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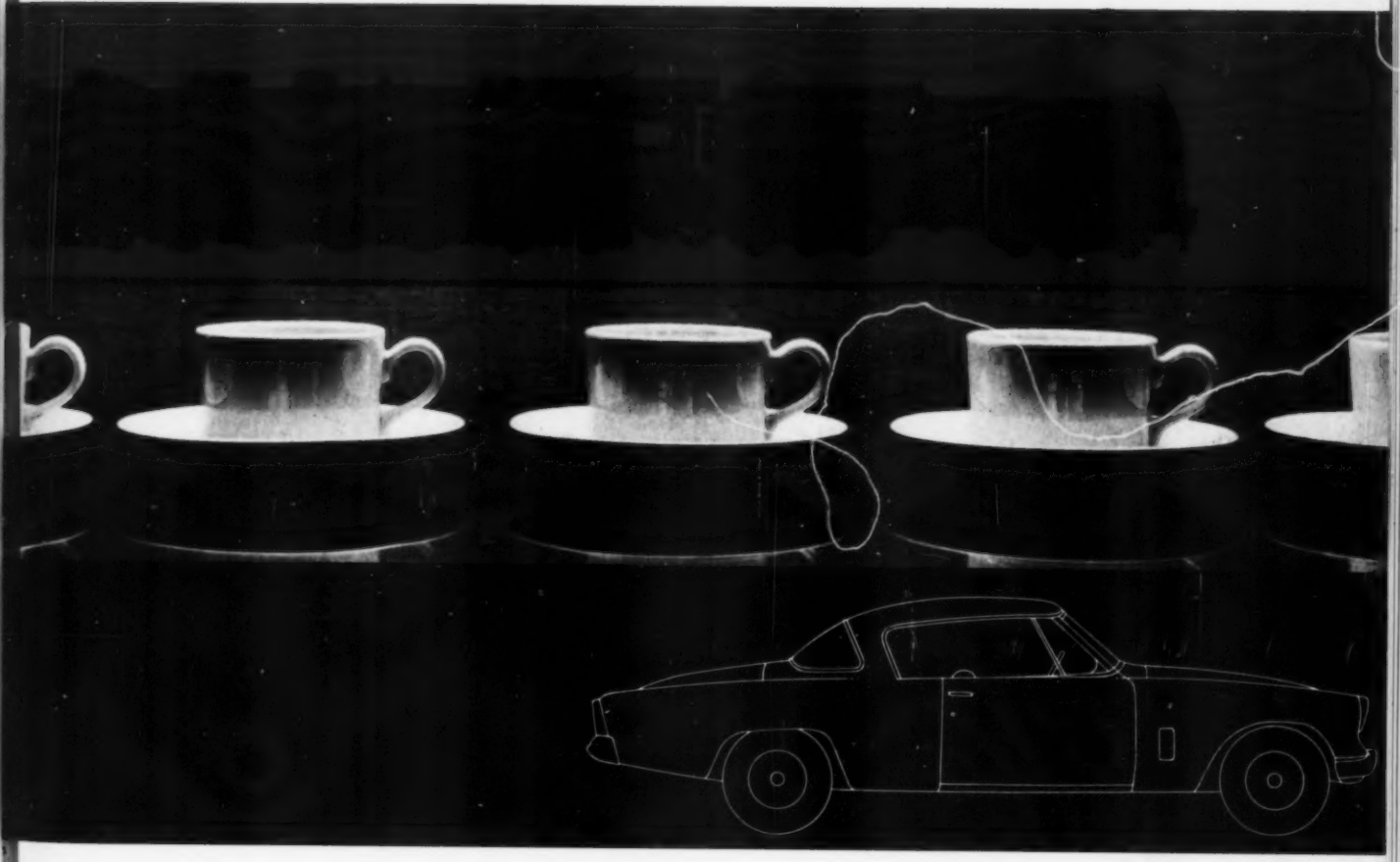
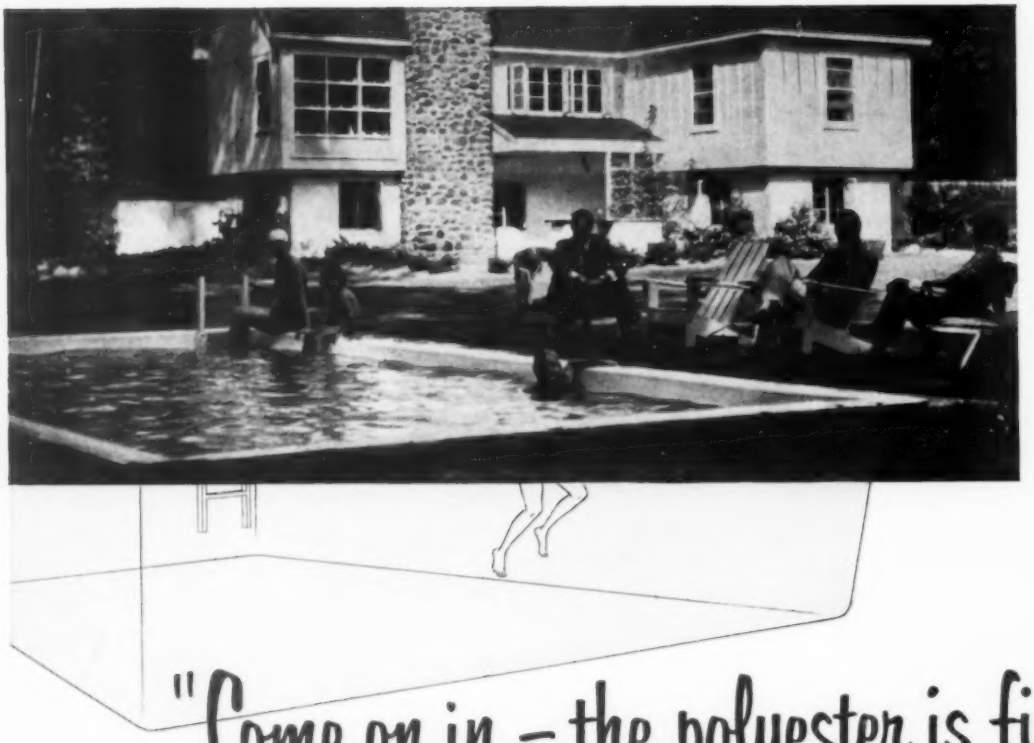


February 1954 **1** *two dollars a copy*



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Here is a suburban swimming pool made of glass cloth impregnated with polyester resin. It could be a contemporary chair . . . a corrugated translucent roof over a terrace . . . a storage tank for corrosive chemicals . . . a mannequin in a store window . . . an automobile body or an LCVP landing craft. For all these products and hundreds more are now being made of polyester resins reinforced with such fillers as glass cloth, glass mat, fabric or paper.

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PLASTICS

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VOLUME 1, NUMBER 1

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 FEBRUARY, 1954:

Contributors 8

Letters 10

News 14

Editorial 29

Power Tools: The Newest Appliance 30

The Studebaker Story *John W. Freeman* 38

Design: Means for Survival *Richard Neutra* 46

Five Photographs *Andreas Feininger* 51

What's So Special About Plastics? 57

Designs from Abroad 66

Who's Who in Distinguished Design *Robert Osborn and Thomas B. Hess* 68

Package from Scandinavia 72

Handles for Time 78

The Iron Horse *John Pile* 80

Bayer's Geo-graphics 94

Bartrev: A Company Design Program 98

Planned Expansion *George Nelson* 106

Tom Lamb the Handle Man 110

Design in the Company: Where, What, How? *Arthur N. BecVar* 114

Symbols as Identifiers *Ladislav Sutnar* 118

Raymor: 25 Years a Pioneer 124

Design Review 128

Invention 130

Major Appliances, 1954 132

Technics 138

Publisher's Postscript 152

Stock for paper containers is a material of magnificent proportions as it roller-coasts through the festoon dryers of a coating mill. Container Corporation of America photo, by Torkel Korling. ——→

PUBLISHER	*Charles E. Whitney*
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PUBLICATION OFFICES: Whitney Publications, Inc., 18 East 50th St., New York 22, N. Y. Charles E. Whitney, President and Treasurer; Jean McClellan Whitney, Vice-President; Alec E. Oakes, Vice-President; Robert E. Connolly, Secretary.

ADVERTISING OFFICES

New York	18 East 50th Street New York 22 Telephone PLaza 1-2626
Chicago	Archer A. King & Company 410 North Michigan Avenue Chicago 11, Illinois
Atlanta	Blanchard-Nichols-Osborn 75 8th Street North East Atlanta 5, Georgia
Los Angeles	The Maurice A. Kimball Co., Inc. 2550 Beverly Boulevard Los Angeles 57, California
San Francisco	The Maurice A. Kimball Co., Inc. 681 Market Street San Francisco 5, California

INDUSTRIAL DESIGN *is published bi-monthly by Whitney Publications, Inc., 18 East 50th Street, New York 22, N. Y. Subscription price* $9.00 *for one year (six issues),* $16.00 *for two years in the United States, U. S. Possessions, Canada and countries of the Pan-American Union; rates to all other countries,* $11.00 *for one year,* $20.00 *for two years. Price per copy,* $2.00. *Application is pending for acceptance under Section* 34.64 *P. L. & R.*

Publisher's Postscript 152

Contributors to this issue

George Nelson, equally at home with a 4-H and a blue pencil, has divided his talents with unusual success between design and editing. Trained as an architect, he was co-Managing Editor of the *Architectural Forum*, a contributor to *Fortune*, *Interiors*, and now INDUSTRIAL DESIGN. Concurrently he heads an organization doing product design, architecture, interiors and graphics which—like the affairs of the client mentioned herein—has an uncheckable tendency toward expansion.

John W. Freeman and Alexandre Georges, looking as apprehensive as a couple of dicks, were snapped in Europe while working on their *Sports Car Album* (Fawcett, 1953). As this picture and "The Studebaker Story" suggest, both are auto addicts; Georges, a pianist turned photographer, acquired the car bug while shooting the Museum of Modern Art's 1951 automobile show, on which Freeman, who has long had the bug, was a consultant. This mutual enthusiasm led to plans for the album, "because nothing existed on the subject."

Richard Neutra's pioneering in contemporary architecture has been in the humanistic vein since his early work on the West Coast, to which he came in 1923 from Vienna. The summation of a life's interest in people and populations, in projects ranging from open-air schools to tropical hospitals, is the book we have excerpted; it tackles the critical question, "Is human planning possible?"

Thomas B. Hess, intellectual anti-intellectual, is Managing Editor of *Art News* and author of *Abstract Painting: Background and American Phase* (Viking). Pressed for details, he gives, "Age 33, pilot (first-hand experience with industrial design), Democrat."

Robert C. Osborn was once described as "cartoonist with teeth," though on a good day in his Berkshire studio, Osborn's smile is undoubtedly the gentlest in the profession. He says his visual incisiveness was prefaced by a childhood full of drawing and ulcers, later modified by art study and a good deal of European travel.

Andreas Feininger, the photographer of many startling views of nature's depths and surfaces, including those on pages 52-56, describes himself as a frustrated scientist; by this he apparently means that, because he studied and practiced architecture and worked for some years as an architectural photographer prior to joining *Life*, he finds in the structural logic of natural things a subject of irresistible fascination.

John Pile, a Philadelphian, received his degree in architecture, worked with Donald Deskey Associates, designed furniture with Paul McCobb, and became one of George Nelson's associates in 1952. He teaches design at Pratt Institute, makes movies, paints and builds models—mostly of locomotives.

Arthur N. BecVar was thrice educated—first in fine arts, then industrial design, then engineering. He was associated with John Gordon Rideout and Revere Copper and Brass before joining General Electric in 1945, and is a member of the S.I.D.

Ladislav Sutnar, before coming to New York, was director of the State School of Graphic Arts in Prague. Now art director of Sweet's Catalog Service, he also designs advertising, illustrations, package and products, and teaches advanced advertising design at Pratt Institute. A prolific author, Sutnar has published three books on design since 1950.

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letters

Since our first announcement of plans for INDUSTRIAL DESIGN several months ago, some hundreds of designers and design executives have sent us their congratulations and suggestions. The limits of our printed page make it possible to publish only random samples from these letters.

Can't Be Underestimated

Sirs:
I have noted with great interest the announcement of your new magazine, INDUSTRIAL DESIGN. I have also been pleased to note that you are going to devote time and space to the technical aspects of consumer design development. More and more designers, such as myself, not only establish new appearance and better utility in a product, but also, from a consumer point of view, specify materials, finishes and performance as they occur in design.

I cannot underestimate the importance of this facet of design development, since *today's consumer buys on the basis of total visual impression.* This means that he not only likes the appearance of the product, but he is also pleased with its performance, its colors, its texture, and the material from which the product is made. Because this is now a vital part of consumer approval, the specific definition of materials to be used, colors to be chosen, and performance as the consumer understands performance, becomes a primary decision for the Industrial Designer.

Therefore, may I again congratulate you on your decision to recognize, in print, the full responsibility of the designer, as well as your desire to create a publication from which the designer can extract a balanced review of materials, processes and appearance as they apply to his services to his clients or his company.
Raymond Spilman, S.I.D.
New York, New York

Exclusively

Sirs:
There is need for a magazine devoted exclusively to Industrial Design.

Within the past quarter century, design has become an essential element of business, and an influence upon both the practical and esthetic aspects of today's life.

We welcome your new publication, INDUSTRIAL DESIGN, as a medium of benefit and interest to all engaged in and responsible for product planning.
J. O. Reinecke, S.I.D.
Reinecke and Associates
Chicago, Illinois

Excellent Guide

Sirs:
There has always been a very real need for an authoritative publication on industrial design; and if the high standards of INTERIORS are taken as a guide, the publication should be an excellent one.
Peter Müller-Munk
Peter Müller-Munk Associates
Pittsburgh, Pennsylvania

Strengthen the Bond

Sirs:
You are to be congratulated for the creation of INDUSTRIAL DESIGN. All I can do is re-echo the opinion of others, because its need has long existed. Aside from the need for a common medium for the interchange of ideas, and for keeping up in a creative field, INDUSTRIAL DESIGN will do much to strengthen the bond within the profession as well as elevate it to its proper status in our industrial society.

It should assist in the establishment of some order within the profession, so that ultimately Industrial Designers can be recognized as a professional group just as solid as the doctors and lawyers.
J. E. Moberg, Designer
Robeson Cutlery Co., Inc.
Perry, New York

Executives' Must

Sirs:
. . . Good luck! I'm sure this magazine will be on the "must" list of all designers and executives.
Alfons Bach
Ridgeway Center
Stamford, Conn.

Speaks for Many

Sirs:
As chairman of the Chicago Chapter of the Industrial Designers' Institute and head of my design studio I believe I can speak for many active designers when I say that I think this publication can be the biggest single asset to our profession and the manufacturer in need of design service since the inception of the industrial designer.
Joseph R. Mango, I.D.I.
Banka Mango Design
Chicago, Illinois

Joining Rush

Sirs:
Put us down as charter subscribers. We're enclosing payment for what we're sure will be an outstanding publication. We also want to join in what we feel certain to be "the rush" to offer our confidence and congratulations on taking this much-needed step forward in the design field. . . .
Read Viemeister,
Budd Steinhilber
Vie Design Studios
Yellow Springs, Ohio

Many Facets

Sirs:
We eagerly await the first issue for we feel there is a great need in the industry for a single source of information touching upon the many facets of basic design.
Tek Osborn, Lea Tek
Lake Zurich, Illinois

Appreciative

Sirs:
. . . I am sure that all of us in the Industrial Design field will appreciate this indication that we are gradually coming of age. I want to add that I can think of no publisher better qualified to produce a magazine on this subject. You have proven that through the high quality and standards of INTERIORS over a long period of years.
Robert L. Gruen, I.D.I.
Robert Gruen Associates
New York, N. Y.

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Letters

Insistent

Sirs:
Our very best wishes for the success of your new publication, INDUSTRIAL DESIGN. An early announcement has apparently come to the attention of our design engineers and they are insisting that we get our order in early. . . .
F. N. McEwen
Smith, Kline & French Laboratories
Philadelphia, Pennsylvania

Well-Wishers

Sirs:
We wish you well on your forthcoming new publication, INDUSTRIAL DESIGN. We believe you will be filling a definite need in the field of design by publishing such a magazine.
Charles F. Anderson
Project Director
Dickens, Incorporated
Chicago, Illinois

Overdue

Sirs:
We heartily welcome the publishing of INDUSTRIAL DESIGN; it is long overdue.
Jim Teague
Painter, Teague & Petertil
Chicago, Illinois

Far-flung

Sirs:
. . . As I understand it, this magazine will encompass all phases of design-in-industry, and include anything from an automobile to a package for a tube of toothpaste. It would thus serve to provide a bird's-eye view, as well as a microscopic closeup, of many far-flung and diverse developments which have a common link in terms of good design. There has long been a need for such a periodical which would not only stimulate designers to greater efforts, but also serve to enlighten the manufacturing and distributive trades so that they will be more sympathetically aligned with the general directions and impulses of contemporary design. . . .
Alfred Auerbach
Alfred Auerbach Associates
New York, N. Y.

Difficult

Sirs:
I feel this new magazine you are contemplating is greatly needed and . . . should do a great deal toward further stimulating the consideration and acceptance of good design in all phases of industrial activity. . . . In every-day experience, I find more and more executives from the president on down through the salesmen of different types of businesses are becoming increasingly conscious of the need for designing and styling in everything that is to be sold today. It is difficult for the designer to continue this selling job to management, and it is my opinion that if this effort on the part of the designer were supplemented with a publication such as you propose, it would be a very fine thing for the whole industry.
James Birnie, General Director
Styling and Design
Reynolds Metals Company
Richmond, Virginia

Chartered

Sirs:
. . . Please put us down as a charter subscriber.
A. M. Fekula
Vice President, Styling
The Gruen Watch Company
Cincinnati, Ohio

Completely

Sirs:
. . . A magazine covering the field of industrial design as well and completely as INTERIORS covers its related field would be most welcome.
James L. Hvale, I.D.I.
Ekco Products Company
Chicago, Illinois

Confirmed

Sirs:
. . . I am happy that such a publication shall be undertaken by an organization such as yours. The success of INTERIORS confirms that you are most surely capable of producing a publication of the type and quality I think is badly needed in the United States.
William A. Rooney, Advertising Manager
Organic Chemicals Division
Monsanto Chemical Company
St. Louis, Missouri

Marked Service

Sirs:
. . . I have long felt that none of the existing magazines spoke specifically for the field, although a vast number touch upon the subject lightly.

Maybe it is the fault of the industrial design profession, but what is so obvious to you and to me apparently has not reached the business executives of today. Specifically, what does an industrial design organization do, why should a company employ outside design consultation if it already maintains a design and research staff of its own, how does industrial design serve America's companies beyond the point of an attractive appearance for the packaging of a product, or for that matter, the product itself, and how can a company assure itself of the maximum return for each dollar spent on outside design consultation?

Though all these questions are easily answered by a bona fide design firm, it is appalling how many businessmen in high positions do not understand the true value that the industrial design profession offers them.

In my opinion, here is a marked iob for your new publication. . .
Peter Schladermundt
Nowland & Schladermundt
New York, N. Y.

Rewarding Experience

Sirs:
The profession of industrial design is certainly important enough to warrant considerable coverage. . . . Please be assured that I shall look forward to seeing the first issue of the new publication and I am sure that if it is anything remotely like INTERIORS it should be a rewarding experience.
W. B. Petzold, S. I. D.
Supervisor, Industrial Design
General Electric Company
Chemical Division
Coshocton, Ohio

Certainly

Sirs:
You can certainly put us down for a subscription to INDUSTRIAL DESIGN. There was a real need for such a publication to serve our professional group. . . . Your new publication can be of incalculable help to the designer in keeping abreast of important developments in the field. We look forward with great interest to the first issue.
Ben Koodin
Koodin-Lapow Associates
New York, N. Y.

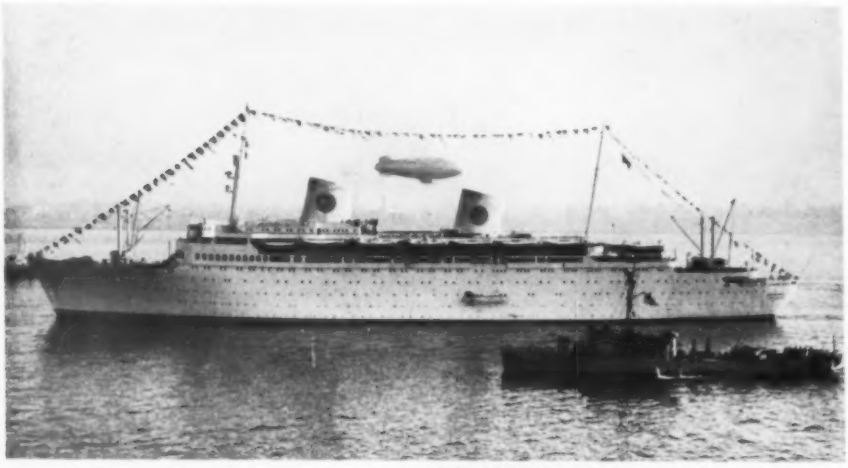
Absolutely

Sirs:
As a practicing designer I happily forwarded my personal subscription to you sometime ago. As a teacher of industrial design I wish also to tell you how encouraged I am that your organization will publish INDUSTRIAL DESIGN. It will be of inestimable benefit to industrial design education I am absolutely confident. . . .
James Shipley, I.D.I.
Professor in Charge of
Industrial Design
College of Fine and Applied Arts
University of Illinois
Urbana, Illinois

JAMES AMSTER . . . noted furniture and fabric designer. Design and color consultant for Swedish American Line's new "Kungsholm," Mr. Amster recently developed a new line of contemporary Gustavian furniture. His latest achievement is the complete renovation of the Waldorf-Astoria's famed Peacock Alley, which heightens his reputation for exploiting natural balance of textures and colors.

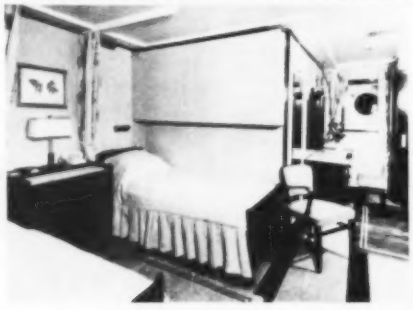
news

New Queen of the Swedish-American Line, M. S. Kungsholm is welcomed to New York.



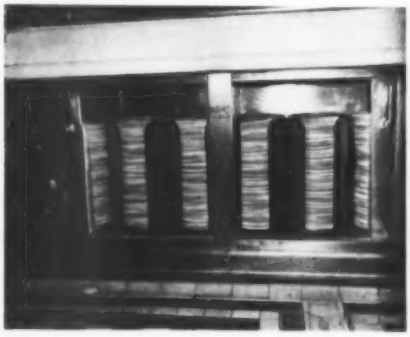
M. S. Kungsholm: A Lived-in Feeling

Possibly the only ship in the world on which tourist class is as good as or better than first, the new Swedish passenger flagship Kungsholm opened her gangways one rainy night this winter to the New York press. Armed with 2 lbs. of literature, and primed with excellent champagne and smorgasbord, we wandered the ship from stem to stern, were introduced to courtly Swedish-American Line officials, were solicited by kindly stewards who seemed genuinely interested, admired the installations, and wished *we* could go somewhere. "The good taste, comfort and pleasant lived-in feeling of an old distinguished private club . . . restrained luxury . . . a thing of beauty down to the smallest detail." We peered at the smallest detail we could find and it was true: the grain in the soft-colored sand-blasted oak paneling



Believe it or not, this is Tourist class.

Drying dishes move on stainless steel conveyor belt.



of the First-Class Smoking, finely fluted in alternating vertical bands.

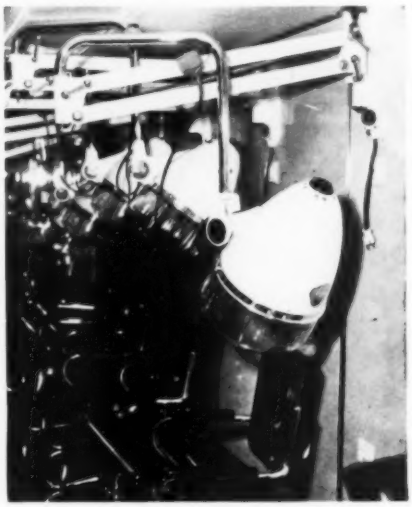
Passing on to Main Tourist-Lounge—large, airy, and widened by steel-framed picture window walls to a vista of leafy verandah—we noted ingenious hiding of air-conditioning drums behind upcurved dark ash lintel, depressing quantity of dark-framed yellow and green miniature wing chairs. Quantity of original sculpture and other art works was impressive.

Our attention called to specially designed ear-shaped door pulls, we pushed and found ourselves in stairhall facing First Class Drawing Room. Deciding latter was Colonial Williamsburg at Sea, tripped (literally—treads too short) down stairs to dining rooms. In silence we admired light-painted Gustavian (Swedish Neo-Classic) decor, convertibility of two rooms into one for one-class cruise. Slipped tentatively into kitchen.

Here, perfectly happy amid stainless steel, all-electric equipment, we saw aesthetic drums for soup, conveyor belt dish washer - drier - storage, impressive chef's control cabin like a stainless steel kiosk. Chef found eating steak; he accepted compliments. Sighing, we found our way out, glimpsing rather small auditorium forward (resolved never to enter without Dramamine), and mounted again to main deck, repeating experience with stair-treads.

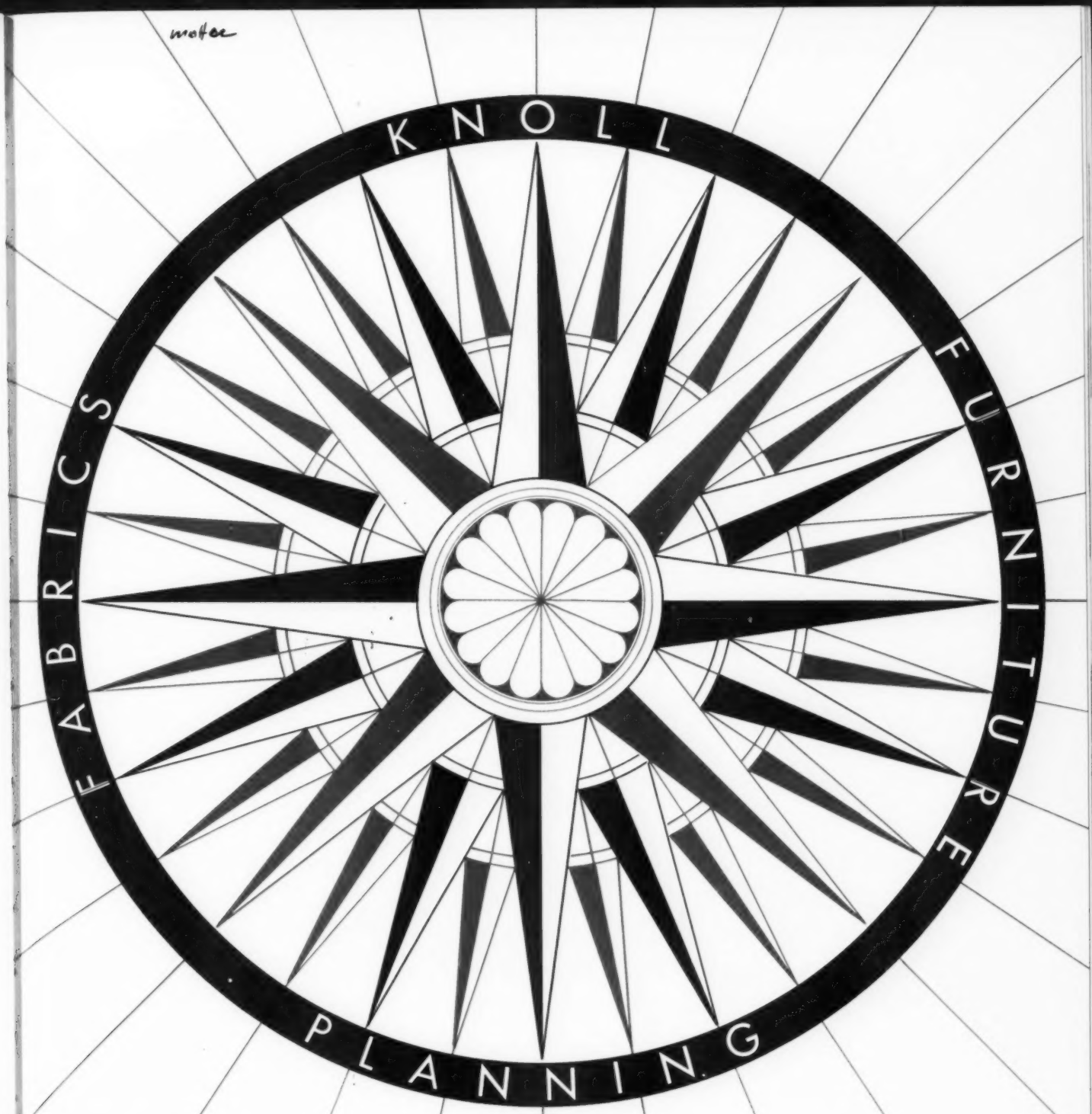
Here was the best argument for the Kungsholm: palatial tourist cabins, each with porthole, w.c., telephone, air-conditioning, pullman upper berths and at least a shower. Overwhelmed to hear that even crew all have portholes, we straggled back to upper decks for a last reconnoiter. Quickly toured sports deck, flowery-chintz and wicker verandahs (wincing slightly at lived-in quality), outdoor shelterable dance floor, and pool. Exhausted, left ship at

Hair driers (below) are the world's first noiseless ones; by Wella, Germany.



last with warm feeling for Swedish-American Line, Kungsholm, Swedes in general.

On the subway we read that ship was designed in Sweden, built in Holland, fitted out in Gothenburg, took six years to complete. Also gross tonnage 22,071, length 600 feet, passenger capacity 802, chef specially trained at Maxim's, and dog kennels equipped with reading lamp. Greatly relieved at this last, we stopped wishing for an unbroken four-times-around-is-a-mile promenade deck and rebuked our nostalgia for the grandiose, endearing, unlived-in bad taste of the *Normandie*.



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At left, the Schweppshire lads, Lewitt (l.) and Him, with their Festival Clock.

Below, a Lewitt-Him "chairman" stands cheerful guard at the Utrecht Textile Fair.

Lewitt-Him: Down with a Chuckle

Two pens that draw as one, Jan Lewitt and George Him, cooperating under the name Lewitt-Him, are a unique British design team responsible for such whimsy as the "Schweppshire" advertising campaign and the incredible satire of the performing clock designed for the Festival of Britain. Marking the Polish-born partners' entry into the U. S. design scene, a recent exhibition of their work at New York's Associated American Artists Gallery showed posters for several European countries—government and commercial—designs for pharmaceutical publicity, advertising campaigns and other designs, as well as factory murals, re-packaging programs, book and magazine designs, exhibitions and displays. "The chocolate coating that makes the real message go down" made British austerity go down with a chuckle with the "Vegetabull" and "If You Can't Grow Fingers Grow Careful." It created the "Chairmen" for the "AKU" (Dutch Rayon and Nylon) exhibit at last year's Utrecht Textile Fair because "exhibits always look so dreary when there's no one there." The belief that "the common man is not so common" and that "people when properly educated will take the plunge on good things" (hear, hear!) will soon be tested in this country: see the coating on *Fortune*, January 1954; and there is a rumor that a certain business machines firm may be chocolate-coated in the near future.

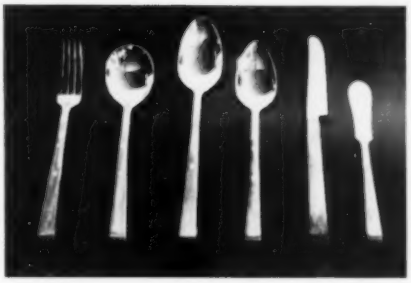
Lewitt-Him:
Poster for General Stampers Ltd., 1943.

New Name for NIDC

In view of its extended activities and the more permanent nature of its functions, Canada's National Industrial Design Committee, now five years old, has been authorized to become the National Industrial Design Council, with headquarters in the Design Center, Ottawa. Retaining its link with the National Gallery of Canada, through which it receives its principal funds to promote industrial design in Canada, the NIDC also receives support from industrial groups and manufacturers. The Council sponsors yearly Design Awards to Canadian-manufactured products, of either Canadian or foreign design, and maintains a Design Index of accepted entries. Beside publicizing and promoting the sale of Design Award items, among other activities the NIDC provides scholarships for the study of advanced industrial design for graduate students in architecture and engineering.

Pratt: Penny to a Dollar

Taste, goes the old saw, is not a matter of money. Neither is good design. This was proved again recently by second-year Interior Design students at Pratt Institute, Brooklyn, New York, with a show of *Good Design: Penny to a Dollar*. The problem posed to the students: a dual one, to find well-designed household objects costing under a dollar, and to arrange them in a well thought-out exhibition. Says Eleanor Pepper, Department Chairman, "Students are trained to understand display as a factor in design, and not to substitute surface decoration for fundamental solutions to design problems." The means: ingenuity and a $50 maximum. Time: two weeks. Result: a modest yet fresh selection of over 200 attractive and sometimes surprising objects, from a penny brass screw to a heavy, swelling stemless brandy-snifter (89c), orange-slice place mats ($1.00) and a bright yellow dustpan (29c). Tastefully and ingeniously installed, a system of black-painted wood struts supporting removable board shelves, beaverboard, and wire mesh free panels, in a scheme of yellow, orange, black and white, made the most of limited space and funds (final display cost: $35) for an exhibition which paid tribute not only to students' ingenuity and to their instructors, Jeannette Osborn and Arnold Friedman, but to the growing availability of well-designed objects at even bargain basement prices.



Ingenuity at Pratt: students spent only $35 *on installation (top).*
Prices on the stainless steel and pressed-wood cutlery average 90 *cents.*

Yale Design Center

A three-dimensional ceiling concept and "pogostick" panels are features of Yale University's new Art Gallery and Design Center, formally dedicated on November 5, 1953. Designed by Louis I. Kahn and Douglas Orr, architects, and built by the George B. H. Macomber Company, the new four-storey structure will serve as museum and classrooms for Yale's art, architecture, city planning and graphic arts departments. (See Lettering and Architecture conference on the next page.)

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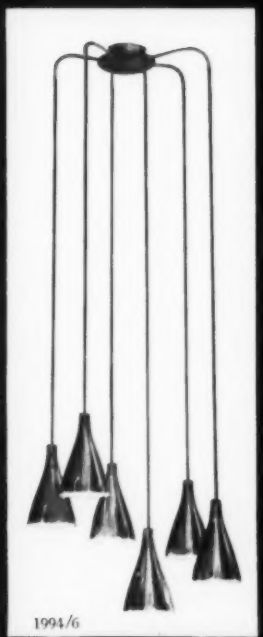
1994/6


A 1984

a few representative custom installations:

United Nations, New York
Neiman-Marcus, Dallas, Texas
Pittsburgh Plate Glass, Pittsburgh, Pa.
House Beautiful Pacesetter Houses, 1953 and 1954
Conrad Hilton Hotel, Chicago, Ill.
Mayo Clinic, Rochester, N. Y.
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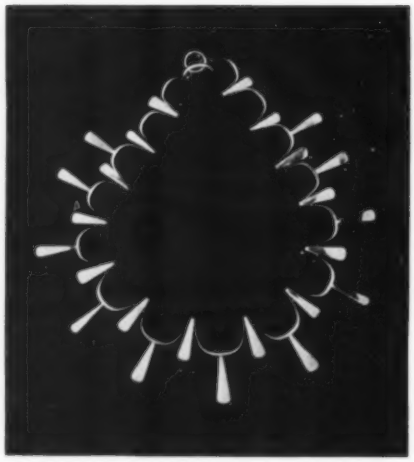
Designer-Craftsmen U. S. A.

Original forms, new uses of materials are products of the human mind. Nowhere is the human mind more completely alive than in the process of creation, and when it is allied with the human hand it gives fullest expression to man's creative urge. In the case of the craftsman, the result is more modest, perhaps, than the sculptures of Michelangelo or the canvases of Titian, but it is no less satisfying. Working with his hands, the designer-craftsman is an independent creator, and knows intimately the problems, qualities and possibilities of the materials with which he works, often arriving at subtle, humanized solutions of which the machine would be incapable. Designs so arrived at can be of great value to industry.

$500 prize: table by Loren Manbeck, Massachusetts (below); oak top, walnut legs.

Above: lounge chair by Ronald Mathies, Washington, $25 award; iron and cotton.

The American Craftsmen's Educational Council, with the cooperation of museums including the Brooklyn Museum (where it was first shown), the Art Institute of Chicago (March 15-April 26) and the San Francisco Museum of Art (where it will be over the summer), has organized an exhibition of some 243 examples of work by native craftsmen who competed nationally for acceptance in the show and for $6,000 in cash prizes offered by individuals and business firms. Classifications and prizes in the show cover ceramics, textiles, wood, metals and leather; among prize donors are Towle Silversmiths, Hollis Baker, Steuben, Handy and Harman, F. Schumacher & Co., George Jensen, Inc., Mark Cross and the Kittinger Company.



Forged-gold necklace by John Paul Miller, Ohio; in the Designer-Craftsmen show.

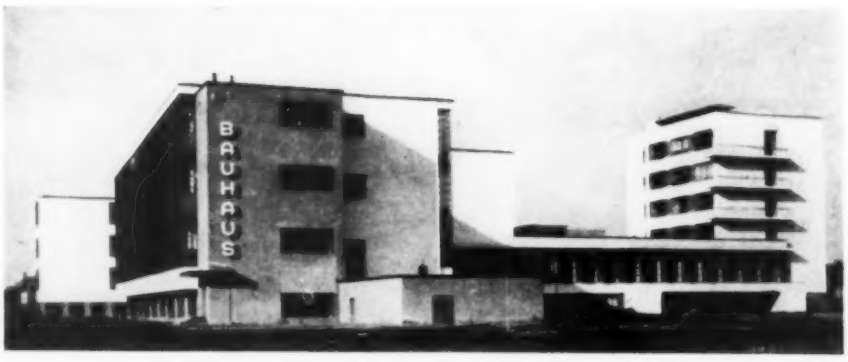
The final selection jury, meeting in Brooklyn, had the assistance of technical advisors in the various fields in choosing objects which combined "technical excellence and beauty of design." The result: a conscientious national cross-section of a tradition surprisingly vital in this industrial age.

Architects and Alphabets

Look uptown on Fifth Avenue at 53rd Street in New York, and you face the calligrapher's nightmare shown below—everything from Postbox Bold Italic to Trashcan Expanded. Look West and you see the "chop suey" sign which trails down the Museum of Modern Art and is anything but easy to read.

To hash out this matter of lettering in our landscape, how and by whom it should be better done, was the aim of some 90 architects, graphic designers and Yale art students who assembled on November 20 at the new Yale Fine Arts Center. The speakers of the day tried, by focusing their sights on the slim end of a serif, to point out some solutions to the bigger problem: Alvin Lustig, reviewing prevailing attitudes in lettering, defended the constructed letter for contemporary use because its organizing principles are similar to those of modern architecture; Henry-Russell Hitchcock gave some historical perspective to the architecture-lettering relationship, especially with his remark about the vitality of the 19th century; John Howard Benson, calligrapher & typographer, added a clear statement of the value of the calligraphic discipline in terms of tools and materials, but concluded that only constructed lettering makes sense today. After all this and a recess for dinner, architect Eero Saarinen and designer Gyorgy Kepes agreed that our man-made landscape, 53rd Street and all the rest, is indeed a mess—which is perhaps where the conference should have gotten down to cases. At any rate, a major problem got some attention, and there will be a further chance for everyone to toss it around at a Museum of Modern Art symposium on March 31.

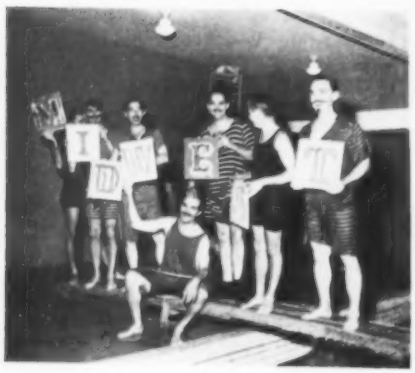
Traditional milestone exemplies clarity and vigor which modern lettering often loses.



Sign on the Bauhaus, below, is one of few examples of successful vertical lettering.

S. I. D. Fun and Games

On a balmy mid-October weekend at a rambling country hotel in Bedford Springs, Pa., members of the Society of Industrial Designers turned out for their annual 3-day conference. Serious business included inauguration of a new president, panel discussions, addresses by designer George Nelson, Captain A. F. Van Dyck, and pollster Dilman Smith. On levity's side conferees competed over informally abstract sculpture (winner: Henry Dreyfuss), bet money on designer-dubbed horses (winner: Henry Dreyfuss), and took a midnight plunge.



