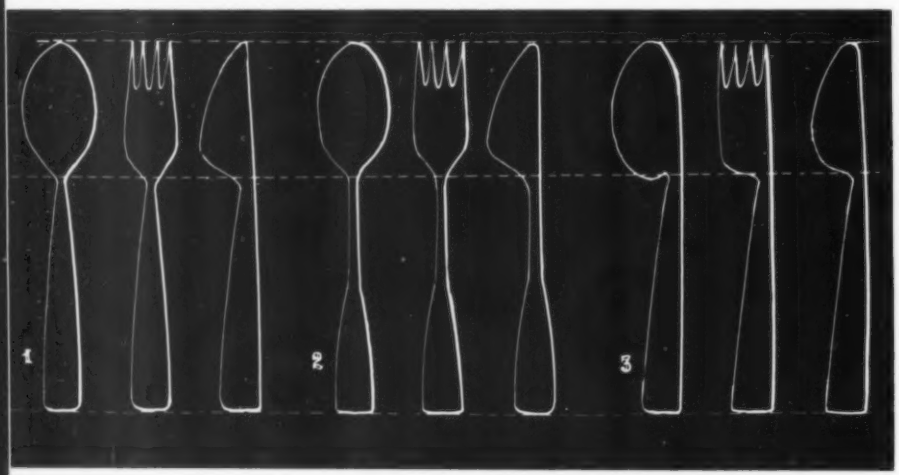
Redesign: old functions, new forms. Ponti's sketches, left, show a conventional fork, knife and spoon, their present faults and the Ponti improvements. The knife is shortened and reshaped for more efficient cutting and a better relationship to the plate. The fork, with a concavity behind shorter tines, has passed the supreme Italian test: spaghetti. The contours of each piece of Wallance's "Design One," below, for the H. E. Lauffer Co., were arrived at independently through wax impressions and model studies, to emphasize comfort and tactile values as well as functional improvements.





michael miller

There are three versions of Ponti's design. The first, in stainless steel, imported by Fraser's Berkeley, is also shown in the photograph. The second, available in Milan, uses alpaca and vermeil: nickel silver with gold-color handles. In the third, he has tried an identical alignment of the three pieces, repeating the straight edge of the knife in an asymmetrical fork and spoon, an experiment irresistable to a man with "formal architectural attitudes." His architectural approach is clear in the straight profiles of knife and fork, above. Plate and tablecloth, opposite: Corinne Steinrisser.



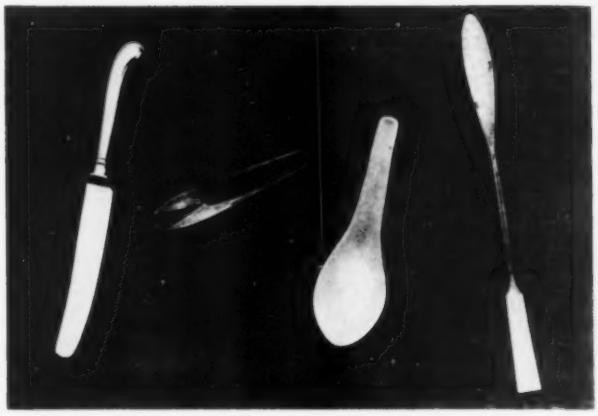
As Ponti sees it

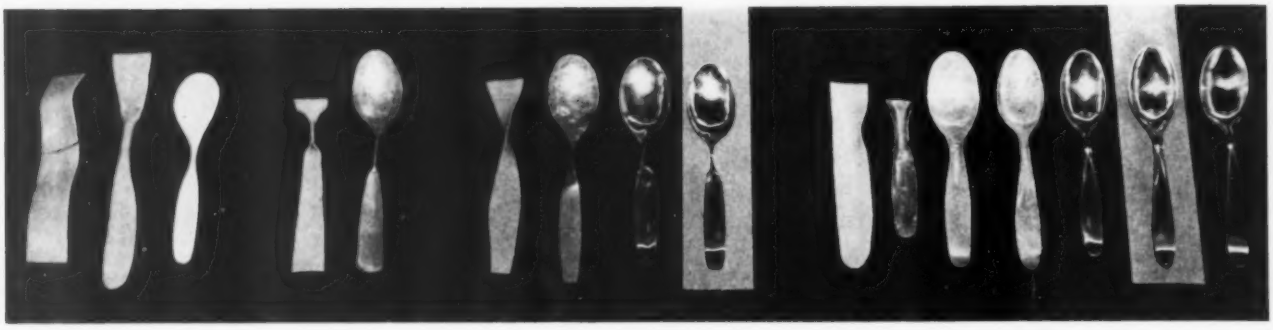
Why are they so different? The explanation lies in the men themselves as people and as artists, and in their personal tastes, proving that design, no matter how limited by functional requirements, still remains a highly individual art. The designer gives his own stamp even to the products of the machine; there is always an element of free esthetic choice. By his own account Ponti prefers not to consider himself a "creator" or "inventor" of new forms. If he observes objects critically it soon becomes apparent that they could, with certain changes, function better; thus, says Ponti, he acts merely as an "agent-provocateur," a kind of aggressive spectator giving objects a gentle push in the right direction. They transform themselves, he says, goaded by his critical observations to find their own "true forms." With a scholarly rationalization characteristic of the Italian architect, he points out that in Latin the word "invention," which has become almost synonymous with "creation," meant only "to find *again*." In this sense, we merely rediscover forms that are there all the time, waiting to be recognized by a thoughtful observer. We should never be aware of the arbitrary hand of the designer, he concludes, but only of the "natural form" of the object itself.

Unmistakably one sees Ponti's hand, at the same time that one delights in his discourse to the contrary. Although the simplicity of his forms suggests a kind of primitive functionalism, lending credence to his explanation, they are highly sophisticated. All of Ponti's work has a recognizable touch, often relying on a very tasteful stylishness, a surface crispness, a "fashionable" elegance. Whatever functional logic may underlie them, these forms are clearly created for the designer's pleasure.

Photo Domus

Stainless comes to dinner





Wallance's pieces were developed by careful model studies. Two design possibilities were shown to the manufacturer—the spoons on the light strips. He first chose the center spoon, later followed Wallance's preference for the one on the right.

Wallance's solution

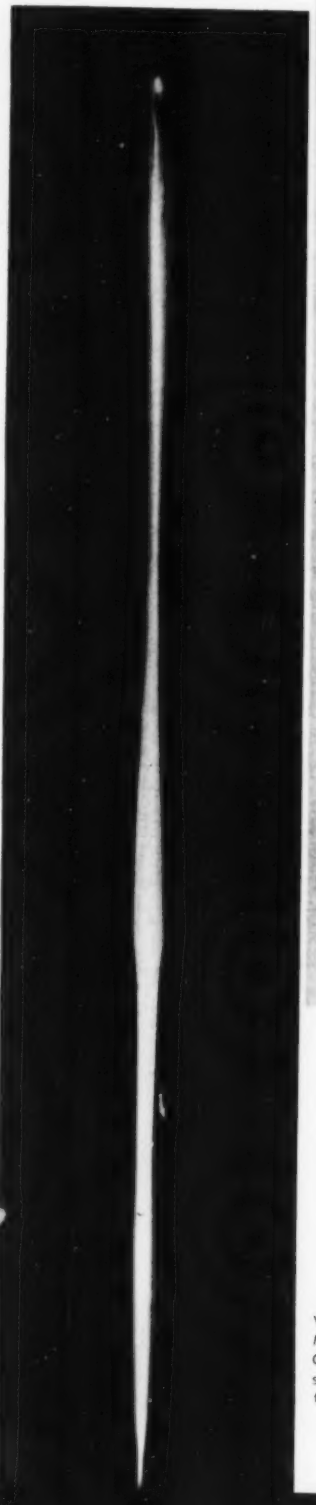
Wallance, by contrast, acknowledges that he was aware not only of functional needs and such prototypes as silverware and tools, but less consciously of abstract sculpture — the work of De Rivera and the svelte curves of Brancusi's *Bird in Flight*. His studies of form for tactile values proceeded simultaneously with a working analysis of the individual pieces. He made over a hundred models using wax, clay, wood, plaster and a special tin-lead alloy made up to resemble stainless steel.

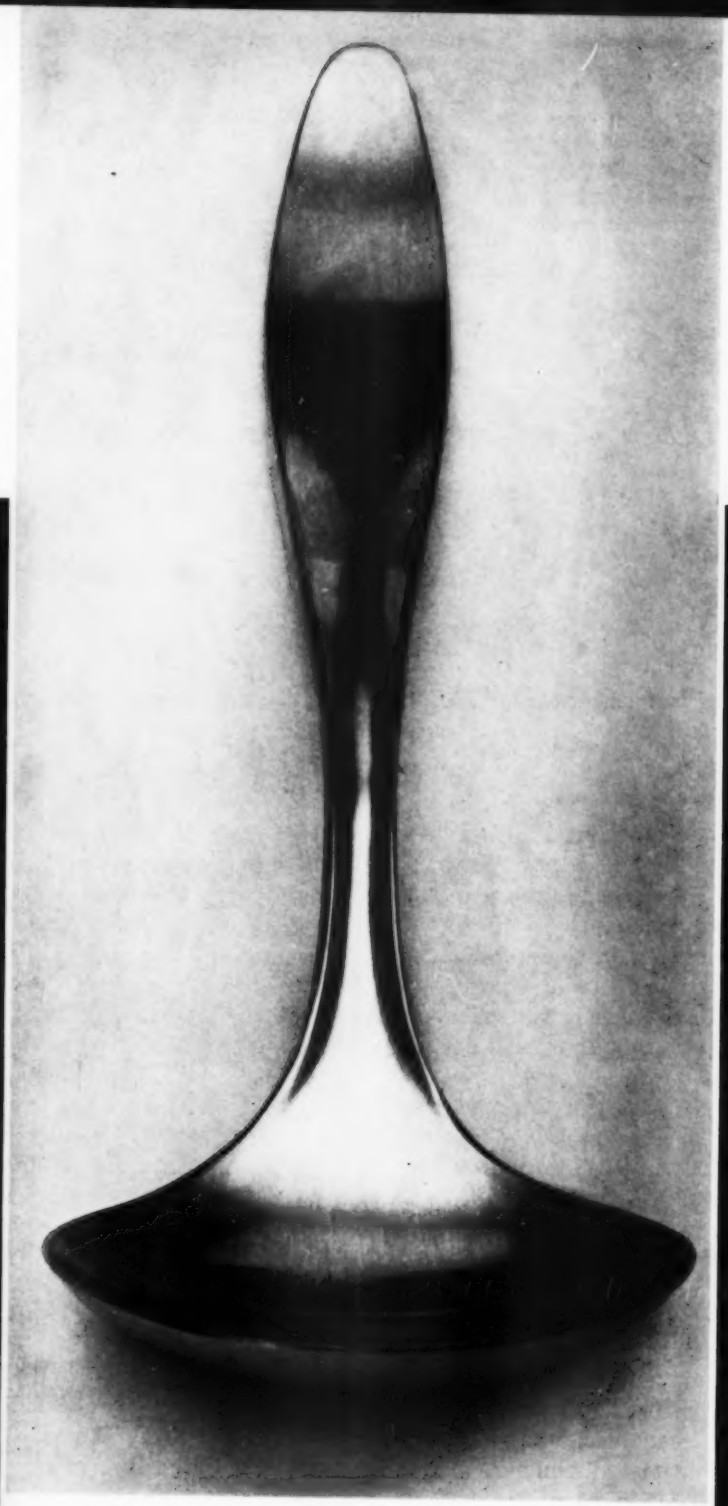
The manufacturer, H. E. Lauffer, wanted a suitable place-setting to complement his plain, white imported Arzberg china. His request was not specifically for stainless steel, but for a contemporary design— as radical as necessary — to complete a handsome modern table service. After manufacturer and designer had agreed on the fundamental shape, refinement went on for many months. Each piece was studied front, back, and in profile, to look well from every angle. A crimp in the throat gives a graceful transitional shape, unusual strength, and a finger rest for cutting.

The Wallance pieces are being made in a West German factory. The first set of dies were rejected as deviating too far from the designer's samples, partly because of failure to allow sufficiently for the unusual "spring-back" of stainless steel. The dies were scrapped, and a more successful set made.

The design, in spite of its unconventionality, met with an excellent buyers' reception, and is selling well. This is particularly interesting in the light of some important questions that constantly plague industry and the designer: can the manufacturer afford to be ahead of proven public taste, can he take a chance by deviating from existing, accepted standards indicated by sales figures, and can he trust the designer's recommendations? Lauffer's experience suggests that avant-garde design may have a profitable place in one of the most conventional corners of home furnishings: the big gamble for the manufacturer is finding the right designer.

While Wallance worked, he was aware of certain forms (left) that had always pleased his hand and eye: a Georgian pistol-handled knife, a Japanese cutting tool, a Chinese porcelain spoon, a sculptor's tool. This sensuous response is reflected in the contours of the finished pieces.





Wallance photos by Michael Miller, from "A Designer's Case History of a Product," shown at Fourth Design Conference, Aspen, Colorado.

Two Views of design progress at Bell & Howell

Malcolm Townsley, *Vice President in charge of Engineering,* **speaks for management**

Bell & Howell Company was founded in 1907 to manufacture equipment for the motion picture industry. A year before, Albert S. Howell had developed and patented the first standard 35mm. projector, and in the following years the company produced a 35mm. film perforator, a 35mm. camera, and a continuous film printer. Since all of the equipment was designed to give good service and performance to professionals, it had a clean, direct and businesslike appearance which came as a natural expression of its function rather than from special esthetic attention.

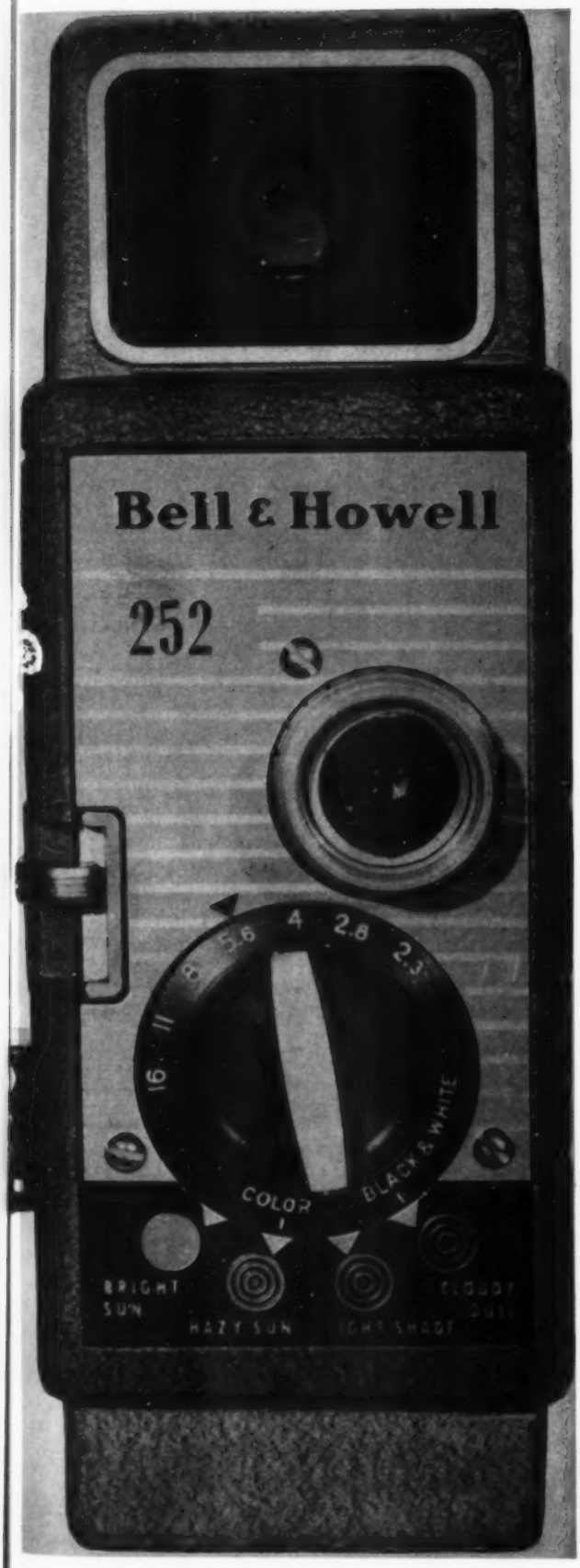
It was natural, when Bell & Howell introduced its first line of non-professional equipment in 1923, that this tradition of simple workmanlike appearance should be carried on. For a decade and a half, as Bell & Howell expanded into the 16mm. and then 8mm. field, products were constructed in the same way—the most straightforward arrangement of working parts with a minimum skin formed closely over them. Though this approach was purely functional, the sensitivity of the engineer was such that instruments of remarkable and distinguished appearance were produced; many of them are still on the market. The appeal of this group of products was still primarily to the serious photographer and semi-professional who understood and enjoyed photographic equipment, and not to the mass market. That is why attention to form and decoration was less important than an impression of the quality on which the product's reputation was built.

Then, after the war, the firm's new management wanted to broaden its markets. A major decision was made: Bell & Howell would enter the low-priced 8mm. amateur equipment field. Still photography, of course, had become a popular pastime requiring very little technical skill, and Bell & Howell felt that amateur film-making could be equally popular, and easy enough for the average housewife, if the right product were offered to the consumer at the right price. One of the original considerations was to get that equipment "right," both technically and visually, and this seemed like a problem to be tackled jointly by designers and engineers. We knew, too, from market surveys that product appearance had an important bearing on consumer preference in this field, and one of our original specifications for the line was that our consultant designers should have a freer hand than ever before. Although this meant a clean break between the low-priced and the professional lines, we wanted the new products to maintain the dignity of the firm name and a sense of unity with all our equipment. Above all, we wanted to uphold our tradition of quality—the product would not be cheapened; it would only be simplified.

Selecting a designer

How does a firm like Bell & Howell go about selecting an industrial designer? Our criteria for selection did not exist in the mind of any one individual, nor were they ever written down. We had used industrial designers on a "project" basis since 1936, but had never given them a particularly free hand and had not maintained a continuous design program. Now, on the other hand, we were looking for a continuous relationship with a designer who would be compatible with our way of thinking and operating, and whose experience and capabilities would enable him to do a good job on our particular kind of product.

We made a thorough study of the field, paying particular attention to experience in mechanical devices—especially tools. Since virtually all of our products use die castings in their construction, no designer was considered unless he had a thorough knowledge of design with die castings.

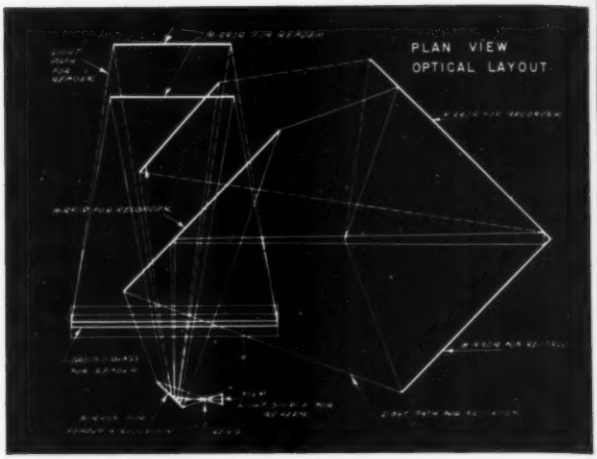


In 1949, the company had engaged Peter Muller-Munk Associates to work on the design of some experimental equipment, and this project served to check our ability to work well with them, and their ability to work with our engineers, merchandising division, and management. So, when the low-cost line was being planned, it was natural that they should be invited to work on it. A retainer was negotiated and has continued for other projects as well.

Coordinating the program

The coordinating body for product development at Bell & Howell — where all departments assess their objectives — is the Research Board, composed of chief executives from top administrative management, engineering, manufacturing and sales. The company's new products program is developed by this Board; it establishes the requirements which engineers and design consultant must meet, and later accepts the final product — thus making design a part of management responsibility.

Probably our most important design demand is that the company's personality be expressed through the product, and that the product — whether a camera, lens or projector — give the impression of quality which is built into every item. Because some products created by our engineers and other designers are still in our catalog, our line is not entirely visually unified yet; but we feel that our consultant designer has successfully created a family appearance in the new lines which expresses the character and reputation of Bell & Howell. We feel that industrial design is firmly established as a complement to, and an essential part of, our product development program. Modern competition requires that full attention be given to the appearance of a product — and to the way it conveys the product's character.



Peter Muller-Munk speaks for design

It was our responsibility, as consultant designers, to create new products for a new market and to give family unity to a diversified line of precision equipment. This sounds quite neat and simple when you define it, but it is far from easy when you have to do it. Design, if it is to be something more than a short-range hit-or-miss procedure, becomes the translation of a company's identity in a variety of forms. At Bell & Howell it was a combination of creative engineering and forceful management, backed by a tradition of product quality, which became the key to our design approach.

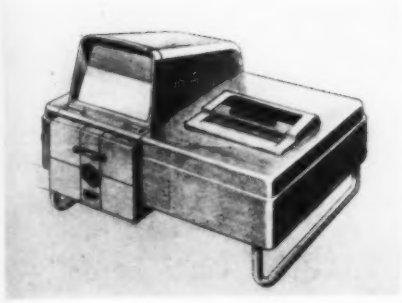
In motion-picture equipment, the concept and quality of engineering determine the quality of the end product; design must work as a projection of engineering vision. One cannot, therefore, approach the design of a new camera or projector — let alone a lens mount — as a problem in pure esthetics. The optical and mechanical problems must be understood before the series of choices which are fundamental to design can be made. A well-engineered mechanism, of course, is an excellent base on which to build the form and character of a product. If a camera chassis is well-planned and if its spool centers are in the proper functional relation to the sprocket and lens-center line, the basic shape is generally authoritative and pleasing. Refinement of this shape with finish, form, and line then gives the instrument its final character.

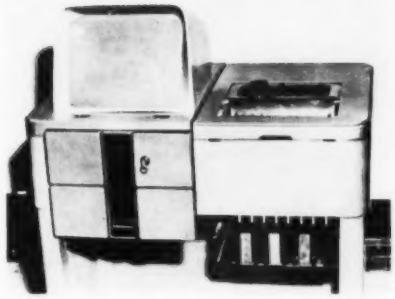
In the course of our association with Bell & Howell, our assignments ranged from questions of company identification through nomenclature, color, finish, and details, to problems of design based on radical invention. Though each assignment had its special aspects, this is generally how we worked: At the very inception of a project, before any design was started, conferences were held with engineering, sales, and management. A thorough analysis of the product was made, a time chart set up, and the cost and quality objectives in relation to competing products were clarified. The final specifications were drawn up collaboratively.

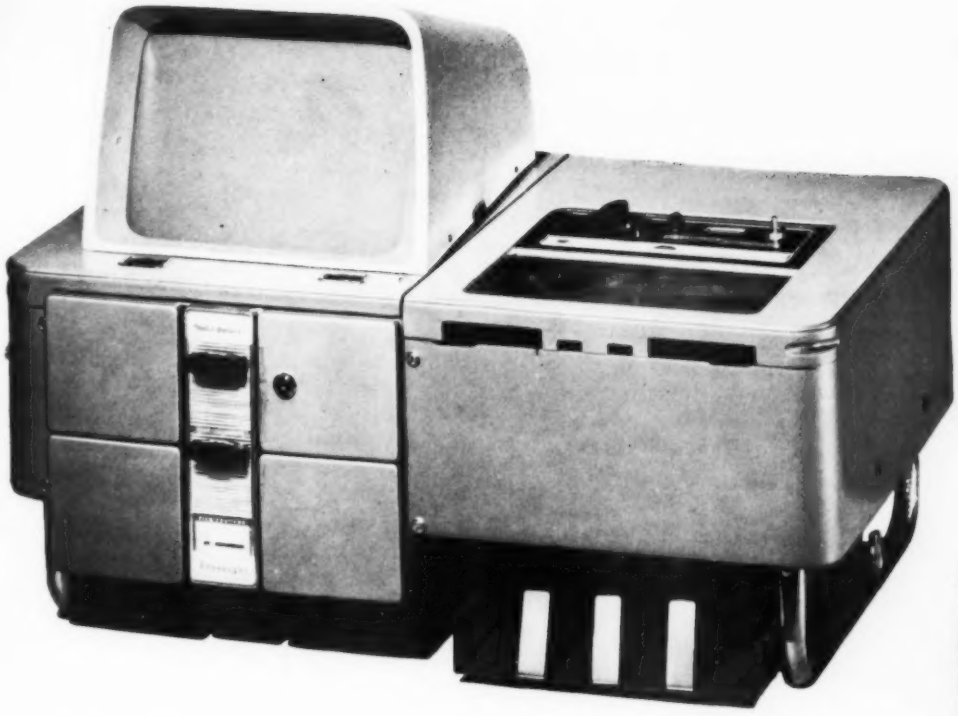
The actual starting points of our designs were the preliminary mechanical layouts made by staff engineers. We would then develop basic forms and present a series of ideas, usually in form blocks which allowed a study of mass, proportion and arrangement of components and control. Sometimes we suggested variations in the original layout; this, naturally, was thoroughly discussed with engineering, and the mechanical and appearance requirements were weighed for the best possible results. Only after this lengthy design investigation, and usually not until breadboard models were prepared, was the mechanical layout frozen, because up to that point changes could still be made; five months later would have been too late.

There were fundamental differences of approach to the various product categories of the Bell & Howell line. In cameras and projectors there was a great backlog of experience within the company, and we had many competitive products against which to judge the success of our solutions. In microfilm, with little prior art and with a great deal of engineering invention, design progressed more rapidly and received much quicker reception. These approaches may be best illustrated by our specific assignments.

The Micro-Twin recorder presented some very special problems. The basic engineering idea was to combine microfilm recording and reading operations in a single instrument which, with the use of a single optical system, would be considerably more economical than two separate pieces of equipment. The engineers presented us with the optical layout—



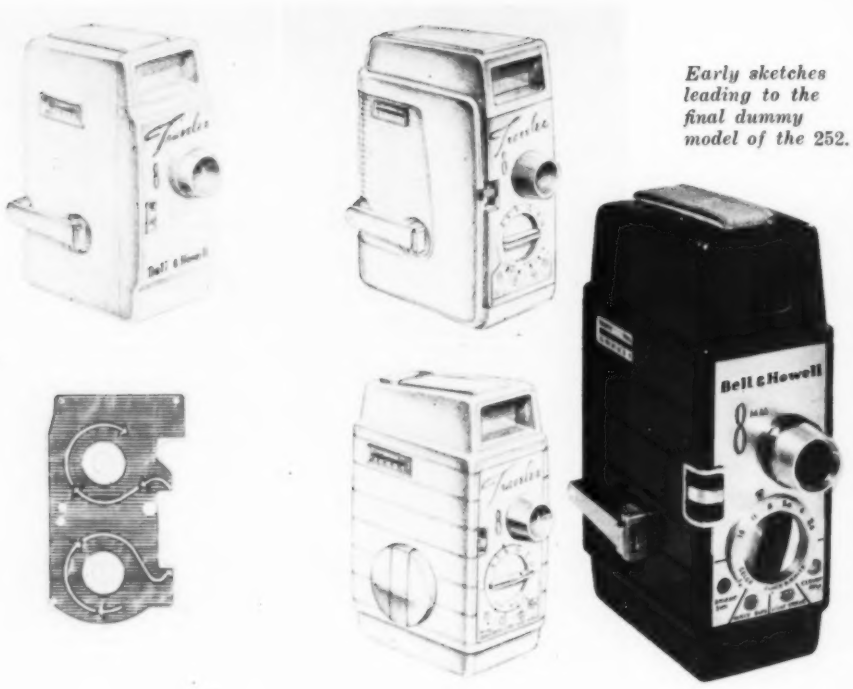




The Micro-Twin combines microfilm recording and reading. Documents are inserted in the slot at the right, carried vertically, photographed on both sides and dropped in the basket. Camera and projector are housed at the front below the screen, and can be operated independently. For reading, a roll of finished film is inserted at the left front and the lens switched from camera to reader operation by turning the center knob. The designer's task was to transform the complex optical and mechanical system into a machine which would look neither bizarre nor dull, but which would be attractive, compact and portable for office use. The housing is plywood over a frame built up of extrusions and castings. The top is Melamine over plywood, and the reader hood is Royalite.

A light strong laminated plywood case with special scratch-proof paint finish was developed for the Filmosound projector. The redesigned 273 projector (far right) received new reel arms, a die-cast aluminum base and a formed Royalite case. Two-tone coloring was chosen to give products continuity.

Bell & Howell



Early sketches leading to the final dummy model of the 252.

actually two superimposed optical paths—and models of the very complex mechanism which had to fit around these paths. The mechanical requirements seemed to point to an irregular and strangely proportioned instrument, and for sometime there was a question whether the combination could develop into the small, portable attractive office machine that we wanted. We made sketches to visualize it, then went on to a working model — only then were we certain that the problem of giving form to a complex machine was in the process of being solved. After that, we refined it, and tried in every detail to make it more compact and visually lighter.

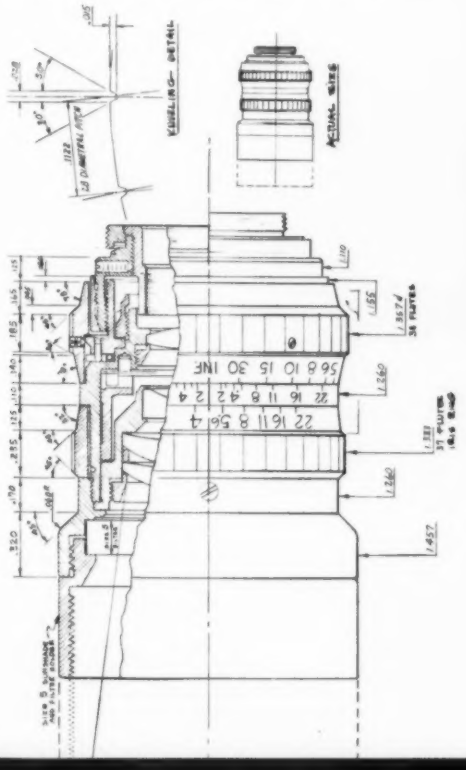
Since the low-priced 8 mm. camera and projector marked a debut for the company in the lower-priced home market, they naturally had to be preceded by a good deal of fresh thinking on how and what to design for that market. Obviously, price was one factor which would make movie equipment attractive to the uninitiated, although cost and quality requirements were to remain very stringent. Other objectives were equally important: the camera had to be extremely simple to operate and had to look as self-explanatory and as easy to operate as it really was. With all of this, it had to reflect the standing of the manufacturer. Such a problem could be solved only by the closest collaboration between designers and engineers. For example, in the shape of the viewfinder and in the visual organization of the front plate of the 252 camera, we tried to emphasize the operating simplicity of the lens-setting guide — (which automatically sets the lens opening when the indicator is turned to the proper light condition), and of the picture-window viewfinder which had been developed by Bell & Howell engineers. On the companion 8 mm. projector, it was generally decided that the housing and carrying case could be combined in a single fixed half-shell. This meant the entire machine had to be re-engineered around a center mechanism plate on which the various components were mounted.

One of the most interesting projects dealt with the redesign of the Bell & Howell lens mounts and viewfinder objectives, some of which were manufactured here, some in England. Nothing would have been worse than to treat this as a problem in "styling." This was a study of pure precision in which we had to organize finishes, knurls, and proportions into clean and convincing forms which would express effortlessly the function and spirit of optical equipment. In this case, practically no sketches were used: we worked largely with dummy models and engineering drawings, since the appearance of lenses is so directly integrated with mechanical construction. We found that our duties could not end with the product presentation to management but that, in the interest of the best results, we had to stay with it to the very end, catching any of the million little variations which tend to creep in along the line and destroy the essential character of a design.

Probably the most difficult aspect of working on all of these assignments is the need to project judgments into the future. Design and engineering, tied to fixed sales features and price and quality specifications, become a slow and arduous process because there is always a major time lag between the idea and the marketable product. The designer must be something of a prophet, anticipating the economic and social climate, the advances of competitors, and the inevitable changes of his own and his client's judgment. It is one thing to assume the responsibility for the next few years — designers do that every day; it is quite another to judge how things will look five or ten years hence. One always hopes that the equipment and its design will capture time equally well.

The 8 mm. Monterey, the second half of Bell & Howell's bid for the low-cost home equipment market, had to be compact, and economical. The basic concept of using the rear housing for half of the carrying case, carried through in an aluminum die casting by Monarch Aluminum Company, led to an unusual mechanical layout around which a new form was designed. Folding reel arms and storage for cord and reel adds to its compactness. Finish is two-tone brown wrinkle.

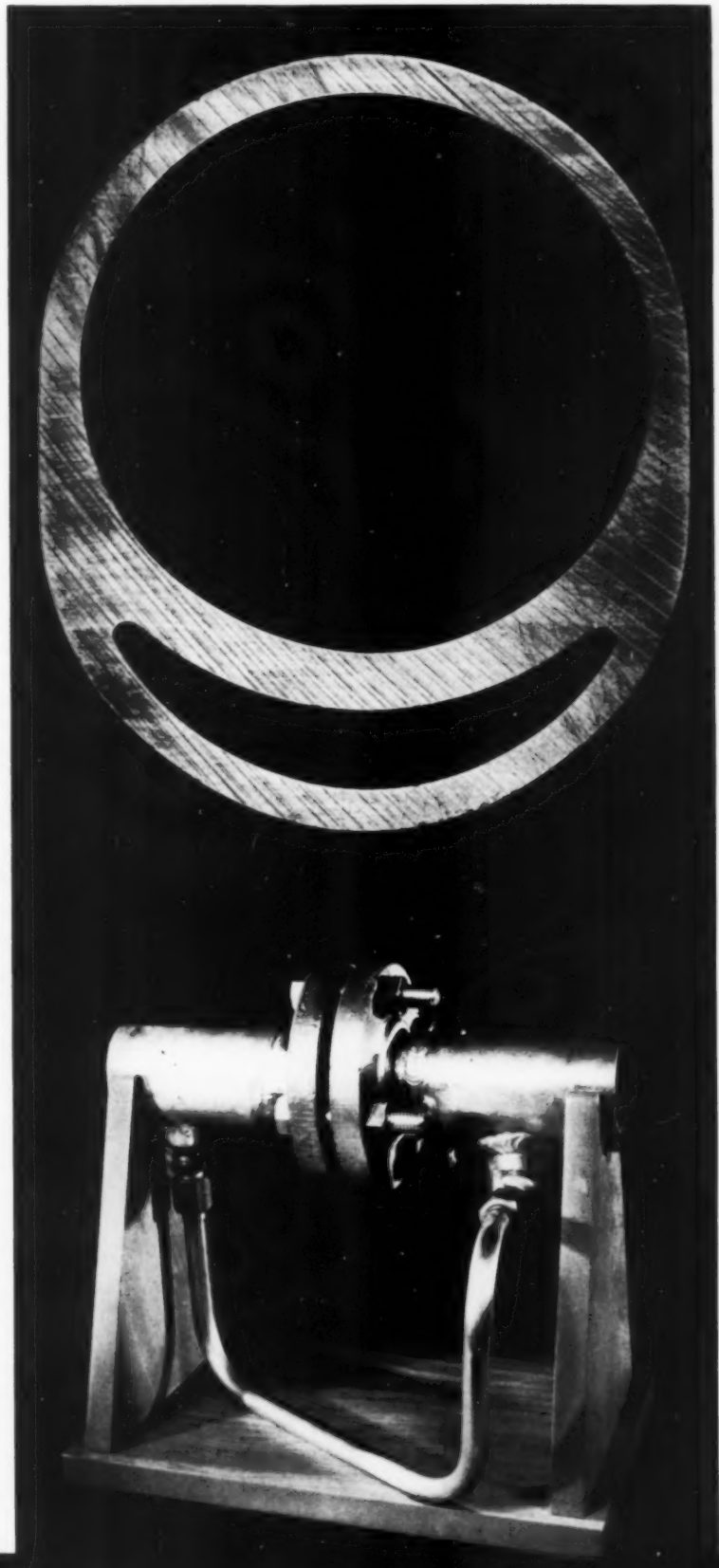
Diagram of the T2.1 Super Comat, below, shows how appearance and feel of lens knurling was studied. The number and depth of flutes was investigated to determine a diametral pitch which could be applied to the entire line. The result was that one knurl style was selected for all lenses, and this knurl could be rolled rather than cut. Aluminum stock with a semi-bright chrome plated finish was used for the line.



REdesign

Pipe with its own steam tracing

When pipe is used to carry thick and sticky materials (tar, pitch, glacial acetic acid) a steam pipe must warm the main pipe so that the material being piped will not stiffen up and stop flowing. This is called "steam traced piping." Sometimes a complete steam jacket is used, sometimes a separate pipe with insulation wrapped around both pipes, but in any case two complete sets of piping are needed, calling for double expense and double maintenance. "Unitrace" is an aluminum pipe developed by the Aluminum Company of America and Hercules Powder to solve this problem. Its oval section includes a 2" round pipe and a steam tube below it extruded together as a single pipe. Standard 2½" pipe insulation can be used so that the double pipe is no more difficult or complex to install than either one of the two pipes that it replaces. Joints are made by welding, either with or without fittings. The problem of joining both cells can be solved either by cutting away the steam cell while the main pipe is welded and then welding back the cut-out piece to complete the steam cell connection, or by sealing the steam cells and then interconnecting their ends with a separate jumper of tubing, as is shown in the bottom photograph. Savings resulting from the use of Unitrace are about 38 cents a foot on material, 5 cents a foot on insulation, 30% in labor cost.



Portability in a professional tape recorder

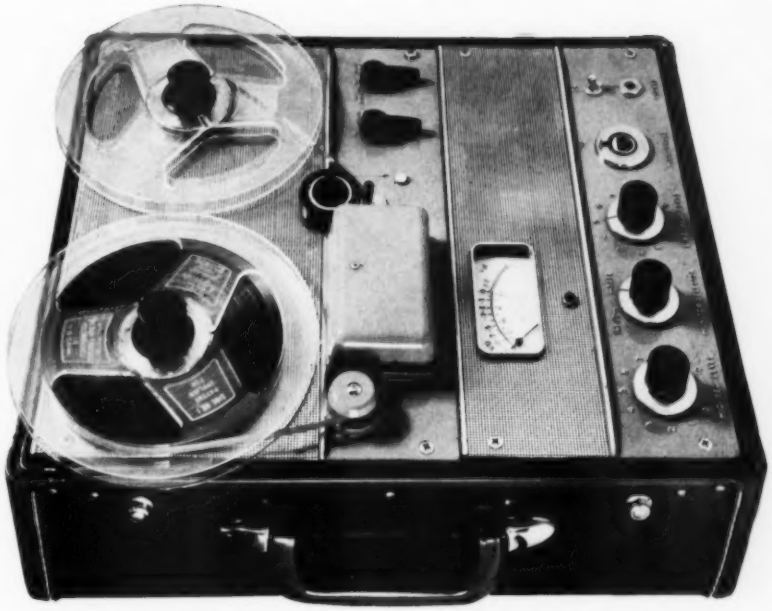
It is interesting that in 1952 the Ampex Corporation started the design of its newest model by setting up criteria for an ideal machine of the future. Specifications included maximum weight and dimensions, and minimum performance standards to equal the best of the large professional Ampex machines.