Robert H. Hose (with the carnation), new S.I.D. president, is congratulated by outgoing president Jean O. Reinecke (top). The suave gentlemen below are, l. to r., William Winterbottom, Bill Goldsmith, Reinecke, Dave Chapman (seated), Donald Dailey, Theodore Koeber, and an unidentified Van Dyck-bearded industrial designer.

Engineering Research Contractors

A new Engineering Research Institute at Tulane University has been formed to serve the needs of industry in the Louisiana-Mississippi area. Under Dr. Raymond V. Bailey, head of the University's department of chemical engineering, about 20 faculty members of the school of engineering, with other consultant specialists, will contract with industrial firms for specific research projects involving practical problems in such fields as fluid flow, electronics, pre-stressed concrete and illumination. The Institute will also furnish research fellowships for advanced students.

Shaeffer's New Venture

The Shaeffer Pen Company has embarked on a new venture with the opening of a $1,500,000 tool and die plant at Fort Madison, Iowa. Housed in a new, specially-designed one-story air-conditioned, humidity-controlled building, the new plant will produce tools, dies, fixtures and special machines for other companies throughout the nation as well as for the pen company. A. A. Zuber, general manager of the new division and formerly vice president and a director of the Carver Pump Co., Muscatine, Iowa, reports that in addition to obtaining the finest equipment, enabling them to handle special equipment for any industry, they "have gone to great lengths to obtain some of the finest tool and die makers available to assure top quality work for our customers." The plant, one of the newest and most complete in the Midwest, is centrally located to provide fast service to customers, who already include Bendix Aviation, Ford Motor Co. and General Electric. A fifty per cent additional space allowance in the original construction plans will provide for expected expansion in the next few years; but provision has also been made for recession: in the event of slack times, Shaeffer will "utilize the skill of the men in our own experimental and development work." The new plant was designed by Keene and Simpson, Kansas City, Mo.; Universal Construction Co., Kansas City, contractors.

New Shaeffer plant at Fort Madison can produce tools and dies for any industry.

Vinyl Quality Program

An educational program under the sponsorship of the Society of the Plastics Industry will promote to retailers, fabricators and processors a new Standard and Seal of Quality for Vinyl Plastic Film. This educational program, carried out by a group of company representatives in the field under the name of the SPI Vinyl Standards Educational Committee, will be a prominent part of the two-day Fifth Film, Sheeting and Coated Fabrics Division of the S.P.I. conference to be held in the early spring, announced Bernard Mittman, Chairman of the Vinyl Processors Administrative Committee of the S.P.I. Fourteen companies in the plastics industry have already joined the program.

Nike to Arens to Mennen

A bronze Winged Victory, personification of the Irwin D. Wolf Award for outstanding merit in package design, was presented as top honor in the recent Package Designers Council 1953 Awards Competition to the Mennen Company, for its newly designed line of men's toiletries. William Mennen, Jr., president of the company, received the trophy from Egmont Arens, chairman of the Council awards committee; Francis E. Blod of Design Associates Ltd., designer of the packages, received the prized Wolf Award Certificate. Other awards in eight categories covered the package design field.

Manufacturer William Mennen, Jr. (r.), accepts the Nike from Egmont Arens (top). Below, the award-winning packages.

Alcoa Pistons

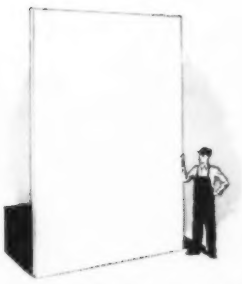
Design information on aluminum pistons, developed in over 35 years of exhaustive research by Alcoa's Development Division and Aluminum Research Laboratories, was presented at a recent symposium of top automotive design engineers at the company's Cleveland Works. All types, aspects and phases of aluminum piston design were discussed by Alcoa design, development and research engineers; the all-aluminum double trans-slot piston was demonstrated as the optimum design to meet most automotive requirements.

Honeywell Short Course

A 14-weeks comprehensive course in industrial instruments maintenance and repair is again offered by Minneapolis-Honeywell Regulator Company's Philadelphia train-

100 uses already developed

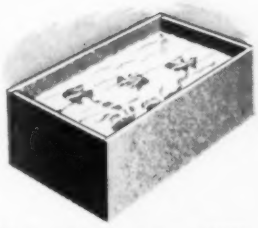
Several hundred still to be found



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

This material has **STRENGTH** . . . permanently crackproof, an 8′ x 14′ sheet is easily jacked through a 6′ door. (Used as sheathing, no corner bracing is required.)

This material has top **INSULATING EFFICIENCY** . . . an ice bucket, made with this material, keeps ice cubes for 36 hours.



This material has maximum **MOISTURE RESISTANCE** . . . solely for demonstration, five pieces, simply nailed together, make a useable vase for flowers — or a goldfish pool.

This material has **FLEXIBILITY IN USE** . . . bent on an 18″ radius, it holds its new form with no loss of the original strength.

This material has **NO GRAIN** . . . its fine, homogeneous surface takes any paint or stain, holds a coat of paper, leather or any other laminate glue can hold.

This material has remarkable **SOUND-DEADENING QUALITIES** . . . demonstrated by its frequent use as underlayment for linoleum or wall-to-wall carpeting—in leading hotels throughout the country.

This material works **EASIER THAN WOOD** . . . its nail-holding properties (by the pull-through test) are among the highest.

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5/8″ **HOMASOTE TYPE U** — more resilient. In 4′ x 4′ size.

21/32″ **HOMASOTE TYPE RD**—strong, tough, weatherproof. Single-ply in sizes up to 8′ x 14′; 2- or 3-ply in 2′ x 8′ size, V-grooved. Strong—live load 75 lbs. with 2-ply 32″ o.c.; 3-ply 48″ o.c.

15/32″ **STRIATED HOMASOTE PANELS** — offering endless variety of pattern, depending upon how cut and positioned. Panels are 8′ in length; 16″, 32″ and 48″ in width.

15/32″ **WOOD-TEXTURED HOMASOTE PANELS** — molded from actual board, retaining everything but the splinters. (Dimensions same as for Striated Panels.)

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SEE OUR CATALOG IN SWEET'S

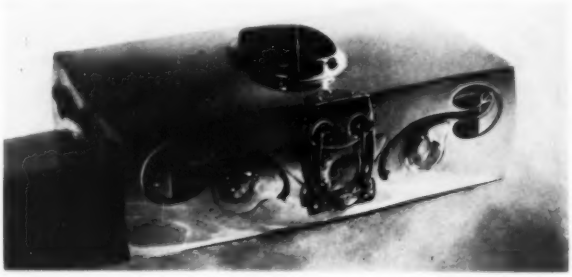
HOMASOTE COMPANY

TRENTON 3, NEW JERSEY

ing school, from Feb. 15 to May 21, 1954. Now in their eighteenth year, the company's increasingly popular customer courses also include a five-week session from April 26, and shorter sessions from Feb. 15, March 8, April 5 and June 7, 1954.

Design Landmarks on View

The Barcelona Chair, a De Stijl lamp, the Endless House, landmarks in the history of contemporary industrial design, all acquired by the Museum of Modern Art (New York's) Design Collection since 1946, are among other unique objects on view at the Museum until February 22, 1954. Designed by Philip Johnson, Architecture and Design department director, the exhibition is the first of its kind, and the setting does it proud. Also for the first time, white snowy-textured plastic panels, built up like large cinder blocks, line two galleries to form a dazzlingly brilliant background for elegant arrangements of equally elegant objects. Of interest also is the dating of the objects: from a Thonet wood chair, 1870, and a delicious *art nouveau* sterling and inlaid jewel box, 1900, through two graceful Lobmeyr crystal stem glasses, 1920, to a 1951 page from a Knoll Associates catalogue.



No rigid lines break the sinuous curves of this art nouveau *sterling silver jewel box, decorated with mother-of-pearl, enamel and turquoise. Designed in* 1900 *by Charles Knox; made for Liberty and Company (England), William Craythorne, craftsman; at Museum of Modern Art, N. Y.*

J. O. B.

Prepared and distributed monthly by the Institute of Contemporary Art, Boston, a Job Opportunity Bulletin lists openings with maufacturers and individual artists and designers desiring employment, for their mutual benefit. All communications regarding this service should be addressed to: Editor, J.O.B., Institute of Contemporary Art, 138 Newbury Street, Boston 16, Mass.

UDEC to Wayne

Big business firms in two midwestern areas have banded together to provide their respective universities with electronic computers which will serve not only those universities' training programs but also the companies and industries which donated them. The University of Wisconsin is in the process of installing an alternating current network calculator built by Westinghouse and donated by the Wisconsin Utilities Association, while the joint efforts of the Burroughs Corporation (which designed and built it), General Motors, Ford, and other Detroit firms, have resulted in the installation of a giant new electronic computer, known as "UDEC" (unitized digital electronic computer), in Wayne University's computation laboratory.—*m.s.*

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Illustrated: *New Showrooms and Offices of D. Lisner, Inc., designed by Tom Lee, Ltd.*


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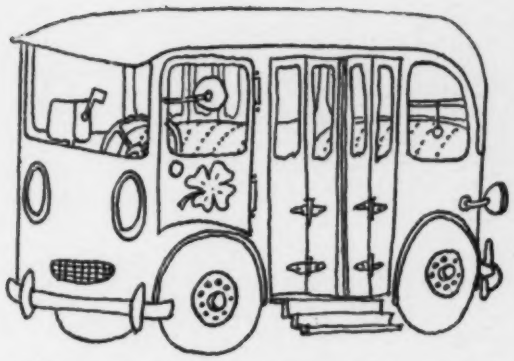


The trouble with taxis...

We start the New Year, and the new magazine, with a quotation from another publication. Roused by New York City's unexpected blessing of an abbreviated, space-saving taxi, a recent issue of the *New Yorker* opened with the thought that a taxi is, after all, a delivery vehicle on a pleasure car's chassis; a short taxi retains most of the old ills and adds the discomfort of cramping. The trouble with taxis, the *New Yorker* spokesman proffered, as with most human affairs today, is design. Now a properly designed taxi should have . . . and he proceeded to write an excellent program for the redesign of the taxi. Literally transcribed, the plaintiff's ideal cab would resemble the sketch: short, high, roomy—not so much a limousine as a delivery truck.

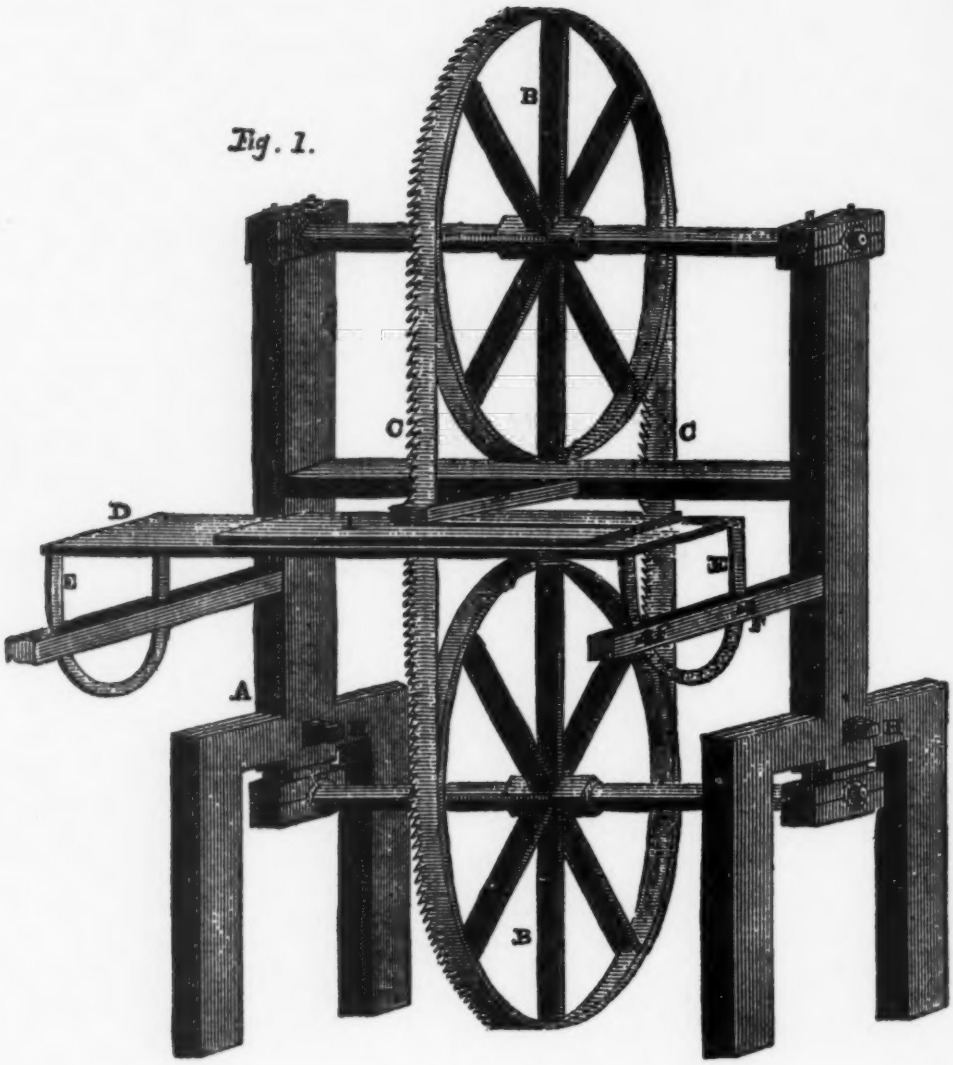
In the course of this outburst, the *New Yorker* hinted at a pretty good definition of an industrial designer: He's not so much a stylist—a man who slaps jumbo grilles and speedlines on another fellow's chassis—as a skilled and critical taxi-rider, professionally fitted to give a roadworthy chassis a body worthy of human occupation.

We break with the *New Yorker* on just one point: They say it is for citizens and city fathers to arise and demand a sensible cab. As far as we're concerned, it is up to the designers, the professional partisans of the taxi-riding (and Jeep-riding) public, to do the arising (*not* while the vehicle is in motion, please). And the revolt should originate, not in a literary publication, but in a professional magazine dedicated to the efforts of designer and industry to serve the public's needs.

Needless to say, INDUSTRIAL DESIGN hopes to be that professional magazine, and we hereby dedicate ourselves to those problems and all the men embroiled in them. For us, the design profession includes everyone who has a hand in shaping the products of industry for human consumption. The best way to serve a mature profession, as we see it, is not to offer advice but to *explore* the problems these men face, and *report* the information they want and need.

This first issue is our best advocate. One story, for example, reports on how an independent designer won a free hand with—of all things—a passenger car. For those concerned with human comfort and welfare, Richard Neutra explores some cushions of a basic sort—biological ones. For those who feel the profession is underrated, we examine the broad design policy of the Vere Company, which perceived that though design is a good salesman, that's not the only good of design. Detachment from well-grooved thoughts and views is fundamental to design today; Feininger's close-ups refer to nature for a new approach to structure, while a report on plastics shows what happens when an unfamiliar material is shaped by untraditional thinking.

That taxi at the top of the page—it just sketches the problem. Like the *New Yorker*, we count on you to give it shape. ——*the editors.*

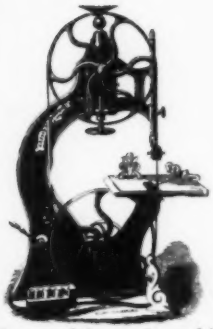


POWER TOOLS

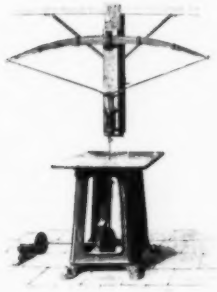
THE NEWEST HOME APPLIANCE

There is an old theory that machines are for factories, where they manage to pay their way by working around the clock. But the theory has broken down. Any appliance dealer can explain why each one of us should have a Wunderbar, a deep freeze, a deep fat fryer, a rotisserie, an electric masseuse, an electric clock, a couple of portable radios, and an extra oven. Indeed, he is constantly threatened with a saturated market unless he can find something new in plug-in worksavers. Yet the latest success among plug-ins, the home power tool, has taken the dealer and even the manufacturer by surprise, although home power tools are not new but as old as the appliance dealer himself.

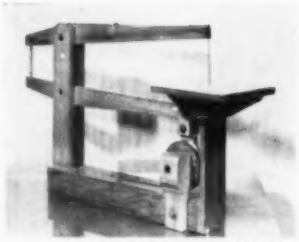
We have only one explanation for this unforeseen boom: manufacturers and dealers, no matter what they say, persist in thinking of appliances as luxuries and worksavers when in actual fact the consumer's aim is to accomplish *more* work. What civilized person, before the advent of the appliance dealer, kept an entire house, did



The wood-framed machine shown on the opposite page, made in 1808, is supposed to be the first bandsaw. Like the modern one it has a tilting table.

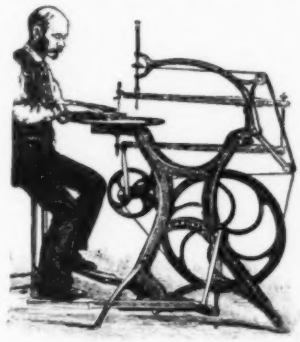


The "Patent Band Sawing Machine" above was portrayed in 1870 with typical examples of its work.



Courtesy Shopmaster, Inc.

The simply constructed wooden jigsaws at right, one with a bow spring, the other with a coil spring, suggest how hard it was for the early designer to make the blade vibrate evenly. A 19th-century designer wrote: "It is to be hoped that changes in the style of wood ornamentation or the substitution of rotary machinery will in time take the place of jig saws and that they may become exceptional among woodcutting machines." However, the jigsaw's popularity grew. The iron one at right is an early form of power tool.

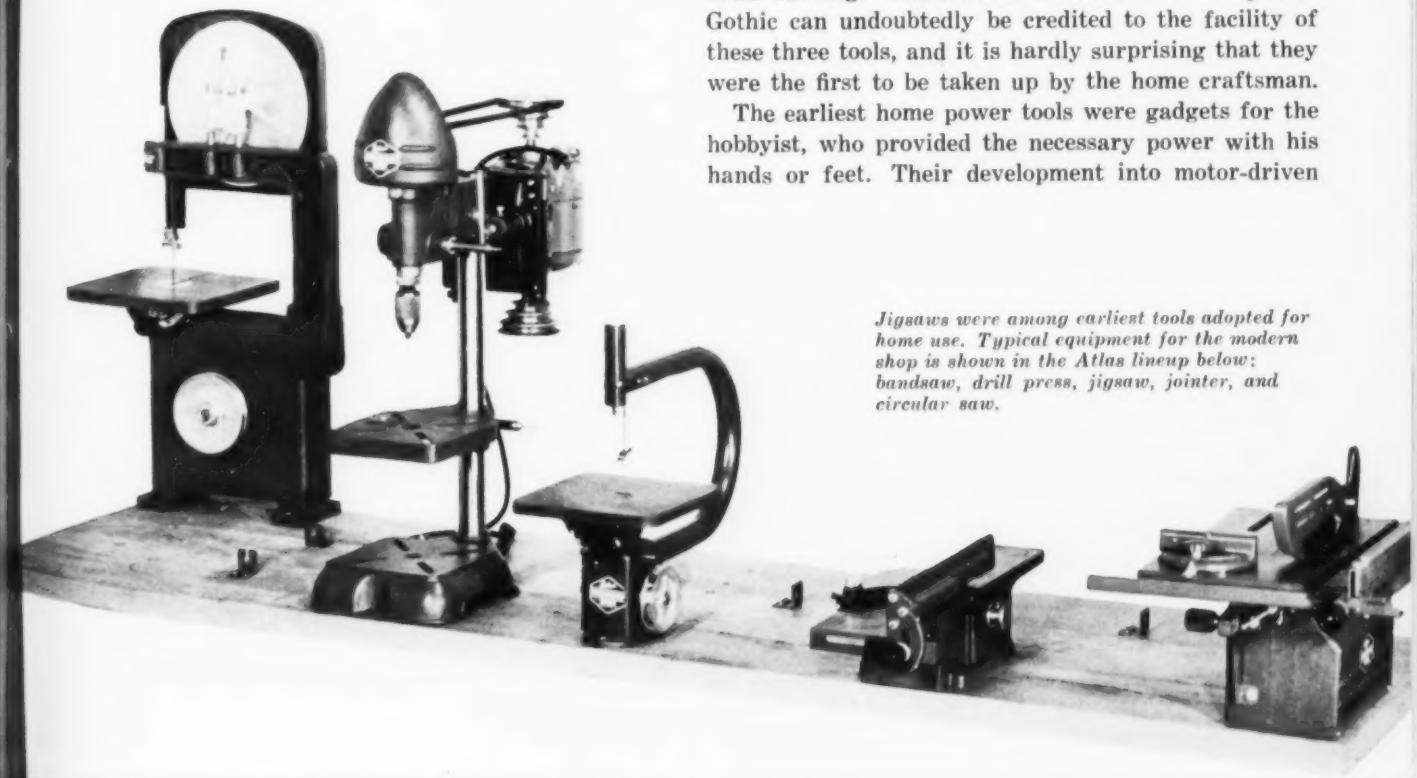


French cooking, baking, a laundry of magnificent proportions, and still managed to entertain in style and see all the top performers on television? As Eric Larrabee of *Harper's Magazine* suggests, the machines are not destroying skills; they are putting them in the hands of every unskilled householder.

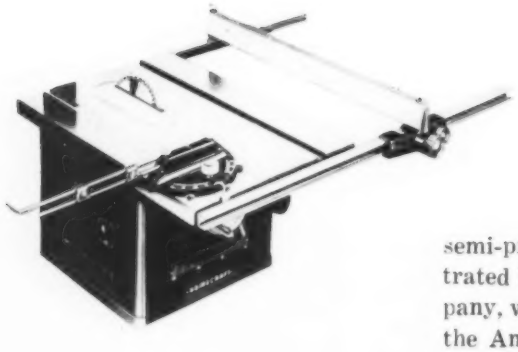
The ability to run a machine has only recently become an accomplishment of any social standing, so it is not surprising that power tools had a rather shady beginning. The principle of rotary cutters—the revolving knives of the planer, jointer, moulder, and buzz saw—was developed toward the end of the eighteenth century by Brigadier General Samuel Bentham for the industrial prisons set up by his brother Jeremy. A contemporary document explains this bluntly: "Sir Samuel Bentham prepared a system of machinery for the employment of men without skill, and particularly with a view to utilizing convict labor."

There is little doubt that Samuel Bentham would have been distressed at the success of his invention. A tool like the circular saw was little more than a speedier version of the workman, but with the lathe, the bandsaw, and the scroll or jig saw anyone with a modicum of experience could turn a stick of wood into what apparently seemed a reasonable facsimile of fine hand carving. The shallow histrionics of Carpenter Gothic can undoubtedly be credited to the facility of these three tools, and it is hardly surprising that they were the first to be taken up by the home craftsman.

The earliest home power tools were gadgets for the hobbyist, who provided the necessary power with his hands or feet. Their development into motor-driven



Jigsaws were among earliest tools adopted for home use. Typical equipment for the modern shop is shown in the Atlas lineup below: bandsaw, drill press, jigsaw, jointer, and circular saw.

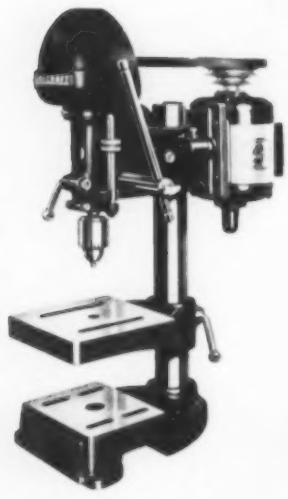


The Delta tilting arbor saw at top is a modern design of traditional unpretentiousness. The sleeker design beneath it is from Darra James.

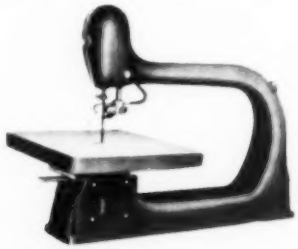
semi-professional woodworking equipment is illustrated by the history of the Delta Manufacturing Company, which started business in 1923 with two products, the American Boy Scroll Saw and the American Girl Sewing Machine. Delta thought there might be a demand for a tool of professional quality scaled down to domestic proportions. The demand proved itself beyond a doubt during the depression, when countless thousands of hobbyists retired to their cellars determined to make a paying proposition of the jigsaw puzzles, the birdhouses, and the hand-turned lampbases that had been their sparetime solace. While businesses failed, the market for jigsaws assumed gigantic proportions.

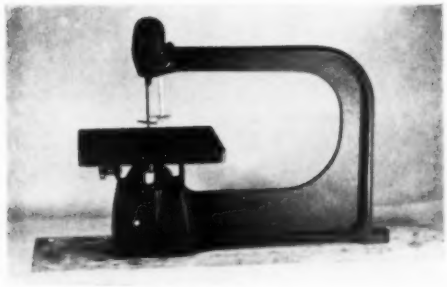
Delta now makes professional equipment as well as home power tools, and like countless manufacturers has found a small but steady market for scaled-down versions of its professional equipment. Yet this latest postwar boom took even Delta by surprise. The addicts of this generation are not out to embellish their homes but to build them, and they seem to look on power tools as normal equipment for an up-to-date household.

It is hard to say what effect the boom will have on the design of power tools, but the manufacturers, accustomed to think in terms of engineering, are braced

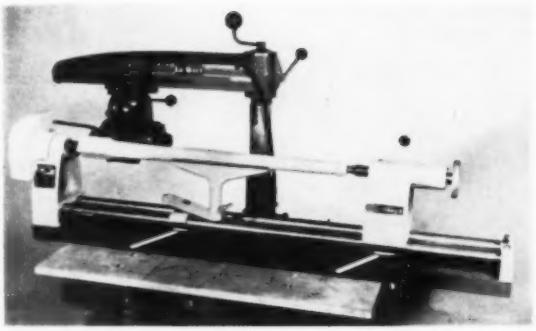


Hood shields pulleys of Delta drill press, left, envelopes mechanism of streamlined Darra James.

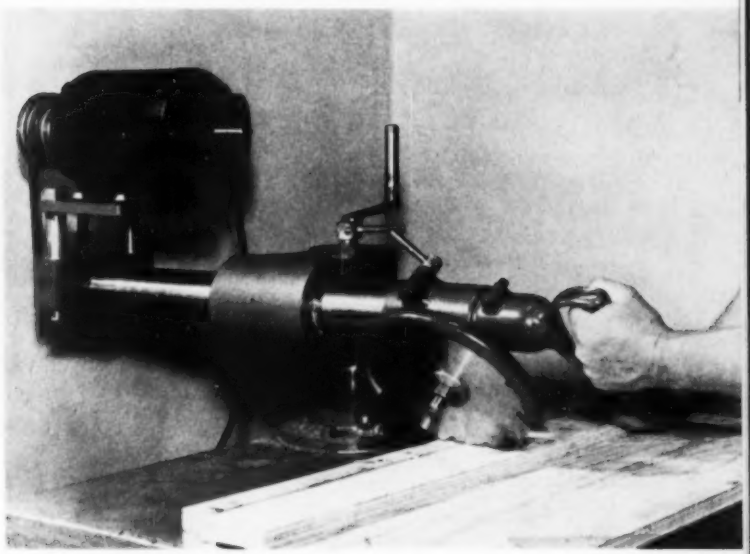




Both jigsaws, one with thoughtfully inclined head, the other sturdily built around a girder, are from Darra James.



Expanding market inspired DeWalt to retain Henry Dreyfuss, issue colorful attachments like yellow lathe. Old hands like professional looking machine, but manufacturers are trying flashier designs on new market.

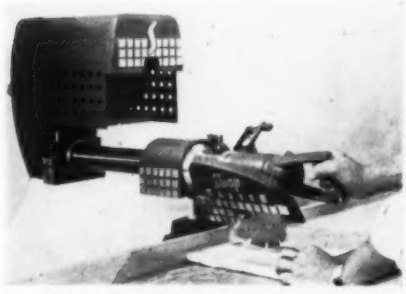


Shopmaster's old radial arm saw was strikingly simple.

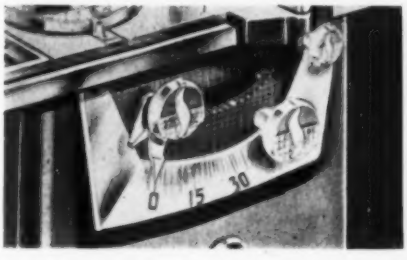
for a change. While they are seldom beautiful, power tools generally follow certain logical, widely accepted design conventions. In the days of the steam engine they were composed around the great wheels and belts that transmitted power from the line shaft, but today these wheels are no longer necessary and woodworking machinery, like the automobile, wears streamlined metal dustcovers. The twin circles of the bandsaw and the anthropomorphic head of jigsaw and drill are the most eccentric shapes the designer has to work with. Usually his main concern is to give each machine an air of strength and rigidity. Thus the guard around the pulleys on the drill press becomes a massive hood. On the latest Shopmaster radial arm saw the compactly engineered motor hides within a capacious sheet-metal housing.

Generally speaking, the most successful modern tool is the table saw, where a heavy base in traditional gray or dark green emphasizes the beautifully machined plane of the table and the accurate set of the miter gauge and rip fence.

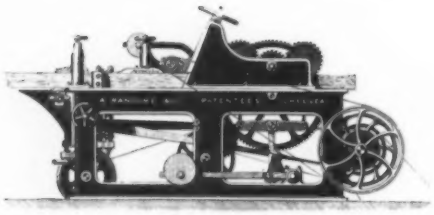
The inclusion of power tools as basic equipment in several housing projects has encouraged the manufacturers to think of them as home appliances. Usually their first thought has been to exchange the traditional dark finishes of the professional shop for something brighter. One manufacturer has painted a few ex-

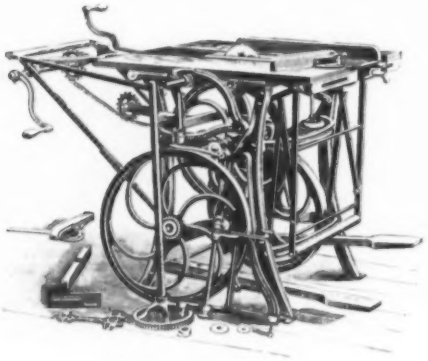


Scharfenberg and Polivka gave Shopmaster brighter finish, ornamental touches, massive hood.



Home appliance influence is seen in proposed dial for Shopmaster table saw.



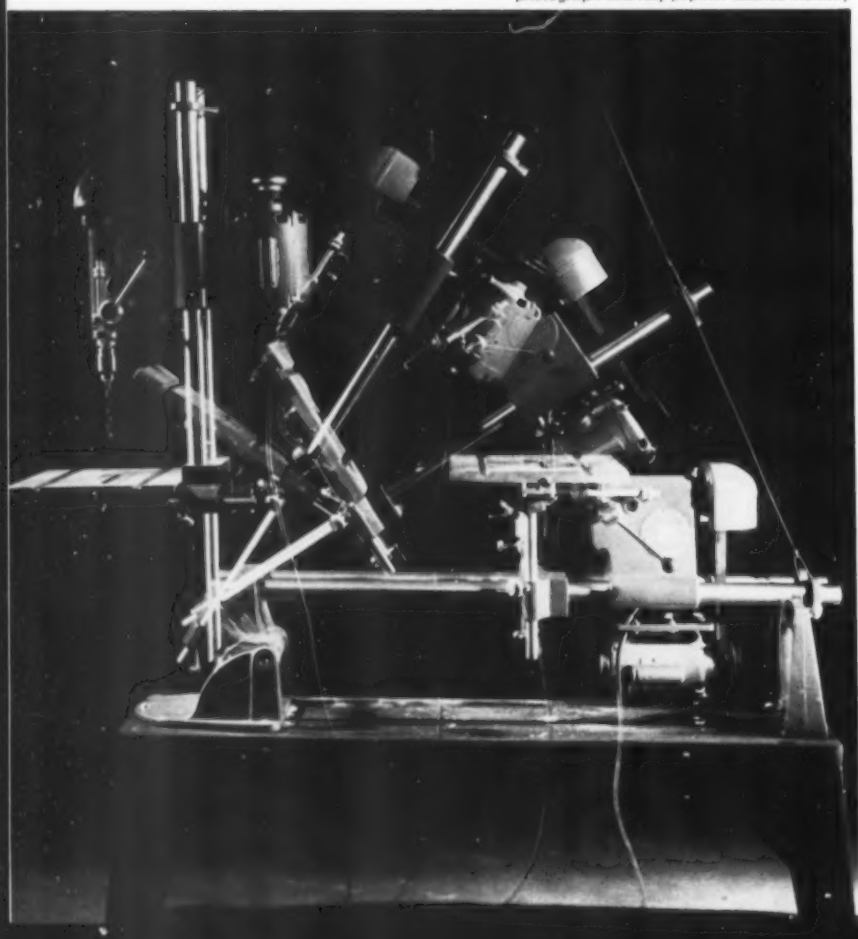


Two early combination units, one run by steam, the other by hand, are shown above.

perimental models appliance white, and DeWalt is now using a different bright color for each attachment to its basic unit. The company that has gone farthest, with the appliance angle is Shopmaster, whose newest tools, designed by Scharfenberg and Polivka, have a sea green finish dictated by consumer preference and lines as modern as the latest kitchen stove.

One result of the home power tool boom has been a spate of combination tools. Their appeal is obvious: they look more ingenious, less extravagant, and easier to manage than an array of separate tools. The idea, however, is far from new. In 1872 a writer complained that "thousands of pounds of money and time are continually being spent by mistaking 'combination' for 'invention.' The novelty of performing two or more things with the same agent is quite deceptive, and we are apt to mistake for useful that which is only novel."

photograph courtesy popular science monthly



Delta's combination unit consists of separate tools mounted around one motor.

Appeal of combination unit is shown in this photo of Shopsmith. Lathe bed carries saw in horizontal position, drill press when vertical.

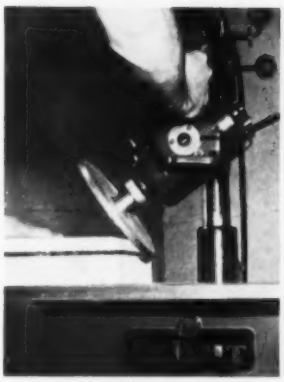
Nevertheless, the combination unit has definite advantages in the home shop: it takes a minimum of space, and since it uses just one motor for a number of jobs it is likely to be less expensive than a string of separate tools. Delta, which has staked its reputation on the professional and near-professional craftsman, points out that the combination tool must be adjusted for each separate job and is a nuisance to the man who sets out seriously to finish a project as quickly as possible. Delta's version of the combination unit is a series of separate tools clustered around one motor, the idea being that when the customer really gets going he will set up each tool with its own power source.

All in all, there haven't been many basic inventions in power tools since Samuel Bentham first came up with the novel idea of rotating blades. Today, as in the earliest machines, a belt from the power source turns a spindle on which the cutting instrument is mounted, and the work is laid on a table which can if necessary be raised or lowered or tilted to adjust the depth of a cut or the angle of a miter. Since the introduction of the electric motor there have been but two basic departures from this system. One is the portable tool; the other is the radial arm saw.

In name, even the radial arm saw is old. In the nineteenth century a saw mounted on a boom was used to cut lumber in lengths. The modern radial arm saw was invented in the early twenties by R. E. DeWalt, who conceived the idea of hanging a circular saw from an arm so that it could be raised and lowered, moved back and forth across the work, swung to one side or the other, or tilted at any angle to the table. The DeWalt is a creature of amazing versatility. Its ability

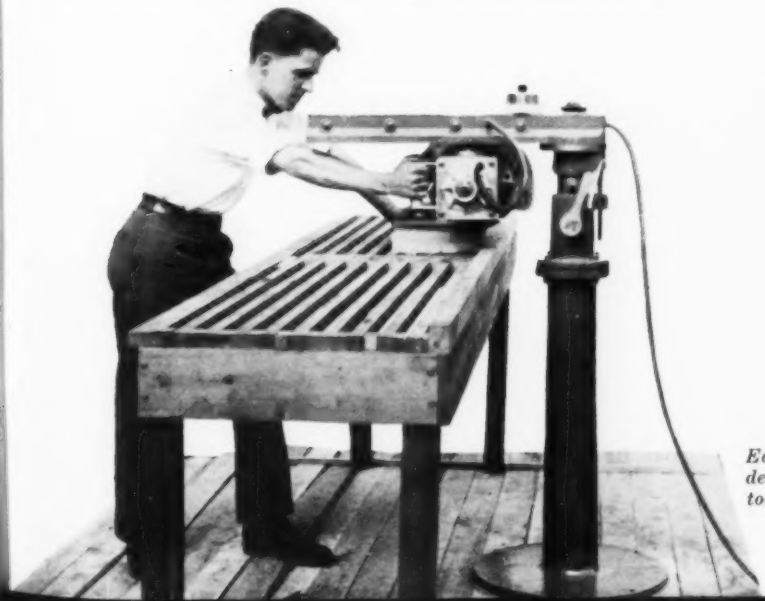
DeWalt's radial arm saw is unusually versatile.

It can run a saber saw;

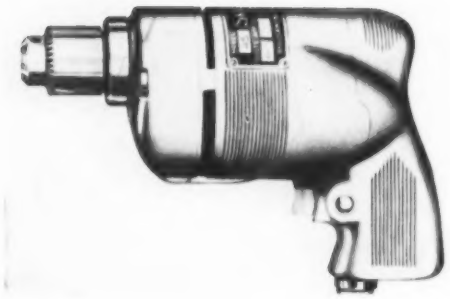


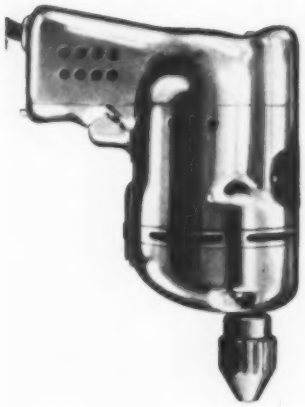
or perform rotary sanding;

or disc sanding.

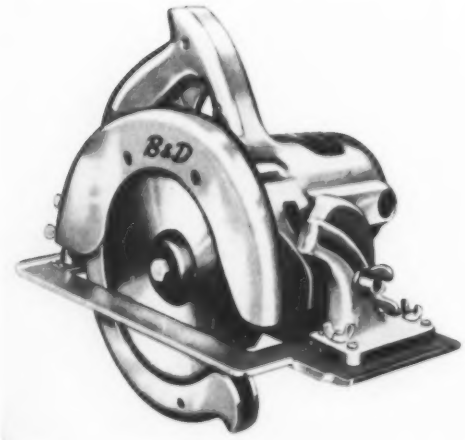


Earliest DeWalt was designed as a professional tool.





Drills from Skil (above) and Black & Decker (left) show that design is a matter of refinement.



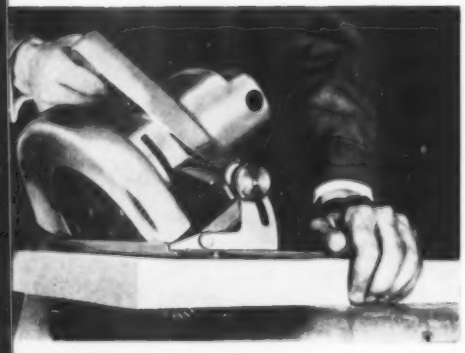
to cut, rout, sand, and drill in every direction have won it an unexpected share of the non-professional market, and today it is even sold on television. The DeWalt's appearance is undoubtedly a large part of its appeal. It is neat and compact, yet the powerful backbone and exposed motor and blade make it far the most interesting of bench tools. It looks as though it could do anything, although in actual fact it is an extraordinarily versatile saw and becomes a combination unit only with the addition of belt-driven attachments.

The makers of portable tools were naturally the first to enjoy a spurt in sales and believe this was largely the result of the tool experience that civilians gained in war work. Most of the portable tool companies now make "semi-professional" tools, and like the makers of bench tools have found that a tool designed for the home is often capable of light factory work.

Perhaps because compact engineering and a tightly-drawn skin are practical requirements, portable tools generally take pleasant shapes; the difference between one and another is usually a matter of refinements of contour and the detailing of ventilators, etc. The double curve of handle and blade in a portable saw is often handsome.

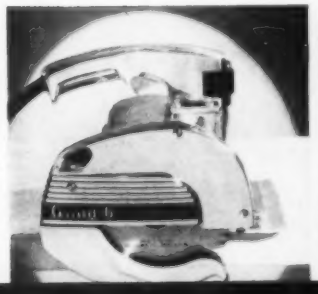
The discovery that portable tools are bought as gifts by women has inspired some colorful experiments. Black & Decker found that a hammered finish was frowned on by purists as a cover-up for bad workmanship, but one company advertises a transparent plastic "executive" holster for its drill, and another now offers drills in five fashion colors for Christmas giving.

Even the trade hesitates to say whether the new emphasis on style will enhance power tools or debase them, but they promise engineering will not suffer—*d.a.*



Portable saw has inherently interesting shape. These are by Black & Decker and Skil.