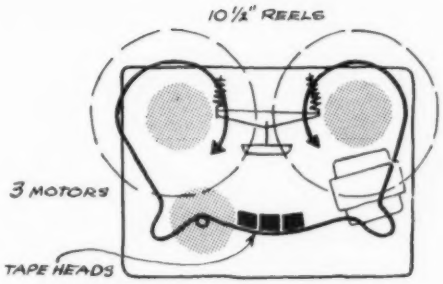
This spring the company introduced the portable 600, weighing only 26 pounds, measuring only 8" x 13¾" x 16½", and offering quality to match that of its large (87-98 pound) professional competitors. How do they do it?

For good quality in a tape recorder, three large motors and many heavy components have been necessary to avoid the slippage and unreliability of pulleys and idlers. Adequate motors are always large, and when all three are stuffed into a box along with tape heads, reels, amplifier chassis, the result has rarely been as "portable" as a convenient handle would suggest.

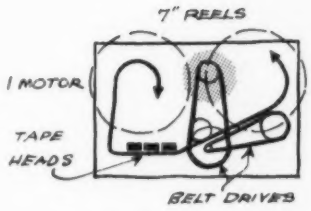
Ampex, to meet the problem, designed a special motor of modest size, and connected it up with Neoprene belting to do the job of all three. A system used in many small home machines, but generally with a sacrifice of quality. In this case, money spent on a superb drive has produced a truly portable professional recorder for $545.

The only sacrifice has been in reel size; ten-inch reels for hour programs cannot be accommodated. Ampex says that thinner base tapes will soon put longer programs on the smaller reel.



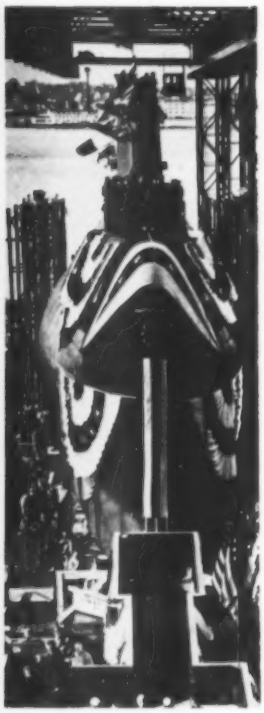


Typical high quality portable recorder

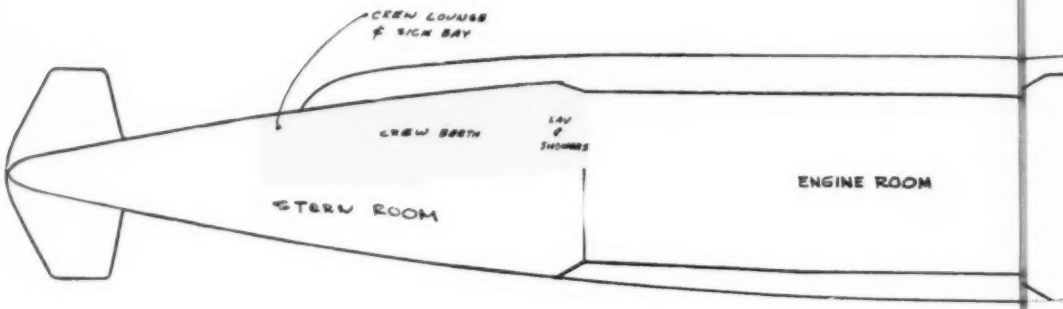


Ampex "600"

The Ampex "600" (top) combines the quality of the large professional machine (right) with less bulk than the best portable recorder (above). Comparative section drawings show that the Ampex substitutes one special motor for the three normally used.



The Navy calls on design to make quarters habitable in the world's longest-cruising submarine.



THE CHAMBERED NAUTILUS

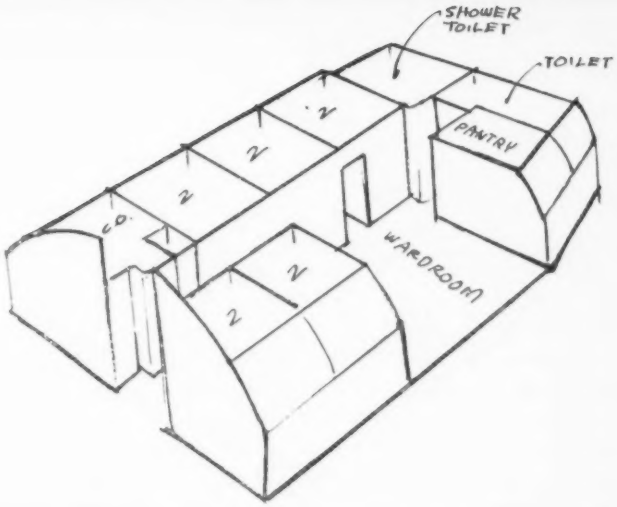
When the *U.S.S. Nautilus*, the Navy's first atomic-powered submarine, was launched last winter, there was a great deal of talk about her top-secret engine room. But in terms of the efficiency of an atomic submarine, what had happened in her unclassified living quarters was news of almost equal importance. For the *Nautilus*' almost inexhaustible power source had solved one problem — unlimited cruising — only to create another: human endurance. Since a crew cooped up for months on end might easily give out long before the fuel supply, keeping the men in running order became one of the Navy's prime concerns.

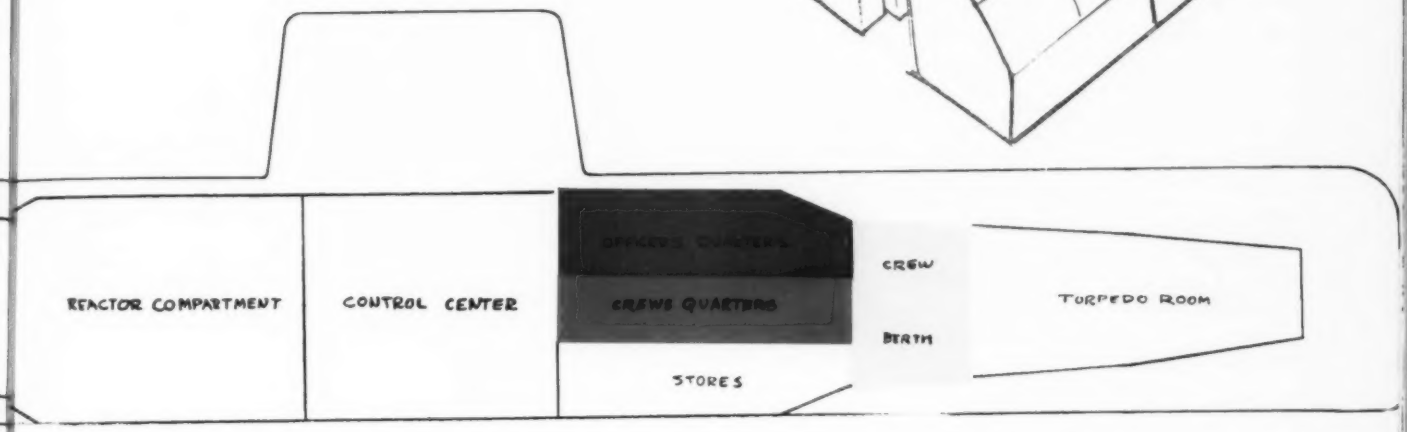
The idea that "habitability" is a factor to reckon with probably grew from fleet complaints after World War II, when the growing load of electronic equipment all but crowded crews out of their bunks. Efficiency was lowered, and new fatigue problems arose as brainwork replaced backwork. In 1952, the Navy finally issued a directive: habitability studies would be made for all new ships. About that time a construction contract for the *Nautilus* went to Electric Boat Division of General Dynamics Corporation in Groton, Connecticut. In line with the new policy, the builders selected Lippincott and Margulies, one of three design firms under Navy contract for habitability studies, to design the living quarters of the world's longest-cruising submarine.

L & M assigned six men to the project. Under the direction of Larry Brulin, head of the Transportation Design Department, they worked a 7-day week for nine months, until drawings were complete. The designers dealt directly with Electric Boat, consulting with the Navy's Supervisor of Shipbuilding (Groton's liaison with Washington) and the Medical Research Laboratory, New London Submarine Base.

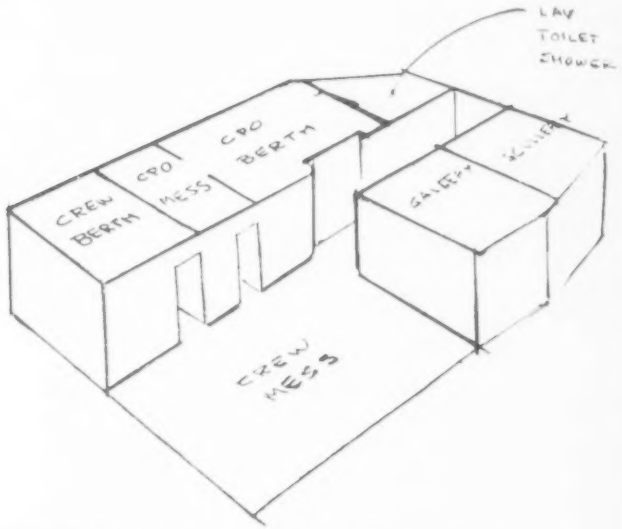
The designers' first job was to study Electric Boat's plans, and ask why. Beyond the demands of any ship design — getting the most in the least space and creating a tolerable atmosphere — they found unusually stringent limitations on a submarine. Weight was one: all joinerwork (furniture) had to be aluminum. Noise was another: a rattling door could give away the ship's location. Illumination, where daylight never enters, must be kind to the eyes and psyche. No glass could be used; no wood, and no material, even "fireproofed," which could smolder and create noxious fumes. Durability, easy maintenance and economy were, of course, vital. What L & M did to achieve habitability within these limitations is shown on the next four pages.

Officers' quarters are on the upper deck. Officers are berthed in twos with the Captain next to the control area. The only overhead (ceiling) in the ship is over the officers' wardroom; the only door (for security) is on the Captain's stateroom. All other areas are separated only by flameproof curtains.

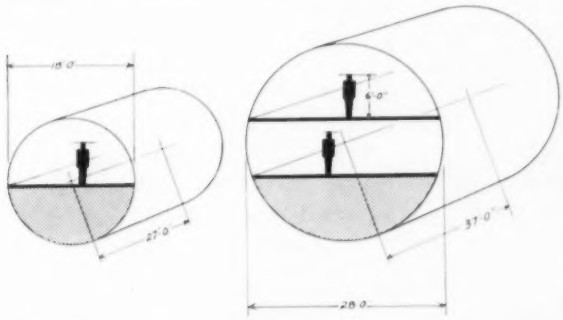




Around the central enlisted men's mess-recreation area on the lower deck are bunkrooms for petty officers and chief petty officers; for the first time on a sub, there is a separate mess for chief petty officers. This can be converted into a bunkroom if crew swells, as can the officers' wardroom.



Enlisted men's berth and sanitary areas are fore and aft, but for once the crew does not sleep with torpedoes.



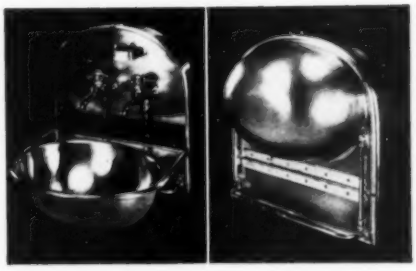
The ratio of living area to crew is compared above: Trigger class ship, right, has crew of about 70; Nautilus, with crew of about 90, provides greater living area with a two-deck arrangement.

L & M's first proposal was that officers' quarters be laid out on an open plan, with small three-man staterooms around a large communal ward-room. The Navy rejected the idea, reasoning that under cramped working conditions officers needed maximum privacy in their own rooms. The designers tried to achieve that spaciousness with smooth and restful surfaces. Lockers were redesigned on a 2′ module, which was related to other stateroom dimensions to simplify interior arrangements. New bunks were designed, using a Neoprene mattress on a reinforced Fiberglas "pan" which has a comfortable spring to it. For officers, top bunks fold down to form a back rest behind the lower one for daytime lounging. (In crew areas, berths now remain permanently down during the day, so men always have a retreat.)

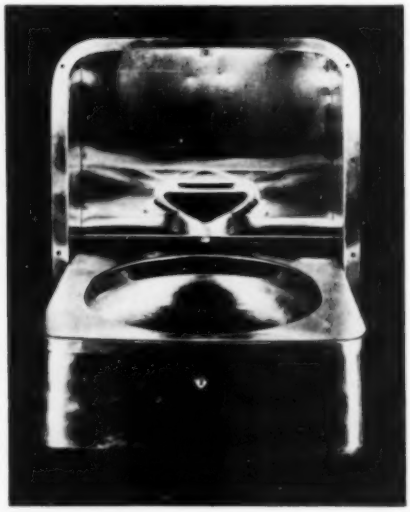
Wherever possible, L & M replaced custom-made equipment with a less expensive commercial version. For officers' lavatories, they found one which would close flush with the wall — and cost half as much as the old sub unit. Some equipment had to be especially designed — the officers' desks, for instance, which have a concealed light so one man can work while his bunkmate sleeps.

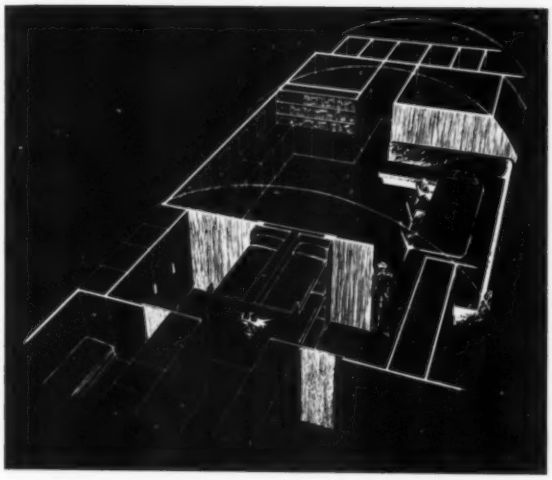
Choosing materials and colors demanded a delicate balance between practicality and psychology. Decking for instance, had to adhere to a steel deck, and be spongy underfoot (to combat flat feet from pacing on hard decks), non-inflammable and fume-proof. Linoleum was the only material for which the Navy could guarantee adherence under all sub conditions, but the Medical Lab advised that it absorbs water and could house bacteria. After many tests, L & M chose Linotile; though harder and about as absorbent as ordinary linoleum, it offered pleasing colors. Safety plus looks outweighed flat feet.

Applying color and texture to 1/16″ aluminum bulkheads was another puzzler. The designers chose Formica, but no method of gluing without heat and pressure could be guaranteed. They finally attached it with steel strips. Other bulkheads were given a special alkyd paint which adhered well to aluminum. All colors — picked for their freshness or suggestion of earth tones — were tested under low red light for their orientation value under battle conditions. Even the smallest details, like ashtrays, were examined and often improved. When it came to wardroom chairs, L & M felt an armchair would be more comfortable and less costly than the standard Navy side-chair. Their first choice, the Eames Fiberglas chair, allowed too little ventilation for continuous sitting. The English Race chair wouldn't accommodate enough men at each table. Since the hatch was only 25″ wide, other chairs couldn't pass through once the hull had been buttoned up, and in the end the old Navy chair turned out to be unbeatable.



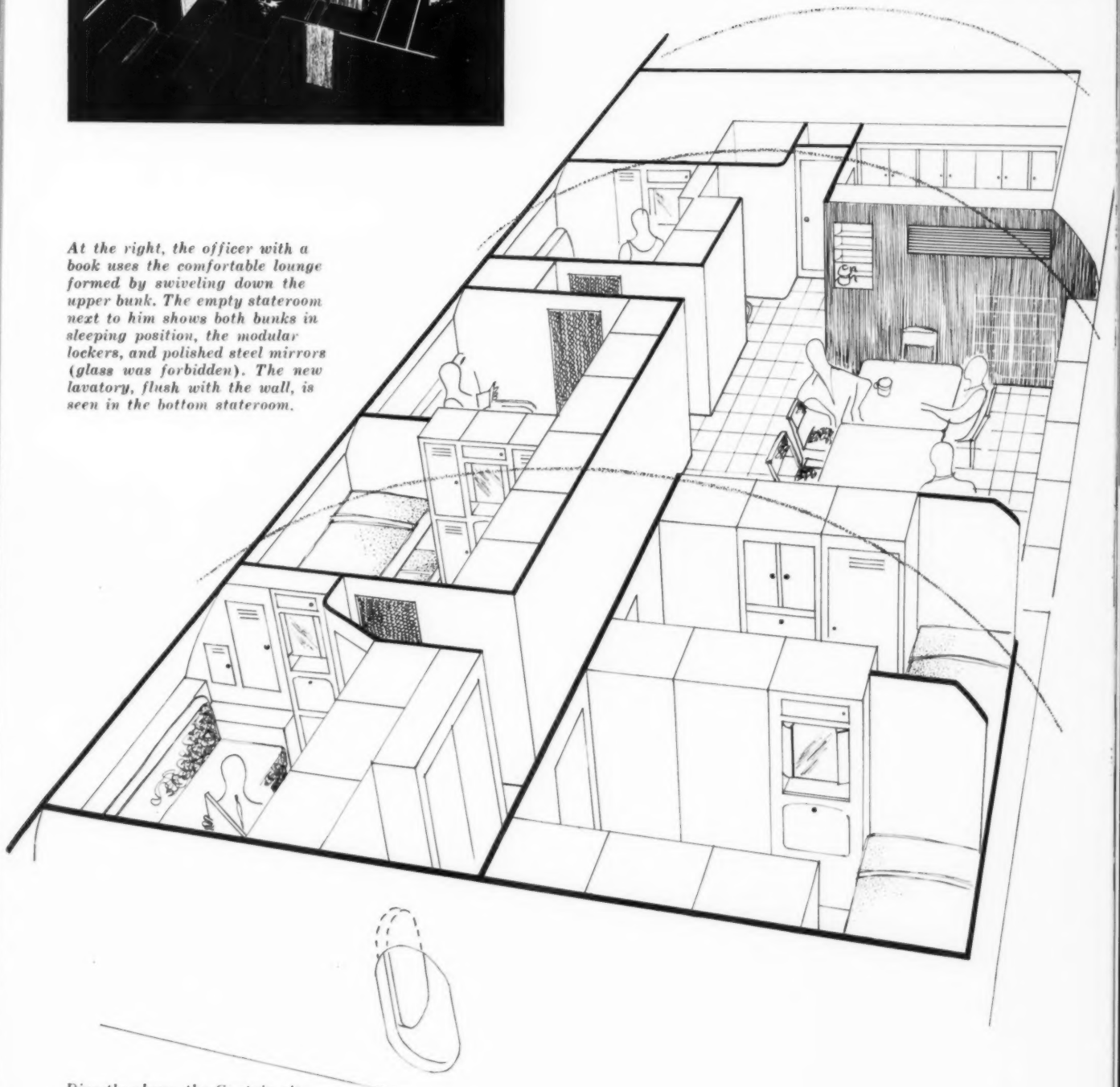
To replace the lavatory above, formerly used in submarines, the designers found one not only better designed (stronger construction with no jutting parts) but 60% cheaper, made by Ozone Products Corp. It is used in Pullman roomettes.



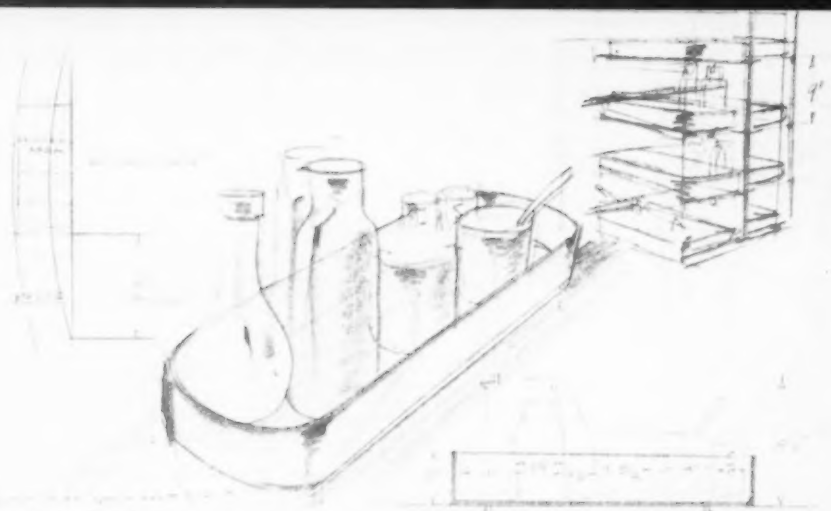


The idea of an open plan for officers' quarters, stressing communal recreation at the expense of small staterooms (left) was rejected in favor of a closed plan which allowed maximum individual privacy.

At the right, the officer with a book uses the comfortable lounge formed by swiveling down the upper bunk. The empty stateroom next to him shows both bunks in sleeping position, the modular lockers, and polished steel mirrors (glass was forbidden). The new lavatory, flush with the wall, is seen in the bottom stateroom.



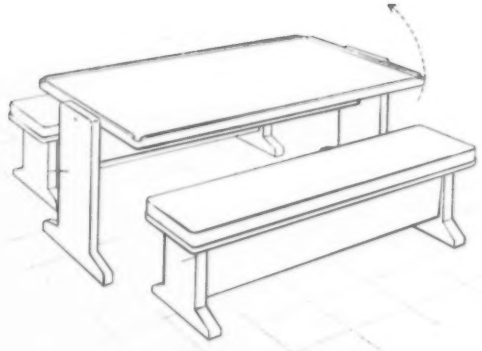
Directly above, the Captain sits at his desk. His chair, like those in the wardroom, is the standard $45 Navy chair. The designers wanted one with arms; the Eames Fiberglas shell didn't ventilate enough; the English Race chair was too wide. The standard chair was found to be most practical.

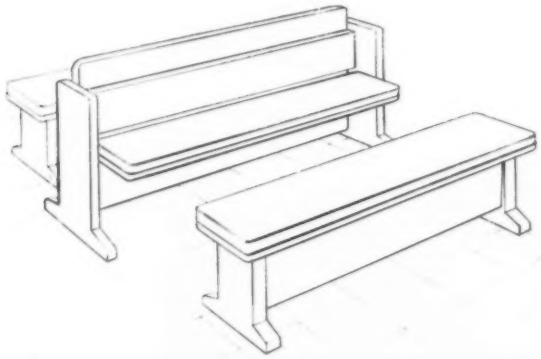


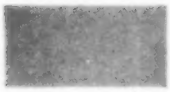
The Nautilus' condiment tray, no longer needed for lighting, is engineered to hold necessities compactly. When not in use, it is put away in the outboard bulkhead.

The crew mess area on a Trigger-class sub, above, graphically points up improvements on the Nautilus *(opposite). Men are crowded together amid instruments and an overhead clutter of pipes and wiring. The laden shelf at eye level is a condiment tray. Its underside provides light for the table, since overhead suspended lights are virtually impossible, but the tray remains a permanent obstacle to vision and conversation.*

Key to the convertibility of the Nautilus' *mess area is the table with a top which tips back to produce, from its underside, another bench. When more space is needed, for movies or recreation, the center row of benches may be moved to one end of the area.*







warm sand alkyd-chlorinated rubber-based paint (special).

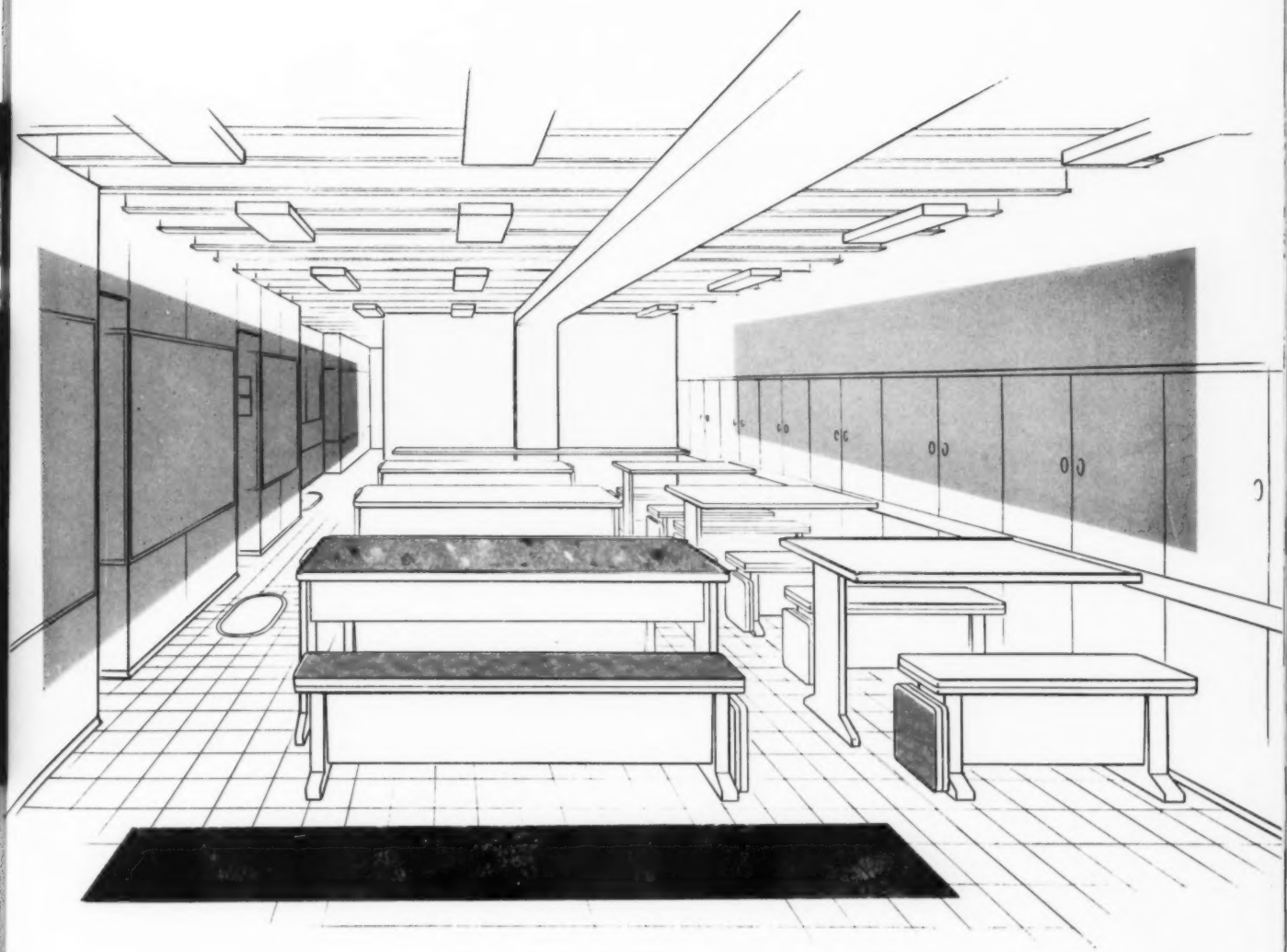
Formica grey-green Surfglo; matching alkyd paint.

neutral yellow alkyd-chlorinated rubber-based paint.

Westinghouse Micarta Mardi-Gras pattern (satin).

Lackawanna Leather Vermilion top-grain hide.

Armstrong Linotile red-brown marbelized New Sienna.



Innovations in habitability on the Nautilus *are epitomized in the crew mess area. Pleasing colors and textures were used to offset the serious mood of work areas, and to mitigate monotony of underwater existence. In the view above, the yellow wall shields the galley. Overhead, the squared duct brings in fresh air; the lighting fixtures consist of an upper pan of cast aluminum and a lower of milk-white drawn Plexiglas, hermetically sealed with a rubber gasket. On the inboard bulkhead, grey-blue-green Formica panels, chosen for the mat finish, slight pattern (and fingerprint resistance), are held by stainless steel strips to the matched-painted wall; the outboard bulkhead, with storage space, is painted a warm sand. Decking is a mottled red-brown Linotile; tops on the satin-finished aluminum tables are a cool, flecked-grey Micarta. The cheerful tomato-colored bench cushions are resin-finished leather: the leather was chosen because it is fireproof, because its colors wear well, and because it was thought to be tougher than synthetics. Recessed bookcases (barely indicated) have perforated aluminum doors. The area seats 36 for mess, more for movies.*

a big year for Japan

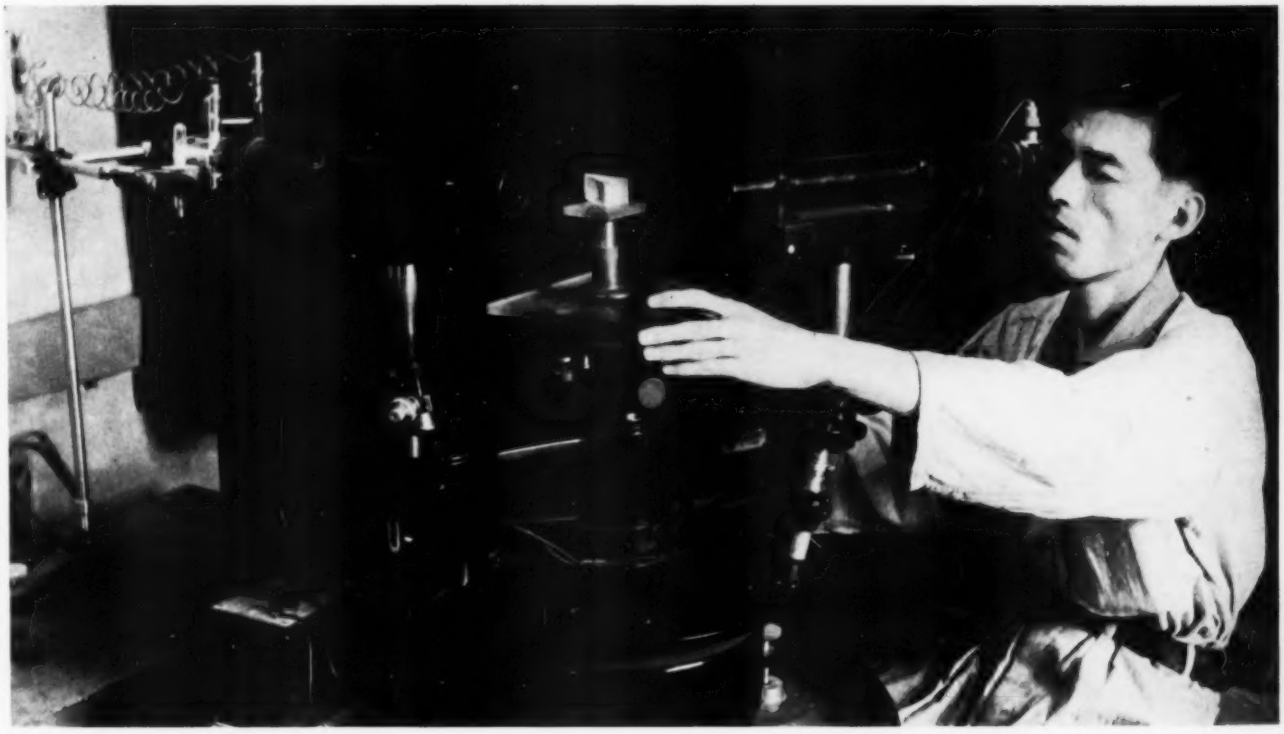
betty rosenzweig

Japan could use a big year. While other nations engage in the comparative child's play of a postwar comeback, Japan is doing its best to stage a complete about-face. One of the first symptoms, after the war, was the Nikon, a 35 mm. camera that rivals the greatest German miniatures. For Americans accustomed to think of Japan as the source of stocking toys and gnome gardens it demonstrated that in one field, at least, the Japanese are capable of brilliant integrity.

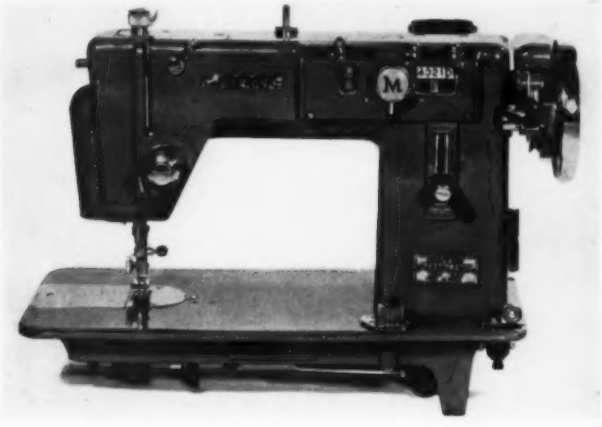
For Japan, however, the Nikon is not unique but a "signboard" of her industry. Though the optical industry is new to us, it served for decades as the "secret eye" of Japan's armed forces. Its development is encouraged by the abundance of sand and unusual variety of minerals in a country whose natural resources are limited. But what makes the camera important to Japan is its revelation of the nation's most valuable resources — skilled craftsmanship and a tradition for functional design.

These resources are almost forgotten by most Americans, who know only the Japan created by foreign trade. Importers have always shopped Japan for low prices, and in the past have often specified both the price and the design of Japanese products. Cutting corners led to ingenuity first, but finally to shoddiness. That trend, as Japan now professes, was not a native one, and the postwar evidence she can muster is good. Besides the cameras there are microscopes, binoculars, surveyors' instruments, surgical instruments, and watches. Former munitions factories turn out sewing machines.

A new step forward was taken this spring with the opening of the Japan Trade Center on Fifth Avenue, New York. Here, in a striking, simple showroom, the smaller industries can display the wares they want to be known for. In May, Japan was honored for her "influence" on American home furnishings. But perhaps the most telling argument of the year was raised in June in the garden of the Museum of Modern Art, in New York. A Japanese house in the style developed in the 16th and 17th centuries is teaching record-breaking crowds that skilled craftsmanship and functional design are indeed the tradition of Japan.



nippon kogaku



The craftsman above, using electronic instruments to study optical glass, is more typically Japanese than the quaint silk parasols that have represented his nation in America's five-and-tens. Postwar Japan hopes to prove this with soundly built, nationally advertised products like the Nikon camera and the Morse sewing machine below. A Japanese exhibition house in New York (opposite) teaches the lesson the easy way.

Japan

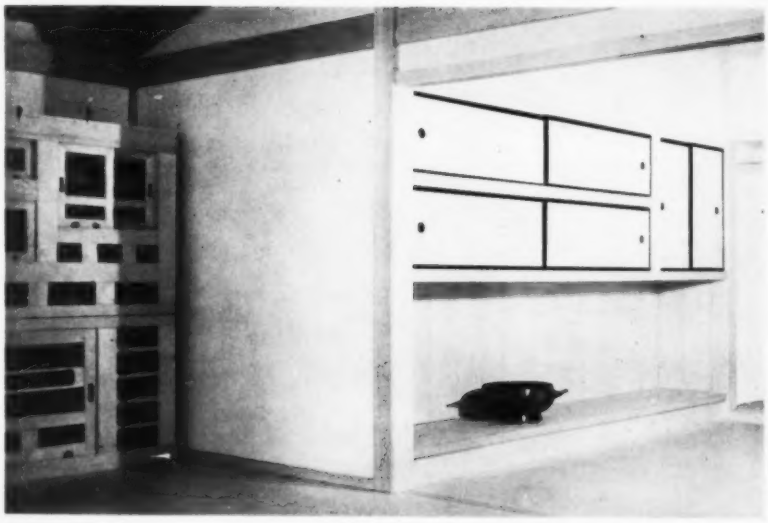
American industry does not seem to share the public's delight with the Japanese house in New York. "Where," they ask, "is the furniture? Are you telling people to live without *things?*" They may find comfort in the fact that the Japanese house is a work of craftsmanship that few American families could afford. But if they looked a little closer, they might find inspiration. The modular Japanese house is a softspoken array of civilized conveniences: every stick of it could be regarded as a product. The smooth bench under the paper window is a desk with a diffused light above it and a kneehole behind a sliding door. Beautifully finished cupboards and bureaus with paintings for doors form panels between the rooms. One shelf is installed solely to hold a display of the family's most precious objects. Those that are not displayed are carefully stored in cabinets, with the bedding and clothes (the museum house was shorn to allow for traffic). But the Japanese are collectors to warm the heart of *House Beautiful*, and even the built-in chests do not solve their storage problems: usually a warehouse is built next to the house to hold extra china and winter clothes. It's not all so alien as it seems. Even the exquisite joinery might be feasible in this country if it were factory done. The most alien quality, perhaps, is the desire to make *things* recede into the whole.

Some people think it is unfurnished.

Others say it is furniture in itself.