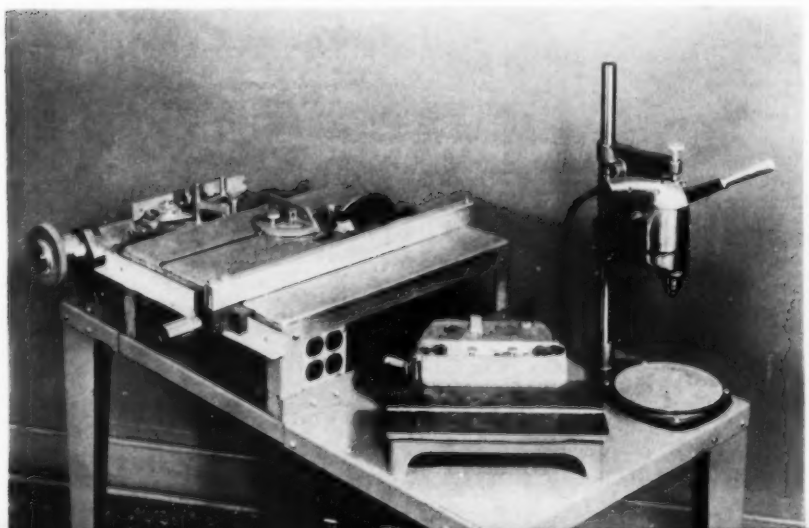
Peter Müller-Munk gave Porter-Cable saws a more massive appearance, sacrificed the circle to an intimation of speed.



Professional Skilsaw can be hung on a radial arm to make a cut-off saw.

Cummins Do-It Shop, a combination unit powered by portable drill, appeals to amateurs intimidated by larger tools.

Porter-Cable offers a bench on which portable tools can be made stationary as required.



Lancia "Aurelia" by Pinin Farina

Ferrari coupé by Alfredo Vignale

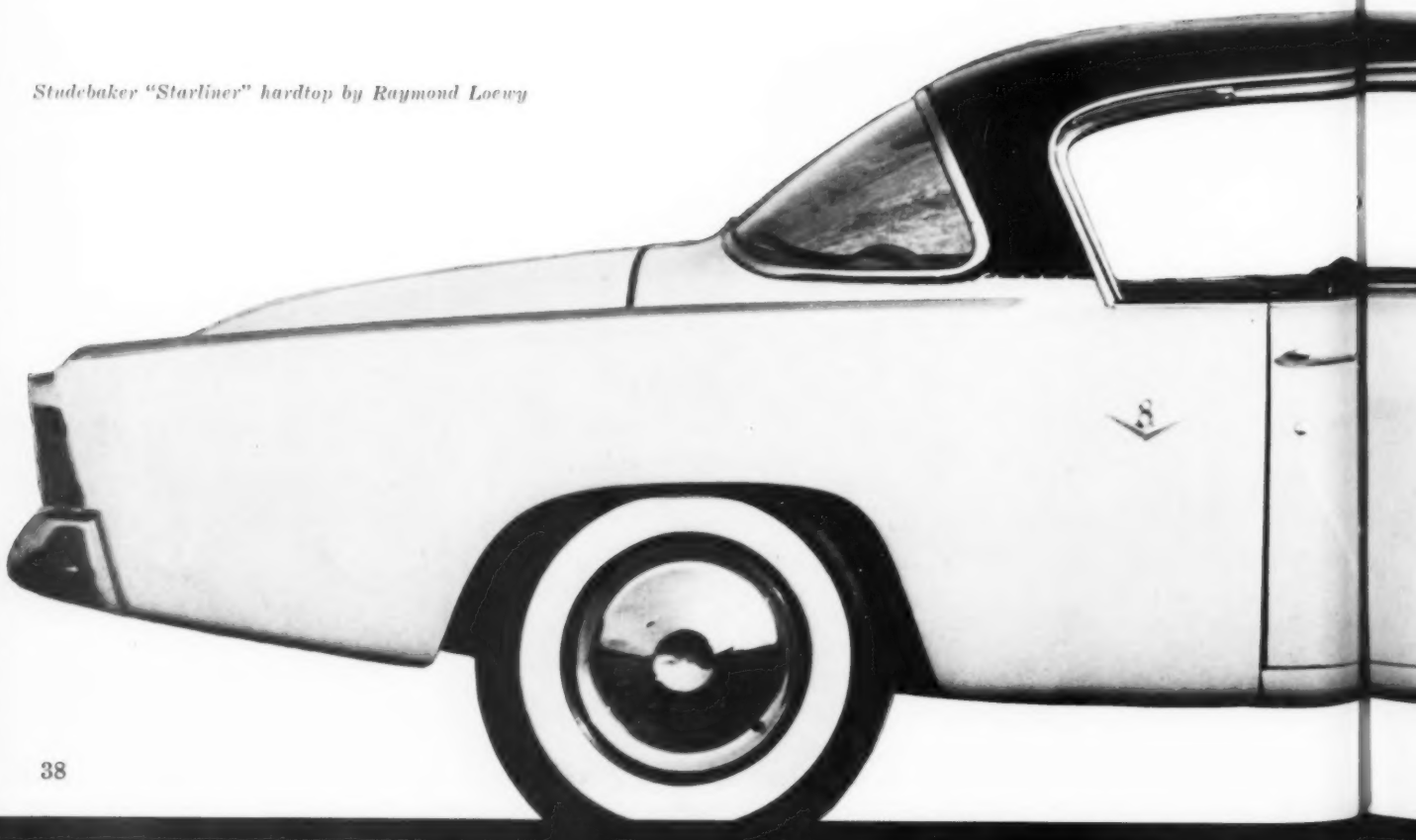
Cisitalia "Gran Sport" by Pinin Farina

photographs: alexandre georges

THE STUDEBAKER STORY

by John Wheelock Freeman

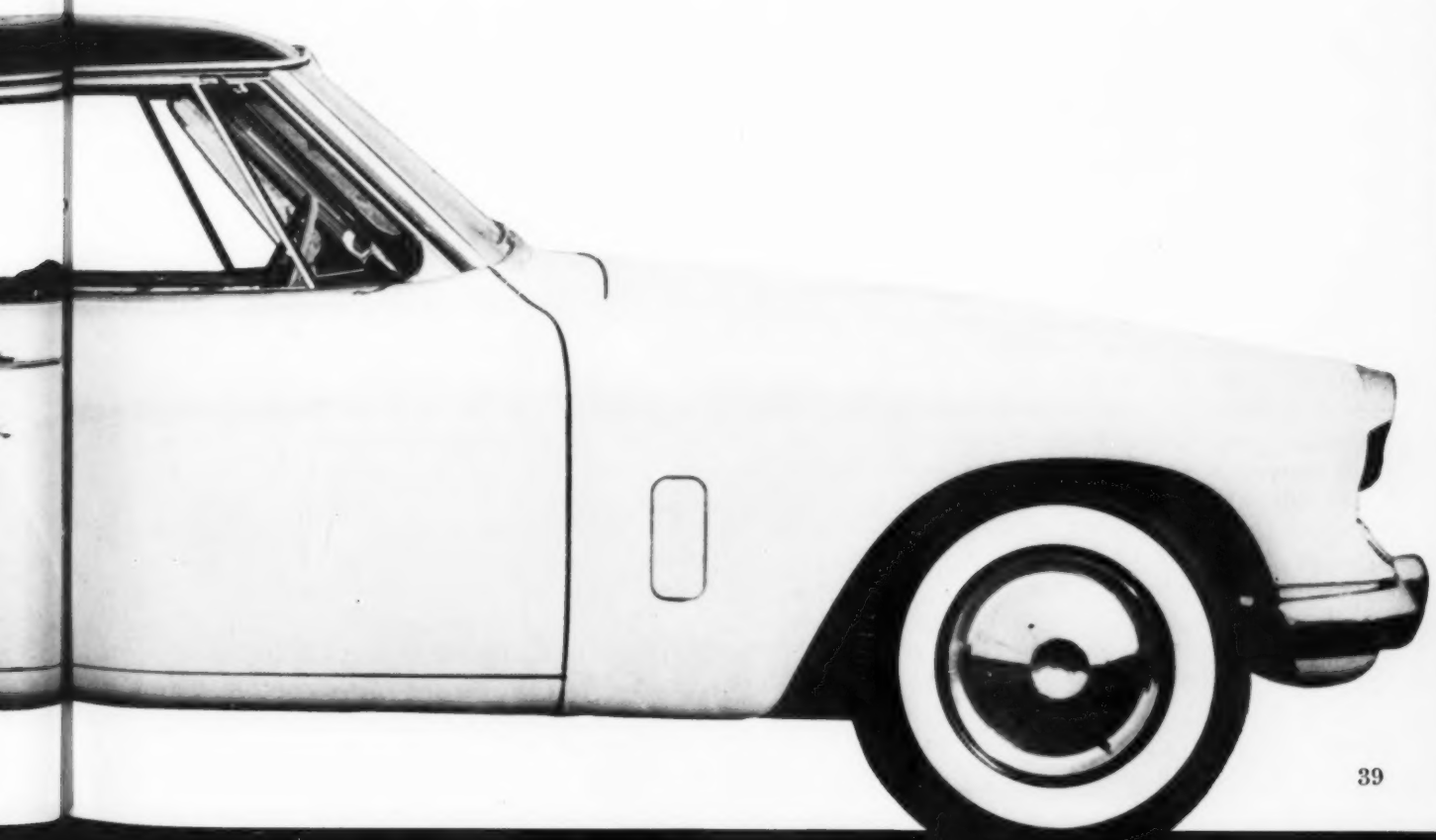
Studebaker "Starliner" hardtop by Raymond Loewy



Today, when the American automobile industry is faced with its greatest sales problem since long before World War II, public enthusiasm has been aroused by a freshly conceived car design, the Studebaker coupé. The model owes its success, and in fact its existence, to a calculated gamble, first on the part of Raymond Loewy, its designer, and then on the part of the Studebaker Corporation. Had the design failed to attract buyers as well as viewers, the manufacturer could have survived by falling back on its more conventional family sedan models, but Mr. Loewy would have lost the client's trust which he so schemed to win. As it turned out, the car's commercial success more than confirmed Mr. Loewy's intuitive faith in the radical design and the way he managed to pass this faith on to his client.

As an independent, Studebaker occupies a seemingly contradictory position in the industry. On the one hand, it must avoid the disaster which could result from too radical a departure in its product; on the other, it must keep ahead of its larger competitors in order to stay in business at all. In 1947, when other manufacturers saw no need to grace a sellers' market with anything new, Studebaker took a chance with the first postwar American design. Convinced that he was on the right track, Mr. Loewy then started work on the present coupé model. The public, he felt, would soon be ready for a car reflecting European design trends toward a lighter, longer, lower appearance. Growing interest in imported sports cars made it clear that American buyers were attracted by chic as well as by utility and horsepower. After developing the "European look" into a coupé for Studebaker, Mr. Loewy's next step was to over-

photographs: alexandre georges



Above: 1936 Cord sedan by Gordon Buehrig; below: 1941 Lincoln Continental originated by Edsel Ford.

come management's qualms about such a forward move. At this point he resorted to stratagem.

On the basis of the coupé design, he worked out a more conservative four-door sedan which might logically be the basis of Studebaker's 1953 series, and built a mock-up for executive approval. When Studebaker's President, Harold Vance, met with his committee and Mr. Loewy in the spring of 1951, there were two tarpaulin-draped models in the designer's shop. The sedan was duly unveiled, viewed, and discussed favorably. Then there were queries about the other model, standing off to one side. Mr. Loewy referred to it as a project on which he had been experimenting in spare moments; he had made the mock-up just for fun. When he lifted the tarpaulin the sedan was forgotten; management, caught off guard, was keenly enthusiastic about the exciting appearance of the low-slung coupé. Mr. Vance wanted to know whether it could be adapted to series production, and agreed to give the designer two chassis for experimentation. A short time later Studebaker, feeling as confident as it did enthusiastic, decided to make room for the coupé by expanding production facilities, tentatively allotting it 40% of all scheduled output. Thus Mr. Loewy got his design into production without the major changes which would inevitably have come from presenting it in the usual manner.

Mr. Loewy and his clients had to wait some time, however, before the new model's public reception could be translated in terms of acceptance, indifference or rejection. Although introduced in January, the coupé did not reach normal production until July. First there was tooling trouble, and demonstration models had to be partially hand-finished while one of the fender dies was remade. Orders began to accumulate. A strike in the late spring cut off Studebaker's entire supply of overdrive transmissions for ten weeks. Nonetheless, the coupé sold as fast as it could be delivered and, despite its higher price, substantially outsold the sedan in many areas. It accounted for 40% of Studebaker's 1953 sales—the planned production maximum. Certain that it will make up for lost time this year, Studebaker may allot even more of its production to the 1954 coupé.

The designers' public

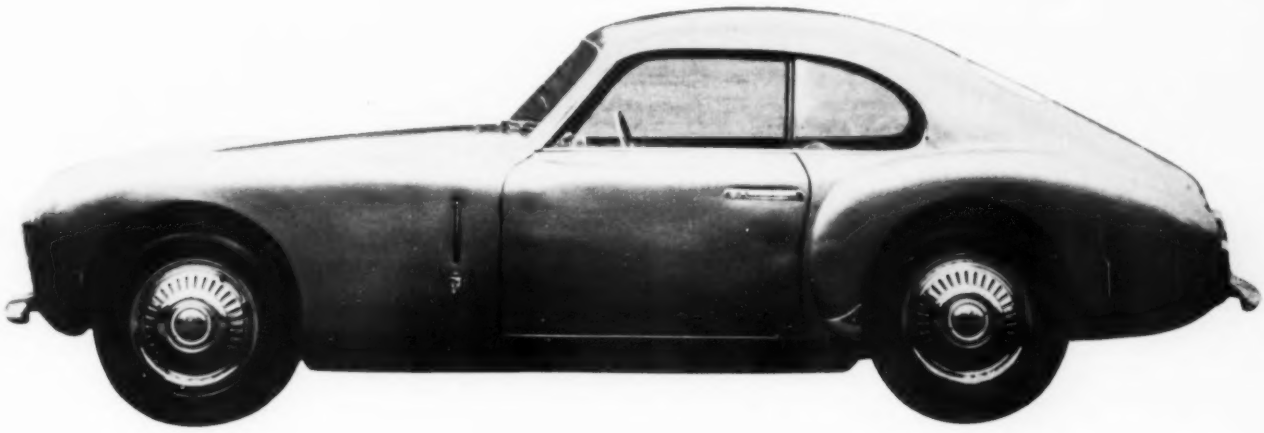
The coupé's success vindicated not only Mr. Loewy's faith in his design but also public taste itself, of which he proved to be a discriminating judge. The buyers' immediate response suggests the need for a general overhauling of the accepted ways of handling the allegedly juvenile and easily swayed multitudes. A curious anomaly of the American automotive industry is that, while it holds a persistently low estimate of the buyer's power of discrimination, it insists that design policy must be dictated by what the public wants. This inconsistency has remained unchallenged for two reasons. First, the public is seldom given a chance to prove whether or not it would prefer distinguished design; on the rare occasions when such a choice has been of-

iered, as with the 1936 Cord and the 1940 Lincoln Continental, a rewarding vote of confidence resulted—although these cars were outside the popular price range and could not be accepted in quantity. Second, since the Cadillac has today become the uncontested emblem of social and financial eminence, social aspirants may be expected to envy and desire either a new Cadillac or a car which copies one, regardless of details of its design. In an industry so sharply competitive yet so leery of individualism, confidence in the results of public opinion polls really adds up to confidence in the industry's ability to condition that opinion.

Change for the better

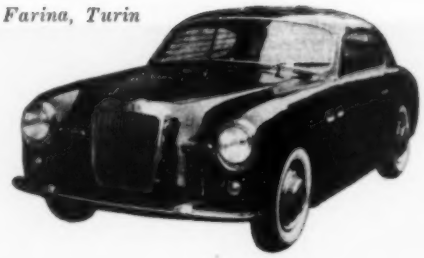
The auto industry has been the most reluctant of the major industries to embrace major changes. There is good reason for such caution: the high cost of any change, great or small. There is fallacious rationalizing, though, in the industry's unwillingness to forget the doom of Chrysler's 1934 Airflow design; many people apparently still attribute its failure to novelty, rather than to its ugliness. So, while most consumer products today benefit from professional design, car companies ride alone and united in their reluctance to extend design confidence beyond their own walls. Recently, only two companies have taken their problems to independent, recognized design firms for a thorough and consistent esthetic working-out—Nash, who recently went to Pinin Farina of Turin, and Studebaker, who first went to Loewy in 1936. By its unprecedented policy of giving a free hand to its consultant designer, Studebaker has proved a principle which will undoubtedly be acknowledged by other car manufacturers—to just what extent, we must wait for the redesigned 1955 models to discover. The motor industry has, through its system of changing basic designs every three years and altering only their superficial trim in between, created a public taste for development and change which, though artificially stimulated, is rabid and insatiable. In choosing cars, of all products, the public has few attachments to what has been, but rather a hopeful curiosity about improvement and progress. Mr. Loewy has pioneered the idea that such progress can move toward better design, rather than undermining it by change for change's sake alone.

The importance of Mr. Loewy's judgment and Studebaker's confidence in him stands out against the background of American car history—the evolution from an interesting assembly of parts to the strictly utilitarian Tin Lizzy, to the streamlined all-embracing body



Above: 1946 Cisitalia "Gran Sport" by Pinin Farina; below: Porsche "1500" coupé by Reutter of Stuttgart.

Siata "Daina" by Stabilimenti Farina, Turin



American Cunningham by Alfredo Vignale, Turin

MG-Arnolt by Bertone, Turin

French Ford "Comete" by Facel-Metallon, Paris

Alfa-Romeo "1900" by Pinin Farina, Turin

shell, to the gradual death by elephantiasis of any remnants of elegance. Dreading the outcome of this trend toward fat, heavily bejeweled bodies, Mr. Loewy, in 1947, lowered his lance against two all-American fetishes: Conspicuous Consumption (especially of chromium) and the Big Package. By cutting down drastically on applied decoration, he focused attention on the sculptural interest of the metal shell. He reasserted the grille's function as an air intake rather than a cowcatcher, and capitalized on large glass areas for both visibility and a feeling of lightness.

This refreshing return to fundamentals in the 1947 Studebaker was symptomatic of a new interest in aircraft design principles, already widespread in the motor industry of Europe. Because of high speeds and consequently critical slipstream characteristics, aircraft design is predominantly functional. Some automobile designers, impressed by the esthetic effectiveness of these efficient designs, tried to apply similar techniques to motorcar bodies. In their most rigorous application, these techniques produced cars similar to aircraft in surface conformation—with the reservation, of course, that a car is earthbound by a flat quadrilateral bottom with four wheels.

The most nearly perfect, though by no means the first, instance of such a strict aerodynamic approach is the German Porsche coupé. Here the conventional chassis has been replaced by a flat metal tray, eliminating wind drag on the underside. The body has become a cover for this tray together with its engine and occupants, fitting over the whole like a walnut shell. The most efficient form was determined by wind tunnel tests. Sloping over the spare wheel, the fuel tank and the driver's legs, the car's nose directs air currents upwards over the roof. At the same time, air pressure encountered from the front presses downward on the front deck, holding the car more and more firmly to the road as its speed increases. The rear deck, covering the small air-cooled engine, makes use of a partial vacuum in its wake to draw warm air from the engine's cooling system.

Italian pace-setter

Though far ahead of other production cars today, the Porsche owes much to prior achievements of the Italian design school. For it was a small nucleus of Italian designers who, in automobiles as in furniture, architecture and fashion, set in motion some of the world's liveliest postwar trends.

The Cisitalia coupé, created by Pinin Farina Coachworks of Turin in 1946, was pace-setter for the present Italian school, and remains its champion. Here, as with the later Porsche, a low hood sloping below fender level combines slipstream stability with maximum visibility. The body, imagined as a smooth metal skin drawn tightly over a compact tubular frame, is decoated only by accenting key parts of the car—openings for windows, doors and wheels. The Cisitalia is axiomatic proof that the wheels' round shape, a source of visual fascination, may be emphasized through repetition but cannot successfully be varied. Thus the current use of squared openings which violate this roundness, or of covers which conceal the wheels, is a failure to realize of one of the car's essential characteristics.

The Cisitalia shows, too, that sculptural modeling of the unit shell need not be superfluous, but may relate to basic facts about the machine underneath. Thus, though fenders as such are no longer used in aerodynamic cars, an articulated fender shape over the Cisitalia's rear wheel accentuates the wheel itself as a decorative stroke, breaking the monotony of a flat side and augmenting the visual effect of the car's length.

New problems

Designs like the Cisitalia are often praised for their "purity" or "simplicity," qualities which, though hard to define, are easy to recognize when they are present. Simplicity in car design does not mean austerity or dry functionalism, but it does imply the elimination of extraneous elements and the careful integration of what remains. In design it is generally assumed that incongruous or unrelated elements are signs of incompetence—not because it is bad to attract attention, but because the whole object should attract attention first, giving the impression of being the sum of its parts.

The early classic car, with its separate horns, headlamps and body parts, called for scale and integration too, but it spared the designer the chore of covering these components once he had organized them. Today's aerodynamic envelope is much the more difficult design to execute properly. Like a woman's dress, it can apotheosize or mortally embarrass by the amount it reveals to view and by how tastefully it sheathes the rest. The car designer, once comparable to an interior decorator, is now faced with the same issues as the architect and sculptor: he is engaged in enclosing and defining space.

In any discussion of the postwar Italian style and its potential usefulness to American designers, comparisons between the aims, methods and products of both countries are inevitable. Aside from differences in physical and psychological working conditions—individualized and perfectionist in Italy, standardized and conformist in America—there is a much greater difference in the underlying idea of what constitutes a car. European auto workers ride bicycles to the factory and produce nothing for themselves; they are the artisans in a feudal society. As a luxury, the car remains free of the dray harness and can *be a car* as intensely as possible. The privileged European likes his transportation as personal as his clothes—a trim, maneuverable sports car whose performance gives him unquestioned *droit du seigneur* over Europe's treacherous roads. Unlike the minions of Consumers' Union, he is willing to get into his car without measuring the distance between his head and the roof, nor does he fret when stowing luggage about the cubic footage it occupies. He buys for himself, not per capita; and what he buys is a private car, not a combined moving van, school bus and Pullman parlor coach.

The American designer faces, by contrast, a solemn

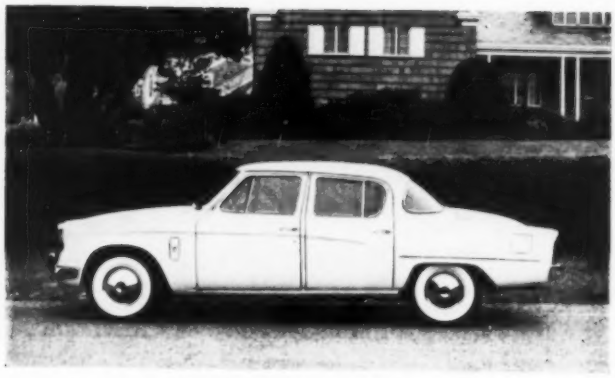
and mundane packaging job. He is told that his public demands certain features, regardless of their compatibility with requirements of safety and pleasing appearance. To make the interior extravagantly spacious, engineers must move the engine as far forward as it will go. To supply an excess of reliable brute force, they devise a massive engine which, in its new forward position, unbalances the car so it needs power steering and a bag of cement in the trunk (which has room for quite a few). Three well-fed people are seated abreast, cramping the driver and depriving him of adequate back support on curves or long trips. Wide seats in turn mean wide cars, which mean vulnerable sides and awkward parking. Since each solution thus begets another problem, the designer learns to give and take —and often finds himself taking heavily from the esthetic side.

Italian cars are meant, then, to be driven, while American cars are emphatically passenger cars. Despite this antithesis, the Italian design approach is applicable to family cars; the Italians themselves have proven this during moments of more practical inspiration. Raymond Loewy's Studebaker makes a positive start toward merging the two seemingly incompatible ideas of what a car should be. Indeed the Studebaker Corporation has, with an eye toward satisfying the public's fancy for European styles, gone so far as to call its new coupé a "hardtop convertible" and "sports car"—neither of which it really is.

In the design of this car we find reflected, strangely enough, the Italianization of such originally American devices as wrap-around bumpers and rear window,

1947 Studebaker Champion

1934 Hupmobile by Raymond Loewy



1953 Studebaker Land Cruiser

1933 Hupmobile by Raymond Loewy

Mr. Loewy and his personally modified 1953 hardtop.

curved one-piece windshield, and disappearing side-window posts. Originally European, on the other hand, are such ideas as the Porsche-Cisitalia sloping hood with its low, clean air scoop. Apparently dissatisfied with the Cisitalia's use of an articulated rear fender to decorate the side, Mr. Loewy sought to banish all vestiges of an earlier design style by indenting the side with a purely imaginative backlash pattern. This device would possibly have been more effective if it did not antagonize the shape of the side window group, the angles of whose posts also conflict. (An Italian designer would probably have asserted at least one vertical.) These slight discrepancies, and the irregular wheel openings, are the only battle scars of the designer's victorious campaign to rout conventional American "styling" superstition. If he did give in to a few detail modifications, he held out for the integrity of his overall concept. He may, for example, have permitted the squared wheel openings, but in doing so he conciliated those who wanted to cover the rear wheels entirely.

Just as the Studebaker Corporation has distinguished itself by stealing a march on its competitors with a superior product, Mr. Loewy has set himself apart through two phases of his achievement as this product's designer. First, he has earned a motor company's trust on a client basis. Second, he has recognized the present as another turning point in car design history. In the Italian school he has found the most promising creative direction for the future, giving us a successful example of how the Italian style can be catalyzed with American needs to produce car designs worthy of this country's numerical leadership in the automotive world.

DESIGN

The future of the designer and of man himself, architect Neutra maintains in his forthcoming book, "Survival Through Design," depends on replacing vague notions of beauty or saleability with a scientific attention to human needs.*

by Richard Neutra

** From which these excerpts are taken. Oxford University Press, February, 1954.*

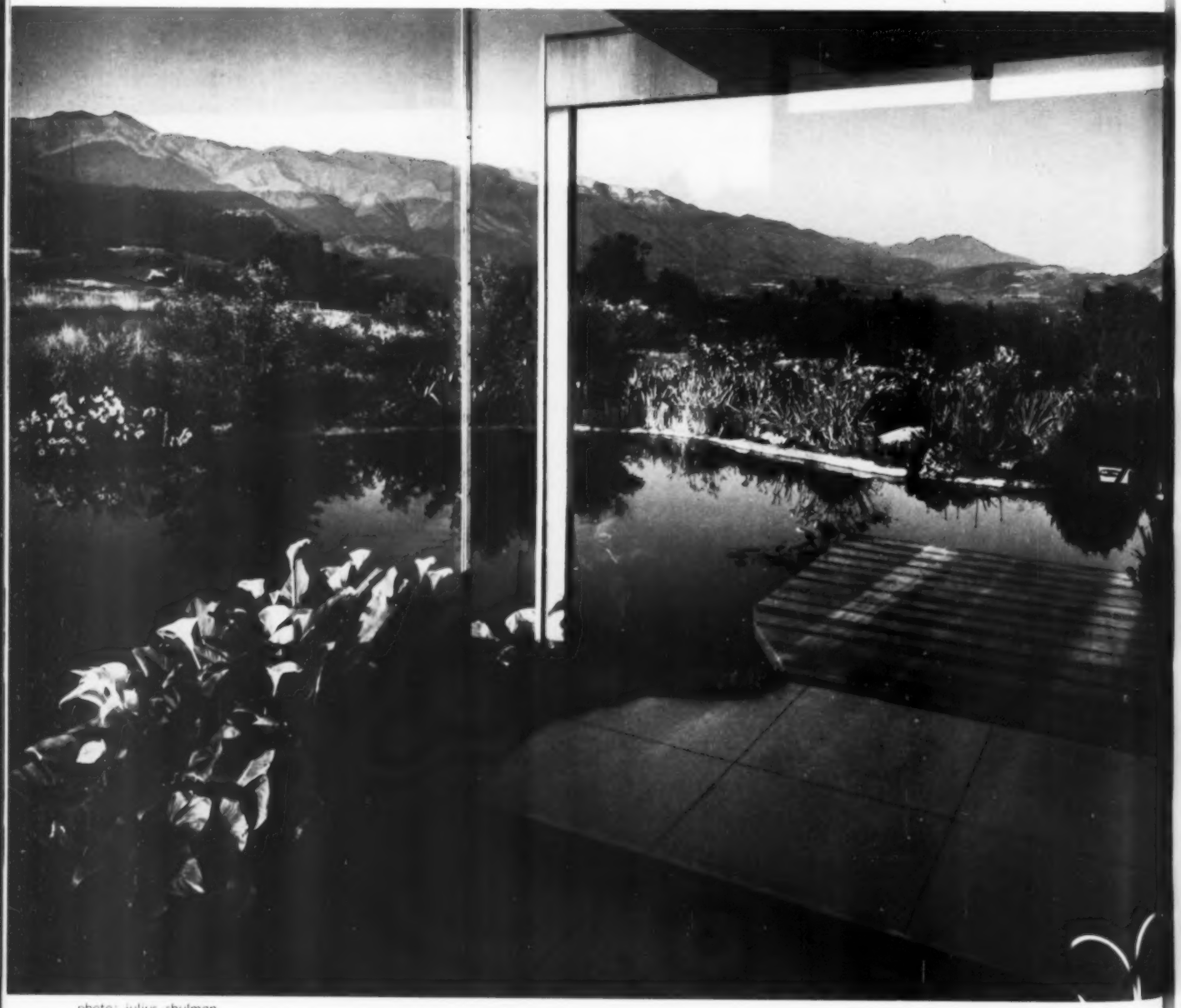


photo: julius shulman

MEANS FOR SURVIVAL

Acceptance of design must turn from a commercial into a physiological issue. Fitness for assimilation by our organic capacity becomes a guiding principle for judging design because such fitness aids the survival of the individual, the community, the race itself. Design must be a barrier against irritation instead of an incitement to it. The everyday insight in this matter is more rudimentary than we would think because of the weight of habit. A diet is not necessarily healthful because it is habitual. The fact that someone is *used* to smoking opium, even craves it, does not make opium a harmless drug. An element of design may be habit-forming and thus attractive but still incompatible with the requirements of our constitutional system. Designers of the future will neither cater to harmful habits nor gratify arbitrary desires. Their decisions will abide by ever-increasing physiological information.

In many countries the buyer of food or drugs is, to some extent, protected by law against products that might prove damaging to health. But things must not necessarily be swallowed to bring harm. External stimuli in our physical suroundings must not be underestimated and left untested. Beauty commissions, whose opinions are controversial, solve little and might find meager support when they dared deviate from public taste. As for the producer's claims and propaganda, it is obvious that they cannot be taken at face value.

Let us analyze an example of a common builder's supply item—linoleum called marbleized. First, a look at the productional aspect. Flawlessly plain surfaces are harder to produce than mottled ones, and thus the latter are found to cost less. 'Beauty' enters the picture as an afterthought, when the manufacturer accidentally discovers that his product has a possible visual likeness to marble. This is what we describe as pseudomorphism. The manufacturer exploits the similarity by advertising his linoleum as marble-like and marbelized; and then he suggests also a functional plus of his article: 'dirt does not show.' The cheaper product is made acceptable to the consumer because it is 'beautiful *and* practical.' In one strange mathematical sum, two abstract concepts of rather different order are added up.

Now we may disregard the seller's biased advertising and consider the consumer's side; for instance, the manner in which a kitchen counter or any work surface may affect our nervous system. There are possible three clearly distinguishable cases of stimulation originating at the surface of an object:

1. Continuous, *smooth and even* distribution of stimuli over this surface.
2. *Rhythmical* distribution of stimuli.
3. *Irregular* distribution of stimuli.

We can test our sense receptors in experimental arrangements, and this testing will actually have to be done to arrive at anything but an arbitrary decision.

Although we have as yet no experimental data to prove that irregularly textured (jazz) plaster or marbleized linoleum is under certain conditions unpleasant to the tactile or visual senses, we know that throughout history man has shown a certain preference for smooth and even surfaces. Neolithic flint implements are polished beyond immediate practical requirements. Over an even surface, our tactile and our visual senses can move without abrupt changes in innervation, just as a skater glides over smooth ice. Bumps or holes in the ice make skating less pleasant, because sudden and irregular nervous adjustments become necessary. If such external obstacles to steady nervous processes occur at rhythmic intervals however, their effect seems more pleasant than that of irregular and haphazard interruptions.

Without delving into these quasi-kinesthetic problems, we should like here only to point out that something of 'beauty' or 'pleasantness,' or the lack of them, in marbleized linoleum is not beyond physiological testing. Perhaps we could even come to interpret why one type of mottled effect is less offensive than others.

As for the 'practical' merits of a product, we must again resort to an associative evaluation. The idea that dirt does not show on marbleized linoleum is similar to that of painting a butcher shop red because blood splashes on a red wall do not bother the eye.

Cleanliness has been put on a level with godliness and morality. It contains also what used to be considered potent aesthetic ingredients, and altogether a vast background of associations extending into the depths of consciousness. For reasons of this involvement, the idea of cleanliness changes with time, place, and setting, and becomes another instance to prove the insufficiency of an aesthetic that is pure, simple, and timeless.

To us, cleanliness is not merely a matter of visual appearance, as it was, for example, in the past to the Japanese. Under their spotless floor mats, the *tatami* on which they eat and sleep, small refuse could accumulate for months and feed vermin. As borne out by odors in a poor but neat Japanese house, the sense of smell, for instance, can be markedly less involved in the concept of cleanliness. Here cleanliness is purely visual, while a Hindu may conceive it mostly in spiritual terms. In India, thousands of the faithful cleanse their ailing bodies by submerging them in waters that seem polluted to Western tourists.

Our own concept of cleanliness, imparted in kindergartens and elementary schools, through parental ad-

monition and pamphlets of public health departments, is neither merely visual nor spiritual. It has a biological basis and is conceived almost as a scientific survival aid. We often act to protect ourselves against agents of uncleanliness which cannot be detected without a microscope. In no case are we really satisfied with merely concealing dirt. From this point of view, a surface that shows clearly any undesirable accumulations of dirt is superior to one that does not. Maximum imperviousness and absence of open joints are preferable on this count as well as on the count of labor saved in cleaning.

Polished marble, a very ancient product, possesses this quality of imperviousness to a high degree, while thin gauge linoleum, which was the first material of this sort to introduce a phony marbleization, had a surface clearly afflicted with the pronounced unevenness of its burlap base. The producer's claims concerning the practical merits of marbleized linoleum depended on a fallacious association: Marble is easily cleaned; marbleized linoleum resembles marble, and so it is clean and cleanable. And if in fact it is much less easily and perfectly cleaned, well, at least it does not show the dirt. A clever pseudomorphic substitute is introduced with the intent to satisfy one sense, the eye (rather dulled that eye must be), while those of its qualities that are important for hygiene, such as minimum porousness and chemical imperviousness, are disregarded.

The fact that a man does not realize the harmfulness of a product or a design-element in his surroundings, does not mean that it is harmless. We need other, more objective, criteria than mere opinions or custom and habit. We may become used to the sight of a telephone pole in front of our window and may claim that we can ignore it, but it still might be proved detrimental to visual and thus general well-being.

Nature has endowed us with minute pain receptors, devices that alarm us in case of injury. They also signal over-fatigue, and thus help to head it off. These pain receptors function successfully in natural situations. To insure the perpetuity of this elaborate apparatus—for the benefit of our survival—nature has made it non-adaptive, i.e. pain does not become less perceptible if it persists. Nobody can really get used to painful exhaustion and just work harder and harder. On the contrary, these alarm signals get more and more piercing and loud if we do not heed them. But it seems that some 'unnatural,' man-made stimuli, while eliciting response from other receptors, happen not to cause direct pain, and in such cases repeated stimulation results simply in an accommodation to it. From then on, we are left without any warning.

There are numerous threats in the unheeded by-products of human inventions. We may mention, for instance, the fact that there are two hundred known carcinogenic substances, that is, substances that favor the incidence of cancer. One of these is ordinary soot, the effect of which has been studied on ailing chimney sweeps in England. Another is the hydrocarbons, such as are contained in the kerosene drippings from seemingly harmless little body stoves, which Hindu women have been carrying too close to their skin, with fatal results.

In the cases mentioned above, the victims long remained unaware of their plight. The disease struck insidiously. There had been a sensory adaptation, an accommodation of the skin, to the particular poison, the presence of which might otherwise have been noticed. For survival, we cannot always depend on our senses. They often fail to report danger in the smallest dose, which sometimes is the most dangerous.

The adjustment of human beings to man-made environment is a much more complex process than biological adjustment to a natural habitat. It is a process involving rapid readjustments; new frictions and nervous 'arrhythmias' are continually produced, and efforts are continually made to alleviate them. All this internally mirrors, in fact physiologically constitutes, the endlessly ramified process of civilization. The pace of this process is much speedier than that of adaptation through long, biological ages. Every new technological invention results in urgent new demands on the human nervous equipment.

We have keenly felt the need to probe into the general background of design and to search for the methods that ought to make its activity safe and sound for its vast consumership. Through the ages, man has labored hard, both physically and speculatively, to devise instruments for improving his environment. Himself he has largely taken for granted and known for the most part by accidental introspection. The fresh goal of our discussions is to stimulate interest in objective physiological data as guides in constructing and in judging human environment to fit man, properly appraised.

It is strange that human beings have hardly ever been studied with regard to their vital needs and care, the way rooted plants are studied in order to aid the agronomist in *his* work. Little information of this kind has been collected in practical handbooks printed for the architect and the designer. The sort of investigation spoken of here is not at all revolutionary in itself. Only its application to design has so far been rather fragmentary. The most specifically human endowment to be studied is a nervous system fused to an upper brain of extraordinary volume and complexity.

The first task will be at least to hint at programs of purposeful experimentation. The labors of many a researcher will be required to isolate and solve problems roughly pointed out by the practitioner.

For many years, I have been concerned with finding a good start from which to evolve concrete research in this vast field of design and to learn from attempted investigations what we ought to know of its biological effects. The experimental design of elementary classrooms in Texas may serve as an example. It represents an attempt at such investigations that has prompted similar efforts elsewhere.

Dr. D. B. Harmon, who began with a physiological

interest in primarily optical environmental influences on the development of school children, penetrated—whatever the detail validity of this work may be—deeply into the problems of biological oneness. An interprofessional commission—composed of physicians practicing internal medicine, dentists, orthopedists, educators, illumination engineers, color, paint, and optical experts—was formed for the purpose of studying the light and brightness distribution in elementary classrooms, and all factors that thereby influence the growth, health, behavior, and learning performance of 160,000 Texas school children. Tentative exemplary measures were taken to correct a few sample classrooms in visual matters.

Brightness contrasts were diminished not to exceed one to five anywhere in the binocular field. The effects of this simple but newly established balance were stunning. Of a huge number of well-established refractive difficulties, supposedly correctible by glasses only, 65 per cent had disappeared after six months in the properly illuminated and colored classroom, which had been treated for proper brightness distribution.

But what to doubters is even more striking and astounding than specific eye welfare is the fact that 47 per cent of malnutrition symptoms were reported to dwindle out of existence, because of the energy preserved when muscular strain, caused by malposture and growth difficulties due to visual trouble, was elminated. Diet had not been changed at all during this half year. Forty per cent of chronic infections, nose, throat, and ear ailments, and deficient functionings, we are told, were eliminated without any specific treatment of these deficiencies, by general improvement of visual hygiene.

The results of these systematic studies were carefully tabulated. The entire reflex chain set into motion by *action under visual stimulus* was identified, observed, and illustrated through the medium of motion pictures. Stills were excerpted from this flowing record and interpreted. The positioning of all bodily members was appraised in relation to subtle determinants from the field of vision, particularly in relation to the visual stimulation by brightness differentials. The posture pattern under this influence, and during a special localized visual task, was compared with desirable, normal, undistorted posture. The visual adaptation to this task and the adaptation to it of the whole body appeared intimately fused. It was recognized that wholesome normalcy and free play in the total bodily action followed from visual ease and relaxation. This would of course best result from making the kinesthetic plane—the plane of comfortable manipulation of the object in our hands—coincide with a suitable visual plane of acuity and eye comfort. But the visually guided action must also happen without undue lateral optical interferences that originate off center. Offensive or distracting brightness and sharp contrasts to it in the broad binocular field surrounding the focus of active attention must be well controlled.

Where such controls were not exercised, malpostures promptly occurred. These malpostures had to be interpreted not only 'geometrically' but also 'dynamically,' i.e. in muscular tensions that were evidently produced by the reflex positions of head, jaws, neck, spine, arms, and so on. This led to methodical electric measurement of muscular innervation with careful comparison upon tabulation, and to anthropometric studies repeated over a long period in order to record results of specific habitual strain on the muscular and bone structure of growing children.

Comparing traditional with visually corrected classrooms, biomicroscopic investigations revealed that the physical architectural shape and character of these rooms corresponded to equally characteristic eye deformations of the children who lived and worked in these rooms. Noticeable morphological and histological changes of the living sense organ itself proved startling and intimate consequences of the architect's design. This design had to him been very largely 'eye-determined,' only in a more traditional sense.