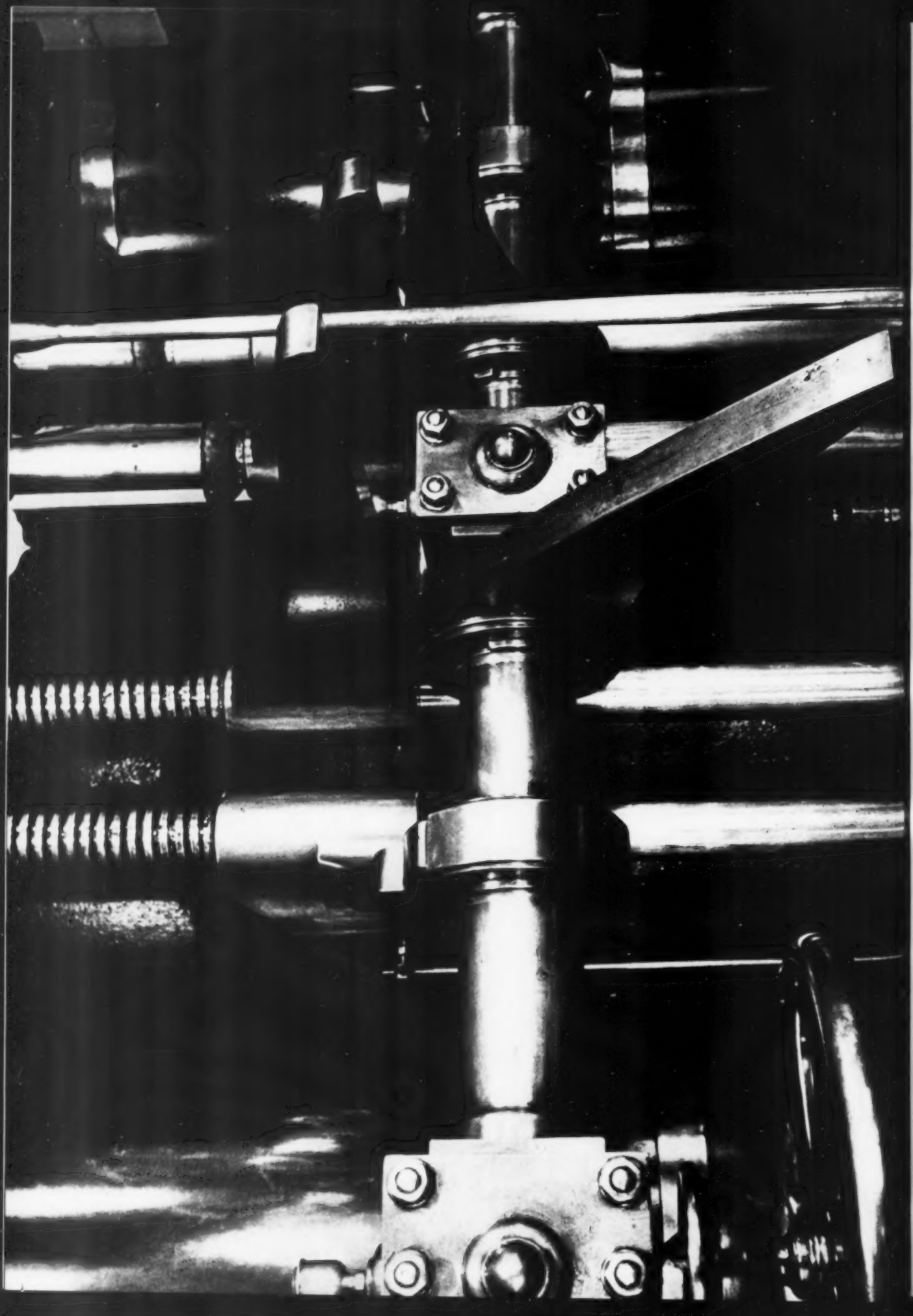
Every wall is a piece of equipment.

Conveniences are part of the structure. Left: in the kitchen, rising heat is carried off naturally at the ceiling. Utensils are part of the composition. Below, left: Cabinets for food and china are carefully sealed. Below, right: The tub is set under a window on the interior court. A built-in drainboard surrounds it.



all photos: ezra stoller

The garden is as carefully walled, planned, and furnished as the house itself. It is lit at night with stone lanterns.



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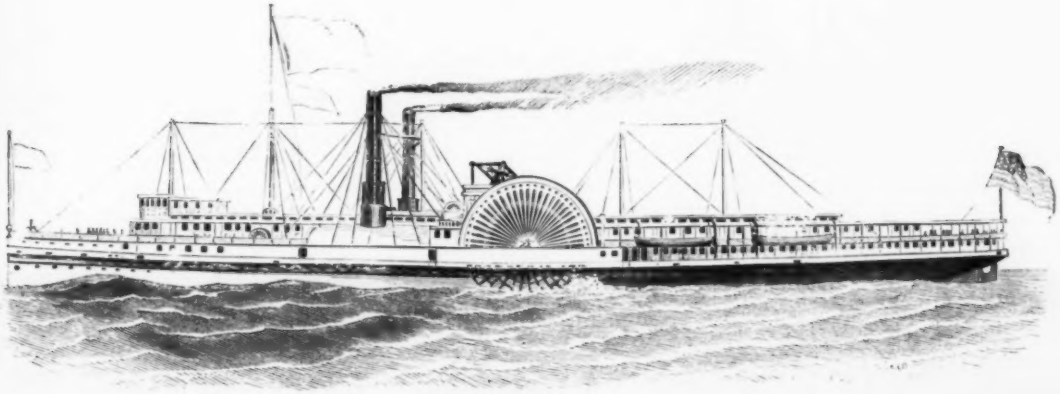
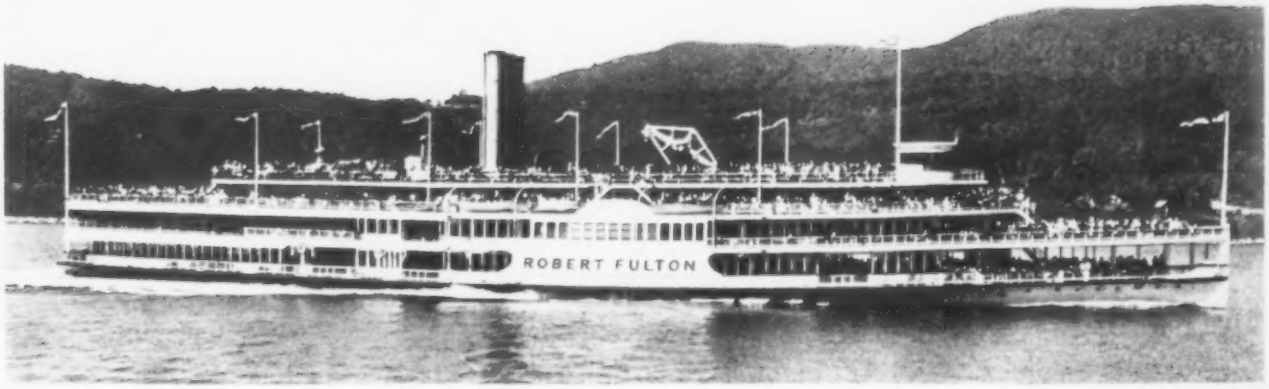
Left: The engineer on the starting platform faces this gleaming collection of valve lifters. Below: An ancestor of the dayliner of 1872. The engine must have been similar but the boilers are on deck.

DAYLINER

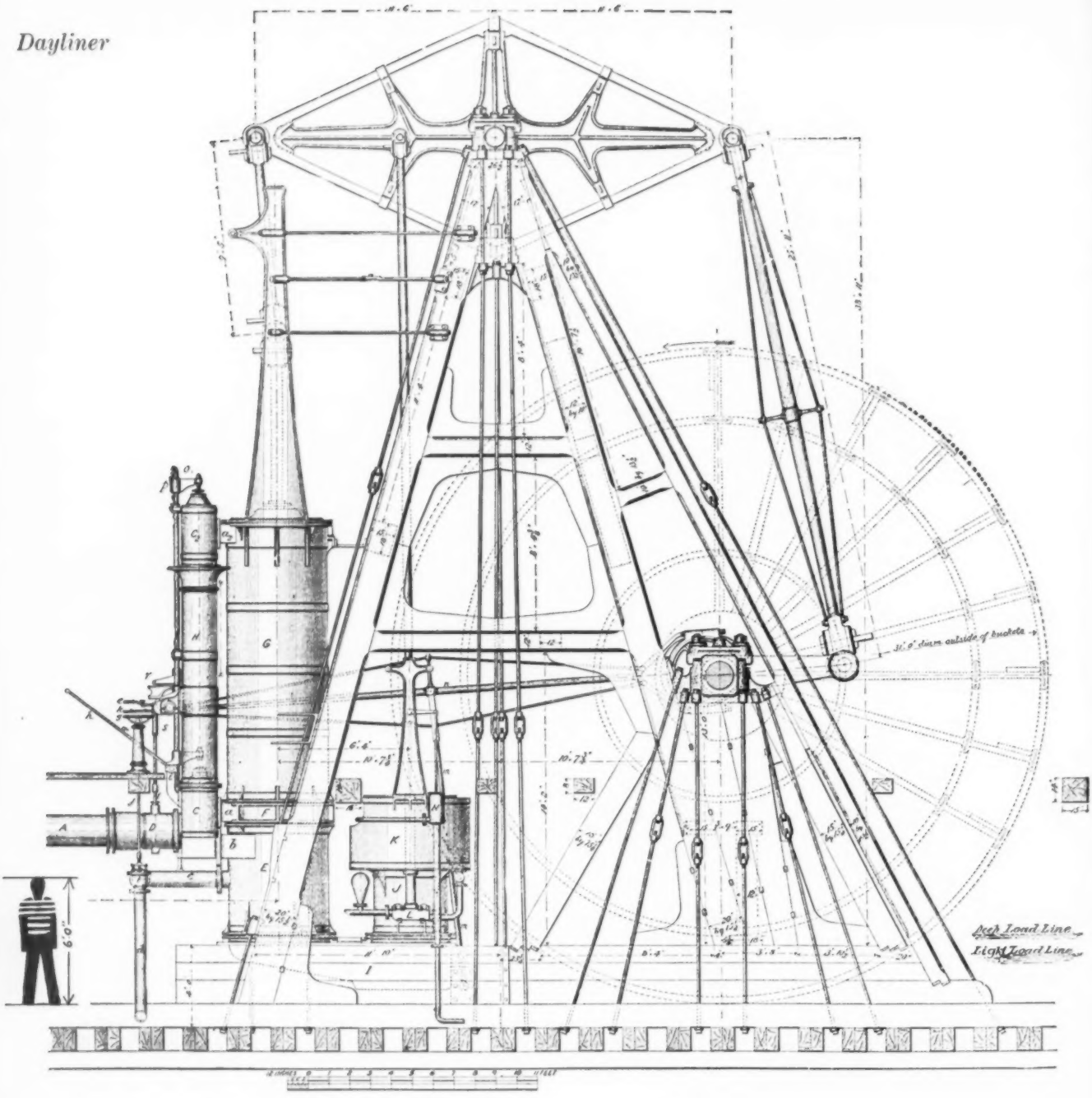


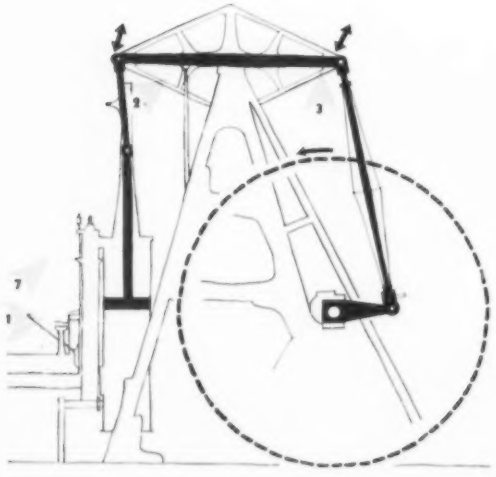


photos and text by **John Pile**

Any day during the summer, the rather undistinguished vessel above may be seen paddling up or down the Hudson River loaded with excursionists picked up at the foot of New York's 42nd Street pier, and bound for picnic spots along the way. The dayliner is the *Robert Fulton*, and this performance has been going on since 1909. If the *Fulton* seems plain, and a little uncertain about whether she is coming or going, we should remember that she was built in the days when the river boat was on the decline. When the Hudson River was the best route from New York to Albany, hundreds of beautiful vessels were built to make the run. The example at the top, built in 1872, is the archetype. Her sidewheel is clearly displayed in the large semi-circular housing, and even the boilers (complete with stack) sit out on deck in plain sight. Sidewheels were eventually eclipsed by the more efficient screw propeller, but in their day they made an impressive team with the beam steam engine. The "walking beam," as it was called, was usually placed far above the bottom of the boat in full view over the top deck because a river boat had to be designed to draw little water.

The reason the modest *Fulton* deserves a second look is to be found below decks: its engine, built in 1874 for a boat which burned long ago, remains a fine example of





The engine illustrated above is almost identical with that of the Robert Fulton. *The numbered indications (left) refer to the photographs in this article. The lettered parts are:*

A steam pipe	*d injection suction*
C and C_2 steam chests	*e cut-off lever*
D throttle valve	*f throttle valve spindle*
E condenser	*g injector wheel*
F cylinder bottom	*h starting bar*
G cylinder	*i trip shaft*
H side pipe	*j injection valve spindle*
I bed plate	*k throttle lever*
J air pump	*m eccentric rod support*
K hot well	*n eccentric rod*
L boiler feed pump	*o valve lifter*
N bilge pump	*p lifter rod*
a and a_2 steam ports	*r toes*
b exhaust to condenser	*s cam shaft or rocker shaft*
c injection pipe	*t injection valve*

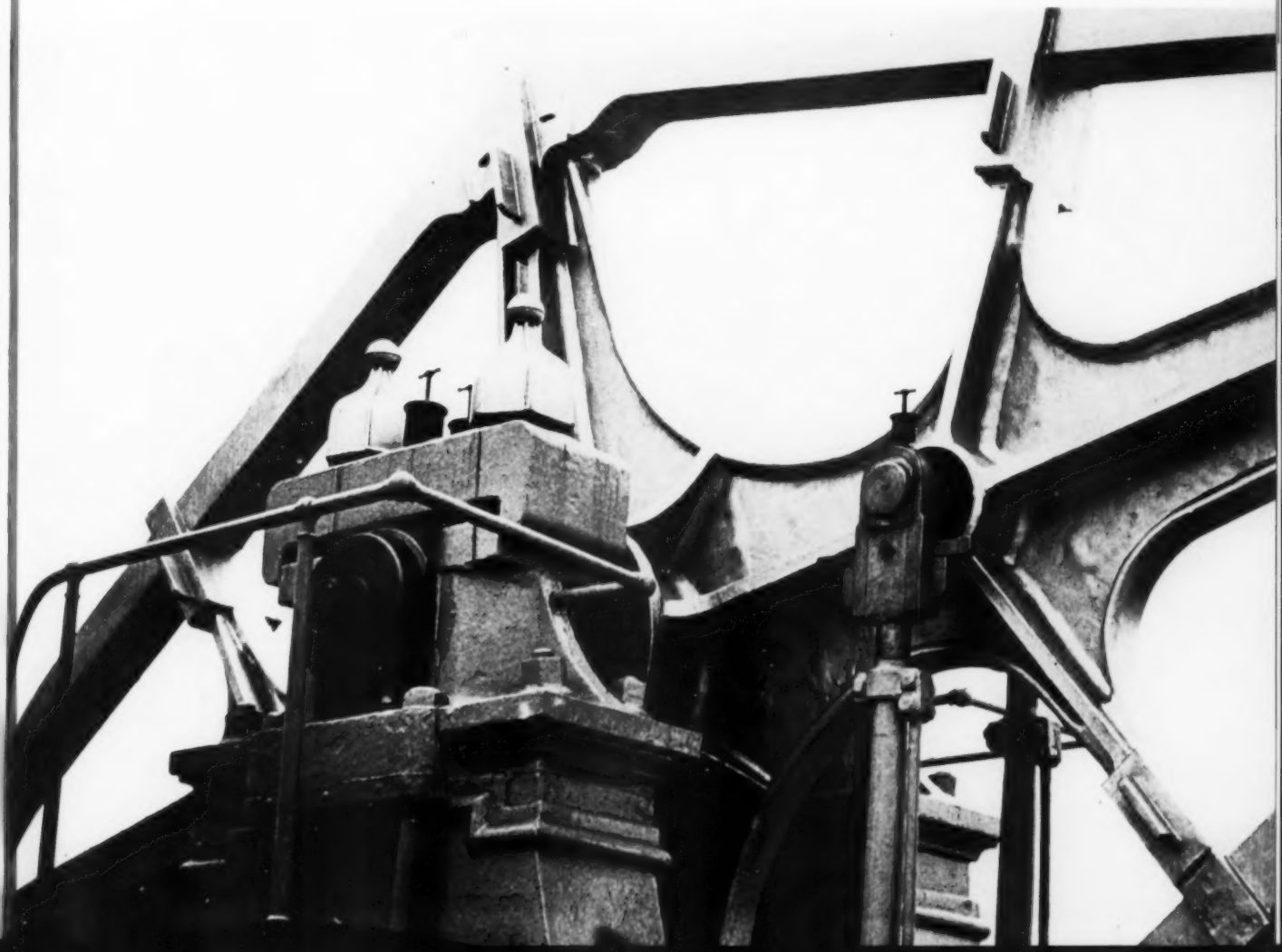
the most distinguished mechanism ever used to power a boat. Today we all admire boats for their lines, assuming that mechanical parts like engines and turbines are routine elements. The beauties of the *Fulton's* beam engine, and the very obviousness of its idea and structure, suggest that it may have been easy for people who were regularly exposed to the workings of machinery — in the days before the housing — to develop a natural understanding of its fundamental principles; at any rate, they came up with the most basic kinds of machines. The slow-turning beam engine has a vast scale and a majestic rhythm unknown in modern machinery: steam pressure in a single cylinder over twelve feet high raises and lowers a rod attached to the beam; the beam rocks (or "walks") and moves a second rod which turns the crank of the paddle wheel. Because of the size of the wheel, even when the boat is moving at its full speed of 20 knots the crank revolves only once every two or three seconds.

The beam itself, an integral part of the engine although it is on deck, is a gigantic diamond of wrought iron with a center bracing of cast iron secured with pins and wedges that must have been derived from timber construction. The entire assembly is so large that rigidity is quite out of the question, and the parts are secured largely by rod braces with adjustable turnbuckles. As a matter of fact, this flexibility has always been an advantage of the beam engine, since it provides a way of keeping the engine in alignment as the river boat sags with age.

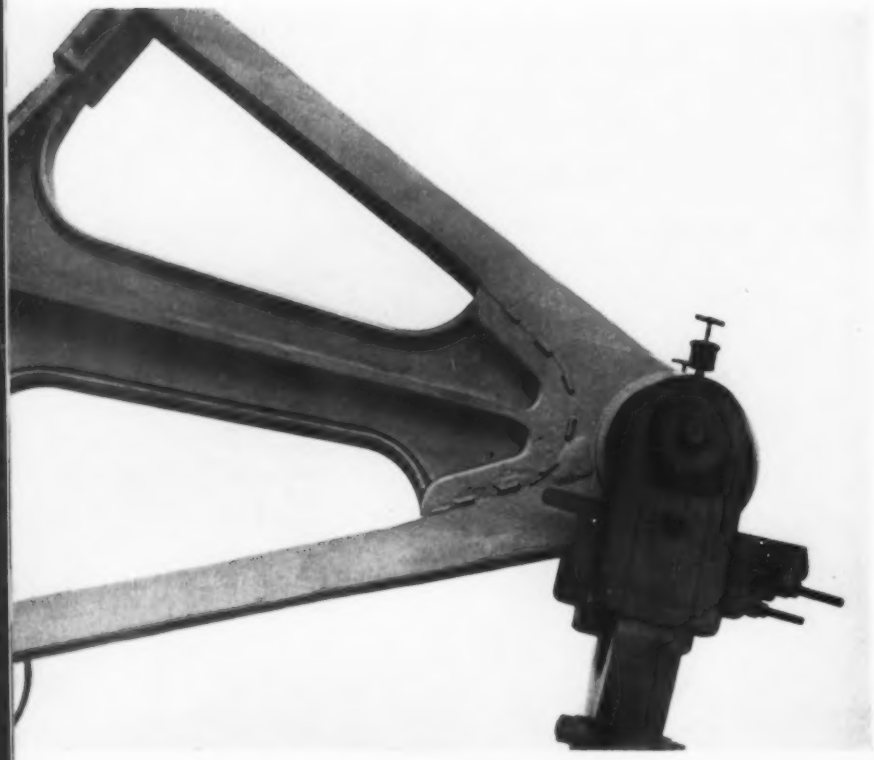
The scale of this engine is so vast that it cannot possibly be seen as a whole. The "engine room" does not really contain it, but is a maze of passages and spaces in, around, and through the engine — and the engine is all the more impressive for this. The fact that the engine can only be seen completely from inside makes it easier to comprehend than its fast-moving, tightly housed modern counterparts.

It is interesting that the designers of such engines didn't hesitate to use ornament where they felt it appropriate, and that they seemed to have an unfailing sense of what and where it should be. Supporting parts, such as the top of the main frame at the beam, carry reserved classic architectural molding detail. "Trimmings," such as oil cups and bells, are also ornamental in shape. The actual working parts are sternly devoid of ornament; the designers seem to have understood that the purely functional parts of a design did not need to be enhanced.

Part of the beam and its support, showing ornamental housings over the huge nuts that hold the frame together. **2**



Though it's hard to believe that this engine of 1874 is highly efficient, it compares favorably with modern marine turbines. Its endurance far outstrips any engine of comparable power. With such a slow rate of rotation, frictional wear is minimized, and after 70 years the *Fulton's* engine is in excellent shape and will no doubt outlast the boat. The decline of the beam engine has nothing to do with its power; the problem is how that power can be utilized. Its normal speed of two or three revolutions a minute does not suit modern machinery as it suited the pumps and paddlewheel of the 19th century. The paddlewheel is hopelessly inefficient because it rotates most of the time out of water, and consumes power "feathering" the paddles (turning them edgewise) as they enter and leave the water for the short dip which actually moves the boat. The screw propeller, by contrast, is always submerged and transmits virtually all of its energy into forward drive. This problem is typical of all modern machinery. Auto wheels, generators, propellers, which demand fast rotation, have led engineers to inefficient and short-lived high-speed machines like the turbine and internal combustion engine. If slow but powerful rotation is all that is needed, the beam engine will deliver it economically, and unprotestingly, for at least 70 years.



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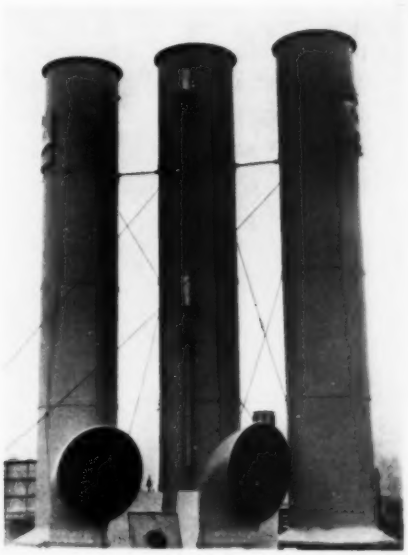

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3 *Detail of the end of the beam.*
4 *Three thin stacks, the* Fulton's *only distinguishing feature besides the engine.*
5 *This bell hangs on the pilot house.*
6 *The boat itself is simply a series of open pavilions built on a floating hull.*
7 *On the starting platform. The date applies to the installation of the engine in the present boat. It was built in* 1874.

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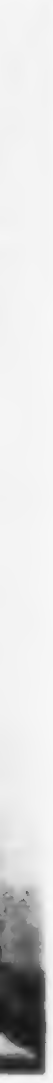

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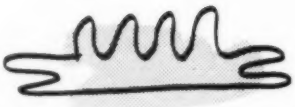
W. & A. FLETCHER CO. HOBOKEN, N.J. 1909
204

Case Study MCMLIV

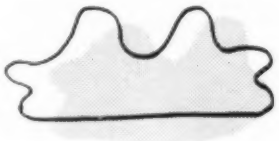
This case study has been selected because it is a particularly good example of product development in its purest, most challenging form. There were no strings attached. The sky was the limit. Slick & Slim, the country's largest manufacturer of straw cake testers, wanted to diversify. It set forth only one limitation: The new product should not be a cake tester.

1 Plastic was unanimously agreed on as the material because it has certain advantages over other, similar materials.

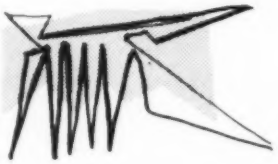
2 Engineering pointed out that plastic can be molded with great precision:



but added that with fewer sharp radii the product would be stronger and more durable.



3 Management remarked that people don't like things to last forever and wouldn't it be nice to be assured of a replacement market?



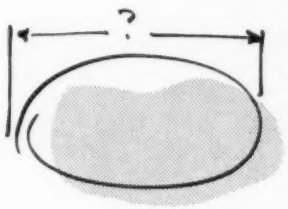
4 Sales insisted that 9 out of 10 people prefer products with character.

5 Engineering replied that they could get into production faster by sticking to existing molds.

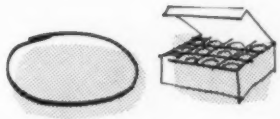
6 Design felt that the product should represent the functionally perfect form, which would naturally make it a symbol of progress.

drawings by henry jova

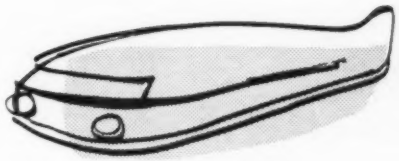
7 Sales complained that if it were too small people would feel they weren't getting enough for their money.



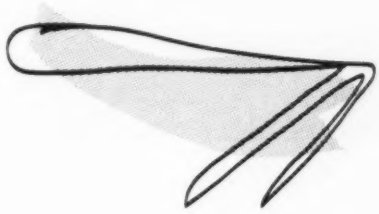
8 Design was afraid that if it were too big it would be difficult to package.



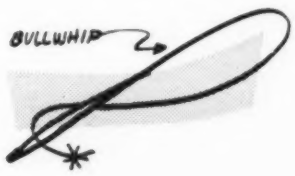
9 Management remarked that a space ship seemed like the real up-to-date symbol of progress.



10 Design replied that an Italian touch would make it look as modern as a minute.



11 Sales predicted that with a few minor adjustments, the product could hit the Do-It market.



12 Suddenly management perceived that if the product were scaled down it could hit *all* markets as a multi-purpose tool.

13 Design agreed that innovations are best slipped over in familiar forms. Final steps included simplification by engineering, imagineering by design, slicking up by sales, and hearty endorsement by management.

In the end, everyone agreed that compromise is the best policy.

Is the Kitchen

When the customer admires them on the showroom floor, appliances are big gleaming promises of efficiency, more virtuose, more loaded with luxury than ever before.

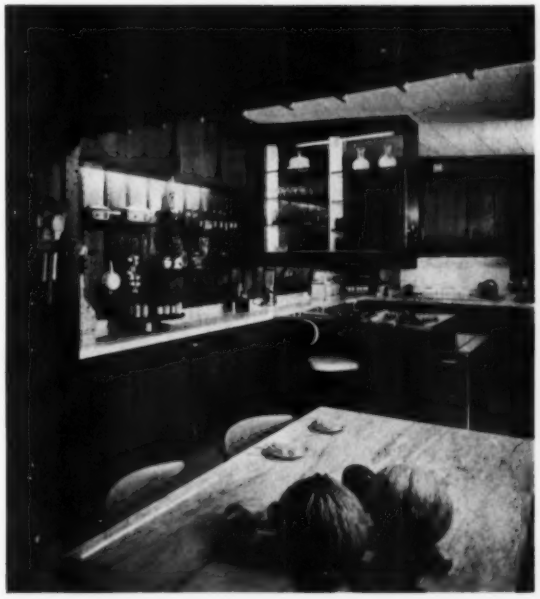
But how do they stack up in that dream kitchen she's been hearing about—an elegant, flexible parlor and playroom and work area too, please?

If the consumer's buying habits are any indication, there's a discrepancy somewhere. The stampede to small appliances, to built-ins on one hand and portables on the other, suggest she's cutting appliances to her own kitchen pattern—a pattern made up of alarmingly small pieces.

The way things are going, in fact, the appliance industry may well ask, What's in a kitchen?

Disintegrating?

by Jane Fiske Mitarachi



ezra stoller

Two renditions of the dream kitchen, in contrasting keys, both point to an apparently appliance-less but highly efficient ideal: Congoleum-Nairn's ad for Gold Seal linoleum, left, and House Beautiful's *Pacemaker kitchen, right.*

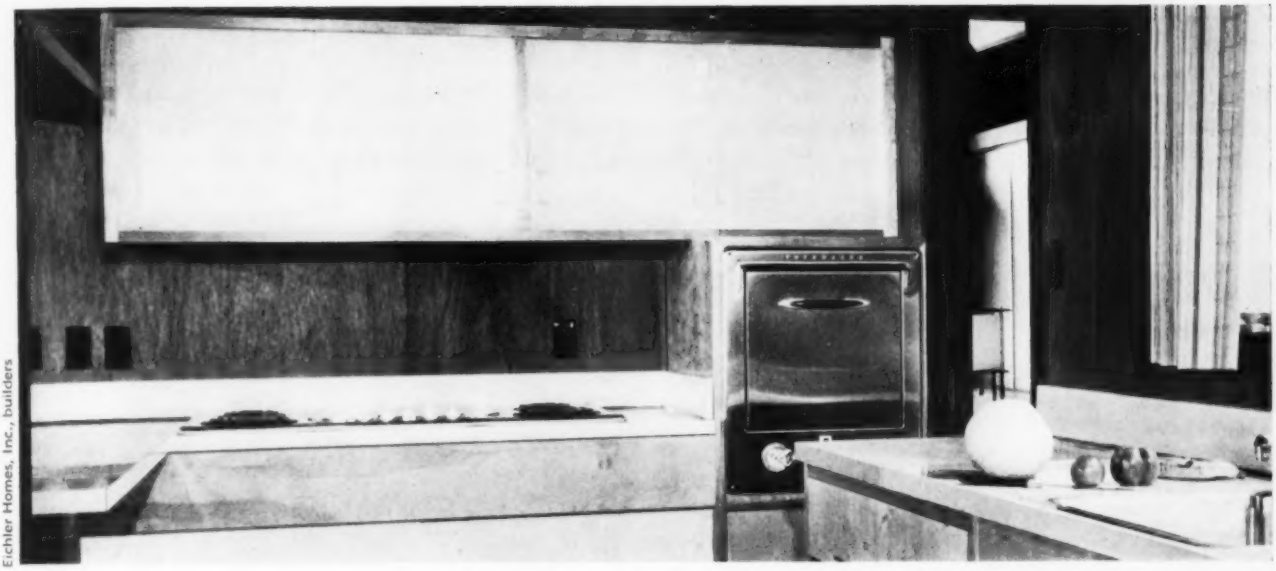
What's behind it? Conflicts, contradictions, and Cassandra in the kitchen.

If there is one consistent trend in kitchens, it is the trend to contradictions: built-ins vs. portables, mammoths vs. miniatures, the quickie meal vs. the new gourmandism. They're all fragments of the disintegration which started when the servants picked up and left. The lady of the house, become a mere housewife, showed her resentment in the dream kitchen of two decades ago: fiercely efficient, clinical, isolated, it was a kind of domestic postscript to flat bosoms and short bobs. Soon, though, modern architecture came up with a new plan for servantless survival, and it has done a lot to bring the woman back into the family. Key to the plan is the so-called open kitchen, which takes efficiency — and appliances — pretty much for granted, and concentrates on social values. It is openly disintegrating into the rest of the house because it is an all-purpose room, an elegant headquarters for all the things the housewife chooses to get involved with.

So what does she do but pick up and leave too. She serves breakfast on the patio, bakes beans in the parlor, invites sixteen for steak on the lawn. And why not? When a stove was the sole source of heat and light, there was reason to cluster a kitchen around it; now, with cheap, tiny power units, there is hardly need for a kitchen at all, and the housewife, with a burner in every pot, can carry her cooking hither and yon. Is she plotting the kitchen's demise? Not necessarily. She merely warns that a kitchen which meets her terms may be fittest to survive.

In the light of her cooking habits, of course, any kind of kitchen looks faintly superfluous: handy tin can meals have recently been eclipsed by frozen prefab blintzes and precooked turkey dinners; the trend, if carried to an extreme, could reduce the kitchen to a control panel in short order. But she chooses another extreme. Suddenly no exotic concoction is too much trouble, and magazines extol the four-color banquets she spreads for her brood. Contradiction? Probably not. Foods and appliances with a staff of servants built in give her the time, and the courage to strike out as a gourmet. There is just one conflict which cannot be explained away: housewife vs. appliance. There's evidence that that consumer, armed with new notions of practicality and personality, is hard put to match her ideals to market reality. Hard put, but not powerless, for when all else fails she can resort to camouflage, or persiflage. Is there any practical way to meet her terms with major appliances? We submit that it's not a problem of fashion — whether she wants her kitchen white or woodsy, the industry can't be expected to match every whim. We think it's a matter of common denominators — character and flexibility — and that goes back to design.

Westinghouse

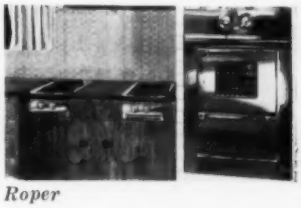


Eichler Homes, Inc., builders

The darling of today's dream kitchen is the built-in, and that's where all the trouble started. The idea of concealing equipment came, logically, from modern architecture, which often absorbs storage and even furniture as part of the structure; appliances, too, are beginning to retire gracefully as they lose their prestige as display pieces. A west coast firm named Thermidor, placing its bet on the minuscule custom-house market, pioneered the wall oven and hotplate after the war. It didn't bet badly. The specialized market boomed, the unspecialized public got a look at the product and liked it, and last year half of the builders who supplied ranges (67%) offered built-ins like the one above.

This year, some 28 firms are marketing their version of the flexible range.

Hotpoint



Roper

Walker Field, architect

Meanwhile the architect—not one to be satisfied with any status quo—is busily improving on the improvement he instigated: This countertop cooker made with individual burners set in a sheet of stainless steel achieves the complete integration of appliance and architecture which is, after all, the real aim of the built-in. Note that control knobs are out of harm's way above the backsplash.

Repeated attempts to cut the refrigerator down to fit the modern kitchen

The refrigerator has been the last to crawl into the wall, and in many an otherwise built-in kitchen it stands out like a sentry, as inflexible as it is indispensable. Given a chance to interpret the housewife's idea of the perfect kitchen, architects rarely treat the refrigerator with reverence.

George Nelson, designer

The Tile Council's 1952 model kitchen dreamed up before built-in refrigerators were available for the home, used a 3-part commercial freezer- refrigeratorto form a neat row with the wall oven.

Edward Elliott, architect

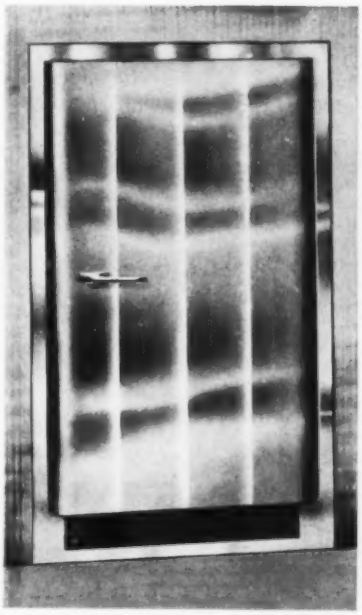
Walker Field, architect. (patent: G. Ecrle)

Rufus Nims, architect

A similar result has been achieved in custom kitchens with the help of special equipment and cabinetwork (left). To increase the efficiency of refrigeration space, one architect installed a four-drawer unit with 9 cubic foot capacity under the counter; the freezer is behind doors at counter level. Even less conventional is the shallow eye-level refrigerator behind sliding glass panels (right). The architect, after installing it in many custom houses, reports that clients will overlook slight condensation (caught by gutter beneath door), because they like the unique design with shallow shelves which are completely visible and can be reached without stooping or bending.

suggested a pattern for a new kind of appliance

The lion's share of appliances, of course, are sold as "replacements," a word which implies duplicating what went before, just as "built-in" implies bothersome custom installation. Some firms, to meet both markets, have tried to make the refrigerator recede without actually building it in.



Ultracold first marketed a recessed model to harmonize with wall ovens in 1951. Revco has a new freezer-refrigerator pair which can be lined up in a wall or stacked on the floor and painted.

photos: ezra stoller

Philip Johnson had a 3-part wall refrigerator-freezer (Davis Products) custom-painted dove gray to match St. Charles cabinets (left). In lieu of custom units in House Beautiful's Pacemaker kitchen, Alfred B. Parker installed stainless-finished Servel Ice-Makers in an outside storage wall, exhausted by air conditioner via open shelf above.

Color is another detour around building in. Just as "painting out" a real built-in makes it almost unnoticeable (left), any object which blends with its background is recessed without redesign. Though color presents its own headaches, the industry is being more than gracious about meeting the trend: Frigidaire offers three colors; Hotpoint has an all-purpose shade called Tusque. Other manufacturers are finding that a material like stainless steel may be the ideal answer: it works as a color with less inventory trouble, and even on standard models it seems to be elegant enough to satisfy the custom customer.

But then you discover that built-ins aren't all the customer wants . . .

The old stove is disintegrating into handy hotspots

It's been an age since toast was toted from the kitchen to the table, and the housewife has slowly been spoiled by all kinds of cooking on location. Steak on the terrace, buns at dinner, popcorn in the nursery each demand a special portable stove—and they get it. This has built quite a market for minor appliances. Those which perform new culinary tricks are turning out to be adequate for the old ones too: a rotisserie produces cakes and chops as well as shishkebab, and when the housewife cooks whole meals on it she conveys some good reasons for buying her culinary conveniences the piecemeal way:

flexibility

mobility

a new kind of cooking

the result

But then, of course, she finds herself stuck with the problem of reassembling the pieces, like unstrung pearls, into the versatile, workable kitchen she really had in mind in the first place.

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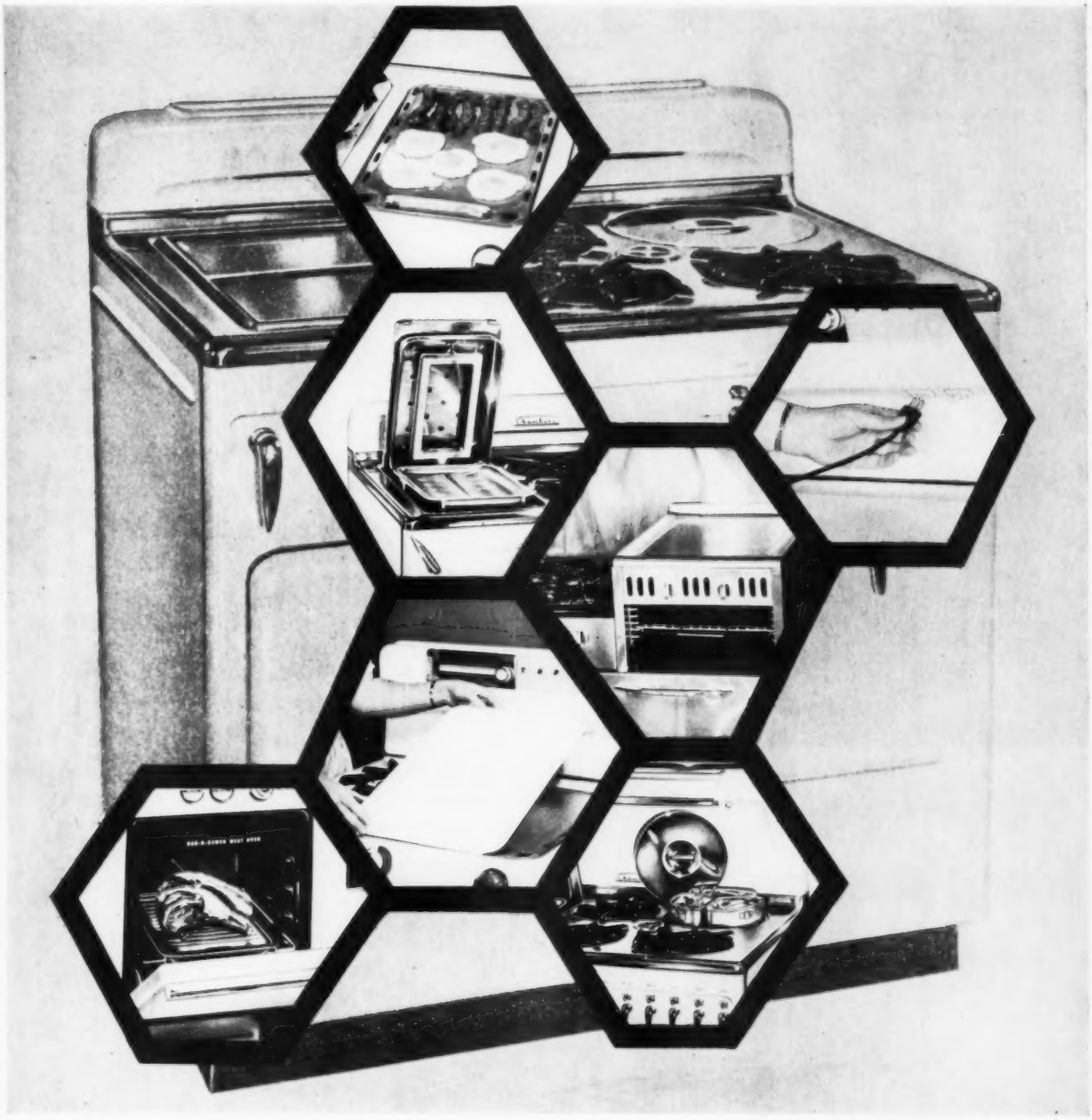
Wouldn't it be nice if there were one perfect, portable all-purpose stove?

Wouldn't it be nice if you didn't need a range at all?

The modern range gathers all the extras into a virtuoso package

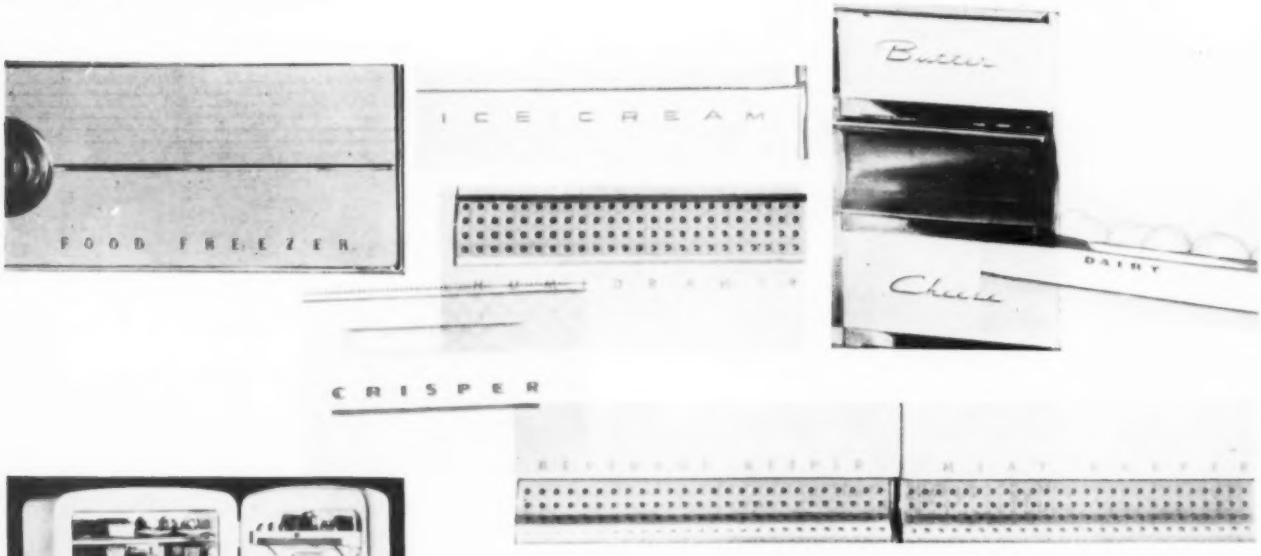
Manufacturers of major appliances, used to thinking in terms of large single items, have made a logical parry to the threat of disintegration: reintegration. Extras, in the kitchen as in the automobile, have always had a tendency to be absorbed as regulars, and recent additions to the range have made it, in effect, a super freestanding built-in. Stove top grills and griddles, deepwells, barbecues and a dashboard of controls reveal the monolithic range flexing its biceps at its tiny competitors.

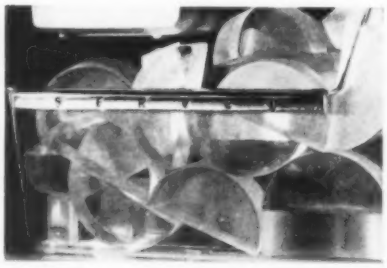


There's just one thing an all-purpose **range** cannot do: pick up and go somewhere else. So the inexorable cycle repeats—and the range isn't the only scene of the war between little and big . . .

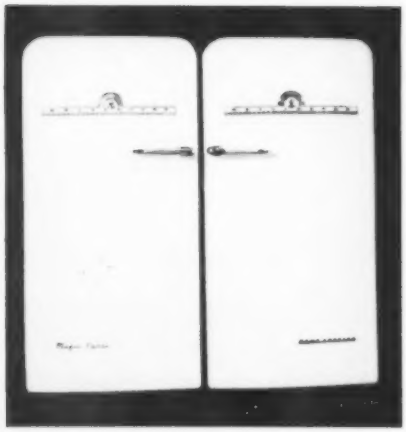
Expansion: refrigerator and freezer are bursting with features . . .

The refrigerator, which is merely food storage at a temperature, did its term in the pantry before being admitted to the kitchen. When extra-cold storage — the deep freeze — came along, it too started as a neat white chest in the cellar or garage. Then refrigerator manufacturers started adding competitive lures, and a handy freezer compartment was one of the features which made the upright more usable:





As the housewife needed more and more freezer space, the combination units gave it to her; today she can hardly do without a full-sized freezer in the kitchen. But even the biggest isn't enough; she wants mobility too. The disintegration of the refrigerator, though slower than the stove, follows the pattern of duplications the customer is happy to pay for. If cooling ever becomes as cheap as heating, miniatures like the Wonderbar may be standard equipment for cars, offices, and even bedrooms.

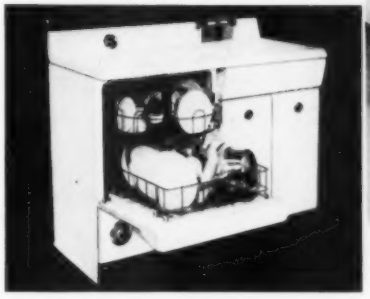


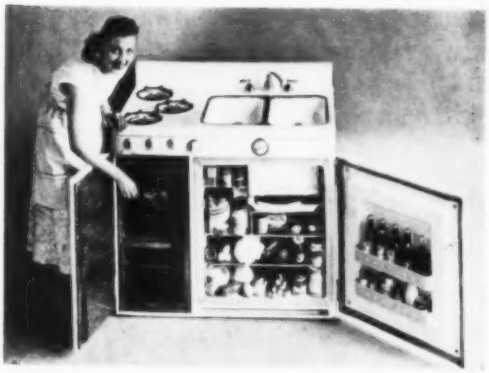
Multiplication: the sink's progeny add to the chaos of conveniences

Though a simple basin beneath the water tap once sufficed for a household's washing and cooking, a twin sink with workspace, or even an island unto itself, hardly seems extravagant in a modern kitchen, and specialized appendages like vegetable basins may be *de rigeur* before long.

Laundering, of course, has long since moved to its own domain,

and washing dishes in a sink is almost as unnecessary as taking a bath there.





As facilities for delivering water have multiplied to a point almost beyond accommodation, a few compact combinations have been offered to those who are forced to worry about space. And who isn't? When you get right down to it, designing appliances to suit the modern kitchen revolves around one central point:

How do you fit this raft of conveniences into an elegant, flexible living space?

Recent experiments have attacked these basic questions at their roots:

Character: Can an appliance suit the modern kitchen without losing face?

General Electric devised a new personality for the refrigerator two years ago with its horizontal XR-10, a room divider which served kitchen and dining areas with Janus-type doors. This evolved into the LW-10, an eye-level wall cabinet that left some installation problems unsolved but not insoluble. It suggested that the appliance could have character without shouting, and quiet good looks which the customer would want to show off.

The LW-10, operating refinement of XR-10, achieved sufficient lightness and compactness with thin-wall vacuum insulation to be hung on the wall like a cabinet. GE's third step in the development of this design is shown on page 86.

Versatility: Can an appliance be either/or: freestanding or built-in?

In the tug of war between regular and recessed models, Universal's Select-A-Range stands out as a remarkably direct solution to a many-sided problem. It achieved versatility with a few modular parts that could add up to a self-sustaining range or a built-in-countertop combination. No longer in production, it might have succeeded if it had been imaginatively treated as modular furniture.

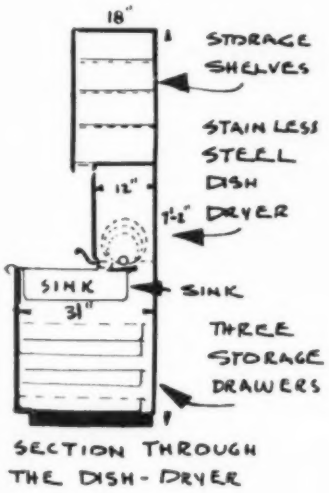
Mobility and integration: Can majors and minors live together?

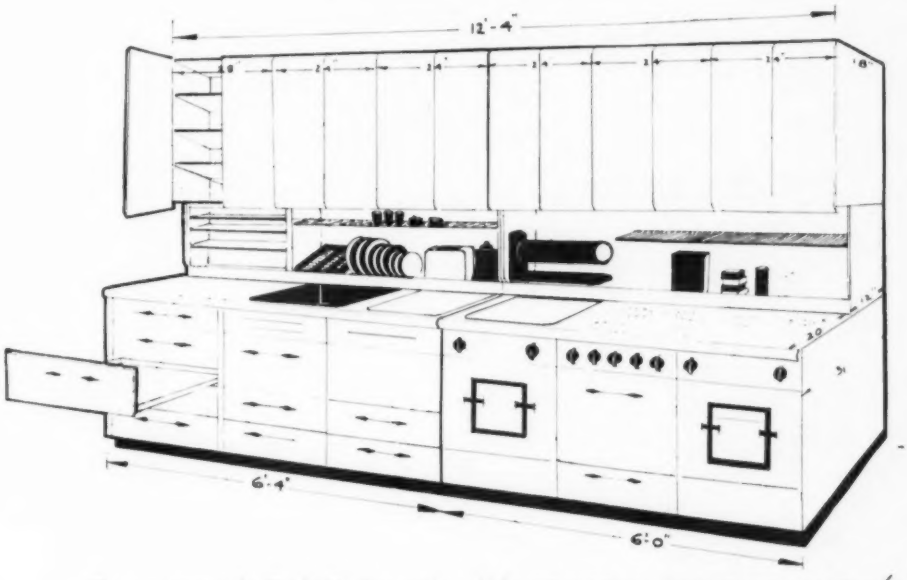
The clash between the specialized miniatures and the all-purpose mammoths may well make both teams nervous. But contradictions need not be mutually exclusive, and it is likely that both trends will go on co-existing. Some extras should indeed go back where they came from; others will always be the kind of duplication our economy, and the customer's budget, can bear, asking only some better planning as part of the complete, functioning kitchen.

Architect Bertrand Goldberg managed to integrate an army of small appliances by giving each a convenient swiveling station at counter height (left). Some appliances may, by redesign, lend themselves to structural integration: Jerome Murray's magnetically-driven mixer could be reduced to a rotor permanently in the counter, and a magnetized blade dropped into any batter or cocktail.

The package: Can appliances merge into one perfect appliance?

The hope of turning a kitchen into one perfect appliance has spurred many men to varied solutions. With apartments and small houses as their proving ground, more have been disproved than otherwise, perhaps because they substituted dwarfish equipment for a re-evaluation of the kitchen as a usable, saleable package. Guyon Earle's unit kitchen ("Not a kitchenette") explores new ways to package equipment for extra capacity. A chassis, formed of modular cabinets, holds a standard range, clothes washer, dryer, and patented drawer refrigerator under a single stainless top. Appliances and cabinets may be assembled into a 6′4″ or 8′4″ kitchen, to be coupled with a 6′ laundry unit, as shown below. If all pieces could be sold separately, to be "packaged" to suit the needs of each kitchen, this unit would overcome the inflexibility common to prefabs.





To save space, the Earle Kitchen omits a dishwasher, offers a back-of-counter dishrack which drains into sink and uses warm refrigerator exhaust for drying. Small appliances may also be stored there. Space adjoining sink can be used for any 24" range, with burners set into special rolled-edge worktop or, in this double unit, for drawer-type deepfreeze. Washer and dryer flank range in this version. Presumably the order of appliances could be varied. Earle is seeking a producer for his unit, on which he has numerous patents.

The builder: Is the kitchen package the answer to his needs?

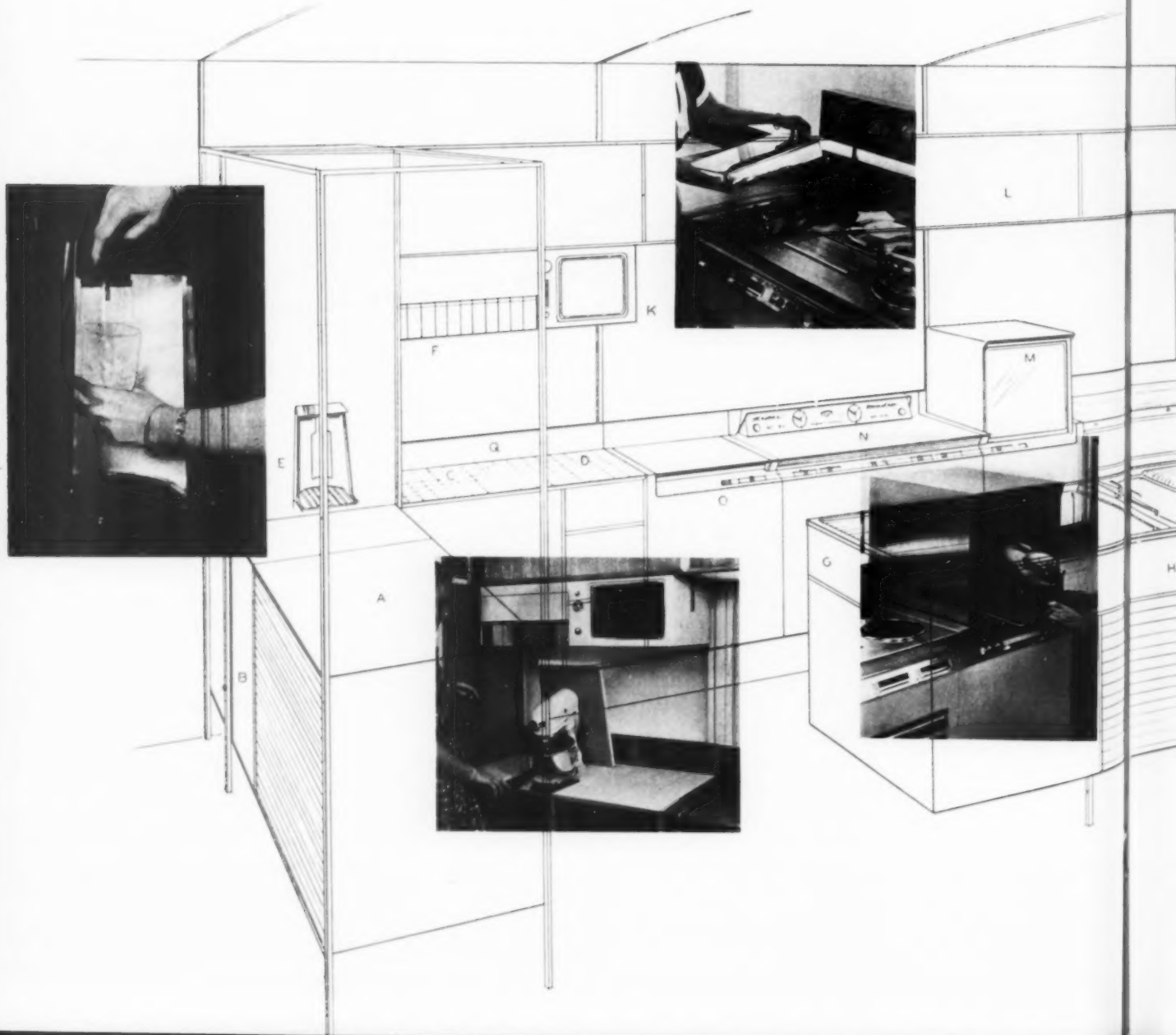
In terms of some 10,000,000 appliances sold in 1953, builders' purchases were not a big slice (estimate: 10%). But no one doubts that, with competition to nudge them and package mortgages to help them sell, builders will increase the number of appliances they include until they're offering complete kitchens. Potentially, then, every new home is a market for five appliances or so, and five could be made into a nice package for the manufacturer. That is why the builder is so critical to the success of a unit kitchen. What everyone wants to know is, how much will the "plus" of a complete kitchen add to the sales value of his house, and what, exactly, is "complete"? One answer might be found in a kitchen system instead of a unit. It could furnish the kitchen with an organizing framework, storage and basic equipment with provisions for equipment the buyer might add later. Then there is the matter of selling the package as a replacement — for a whole kitchen. Though recent rulings on the open-end mortgage have excluded "non-permanent improvement" (even package kitchens), it seems inevitable that homeowners will soon be able to finance complete new kitchens; possibly, too, the kitchen can be designed to qualify as a permanent improvement. This raises another question:

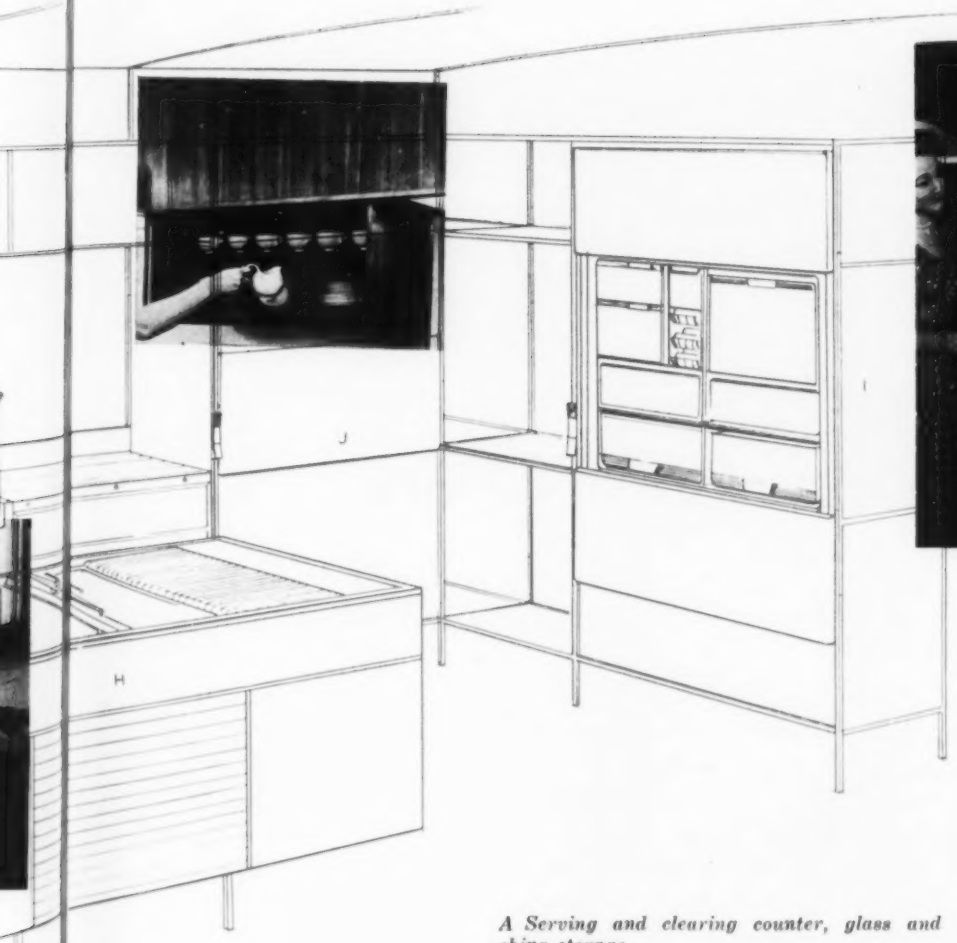
Can a package be versatile enough for new and existing kitchens?

In short, can one kitchen be all things to all people?

GM's Kitchen of Tomorrow ties up all the loose trends in one package

Several million Americans have had a preview of what the kitchen *might* be like, and from all reports they wish it already *were*. In fact it could be, for the Kitchen of Tomorrow, designed by Alexander Kostellow with Frigidaire engineers, is no blue-sky scheme. For all its weird electronic tricks (all available today), its significance is in the way the designer harnessed technology to replan the kitchen as a workable, saleable, and visual whole. To begin with, it is both versatile and a package, a built-in kitchen without any building in. It doesn't even demand a room. Its modular Unistrut framework could fit any space, in easy and open relationship to living areas; the equipment and storage which it supports could be installed or added piecemeal if necessary. Minor appliances are part of the whole, and major ones—the refrigerator with waist-high sliding doors, the rising ovens and glide-down shelves—are reconceived for ultimate convenience. They are no longer insistent appliances, but integrated features which add interesting forms and surfaces to the one big architectural appliance—the kitchen itself.





A Serving and clearing counter, glass and china storage.
B Cellarette.
C, D Mixer, blender stored in counter.
E Ice water and icemaker.
F Condiment shelf with magnetic racks.
G Dishwasher.
H Sink with garbage disposal, single faucet.
I Freezer, open bin storage beneath.
J Refrigerator with automatically controlled horizonal Fiberglas doors.
K Recipe viewer.
L Storage shelves which lower automatically.
M Roasting oven, which sinks into counter when not in use; built-in rotisserie and charcoal broiler.
N Countertop range, with built-in toaster, griddle, dutch oven and deep fryer.
O Electronic oven, which rises to counter height.
Q Mixing area with staple storage. Recessed baseboards permit sitting at counter or at sink, and contain ventilating system. Colors are walnut, brown, and white, with accents of primary colors. Panels, which slip into aluminum Unistrut frame to form cabinetwork, can be any material.

GE's kitchen of the day-after-tomorrow is a package in pieces

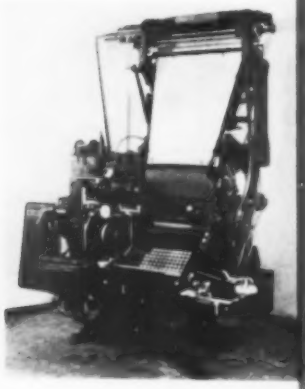
General Electric's vision of life in 1964 was recently given shape by designer Eliot Noyes in the model shown above: a large, open, stressed-skin prefab dome sheltering a spacious and wholely electrified interior. GE, which makes every kind of kitchen equipment, is particularly interested in the future of the builder's house which, it calculates, will be such a prefab and will need a complete kitchen of an appropriate sort. But the company is not ignoring the fact that the replacement market is billowing too. Its kitchen of 1964, designed by the Major Appliance Division, takes account of both markets. Despite its unified facade, it is not a built-in kitchen and not a one-piece package, but a series of independent, freestanding parts which can be sold separately or in combinations as work centers. The parts are of replacement dimensions, yet have been thoroughly reworked for greater accessibility. Ovens, refrigerator and even the dishwasher, in unfamiliar shapes, have been lifted to eye level. The old countertop range has been discarded. For frying there is a plug-in griddle stowed under the ovens; for pan cooking there are casserole-like utensils with integral heating elements in vacuum insulation which prevents surface damage. These portable stoves, which can be plugged in anywhere—counter, table or terrace—suggest a practical and integrated future for the disintegrated appliance.

Refrigerator combines GE experimental cabinet unit with fresh food and freezer storage in undercounter drawers. Under electronic and thermal ovens, note casserole "stoves" which plug into counter or other outlets.

Dishes are washed, dried, and stored in wall-mounted unit. Incinerator is below, laundering machines are at right under counter. The sink, only non-GE item, could be integrally molded with plastic countertop.

From Linotype to Linofilm

Engineers and designers collaborate to improve the printing process



The printing process is a miracle we take pretty much for granted. The 20th century would hardly be what it is without it, yet the last major improvement in typesetting occurred in 1897, when Ottmar Mergenthaler's Linotype machine made it possible to cast complete lines of type in molten lead, mechanically, to replace the laborious handsetting of individual letters. Though this has, of course, been a miraculous time and labor saver, the process is nonetheless costly and cumbersome by the standards of a pushbutton age. For some time now, in fact, the printing industry has been exploring methods which might be more economical than the hot metal process, and most of the investigations have been in the direction of photocomposition—which sets type electronically with camera and film. A development which could mark the industry's next great stride has just been introduced, and it comes again from Mergenthaler: a new photocomposing machine known as the Linofilm, developed by Mergenthaler Company engineers in collaboration with the design firm of Henry Dreyfuss.

Although there are several variations of phototypesetting already on the market (Linofilm is not scheduled to be available commercially for another year), the Mergenthaler machine is probably the most significant advance to date. Mergenthaler went to Dreyfuss with the invention while it was still in the development stage. This invention utilized a special optical system that made it possible to keep both type and film stationary during the photographic process for maximum sharpness and accuracy. As it has now evolved, almost three and a half years later, the Linofilm process consists of two steps and two machines: a keyboard unit, and a photographic unit. The operator, seated at the keyboard unit, uses a standard typewriter keyboard to produce typewritten proof copy and perforated tape that is automatically justified for correct line length. The perforated tape is fed to the second unit, the photographic machine, where its perforations produce electronic signals that select the proper type from a font turntable. Each turntable con-

coding device

justification computor

KEYBOARD UNIT

tape perforator

tape

perforated tape taken from keyboard unit is inserted in photographic unit.

PHOTOGRAPHIC UNIT

tape reader

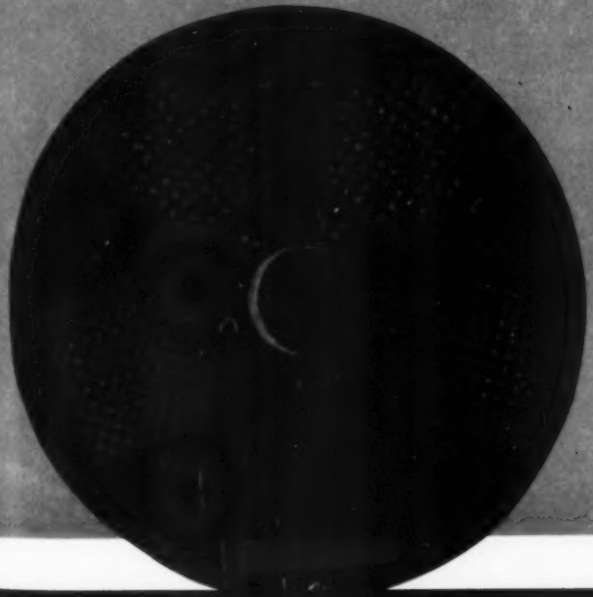
light source

font turntable, containing families of type faces on glass plates, does not move during photography.

shutters

lenses

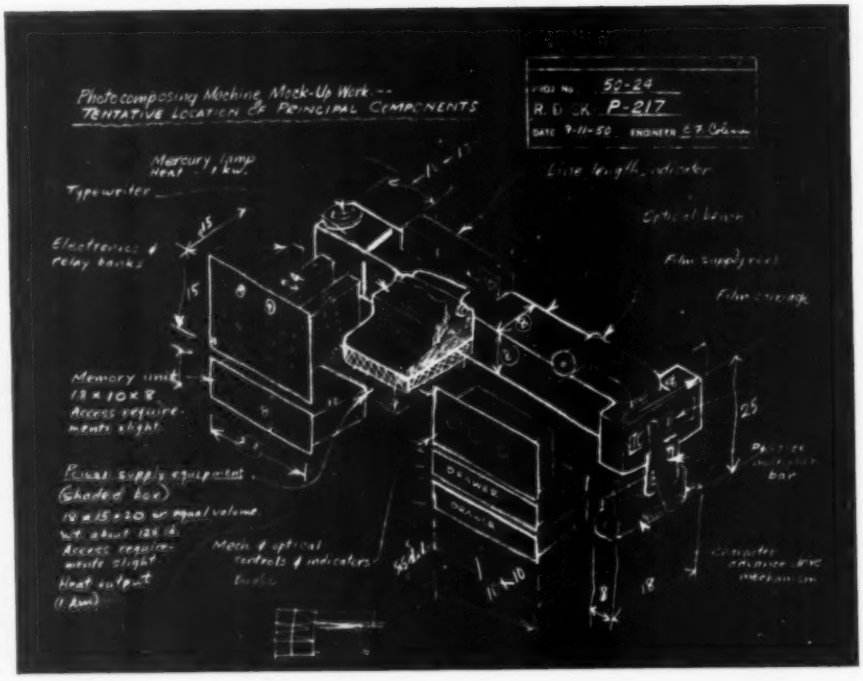
film roll moves only line by line.

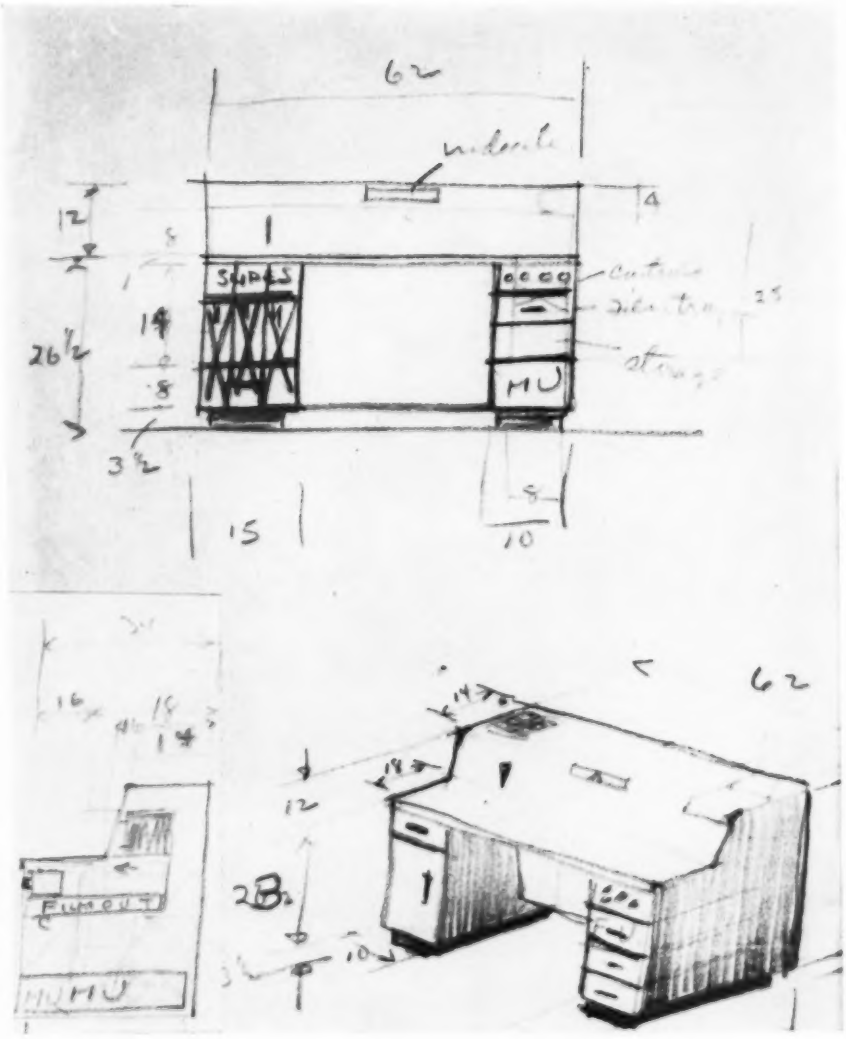


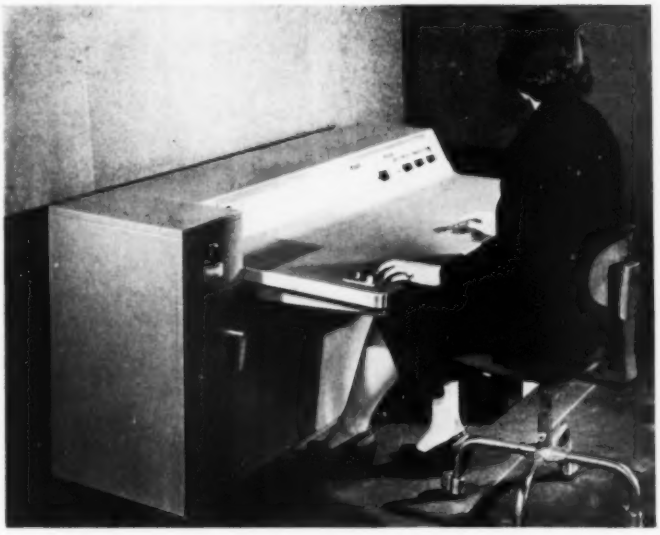
film is developed, proved, and inserted in corrector if necessary. Type is now ready for use in any plate-making process.

tains five character arrays, offering roman, italic, boldface, capitals and small capitals of any type face. The turntables are changed to vary the type. A light source, in combination with a series of shutters and lenses, picks out the letters and projects them, while they are stationary, onto a film which also remains still. After one line is photographed, the film rolls into place for the next one.

When Mergenthaler and Dreyfuss started working together, all of this was visualized as part of a single machine. The process, which was theoretically perfect on paper, had not yet received its mechanical and technical refinements. The designers began by studying several possible housings for the proposed machinery. Meanwhile, under guidance of Louis Rossetto, Director of Research, Mergenthaler continued with the engineering development. Technical changes often meant that the designers had to revise their ideas completely; at the same time the engineers were considering the problem in terms of the designers' suggestions, a procedure familiar to them through work on other projects with the Dreyfuss office. After a year and a half of study, Mergenthaler decided that the main part of the process should be divided into two steps and two units, instead of the original all-purpose machine that the engineers had envisioned. There were good reasons for this separation of keyboard and photographic functions, since tape could be processed far more quickly than it could be produced. Studies determined proper work heights and clearances and the best location of the different elements for the keyboard unit; certain parts of the machinery were relocated for operating conveniences with resulting changes in appearance. These neat cabinets contrast strikingly with the intricate mechanical aspect of the traditional Linotype unit on the previous page. The characteristic machine of the nineteenth century was a mechanism of many exposed, moving parts. The twentieth century machine is becoming a small package of intricate equipment protected by a box which must convey its character.







The engineer's sketch, top of opposite page, shows Mergenthaler's original concept of the Linofilm machine, with the whole process in a single unit. The sketch below it is one of many early studies in which the designers first brought the invention to life. A model, above, produced after a year and a half of cooperative development, still incorporated typing, tape-making, and the photographic process in the one machine.

At this point the engineers decided that it would be more practical to divide the process into its two basic parts: a keyboard unit for typing the copy and making the perforated tape, and a photographic unit which would set the type by decoding the tape and photographing the copy on film.

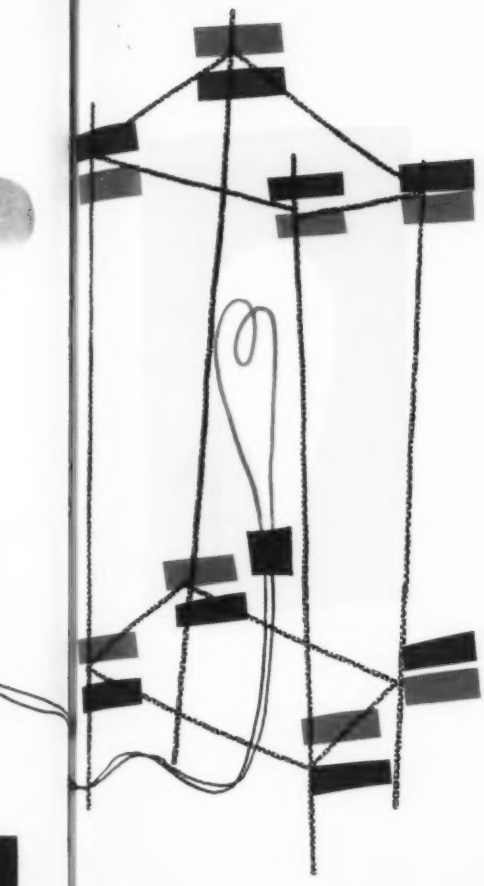
The final study models of the Linofilm machine, as it was presented to the trade this spring, appear right and below: 1) *the keyboard unit,* 2) *the photographic unit, and* 3) *the corrector.*

Differences between the early model and the later keyboard unit are partially the result of the relocation of machinery in line with the designer's suggestions for greater operating efficiency; the justification indicator was moved to eye level above the typewriter, requiring a higher, sloping back panel, and the tape placed at hand level for easily penciled notations. All controls are grouped to the left of the typewriter keyboard.

ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890

Do-it and You



How to ride a hobby horse in 8 easy steps

Why do they do it? Plainly, the reasons are legion. In the first place, do-it is not so much a development as a retrogression. Houses, dolls, and even false teeth, after all, were once the product of unskilled, unpaid labor. When specialization set in and men began to go out to make a living, two large segments of the population were left at home, where they continued to do-it with gusto. Woman's work and child's play have never been taken over by the professional. With the high price of labor, few women want to pay a cook to do something they do pretty well themselves. And children would really have time on their hands if blocks came pre-assembled. Now the men find themselves in the same straits. Why pay someone more than your own time is worth to do what you can do with more devotion—if less skill? Why not spend your leisure profitably when weekends and holidays leave more time than anyone can use for games and culture? Laying tile is easily as pleasure-giving as a good game of contract.

These aren't the only arguments for doing it yourself. The American standard of living, the highest in the world, is higher in fancy than it is in fact. People who can afford a new car every two years should certainly expect a biennial paint job on their homes, if not a new wing. As *Time* says, in its recent profile of the hobby, "For many Americans, do-it-yourself makes possible luxuries that once existed only in their dreams." That is why the trades, and the industries that serve them, can look on do-it, not as a threat, but as a new leavening agent for the billowing economy. The people are hiking their standard of living by self-help, but they can use some outside help. Just as home cooks have been inspired in their efforts with bottled Escoffier sauces and an expanding array of culinary implements, the home workman has been encouraged with rubber paints, paint rollers, and dial-easy saws. Now it turns out he's a brand new market for such dreary items as scaffolding and putty knives.

To a large extent, the revolution was started by the manufacturer. He began making work easier long before he realized just *who* he was making it easier for. Scissors and glue—nursery school equipment—have been taking over from nails and mortar for some time. The day may come when scissors and glue will build a house.