The research tended to branch out over a much broader field. Chemical tests were made on the children; quantitative analyses of blood samples, urine, feces, the end products of glandular activity, were statistically compared. Fatigue studies of many kinds concerned themselves with cardiac conditions, sampling certain modifications in heart sounds, and with neurological effects of visual activity, by checking on typical changes in all principal normal reflexes and in the respirational pattern. The experimenters also became attentive to strictly cerebral phenomena. Brain-wave recordings were made of children while in visually stimulated action, under both ordinary and corrected classroom circumstances. Psychometrics were applied to gauge comparative mental achievement in detail and learning performance in general. This in itself is a tremendous field of experimental elucidation of classroom design through functional results, to which, after all, classrooms are dedicated.

Dr. Harmon, originally interested only in the vision of school children, comes to state in the course of his studies that 50 per cent of dental trouble due to faulty jaw positioning (malocclusion) may be attributed to forced general posturing, caused by a wrong and troublesome distribution of brightness levels in an elementary classroom.

That vision, posture, and dental decay may have a hitherto unsuspected relationship can help to exemplify for us the complex responsibilities of design. When we follow the successive stages of redesign of classrooms—their fenestration, illumination, color schemes, and general equipment, down to slant and reflectivity of desk tops—we can foresee that what has long been treated under the rule of innocent inertia or reckless guesswork may be based to a degree on provable knowledge and cautious balance of valid considerations. Even where design failure would not immediately threaten us with grossly pathological consequences, architecture seems to ascend to a new order of motivation, and design may have to answer a new and less arbitrary consumer attitude.

We may conclude by demonstrating how one specific physiological investigation may demolish design patterns of long standing. It can lead to serviceable differentiation more fitting for both the individual and the human natural equipment in general. There have been in the past too many fallacious generalizations on the one hand, and exaggerated beliefs in super-individualized response to aesthetic stimuli on the other.

In a traditional grade-school room with several windows in one of its long walls, the children are regimented. They are seated parallel to each other at fixed desks placed in straight rows, all directly facing the blackboard. The light comes from the left. The studies of Dr. Harmon have proved the physiological fallacy of this simple geometrical arrangement and have shown the urgent need to give individual attention to the placement of each single seat. For each seat and for each row of seats, the left front corner of the room—that is, the corner where the bright window wall intersects with the much darker blackboard wall—is optically the decisive point. And it is differently situated in relation to each child. The angle between the line of vision directed toward this corner and the line toward the center of the blackboard is naturally different for every seat in the room. Assuming that the difference in brightness between the left and the frontal portion of the field of vision should be reduced to a minimum to obviate eye strain, Dr. Harmon arrived at a most unusual arrangement of the seats in curves, fanning out and nonconcentric. Here each child is turned differently in order to have the same visual benefits. The novel and interesting design and layout is governed by physiological optima. It improves not only conditions of vision, but, as a consequence, also general performance of body and mind, and fosters growth without distortion. Children are indeed observed and aided by the designer to act and to grow under the directive influence of light, almost as plants do in a greenhouse in following their basic heliotropism.

A design innovation of this kind may, on the one hand, introduce interesting individualization, too little considered in the past. On the other hand, it allows for important physiological constants to counteract a lawless espousal of a pseudo-individualization. We have been suffering in our time from a roughshod and arbitrary individualism that interferes with the kind of harmonious setting other cultures have enjoyed. But we may in our designs come closer to a true and new understanding of the individual and his nature, engaged in a profound interplay of inner and outer circumstances.

The far-reaching influence that a new biological knowledge must have on design is quite obvious. While such research would perhaps have seemed fantastic a few decades ago, it is now common enough to be put into the service of the consumer. It will enable us to receive a fairly clear picture of the pathology of design, of the ill effects caused by design miscarriage, even if they are not conspicuous or easily detected. Through the sensory functions or irritations that design elicits, it often disturbs many inner balances and thus manifestly affects our individual well-being. It has its meaning for the development of a generation of growing, still pliable children, and particularly through this circumstance, for the survival of the race. The investigation may, as said, lead to an appraisal of injuries due to design that are as yet unknown to the designer himself. The potential consequences of such a state of ignorance may well make us feel uneasy.

A high organism such as ours stands in a subtle relationship of sensory response to what happens outside. It has always been known that our 'vegetative functions' are not truly and fully removed or isolated from those of the senses. They are not really autonomically governed by a special nervous system. Their connections to the spinal equipment and the brain are so manifold that a mutual influencing is perpetual. For instance, since Cannon's work of 1915, the effectiveness of emotional states on all vegetable functions has been scientifically confirmed. The gall bladder, liver, and intestines have long been known to be affected by what is seen and heard and our feelings about it. Everyone is aware that a shock, such as a frightening sight, may upset intestinal functions.

Cannon's studies, which show the sympathetic system as an *instrument of automatic adaptation to routine change* of the environment, are highly interesting to the designer because he is perpetually concerned with what adaptation to his design an individual or the public as a whole can accomplish. Such an adaptive process will rarely be conscious and voluntary.

We must not forget that 'aware and willful' activities are relatively few and are directed from the motor areas of the frontal lobe. *Through design, however, man can, mediately or by a planned roundabout way, extend willful events to his innermost realms where responses were formerly almost uncontrolled.*

Design, the act of putting constructs in an order, or disorder, seems to be human destiny. It seems to be the way into trouble and it may be the way out. It is the specific responsibility to which our species has matured, and constitutes the only chance of the thinking, foreseeing, and constructing animal, that we are, to preserve life on this shrunken planet and to survive with grace.

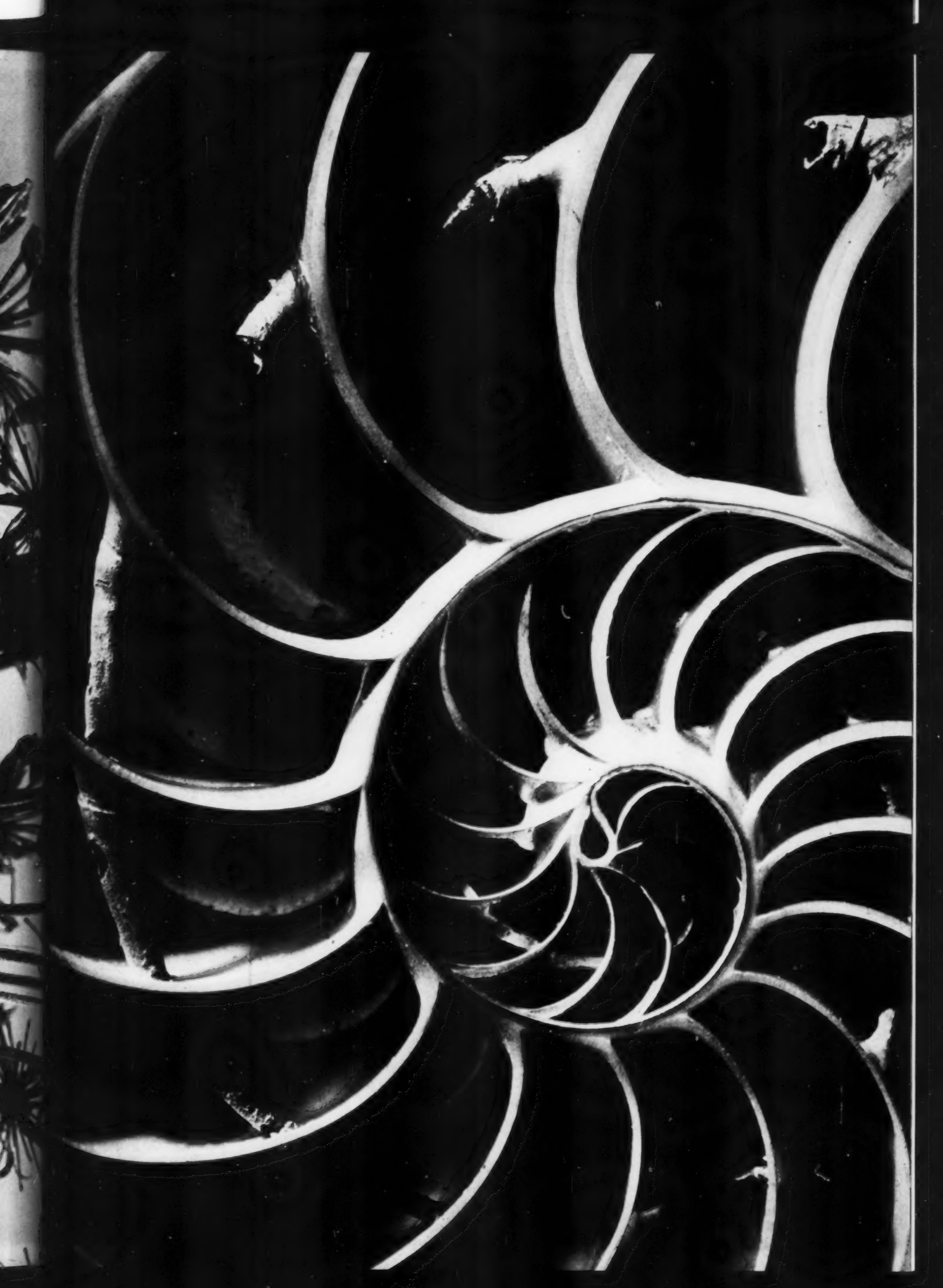
Such survival is undoubtedly our grand objective, according to an innate pattern of feeling. It is a matter of urgent concern to everyone—from the loftiest philosopher to the most matter-of-fact businessman. Design to contribute to survival of the race is more than design as a long-hair luxury or as a lubrication of bigger and better trade.

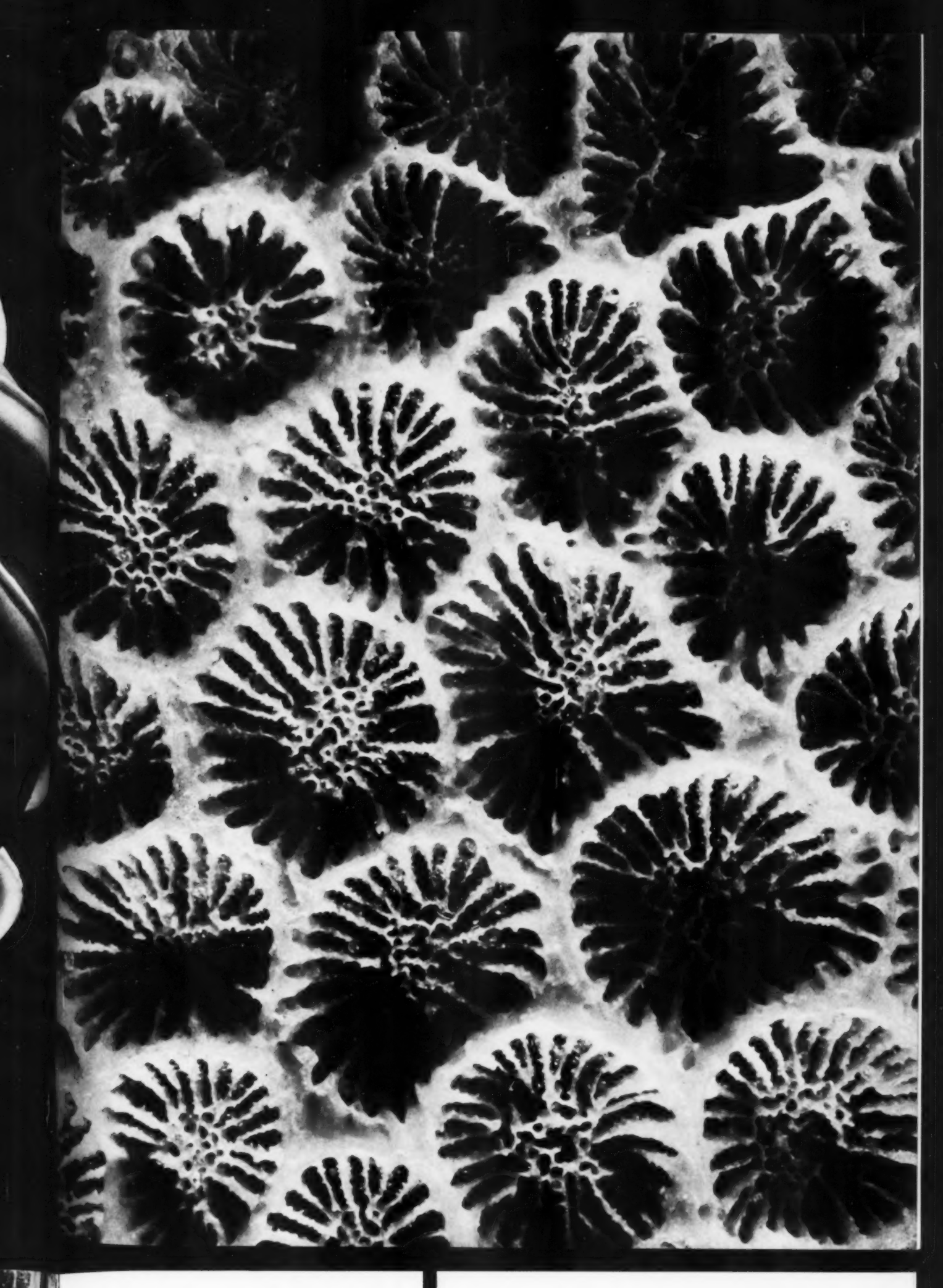
With knowledge of the soil and subsoil of human nature and its potentials, we shall raise our heads over the turmoil of daily production and command views over an earth which we shall have to keep green with life if we mean to survive—not cramped full with all the doubtful doings of a too thoroughly commercialized technology. Tangible observation rather than abstract speculation will have to be the proper guide. And drifting will no longer do.

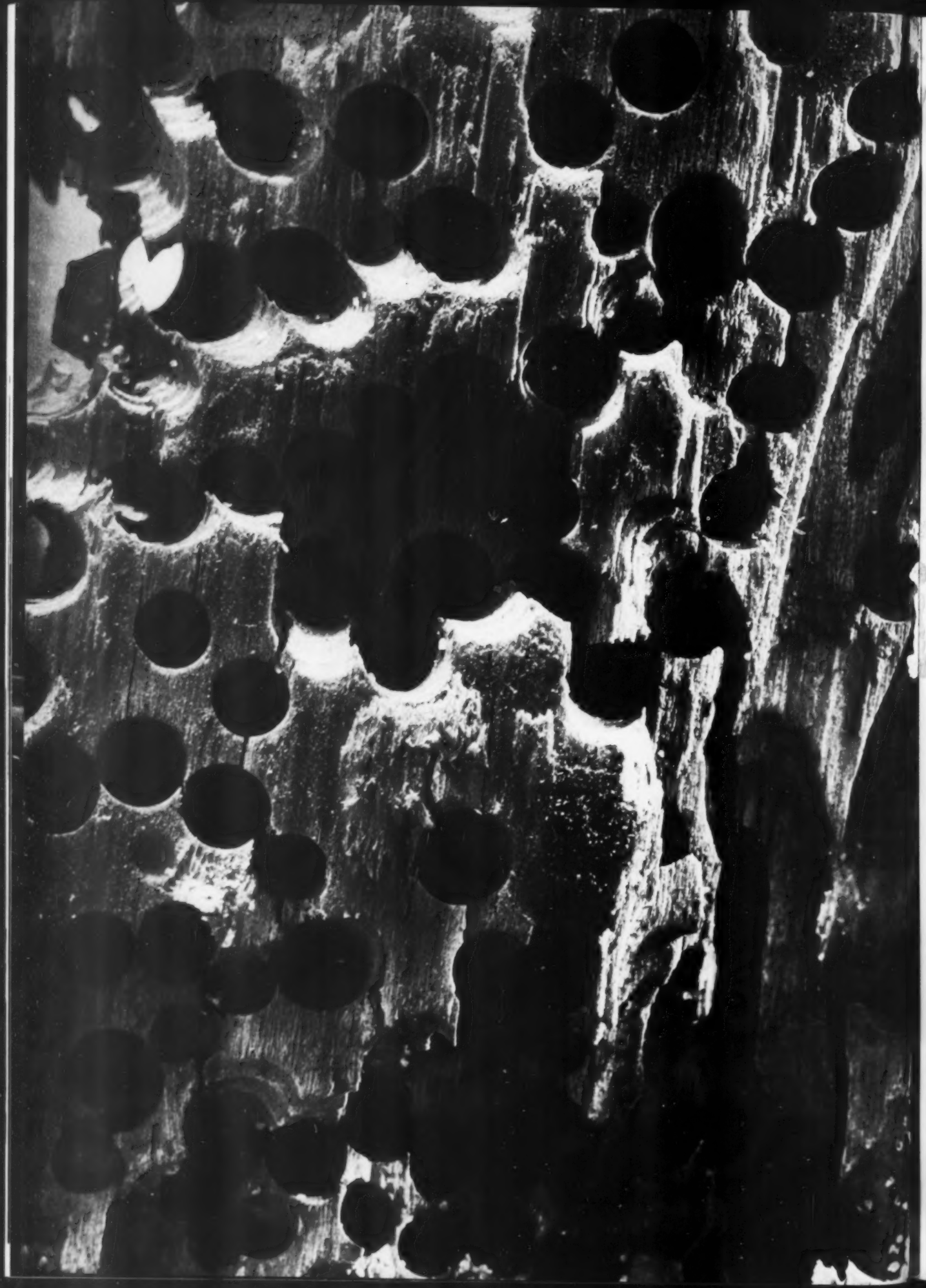
5

Photographs by Andreas Feininger

Nature photographs are not new, but the photographs by Andreas Feininger on the following pages suggest that we take a deeper look into the logic and beauty of nature's designs. When he focuses his camera on the nautilus, he records a sea animal's ever-expanding shell house. But we may find in it a suggestion of a water wheel or a dynamo, or even an intimation of a construction that has never been tried. Again, we may simply see it as a composition on the cross-section of a shell — something quite worth studying for its own sake.







Photographs on the preceding five pages, in order:
1 *Bishop's-weed, 3½ times natural size. Compound umbels typify carrot family.*
2 *Nautilus cross-section shows series of houses which animal builds as it grows; magnified 4 times.*
3 *Scalaria, here magnified 5 times, means "spiral staircase."*
4 *Coral colony, limestone; 3½ times natural size.*
5 *Pier timber riddled by marine borer reveals sea beyond; magnified 4 times.*

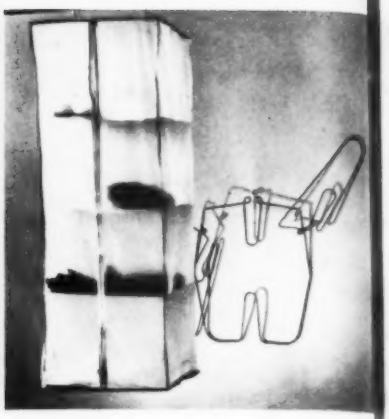
what's so special about plastics?

It is said so often we hardly think to argue—that any new material is introduced in the guise of an old one. Yet the postwar plastics have appeared without disguise before a generation of consumers that copes with innovation as the commonplace. Certainly there have been some startling masquerades, but marble-like plastic is no more the rule than wood-finish metal or pig-grain calf. There has even been rebellion. The consumer rebels, not against a material, but against a material wrongly used—a smooth, harmless rattle that shatters on the bathroom floor or a thermoplastic soup bowl that swims into the soup. That same critic is quick to see the virtues of heavy-duty plastic tableware and lays it out for company as soon as it is recommended for the breakfast table.

The true and only complaint against plastic as a material is likely to come from the designer himself, who may, and particularly if he is accustomed to work materials by hand, contend that plastics are not a fit medium of design. This argument interests us because, for better or worse, plastics *are* today a medium of design. They appear in every context and can be recognized at a glance as something quite apart from wood, metal, ceramic, or glass.

Plastic has been classified time and again according to the particular qualities that suit each compound for a particular purpose. Any designer knows that the plastics are not one material but many. But even if the reason be semantic, the consumer recognizes plastic as one new material with a thousand new shapes. On these pages, without taking any stand on the fitness of the medium, we classify some of these shapes in an attempt to show how quickly and certainly plastics have changed the landscape. Some of the designs we show may have been unsuccessful; some are no longer made; but all of them seem to represent a distinct departure from tradition.—*d.a.*

The most strikingly recognizable plastics *are undoubtedly the transparent and translucent ones. As pedestrian an article as a garment bag or a storage battery has an otherworldly effect when it is for practical reasons made from unpigmented plastic.*



The battery case was injection molded of acrylic plastic. Courtesy Rohm & Haas. The vinyl garment bag appeared in a show of Museum of Modern Art.

Translucent plastic offers a new way of approaching effects found in nature.

The vinyl body of this spinning lure was made from a hair curler and is said to resemble Florida shrimp. Courtesy Bakelite.

Transparent plastics can be used to reveal what happens inside a container.

The Tenite minnow trap was designed to shanghai minnows as decoys, make counting easy.

Or to simplify measurement and correlation:

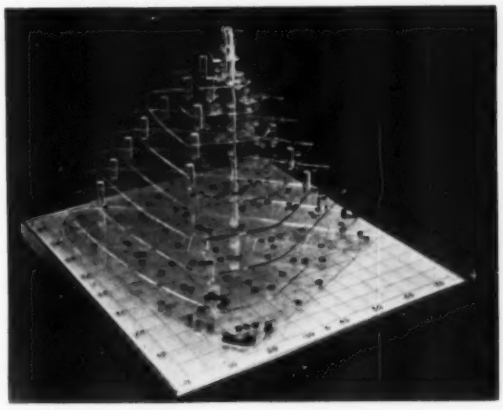
Square, protractor, triangle, rule, French curve are combined in a Tenite drafting instrument. Tennessee Eastman.

And this may allow a complicated design problem to be simply rendered.

The Tenite head of a bath spray serves as the housing for a bath thermometer. Tennessee Eastman.

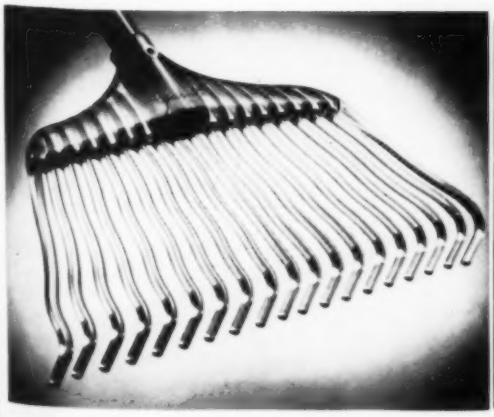
Transparent plastics can be made to reveal what is unseen in real life. . .

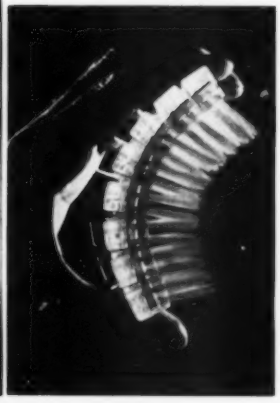
Translucent mandible of jaw model reveals nerve and blood supply. Light sent through head cast in "C-8" resins demonstrates radiation therapy. Bakelite Company.



Or to represent difficult theories graphically.

Lucite planes hung over luminous base make a three-dimensional graph on which colors are plotted according to value, hue, and chroma. Du Pont.





Sometimes the transparency of the plastic is used to reveal the structure of the design itself.

Reinforcing ribs show through Australian-made Tenite garden rake. Tennessee Eastman. Lucite blocks strung on nylon cord make flexible Tek-Hughes brush. Du Pont.

Flexible plastics have made fantastic designs *a commonplace. Polyethylene, for instance, inspires entirely new containers, with airtight lids that simply snap into place, or flexible lids that serve a double purpose.*

Polyethylene cocktail shaker has snap-on strainer and lid. Cover of shampoo font ends in flexible fingers. Tupper Corp.

Flexibility and transparency are combined in "transvision" booklets that permit page-by-page dissection of a complicated structure.

Instruction manuals with overlays printed on acetate film were developed during World War II. Courtesy Celanese Corporation.

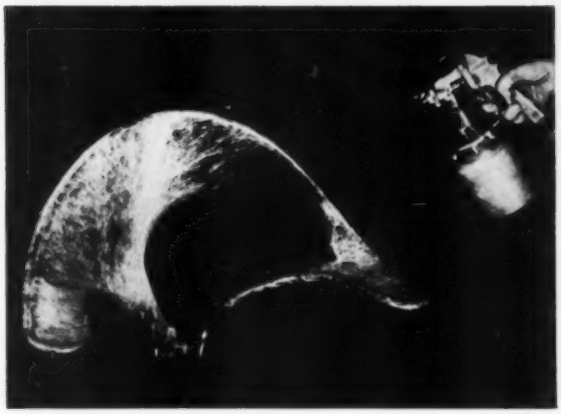
Flexible sheet material makes a plastic skin a container which, having no shape of its own, takes on the shape of the object that it encloses. The object may be a chicken:

Dressed chicken wears a display-case skin of acetate film. Courtesy Celanese Corporation.

But often it is as amorphous as water.

Airtight transportation is provided by disposable vinyl blood pack. Naugatuck Chemical. English packages, some self-sealing, are made and filled at the same time. Technopol Laboratories Limited.

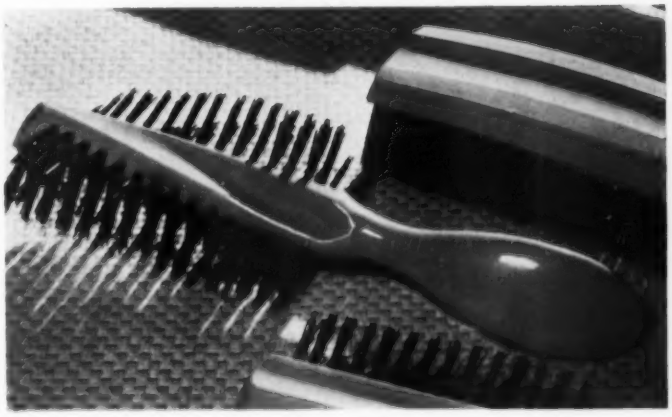
The flexibility of a cobweb is found in a plastic that can be sprayed into thin air to spin across the mere outline of a design.



A liquid vinyl, sprayed across spans up to twenty-four inches, produces a flexible, leathery skin. Progressive Industries, Inc.

The designer who considers plastic an unworthy medium *is probably disturbed by the fact that it has no life of its own. While wood has an organic grain and metal usually comes in bars and sheets that must be forced into shape, most plastics are nothing but a chemical compound until they are formed under heat and pressure in the mold. The plastic flows into the mold without preconceptions and acquires the internal structure that characterizes the finished product at the same time that it takes its outward shape.*

A shape that might be carved down from a block of wood has another texture when it is formed without waste by a quick mechanical motion.

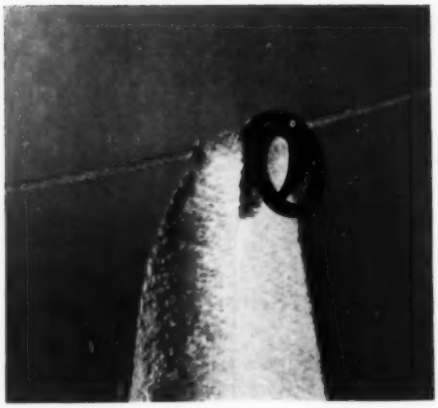


Fuller brushes designed by J. Gordon Lippincott have backs of cellulose acetate. Courtesy Celanese Corporation of America.

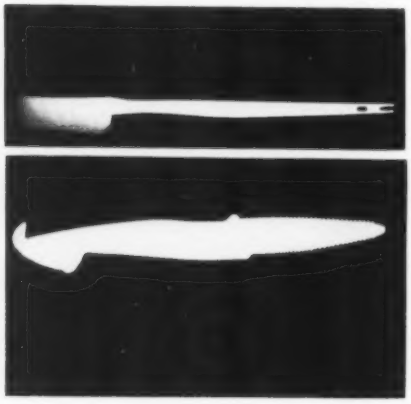
The adaptation of a utilitarian article to the molding technique may result in an unfamiliar suavity.

Design of British dustpan clearly implies that the polyethylene flowed into place. Courtesy Council of Industrial Design.

Some of the shapes introduced in plastic are so bewitchingly neat as to obscure the fact that they would have been difficult to manufacture in another material.



Spiral clothespins of cellulose acetate were designed around snap-back action. Courtesy Celanese.



A characteristic of many plastics is the extraordinary accuracy with which they may be molded.

Kitchen utensils by Northwest Plastics have finely-detailed styrene handles. Scraper is polyethylene. Courtesy Dow.

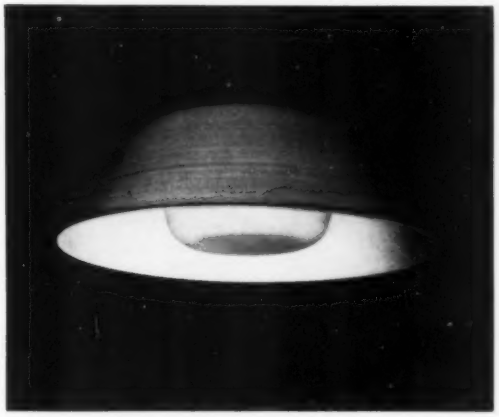
This is another quality which makes a new material a new medium for approaching a natural effect.

Vinyl-resin based plastisols make anatomical models whose accurately scaled removable parts ape the living with characteristic textures. Bakelite.

Sometimes the engineering of the mold has a distinct effect on the shape that is produced.

Cup handle with axis at right angles to bowl, originally result of molding around draw pin, now appears in cups molded by other techniques.

Traditionally, objects made from sheet materials *have been designed to look as if they were sculptured in three dimensions: a silver tea service is an example. But today the designer often likes to delineate volume with a curved two-dimensional covering, a sort of counterpart in sculpture to an outline drawing. This modern convention is especially apt in a relatively strong yet fluid medium like plastic.*



Thermoplastic sheet materials, softened and then remolded, can sometimes accomplish in one deft convolution what might otherwise take several parts.

In a new lighting fixture a sheet of styrene is vacuum molded to form diffuser and shade in one piece. Lam Workshop.

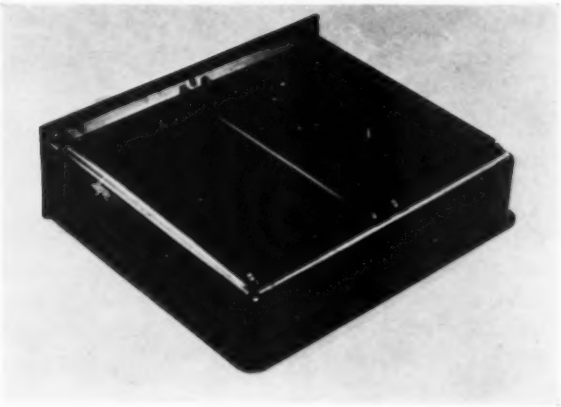
Occasionally a streamlined design can be produced without molding, simply by cutting a sheet of material to the proper outline.

The sweeping Kodapak lenses of these sunglasses seem to have inspired a similar suavity in the Tenite frames. Tennessee Eastman.

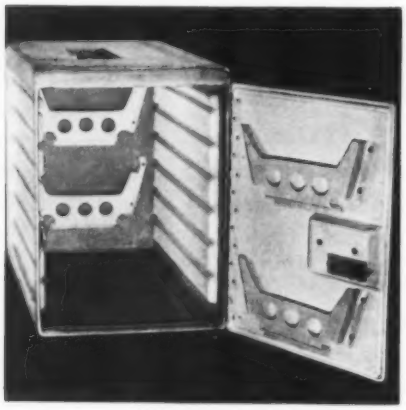
The thin walls and complex undulating surfaces ordinarily associated with sheet materials are sometimes found in moldings economically designed to spare the expensive material and make the most of its pliability.

The "Lit'l Tyke Trainer" is injection molded in one piece from cellulose acetate butyrate. Courtesy Tennessee Eastman.

When cabinetwork is adapted to the molding technique the careful fitting and laborious assembly that are a traditional mark of quality become unnecessary.



One-piece drawers molded from phenolic resins were first used in case goods by Edmund J. Spence. Courtesy Bakelite.

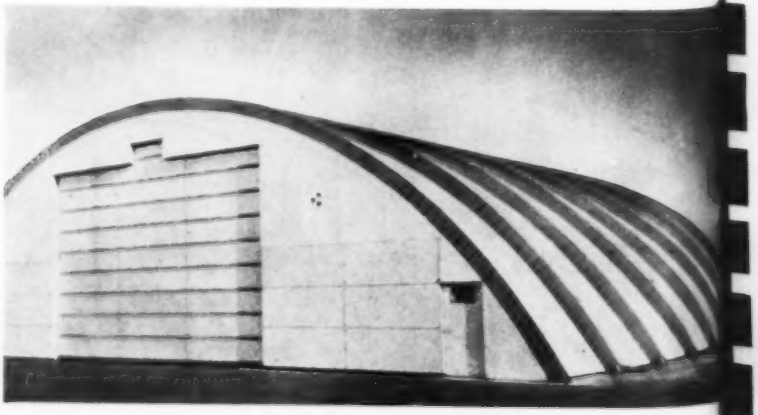


And hidden structural components may emerge as characteristic elements of the design.

Trays rest on integral runners in American Airlines glass and polyester food carriers. Sides are match-molded prior to bag-molding of entire case. American Cyanamid.

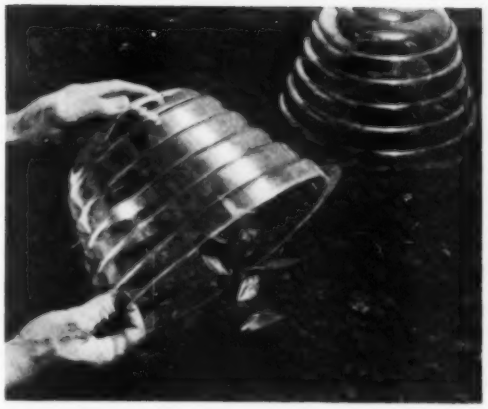
Reinforced plastic has many qualities *that recommend it as a building material. Its light weight, high strength, translucence, and moldability have encouraged speculation and costly research. It has certain handicaps, the most important of which is probably the expense of the material itself. But even costwise plastic has an advantage: it can be prefabricated into building components almost as easily as it can be turned out in sheets. Whenever tooling must be paid for, plastic offers economies which show up even in relatively small production.*

Sometimes the light weight of plastic and the economy of structure it allows are more important than cost.

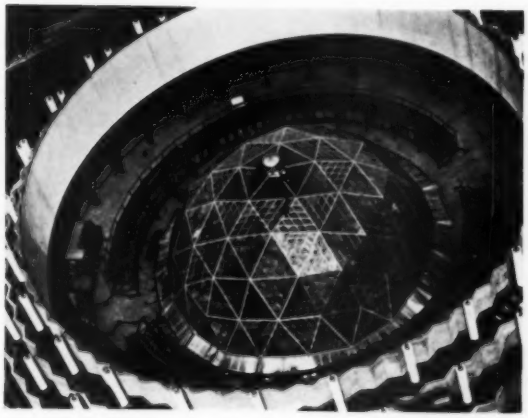


Plastic panels and magnesium arches to make a hangar can be carried in a large cargo plane. East Coast Aeronautics.

Plastic can be formed in inherently structural shapes.



Among the earliest plastic domes to reach consumers was a portable greenhouse drawn from extruded Tenite sheet. Tennessee Eastman Corporation.



Plastic panels can apparently be made self-supporting even over large spans.

Buckminster Fuller now believes a dome like the one he built for Ford might stand without the aluminum framework. Bakelite.

Where reinforcing proves necessary it can be formed as an integral part of the panel.

Twelve identical panels, integrally ribbed, join with gaskets and clamps to make portable shelter. East Coast Aeronautics.

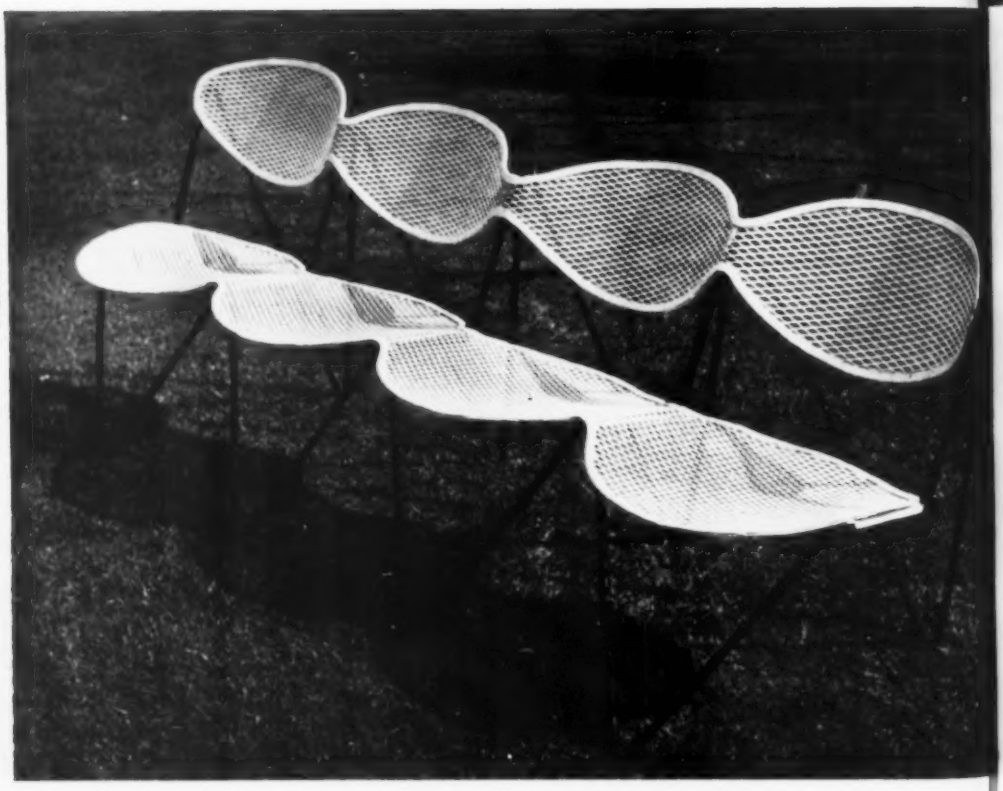
The future of plastic, whatever it may be in building, seems undoubted in aircraft, where a true continuous skin and its integral reinforcing promise to replace an armor laid piece by piece over independent ribs.

Experimental wing shell, a glass-plastic sandwich with built-in beams, proves strong, unusually smooth. East Coast Aeronautics.

Denmark: Stoneware vase in a craft tradition.

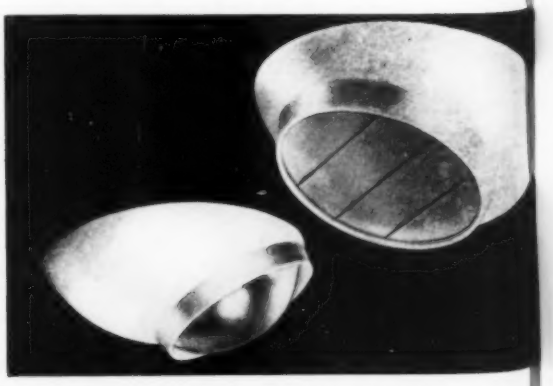
Designs from abroad

Photo Council of Industrial Design, London



Great Britain: Fresh approach to the park bench in rustproof steel rod and flattened expanded steel. Nigel Walters for Andrew A. Pegram Ltd.