The women helped too. Masters of *arroz con pollo* and the bias cut, they knew perfectly well that changing washers and hanging paper didn't have to wait on the professional. Today they are out leading the parade, into the hardware store, into the lumber yard. U.S. Plywood asked its dealers about this and found that they "noted a large population of husbands and wives together in the lumber yards, a significant proportion of women alone, and only a minority of men who were solely responsible for the buying decisions."

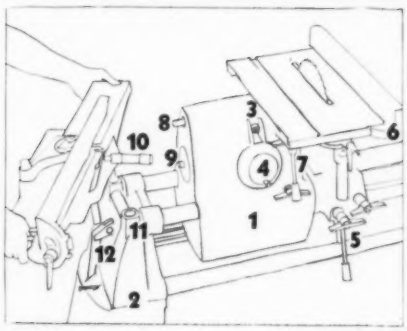
Doctors are also encouraging do-it. It releases tension, develops the whole man. This brings us back to children, who really have the secret of longevity. The first grown man to take up with tinkertoys, to our knowledge, was the artist Tino Nivola, who furnished his own home with tinkertoy lamps. The tinkertoy can now be officially designated as a knockdown. Peter Kitchell of Exeter, New Hampshire, sells it by mailorder for $3.75, including vinyl shade and electrical socket (above). Although the project is a bit confining for childish imaginations, the fathers we have asked like it fine.—*d.a.*

1 *How-to is a problem in itself*

In some cases, do-it does the designer out of a job, but it has made up for this by creating a new one—the design of how-to. The success of a do-it item often depends on whether the instructions make the job look easy and the product enticing. At least one business has been built on the production of how-to material. The Cavedale Craftsmen, of Sonoma, California, a partnership of doers-writers Darrell Huff and Paul Corey, serves national accounts with ideas, pictures, stories, and layouts for magazine articles, books, booklets, and stuffers. Their three-part plant consists of workshop, office, and photographic studio, in line with their major premise that clear how-to requires good photographs. Their direction sheets are carefully integrated arrangements of photographs and explanation; their helpful hints are shop tested. They take pride in designating themselves as "designers for the home workshop man." With increasing amounts of furniture sold as rough lumber, it's about time good designers worked the camp-craft flavor out of do-it projects. Cavedale is leaping into the breach with a book of about 40 furniture designs, worked out for Shopsmith (below).

2 *Old saws take on new meaning*

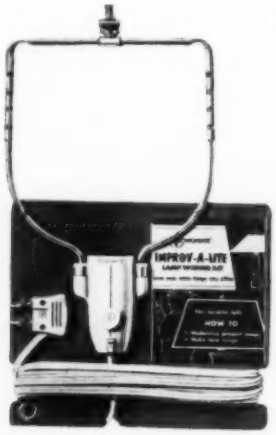
Theoretically, the makers of power tools are riding the wave, but they find it takes some steering to hit the mass market. No one has taken the problem and the promise more seriously than Magna Engineering Company, makers of the Shopsmith. Magna got into the do-it market early: The first Shopsmith, a flashy combination tool built around the ways of the lathe, was introduced in 1947. Do-it highbrows claimed the Shopsmith was more of a toy than a tool: a combination was a nuisance when you really got down to work. But Magna, bent on its own market, set right to work on its second, improved Shopsmith. The aim was to make a machine that was neater, safer, and bewitchingly easy to run. The new Shopsmith Mark V, introduced this spring, is Mr. Mumblethumbs' dream. And it was designed for real mass production. Magna turned to an obvious, successful source on how to make the big time—the automobile industry. It managed to keep costs down despite countless refinements by moving away from foundry work and tooling up for die-cast aluminum and steel. One estimate says Magna spent $600,000 on tooling and engineering; presumably this doesn't cover parts made by other companies, who get $4 for every $1 Magna spends on its own labor force. In the new Mark V hardly a detail escaped reworking. For safety, the company developed an uncased motor so that both motors and pulleys could be enclosed in one airtight housing. For convenience, most of the controls were put on the near side of the machine. Other details are shown at right.



1. *Enclosed drive; die cast aluminum alloy hood is light and rigid.* 2. *Integral steel bench (usually they are extra).* 3. *Motor switch; wings permit it to be knocked off but not on.* 4. *Speed dial; control is geared up to simplify fine tuning; speeds from "disc sand" through "shape" are transmitted through interdigitary sheaves.* 5. *Table riser lock and lever; single lock clamps table at both sides.* 6. *Fence lock; one knob aligns fence and locks it to both sides of table.* 7. *Quill lock and feed; feed lever can be attached on either side of motor for horizontal or vertical drilling.* 8. *Auxiliary spindle for driving jigsaw, etc.* 9. *Jointer spindle; geared down to run at proper speed in conjunction with saw.* 10. *Flexible coupling.* 11. *Sockets to receive extension table, accessories.* 12. *Headrest lock to unlock ways for vertical operation.*

3 *It's easy to help those who help themselves*

The Wiring Device Department of General Electric goads its designers with the requirement that 10% of yearly sales must come from new products. One answer for the stymied designer is to make it easier for people to buy things they already want. Presumably, almost anyone wants a modern three-way diffused light, but just as presumably, they don't want to throw out a perfectly good lamp just because of the bulb. Thus the Improv-a-Lite, an inexpensive gadget, neatly carded, that can be inserted in place of the standard socket in an ordinary lamp. Originally, the Improv-a-Lite was sold for remodeling old lamps, but lately GE has latched onto a good thing by suggesting that creative doers make new lamps of old what-have-yous.

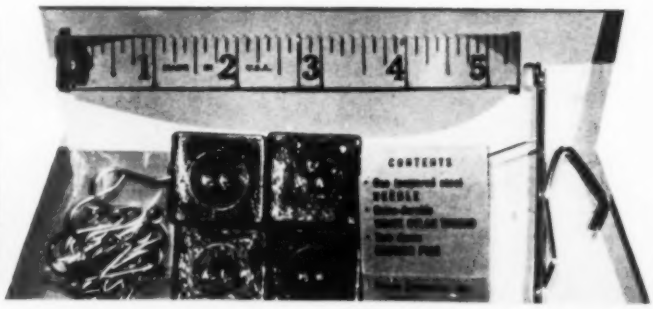


4 *Anyone can hasten obsolescence*

Yale & Towne, a company usually associated with good brass hardware, recently became its own competitor with a line of decorative porcelain door knobs. To encourage the housewife to throw out her present knobs, the new line is designed for easy attachment with glue and one screw, styled in modish variety, and displayed in a modish package. Yale & Towne is a leader in a do-it-inspired movement to design packages that will earn counter space in the hardware store. Even their hinges and padlocks are individually marked and wrapped to encourage impulse buying.

5 *All you need is a package, sometimes*

Probably the greatest number of so-called do-it products are things that were around anyhow and only needed a little dressing up to fit the title. Prefabricated draperies, for example, are not unusual—the "you can do-it" package is. Tape measure, needles, and pins (usually available in the home), lead weights and drapery hooks (usually sold right next to drapery fabrics) make an ensemble as enticing as a doll's wardrobe.



6 *It helps to have some ideas*

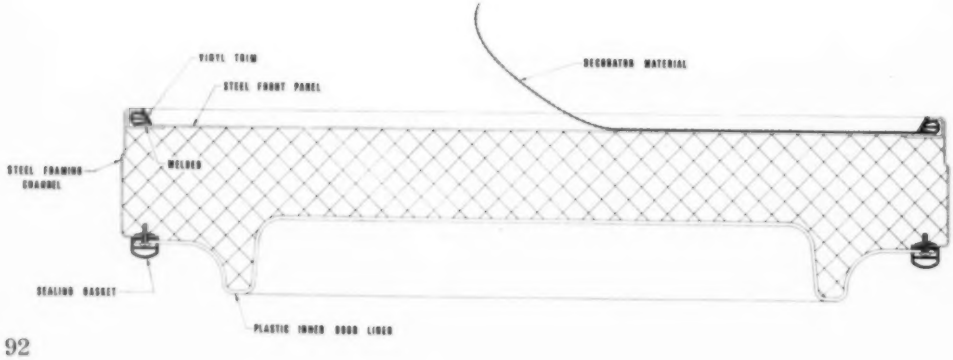
At a glance, aluminum does not seem any more appropriate to do-it than a dozen other materials. But Reynolds, which has already shown how far a good idea can carry with its household foil, expects to make aluminum a standard home workshop item. If the venture succeeds (Reynolds easily pictures annual sales of ten pounds a home workshop, a total of at least 110 million pounds), it will probably be due to four good ideas: 1. Reynolds developed an alloy that could be worked with ordinary woodworking tools and turned it out in a variety of handy forms—sheet, rod, bar, tubing, angles. 2. They cut it in short lengths for piece sales. 3. They gave it a prominent, serve-yourself dealer display. 4. They thought up an appealing variety of projects for it. Reynolds is not staking everything on one market. Reynolds' designers are turning out patterns for darling spice shelves, matchbox holders, and tie racks for the traditional artsy-craftsy type. At the same time they're advising young marrieds on a tight budget that aluminum is high style for contemporary furniture and so easy to work that anyone can make smart, Eamesian tables, desks, and bookcases. Special extrusions have been designed to simplify the making of aluminum storm sash and fly screens. Finally, in the realization that not all their customers are this ambitious, Reynolds has figured out a host of inescapably simple uses for the metal—grease drip pans for the garage, fence post tops, termite shields, stair rails, etc.

Among other producers of basic materials who have gotten into the retail market with do-it is U. S. Plywood, which decided to offer a line of pre-finished veneers to the consumer, then tried to think up an easy method of attachment that wouldn't mar the surfaces. The first result was Plankweld, a paneling joined with clips; now there's a glue that lets you panel a room entirely without nails. Last year U. S. Plywood figured 42% of its retail sales of hardwood plywood was to doers.

7 *Maybe the customer can help you*

For most manufacturers do-it is a challenge. International Harvester took it as a blessing. Like all refrigerator manufacturers, IH has a problem with color. It's a lot of trouble to decide on a palette, set up color control, build inventories, etc. When you get through, the housewife who clamored for color is stuck with it; if she gets tired of Sunshine in her kitchen, she may transfer her dislike to the maker. To get around this problem, the new IH refrigerator was designed to take a slipcover, which the housewife could change to match her decor. The usual drawn metal door was ruled out because its bulges would require an elastic fabric. The solution, worked out in collaboration with designer Dave Chapman, was something that hasn't been seen for years—a flat refrigerator door. The front is sheet steel, the frame an extrusion that can be bent to fit various models. Materials up to ⅛" thick are applied to the door with a double-faced adhesive tape. A removable vinyl gasket makes a neat line over the cut edge of the cover.

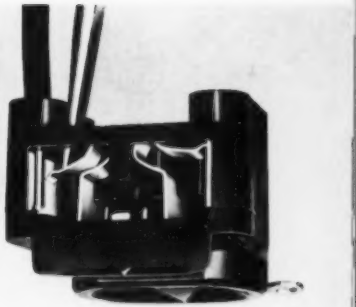
This is not the first inventory problem that has been solved by do-it, although it's one of the most imaginative. Knock-down makes life so easy for the retailer that he's selling it knock-down whether it was designed that way or not. Needless to say, this doesn't help the market for knock-downs legitimately designed for amateur assembly. Things have come to such a pass that some stores, according to a recent item in *Retailing Daily*, "are specifying whenever disassembled merchandise is offered."



8 *Sometimes it turns out that the customer does it*

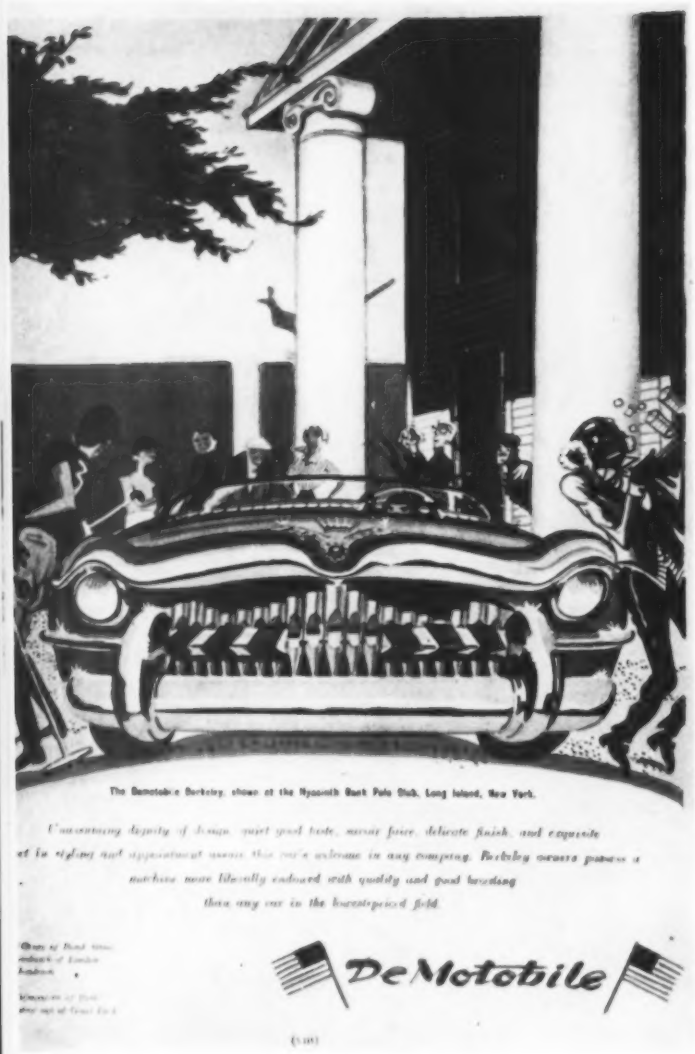
A typical do-it product, and one of the earliest, is a little 15-cent plug that makes it easy for anyone to repair a frayed or broken electric cord. The inventor, Martin Greenbaum, went to work on the problem over fifteen years ago, introduced the Academy plug in 1945. The design is simplicity itself: contact is made with barbs that pierce an ordinary, untrimmed cord when the hinged prongs are closed. If the cord pulls loose, a band of insulation left in the plug prevents arcing. The solid core makes the plug unbreakable. UL approval was hard to get, but it was followed by a Lewis & Conger Safety Award, and today such plugs are regarded as safety devices. Realizing it would have tough going against the big companies, Academy sought attention in several ways. The pearly urea devised for buttons was used as an alternative to the standard dark, economical phenolics (six years later, pearl is just taking the sales lead). Counter displays, designed to hold 36 carded plugs, were among the first in the electric field.

for a living



The Academy plug was developed on the theory that human slip-ups can be circumvented with automatic devices. It's a timely theory, and applies especially, in a day of complicated and critical devices, to skilled labor. So its hardly surprising that General Electric, one of several companies that now make a line of automatic wiring devices along the lines of Academy's, has adapted the principle to a line of professional equipment. GE's pressure-lock terminals are connected simply by pressing stripped wire into a hole, where it is locked by a spring. Wires can be released by running a screwdriver into a slot to push back the spring. The system saves wiring time and makes faulty wiring less likely.

Many of the ideas that make things easier for the professional were first developed in consumer products. Often, as in the case of the paint roller, the professional resists the short cut, but in the end it may be his only defense against do-it. A Michigan court recently decided unions could not prevent painters from using rollers. This implies a pretty prospect: more paint, applied more cheaply and more often, providing more work for both the professional and the man with nothing better to do.



WHAT'S SELLING AMERICAN CARS?

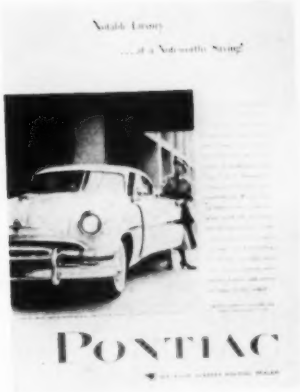
(5,738,989 last year)

The ad at left, which appeared on the back cover of a mock New Yorker bound into the Spring issue of the English humor magazine, Punch, takes a poke at the familiar snobbism of American automobile salesmanship. But it was dated when it appeared, for Detroit was already replacing the old slap-bang approach with the bizarre understatement of the fashion magazines. The biggest, best-modulated gun was fired last fall with Chrysler Corporation's lavish invitation to " . . . Beauty on the Move . . .": a twelve-page photographic essay by John Rawlings. General Motors has not embraced the style wholeheartedly (right), but at least one department has discovered that half a car is sometimes better than a whole one. Chevrolet displays its chrome against the brilliant, severe GM Research Center of Eero Saarinen; Pontiac has hired a bang-up fashion photographer, and Lincoln has discovered the sparse, faintly morbid dream world of the highbrow that was pioneered by Smirnoff Vodka and Hathaway shirts. The change in style has been associated with an increasing use of photography in advertising, but perhaps the reasons are deeper. Perhaps it is a promise that the new cars, like the new ads, will have the understated brilliance of the little black dress by Dior.

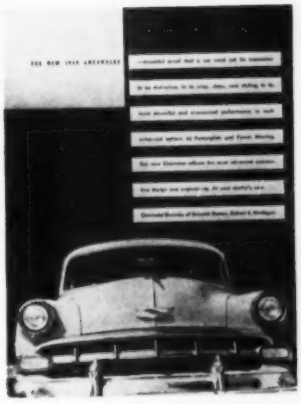

"Won't you come in?"


Won't you come in?...and see why
people on the inside
know that these are the cars of the year


When a Man is Seen at His Best!
Cadillac


PONTIAC


The new Lincoln proves that modern living can go anywhere
LINCOLN




this dream is real!
OLDSMOBILE
Ninety Eight


from head
to foot
GENERAL MOTORS leads the way

WHY ARE THEY BUYING FOREIGN CARS? (28,961 last year*)

Importers of foreign cars had some trouble last year. The market was bad for any car, American price-cutting stole some sales (foreign dealers operate at a close margin, can't afford cuts), and a lot of new imports turned up. But a closer look shows dwindling sales were not the big story in the foreign car market.

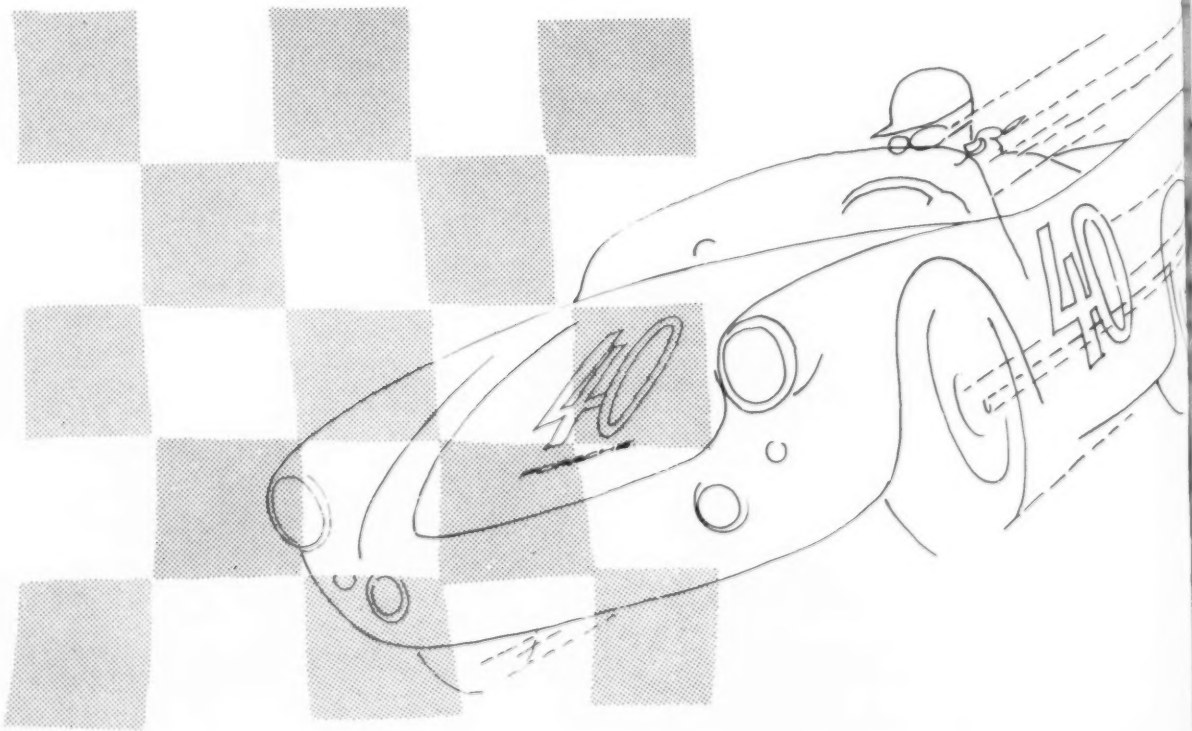
Right after the war, when cars were hard to get, the countries that used to send us limousines rushed into the vacuum with small, economical family sedans. In the first year, 1948, Austin made a post-war record with 8,610 imports and Ford dealers had their domestic stocks bolstered with over 3,000 imported miniatures. But last year, Ford was down to fourth place, Austin to fifth. At the top was a flashy two-seater, the MG, and now, according to latest reports, the sporty Jaguar is ahead. These cars are economical to run, but as far as price goes they're in the Buick-Chrysler class.

The change to luxury was prophesied by Hoffman Motors, one of the biggest dealers. In 1949 Hoffman introduced Germany's midget, the Volkswagen. It did all right, but Hoffman dropped it to concentrate on two of his classiest lines. Mercedes Benz was given its own Park Avenue showroom, and Jaguar will have a home by Frank Lloyd Wright across the street. Both Austin and Rootes recently topped their staid lines with sport cars. But makers of small cars aren't desperate: midgets are necessary in most countries because of the bad roads. While Mercedes might be out of business with its luxury cars if the American market didn't materialize, GM doesn't even bother to sell its little Vauxhall here.

What makes the market for these luxury cars? One Mercedes salesman says "There are people who will spend $100,000 at a glance, but they won't spend a nickel poorly." Most foreign cars give them their money's worth in workmanship that extends to the last nut on the engine mount. Most customers know what they want before they turn up; a lot are real addicts—follow the cars and know their racing records (racing is a post-war phenomenon in this country). They like the economy and maneuverability of foreign cars, but they like these virtues hand in hand with speed. There's snobbism involved, of course, but there's also real love. Some people would as soon turn in a two-year-old car as trade off a wife, and importers can promise stout engines and unchanging styles. Successful companies have also learned to promise good service and an ample supply of parts.

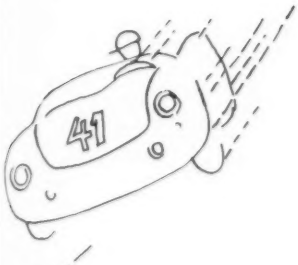
Perhaps the biggest advantage foreign cars have is the fact that they don't tackle the mass market. Bold variety is their dish. They know there will always be a minority, and as the two-car families increase, they can hope there will be a minority in every home.

* Statistics Courtesy New Yorker Magazine



Classic lines, beautiful workmanship

Mercedes-Benz New York showroom;
Edward L. Barnes, architect.



Speed and roadability

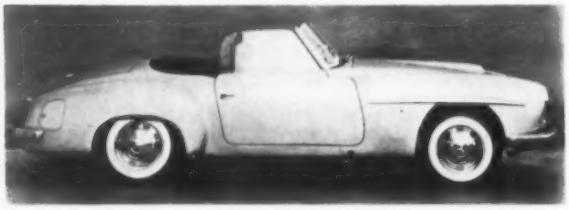
"I am sending my son to Groton with money I have saved driving Austins"

Name: Austin-Healey. Speed: About 110 mph. Price: $2683

Austin ads reveal a switch. *A few years ago Austin was offering impoverished upper classes a chance to save money in style. Recently it recognized a new market in people with money to burn, introduced a speedy new sports car for them to burn it up with.*

What's selling foreign cars?

Hillman Minx: *Rootes version of practical family car with Loewy styling, priced from* $1699, *took second place in '53, though sales were off. Hopes are high for racy new Sunbeam Alpine.*



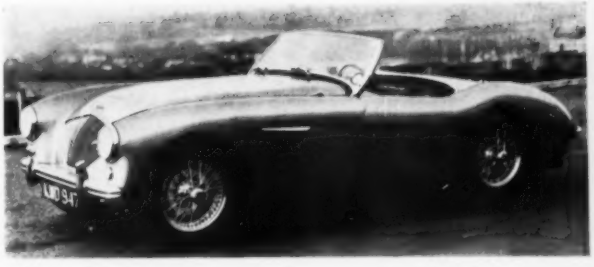
Mercedes Benz: *noted for engineering, exquisite workmanship, brackets quality market with prices from* $3,300 *to* $13,000. *New showroom sold* 288 *in* 6 *months.*

Porsche: *a custom car famed for rear engine, aerodynamic styling, was introduced in '52, sold* 573 *in '53. It may be a comer.*

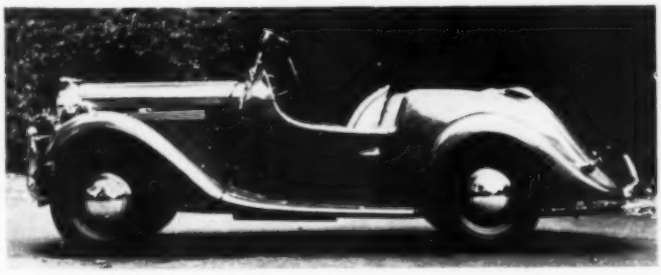
Jaguar: *a racy production car, held third place in '53 with sales of* 3,194, *jumped to lead this spring. Though prices start at* $3,345, *6-cylinder engine makes it more powerful than most sports cars. Strong dealer set-up, new showroom should keep sales high.*

MG: *pioneer of the sports car market, sold record 7,499 in '52, maintained lead in '53. Prices start at $2,195. Sales are encouraged by network of dealers, ample spare parts, and fanatic owners, who form clubs all over the world. Classic wire wheels (now extra) and knapsack effect have been influential.*

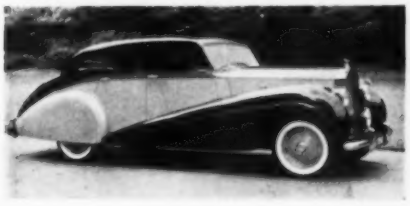
Ford: *a Detroit-designed budget car (Anglia, above, sells for $1,398), reached peak in '50. In '53 it still held fourth place with sales at 3,644. Originally sold as bottom end of domestic line, it now has separate dealers, sells best in countries that lack super highways.*



Austin: *dumpy family car with prices from $1,395, dropped from record 8,610 in '48 to fifth place in '53. New hope, speedy Austin-Healey (above), bowed in March at $2,988.*



Singer: *a subdued version of stylish MG, rose from 389 in '52 to an estimated 2,500 in '53.*

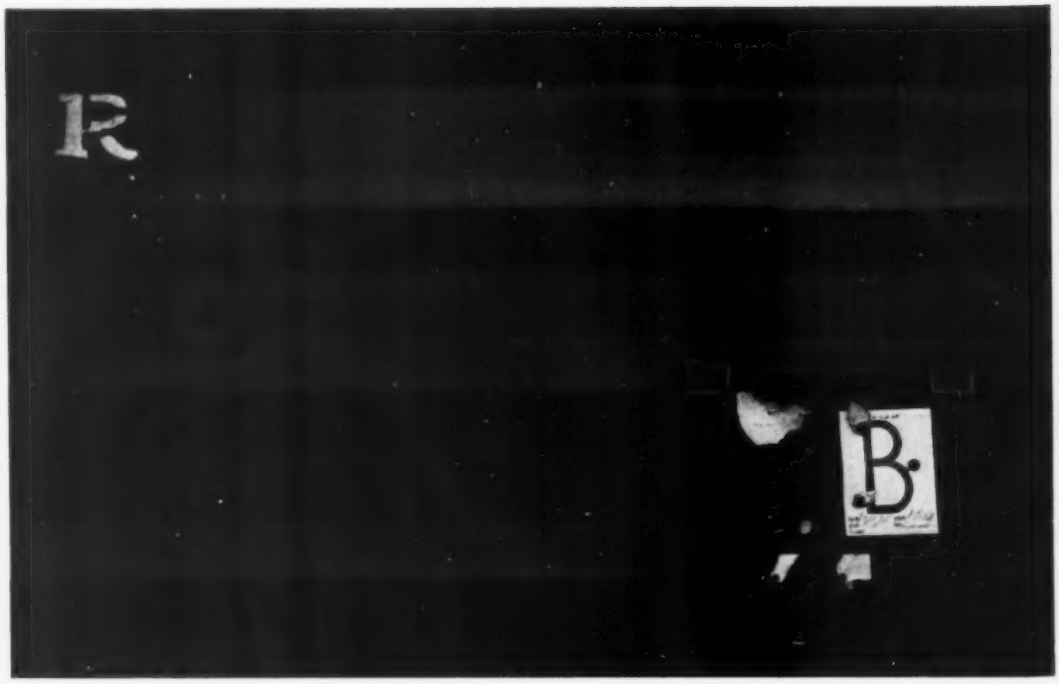


Rolls Royce: *tops for prestige, once had domestic factory. 85 sold here last year. Owner-driver models (above) are slow.*

Photographs by

AARON SISKIND

The impress man leaves on his surroundings, acted on by time, often makes poetic or comic images which a sensitive photographer finds meaningful as symbol and design. The designer, too, in his search for new relationships, may find a stimulus in this world of accidentals and strange juxtapositions. Aaron Siskind pioneered in observing and recording the magic of the ignored.—*a.l.*




LAISVE-DIRBTI
LAISVE-MELSTIS
LAISVE-KALBOS 7SP
HOMES OWNERY-MARY
TRADES
DRY
GOODS
STORE
MILU-2
TEACHERS K-KOK
LIFE-A-LONGR
HOLY
SONG
WEDDING-LOVES
SAVE
FOR SAL BALSUS
GETAR MUICK-SALES
BUY-AND-SALAM
LABOR
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PHLICA:SAL
FIND ONE
HONEY-S VEETHERT
SENT KYS LOVE
KARPYO-RADIO
SO.LETTER
SIEVIJKATE
O K-TRY-LUCK
SOUVENIR
HOME COOKING
GOOD FOOD-HONEY
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AND-KREAUCIU2
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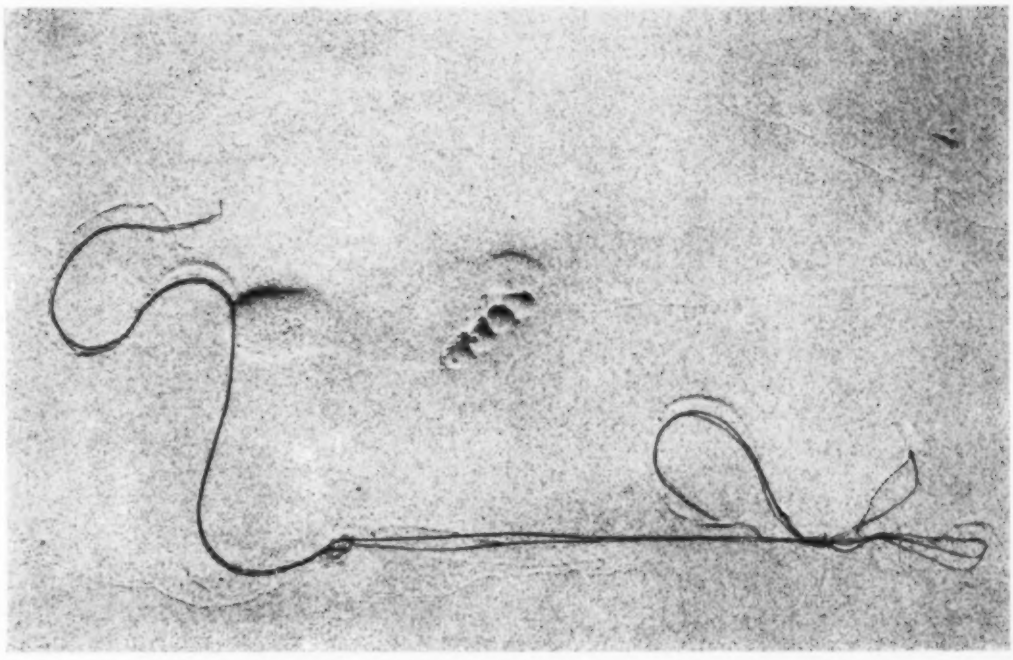
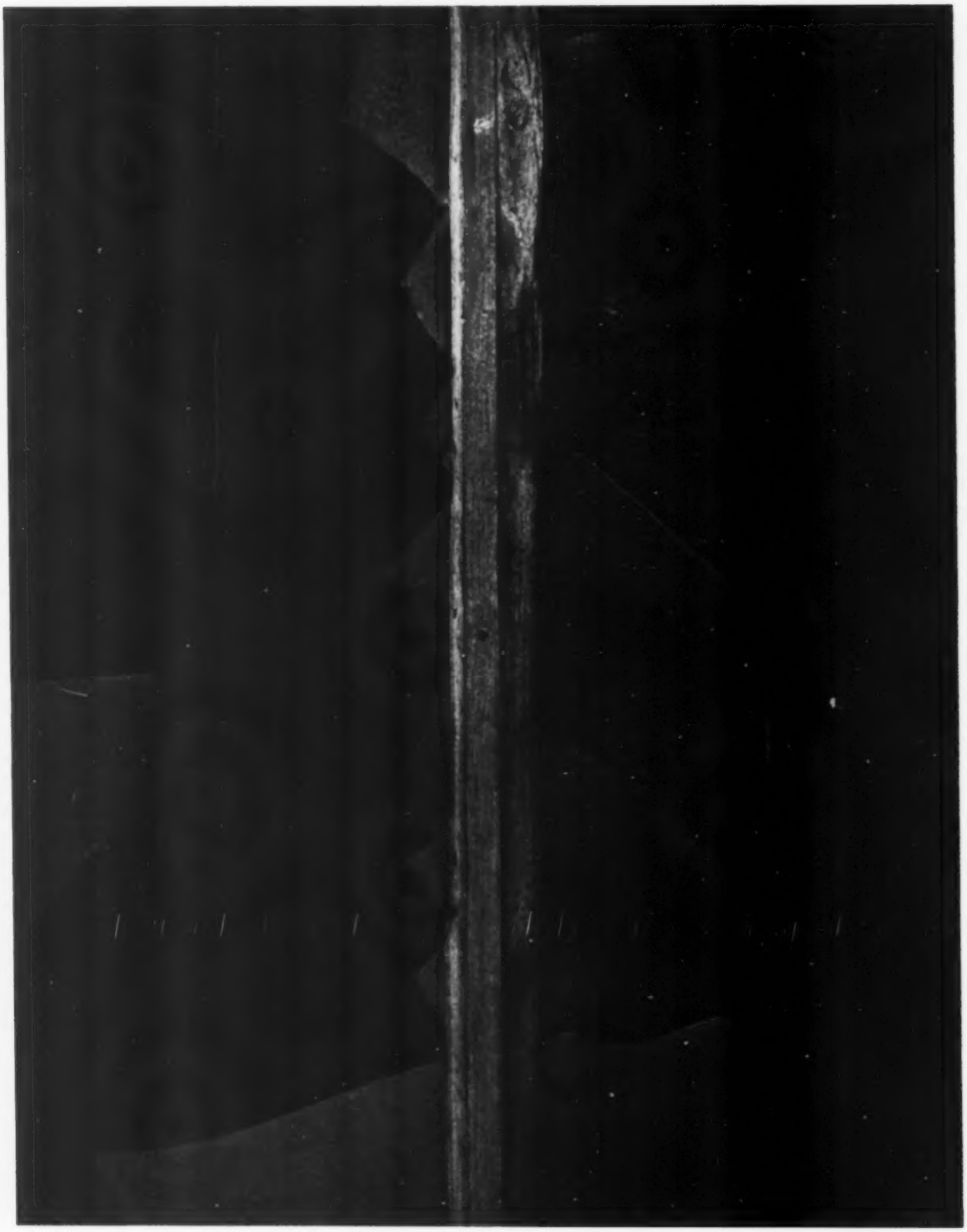




Photographs courtesy Egan Gallery

In this excerpt from the new edition of "Industrial Design—A Practical Guide," to be published this fall, Mr. Van Doren evaluates various financial arrangements between consultant designer and manufacturer.

Harold Van Doren

The Fee Question

Determining fees is a ticklish problem. If a designer is worth hiring, just how much is he worth?

There is not now, and perhaps never can be, any method of establishing fees which will fit all cases. The architect of a house charges his 6% to 12%, and knows approximately how much he will get for his services because the client has stated how much he wants to spend. The advertising agency gets its 15% of space plus production costs. A few attempts have been made to work out standard practice for industrial designers, but results have been inconclusive.

Industrial design is a young profession without many established traditions. Designers are reluctant to talk about their fees—and rightly so, for this is a private matter between designer and client. By and large, however, they must be charging reasonably for their services, or they would not stay in business. "Reasonably," as far as the manufacturer is concerned, means in reasonable proportion to other productive expenditures like advertising and tools.

There is always some unfortunate talk about extravagant fees, which is usually the result of unwise publicity and the American tendency to exaggerate when it comes to money matters. The head of a company lets slip the remark that he paid a designer so much to design a certain product for him. Word gets around, and before long the figure may reach fantastic proportions. Occasionally a manufacturer may willfully exaggerate just to frighten competitors away, but such behavior is hardly helpful to good designer-client relations.

After a newly designed product has proved successful on the market, it is often difficult to pick out the factors responsible. It could have been a mechanical improvement, a novel feature, an intense advertising campaign or better marketing policies. And failure may be due to any number of causes which have nothing to do with the design itself. All of these variables make it hard to evaluate the designer's importance, and worth.

Fees, naturally, vary with the type of product. If a refrigerator company sells a million units a year at $275, the tool and die investment alone may run to several million dollars. It seems worthwhile to protect that investment by paying a fee, even a large one, to have the refrigerators attractively designed. The designer himself may work just as hard on a machine that sells for $10,000, but as few as 50 units may be built in a year. Obviously the fee cannot be the same in both cases. It is then the designer's problem to decide whether to wait for larger fees or to keep busy handling a number of smaller jobs.

The sales and distribution costs for a $10,000 machine are only a fraction of similar costs for consumer merchandise, but engineering and development expenses are proportionately higher. Profit

margins in durable goods need not be so close since competition is not such a factor in the eventual sale. Thus fees for production machinery might logically represent a larger percentage of the retail price.

Where shall we charge it?

If design expenditure is new to a company, it is unlikely that there is any provision for it in the budget. Where will the money come from? Perhaps the company has a fund for such contingencies if not, there is usually an intramural contest over the pruning needed to meet this extra-budgetary expense, which may delay decisions and create ill will between departments.

One designer has suggested that fees become a factor in tool expense, by making the fee an established percentage of the cost of tooling. That would be a ticklish system, for so much depends on the type of product and its sales volume. Nevertheless, the most sensible way to charge the fee is as a production cost, along with tools and dies, where it can be amortised over a predetermined period. This seems far more practical than saddling one department with the expense.

Methods of payment

Policies governing the method of payment vary widely with clients. In some industries, royalties are anathema; others consider them quite logical. Some firms are accustomed to paying for special services on a retainer basis; others insist on knowing the exact cost, or at least maximum cost, in advance. The merits and drawbacks of these various methods of payments are worth some discussion: 1) Project or per-job basis; 2) Retainer fee; 3) Retainer fee plus other charges at cost; 4) Royalty; 5) Cost-plus; 6) Consultation fee.

1) Project basis. For the design of a single product, this method will usually work out best for the client. With a definite quotation in hand, the manufacturer knows just where he stands, and on the basis of past sales and anticipated volume he can judge what the design fee will add to unit cost.

But what about the designer? How long does it take him to develop a new and better toaster or movie projector? In quoting on a project basis, he must name his price for work which has not yet been started; completion time may be impossible to estimate, and the value of his work may not be proved until years later when the product reaches the market. Small wonder that fees vary so widely.

Estimating project-basis jobs successfully, and fairly to both designer and client, can sometimes be done from profit-and-loss statements on previous jobs. Usually a prospective client will recognize the difficulties of estimating exactly, and may accept a quotation with minimum and maximum limits, differing perhaps 20% to 25%. The designer is then obligated, if the job proves simpler than anticipated, to figure his actual cost, plus overhead and normal profit, and to submit his final invoices accordingly.

In quoting by the job, the designer estimates roughly how long it will take to complete the work. Frequently there are unforeseen delays. The designer who has agreed to accept payment on completion of the job may have to wait indefinitely. For this reason it is sensible to agree at the start that partial payment will be made at certain stages of the work. This is the arrangement made by most architects, who receive part of the fee for preliminary plans and sketches, another installment after detailed drawings are done, and the balance after supervision.

The designer who undertakes work on a predetermined fee basis must be prepared to see it through production. However, if changes in his design must be made because of some change in company policy or other conditions beyond his control, he is entitled to further payment for his additional effort.

2) Retainer fee. In many lines of manufacture, new models are put out every year or two. Because design is an ever-present problem, the companies involved usually prefer to pay a retainer fee for design work on such products; and if they do not maintain staff designers they usually make allowance for the expense in their budgets.

The best solution in these cases is a monthly fee, because it tends to balance out for both parties in the usual peaks and valleys of activity. It is unwise, however, for a designer and manufacturer to make a long-term contract before a six-to-nine-months trial run—falling equally between heavy and light seasons—has been made.

A protracted program of modernization in heavy industry—machine tools or farm equipment, for instance, might also be undertaken on a retainer basis. It goes without saying that the manufacturer who retains a designer for any length of time must be thoroughly convinced of his competence and his conscientious interest in the problem.

3) Retainer fee plus other charges. Perhaps the most satisfactory method of all is a combination of a retainer fee plus other charges billed at cost of labor plus overhead. The retainer covers all the time of the chief designer or partners (or the chief designer and an account executive as the case may be) and all

profit. In this retainer the manufacturer is paying not only for the time of the most expert members of the organization, but also for the least tangible and most valuable commodities they have to offer: ability and experience. The designers then allocate to his account a certain proportion of their time, based on the nature of the problem and the size of the fee. The more routine aspects of the work, such as rendering, drafting, and model-building, are billed at cost plus overhead; other expenses—out-of-pocket travel, telephone and telegraph, special materials, blueprinting, and so on—are billed at cost.

In this way, the manufacturer pays for services in exact proportion to his demands. The designer is protected in case these demands become unusually heavy. The difficulties of advance estimate are minimized, and the work continues only as long as is necessary for the project to be properly completed.

If a standard fee system is ever adopted by industrial designers, it will probably be along these lines. With a little experience in handling accounts this way, a designer can make a reasonable estimate of how much routine service—at cost—will be required, and how long it will take to finish the work. The client then receives a quotation tantamount to a project-basis fee, yet the designer is safeguarded against unforeseen delays and extra work.

4) Royalty. From a designer's point of view, working on a royalty is alluring at first glance. If a prospective client favors such an arrangement at all—and many do not—it will not be hard to get the go-ahead. The manufacturer puts up nothing, except perhaps a little time to get the designer started and to look at the finished drawings. And the designer, full of confidence in his ability, stands to clean up—he hopes.

But in any gambling game, even an "honest" one, the odds are somewhat against winning. Straight royalty is little better than pure speculation. Even with the best will in the world, the manufacturer who gets something for nothing is inclined to be hypercritical, whereas, if he already has an investment in the designs, he is more likely to follow the investment up with further expenditures to get them into production.

The hazards are almost too great. Market requirements change suddenly, and months of work may go for nothing. Take the case of a designer who had an entire line of pressed glassware ready for molds when a change in import duties knocked the whole program to bits.

For the designer who is determined to take work on royalty, certain supplementary arrangements can sometimes be made to provide a margin of safety:

a) A flat fee or guarantee, prepaid against the royalty, in a lump sum, at various intervals during the work, or monthly.

b) Payment on a time basis, either against the royalty or in addition to it.

The designer may further insure his royalty by demanding the following:

a) That a specified amount be spent initially or annually on advertising and/or publicity.

b) That the product be brought out in a certain price range.

c) That his name be used in advertising and/or on the product.

It is also essential that every contract carry the proviso that, should the manufacturer copy or imitate the design, full royalties be paid to the designer.

The "limited" royalty is something to beware of. Occasionally a royalty on all sales "for the first year" will be proposed. The designer who is going to gamble will do better to gamble all or nothing, and see that the royalty is paid throughout the life of the product. Royalties may, however, be scaled to the volume of sales.

Just what is a royalty to be based on—manufacturing cost, sales price to the distributor, or retail price? When will payments become due? Will the designer have access to the client's books to check the accuracy of the royalty report? In making such contracts any designer will do well to consult an attorney. Although simple agreements made by letter, with an "Accepted . . ." line at the bottom will suffice as contracts for retainer or job arrangements, royalty agreements should have a formal contract worded with the greatest care.

5) Cost Plus. This is probably the least common basis of payment. It is mutually satisfactory only if the designer and manufacturer have worked together long and amicably. For the designer, of course, it is ideal. He cannot lose through inaccurate estimates of time and work.

How much the "plus" will be—the reasonable profit on operation — is something every designer must decide. It cannot, of course, be figured like the margin of profit on merchandise. A service organization is not a factory; its employees cannot very well be laid off and rehired when needed. Its percentage of idle or unchargeable time may vary considerably from month to month. In fact, its whole operation is speculative and more subject to feast and famine than manufacturing. Therefore, the margin of profit above actual cost of time, materials and overhead will naturally have to be greater than would be normal for soap or sofas.

After the designer has determined for himself what constitutes a reasonable profit, he should stick to it in figuring gains or losses in all transactions—whether they are based on a retainer, royalty, project or cost-plus arrangement.

"Payroll" is, of course, by far the largest single expense item in the conduct of an industrial design office. In estimating fees and in determining whether or not a profit has been made after the work is completed, payroll therefore becomes the core of all computations. Fees will then be based on some such formula as this: payroll x a multiplying factor. The multiplier covers all overhead expense (rent, light, and heat; materials; insurance; sales expense; legal and accounting, etc.), and profit on *all* time, including the salaries of proprietor or partners. Depending on many things, it may be anywhere from 3.0 to 3.5.

Thus let us suppose the designer is estimating the kind of monthly retainer fee required to service a certain account. The cost of payroll is determined to be $500 per month; $500 x 3 = $1500 and $500 x 3.5 = $1750, (or anywhere in between). If it is a small single job and the estimate is a payroll expense of $400, then the quotation to the client would be: $400 x 3 = $1200 or $400 x 3.5 = $1400.

A partner in a very large engineering company has told me that his firm estimates big engineering projects on the following basis: payroll x 3 for the time of partners, senior engineers, and report writers; payroll x 2 for drafting, clerical work, etc. This would not be satisfactory for industrial design. Few if any design firms use or need such a large staff. Further, a far larger proportion of the personnel required in the practice of industrial design consists of highly skilled creative people. Therefore the multiplying factor is naturally higher.

All accounts, no matter what the fee basis, should be quoted plus out of pocket travel expenses. If a client desires frequent contact calls from a designer in another city, he should expect to meet these expenses. Usually the designer supplies two blueprints of each drawing as part of his service. If the client want more prints, they should be billed separately.

6) Consultation Fee. When a manufacturer seeks a consultant — technical, legal or design — he chooses him because of reputation and wide experience. Perhaps his firm has its own design staff, and he merely wants a check-up by an expert with an impartial viewpoint. Sometimes it is worth the money merely to be told he is right.

The size of consultation fees, whether paid on a per diem or an annual basis, is entirely dependent on the ability of the designer and on the degree to which the company needs his advice. Some designers ask, and get, handsome sums for a few days of their time. Consultation on this basis obviously is not for the beginner.

Shall I speculate?

"We shall be only too happy to consider any ideas you may care to submit."

Every designer is familiar with this remark. If he is wise, he turns a deaf ear to such suggestions. No reputable designer submits anything on approval without some prior agreement. The established manufacturer does not expect the best legal counsel or other professional to advise him and then ask payment only if he accepts the advice. The idea is slightly reminiscent of Mark Twain's reply to the autograph seeker who asked him to throw in some original sentiment for good measure: "What! Would you ask a doctor to give you one of his corpses?"

Everyone who has tried to sell intangibles is acutely aware that the prospect faces a genuine gamble. However, the businessman must realize that the designer's stock in trade is talent plus specialized knowledge and training. By the time an idea is ready to be presented to the client, the painstaking research and the creative design — the hardest part — has been done. He cannot sell it to somebody else.

Speculative work has become the bane of advertising, and it is to be hoped that as industrial design develops into an established profession speculation will not be part of its practice.

"How am I to acquire a reputation," the beginner may ask, "until I have something concrete to show?" He will never acquire a reputation at all if he speculates. It is impossible to do a good job without getting an inside understanding of the problem, and he will never get to the inside if he crawls there on his hands and knees. The prospect will attach no value to work as long as he has no obligations toward it.

Any designer who is worth his salt should get paid from the beginning — no matter how little. Industrial design, properly done, cannot be regarded as a cut-rate commodity. If creative thinking, a knowledge of manufacturing, and a sympathetic approach to production and sales problems are expected of the designer, then design bargains are poor economy.

The methods of charging described above have the approval of the Board of Directors of the Society of Industrial Designers. The section on royalties was revised from the first edition by Russel Wright.

yavno

For seven conversational, recreational days at the Fourth Design Conference at

ASPEN

design was explored, compared, questioned, baited, elevated—and organized.

drawing by Richard Neutra

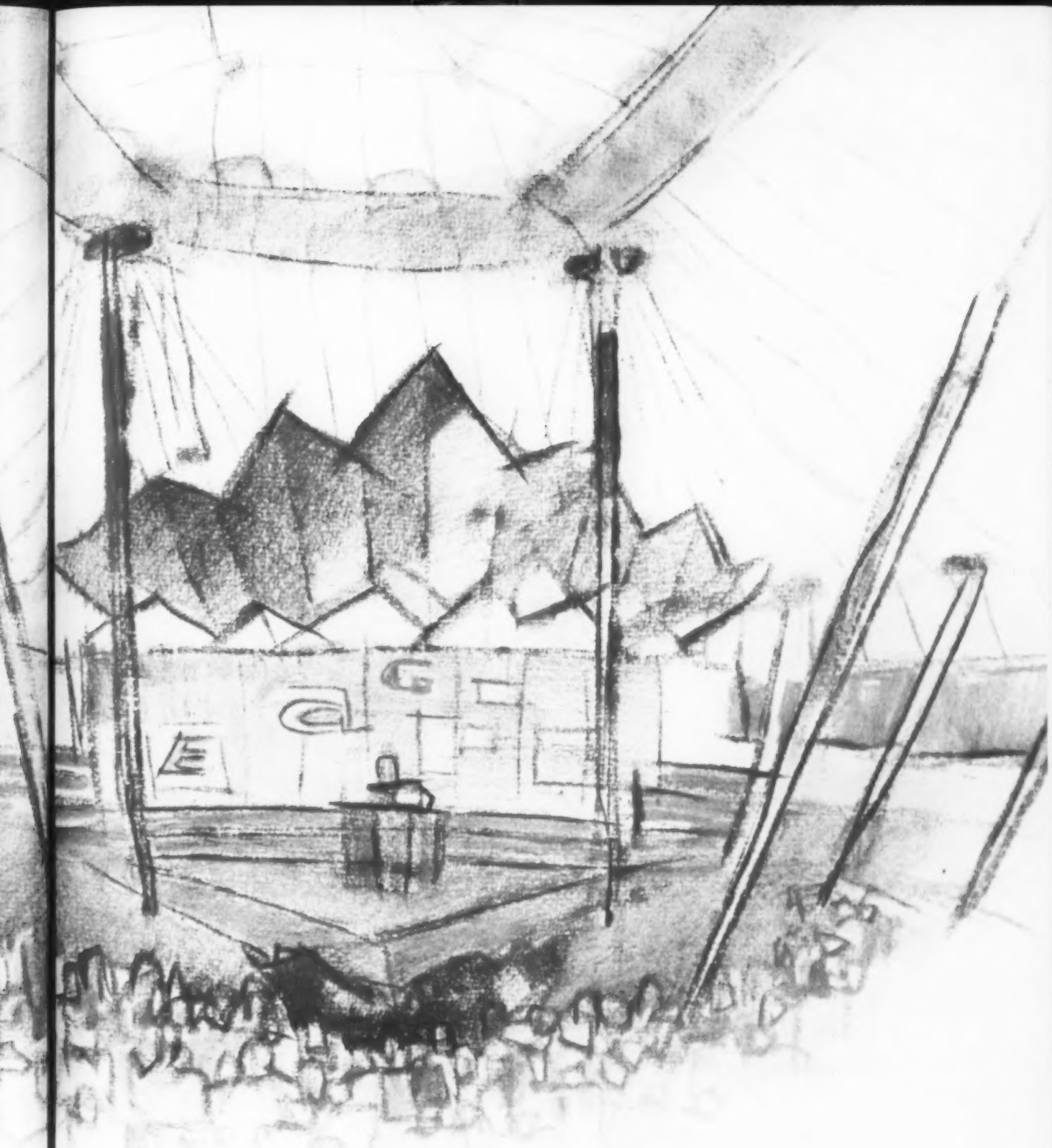
by Georgine Oeri

That old conflict between artists and practical men seemed to lurk beneath all the discussions at the Fourth Aspen Design Conference, which convened in the lofty Saarinen tent on June 23. Chairmen Carl Maas. Will Burtin and Gyorgy Kepes, feeling that designers needed the challenge of outside viewpoints, chose "Planning: Basis of Design" as the theme of the 7-day conference. The idea, as Container Corporation's president Walter Paepcke put it, was to cross fertilize design and other fields which concern the human being. Representatives of psychology, research, mass communication, science and education were given the floor during most of the morning panels; afternoons were given over to discussion of the principal topics.

Perhaps the most audible and persistent issue of all the discussions, overshadowing others which may have been more basic, was creative freedom *vs.* sales figures, Every time it came up, the designers were curiously intimidated by it. The most vigorous defense of the innovator and artist came, strangely enough, from a non-designer — Robert Saudek, producer of Omnibus—when he expounded the importance of creativity in every human being. And, when someone in the audience expressed some doubt that there was a future Leonardo among them, it was a scientist—Dr. Albert Parr, director of the Museum of Natural History—who bluntly decried this abdication from belief in the profession's capacities. The only vocal dissenter in the designers' ranks was Alvin Lustig, who declared that the very fact of being a designer implies a conviction that one understands society's underlying ideas and has the ability to give them form. This brush with outside viewpoints must have been enlightening to the designer: it showed so conclusively that people outside the profession have a greater faith in the designer's function than he himself does.

Other issues didn't get such an airing. The "human being" and his welfare was a constant point of reference that nobody questioned; it seemed to be generally assumed that what people like, and what is good for them, is pretty much what every scientist, educator or designer finds most to his liking. Though these questions of human values were basic to all the surface dissensions, they were never clarified.

After all the talk. the week ended in action: It was decided that the Aspen Design Conference would be made a permanent organization, including designers, manufacturers, educators and consumers on a membership basis. An executive committee and regional chairmen were appointed, with several functions: 1) To implement communication among organizations, individuals and agencies concerned with the entire design field. 2) To plan and hold an annual conference on design. 3) To publish periodic reports on developments in the field of design.



Architect Richard Neutra, in a hiatus between pastorals and cocktails rendered the interior of Saarinen's conference tent at Aspen, Colorado.

Aspen

Roberto Burle-Marx (*left*) *landscape architect: I want to relate landscape and architecture so that they become part of an organically planned structure, a piece of sculpture, a place in which people can realize themselves."*

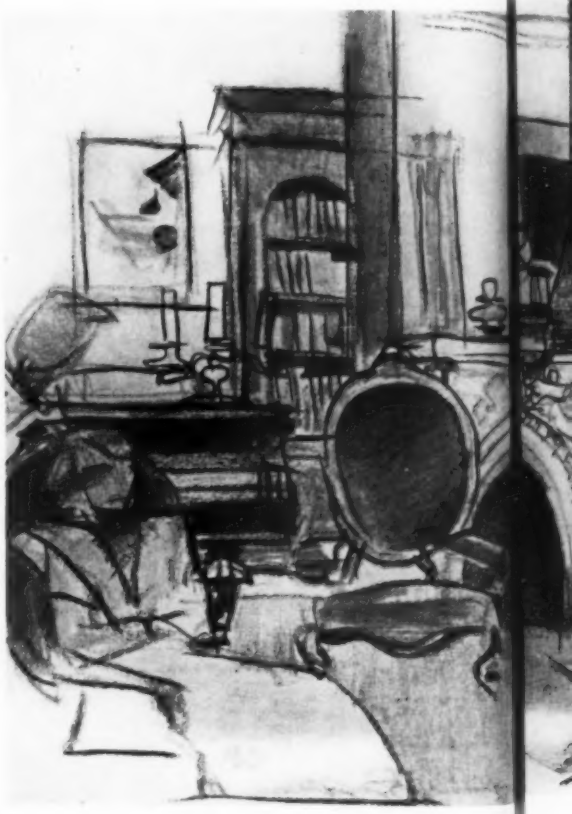
Richard Neutra, *architect* (*right*)*: My book, "Survival Through Design," is somewhat angry at the laboratories which produce streams of miracle items which only get on our nerves. . . . It is propaganda against the false security of thinking that all those humming wheels around us, all those cellophaned and chrome-trimmed things by-passing slums are "Progress." The book puts the designer on top, staggeringly high, and all his willy-nilly consumers frightfully in his power.*

Burns Roper, *Research Executive, Elmo Roper Research: What other designers think of your work is not more important than what the general public thinks; the public is the jury that decides by its purchases who is a good designer. Very specific research is needed to determine that in advance. . . .*

Will Burtin, *designer: When you see a finished product, you can hardly overestimate the amount of collecting and digesting of facts the designer has done—research of the kind he needs—before reaching that particular solution.*

Alvin Lustig

Robert Saudek, *Producer of "Omnibus": Our founding fathers made no surveys to determine the articles of the Constitution, nor did Edison ask people whether they liked oil lamps better than incandescent ones. The expansion of human experience is not a bland affair of meeting the articulate requests of inarticulate people. . . . If the visual media have any mission at all, is it not to make people excited about themselves and their surroundings? Is this done by making them comfortable, or uncomfortable?*



Dinner at Walter Paepcke's, by Richard Neutra.

Herbert Bayer, *designer of Aspen exhibition hall, left.*

Carl Maas, *Art Director, Standard Oil Company (New Jersey): The undercurrent of all our discussion seems to be the basic issue of morality—the designer as a moralist trying to impose his standards on society, the designer facing a moral decision between individual and social responsibility.*

Saul Bass, *designer: We talk about creating a more noble life for the people. But who are people? What is freedom? Whose freedom? . . . We are not free, as designers, unless we take a stand on all sorts of social and political issues. The problem of design is not just for designers. . . .*

Robert Carlson, *Director of Public Opinion Research, Standard Oil Company (New Jersey): We know very little about the process by which standards of taste are established, fashions transmitted, styles changed. . . . When does it cease to be fashionable to own a Cadillac or to dress in the Edwardian manner? Who makes and enforces the rules?*

Russell Lynes, *Managing Editor, Harper's Magazine: The tastemakers will not leave us alone. There are pressures on us from all sides that we scarcely dare ignore. The making of taste in America is a major industry. Is there any other place where there are so many professionals telling so many nonprofessionals what their taste should be?*

Mildred Constantine, *Associate Curator of Graphic Design, Museum of Modern Art, N. Y.: For me the word "tastemaker" does not have this nasty connotation. All of us who work in the Museum and in educational fields are in a sense tastemakers. It is one of the responsibilities we can't escape.*

John Burchard, *Dean of Humanities, M.I.T.: If the men who will become leaders leave the universities as visually illiterate as they entered, what kind of design can we expect them, as leaders, to select? If our schools ignore the cultivation of a visual sense, what can we expect the public to ask of its leaders?*

Ted Parmelee, *United Productions of America: At times, we don't know what the "expert" in any field is talking about because he is so exact, so precise. We need "loosities" to get a message across. We are merchants of "whimsy."*

podium portraits by max yavno
snapshots by ferenc berko

William C. Renwick

How far can you go with

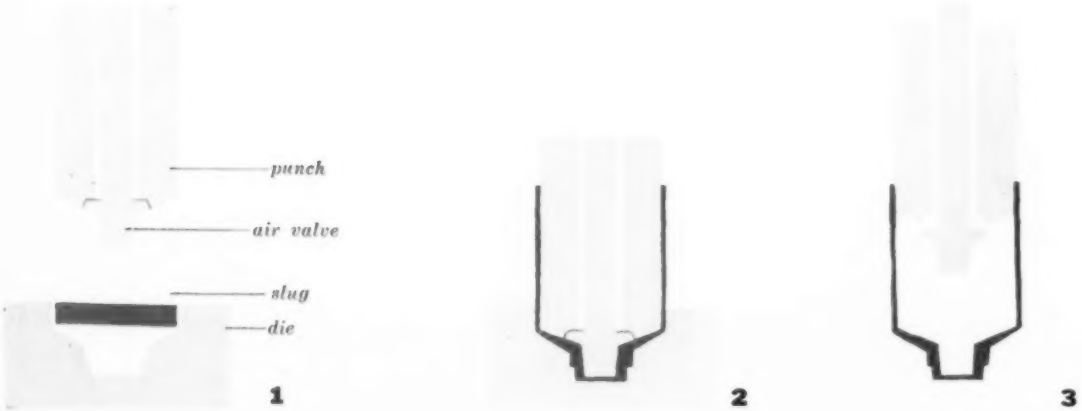
IMPACT EXTRUSIONS?

With some of the new technical possibilities of the process it may be farther than you think.

No doubt you know that toothpaste is squeezed out of its tube onto your brush by a process known as continuous extrusion. Do you know how the tube itself is made? A slug or preform of metal is placed in a die cavity and struck with a punch that is smaller than the die. Excess metal is forced backward along the punch, leaving a tube of flash which is part of the finished piece. This is impact extrusion. Many designers are fascinated by the process, for the toothpaste tube is just the beginning of the things it can do. Yet, for some reason, it is seldom exploited in product design. This might be blamed on the popular concept that the size of extrusion you can get is severely limited. It might also be traced to the aluminum industry's excellent promotion of its product for extrusion —which has been so successful that the process is often considered synonymous with aluminum. Actually there is no technical reason any metal should have a monopoly on impact extrusion.

The reasons for giving impact extrusion more than a passing glance begin with its style possibilities: it offers decorative shapes and surfaces and a crispness of detail which generally require costly die casting (they're impossible with sheet metal processes) at a very low tool cost. As far as size is concerned, it seems to be limited largely by what you want to invest in tooling. At a recent meeting of an aluminum company's brass, someone suggested making a wastebasket by impact extrusion and not an eye was batted. And there seems to be no limitation on materials that may be impact extruded—unless you are designing for something besides gold, silver, copper, brass, aluminum, magnesium, lead, zinc, tin, iron, and steel — including stainless.

To understand the new techniques which have opened up these possibilities it is well to go back to the extrusion of the classic toothpaste tube: A round, lubricated dead-soft slug of metal (tin, lead or aluminum) is placed in a die shaped like the head of a toothpaste tube—except that the threads are omitted and the mouth is closed (1). The punch is shaped to allow a thickness at the shoulder, because the tube works better that way and because the bottom of an impact extrusion must be somewhat thicker than the sides to provide a cushion of materials to feed the side walls. (This is particularly true of metals which harden from cold-working. The actual thickness of the shoulder is adjustable, and is determined by the travel of the press head.) As the punch is rammed into the die, the slug is squeezed down, outward, and then up into the clearance between the punch and the die (2). The excess is pushed out into space without further influence by the punch and die and, of course, cannot exceed the punch in length. As the punch ascends the extruded piece is generally removed by a stripper plate fitted close around the base of the punch, after which an air blast blows the falling piece clear of the press. Thin-walled collapsible tubes, however, would be damaged by such a stripper plate, so a poppet—or valve—is built into



the end of the punch; as the punch rises the poppet opens, releasing a blast of air which blows the piece off the punch (3).

After the tube is extruded, the cap threads are cut or rolled and the mouth is trimmed in a secondary operation. Because slug sizes may vary slightly and certain differences in tube length may occur while the machine is warming up, it is general practice to trim the open end at this point too.

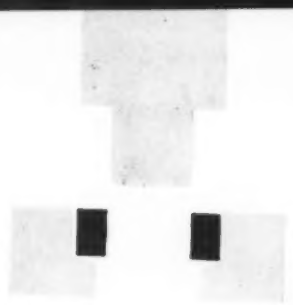
There are a number of variations on this classic method. By using a hollow punch and placing a boss in the die (4), you achieve two sets of verticals in the form of a tube-within-a-tube (5). By fitting the outside diameter of the punch very closely to the die, you get a tube with a flange (6). Since the bottom of the impact extrusion is, in effect, a forging, and can be any thickness within reason, decorative treatments ranging from simple lettering to cloisonné work are also easy to achieve (7).

It is possible to effect some interesting combinations of metals by using inserts in various ways (8, 9). A few precautions should be taken, however. Your inserts must be supported in the die in a way which prevents breakage during impact, and the insert must be one which will not be destroyed during impact even if properly supported. Combinations are not advisable if the piece is to be subjected to extremes of temperatures, because unequal expansion and contraction might loosen the insert. If moisture conditions are expected, the metals should of course be galvanically compatible.

Walls as well as ends can be decoratively handled. Exterior rib treatments are almost limitless as long as they are fairly symmetrical. It used to be axiomatic that ribs had to be straight, but recently a company produced a lipstick holder with spiral ribs, so even that limitation seems to have been lifted. And it doesn't seem unreasonable to believe that a tube could also be made with interior spiral ribs.

Length and diameter

In deciding what pieces are practical for impact extrusion, one of the major considerations is the length which can be achieved with a bore of the desired diameter. You can see that if a punch were one inch in diameter and two feet long, it would tend to bend slightly and drift to one side during impact, producing a piece with an eccentric bore and an unequal wall thickness. This bending is less likely to occur when the shape of the punch helps "centering" — the toothpaste tube with its tapered shoulder is an ideal shape in this respect. When the punch has a less favorable shape — flat, for instance — it is usually scored to prevent skidding, and slightly beveled for better centering. The permissible length-diameter ratio is also very closely related to the material being worked. The harder the punch must hit, the greater its tendency to bend. Softer metals requiring relatively low impact loads allow the use of a long punch — up to eight times as long as the



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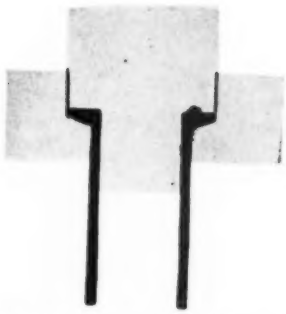

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diameter of the bore. Aluminum is limited to a maximum ratio of six to one for trouble-free operation, and steel (250,000 psi and more) has a maximum ratio of three to one. There is, however, a way around this limitation of the length-diameter ratio — an extrusion in the opposite direction.

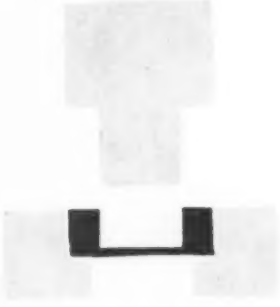
Forward extrusion

Look at the diagram of the toothpaste tube again (2) and you will see that it was actually formed by extrusion in two directions: the tube itself was extruded backwards along the punch, while the neck was formed by a forward flow of the metal. If the die were open at the neck point, it would produce what might be called a "forward" extrusion — an action which has in fact been developed into a technique combining the best features of both impact and continuous extrusion.

One of the most important uses of forward extrusion is in the production of seamless tube. For years, copper tubing manufacturers have used it to obtain a hollow section which can be drawn into a long thin-walled tube. You might expect this kind of section to be produced by the continuous process, but copper presents some peculiar difficulties in this respect. The bore of the tube, in the usual extrusion method, is formed by a blank held by bridging; the metal being extruded must flow around the bridging and reweld. But copper and its alloys do not reweld. By using a doughnut-shaped slug and a forward impact extrusion, on the other hand (10), you may produce a hollow tube without placing any obstruction in the path of the flowing metal (11). In addition to being ideal for copper, the process has two plusses: since what it produces is still basically an impact extrusion, the tube may have an end closure; since the metal flows forward instead of back along the punch, the length of the extruded piece is not limited by the length of the punch.

Forward extrusion can, furthermore, produce parts which are virtually impossible to get with any similarly inexpensive process — such as a piece with both a closed end and a flange at the open end (12, 13). A thick section at the neck can be swaged inward in a secondary operation to produce a piece closed at one end and semi-closed at the other (15). If a slug is shaped like a cup, the forward extrusion will have a bottom of the same thickness as the preform (14). Note, too, that if the pilot on the end of the punch is tapered, the piece will have a tapered wall thickness.

Solid extrusions are obviously easy to make by both forward and backward extrusion. The pump (16), which was redesigned to trade a number of single parts for extruded parts, has a one-piece forward extrusion for its handle and shaft. Its body is a backward extrusion, and its end-closure nut a kind of forging made by impact extrusion which must be unscrewed from the punch after each impact — a method by which tube caps are often made.



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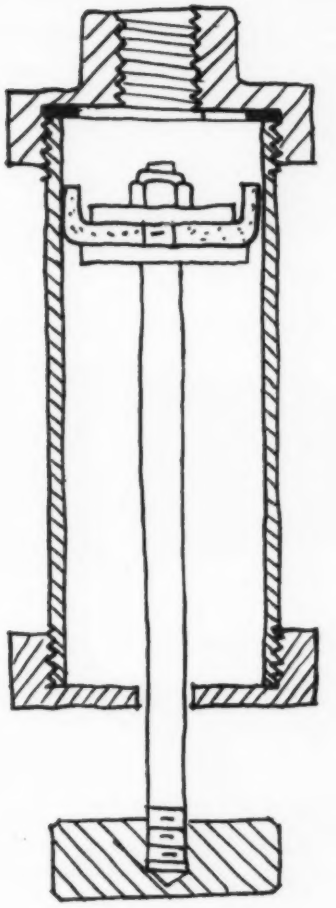
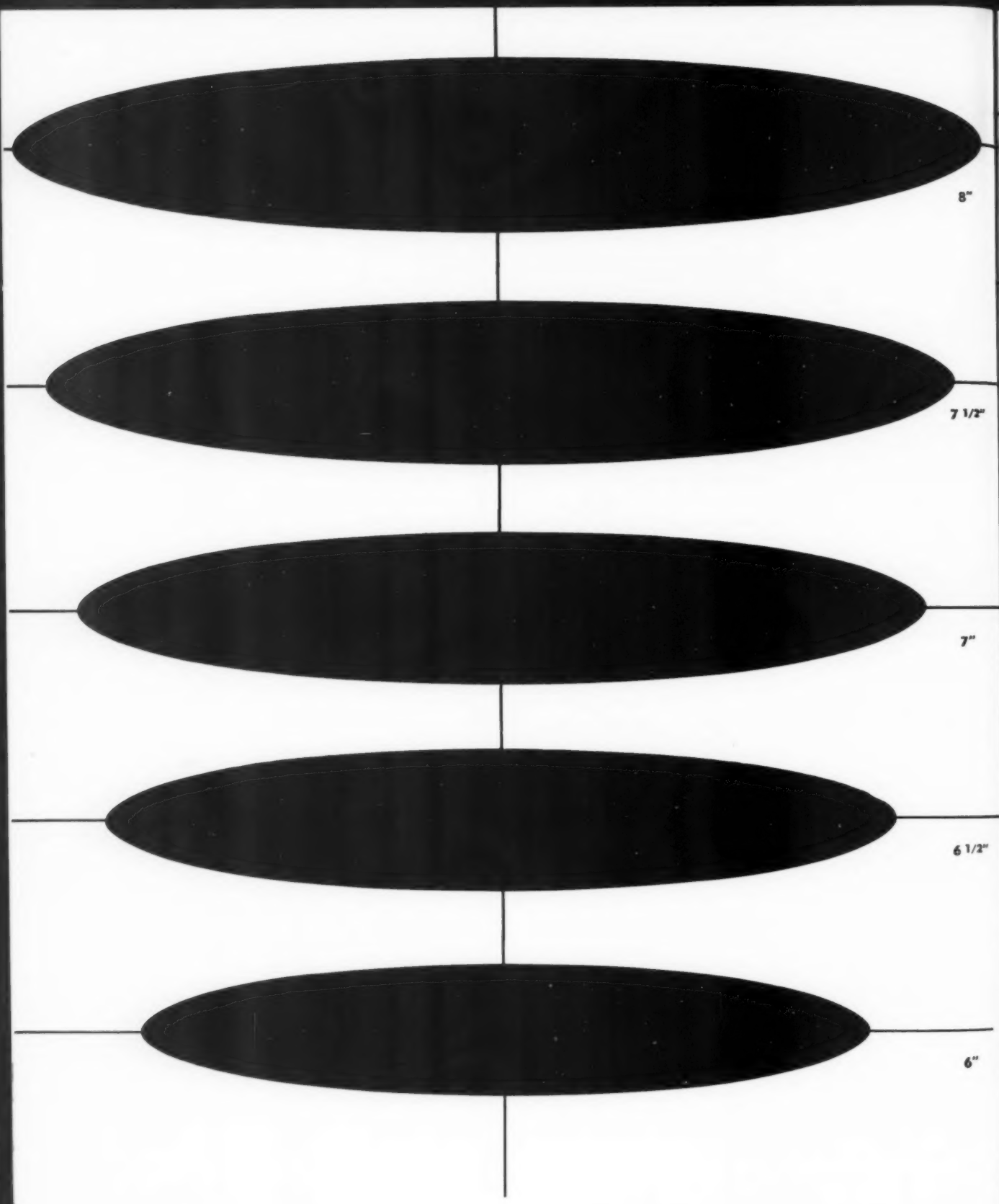


Costs and economies

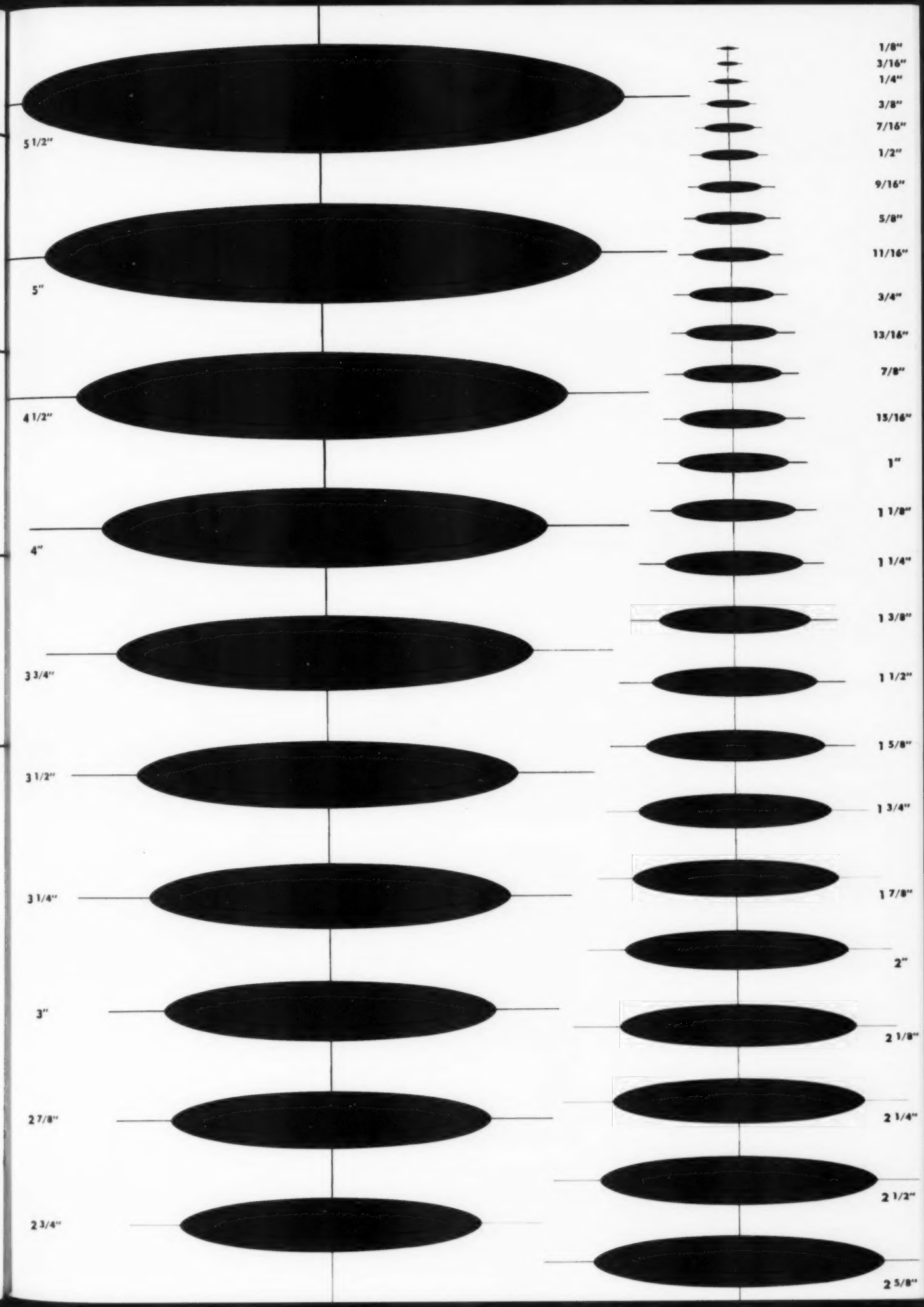
Not the least of the attractions of impact extrusion is the fact that most metals benefit greatly from the cold-working they get during extrusion. Even magnesium, which is extruded hot, and steel, sometimes extruded hot, gain strength and hardness in the process. It is often possible to give an inexpensive low carbon steel the physical properties of a heat-treated alloy steel. (This is something of a drawback with aluminum collapsible tubes, because they don't collapse easily unless they are annealed.)