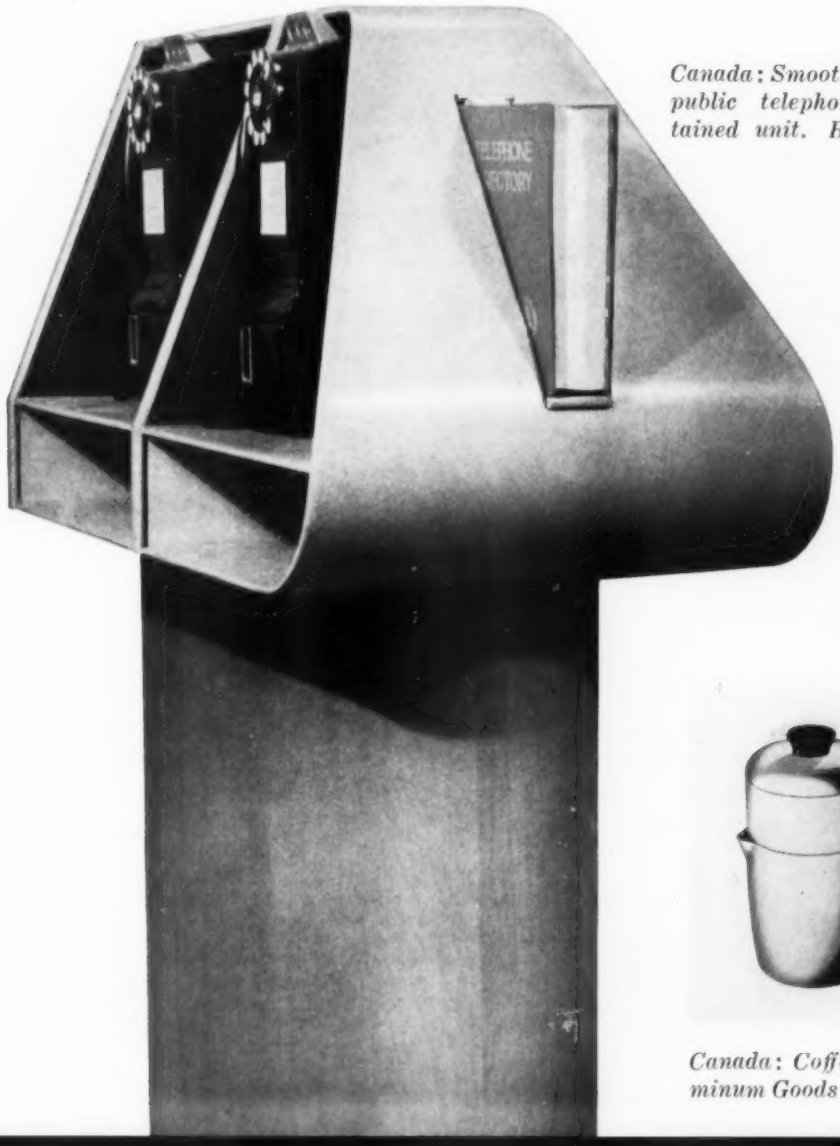
Denmark: Only 9" across, Contex calculator designed in plastic by Sigvard Bernadotte and Acton Bjorn uses color to clarify operation.



Switzerland: "Spoteye" lights by Steiner & Steiner, Basel, are installed without separate fixture ring.

Mexico: Spanning the Rio Blanco near Vera Cruz, this tautly strung splayed-arch bridge achieves new freedom with welded steel. By Camilo Piccone, based on a design conception by Dr. Thomas Kavanaugh of New York University.

Switzerland: Elegant forms characterize fixtures by Oederlin & Cie., Baden (below).



Canada: Smoothly molded plywood encases public telephone essentials in a contained unit. By Design Craft, Toronto.

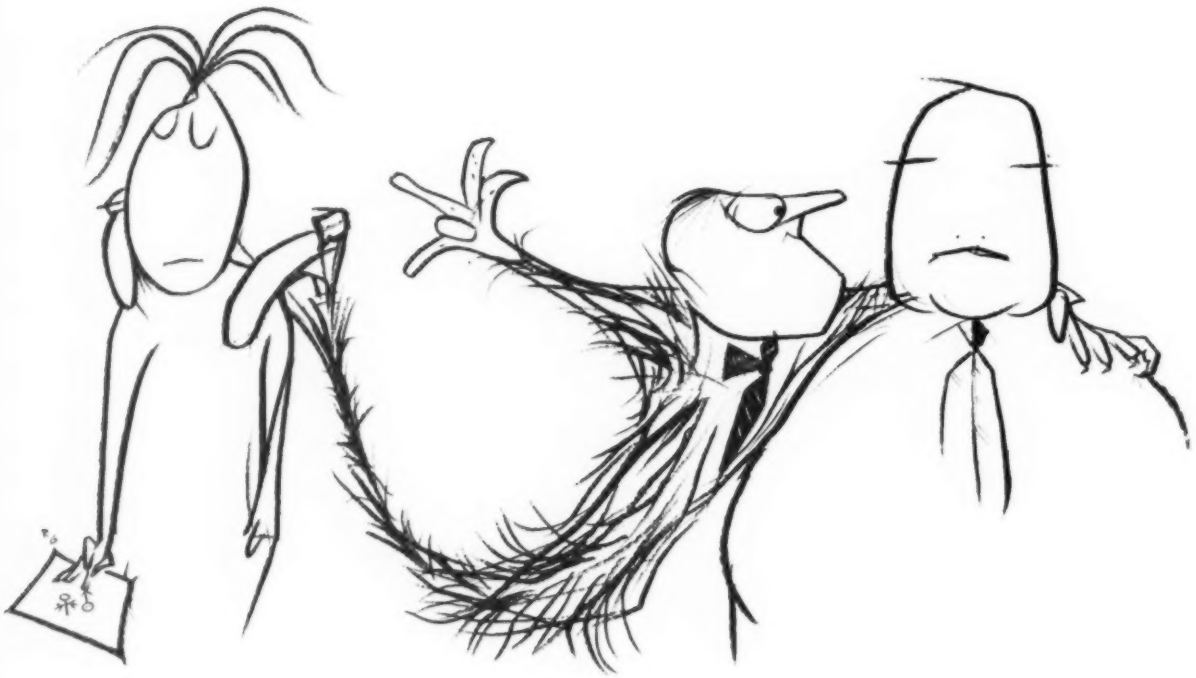
Canada: Coffee maker by Aluminum Goods Limited, Toronto.

WHO'S WHO
in distinguished design

A mid-century compendium of great living philosophies by the famous men who have made America strong.

Portraits by ROBERT OSBORN

Compiled by THOMAS B. HESS



Makepeace von Schadkhen

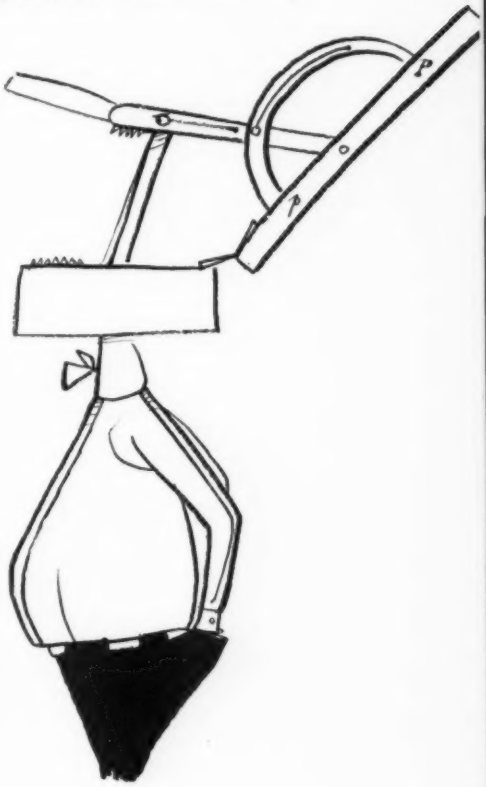
"We presided at the Marriage of Art and Industry: the Consummation is on the boards."

B. Furt, Germany, 1892. Ph.D. Art History and Expertise, Univ. of Berlin, 1910. Commissioner of Pan-Slavonic Crafts Festival, Prague, 1914. To U.S.A., 1915. Introduced Henry Ford to Diego Rivera, 1920; Howard Chandler Christie to Lily Daché, 1924; Pablo Picasso to John D. Rockefeller, 1929. Spearheaded movement toward intarsia ovenfronts, free-form pianos, machine-painted neckties. Arranged exhibitions, "Modern Sculpture: From Nadelman to Nash-Healy," and "Corn in Arapesh Paintings," 1951. Currently Director of Aesthetic Innovation, National Placemats, Inc. Res.: Decimal Pointe, Mich.

Asa U. Waite

"Naturally, in our great democracy, the designer ethically is obligated to supply the most ascertainable demand."

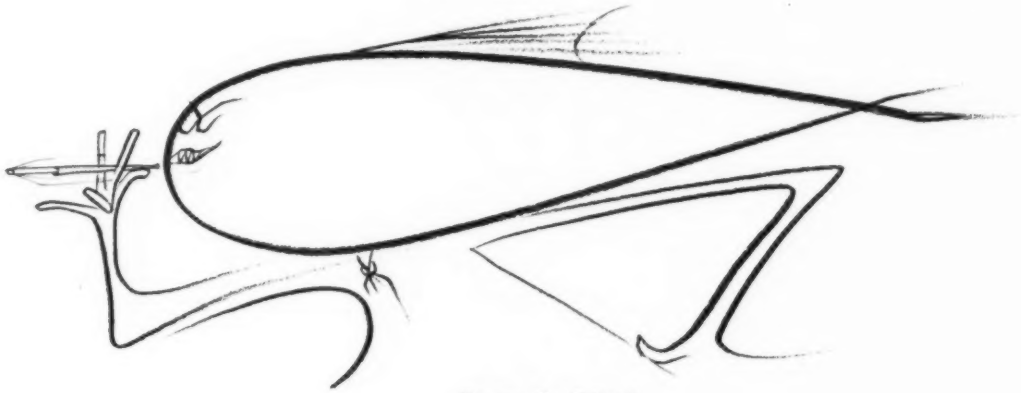
b. Los Angeles, 1901. B.A. Duke (majored in parapsychology), 1922. Galvanized national attention with fumed oak Crystal Set cabinets, 1929. Consultant on *Literary Digest* poll, 1932. President of Neo-Art Nouveau, Inc., 1937 (specializing in green St. Patrick's Day chrysanthemums, movie house mirrors). Field runner for Gallup, 1948. Founded Nothing Too-lose Lautrec Painting Kits Corp., ("He draws 'em, you paint 'em). Author of *Thar She Blows: The Weathervane Theory of Design.* Current projects: Queen Anne Geiger counters, wall-to-wall video screens, vest pocket Hi-Fi. Res.: Pulsa, Okla.



Will C. Werk

"Function + Form = Functioning Organism
Function = Functioning Organism
Form = 0

b. Deadwood, S. D., 1917. Apprenticeships Black Mountain College, M.I.T., Vassar. Expert on cardboard visual-aids for F.H.A., 1940. Horn and handrail styles for Mack Trucks, 1943. Werk-Perfect Perforation, the Circle of a Thousand Uses, 1944; the Tube Glass, 1946; the Flat Dish, 1947. The 3-in-1, 3-to-1 Martini Mixer, 1948. Werk-4-U Canopener honored at Hammacher-Schlemmacher Triennale, 1949. At present rephilosophizing basic windshield-wiper thinking for U. S. Army Ordinance. Committee for Demuralification of Post Offices. Author: *Taste Makes Waste*, Dept. Commerce Bulletin. Res.: Redwood, Cal.



Rram de 'Vhwh

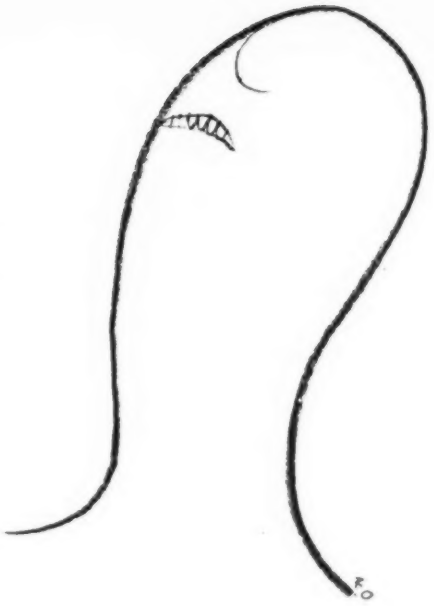
"I had broken through the sound barrier by 1934."

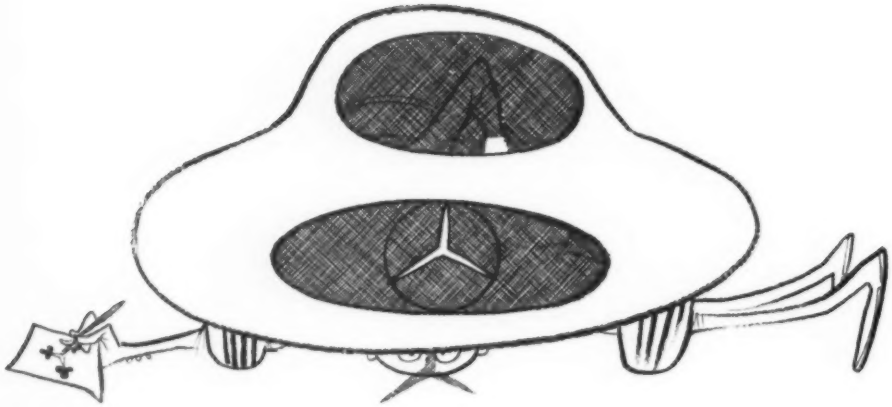
b. Sztlod, Crimea, 1910. (To pronounce 'Vhwh, say "leave whey," then omit "lea" and "hey.") Trained at Imperial Institute of Artillery, St. Petersberg, but was early attracted to Constructivist movement. Collaborated with Malevitch on white ashtrays, 1929. Liaison between H. G. Wells and Aldous Huxley, 1930-33. Founded Futura-matics, Inc., N. Y., 1934, and organized sensational 'Vhwh Pavilion at the 1939 World's Fair. Frequent Contributor to "Letters" of *Sat. Eve. Post and Lintel* under nom de plume "Indignant." 'Vhwh toaster runner-up in "Speeding Objects" competition, 1952. Res.: Airfoil, Ill.

Whyte N. Pyuer

"The luxurious handmade table must achieve the authority of our pristine machine-age culture."

b. Scarsdale, N. Y., 1907. Studied with Schonberg (harmony), Sartre (rhythm) and Mondrian (content). Organized *One-Chair House* competition for 1944 Hollywood Community Chest Drive. Straight-edge advisor, Algonquin Pencil Co., 1945. Noted for handless watch dial, beltless trench coat, and solid gold curtain for Neiman-Marcus Exhibit, 1950 Texarkana International (now on permanent loan to Fort Knox). Holes consultant to *Flair*, 1951. Now Director, Museum of Non-Objectionable Design, Whytestown, Pa. Author of *NO! and other Plays* (Negativist Press, 1949) and *The Abstemious Sybarite* (autobiographic revelations), 1952. Res. Nixville, L. I.

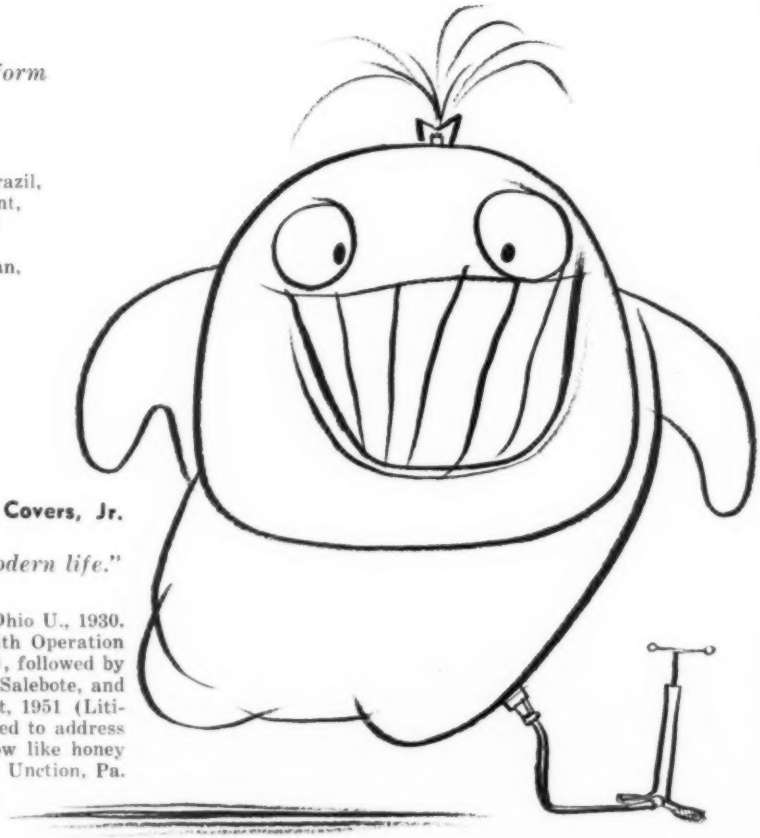




Carlisle Steale

"Good old Yankee industrial know-how can transform alien design into 100% year-round Americana."

b. Philadelphia, 1900. Self-taught. Staff humorist, *Nat. Geographic*, 1914-32. Efficiency expert to: Republic of Brazil, *Reader's Digest*, U. S. Can, U. S. Mint, U. S. Cant, Coldpoint, Hotspot, City of Seattle (Wealth and Helfare Dept.), and Southern Belle Telephone. Originality and self-reliance recognized in contributions to creation of Hammond organ, Eddystone light, Hepplewhite hassock, Cherrystone clam. Current project: Redesigning right-hand road curbs for projected right-seat steering wheel. Res.: Ischia, Mich.



E. Z. Covers, Jr.

"A soothing surface can ease rough edges out of modern life."

b. Poughkeepsie, N. Y., 1912. English and Layout, Ohio U., 1930. Instructor at I.B.M. Thinkstitute, 1935. Experience with Operation Mothball led to revolutionary Computor Slipcase (1943), followed by independent work on plastic Bubblechair, Sho-No Parts Salebote, and Total Envelope Multiple Living Plan (1949). Schmoo Suit, 1951 (Litigation Capp vs. Covers, settled out of court). Invited to address Murano Glassblowers Confraternity, 1952. "His forms flow like honey from some celestial spoon. . . ."—Halbott Tamlin. Res.: Unction, Pa.

Cozz McFields

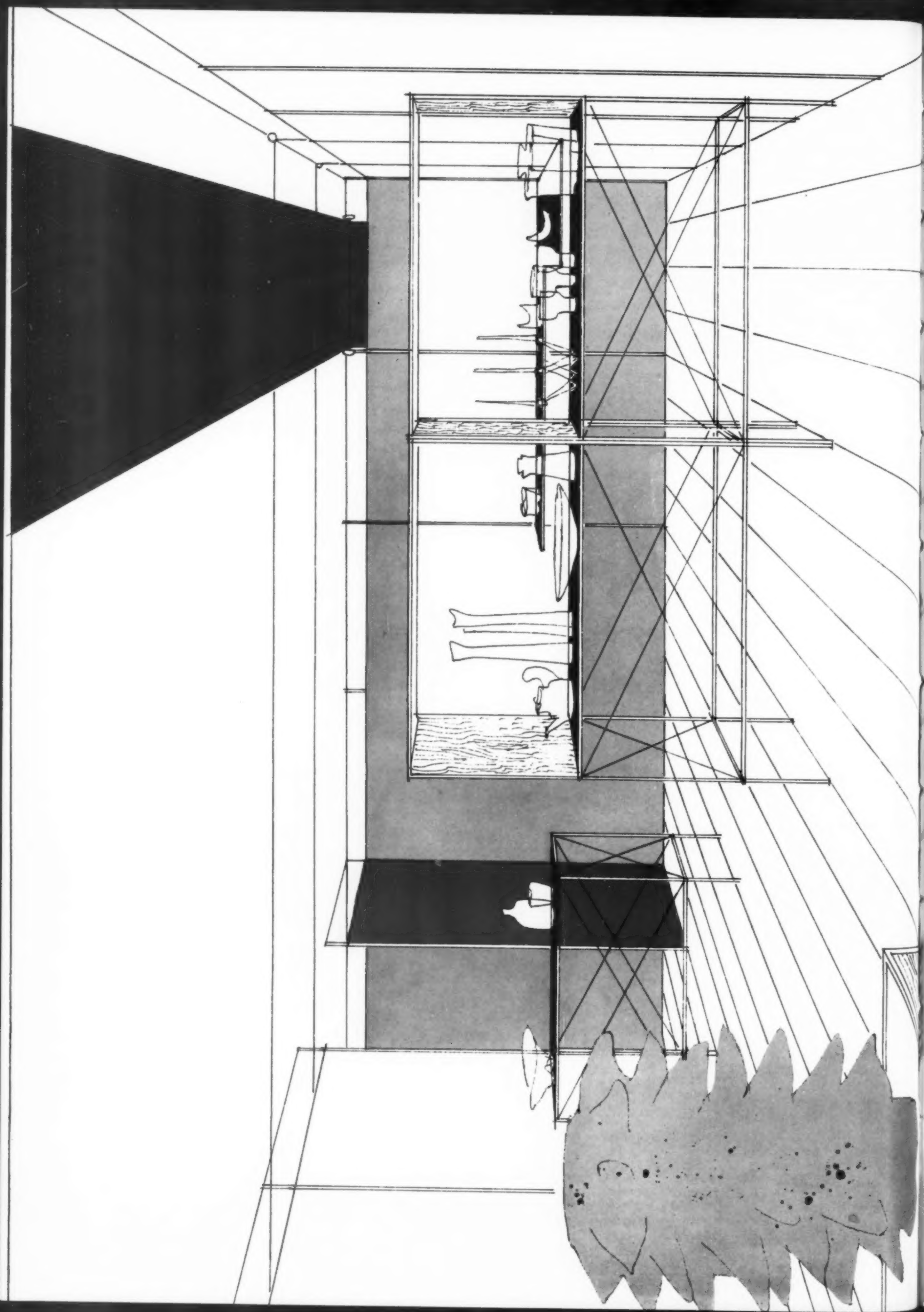
"*The* Zeitgeist *insists that our* Weltanschauung *be* Gestalt."

b. Tucson, Ariz., 1931. Bauhaus Kindergarten, 1926. Meta-spiritual conversations with Gandhi augmented by travels to Tibet, Nepal. New School for Social Research, N. Y., 1938. Proto-Cybernetic Weathermaps for USAAF, 1944. Group captain, 100 Great Books, Aspen, 1952. Pamphlets on "A Groundnut Scheme for Caribbean Factories, Involving Around-the-Clock Use of Parking Areas," and "Existenz for Everymann," (Jeep Foundation, 1951). One-man show of blueprints and photomurals scheduled at the Armory, 1956, tentatively entitled "Dyna-Fields for Total-Feelings." Schnorbert Wiener in *Out of This World Review* commented: "His module is as universal as the pinhead." Res.: Penthouse, Empire State Bldg.

Leader F. D. Lamb

"The public has to be led firmly exactly where it wants to go."

b. 1893, Seattle, Wash. Retired from presidency of Helpy-Selfy chain variety stores after international success of "Lost Generation Kit," 1929. Awarded Penrod Medal of Regionalist Designers' Society, 1935. Discovered Old Man Moses, primitive painter, 1942, and styled his inspiration to Gallerymark Cards, 1944. Designed "Assemble Your Own Etruscan Sculpture Set," 1945. Prospected Big Sur coastal reaches for driftwood deposits, 1950, and founded Drifting Mobiles, Inc., to exploit invention of plastic driftwood, 1951. (Capitalization $67,000,000). Co-author with Benton Craven of *Is Last Year's Craze This Year's Dividend?* Res.: Fountainhead, N. J.



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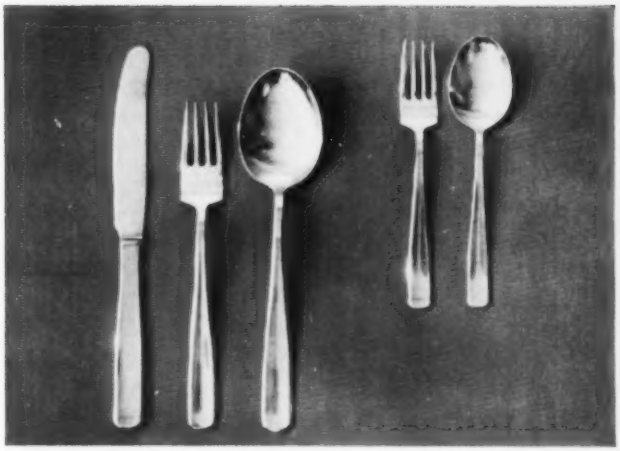
Left: One of the designer's projections of the installation. Right: Stainless steel cutlery, by Folke Arstrum, Sweden.



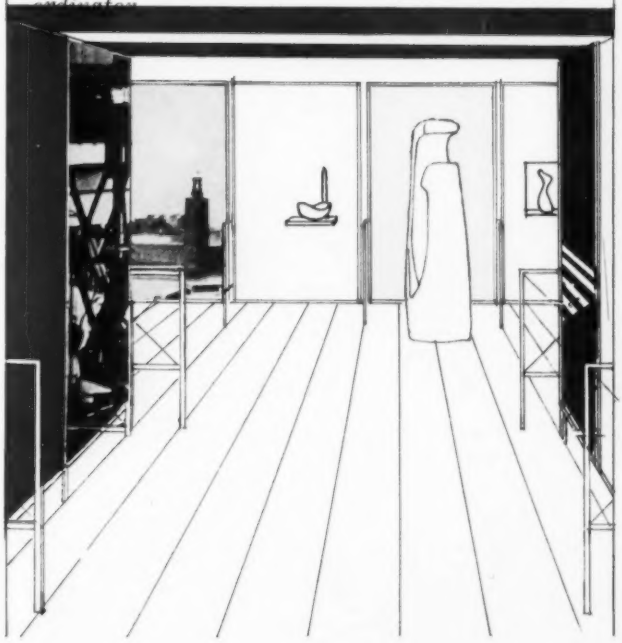
Package *from Scandinavia*

A travelling exhibition on a four-year tour will acquaint Americans with life and design in the North countries.

That group of American consumers who frequent the creamy, big-city specialty stores have been on familiar terms with contemporary Scandinavian products for some years. Ever since the first bit of imported blondwood made its prewar appearance, they have accepted svelte Scandinavian furnishings in their rooms and on their tables. But the majority of people haven't so much as a nodding acquaintance with Orrefors, Gustavsberg, Wirkkala or Bojesen, either as names or as traditions, simply because their goods haven't usually been around in Dallas or Denver to get acquainted with. The irony of this is twofold: Modern Scandinavia has done a good deal to cut a path for better industrial products in this country, and happens to have created some unusually attractive objects to boot.

In the next few years Americans from Baltimore to Seattle will get their chance to see one of the most impressive collections of Scandinavian home arts ever assembled—over 700 examples of furniture, textiles, silver, steel and glass from Norway, Denmark, Finland and Sweden. "Design in Scandinavia" had its full-dress international opening on January 15 at the Virginia Museum of Fine Arts, Richmond; from there it will go to the Brooklyn Museum in April, then on a four-year tour to some twenty museums across the country which jointly sponsored its trip here.

Working with floor plans of more than twenty American museums which the exhibition would visit, Herlow juggled his modular units to fit each one. Below is a typical installation. The exhibition is being circulated by the American Federation of Arts; the Virginia Museum of Fine Arts, co-



Because travel is so much the point of this exhibition, its installation is as topical as its contents. Entirely put together in Scandinavia, the show's installation is the result of a four-nation competition won by the Danish architect, Eric Herlow. He inherited, with the honor, the problem of designing an exhibition thousands of miles away from the various galleries in which it would be seen.

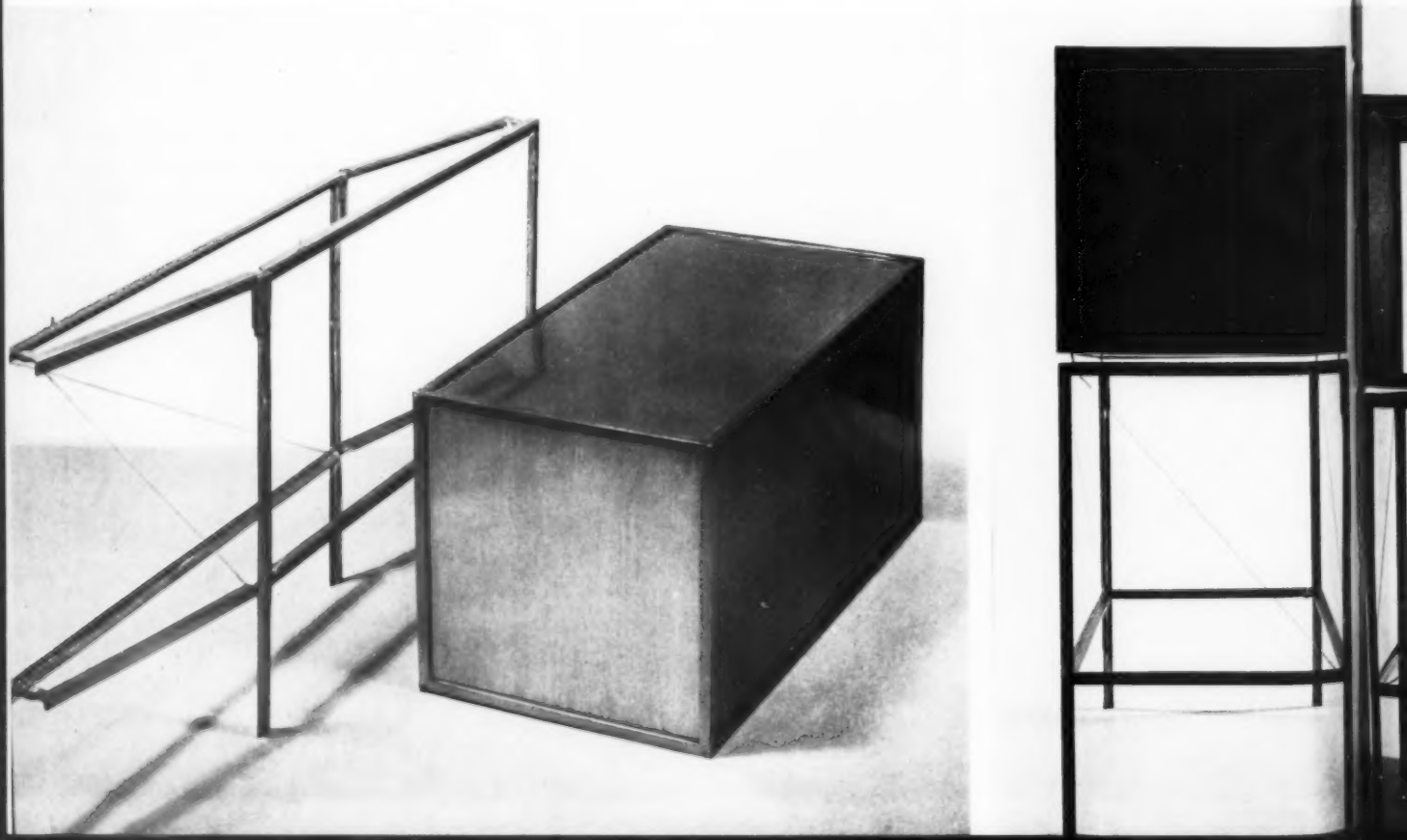
When it opened in Richmond, every fork, lamp and vase in the show was in place, and the total effect was very much as Herlow had visualized it in the sketch on the previous page. For travelling shows this kind of happy ending, or even beginning, is not at all customary, and the success of Herlow's plan lies in the fact that it is virtually foolproof: a complete, self-contained package which is flexible, yet keeps its identity in any surrounding. Nothing fastens to museum walls, ceilings or floors. The plans include all cases, tables, pedestals, backgrounds, lighting and even music. Herlow worked this out with a system of modular units which convert rapidly from packing boxes into display cases, integrated by screens, platforms and overhead strips which are infinitely variable. Then he simply made a special installation plan for every museum in the circuit.

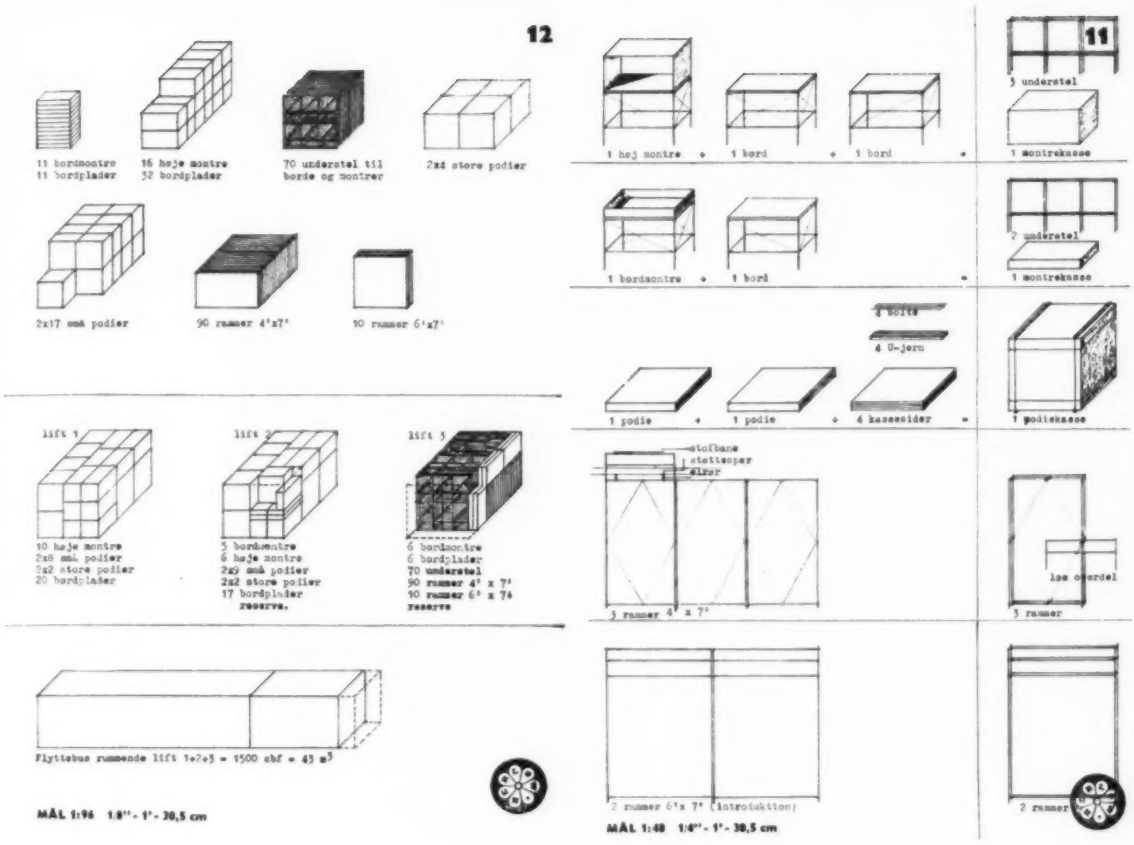
In transit the objects are protected in the boxes by specially shaped foam-rubber wraps; the Formica sides slide out, leaving glass display cases which are set up on anodized aluminum frames. When it is time to move on, the whole package collapses easily and stacks up as neatly as toy blocks into just the space available in two moving vans.

Furniture and fabrics, as opposed to the case-enclosed objects, are set off against life-sized photo-murals of interiors within framed niches of black, grey and white Formica. This stimulates, without fuss and clutter, the spatial sense of a room and, like the entire display device, makes a strict impersonal frame for the contents.

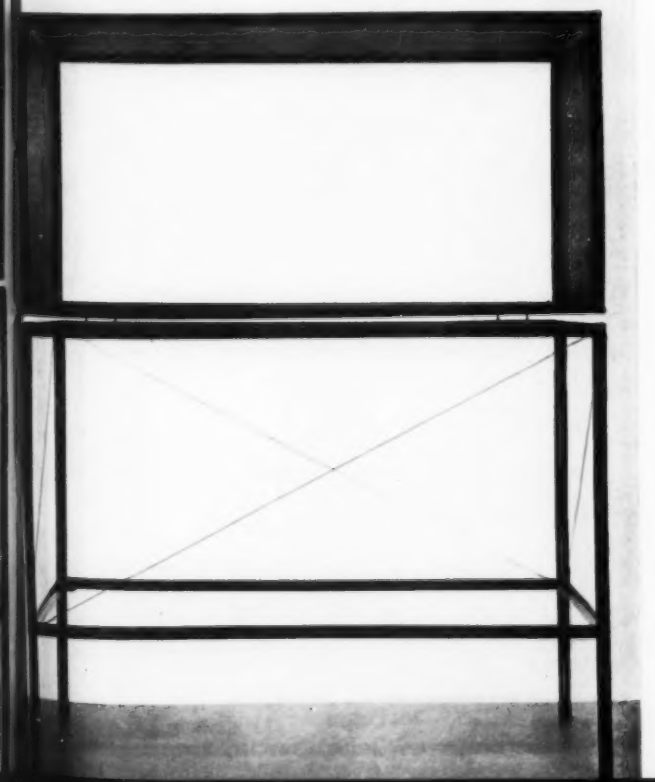
The array of objects thus displayed, some of which are shown on the following pages, sums up a Scandinavian point of view which Americans—designers, business men and buying public alike—will do well to scrutinize. Because they are in touch with a continuing craft tradition, Scandinavian designers have a sense of, and a respect for the materials they work. This doesn't mean that their creativity is confined to objects turned out by hand—as we see in cast iron dishes, steel chairs, machine-loomed textiles. It does mean that this sympathy for materials, linked with what might be called a sense of justness in Scandinavian culture, has produced a remarkably high median of design. That level of quality is found even in ordinary machine-made goods, and Americans who see evidence of it in this show may come away a little more demanding of their own Five-and-Dimes.—*j.f.m.*

No special tools are required to assemble the exhibition; packing boxes are set directly on folding aluminum frames, and when side panels are removed they become glass display cases.

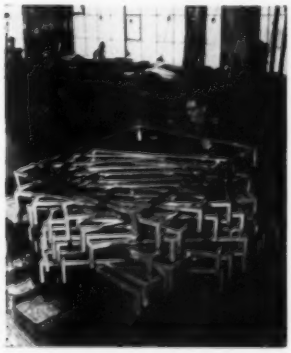




Basic components of the entire exhibition are shown at right; crating and shipping diagram, left.

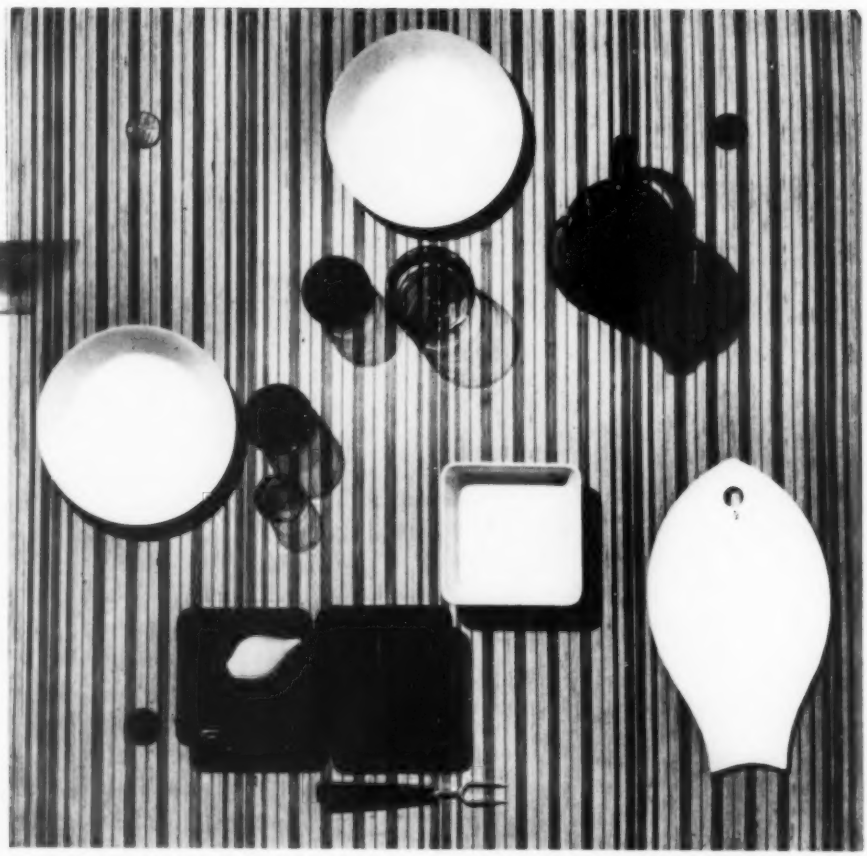


Specially designed anodized aluminum frames were built in the metal shop of AB Nordiska Kompaniet, Stockholm.