Costs for impact extrusions, like anything else, are a matter of condition and degree. Take a cup-shaped part which might be made either by drawing or impact extrusion. If it were shallow enough to be drawn in one operation, you might find it hard to decide which method would be cheaper; if the depth were such that it might take several draws, or if its bottom corners had to be quite sharp, extrusion would be worth considering. As a process, impact extrusion unquestionably offers a chance for economy in many areas. Production can be very rapid — as high as 80 pieces per minute — when volume justifies automatic slug placement. Material waste can be very low, particularly if, when preforms are necessary, they are made by casting or from sintered powdered metal. Impact extrusion can produce pieces with good tolerance and finish, which means secondary operations are kept to a minimum. (The finish is especially good if the die is made of tungsten carbide which, incidentally, lasts ten to twenty times as long as tool steel.) Considering the possible savings on finishing, tool costs are relatively low. If the die will fit a standard holder, it is possible that a punch and die for soft metal will run no more than $100. If you need further convincing, consider the fact that one American firm is determined to change the nation that lives out of tin cans into a nation which lives out of aluminum ones — impact extruded, of course.



at last—a flatter ellipse

For designers who sometimes wish they had a flatter ellipse than the ellipse guide provides, here are some 10° ellipses in a range of sizes. Trace them directly or, to make a permanent guide, scribe them through heavy acetate, break out the ellipses, and sandpaper the edges. The knockouts can be used as curves and rendering masks.


5 1/2"
5"
4 1/2"
4"
3 3/4"
3 1/2"
3 1/4"
3"
2 7/8"
2 3/4"
1/8"
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7/16"
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9/16"
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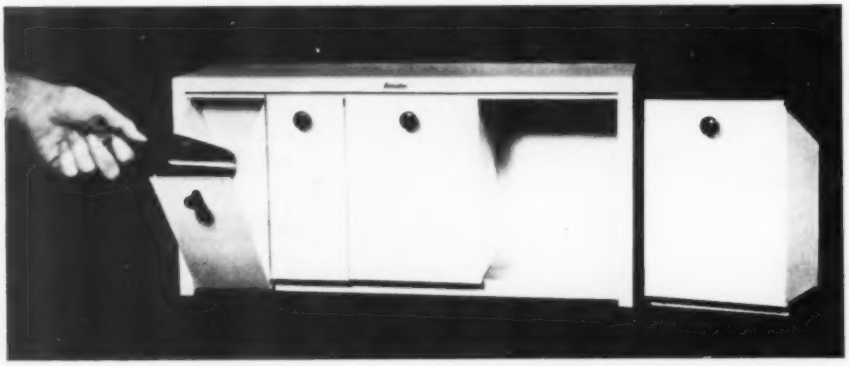
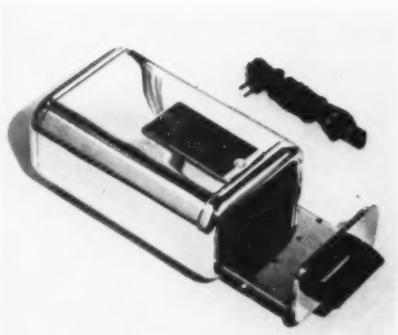
2 5/8"

DESIGN REVIEW : *Housewares*

bolder lines . . . higher style . . . tabletop cookers and more tabletop cookers



↑**Emco Porcelain Enamel Co.** puts kitchen cannisters into an enameled unit called a Binister, which hangs on the wall or sits on the shelf. Tilt-down bins slip out for washing or filling. $7.95.

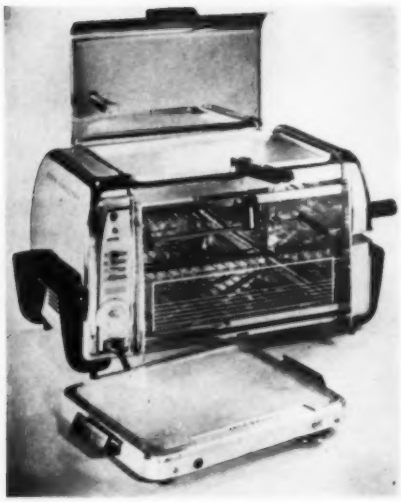


→**Knapp-Monarch** finishes ready-to-bake breads right on the table in its new "Redi-Baker" automatic table oven, with black plastic handles and feet, porcelain enamel interior, chrome finish. $29.95.

↓**Peerless Electric Inc.'s** Broil-Quik offers a removable grill plate, an unheated well to catch grease, electric timer and baking tray. It holds a 20-lb. roast, pops corn, and fries square eggs for sandwiches. Designed by Raymond Loewy Associates. $79.95.

↑**Westinghouse** has restyled its electric roaster oven along bolder lines. The polished aluminum lid has a look-in window; a slide-out shelf at the base lists cooking times and temperatures, and may serve as a hot-dish shelf. $43.95.

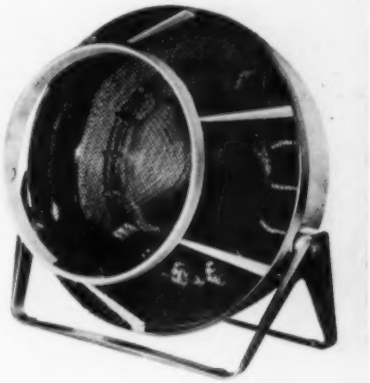
↓**Mimar Product's** "Mimarvel" hair dryer blows a strong stream of cool, tepid or warm air, and can be used to air out smoky rooms. Steel casing has chrome-plated ends. $19.50.



↑**Roto Broil's** Custom 400, with an automatic infra-red rotisserie, will do anything from frying to baking. Bak-a-tray has its own heating unit, and doubles as a table food warmer or cooker. $69.95.

←**Nesco's** major revamping of its electric appliances, one of the most radical changes at the recent housewares show, produced the Fryryte quadruped table frying pan with a heat control unit in the handle. $27.95. There is a companion square-lined Tearyte, and a Cookryte saucepan, too.
↓**Nesco's** Aireryte radiant heater retails for $24.95, may be had in a chrome finish.

←**Sweden Freezer's** new Speed Juicer takes whole pieces of fruit or vegetable through a lid opening and extracts the juice by centrifugal force in 10 seconds. Black Bakelite base holds white molded Tenite Butyrate bowl which is chip-proof. $89.50.

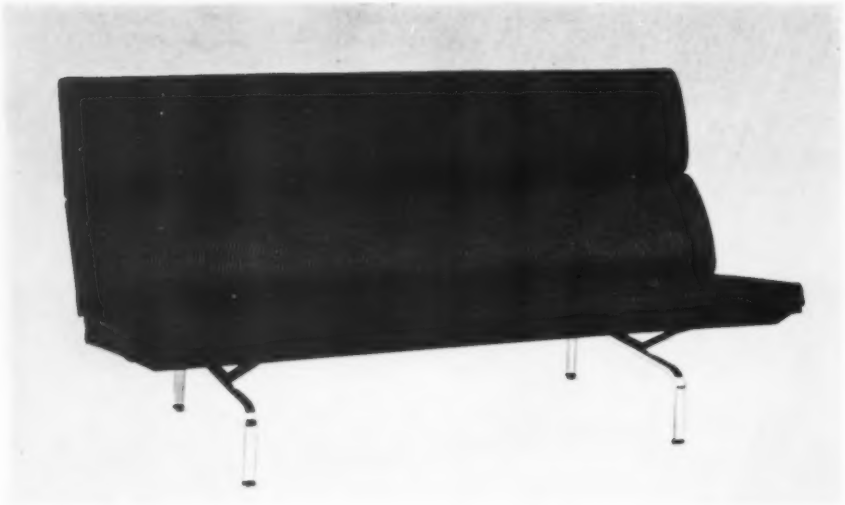


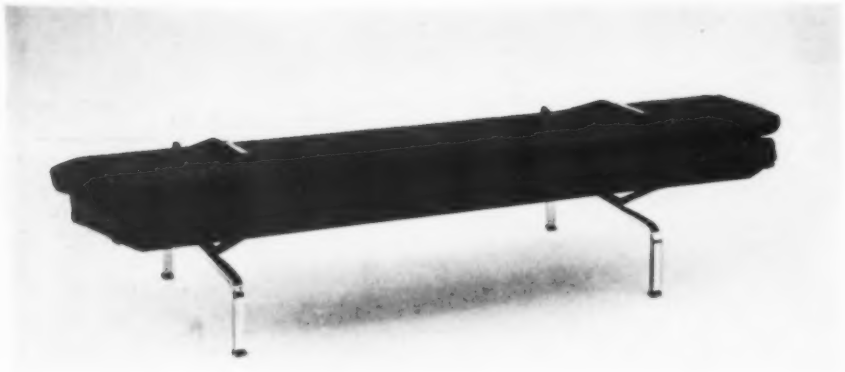
↓**General Electric's** new "Ceramic" is a clock for every room. Made of semi-vitreous china, white clay is exposed on numbers, back and trim, while a slip of colored clay applied to the face gives four color variations. Russel Wright, designer. $8.98.

↑**Chemex's** "Ohmlette" kettle achieves a fast boil with a heater coil inserted directly in the water. Two electrodes in the Pyrex cover hold coil and form plug for cord. Peter Schlumbohm, designer. $9.50.

↓**Westinghouse** puts ebony phenolic endplates on its new pop-up, which repeats the bold lines of its other products. Toaster uses a new heating element and internal reflectors for more even toasting. $19.95.

→**Westinghouse's** Porta-Vac is a pint-sized (12" long, 6" wide) and lightweight (7½ pounds) but powerful (½ hp.) cleaner with a rubber-reinforced plastic body. It is the lowest price cleaner with tossaway bags. Styled by R. A. Lambert. $49.95.



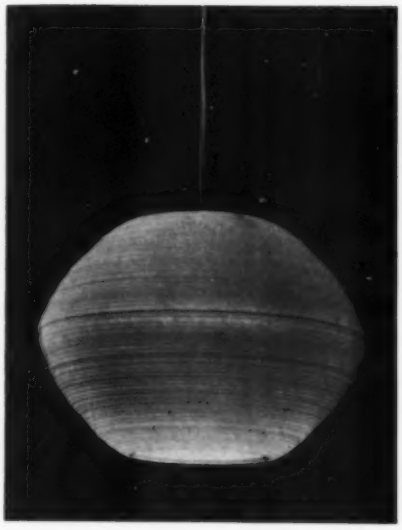


↑**Herman Miller's** highback sofa, designed by Charles Eames, is probably the first multiple seating unit which can be shipped in a carton 12" deep. Foam rubber cushions are folded forward and secured by hinged back support, and chrome-plated steel legs may be unscrewed from base. Prices start at $238.

↑**Herman Miller Co.'s** coffee table, designed by George Nelson, has a quadruple-splayed pedestal of black or white enameled cast aluminum. The top, of grey or white micarta, is edged in natural birch. 16½ inches high; 28½ inches diameter; $110.

↑**Howard Miller Company's** portable electric Daisy clocks are smooth balls of birch, walnut or colored lacquer on a metal stem. Plexon, a plastic cord, traces the hours in continuous hairpin curves. 7" high; 4" deep. $19.50. Designed by George Nelson.

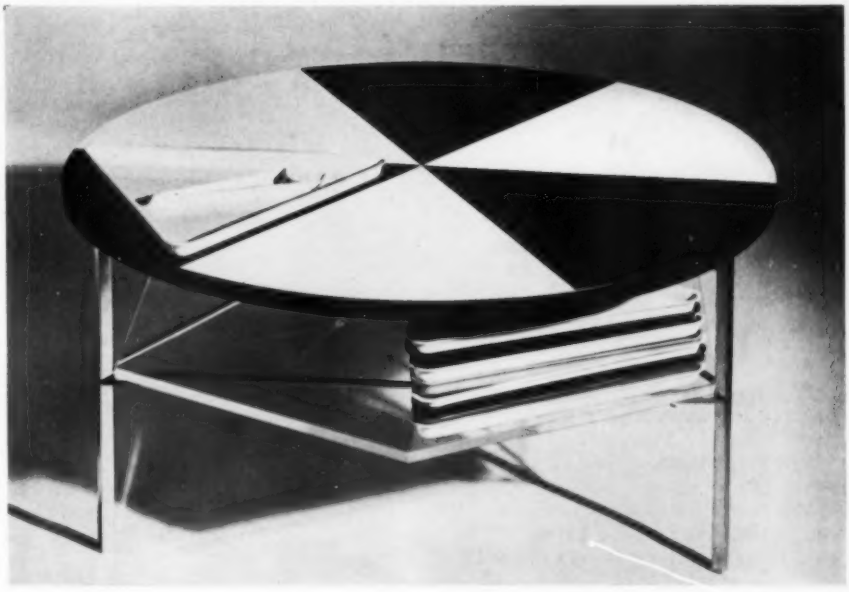
←**Telechron's** new "Diameter" wall clock, designed for easy reading, has clearly differentiated minute and hour markers, with a burnt-orange second hand on the white inner dial. Numerals are white on copper or black on chrome. $14.95.



↑**Lam Workshop Inc.** sells a ribbed plastic bubble diffuser to cover dangling light bulbs. 11" in diameter the bubble is made in halves with a snap-together center seam. A screw-in adapter is available. $3.95.

↑**No-Sag Spring Co.** has combined a neatly ascetic look with deep sleeping comfort in its "flat top" spring bedding base on black lacquered wood or hairpin legs. High legs make cleaning easy, but bed looks low. $30.

↑**Caliquilt Furniture Corp.'s** Rock-N-Lounger will sit upright or recline, indoors or out. Designed by Nat Weiss, it has a welded wrought-iron frame with a stretch-metal seat and back, cotton or molded latex foam pad, and comes in saran, duran, and a variety of indoor fabrics. Shipped knock-down, it is said to be a snap to assemble. $59.50.



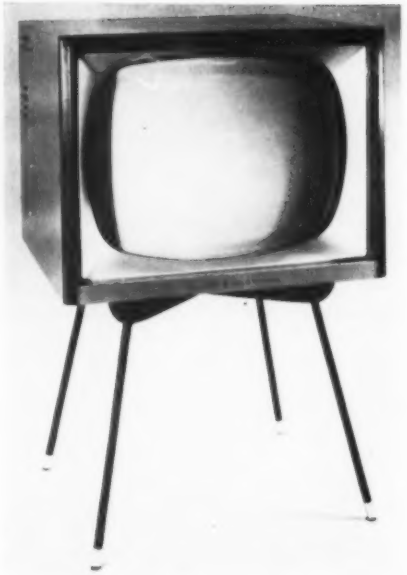
↑**Heywood Wakefield Company** furniture, designed by Pratt Institute's School of Industrial Design, marks the first furniture application of vacuum-formed high-impact Lustrex styrene, in a special formulation by Monsanto. The coffee table top, of black and white melamine, revolves lazy-susan style on ball bearings; shatterproof glass shelf holds styrene trays under the table.
←Room divider, for closet, kitchen or laundry storage, has adjustable styrene shelves and removable, turquoise drawers, particularly interesting for their exposed suspension-track system.
→Baby's chest of drawers of Primavera melamine laminate on brass tubing base has turquoise-and-white "dry" drawers which cantilever out on left, yellow "wet" drawers and removable turquoise styrene bath basin on right.

. . . portables . . . big screen color . . . plastic and metal housings . . . slipcovers

↑**Majestic** "Music Mate" is a portable radio with a 45 rpm turntable built into the tuning dial. Of colored leatherette, it weighs 12 lbs., is 14½" high by 5¼" deep, operates on AC or battery, stores 8 records. $89.95.

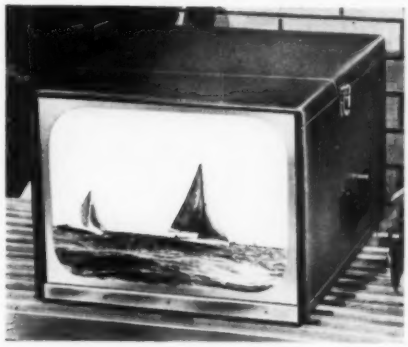
↑**Webster-Chicago's** Midge phonograph is housed in a high-impact polystyrene case with integral speaker grille and handle. In pearl grey or green, it costs $29.95.
↓The same size case, in rose or turquoise, houses a radio-phonograph for $49.95. Both play 3 speeds, measure 12" by 10" by 5", weigh 8-9 lbs. Designed by Clifford Grube.

↓**Magnavox** Magnarama supplements the side speaker with a high-frequency speaker on the front panel to achieve "high-fidelity" sound. $239.50. Other models have speakers and controls on top.



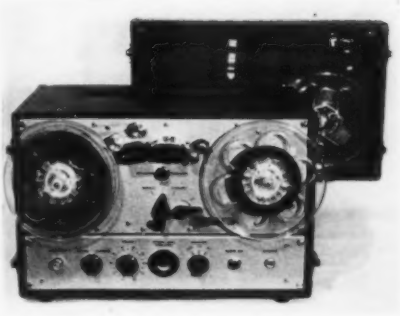
↑**Hallicrafters** use a new 90-degree deflection tube to provide a 21" picture in a compact table model. The simple cabinet uses the whole front for the picture, puts controls on the side. In walnut, mahogany or blond wood; prices from $179.95.

↑**Raytheon's** compact metal Challenger has controls on top which can be removed for upholstering. Customer chooses from 10 standard "sleeves" or makes her own. Small spring hooks on bottom of set hold sleeve in place. 17" and 21", from $139.95.



↑**Emerson's** new portable television set weighs 40 lbs, offers a 14" picture in a leatherette case 15" x 12" x 19". Controls are covered by the lid; closing the lid automatically turns set off. In black, $150.

↑**G.E.'s** Pacer is cased in brown metal, has a built-in antenna. 3-way switch adjusts set to signal strength. 4.1 mc band avoids interference from nearby sets. $149.95.



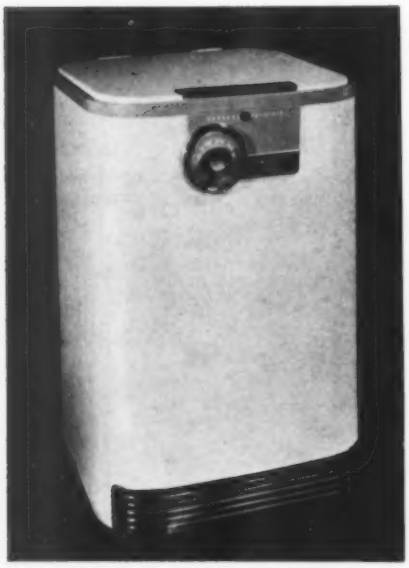
†**Magnecord, Inc.**, has introduced a portable 35-pound magnetic tape recorder (playback unit) which may be attached to any radio, phonograph, or television loudspeaker for amplification. Said to perform all the functions of higher-priced broadcast recording units, this one costs only $299.

†**Raytheon** announces a portable radio whose flat-knob antenna, on top, points out the direction of the station to which the set is tuned, thus acting as a compass. Designed primarily for boat owners, the set receives AM, marine and beacon bands. 12" x 7" x 7", the radio weighs 13 pounds. The price is $149.50.

←**Motorola** claims the first large-screen color TV. The picture area, 205 square inches, approaches 21" size. Two 7" speakers are placed above screen. Controls are lucite, brass legs detachable. $995.50.

†**Motorola, Inc.**, in cooperation with the Chicago Molded Products Corporation, has developed the first bright-colored plastic TV cabinets. Molded of Plaskon urea materials produced by the Barrett Division of Allied Chemical & Dye Corp., these are the largest units yet molded of urea. Electrostatic, they won't attract dust.

†**Zenith** now makes its Cinebeam tube in a 17-inch size. Together with darkened safety glass, here in the Melbourne table model, it is said to produce intensified contrast and sharpened detail. In blonde-color Pyroxylin finish, set costs $189.95.

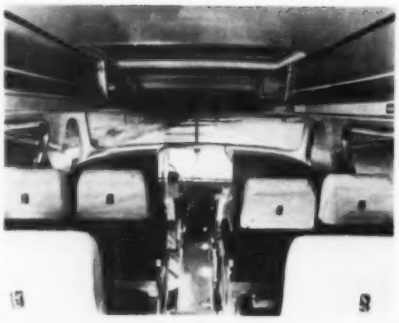


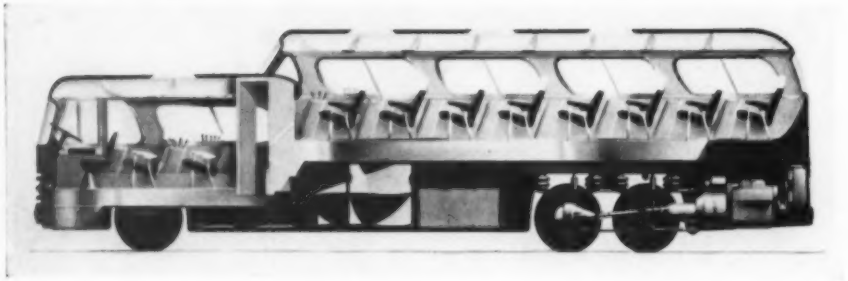
↑**General Electric** introduces the Mobile Maid portable dishwasher which glides noiselessly on invisible casters. Almost square, the unit is designed for top loading. Escutcheon control panel offers manual or automatic operation. $269.

↓**Cory Corporation** designed its Fresh'nd Air institutional room conditioner to avoid exterior projection. A U-shaped steel housing fits between chassis and window, so window may be closed when unit is not operating. A new "silence guard" eliminates motor noise. $329.95 up.

↑**Bell Telephone Laboratories** and designer Henry Dreyfuss collaborated on development of the Answering Set. Before going out, you tape a request that callers leave message. It plays when the phone rings, while another tape records the message; calls are all taped up when you get home.

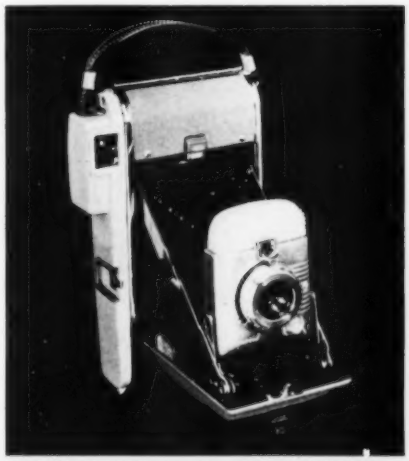
↓**Greyhound's** two-level diesel-driven Scenicruiser offers new heights in riding comfort. Upstairs riders have clear view over the driver's cab (left). There are air-conditioning, tinted picture windows, a lavatory, revolving rack in luggage compartment. Rubber-nylon air cushions have replaced metal springs above wheels. Raymond Loewy Associates, designers, in collaboration with General Motors.

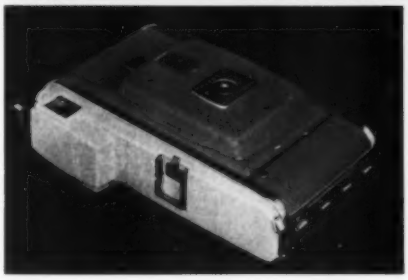




↑**Lewis-Shepard** heavy duty hand pallet truck, made of Frontier Aluminum alloy castings, weighs only 250 pounds but lifts two tons. Load is raised hydraulically by foot-operated lever. $447.50.

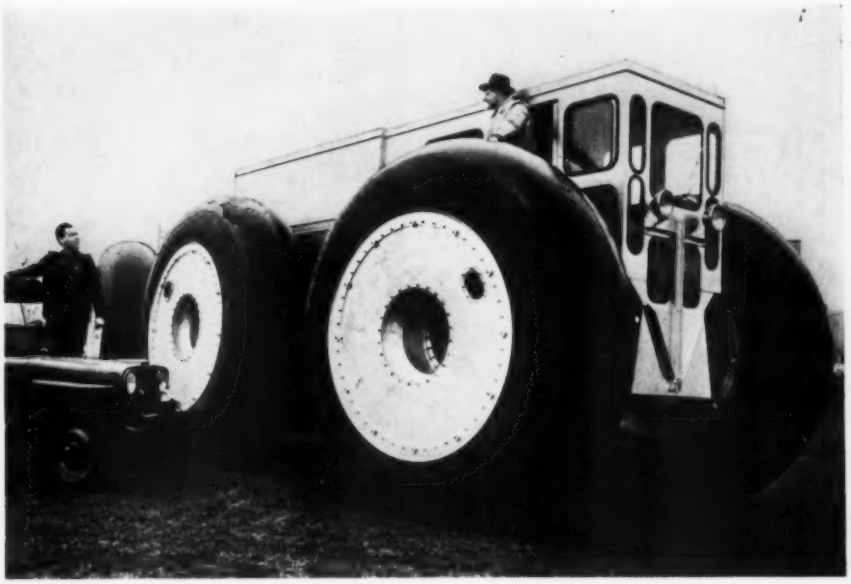
↓**Polaroid Corp.**, pioneer of picture-in-a-minute photography, has managed to make its Highlander smaller, lighter and cheaper while retaining features of previous models. Measuring 7½" x 4½" x 2½", it produces 2¾" x 3½" pictures in 60 seconds. Walter Dorwin Teague Associates, consultant designers. $69.95.





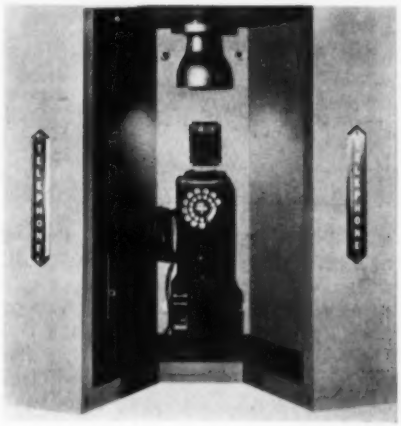
↓**Ritter Company's** Instrumatic Dental Unit has been redesigned to improve patient's psychological attitude. All instruments are concealed until, at touch of switch, panel drops and instruments come forward. Walter Dorwin Teague Associates, consultant designers.

↓**Gulf Oil Corporation's** famous Marsh Buggy, giant amphibious vehicle which can negotiate swamps, deserts, rocky shores and water on 10-foot Goodyear balloon tires, has been adapted for possible military use. In case of puncture tire is kept inflated by a compressor which feeds air through hollow hub. It goes 30 mph.

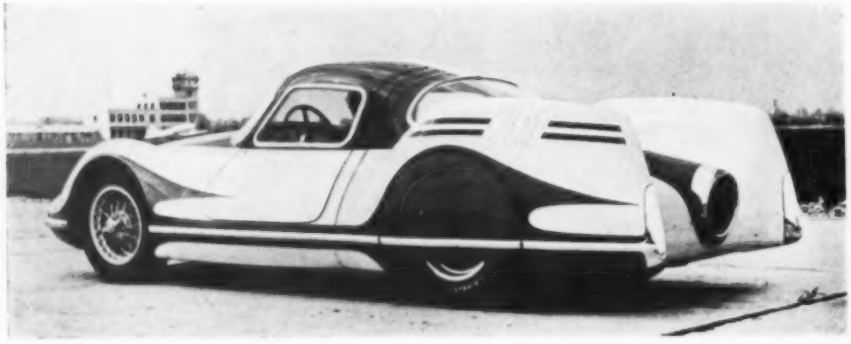


↑**Clary Multiplier's** speedy luxury model calculator, the Custom, features touch-contoured keys alternatingly flat and concave, and color panels dividing keyboard into ledger columns. $345.

↓**Burgess-Manning** makes a doorless telephone booth with unusual acoustic privacy, achieved by its triangular shape and the placement of soundproofing between double steel walls. Designed in collaboration with Armour Research engineers. $100.



↑**Culligan, Inc.,** offers a counter-height water softener styled by Jean Reinecke to fall in with other major appliances. The rust-resistant white enameled unit is 36″ high; push-button electronic controls are set into a brass-and-chrome trimmed plastic panel under the hinged lid.

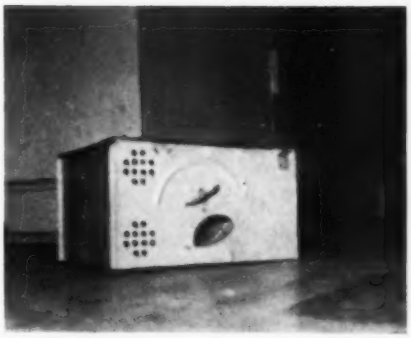


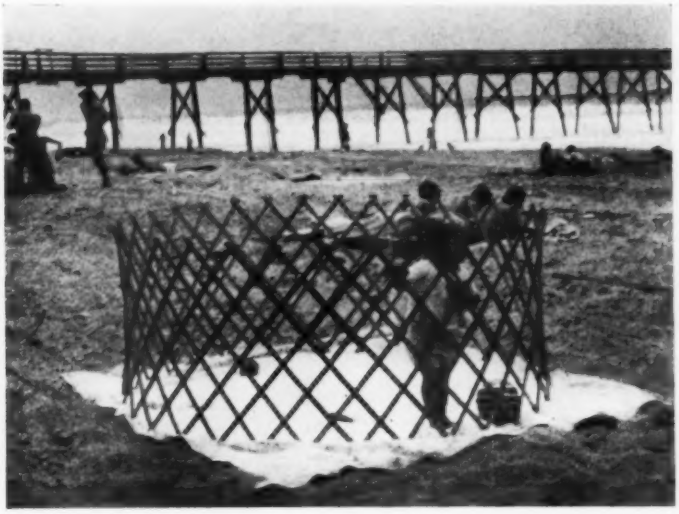
↑**Fiat** has turned out Continental Europe's first gas turbine car. Strictly experimental, with no production planned, the turbine develops 200 hp at 22,000 rpm, giving the 2200-pound car a top speed of 155 mph. The engine is in the rear; air enters through a single opening in the lower front end of the car, and is fed by ducts to the engine. The entire back part of the body is removable, for servicing the power plant.

↓**Kenworth Motor Truck Corporation's** new heavy-duty highway tractor was redesigned by Gideon Kramer. The one-man cab-beside-engine, large side windows, and the outboard mirror, increase the driver's visibility. All-aluminum welded construction makes it lighter than usual trucks.

↑**IBM's** lectern does eveything but make the speech. Designed by Eliot Noyes, the walnut veneer console (which can be removed from the base) is push-button adjusted by the speaker or by remote control. Among other services: two side-mounted microphones and space for five more, a clock, a speech-timer, and a one-minute warning light.

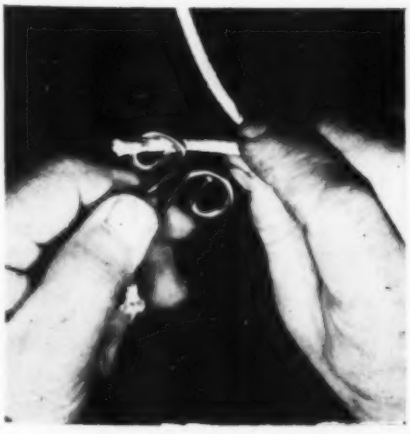
→**Albia Products Co.** distributes the Ketch-All automatic mouse trap invented by A. E. Kness. Curiosity traps the mice; no bait is needed. The mouse looks in, trips a hair trigger, and is spanked by a revolving door into a ventilated hopper. The door, wound by clockwork, can catapult up to 15 mice to their doom at one setting; the lot can then be drowned and/or dumped out through a levered trap door. Galvanized steel, 5″x7″x9″; $4.50.

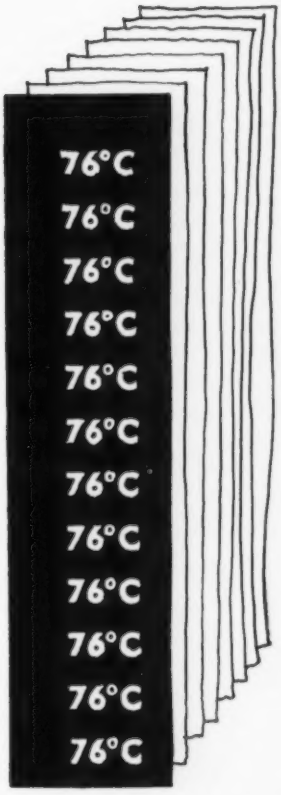




↑**Comfort Products Co.** makes the collapsible Jet play yard of non-toxic buffed-wax-finished wood. Weighing 11 pounds, the pen closes to a 9″ diameter, and can be locked open to a circle of any size up to 6′ in diameter. Designed and patented by Dr. Homer O. Stilson, the portable yard sells for about $12.

↓**No-Knot Hooks,** invented by Frederick B. Clark of Englewood, N. J. for professional laundries, make it easy to carry clothes or other bundles without tying any knots. With the cord thrown around the bundle, the free end can be threaded and twisted around the brass hook or simply drawn tight (r.). Re-usable, non-rusting, and available in two sizes with any length cord, hooks start at $5.61 per hundred.





↑**U.S. Army Quartermaster Research and Development Laboratories,** Philadelphia, have invented paper thermometers which make rapid permanent temperature records where usual methods don't work. Numbers printed in heat-sensitive white pigment indicate the temperature at which that pigment will melt and be permanently absorbed by the black paper base. Each sheet of a 10-strip book records a single temperature; 25 indicators, spaced from 45° C. to 305° C. have been prepared. To find surface temperature of a motor casing, you might apply a 63° and a 76° indicator, watch the reaction, and pinpoint within that range.

TECHNICS

A catalog of new products, materials processes and finishes

A group of aluminum castings made by the Alcoa plaster process. The trademark shield is 2 inches in height.

Plaster casting

Improvements in plaster casting techniques developed recently by Alcoa have increased possibilities for aluminum and magnesium castings. In general, plaster molds permit the reproduction of finer and more precise details and allow better surface finishes than sand castings. In many cases machining operations that were previously necessary with sand or iron (permanent) mold casting can now be eliminated. The key to the improvement in the process is the development of a new type of permeable plaster that makes it possible to achieve fine detail with far less time and cost. The process is in use at a number of foundries in the production of complex parts for automotive torque converters, small bearings and aircraft parts, and it is expected that it will soon be applied to other small castings, such as hardware parts. In general, tolerances of ± .01″ are possible across the parting line, ± .005″ within either part of the mold. For further information contact:

Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pa.

Non-woven wipers

A non-woven wiping cloth produced under the name of Leshner Downy Soft Wipers is expected to replace cheesecloth, mill ends and towels in many applications. The material, made up of short matted fibrous threads rather like a soft, lustrous paper, is white, lintless and highly absorbent, and so strong it can be rinsed and re-used, yet so low in cost that the wipers will probably be considered disposable. The fabric is produced at present in 18″ x 36″ pieces and 36″ squares. The cost in quantity is about 2 cents per square yard. Only utility applications have been considered so far, and the manufacturer makes no mention of the fact that the material is an extremely beautiful filmy white cloth suggestive of Japanese silks which would be suitable for drapery use if produced in continuous rolls. Such uses may soon be possible, since the manufacturer predicts great developments in non-woven fabrics and expects them to replace conventional textiles in many uses in the near future.

Manufacturer: The Leshner Corp., Hamilton, Ohio.

Vacuum forming machine

No supplementary equipment of any kind is needed to place the Pamco Hydro-Vacumatic model HV-30-60 in operation. Air compressor, mold clamps and hydraulic pump for press action are all built into the machine so that high-speed vacuum forming of thermoplastic films or sheets can be started as soon as the machine is plugged in. The 30″ x 60″ platen allows the forming of sheets up to 27″ x 57″, and clamp travel allows a depth of draw up to 18″. Plastic materials up to ¼″ thick can be formed into such products as containers, toys and dolls, refrigerator trays and liners, typewriter cases or any variety of formed parts. 220 volts, 60 cycle, 3 phase current is required.

Manufacturer: Pamco Industries Inc., Ludlam Avenue, Bayville, New York.

Electrospark machining

Conventional machining techniques that use a hard metal tool to cut softer metal work are severely limited when the work is a material of extreme hardness. Various of the new alloys, for example, or sintered carbides, can be machined only with diamond tools. A paper presented at a Westinghouse Tool Electrification Forum, by C. Paul Porterfield, pointed out that if the electric currents which commonly power machine tools are applied as sparks directly to the work, metal particles are broken away just as in conventional machining, without any contact between tool and work. In this way a brass electrode can be used to cut the hardest of materials. Electrospark machining has been made practical by recent developments in the design of suitable power sources and the removing of the material machined away. A machine designated simply as "Model V" has been developed that is, in general, comparable to a drill press. The work is submerged in a dielectric, and an electrode shaped to correspond to the desired cut is applied. Inside machining is achieved in this way using the dielectric circulated by a pump to carry away the waste material. Outside machining is easier, since the problem of material removal does not exist to the same degree. Current control is sufficiently accurate to permit tolerances that are limited only by those of the electrode and the mechanical units which carry the tool and work. The technique is currently being applied in such fields as the machining of jet engine turbine blades and the making of steel railroad rails.

Manufacturer: Method X Company, Pittsburgh, Pennsylvania.

Encapsulating rubber

A silicone rubber product known as Silastic S-2007 can be used to coat electrical parts with a rubbery jacket that is moisture-proof, heat-stable and highly resistant to oxidation and weathering. These coatings have about twice the thermal conductivity of rubber or resinous dielectrics, permitting cooler operations of high temperature parts.

The product comes in the form of a low consistency paste which can be applied by dipping or vacuum impregnating; or it may be molded in fitted encapsulating molds. Coated parts are placed in a hot air oven for vulcanization in two to four hours at 200° C.

Manufacturer: Dow Corning Corp., Midland, Michigan.

Transformer encapsulated with Silastic S-2007.

Ultrasonic generator

A simple generator of ultrasonic frequencies is available for the cleaning of metal parts. The generator is attached to one or two transducers submerged in trichlorethylene or some similar fluid. The part to be cleaned is submerged and the ultrasonic energy of about 500 watts is applied at a frequency between 380,000 and 460,000 cycles per second. A two-second rinse will remove oil, dirt, abrasives and even thin layers of insoluble matter. The unit is small and reasonably light (135 pounds) and costs less than $1000. It is also appropriate for other industrial and experimental ultrasonic applications such as emulsification of immiscible liquids or the dispersion of solid particles in liquids.

Manufacturer: Branson Instruments, Inc., 430 Fairfield Ave., Stamford, Connecticut.

Packaging for wet foods

Cellophane coated with Bakelite polyethylene makes the packing of wet foods—such as dill pickles, sauerkraut and sausages—a good deal easier and neater. The coating gives the bag high moisture and grease resistance and excellent tear strength. The bags are easy to fill and seal, and give packers of wet food products a chance to take advantage of transparent packaging.