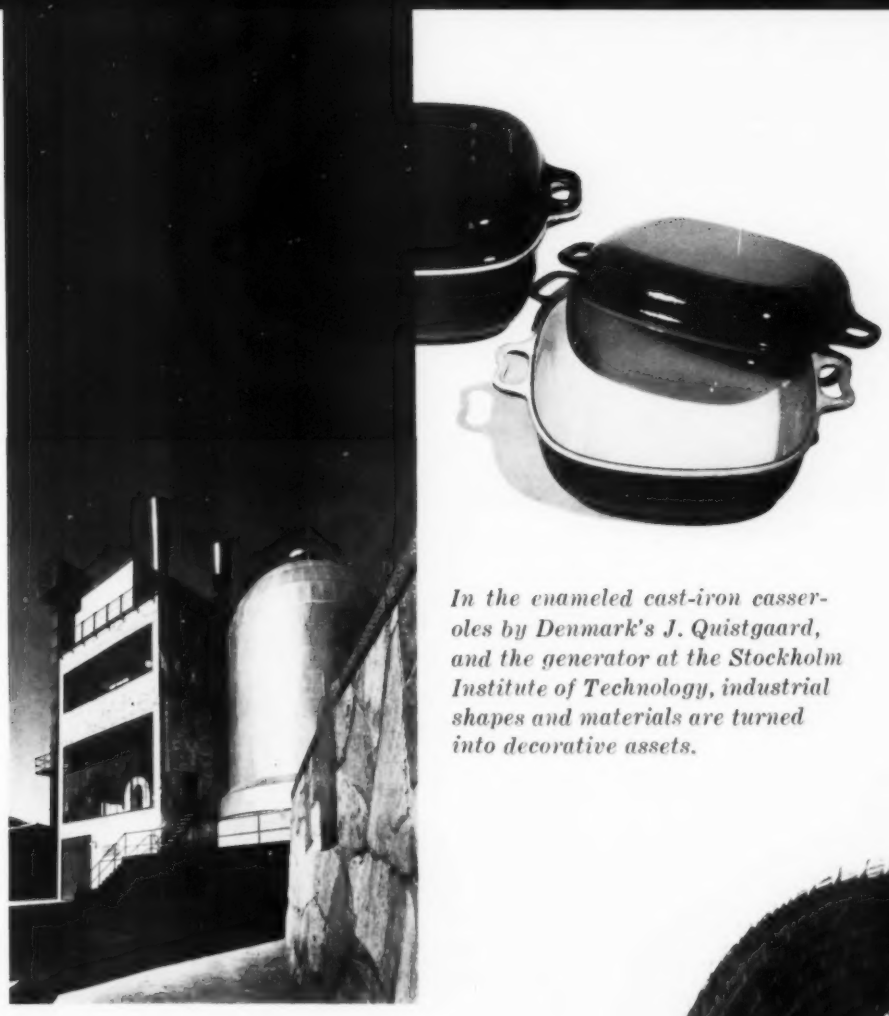


The woodworking tradition: teakwood chimpanzees, by Kay Bojesen, Denmark.

Stig Linberg of Gustavsberg Pottery contemplates one of his ceramics. Portable street flower pots suggest that Scandinavian art and culture are integrated.



Towering earthenware vases, Kyllikki Salmenhaara, above; Table and glassware, Kaj Frank, right. Both artists are Finnish.



In the enameled cast-iron casseroles by Denmark's J. Quistgaard, and the generator at the Stockholm Institute of Technology, industrial shapes and materials are turned into decorative assets.

Swedish folk crafts—peasant straw basket and painted birds—still affect contemporary design.

Chair in steel and wood, designed by the NK Group of Architects, Sweden.

HANDLES FOR TIME

A selection of door hardware for the London office of Time, Inc., emphasizes the design possibilities of an often neglected architectural detail. Architect: Michael Rosenauer. Coordinating designer for the interior: Sir Hugh Casson, working in association with Misha Black.

1 *Editorial Bureau Chief's sliding doors*: silver anodized grooves, flat-rimmed.
2 *Cafeteria swing doors*: stove enamelled steel push-plates, mat black, hip level.
3 *Dining Anteroom swing doors*: brass pulls.
4 *London Director's Office*: black bronze handle, with black and gold panelling.
5 *Life Picture Editor's Office*: satin brass handle, elegant, keyhole in slit.
6 *Reception Foyer swing doors*: wood handles, black leather insert, huge scale.
7 *Second Floor Foyer swing doors*: ebonized wood push-plates, easily gripped.
8 *Sixth Floor General Rooms*: chrome satin.
9 *Weather Window Gear Room*: brass groove-fitting, finger space behind panel.
10 *General Offices*: silver anodized handle.
11 *Reception Foyer Visitors' Coat Closet*: wood handle, leather and brass cup.
12 *Editorial Bureau Chief's Office*: silver anodized handle, on ebonized panel.
13 *Reception Room Balcony swing doors*: bronze alloy push-plates, wood strips.
14 *Main Entrance*: winged-out steel push-plates.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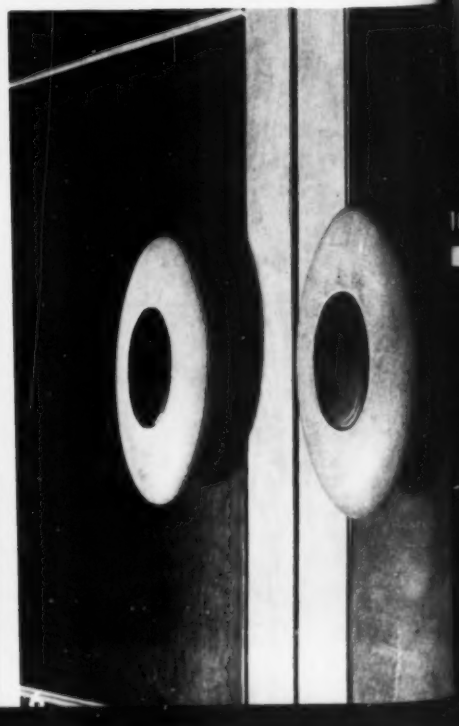
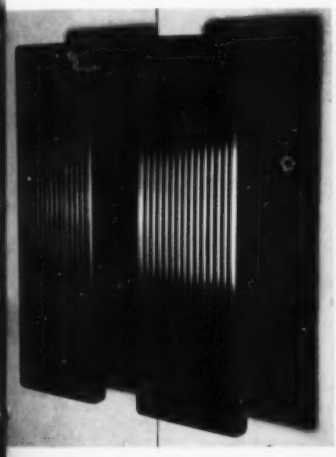
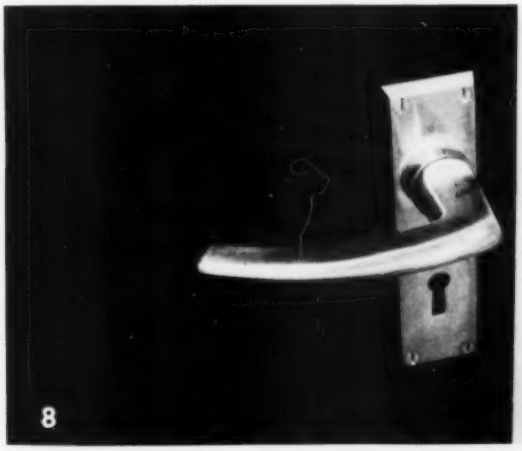


On the shape, type, size and placement of a door handle may depend the dignity of the man who must a hundred times a day pull, push, slide or slam that door, or propel himself through it. The absence of a well-designed handle is noticeable in the undignified shoulder heave, hip bump, or straight-arm shove which results. Rarely has as much attention been given to the design of this hardworking architectural detail, perhaps our most frequent point of contact with that architecture, as in the London Time and Life building. Rich materials and thoughtful shapes are used in an effort to coordinate the handle with the wall, the room as a whole, and the use to which the appended door is put. For the most part custom-designed, the handles on these two pages represent swing doors for public rooms, to be pushed or pulled with a hasty broadside; room doors to be inconspicuously twitched while backing out of a director's office; and closet doors to be slid in a hurry. The editors of our London colleague, *Design*, praising the handles in action, report that only the handle on the Visitors' Coat Cupboard (11) is really "uncomfortable to use, there not being enough finger space behind the knobs. . . . One almost expects to pull them and hear a bagatelle ball shooting around inside."

photos: Council of Industrial Design, London

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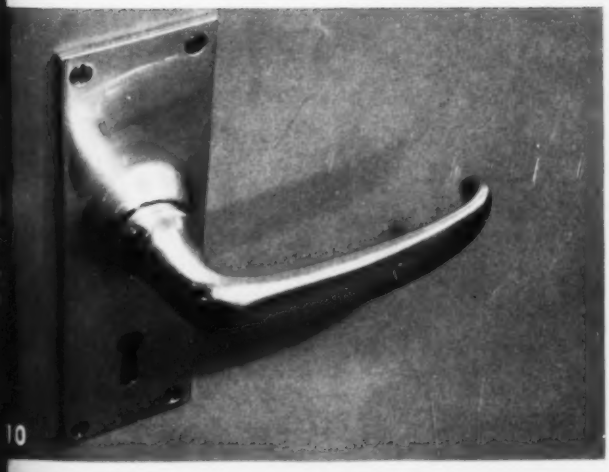
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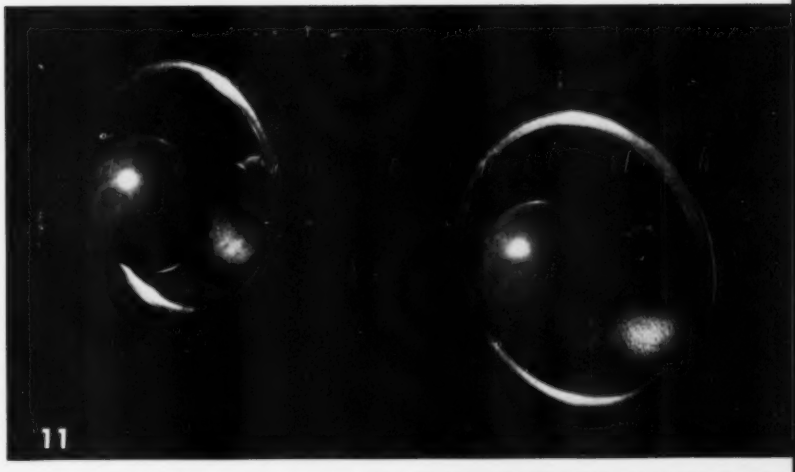
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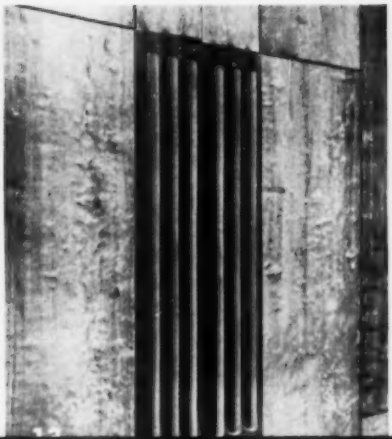
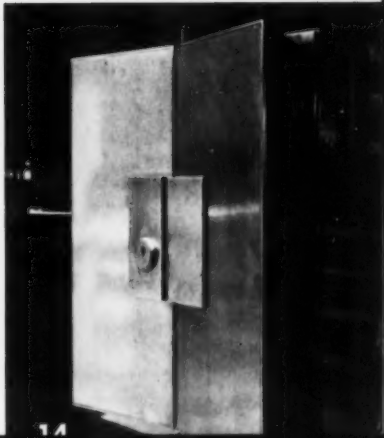
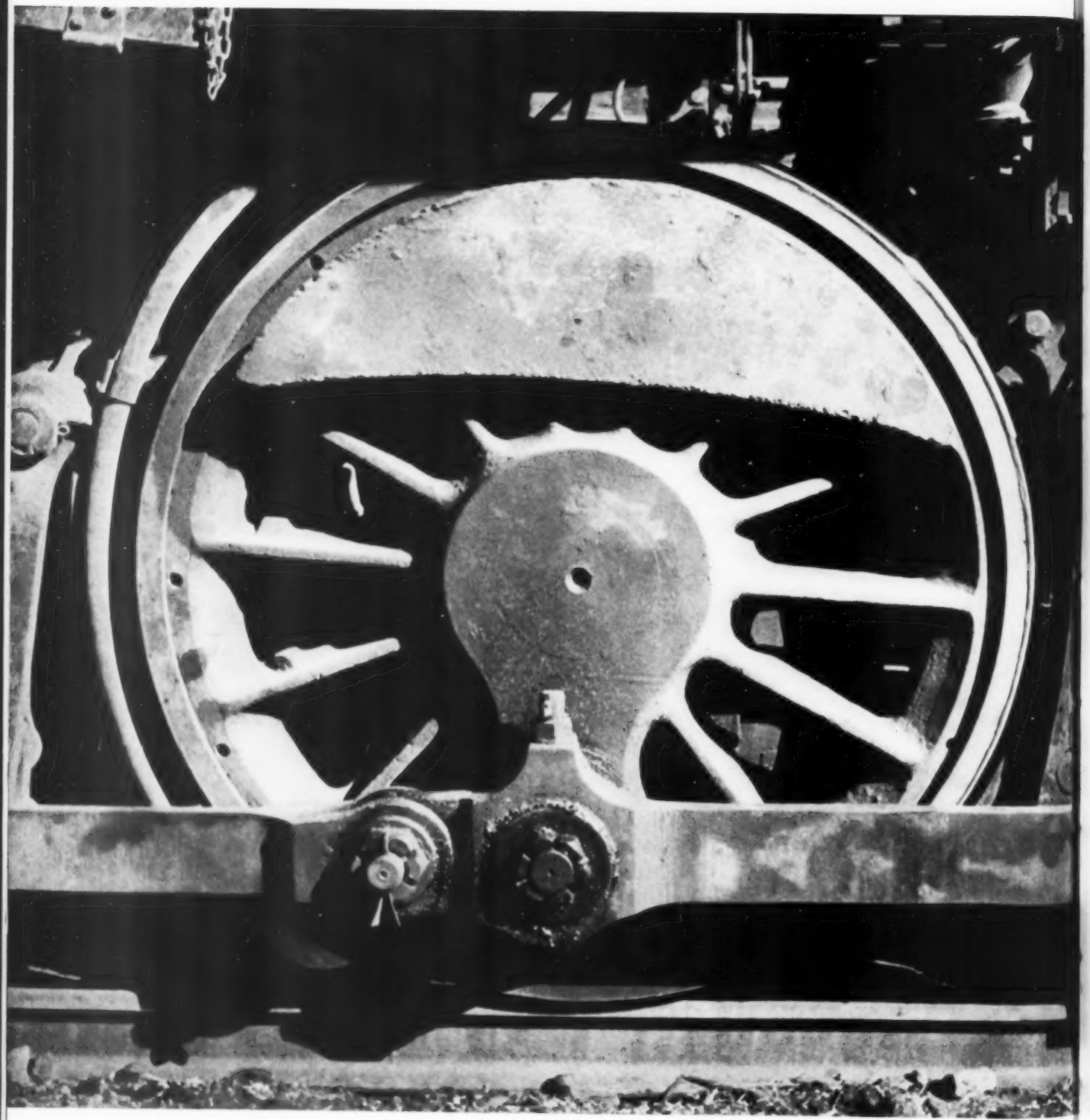
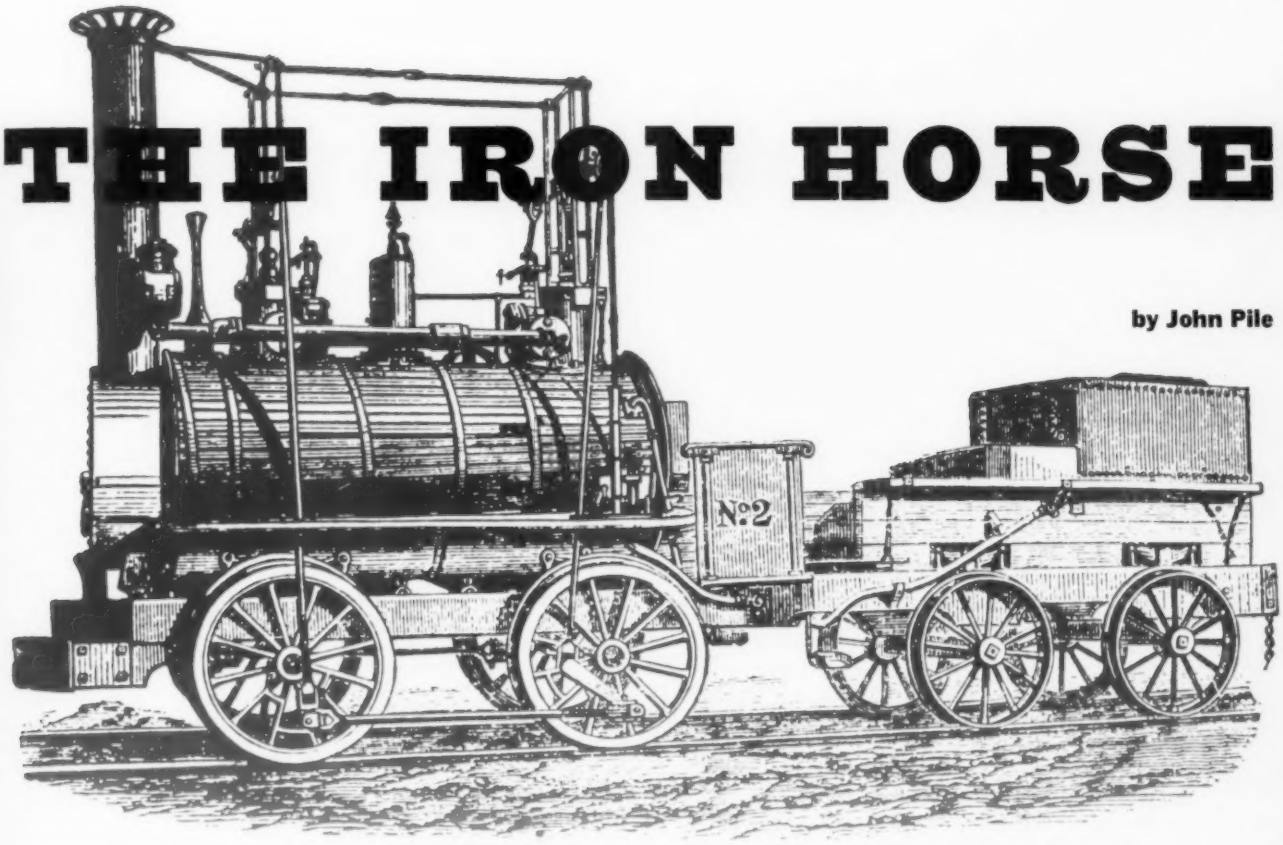






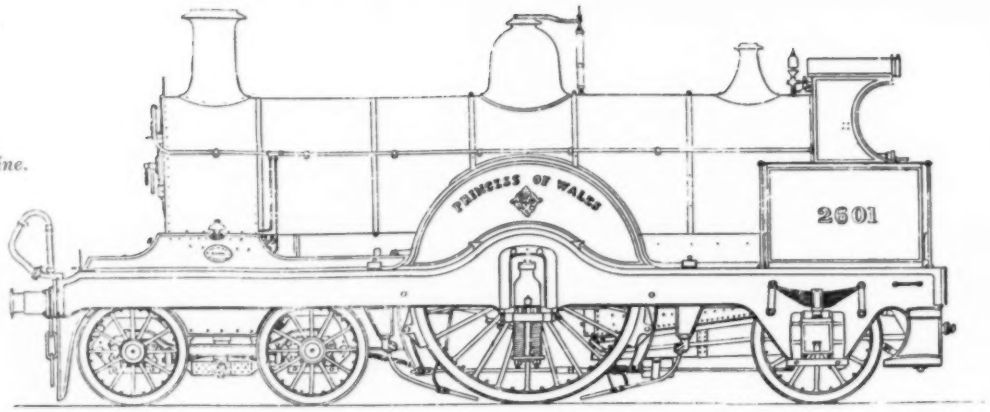
THE IRON HORSE

by John Pile



A toy train is a familiar symbol of any small boy's heart's desire, and the number of small boys who have grown into men still devoted to building model engines, reading about engines and looking at engines suggests the existence of a cult of locomotive worshipers. The locomotive actually deserves some of the symbolic value that its admirers attach to it, since it embodies a kind of concentrated history of the typical mechanical object. Today the locomotive is a changing form. The steam engine (the type to which locomotive admirers attach the greatest importance) is in the process of disappearing. Like the sailing ship it is a superbly developed object destined to be supplanted in a short time. While examples are still in everyday use, therefore, it is a good time to look back over the locomotive's history, searching out the qualities that have made it an object type, a symbol to the many men and women who have braved the sooty environment in which it has always been found.

The forms which the rail locomotive has taken have frequently been beautiful ones, in spite of the range of these forms, and in spite of the fact that conscious thought has rarely been given to their visual design. Perhaps it was the fact that the railroad, and locomotive as its vital power, was so basic to the building of the new industrial civilization that gave the locomotive builders a sense of its importance which is

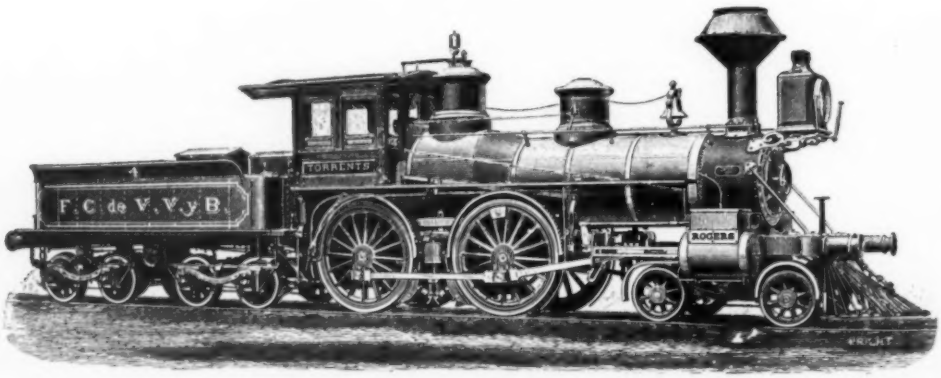


A highly developed British express locomotive, 1889. The great frame outside the wheels dominates the crimson and black machine.

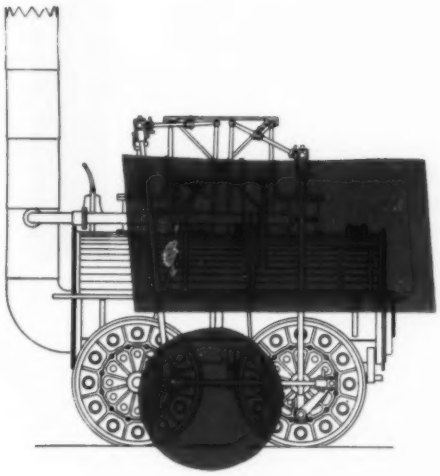
transmitted in the serious and appropriate shapes of these machines in the last hundred years. Along with the decline of the railroad as the lifeline of industrial civilization, there is a clear decline in the visual appeal of the forms which cover its equipment—in spite of an undebatable improvement in the efficiency of the machines themselves. The latest diesel is a superior load puller, but the inherent interest of the machine, which leads men to clothe it in meaningful forms, seems to have disappeared. To look at a series of rail locomotives is to make a tour of the early machine age, its strength and its problems.

Some of the earliest locomotives showed the characteristic that is both a clue to the primitive nature of the steam engine and one of its strengths as a visual symbol. From first to last the steam engine was a "contraption," an assembly of untidily related parts stuck together in a way dictated by expedience, because science and engineering had not yet found a tidy and direct way to do the job. The engine has always been a hybrid assembly of a cart, a furnace, and a prime mover. In a more or less uneasy combination, it has had to reconcile its undercarriage of frame and wheels, its complex mechanism of cylinders and rods, and its unwieldy steam generating plant. Although these (plus such accessories as a house for the engineer) have always made an awkward union, the very difficulty of uniting them has insured the vitality of the shapes that result. Stephenson's "Locomotion No. 2" of 1816 illustrates this problem with primitive clarity. The brutally heavy wooden frame makes the cart origin of the device obvious. Boiler and stack seem to be no more than a load resting on the cart. Only the mass of valve linkage and rods reveals that this crude keg of a boiler provides the power to push the cart. Though the sizes, shapes and placement of these elements are to go through many changes in the later history of the locomotive, "Locomotion" displays the basic ingredients of the machine with a childish simplicity that remains meaningful and almost touching, despite its obvious crudity.

The English locomotive continued to grow on the cart-like frame. John Kouwenhoven has pointed out in "Made In America" that the British designer invariably based his machine on a massive rigid frame that passed outside the wheels, where it was in plain sight and dominated the design of the unit. In spite of the refinement of its design and the perfection of its mechanical performance, the British rail locomotive remained—at least until the 20th century—a cart of iron and later of steel; its boiler rode on top like so much cargo and its mechanism, more often than not, was unobtrusively stowed between the wheels. This kind of design, by reason of its simplicity, lends itself to gradual visual refinement. The parts were simple and easily grasped; the designer had every chance to organize them until he achieved an object of satisfying trimness. This was, indeed, the character of the British engine—tidy, neat, perfectly proportioned, and well-mannered. It is no surprise to find it brightly painted and smartly striped. It is also interesting to notice how the varied colorings were used with skill (which was probably unconscious) to articulate the function of the whole machine. The stripes and changes of color occurred where they would emphasize important forms. What



An "American" of 1886. Frame is invisible and wheels are freely sprung to permit them to follow the irregularities of the track.

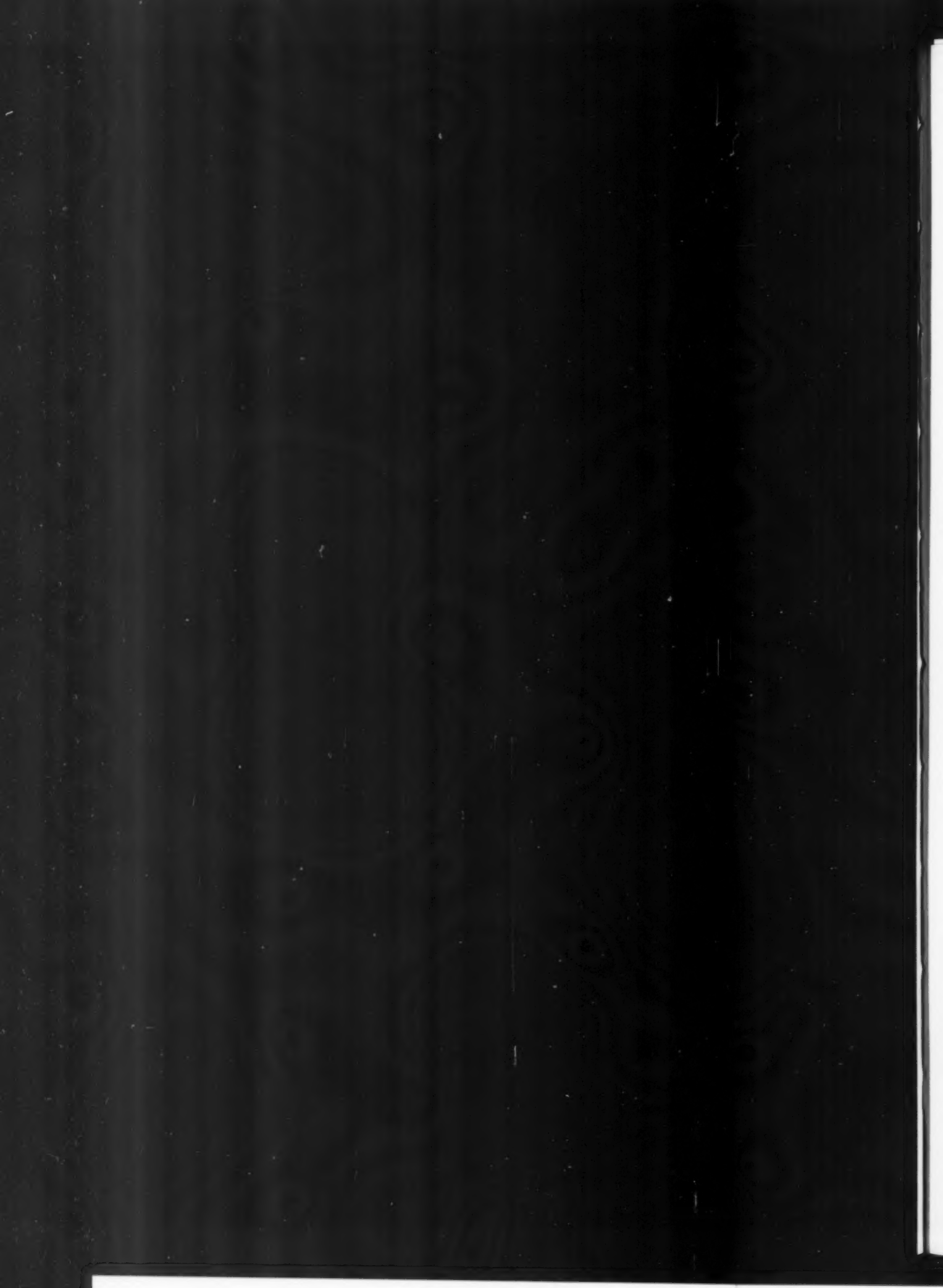


Paint color is a mere detail in the design of a locomotive, but it can improve a good design, or ruin it. Most traditional ways of painting engines have been excellent, most ways developed recently have been poor, ranging from timid to totally disorganized. One of the main problems in finding the right appearance for the modern diesel has been its paint. This chart shows some old ways of painting old locomotives, and suggests an approach for painting new ones.

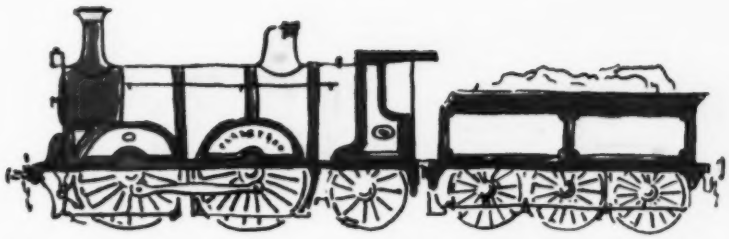
1 Old locomotive paint schemes were usually devised by locomotive men. Their artistic training may have been nil, but their taste was usually superb, probably because they had a genuine understanding and appreciation of the machines that they were painting. Where schemes of this type survive there is no reason for change.

2 The modern locomotive is a standardized unit. The great danger is that the designer in a search for identity will introduce arbitrary forms that have no relation to the forms of the locomotive itself. This is the trouble with some of the striping schemes and bright color layouts that have been adopted by many railroads for their new diesels. It is also regrettable that the fine styles of lettering that have been used for many years on railroad equipment—usually Roman, often extended to suit the long shapes

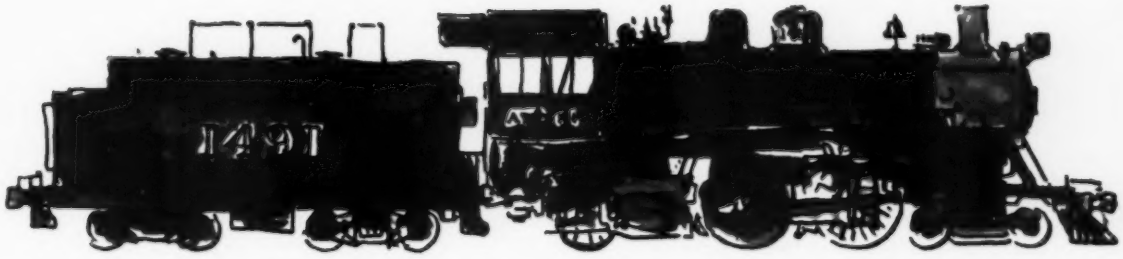
3 of engines and cars—are being dropped in favor of characterless sans-serifs. These diagrams show schemes as bright as any railroad might want, but suggest how the machine form may be emphasized rather than ignored.



1 *These are steam locomotives.*



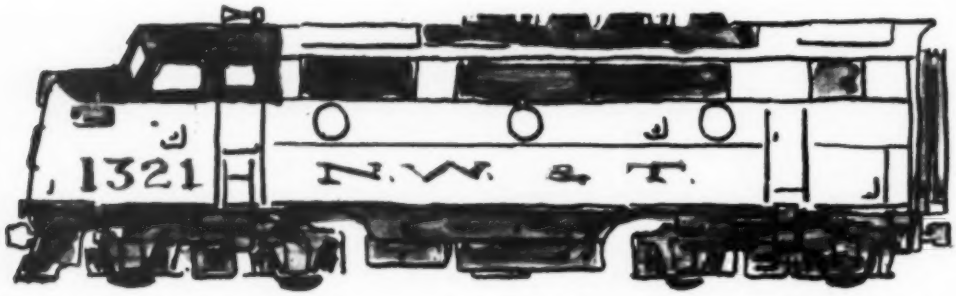
Stroudley's "Gladstone" was built in 1889 for the London, Brighton and South Coast Railway. The diagram shows the color layout much simplified; fine striping of black, olive green, white and yellow was used between the main areas of color, and many details of the moving parts were picked out in color also. This is a color scheme quite as brilliant as any used for modern diesels, yet it is free from tricks that could confuse the basic forms of the machine.



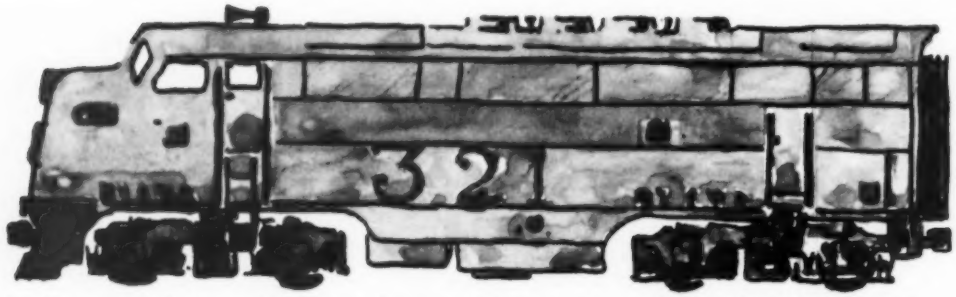
A typical steam locomotive, a Santa Fe "Atlantic," painted in the traditional fashion. White lettering is the only relief from the all-over black. This scheme is based on ease of maintenance, but it is dignified and handsome and permits the shapes of the machinery parts to speak for themselves.

Occasionally steam locomotives have been painted a little more daringly. Olive green with gold trim is a "dress uniform" that has been used. Gold striping used well can help to emphasize the limits of areas, thus clarifying the organization of parts.

2 *These are Electro-Motive F-3 type passenger-freight diesels used for long distance road service. Several are usually combined to pull a long train.*



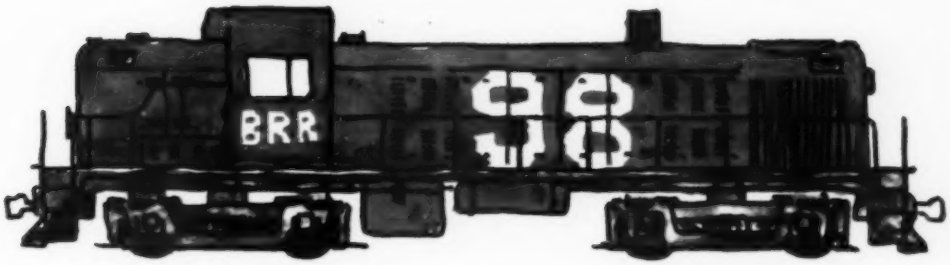
This scheme would use two colors, assigning them according to the functions of the parts. A dark color would reduce glare around the cab, be suitable for working parts, grilles, and exhaust stacks; it could also serve for lettering and numbers. The balance of the cab would then be a bright color. Large railroad-style letters and numbers act as a decoration without any addition of striping.



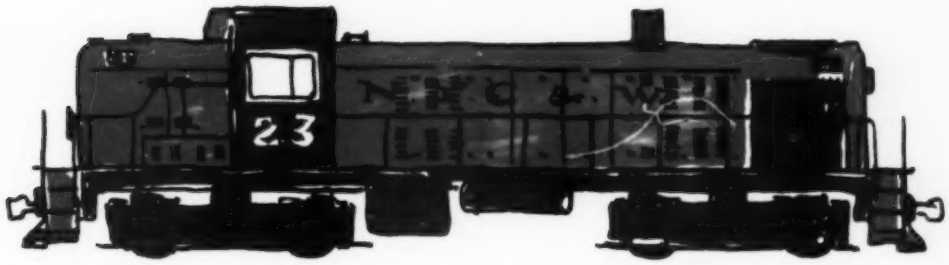
Another possible organization of the paint scheme uses a single utilitarian color for the entire machine (as is done with most steam locomotives) and relies upon a bright trim color for letters, numbers, and details that need to be made prominent for safety reasons. It is surprising to notice how handsome the shape of the standard diesel can be when it is allowed to count as a unit in this way.

Here two darker colors are used to distinguish body and working parts. Striping on blank panel frames and emphasizes lettering. In no case should striping carry across different parts of the body structure. Doing so will invariably confuse the appearance of the locomotive.

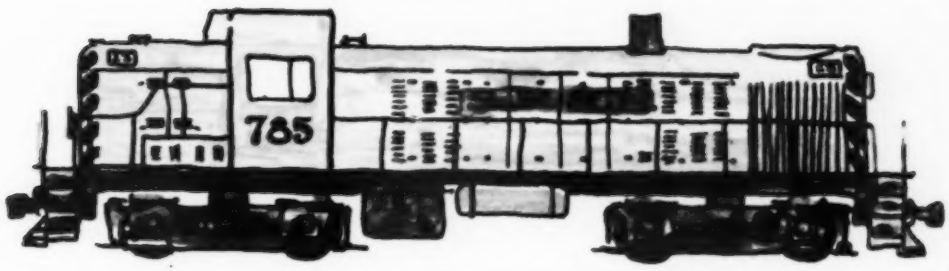
3 *These are Alco-G.E. road switchers. This type is used in yard switching, and also to pull shorter trains for moderate distances at lower speeds.*



The road switcher can reasonably be painted in the same vocabulary that is used for road construction equipment or freight cars. A solid bright color makes for good visibility, and makes the generally pleasant silhouette of the machine clear. Frame and working parts can be a darker color. Lettering and numerals need not always be Roman; a plain bill board type, however, would be preferable to the timid sans-serif that is now so popular.

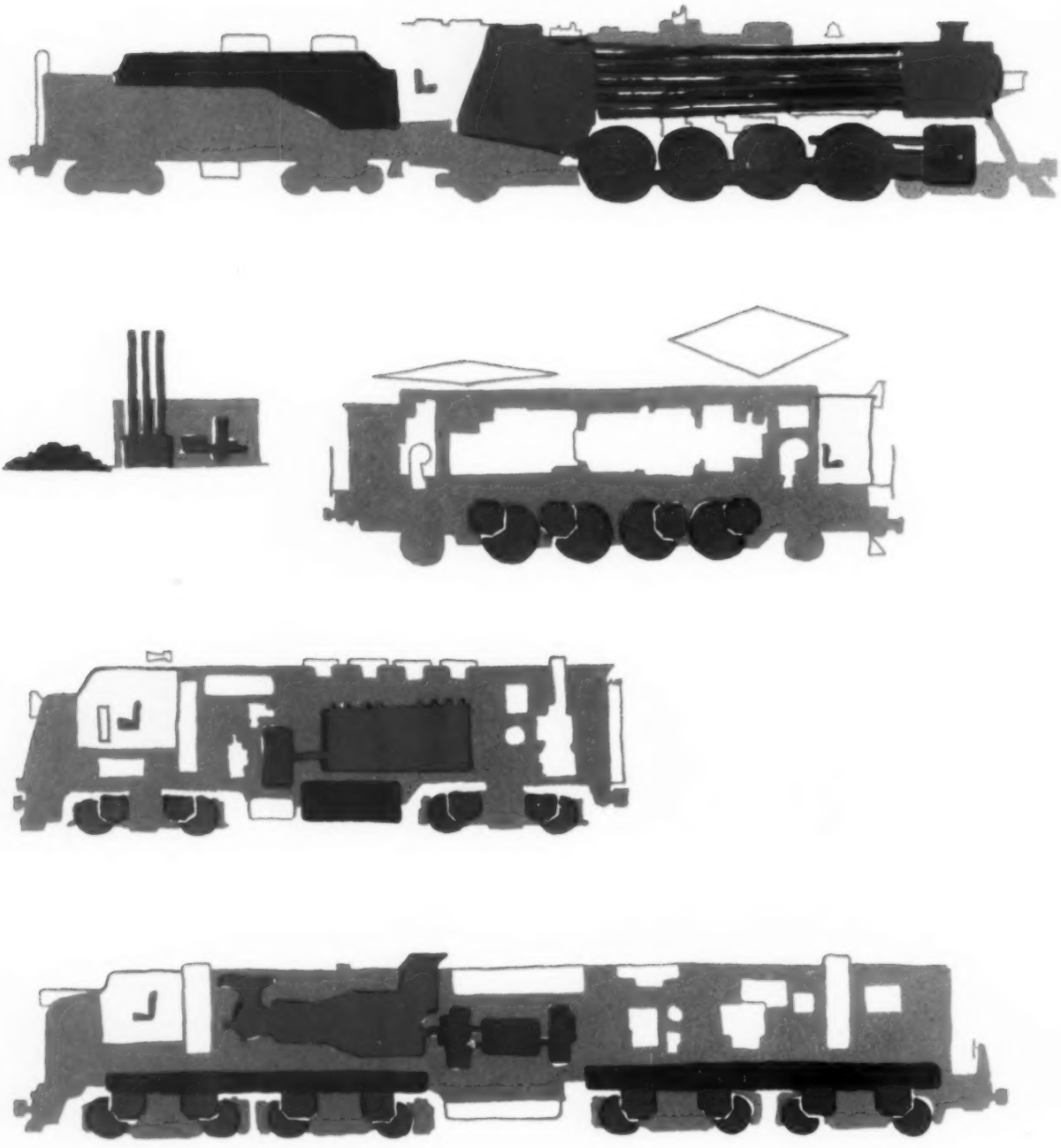


Another bright color scheme using the color changes, in this case, to accentuate changes in both shape and function. Machinery jacketing in orange is set apart from frame, cab and accessories.