Manufacturer: Howard Plastics, P.O. Box 651, Council Bluffs, Iowa.

Expanded metals

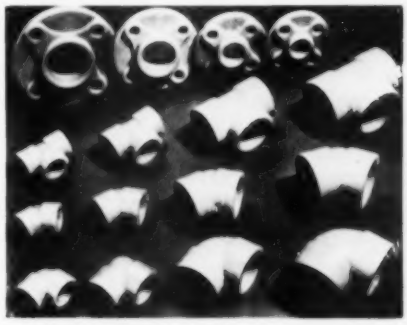
Expanded metal, a familiar lathing material here, is currently produced in England in a wide variety of meshes and sizes, in aluminum with rustproof anodized finishes in a great range of colors. The finish of the mesh (carrying the trade name of "Expamet") is very smooth and the appearance attractive enough for exposed use on consumer products.

Manufacturer: British Industries Corp., (representing Expanded Metal Co. Ltd.), 164 Duane Street, New York 13, New York.

Molded pipe fittings

Pipe fittings in sizes of ½" to 4" with standard I.P.S. threads are now being injection molded of rigid unplasticized polyvinyl chloride material — a feat which would have been considered impossible a year ago. It has been accomplished by the use of a resin known as Exon 402A in a Jackson and Church Company press using the Hendry Pre-plasticizing process. Parts with great strength, uniformity and fine threads are produced at a rate of one a minute. Exon 402A makes a pipe fitting that is resistant to a wide range of acids, alkalis, most inorganic materials and rust. It is expected that use of plastic pipe fittings will soon extend to water and waste piping for homes and other buildings. The cost reduction made possible by the rapid processing of Exon 402A will probably hasten the changeover from metal fittings.

Manufacturer: Firestone Plastics Co., Pottstown, Pennsylvania.



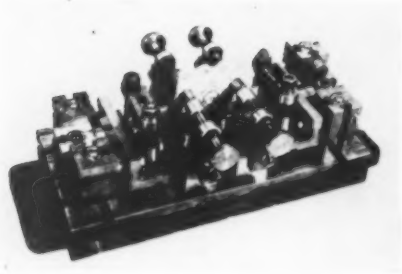
Pickles, sausage and sauerkraut packed in bags of polyethylene-coated cellophane.

A variety of splined parts produced by the Roto-Flo process.

Spline rolling

The vocabulary of available metal-working techniques has been increased by a new process. Splines, serrations or other similar shapes on external parts may be formed by machines known as Roto-Flo spline rollers. By a cold-working process, a metal shaft is placed between forming racks, and emerges in a few seconds with splines or teeth formed at any desired position along the shaft. Compared with hobbing or other older machining processes, the new technique produces a part with a better surface finish, better strength (resulting from pre-stressing produced by pressure) and higher accuracy. The most important advantage is the lowered cost resulting from the high speeds at which parts can be worked (under ten seconds in most cases). The simplicity and rapid operation of the Roto-Flo machine makes it suitable for automatic operation.

Manufacturer: Michigan Tool Co., 7171 E. McNichols Road, Detroit 12, Michigan.



A complex assembly made up from reusable parts of a Wharton and Wilcocks jig and fixture assembly kit.

Jig and fixture kit

Costs for jigs and fixtures in machine tooling, particularly for work in experimental and short run production, are greatly reduced by a kind of Erector set kit developed in England and now available in this country. Tool makers, instead of making up the individual jigs and fixtures needed for the making of complex parts, can simply draw out the units needed from the kit and put them together with simple tools. Base plates range from 8 to 36 inches in length and a great variety of jig parts are available. A basic kit includes 450 parts, larger kits as many as 3000 components. Prices of kits start at about $3,000 and range up to $40,000. Dimensional accuracy of the kit components is held to .0003" and square to .0006" per foot. A fixture that would take 40 man hours to construct to this accuracy can be produced with this system in three to four hours. In addition to the saving in toolmakers' time, all the components can be taken apart and re-used indefinitely. All the jigs and fixtures needed for a vast range of work can be stored in space equivalent to a small filing cabinet. The manufacturer provides a full consultation service on the use of the system, including demonstrations in the prospective purchaser's plant and, after a kit has been purchased, a program of training in the use of the system for the personnel concerned.

Manufacturer: Wharton and Wilcocks of America, Inc., 17 Battery Place, New York 4, New York.

High impact styron

An extra high impact polystyrene, to be known as Styron 480, is ten times tougher than comparable conventional polystyrenes. In products that might have to withstand dropping or other sharp blows, as in toys, kitchen items, boxes, or cases, Styron 480 will be shatterproof where most polystyrenes might not. Styron also stands greater elongation without its good chemical resistance and dimensional stability being affected.

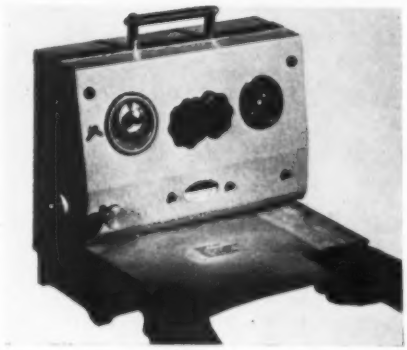
Manufacturer: Dow Chemical Co., Midland, Michigan.

New silicone rubber coating

Retaining the name and price of Silastic 132, Dow Corning has replaced its older product with a new formulation. This is a silicone rubber developed as a coating for glass cloth and synthetic fabrics. Tensile strength after creasing has been greatly improved (remaining at 140 pounds per inch lengthwise after 4 creases) and dielectric strength remains unchanged after 21 days at 250° C. Cloth properly coated with the new Silastic 132 meets the requirements for shipboard cable insulation tape.

Manufacturer: Dow Corning Corporation, Midland, Michigan.

Silastic coated cloth (left, below) springs back into shape.



Compact and flexible "Comet 54" heat sealing machine.

Heat sealing machine

The "Comet 54," a simple semi-automatic device, makes it possible to meet government specifications for heat sealing of coated or laminated barrier materials, regardless of wrinkles or splices in the material to be sealed. The "Comet 54" includes an automatic tripping device that controls the sealing cycle, set in advance by hand knobs, for heat, time, and pressure. An adjustable stop makes it possible to vary the width of seal from ¼" to 1½", while the maximum length seal is 13½". The unit measures 13" x 14" x 10½" and weighs only 29 pounds.

Manufacturer: Fox Mills Tool and Die Co., 5747 Marilyn Ave., Culver City, California.

Organic welding

Extraordinary strength and ease of handling are offered by an organic welding material known as "Tygoweld." Such diverse materials as aluminum, iron, steel, glass, ceramics, thermosetting plastics, wood, paper or concrete can be welded to themselves or to each other with bonds showing a tensile strength of over 4000 psi in standard lap shear specimens with only ½" overlap. Peel resistance is also excellent. Curing time varies with the heat applied: low heats give comparatively quick cures, and welds can even be made at room temperatures if sufficient curing time is allowed. One of the first applications of "Tygoweld" has been the welding of hypodermic needles to glass syringe barrels. A wide range of applications in the bonding of difficult and dissimilar materials is expected.

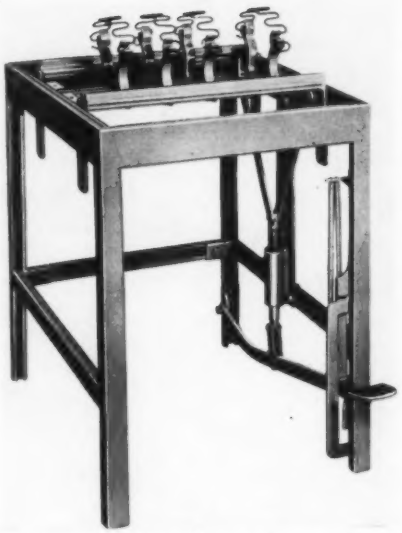
Manufacturer: U.S. Stoneware Co., Akron, Ohio.

Fluctuating pressure transducer

Miniature strain-gauge transducers, redesigned by Electronic Engineering, have the pressure tube brought out the rear together with electrical terminals to permit the unit to be threaded into its flush-mounting position from either direction. The transducer is a hollow-threaded cylinder with a taut diaphragm at one end. A strain gage is bonded to the inner surface of the diaphragm, with wiring leading to terminals at the other end. Standard units are ½" in diameter and are available in lengths of ¼" and ⅜". Seven pressure ratings are available ranging from 2½ to 200 psi. The weight of the unit is 4.5 grams. The mounting of these devices directly into the surface where pressure is to be measured frees them of the errors that arise in systems using pneumatic tubing, and they are also free from shock and acceleration effects.

Manufacturer: Electronic Engineering Associates, Ltd., 992 Brittan Avenue, San Carlos, California.

Improved miniature Sierra Brand pressure transducers of strain-gage type.



Automatic device for stretching and positioning No-Sag springs for attachment to chair frames.

Spring assembler

The familiar No-Sag springs can be installed in chair frames with a new automatic assembler which cuts down hand labor considerably. This device, designed for use with frames of dinette chair size, stretches the springs for a chair seat to the correct arc and holds them accurately in position for hand-gun or air-gun stapling. The device can handle frames for 12″ x 12″ to 20″ x 20″ size and of any thickness over ¾″. Fingers are provided for holding three or four springs and extra fingers for a fifth spring can be added. with a power stapler, seats can be sprung at a rate of 120 per hour, and will probably make springs feasible in chair bottoms now restricted to plywood.

Manufacturer: No-Sag Spring Co., P.O. Box 115, Detroit 13, Michigan.

Cold welding

Aluminum welds made without heat, electricity, or chemicals can be achieved by the simple application of pressure at room temperatures by a process, developed in England, known as "Koldwelding." The surfaces to be welded must be perfectly clean before welding pressures of 27,000 to 40,000 psi are applied. Under these pressures, sufficient to produce the metal flow which brings about the weld, foil, sheet, extrusions, strips, or wire can be welded with an efficiency of 95% to 100%. Special tools for the process are now in production, ranging from simple hand tools for welding foil and wire, to large dies for heavier parts. Aluminum-to-copper welds are also practical. The process promises a number of applications, such as hermetic sealing of containers, making electrical connections, manufacturing tube and assembling extruded parts, to name a few.

Manufacturer: Koldweld Corp., 10 East 40th Street, New York 16, New York.

Nylon slides

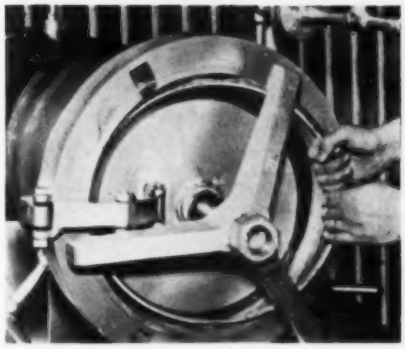
Because of its low friction characteristics, Nylon is proving to be a suitable material for sliding parts in many products, and the Polymer Corporation has announced some interesting examples. A sliding door front and drawer, for example, parts of a new laboratory balance housing, were originally intended to operate with brass or aluminum sliding channels; the substitution of Nylon parts resulted in much quieter and smoother operation. U channels were formed in a hydraulic press from 3/16″ x 1/32″ Polypenco strip to act as guides for a vertically sliding door. Plain strip was used for the drawer slides. A pin used as a cam follower for a pan arrest was machined from Nylon rod. Here also the low friction characteristic of the Nylon resulted in smoother operation than could be achieved with a metal pin.

Manufacturer: The Polymer Corporation of Pennsylvania, Reading, Pennsylvania.

Shell molding resin

The use of Bakelite phenolic resin BRQ-12244 is said to effect up to 50% savings in the amount of resin used in shell molding. Because it is stable and non-heat-reactive, the new resin is used to pre-coat the sand used for the mold without any danger of its hardening before the production heating cycle. A catalyst in a water solution, added to the coated sand, hardens the resin, which bonds the outer layer of sand to form the casting mold. Not only is resin saved by the use of BRQ-12244, but better surfaces with less pitting and fewer bubbles are achieved

Manufacturer: Bakelite Company, 260 Madison Avenue, New York 16, New York.



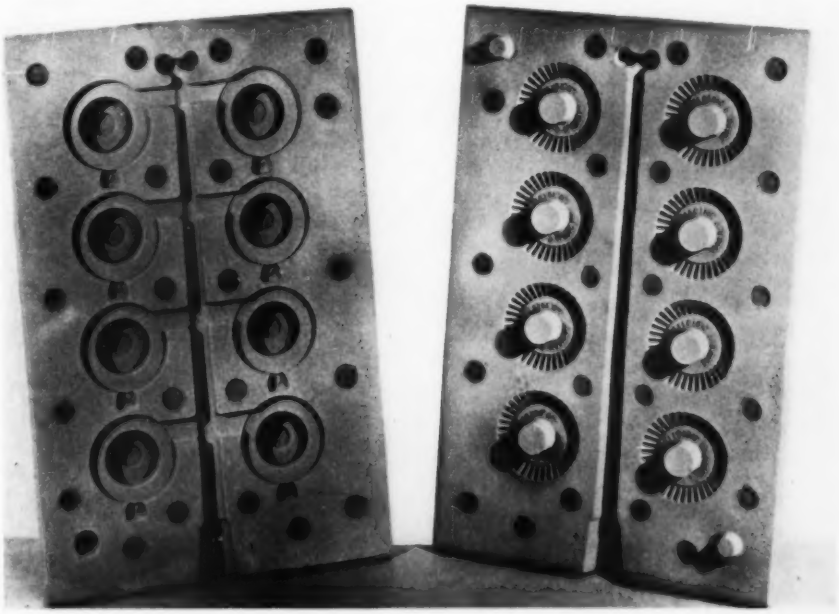
Flex Ring pressure closure shown with spider released; gasket is being removed.

Pressure closure

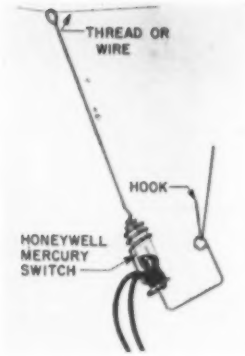
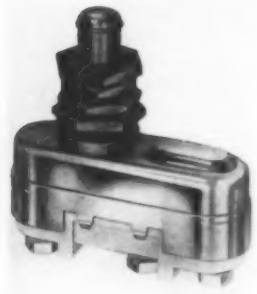
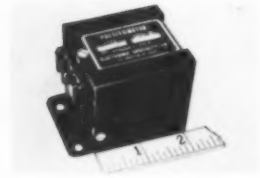
"Flex Ring Closure," a new type of pressure closure, incorporates an internal pressure closing, metal-to-metal seal principle. The seal becomes tighter as pressure is increased. The advantages of "Flex Ring Closure" over older closure methods include quicker opening and closing, lighter weight, fewer parts, tighter sealing and lower costs. The closures consist of four parts: a weld neck, plug, gasket and spider. Its unique feature is the flexible metal gasket which has a normally elliptical shape to allow it to pass through the plug opening. Once it is in place, the tightening of the spider nut presses the gasket into a round shape for proper seating between the plug and the neck. Standard closures are available in sizes and ratings corresponding to ASA sizes.

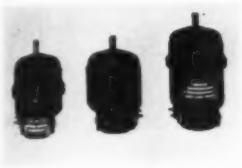
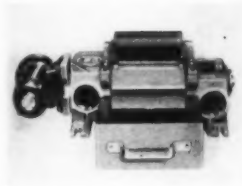
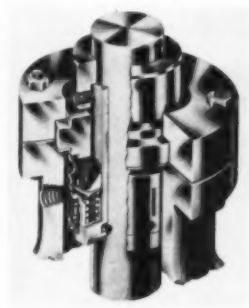
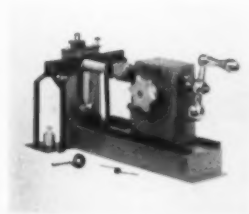
Manufacturer: Sillers Engineering Co., Box 7193, Dallas, Texas.

Shell mold produced with Bakelite phenolic resin BRQ-12244.



Technics: a quick guide to specialized products and components

	Name	Purpose	Manufacturer
	Guardian 8 Pole double throw switch	To give positive control of eight primary circuits controling machines, carriers, boiler feeds, extinguishers or similar equipment. Capacity of 10 amps, 115 V.D.C. non-inductive.	Guardian Electric Manufacturing Co., 1621-PD West Walnut St., Chicago 12, Ill.
	Thread break detector switch	To open a circuit to stop machinery or give an alarm when a strand breaks in thread or wire handling machinery.	Micro Switch, Freeport, Ill. (Division of Minneapolis-Honeywell)
	High temperature switch	For switch applications in aircraft or industry where temperatures of —50° to +1000° F. may be encountered.	Micro Switch, Freeport, Ill.
	Syncro-Snap switch	To provide speed and limit control on rotating shafts by centrifugal action. The switch throws at a predetermined speed of rotation of the shaft to which it is attached.	Torq Engineered Products, Inc., Interstate St., Bedford, Ohio
	Pulsitometer	Creates flashing light to differentiate warnings using a single light in fire and overheated circuits on jet aircraft.	Electronic Specialty Co., 3456 Glendale Blvd., Los Angeles 39, Cal.
	Permanent magnet generator	To generate current for lights on motor cycles and bicycles with minimum weight and bulk.	Whizzer Motor Co., Pontiac, Mich.
	"Displaymotor" Model JM	To provide slow rotation (1 R.P.M to 194 R.P.M.) in either direction for advertising displays, turntables and signs.	New England Gear Works, Meriden Ave. & South End Rd., Southington, Conn.
	Impulse generator	To convert mechanical energy into pulses of electrical energy in signals, alarm systems or wherever small mechanical impulses must set off electrical action.	Microloc, 5811 Marilyn Ave., Culver City, Cal.

	Name	Purpose	Manufacturer
	Comspec tachometer generators	To provide permanent-magnet DC tachometer indications; similar to units built to military specifications at commercially reasonable cost.	Instrument Motors Box 5, Stamford, Conn.
	Polyvinyl chloride globe valve	To provide valve action without use of corrosive materials for use in chemical, petroleum, plating and similar industries.	Stokes Molded Products, Trenton, N. J.
	Houdaille magnetic separator	To filter out metallic particles from coolants and cutting oils used in machine tools.	Honan-Crane Corp., Lebanon, Indiana
	Rzeppa miniature universal joint	To provide universal joint action in an angular range of 0° to 40° with miniature (2⅛" diameter) dimensions.	Joint Division, The Gear Grinding Machine Co., 3901 Christopher, Detroit, Mich.
	Teflon bellows	To give gasket sealing at pipe flanges and bolt hole circles at pressures up to 125 psi.	Crane Packing Co., 1800 Cuyler Ave., Chicago 13, Ill.
	Mechanical shaft seal	To provide sealing around rotating mechanical shafts (such as pump shafts) using only inert plastic material.	Crane Packing Co., 1800 Cuyler Ave., Chicago 13, Ill.
	Computer magnetic read-record head	For recording and reading data magnetically on drum memory systems in computing machines. Resonant frequency is 500 KC.	Librascope Inc., 1607 Flower Street, Glendale, Cal.
	Torsion spring tester	To make possible precise testing of torsion, clock and power springs under laboratory or production conditions.	The Carlson Co., 277 Broadway, New York 7, N. Y.

Manufacturers' Literature

Alumi-Door. Stevens-Thuet Co., 2165 Cowles St., Long Beach, Calif. 12 pp., ill. Information on custom made, wide span aluminum doors for commercial and industrial buildings.

Architectural Models. Industrial Models, Inc., 2311 Sconset Road, Wilmington 3, Del., show the firm's facilities for producing scale models of industrial buildings. Models shown with approximate prices.

Barrel Bearings. Hyatt Bearings Division, General Motors Corp., Harrison, N. J. Vol. 25 of the "Hyatt Rollergravure" covers the new Hyatt barrel bearing. The Barrel Bearing Catalog, No. B-154, contains load ratings and dimension data.

Bondolite. Goodyear Aircraft Corp., Akron 15, Ohio. 32 pp., ill. Originally developed for use in aircraft structures, Bondolite is a high-strength lightweight structural material now suggested for use in many fields. A 32 page brochure and/or a 4-page folder about this material are offered by Goodyear Aircraft.

Broaching Process. Colonial Broach Co., P.O. Box 37, Harper Station, Detroit 13, Michigan. 12 pp. Bulletin C-54. An explanation of broaching and broaching equipment, comparing the cutting action of single and multiple-point tools and broaching tools.

Cast Wood. Forestrong Co., 1355 West 190th St., Gardenia, Calif. 4 pp., ill. Description and applications of a new process for molding wood fiber.

Centrifugal Casting. Shenango-Penn Mold Company, Dover, Ohio. Two informative bulletins about centrifugally cast parts are offered by Shenango-Penn. No. 150 deals with non-ferrous parts; No. 151 covers ferrous parts. Castings are suited for use as bushings, liners, rings, etc.

Die Castings. Precision Castings Company, Inc., P.O. Box 1077, Syracuse, N. Y. 24 pp., ill., charts. A description of this firm's facilities, including an explanation of all the die casting processes: die-building, alloying, casting, trimmings, machining, plating, etc.

Extruded Plastic. Sheffield Plastics Inc., Sheffield Mass. 16 pp., ill. A catalog showing plastic diffusion shields, signs, displays and other conventional and custom-made extruded shapes offered by this firm.

Flexible Tubing. Flexible Tubing Corp., New Whitfield, Guilford, Conn. 4 pp., ill. No. C2-3. A pamphlet describing the uses and properties of Spiratube and Flexflyte tubing.

Foam Plastic. Nopco Chemical Co., 15 Essex, Harrison, N.J. 28 pp., ill. Production and use of foam plastic; physical properties, and suggested applications.

Hardboard. Oregon Lumber Co., Hardboard Division, Dee, Oregon. 8 pp., ill. How hardboard is made, and how it can be used is discussed in a new booklet, "Allwood Hardboard for Industrial Use."

Metal Bar Stock. Shenango-Penn Mold Company, Dover, Ohio. Bulletin No. 152. Description of high strength tubular and solid types of bar stock, suited for the production of valve and pump parts, small gears, pinions, etc.

Manufacturers' Literature *(Continued)*

Nylon Bearings. Thomson Industries, Inc., Manhasset, N. Y. 8 pp., ill. A discussion of Nylon as a bearing material, with engineering data, installation information; and a description of Thomson's "Nylined" Bearings and "Nyliners."

Plastic Cases. Regal Plastic Co., 2800 East 14th St., Kansas City, Mo. 4 pp., ill. An illustrated folder, showing cases that have been made of molded plastic. Samples of Royalite, Fiberglas and styrene, out of which cases may be fabricated, are attached.

Plastic Knobs. Romar Plastics, Inc., 1311 E. Main St., St. Charles, Illinois. Full size photos and engineering drawings of Romar's new line of standard Control and Electronic knobs.

Plastics molding. Bakelite Company, 300 Madison Avenue, New York City. "Bakelite Molding News," a new monthly publication for the plastics molding industry on new developments in Bakelite resins and compounds. For free subscription write to Department 804, The Bakelite Co.

Rigid-Tex Metals. Rigidized Metals Corp., 738 Ohio St., Buffalo, N. Y. 26 Rigid-Tex Metals patterns, pictured on a dial selector that gives pattern number and complete specification data.

Shell Molding. General Electric Company, Chemical Materials Dept., Pittsfield, Mass. 28 pp., ill. (Bulletin CDC-272). Shell molding is a new foundry process designed to make thin sand molds for the production of smooth, accurate castings. G.E.'s experimental work is comprehensively treated in this publication.

Silicone Paint. Dow Corning Corp., Midland, Michigan. 5 pp., No. 7-100. Information about the performance and application of silicone-based protective coatings.

Silicone Rubber. Dow Corning Corp., Midland, Michigan 30 pp., ill., charts. "Compounding Silicone Rubber with Dow Corning Gum" is a collection of compounding information developed by Dow Corning to serve as a guide in making silicone rubber with Dow Corning 400 Gum.

Teflon. E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Delaware. 12 pp. Third edition of du Pont's technical bulletin on tetrafluoroethylene resin finishes. Lists 17 new applications and discusses various finishing systems.

Thermoplastic Compounds. Naugatuck Chemical, Division of U. S. Rubber Co., Naugatuck, Conn. 20 pp., ill., charts. "Kralastica," Naugatuck's molding compounds, their applications, fabrication and properties are explained.

Thermoplastic Resins. Chemical Sales Division, Firestone Plastics Co., Pottstown, Pa. 16 pp., ill. Information about Firestone's plant facilities, technical service and testing equipment, and the Exon line of thermoplastic resins.

Vinyl Resins. Naugatuck Chemical, Division of U. S. Rubber Co., Naugatuck, Conn. 20 pp., ill., charts. A discussion of properties and uses of the "Marvinol" vinyl chloride resins sold as raw materials by Naugatuck Chemical for use with vinyl resins. Detailed methods and formulations also available.

Welding Aluminum. Aluminum Company of America, Pittsburgh, Pa. 176 pp., ill., charts. "Welding Alcoa Aluminum" is a comprehensive textbook that answers most questions about welding aluminum alloys by all available methods.

Wire Products. E. H. Titchener Co., 575 Walnut St., Binghamton, N. Y. 4 pp. Illustrations of many uses of wire in modern product design.

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INDUSTRIAL DESIGNER *with successful experience in styling, engineering, and production of commercial and household products desires position with progressive manufacturer or studio in Chicago area. Box ID-8,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

PRODUCT DESIGNER AND DECORATOR—*Layton graduate. Five years successful experience with office, store and tavern fixture manufacturer. Age 32, married. Would like to relocate in North Central or Mid-West. Box ID-9,* INDUSTRIAL DESIGN, *18 E. 50th St. N. Y. 22.*

INDUSTRIAL DESIGNER—*College and Design school graduate. Three years active, varied product design with top companies. One year sales representative with IBM. Twenty-eight, married. Box ID-10,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

PRODUCT DESIGNER—*Experienced in product design and decoration. Worked with leading glass company. Desires employment in product design and opportunity for executive responsibility. Prefer East or West Coast. BFA Degree. Will send resume upon request. Box ID-14,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

INDUSTRIAL DESIGNER *four years highly responsible product, display, and packaging design experience with manufacturer. BA degree (Carnegie Tech) in industrial design plus some college engineering. Age 29. Box ID-13,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

Help Wanted

HELEN HUTCHINS PERSONNEL AGENCY—*specialist industrial, architectural, Interior Design, Decorative Arts, Trades, Home Furnishings. Helen Hutchins' long association with a leading industrial design organization insures intelligent and individualized screening of all types of personnel for industrial designers. 767 Lexington Ave., New York 21. TE 8-3070. Interviews by appointment.*

MURIEL FEDER—ARCHITECTURAL AND DESIGN PERSONNEL AGENCY—*A personalized placement service for top level architects, designers, engineers, draftsmen, interior decorators, and home furnishing personnel. Selective contacts arranged in a confidential and professional manner. Interviews by appointment. 58 Park Ave., N. Y., MU 3-2523.*

INDUSTRIAL DESIGNER WANTED *with client relations and sales ability. He must have thorough experience in product development, willing to travel. Should be between 35 and 40. To work with top Industrial Design organization in New York. Opportunity for growth. Salary open. Box ID-11,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

Miscellaneous

INDUSTRIAL DESIGNER WITH B.A. DEGREE AND 18 YEARS OF VERSATILE EXPERIENCE *in all creative fields of product designing interested in free lance designing on royalty or retainer fee. Box ID-12,* INDUSTRIAL DESIGN, *18 E. 50th St., N. Y. 22.*

MODELS—*industrial—complete facilities for modelmaking in all materials. Executed to your specifications. Prompt delivery at reasonable prices.* ARNKURT ASSOCIATE ENGINEERS, *31 E. 27th St., LExington 2-4286.*

Index to Advertisers In This Issue

FOR YOUR CALENDAR

Through August 15. Designer-Craftsmen U.S.A. 1953, sponsored by the American Craftsmen's Educational Council, San Francisco Museum of Art, San Francisco, Calif.

Through August 22. Playground Sculpture Competition winners. Museum of Modern Art, New York, N. Y.

Through October 12. Japanese Exhibition House. Museum of Modern Art, New York, N. Y.

Through December 31. 100 selections from Good Design 1950-1954, and a survey of Good Design popular sellers prepared by *Retailing Daily*. Merchandise Mart, Chicago, Illinois.

August 17-Sept. 6. The Modern Movement in Italy: Architecture and Design. Museum of Modern Art, New York.

August 23-Sept. 3. A 2-week special summer program in the Automatic Control of Machine Tools will be offered by the Massachusetts Institute of Technology, Cambridge, Mass.

August 28-Nov. 15. Tenth Triennale, Milan, Italy.

August 30-Sept. 3. 63rd Annual Convention and Trade Show of the Photographers Association of America. Conrad Hilton Hotel, Chicago, Illinois. Photography as a tool of industry will be the theme of this affair.

Sept. 1-30. Design in Scandinavia. American Federation of Arts traveling exhibition. Cleveland Museum of Art, Cleveland, Ohio.

Sept. 8-10. American Society of Mechanical Engineers' Fall Meeting. Milwaukee, Wisconsin.

Sept. 9-19. Sixth Annual National Home Furnishings Show. 71st Regiment Armory, New York, N. Y.

Sept. 13-16. Society of Automotive Engineers' National Tractor Meeting and Production Forum. Hotel Schroeder, Milwaukee, Wisconsin.

Sept. 13-17. Illuminating Engineering Society's National Technical Conference. Chalfonte Haddon Hall Hotel, Atlantic City, N. J. Plans for this Conference include a Residence Lighting Forum, and sessions devoted to basic engineering information in the illumination field.

Sept. 19-Oct. 10. Chicagoland Home & Home Furnishings Festival. Sponsored by the Home & Home Furnishings Council of Chicago. Chicago, Illinois.

October 2. First Annual Seminar of the Southern New England Chapter of the Industrial Designers' Institute. Silvermine Guild, Norwalk, Conn.

Oct. 5-6. National Electronics 10th Annual Conference. Hotel Sherman, Chicago, Illinois.

Oct. 5-9. Society of Automotive Engineers' National Aeronautic Meeting, Aircraft Production Forum, and Aircraft Engineering Display. Hotel Statler, Los Angeles, Calif.

Oct. 14-17. Audiorama 1954. The Audio Fair, sponsored by the Audio Engineering Society. Hotel New Yorker, New York, N. Y.

Oct. 28-31. Society of Industrial Designers' Annual Meeting, Williamsburg, Virginia. SID's 10th Anniversary meeting will feature round-table discussions, and an exhibition of pictures of products from Holland and India. Conference theme will be Industrial Design—The Consumer's Voice in Management.

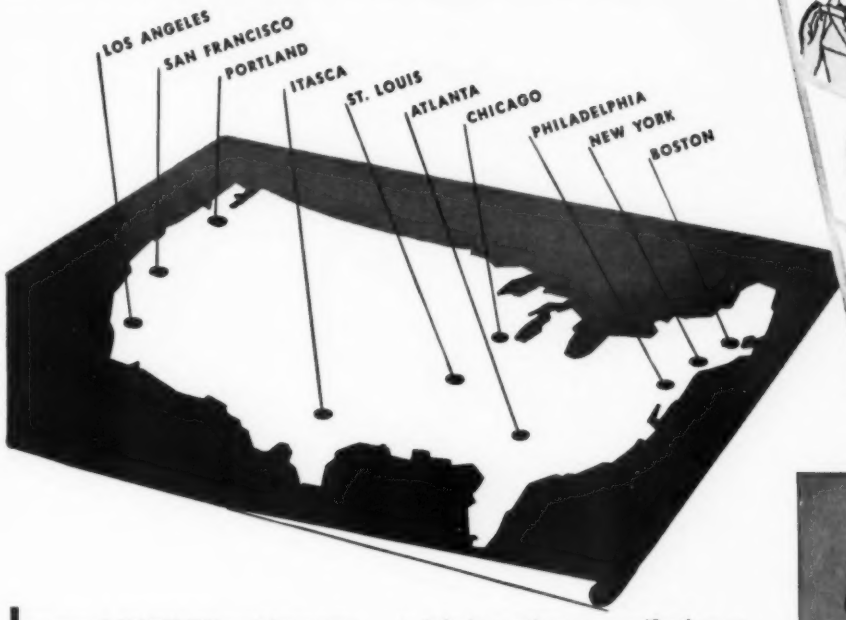
ADHESIVES FOR **PURE-PAK CONTAINERS**

— WITH THE NEW POURING SPOUT

ARE AVAILABLE THROUGH THE

NATIONWIDE ORGANIZATION OF

10 ARABOL PLANTS AND WAREHOUSES



Last year, 5,500,000,000 containers were made for use in Pure-Pak Equipped Dairies. This month, the Ex-Cell-O Corporation, producers of Pure-Pak Dairy Equipment, is introducing a *new* container with a built-in pouring spout. This has already been hailed as one of the most significant advances of recent years in an industry that has been growing steadily since 1940.

The Converters making Pure-Pak Containers and the Dairies using Pure-Pak Equipment, of necessity use only the finest adhesives . . . adhesives made to Ex-Cell-O's most exacting specifications. In 1953, 2,500 tons of adhesives were required to make and seal Pure-Pak containers. This figure should increase greatly in 1954.

The nationwide facilities of 10 Arabol plants and warehouses are fully geared to supply adhesives for the regular needs of both the container makers and the dairymen — to assure prompt delivery when and where adhesives are needed — to help in meeting new specifications as they arise.

Here is one of a hundred industries in which Arabol is privileged to serve the leaders. In 69 years of pioneering, more than 10,000 adhesives formulas have been developed in our five laboratories. Our experience includes adhesives for all types of packaging machinery — including the most modern. Yet we firmly believe that there is *only one* adhesives formula that can best fill your requirements in any particular application. And since the amount spent for adhesives can hardly exceed 3% of your total packaging costs, it follows that you can afford adhesives made to your own specifications.

We invite the opportunity to submit samples for you to test in your own plant — under your particular working conditions — for your specific requirements, whatever their nature. That is the one kind of testing that assures you of satisfactory results. Your inquiry to Dept. 14 will bring a prompt response.

Adhesives?

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THE ARABOL MFG. CO.

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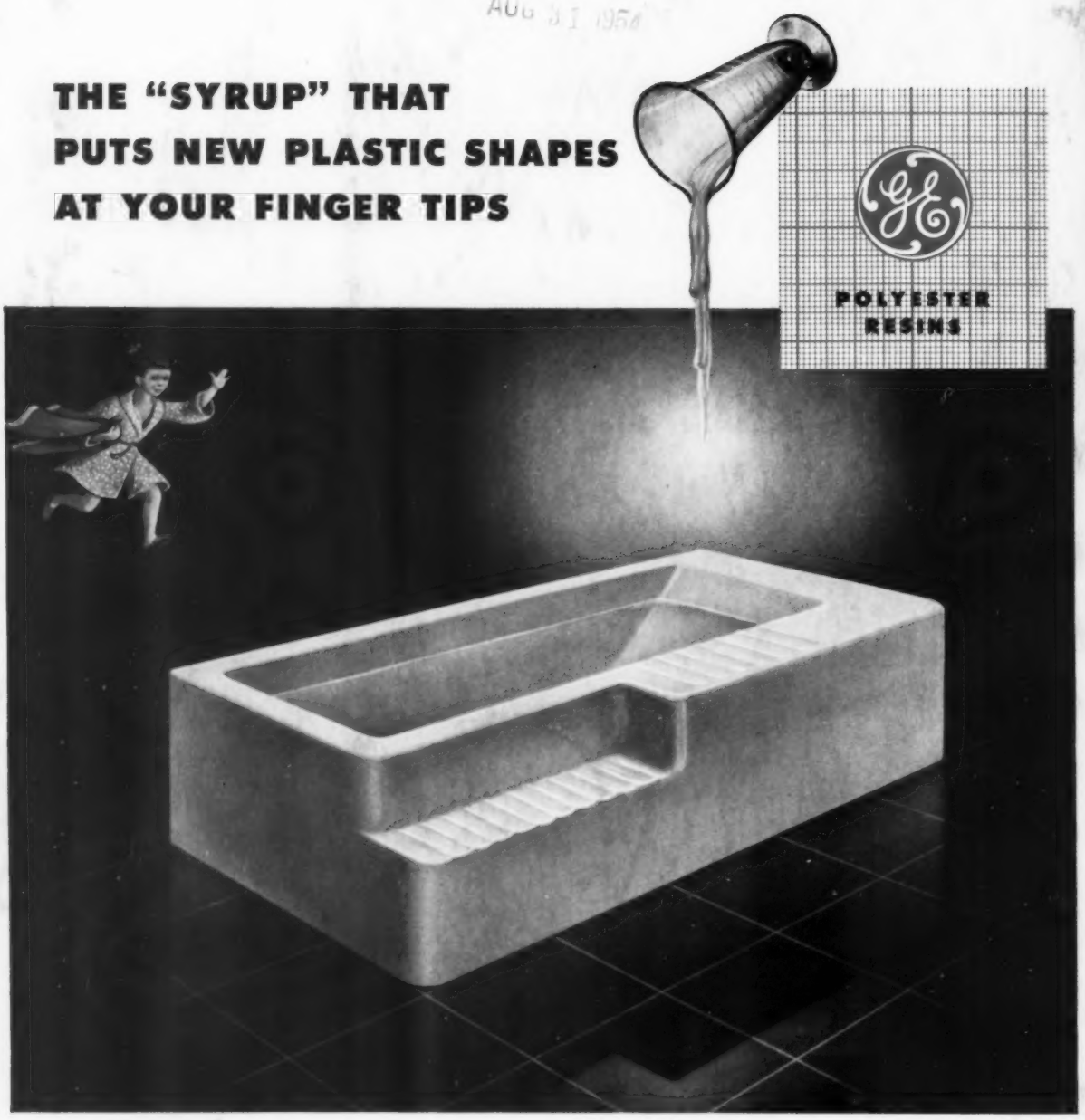
THE "SYRUP" THAT PUTS NEW PLASTIC SHAPES AT YOUR FINGER TIPS



Here you see one unusual example of what the "syrup," known as polyester resins, makes possible in design and production.

By combining G-E polyester resins with glass fiber or other reinforcing material, you can mold, simply and easily, large or small plastic shapes of your choosing.

For example, you can produce lightweight bathtubs that would be warm to the touch, colorful and pleasing to the eye, and resilient to falling objects . . . or, auto bodies and other housings that cannot dent like metal, that resist heat, cold and corrosion.

At low fabricating costs, you can build bathtubs or auto bodies, luggage or aircraft parts—just about anything you want. And, you can readily vary toughness and flexibility as you wish.

Consider for a moment where you might use G-E Polyester glass-plastics to improve a present product, or design a profitable new one.

★ ★ ★

For more data write for technical bulletin (CDC-238) to: *CHEMICAL DIVISION, General Electric Company, Sect. 419-3, Pittsfield, Mass.*

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