The use of a bright yellow (in the tradition of tractors and road machinery) unifies the locomotive and has some safety value. The diagonal striping of the ends follows the custom of grade crossing gates and other safety markings.


WOOD BURNING PASSENGER LOCOMOTIVE
No. 44
BUILT AT THE NEW JERSEY RR & TRANSPORTATION CO WORKS
(JOHN HEADDEN MASTER MECHANIC)
JERSEY CITY N.J.



Location of the major parts of the main types of locomotives are shown by colors. In each case fuel ● is burned ● to release energy ● which is converted to motion ● In addition, there are many accessory parts ○ and space for the engineer and his controls . The types shown are: 1. steam 2. electric (with distant power-house) 3. diesel and 4. gas turbine.

the colors ask us to notice are the great circles of the wheels and the solemn horizontal of the frame. Painted a uniform black, Stroudley's famous "Gladstone" would have lost the articulate organization that it gained from its gamboge yellow and crimson lake edging.

For all this polish of organization, however, the British locomotive continued on a mechanically crude basis. The rigid frame was, essentially, a primitive device for holding together a mass of varied parts. It worked, and worked well, largely because England's railroads made good track, short distances, light trains and fast running the typical conditions of use. In the United States more primitive conditions prevailed. Railroads began, very early, to cover fantastic distances. The track may not have been any straighter than it had to be, nor any more level, but it served to carry people and goods through the wilderness. The American locomotive designer in some instinctive way seemed to know that the British prototype was not altogether the best solution for his vast new country. With an inventive skill that must have sprung from frontier training, he aproached his problem as an exercise in improvisation. The striking symptom of this approach was that the frame of the American locomotive, far from dominating its organization, was almost invisible. There is a feeling that these machines might be assembled with odd scraps of wire and string, so unobtrusive is their structure.

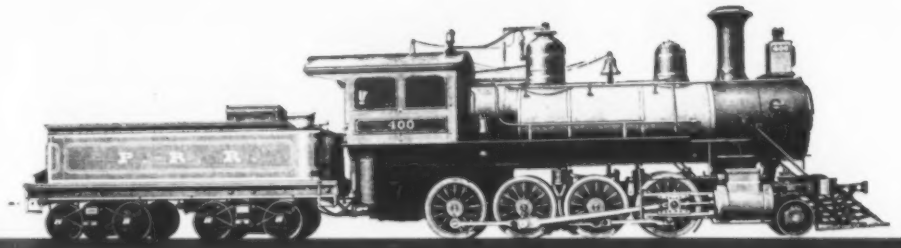
It is a paradox that this seemingly crude frontier locomotive, which readily showed its roughness on the outside, was actually a more advanced mechanism than its polished British counterpart. Eliminating the cart-like frame saved weight and material, and gave a flexible machine far better adapted to the uncertainties of early railroad track and to limited repair facilities. American locomotives use the track they run on to hold their parts together and have, from the first, relied on separate trucks with unpowered small wheels both to lead the engine along its tracks and to support the weight of some of its parts.

The locomotive that came to be called an "American," a 4-4-0 (four leading wheels, four drivers and no trailing wheels), is characterized by this lightness and flexibility. The subsidiary parts that contribute to its operation are not as tastefully concealed as in the contemporary British prototype; rather, they are boldly displayed, attached in any convenient place to the exterior of the great boiler that dominates the machine. The cylinders and valve motion that are at the heart of the engine's mechanical function are in full view, being somewhat rakishly perched on their own four wheels tucked under the front end of the boiler. Each of the accessories has an outlandish form suggestive of the bravado of a pioneer country. The huge pilot or "cow-catcher" which had to do the job its name suggests, the monster stack intended to catch dangerous wood sparks, the dome, the headlight and the gaily painted engineer's cab are all given whatever form their functions require, then lightheartedly loaded onto the machine with no concern about the tasteful result of the whole. The British locomotive of pre-1900 vintage is a more organized design, but it should be remembered that all of these locomotives are objects of the early machine age. They are, essentially, assemblies of standard parts put together Rube Goldberg fashion for a certain purpose. All that locomotive building required was such undifferentiated materials as boiler plate, tubing, nuts, bolts and rivets and, in a few demanding cases, some small castings. In a constructive sense such machine building was primitive, but it permitted adaptability and flexibility to a remarkable extent. It was the American locomotive that chose to exploit these qualities, finding for them a flamboyant expression that is a continuing source of delight.

In most important respects, the appearance of The British locomotive was perfected before 1900. Though it grew steadily larger and more powerful after that, it was able to grow within the design idiom already established for it. The American locomotive, on the other hand, not having a perfect form to adhere to, was able to pass through several phases and to find its own form in each. America's vast size, for one thing, forced the locomotive to expand in scale and power to a degree that rapidly rendered its early forms archaic. The demand for faster passenger engines, for example, forced the growth of boilers and fireboxes until it was necessary to add a pair of rear wheels to support the greater weight and length. An engine with this improvement, a 4-4-2, was called an "Atlantic." A few of them are still in service, and many speed records are held by such engines long since scrapped. Heavy freight trains needed not only the longer boiler and firebox, but extra traction as well. By adding more driving wheels this problem was solved. Such freight engines as the "Consolidation," a 2-8-0 wheel arrangement, appeared, giving visual expression to the difference between passenger and freight traffic in their smaller drivers, lower stance, and large gaunt boilers.

Most admirers of the steam locomotive agree that it was the "Pacific" type, the 4-6-2 (like the "Atlantic" but larger) that introduced a perfect piece of locomotive design. The additional length of boiler gave an ideal power level for the train of the 1900 to 1940 period, and another pair of drivers increased the traction to a point where available power could be fully utilized. It is probably no coincidence that this balancing of functional qualities also gave forms and proportions with a true "classic" character.

A highly developed Pacific locomotive of the period ending with the 1929 crash is one of the final developments of the machine age's first phase. It remains clearly an assembly of parts. It can be dismantled and reassembled almost entirely with simple tools, and uses no techniques more complex than casting in the making of its parts. This Erector-set kind of construction has been cited by Lewis Mumford as one of the clearest marks of the "paleotechnic," or early machine, age. It is one of the glories of such a locomotive that it shows this quality not only in the complexity and variety of its outline, but also in the richness of its texture—made up of jointings, rivet heads, bolts, lapped plates, piping and the like. Despite this confusion of detail, the main



Photograph courtesy of Pennsylvania Railroad

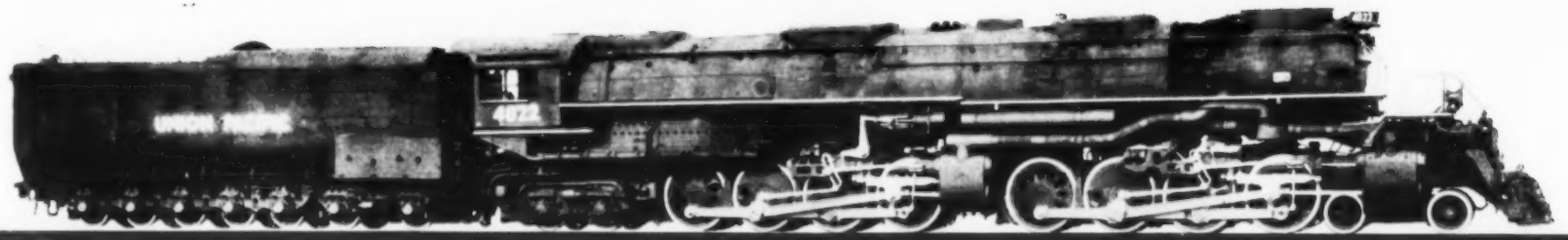
ABOVE LEFT: *"Consolidation" freight locomotive built in* 1889.

ABOVE RIGHT: *A* 4-4-2 *or "Atlantic" of the Pennsylvania railroad. This was the most important type of express passenger engine before the introduction of the "Pacific." Many speed records are still held by "Atlantic" types.*

LEFT: *The Pennsylvania Railroad's K-4 Pacific type steam passenger locomotive and tender in working order for a total weight of* 541,150 *pounds.*

RIGHT: *A "Niagra" or* 4-8 -4 *of the New York Central. Other railroads call such engines "Northerns." This represents the final development of steam power. The refinements intended to improve efficiency cover and conceal much of the machine, but the boiler and wheels still remain clear and dominating forms.*
Photograph courtesy of New York Central System

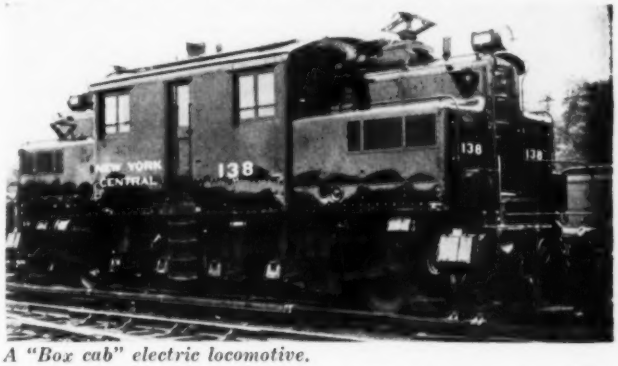
BELOW: *The articulated locomotive. Actually this is two complete locomotives with only one boiler and cab. The stack and domes have been forced into the boiler by tunnel clearances.*
Courtesy Union Pacific R. R.



organization of the engine is quite clear. It divides horizontally into the engine proper below, with its wheels, rods and valve motion, and its dominating cylinders at the front—where the miracle of creation of motion from the energy of steam actually takes place; all of this is distinct from the steam generating plant above, with its firebox at the rear and long boiler forward. Everything is overlaid with a filigree of accessories, pipes, domes, whistles, bells and stacks. At the rear of it all rides the little cab, clearly set off as the only part of the machine intended for habitation. As in the earliest American locomotives, the frame is unobtrusive and the various wheels are only loosely connected to it by a springy suspension that gives maximum flexibility. It is interesting to observe that, although somber black is now for practical reasons the usual color for engines, the few elements of trimming are applied with a noticeable sense of fitness. Striping around the tender and the lower side of the cab defines their shapes and, by emphasizing the blankness of these areas, expresses their simple panel-like non-mechanical functions. These are the areas best suited to billboard use, so are chosen to receive the dignified Roman letters and numerals that identify the machine. To see how wise this choice is, we need only imagine this striping and lettering applied to the boiler and omitted from the cab and tender. On the other hand, the striping of the driver spokes and pilot truck wheels and the polish of the rods emphasizes the kinetic qualities of these parts, drawing to them the attention they deserve.

The decay of steam power started to be evident while such locomotives were still the mainstay of American railroads. This decay can be detected, with the help of hindsight, in many places. One of the first traces of it, oddly enough, was in the further development of the steam locomotive. Many magnificent engines larger than the Pacific were built. Such models as the 4-6-4 Hudson, the 4-8-4 Mountain and their freight-hauling cousins, the 2-8-4s and 2-10-4s, appeared at first as fully perfect as any Pacific. Several problems became apparent, however. Established bridge and tunnel clearances and distances between tracks began to limit the size of these huge machines in all their dimensions except length. Consequently they began to lose the elegant classical proportion of earlier engines, taking on an unnaturally stretched look. A purely esthetic judgment of them suggests the designers' struggle with certain unsolvable problems. Parts that once projected boldly, such as domes and stack, were crushed down into the boiler, injuring the articulation of parts subsidiary to the main unit. Innumerable mechanical improvements came along at the same time, mostly as external additions, in a piecemeal effort to solve the problems of the oversized monster. Booster engines, feedwater heaters, air cooling radiators, safety control devices and roller bearing houses were added, and all seemed to be loaded onto a unit already squeezed by existing dimensional limitations. The effect was to reduce the purity of traditional forms to something ranging from impressive down to merely grotesque.

P.R.R. T-1a. A successful self-conscious design for steam.



A "Box cab" electric locomotive.

Large electric locomotive. Striping ignores engine form.

Standard switching locomotive "decorated" by safety markings.

Diesel with striping that conceals straightforward forms.

The final expression of those outside pressures appeared in the great articulated locomotives which are actually two separate engines complete with cylinders and driving wheels carrying, and being fed by, one enormously long boiler. Here was the perfect expression of the battle between a growing demand for power and unsolvable external limitations; the resulting compromises were daring and often magnificent. In spite of the practical success of these machines, their appearance revealed that they were approaching a limit. Though still larger and more efficient locomotives could no doubt be built, the steam engine clearly had passed its zenith.

New sources of power, one after another, had become available after 1900. Power could be generated efficiently at a central power station, for instance, and distributed for use in electric motors wherever needed. Eventually this system was applied to railroad propulsion, with excellent success in certain areas of use.

The problem of designing the unit that utilized this power at the head of a train, however, was and has remained a difficult one. The designer, no longer working with the power source, had to get along without the sense of vitality that power sources seem to transmit to their visual shell. To make matters worse esthetically, electric power is turned into energy by small, silent motors that are best hidden between small driving wheels. This led to a unit whose many small wheels were surmounted by a house containing some electrical switchgear and room for the engineer—an organization which was for all the world like a box car. Many electric locomotives built in this way had a certain utilitarian integrity, but they did not symbolize a new kind of power in the way that the steam engine did the old kind. That symbol of new power had moved to the dam, the power house and the transformer station, leaving the motor of a train no different and no more interesting than the motor of a sewing machine. Attempts were made to remedy this, but the application of superficial "design" in the shape and trim of the outer shell never conveyed much conviction.

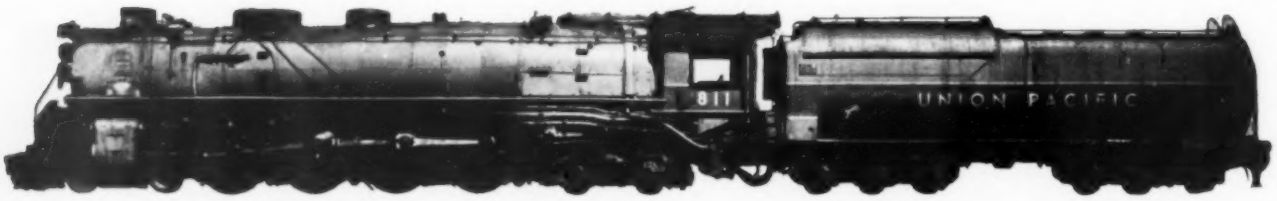
The use of this new invisible and easily transmitted power was, of course, a step in the evolution of the locomotive. The machine age's second phase is set apart from the first by this new power, and by the tendency toward machines of a more specialized nature that are not so much assemblies of familiar standard parts. Thus the traction motor of the new locomotive remained a fairly mysterious unit which, to date, has offered little visual evidence of its efficiency in the way that the old steam mechanism showed its physical complexity and operating simplicity.

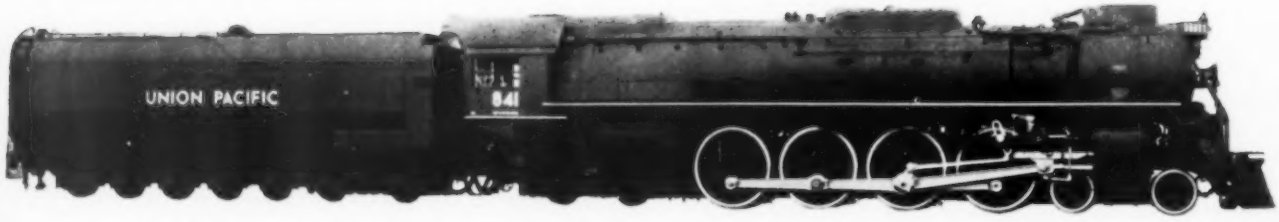
As it turned out, however, the electric motor was only an episode in the decline of steam power. It was always tied to the delicate, costly systems of overhead wires or third rails that were lifelines to the real source of power. The end of the steam locomotive and of further use of electrification came simultaneously in the 1930's with the development of a portable power source reliable enough to drive the motors of a locomotive.

The first diesel locomotives were simply front cars of the articulated three-car trains that appeared in the depression years, hopefully, as an answer to the competition of bus and automobile travel. The Burlington Zephyr and the Union Pacific M-10,000 were both short passenger trains that incorporated the new notion of "streamlining." Their real prophecy, as it turned out, was not a visual form but a source of power.

Both these trains were driven by electric traction motors mounted between the wheels, but the power came not from a remote power house but from a diesel generator mounted right in the front car. This meant that these trains were independent of special overhead wires or third rails, but could still take advantage of the great efficiency of electric power. Their dependability and efficiency surprised even their designers.

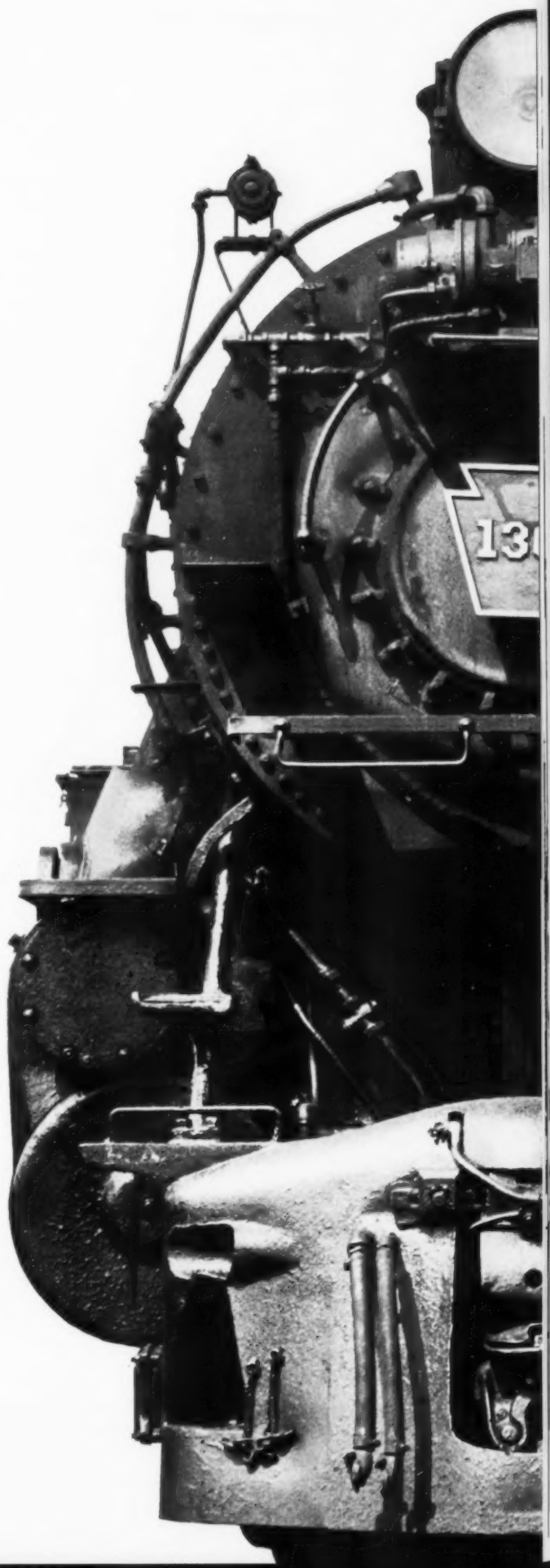
The immediate reaction of locomotive designers to these experimental trains was not to imitate the real innovation—a new motive power system—but rather to imitate their outward forms. The depression-fostered industrial design profession was growing, and the railroads were eager to hold their passenger business. What

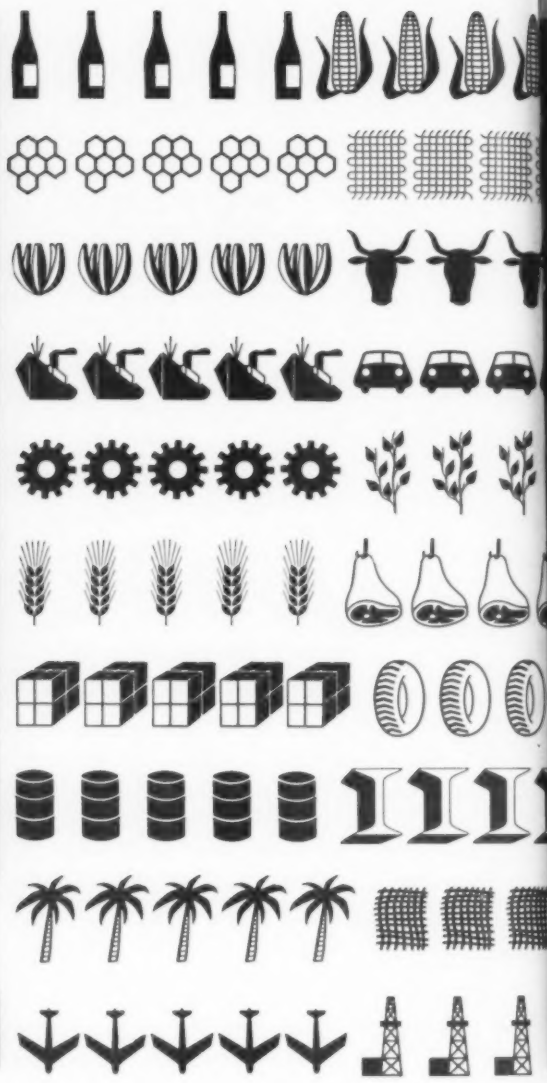




could be more logical than to give the old steam engine the appearance of its new rival, thus winning the streamlining game? Besides, it was argued, the steam locomotive always was an untidy object, and housing it in a neat cover couldn't fail to improve its design and its popularity. Housings called, with unintended irony, "shrouds," were put over creaking and aged iron horses to make them look as fleet as any diesel. It is easy to laugh now as some of the clumsy efforts, but it is worth noting that there were good steps along with many ill-advised ones. The chief error was to ignore the articulation of the steam engine's fundamentally separate parts, in an attempt to arrive at a shape more simple than the nature of the mechanism would allow. In most cases the attempt back-fired, since maintenance of an engine with its vital parts concealed was so difficult that, gradually, the shrouding disapeared and the machine returned to its original naked state. The other failing was devotion to cliché symbols of speed and modernity: the bullet-nose, the rounded corner, the parallel horizontal paint lines—found even in places where they violated the shape and behavior of the machine. The steam locomotive could have been designed by self-conscious professionals with success—had there been more time for them to learn the vocabulary. The designs for the T-1 class locomotives of the Pennsylvania Railroad by the Raymond Loewy organization, particularly the later forms which came after the prototype designs had been modified in use, show that a wedding was possible between the steam engine's demand for articulation and mechanical complexity, and the designer's demand for organization. The last of the T-1's are beautiful mechanisms which clearly express the nature of their declining power source. Although some 50 such engines were built, there was scarcely time to get them into service before they were replaced by the rising diesel.

The steam engine will disappear within a few years. The diesel's vastly superior efficiency makes this as inevitable as the displacement of sails by steam in ships. The diesel in its present form is so inferior, visually, that most admirers of the locomotive regard this displacement as a major tragedy. Yet it is hard to find any intrinsic reason why this should be so. Like the electric engine, the diesel is basically no more than a box car. It contains its own power house complete with such accessories as heating boilers, cooling fans, air tanks and control gear. The power it generates is used in motors mounted out of sight under the floor, like those in trolley cars. The only external evidences of its nature are the cab windows, where the engineer sits in command, and various windows and grilles which reflect the nature and positioning of the mechanisms inside. These elements are similarly organized, with only minor variations, by the several diesel builders in the United States. The main variation of type occurs between the road (long-distance) locomotives with a cab high up in front overlooking a truck-like snub nose, and the switch engines with a small box cab near one end with a more clearly articulated motor housing, and walkways along (*Continued on page* 148)

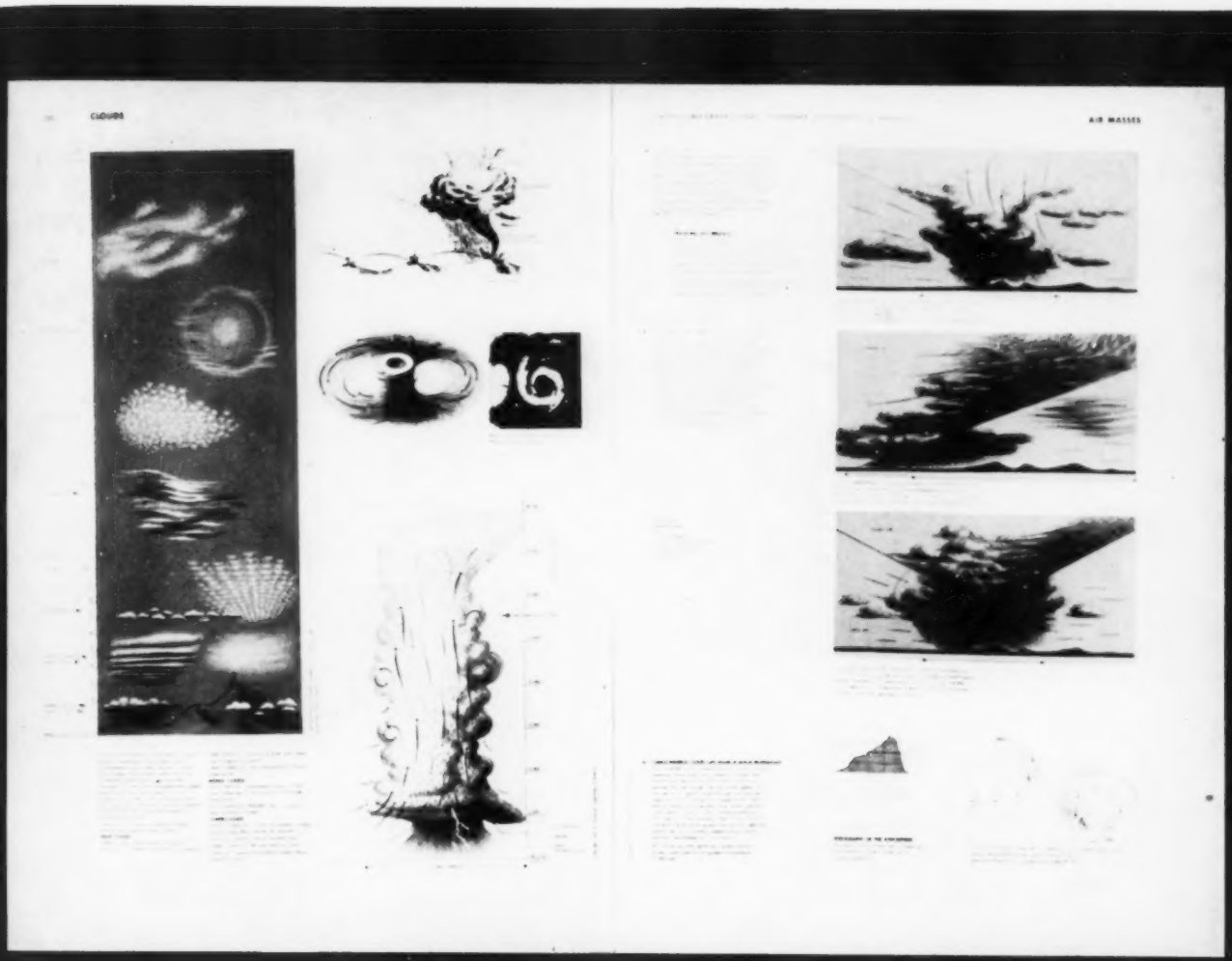




Bayer's Geo-graphics

Only friends of the Container Corporation of America (and *their* friends) may ever see the "World Geographic Atlas" recently published by Rand McNally. It is a big book, physically and intellectually, which has 368 gilt-edged pages printed in eight to ten colors, measures 11″ x 16″, is bound in handsome monkscloth embossed with gold lettering, and tips the scales at 6 lbs. 3 ozs. Into it went roughly 12 man-years of design and research work, plus a generous investment in quality printing and production. But even if you were willing to pay full value for a copy of this impressive tome, you couldn't obtain it, because the atlas is not for sale.

The reason for its remarkably uncommercial existence can be traced to the person of Walter Paepcke, Container's president, and in his relationship with the firm's art consultant, Herbert Bayer. In 1936 Container Corporation had published a businessman's atlas for private distribution. Requests for it continued long after the war had made it obsolete. Paepcke, as part



of a lifetime interest in furthering knowledge and culture, wanted to publish a revised edition, as a good-will gift to business friends which would "contribute modestly to the realms of education and good taste," as he states in his foreword. For his part, Bayer, the internationally known artist who had worked for years on Container's ads and exhibitions, had always wanted to design his own kind of atlas, and the project grew almost effortlessly from this unique meeting of corporate and artistic minds.

Work began in 1948 when Bayer moved to Aspen, Colorado, planning to spend less than half his time on the book for a maximum of two years. When the final symbol was pasted into place to his satisfaction ready for printing, Bayer had three assistants, was working full time, and it was January, 1953.

In a branch of publishing not known for its attention to design, what Bayer produced should chart a course toward more direct visual communication. It should also stand as a testament to the breadth of one designer's interest and learning, for Bayer, though not a scientist, organized from scratch all the material in the book. Working with some hundred reference volumes, he wrote for statistics to all parts of the world, devised his own pictorial methods, and decided ultimately what information was worth including. He personally designed a 13-page visual introduction to the earth's place in the universe (one of these pages is reproduced above), and even wrote most of the text because he wanted the wording to be concise and vivid.

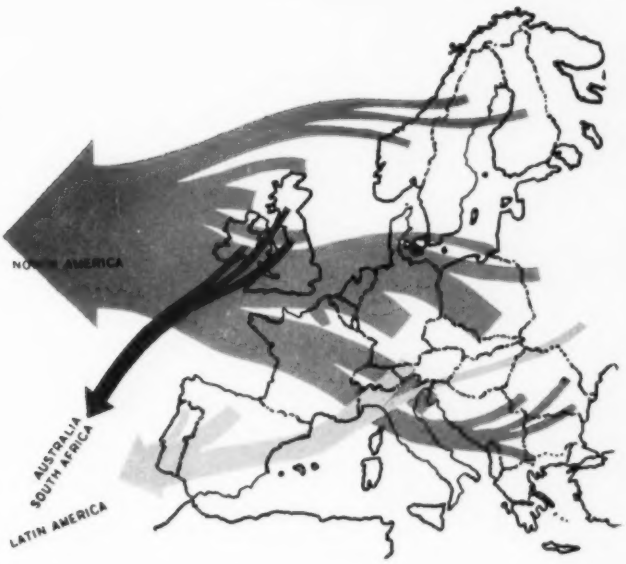
What distinguishes this atlas is not so much its luxuriance as its concept of what a 20th-century atlas should be. This is rather nicely expressed in the compound "geo-graphic"; it includes, in addition to the usual *geo*-graphic maps, many *graphic* illustrations of subjects closely related to modern geography. Bayer has taken an air-age view of the world in two basic ways: in his awareness of natural rather than political geography, and in his way of projecting, by a variety of

photos: betty rosenzweig

Five years of work on the atlas was done in Bayer's mountainside studio in Aspen, Colorado, where the staff was able to take advantage of conferences, festivals, and plenty of skiing.

Martin Rosenzweig, Henry Gardiner, Bayer and Masato Nakagawa discuss a page layout prepared for offset printing in a double-size paste-up. Maps were specially printed in Italy.

Artist and sponsor, Herbert Bayer and Walter Paepcke, flank the 3-billion-year-old globe which their atlas so thoroughly investigates by such graphic means as the cutaway at the left.



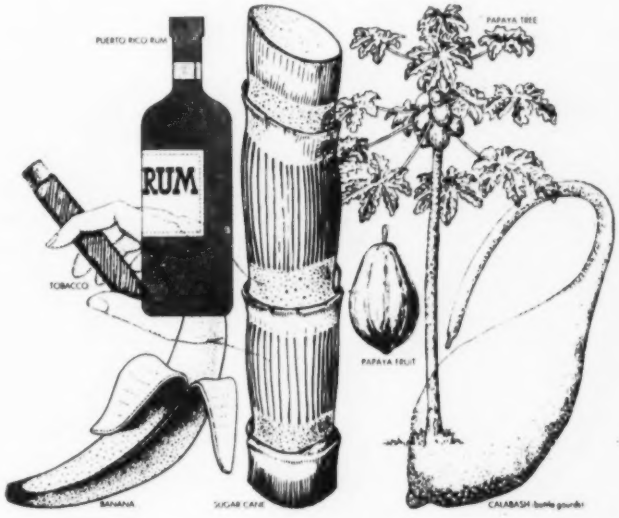
Regions as well as countries are analyzed graphically. Here Europe is shown in terms of immigration to other continents, 1820-1937. Line thickness is keyed to number of immigrants.

graphic devices, information which can't ordinarily be gleaned from a two-dimensional map.

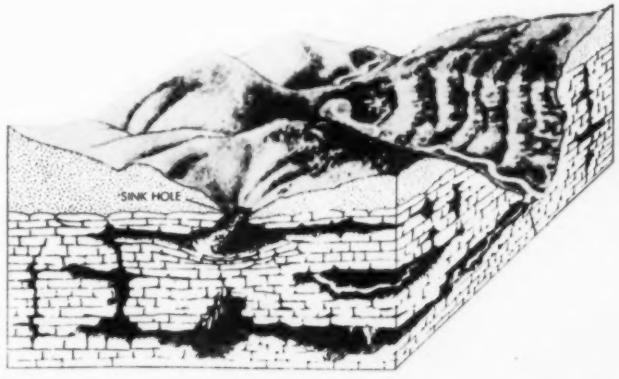
Graphs, sections, pictographs, charts, postage stamps and art—all of these are used to interpret the essentials of each map. The map of Alaska, for instance, is coupled with a page showing the following: a map diagram of flying distances between Alaska and major cities; a size comparison of Alaska and the United States; a block chart of land use; a population pictograph, principal products in dollar-value symbols, a natural resources map, a sketch of a kayak, and an etching of fur seals. If you are thinking about doing business in Alaska, or just contemplating a Yukon holiday, you can see at a glance the economic and geographic character of the country; a closer look at the text supplies a mass of statistics and details.

There are easily as many graphic as conceptual differences between this and any standard book of maps. The most obvious change is doing away with conventional borders, because Bayer felt they over-emphasized the finite limits of places and areas. Conventional map colors have been replaced with more lively ones, and their advancing and retreating values give topographical depth to the maps. When it came to the text, Bayer decided it would be consulted like the text of a dictionary rather than read like a novel, and used a small typeface which daintily embellishes the other graphic elements. In view of the volume of material to go on every page, he worked out a consistently light, informal page layout which, if it is sometimes too loosely constructed to be commanding, is usually rich and always informative.

All of these innovations were made, according to the designer, to help people get more out of maps. "Successful map study provides two kinds of knowledge: interpretation of landscape, and human development in the physical setting. . . . Swiftly spreading global communications and increasing interdependence of all peoples compel us to consider the world as one. . . . This atlas places emphasis on the physical and material background against which man is set." *j.f.m.*



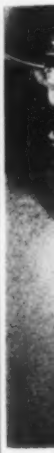
Typical pictorial element is this cluster of produce symbols on the Puerto Rican page. Bayer dug up symbols, seals and stamps which would help tell the story both factually and decoratively.

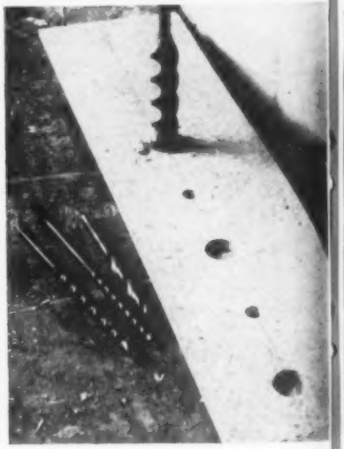


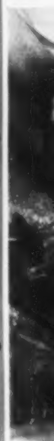
One of the techniques used in the Geology section of Bayer's introduction to the world is this diagrammatic cross-section explaining the formation of underground caverns and sinkholes.

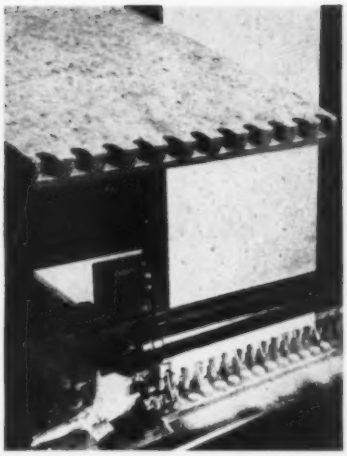
BARTREV

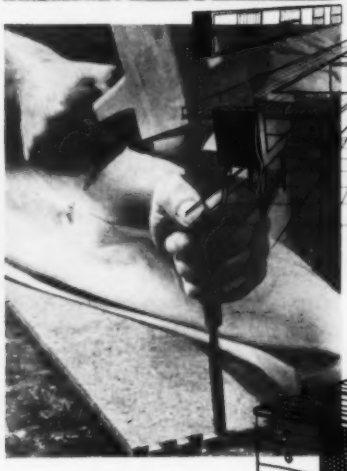
*This is the story of a brand new process
which produced a material which required a designer
who built a company design program.*

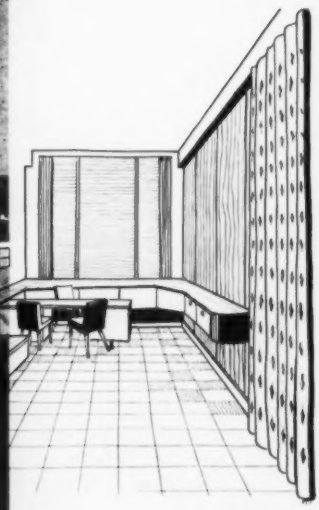


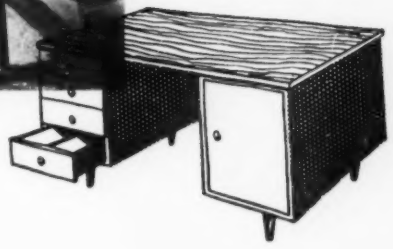


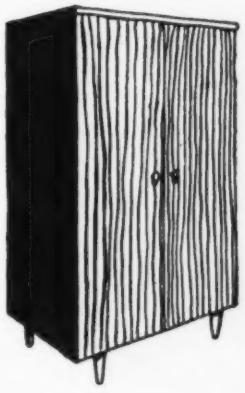






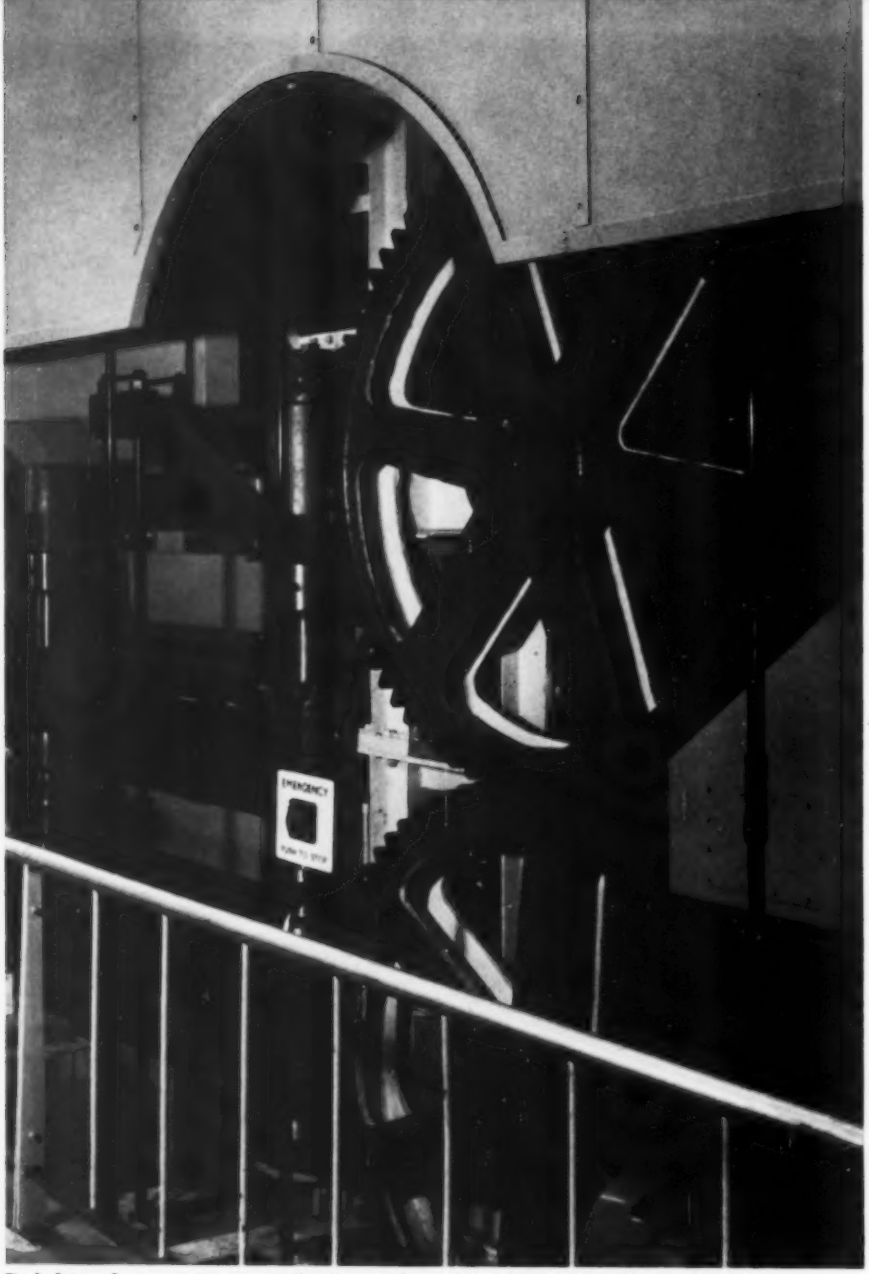




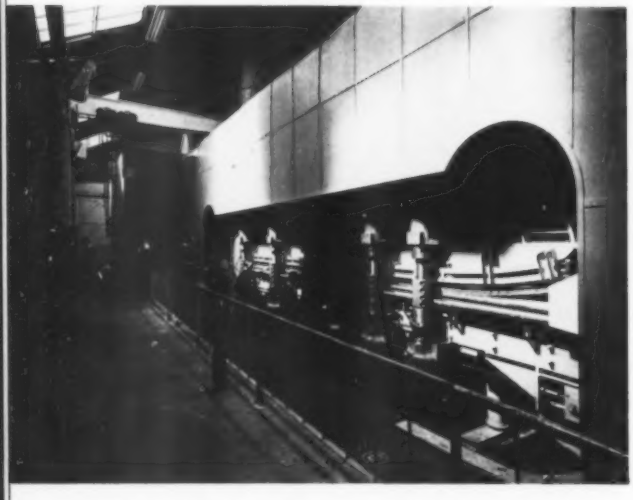


The undulating ribbon in the photo at the left is not a fabric but a man-made timber known as Bartrev board. Engineers spent 14 years developing a press which would consume wood chips at one end, digest them automatically, and continuously grind out this strong, low-cost board at the other. Even before the press had been perfected, executives of the Vere Engineering Company of London realized that they had in hand a new material whose possibilities were unfathomed—though not unfathomable. They engaged Gaby Schreiber and Associates, design consultants, to find practical product uses for the board. Later Mrs. Schreiber's team helped to set up the Bartrev factory, overseeing everything from architecture to calling cards. Thus Bartrev board is news both as a material and as the basis of a unique company policy which says, without qualification, that design is part of good business management. Some of the ways that policy grew and paid off are shown on the next six pages.

The press



Bright color—red gear wheels, yellow framing, deep blue bins—has been used by the designer to turn complex machinery into a pleasing composition.



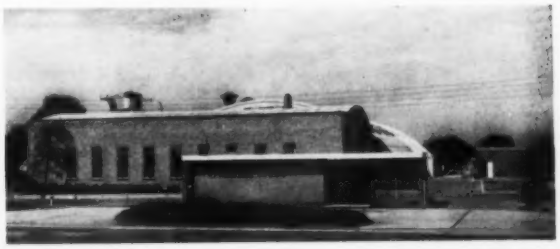
Sheet steel hood gives a satisfying form to the press without concealing it entirely.

In contrast to standard batchmold methods of board manufacture done on platens of a hydraulic press of limited size and standard thickness, the Bartrev plant takes almost any kind of wood fibre, automatically grinds and mixes it with a small quantity of quick-curing resin, cures and bonds it under heat and pressure, and continually turns out a finished board of any desired thickness and length. (The four-foot width is the only fixed dimension.) It converts green wood into season board in 20 minutes, and the process is so flexible that by varying the resin content, heat, pressure and speed, boards can be made to almost any required mechanical, acoustical or insulatory properties. One press working at a speed of 14 feet per minute produces 3,360 square feet of $\frac{3}{8}$" board every hour, with a minimum of manual labor and supervision. Bartrev board can be sawn, drilled and planed on the edges, and worked by the normal joinery methods.

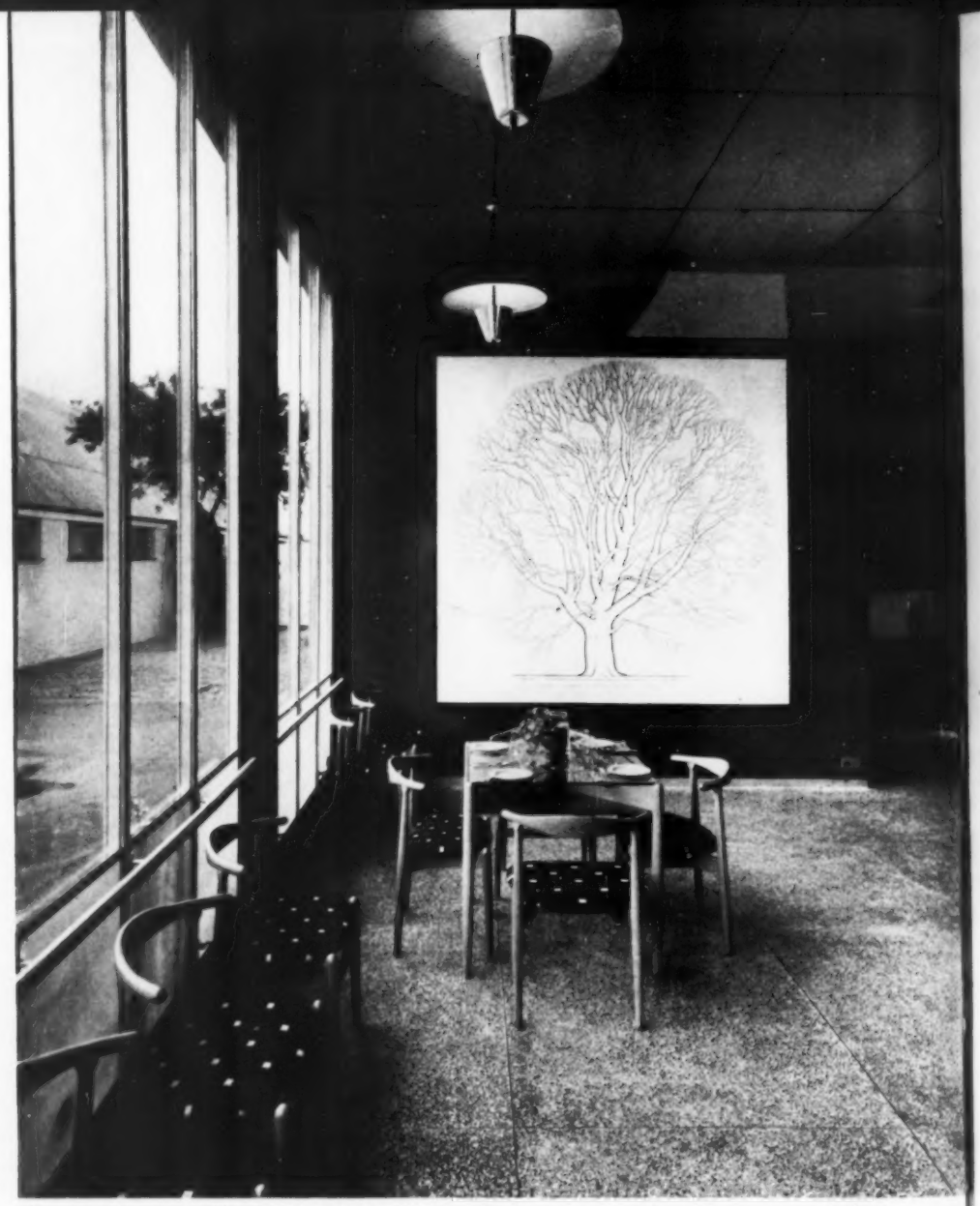
Everything about the Bartrev plant at Marks Tey, Essex—a full-scale production factory—was planned jointly by Mrs. Schreiber and company engineers. She began with the machine: two steel hoods were designed to sheath the press from dust and create proper ventilation. She made good use of British Standards' identification colors on the press itself—red, yellow, orange, grey, and deep blue—giving ducts, rollers and wheels the gay appearance of a mechanical toy. For a gatehouse which would present an inviting face to the street, Mrs. Schreiber designed a crisp, low building with a white fascia, a dove blue Stonite front, red brick end walls and yellow blinds—a colorful advertisement for Bartrev which is in no way at odds with the remodelled vault-roofed factory behind it.

Gatehouse

Main facade of Gatehouse from the road.



Of combined steel frame and low bearing brick construction, the Gatehouse shelters a policeman, a weighing control officer, and bicycles. Ceiling panels at left are unfaced Bartrev board.



Canteen

Canteen is agreeably designed like a home dining room rather than a mess hall.

Storage units, under construction, show a variety of board uses.

So automatic an apparatus as the Bartrev press might seem an unlikely object for esthetic attention; the fact that Vere did give so much thought to the visual side of engineering design simply demonstrates its belief that design should provide amenities for employees as well as customers. Another step in Vere's program—a new Canteen—was likewise aimed purely at the psychological and physical comfort of its staff.

A small rectangular building which complements the gatehouse, the Canteen contains a kitchen and dining room which serves 36 people at a time. In it Mrs. Schreiber gracefully managed to incorporate a complete range of Bartrev board uses without a trace of "model house" atmosphere. Custom-designed beech tables have Bartrev-board tops surfaced in grey Formica; the board is used unfaced on the ceiling, and veneered in cherry wood and mahogany on the walls. The kitchen has a number of examples of the board's suitability to all kinds of cabinet work: storage units with shelves, drawers and doors painted white,

and a self-service counter of Bartrev board and marble. Though it has invested a good deal in exploring uses for its board and continues to develop furniture like that on the following page, Vere is not primarily concerned with selling the board itself. It plans, rather, to manufacture the presses and sell them in all parts of the world where a shortage of building board is coupled with a surplus of wood waste—which means just about anywhere a tree is found growing and a man is found planning its demise.

The factory, therefore, is also a live demonstration of how the process works and what it looks like in operation, for the benefit of potential buyers who continually visit from abroad. For this reason, among those already mentioned, the plant itself is the firm's sales brochure in three colorful and moving dimensions, and everything from its architecture and furnishings to its pamphlets and stationery helps to present the most convincing and agreeable picture possible. The company, in other words, has found out how to represent itself and its product by means of its total plant.

For interior walls, pressed-skin Bartrev panels were prefabricated with veneers.

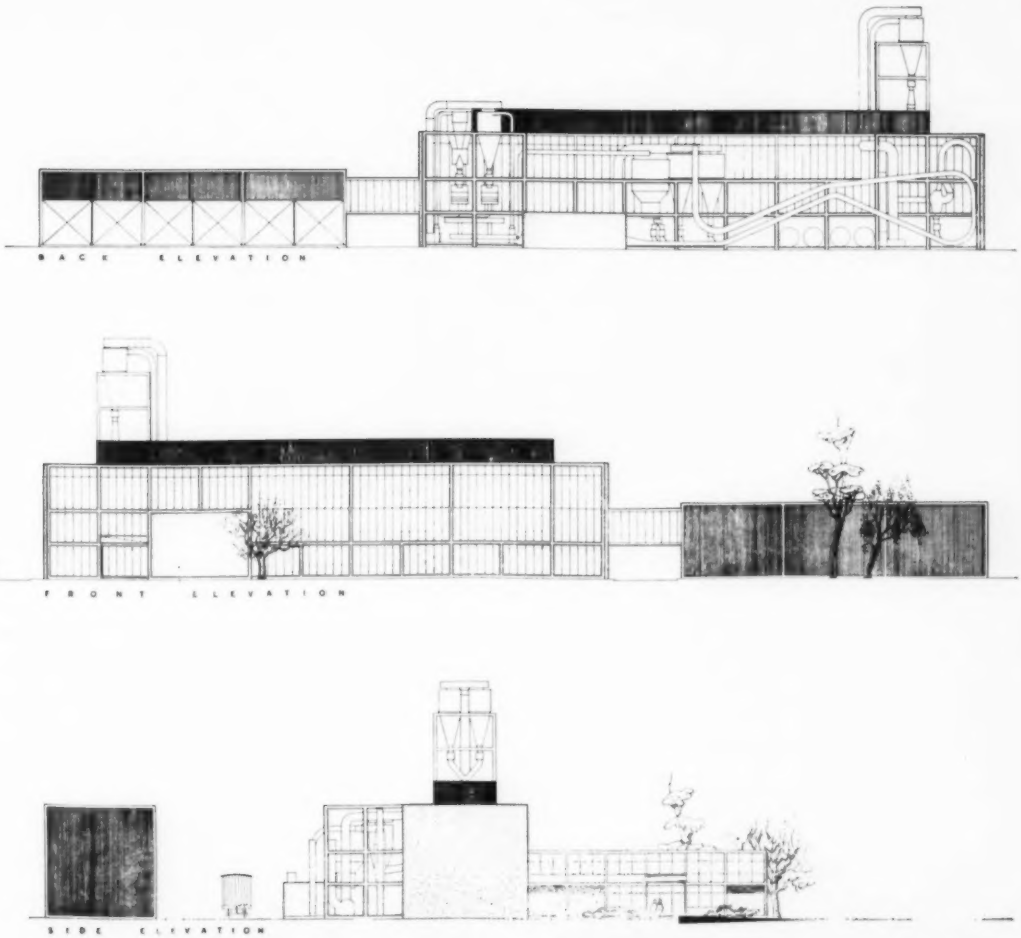
From the outside, the Canteen is a simple brick-ended box tied with aluminum glazing bars.

All the Vere company's graphic work is handled by Mrs. Schreiber's office.

An office using Bartrev board on virtually all surfaces —walls, cabinets, tables, ceilings, shelves—is possible because the board's low cost permits a variety of colors and textures to be applied as veneers and finishes.

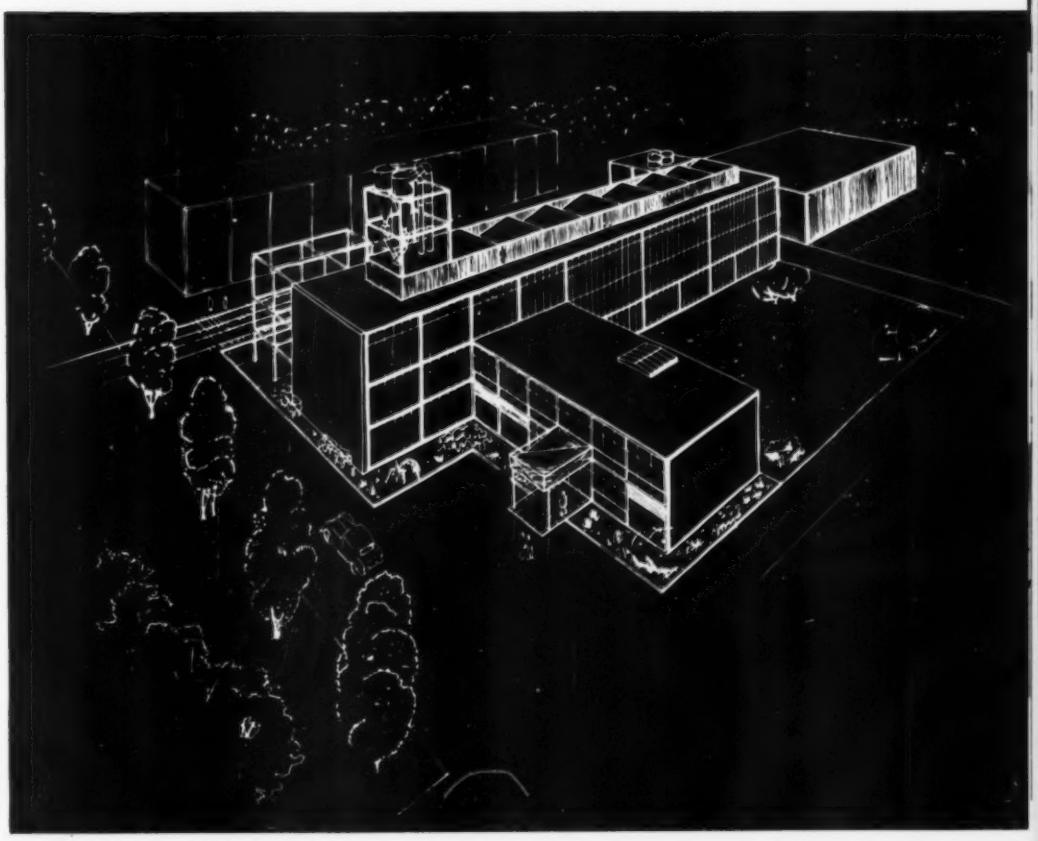
Mrs. Schreiber designed this multiple-use unit for home or office; it has a built-in sunlamp, cosmetic tray, and 12 cupboards.

In selling anything as formidable as a 134-foot press for a new process to a foreign buyer, Vere executives realized, some visible proof of how it would function in another economy might not hurt at all. Their proof has taken the form of a prototype factory, which takes into account all the space and facilities needed to operate one Bartrev press with an adequate staff, worked out in terms of building and operating costs in various parts of the world. On this basis, Gaby Schreiber and Associates have just designed the model factory shown at the right—a simple, well-planned unit with a central building for the press, auxiliary buildings for storage of raw material and finished board, an office wing complete with kitchen and cafeteria, offices, a laboratory and medical room. The plans for this factory, and the services of the designer in adapting it to specific local conditions, are available to any buyer of the machinery. The designer, here again, has been given free rein to further sales of the company's product in a way which is at once practical and uncompromising. *j.f.m.*



To illustrate the total plant necessary to operate a Bartrev press efficiently, Mrs. Schreiber designed this prototype factory; it plans for machinery, storage, and all staff and operating facilities. Even costs and amortization have been considered.

Prototype factory



PLANNED EXPANSION

George Nelson

discusses one firm's solution to the problem of converting a small business into a substantial manufacturing enterprise.

This is an account of the experience of a Midwestern manufacturer and a New York design organization with a program which, in the course of five years, has increased sales volume around 1200%.

The figures are not large (they rarely are in the home accessories business), but the rate of growth is interesting if viewed as an example of how some of the persistent problems of small industry can be solved by a combination of cold analysis and creative activity. In retrospect it seems almost ridiculously easy to help a business grow to its full potential—if certain crucial factors are present. The most important is a manufacturer with sufficient vision to see beyond the end of his nose, a quality not nearly so common as it might be.

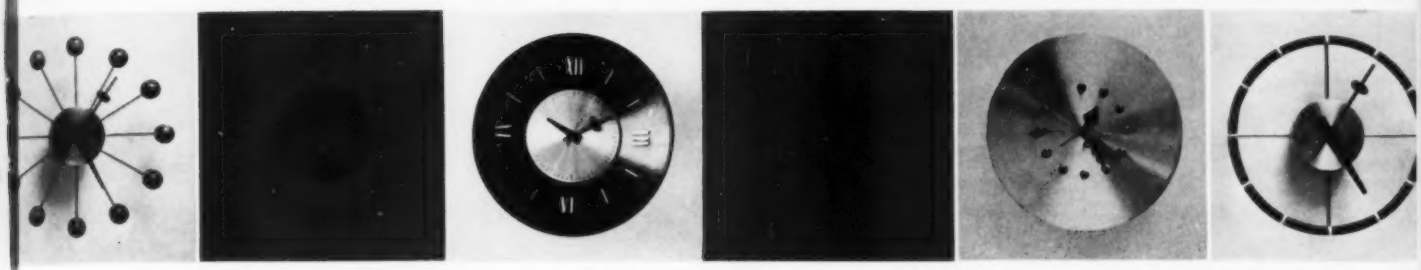
The story in this instance is told by the designer for the simple reason that in this field design is the most important thing the manufacturer has to sell. It establishes both the nature of the production required and the type and size of market to be reached.

The Howard Miller Clock Company is in Zeeland, Michigan, a town not far from Grand Rapids which shares in the woodworking tradition so deeply rooted in the area. In its population there is a strong Dutch strain, sober in outlook, largely fundamentalist in its religion, tenacious in its behavior and occasionally surprising in its combination of vision and nerve. The last has a good bit to do with the company's history.

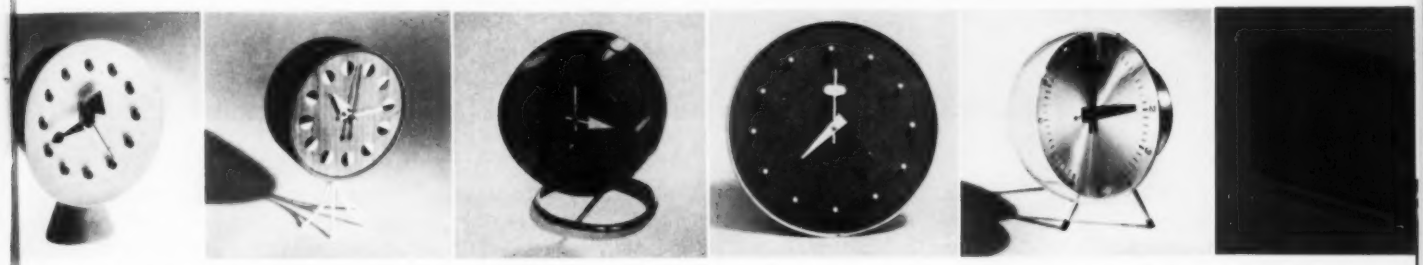
The firm was set up originally, as one might surmise, to make clocks. Since movements were specially made in other plants, the operation was essentially light woodworking, finishing and assembly, a combination of facilities which led naturally to contract work—wood cases for barometers, door chimes, etc.; and by the late 1940s the original clock business had declined to a fraction of total production. From a purely financial point of view the business was perfectly satisfactory, for the company had a good reputation and its customers had been with it for a long time. From management's point of view, however, something was lacking. Its ambition was to be known as the maker of unique products of high quality. The goal, a million-dollar volume in such products, is no longer very far off.

When a manufacturer tells his designers that he wants to make "unique" products they start listening very hard, because the attitude is completely off-beat. The typical U. S. manufacturer has the desire not to be unique, but to be safe, and in practice this means coming as close to the design of successful competing products as he dares. Right here is the key to the company's success, for it contains an important answer to the problem of the independent industrialist. The problem, in the substantial majority of cases, is how to survive in the face of competition from larger companies. The answer: compete *on your own terms*, not on theirs.

For example, we were asked by Miller to design a new line of electric clocks. For any but a major producer this presents quite a problem. Sales of clocks for general household use have been gradually declining

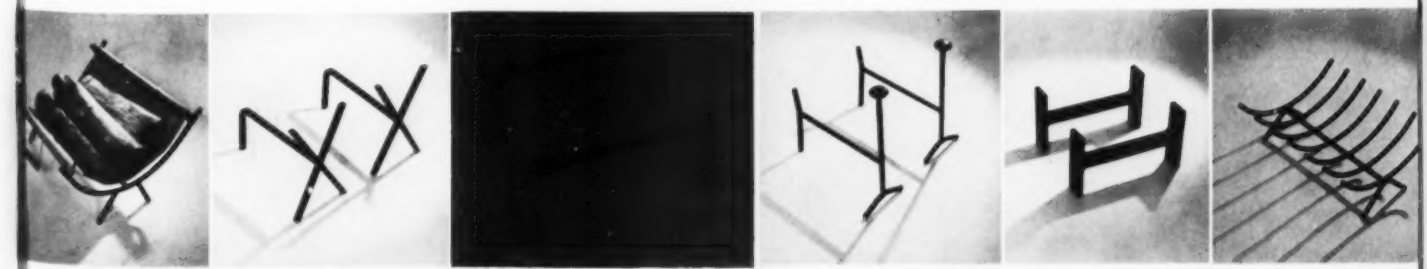


Wall clocks were created to compete with custom installations. Least conventional model, far right, outsold others.

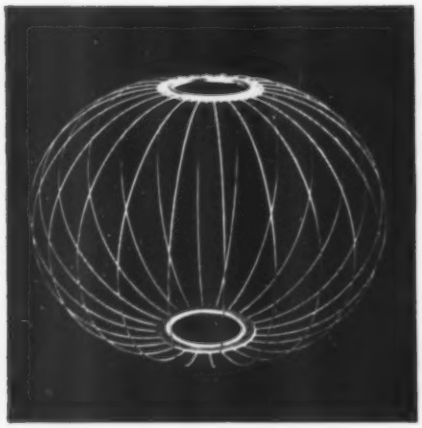


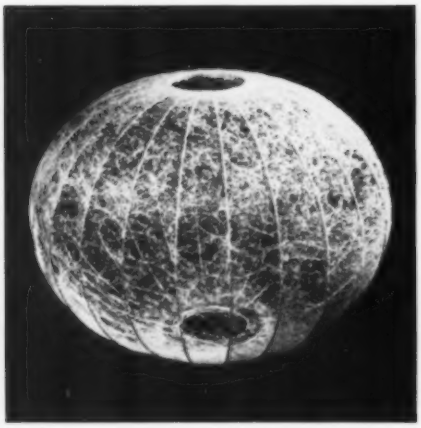
Numbers were omitted from clock faces because designers claim people really tell time by the angle of the hands.

These lamps combined a wire framework with panels of colored elastic which snapped into place to form shades.



Fireplace accessories brought design innovations, like self-stoking firebasket, right, into an overlooked area.





over the years. People do not buy mantel or wall clocks in significant quantities and the grandfather's clock has long since joined grandfather. The production of clocks for kitchens, offices and radios is in the hands of a few very large manufacturers with heavy investments in tooling. The only answer for Miller was to seek out its own market, and this was done with a line of radically modern clocks, all designed for an absolute minimum of tooling. Any producer in this field who has to buy his movements from others suffers a very real cost disadvantage and he must therefore incorporate some kind of plus value to justify the increased price to the consumer. This "plus" we tried to achieve in the appearance of the clocks.

The gamble, modest as it was, paid off. The new designs attracted a good bit of editorial attention (this is important to a company with a low advertising budget) and a reasonable number of customers. Since then periodic additions to the line have been made and sales have increased steadily each year, though not spectacularly. When the first group came out a national distributor, Richards-Morgenthau [see page 124], was appointed and the relationship has worked out so well that it is unlikely that the company will ever set up its own sales staff.

The re-establishment of the company as a clock manufacturer provided the base needed for the program already outlined: development of an indefinite number of product lines, each characterized by good quality, contemporary design and some unusual idea. The clocks were followed by the first complete group of fireplace tools and andirons of modern design. Here too innovations appeared: a wood holder which was also a log carrier, and a self-stoking fire basket.

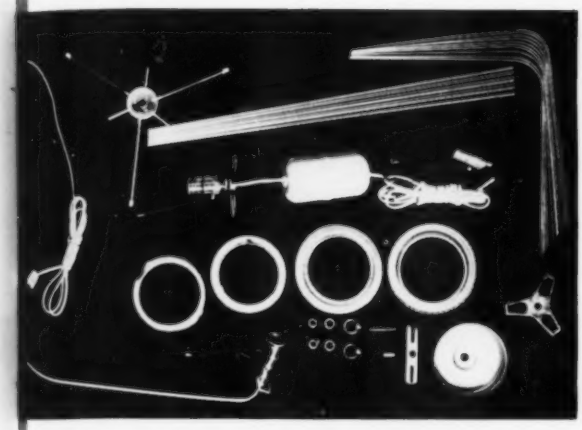
A third line of products put Miller into the lamp business, but not for long. We had become intrigued by the idea of stretching panels of lastex over light wire frames to create illuminated objects of odd shapes and colors. This idea laid a large egg, for reasons which have never been entirely clear. Our best guess (after the fact) is that people will buy lamps or lighting fixtures, and that these colored objects which looked like box kites fell into neither category.

The failure of this project contains material of value to any manufacturer who is looking for ways out of his own particular dead end. *Risks have to be taken.* Responsibility has to be assumed by both producer and designer. A long-term program of growth is a strategic concept which must make provisions for tactical setbacks. In this instance the failure was followed by a new concept in the manufacture of lighting units—the so-called "bubble lamp"—which hit a jackpot.

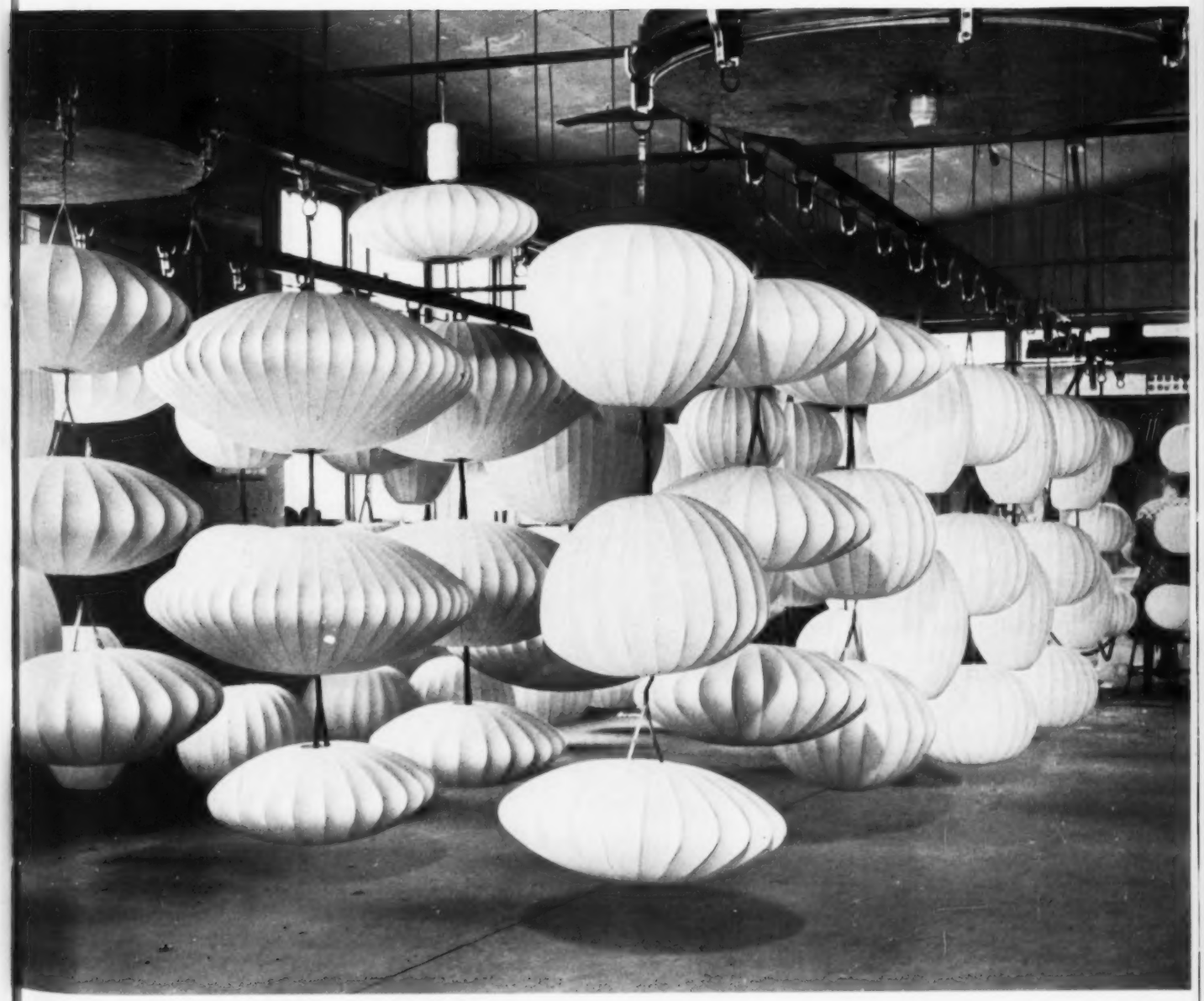
A bubble lamp is a harmless-looking object built like a wire cage whose shade is *sprayed* on instead of being attached by traditional methods. It is a direct descendant of the mothballing technique used by the military to rustproof equipment. The cage is set on a turntable in a spray booth and a self-webbing vinyl plastic material is applied with a gun, forming a kind of spider web which in a few minutes becomes a translucent skin. This product, the simplest in appearance of all the items so far created for Miller, had by far the most difficult birth. Here was a product which lent itself naturally to mass production, and the real design effort was spent on development of both components and processes with a view to keeping cost at a minimum.

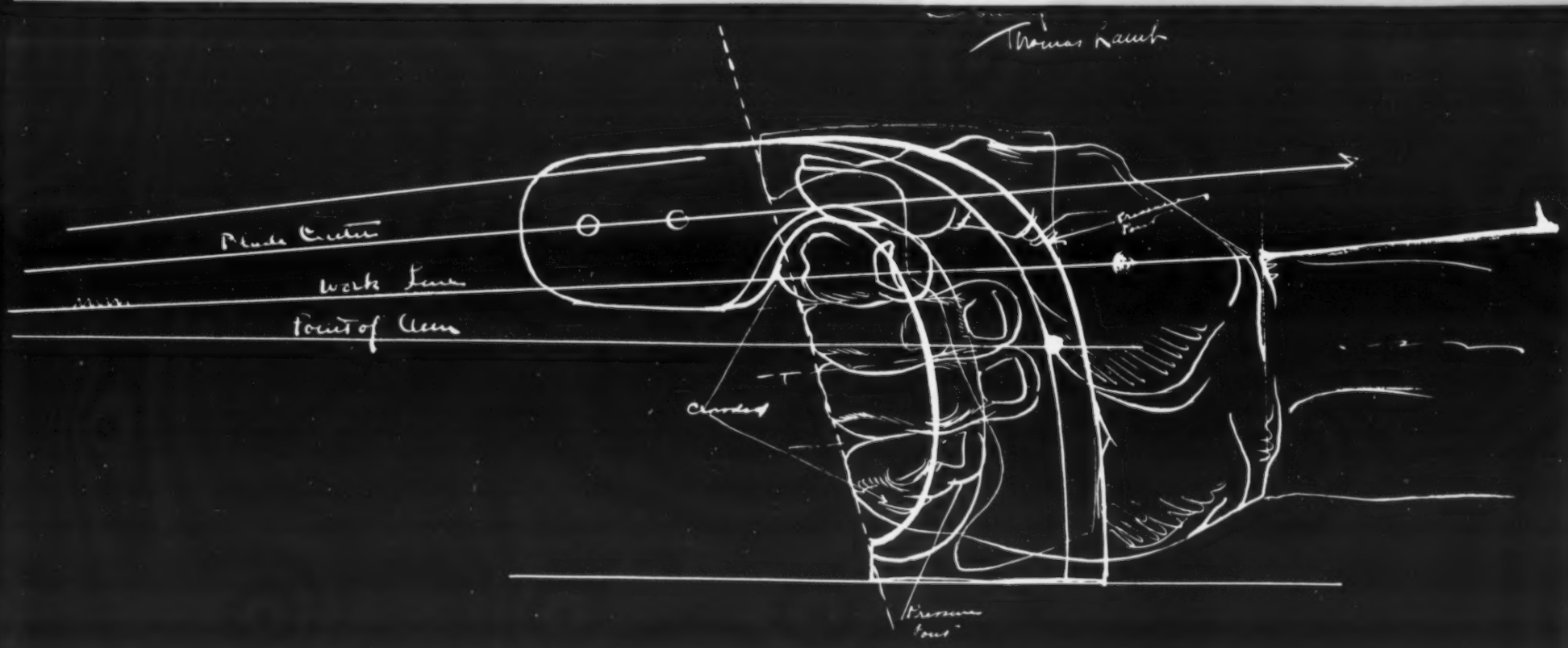
For instance, the normal procedure in making a wire cage is to weld the joints. We wanted to bypass the entire welding operation. A special connector ring was therefore developed which permits rapid assembly without tools. Other problems were studied in the same manner, and when the bubble lamp finally reached the factory it had been engineered for production.

With the emergence of this product a change took place in the company. Previously it had been taken for granted that investments in (*Continued on page* 148)



Construction of a bubble lamp, starting opposite page, left:
1. *The basic wire frame, assembled without welding by means of a special connector ring.*
2. *Partially sprayed frame has delicate cobwebby texture.*
3. *Completely sprayed bubble.*
4. *All the components of the bubble lamp. The various shapes and sizes seen on the conveyor belt (below) are made by changing only length and bend of basic wires.*




Thomas Lamb
Blade Center
Work Line
Point of Cleavage
Chordal
Pressure Point

The jeweler's tool at far left is a rare example of a Lamb Handle as part of a total Lamb design. Machete is shown before and after receiving Lamb Handle. Elaborate analysis which goes into each design is demonstrated by drawing of hand and handle.

TOM LAMB THE HANDLE MAN

Thomas Lamb looks like a family doctor, or the great bluff farmer who comforts small animals with gentle hands. His imposing proportions are magnified and his serious face made joyful by a suffusion of confidence. He is that rarest of men, the happy artist.

Tom Lamb is confident that he has discovered the one narrow field of his life work—manuskinetics, or the science of the forces of the hand at work, and he is confident that the field is his alone, by discovery and by cultivation. He confidently reigns over a subject so unique that it cannot, as he proudly confesses, be properly labeled as art, engineering, anatomy, or physics. Indeed, it is the first time, he points out, when design has created a new science. Thus he can be confident also of his place in history.

In the street Mr. Lamb adds to the varied suggestion of his appearance by wearing a homburg. When he works he wears a smock and retreats to an office so darkly reminiscent of a basement wing of the American Museum of Natural History that one is startled to look out the window and find sunlight in the streets seventeen stories below. Walls, floors, and furniture are gray, and the corridor is lined with metal cabinets whose locked interiors contain tray upon tray of oddly curved and twisted sculptures in glass, plastic, aluminum, steel, clay, wood, and plastic wood. They look like the bones and shards of a civilization; in fact they are the record of Mr. Lamb's extraordinary life work of designing handles to "make full use of the forces of the hand for better and safer manipulation of objects." Locked within the cabinets is another record of Mr. Lamb's work—twelve bound volumes of notes and meticulous sketches comprising the three hundred and sixty studies of handles he has already made toward some 15,000 or so potential applications for the Lamb Wedge-Lock Handle. "There's a book here," says Mr. Lamb, waving a hand at his notes. "There's a whole series of books. It'll make a fascinating story! Someday. . . ." But one wonders when the pressure of all those undeveloped applications for Lamb Handles will give him a moment to write.

He also keeps a shelf of ledgers, in which clients, interviews, and hours worked are illuminated in ink and colors. "I'm a good businessman," he says. "I always was a good businessman." This is fortunate, for business is a large part of Thomas Lamb's work. Generally he sells neither his time nor his designs, but works at his own speed on his own projects. Every handle he designs is protected under his patents describing a scientific mechanism for exploiting the hand. When he is ready with a group of handles, he licenses them to the most promising manufacturer he can find in the appropriate field, who designates them as Lamb Handles and pays a royalty for their use. Naturally Mr. Lamb is greatly concerned with the nature of the company he takes up with. The client must agree to accept his Lamb Handles without modification, which means using Mr. Lamb's hand-sculptured models to make the molds without intervention of engineering drawings.

If in any particular field, as for example paint brushes, Mr. Lamb is unable to interest a company whose future interests *him*, he simply postpones the project for a while, in fullest confidence that someday, everything that comes with a handle will come with a Lamb handle. "If this thing goes the way it looks as though it's going to go, why it's tremendous!" he exclaims, and so it would seem. Among his present clients are two divisions of Alcoa: Cutco for cutlery and Wearever for kitchen utensils, plus Skil in the portable tool field, Aluminum Goods, Ltd. in Canada, Edstrand Brothers in Sweden, and the United States Government. All in all, Mr. Lamb happily estimates that the Lamb Handle has already been attached to fifty million dollars worth of merchandise.

His own practical nature is no embarrassment to Mr. Lamb, for whom art and a good living are not the coin of separate realms but correlative and just rewards for a designer of courage and integrity. His success, he believes, is due to an old-fashioned concept of the designer as a workman, and his fondness for this role is plain to the visitor who watches him, pink-cheeked, besmocked, and exuberant, filing away at his latest handle, and talking of success in business and purity in design. His work is timeless, he explains as he whittles, because he does not try to be modern but only to create pure forms. Nature is the real designer, he says; a basic physical function will produce its own form. As far as he is concerned, generic forms are produced today by only a handful of designers—men like Wright, Neutra, Eames, and Saarinen.

Mr. Lamb's office has a holiday quiet. It is hard to believe that in the old days, before he went into handles, he ran an establishment of stylish dimensions with a crew of designers working on Tom Lamb textiles and a publicity director to spread his fame as "Tom Lamb, Top-Flight Designer." Obviously this was no setup for a workman, and Mr. Lamb's conscience, which apparently derives from his mother's New England, would not allow it. "I make up a pretty picture," he says, "and you're an old New Englander and you say, 'That's nice, Mr. Lamb; how do she feel in the hand?' " Today he has but one assistant whittling away in the long drafting room. He does his own research, makes his own working drawings, and develops his designs in hand-sculptured models.

Even if he could teach a staff of designers to design generic handles, it is doubtful if Mr. Lamb would want to relinquish any part of the job. The Lamb Handle, as far as he is concerned, is the scientific answer to a human problem and does not admit of improvement. "When I finish one of these handles I know I'll probably never touch it again," he says, gazing affectionately at the little knob of wood in his hand.

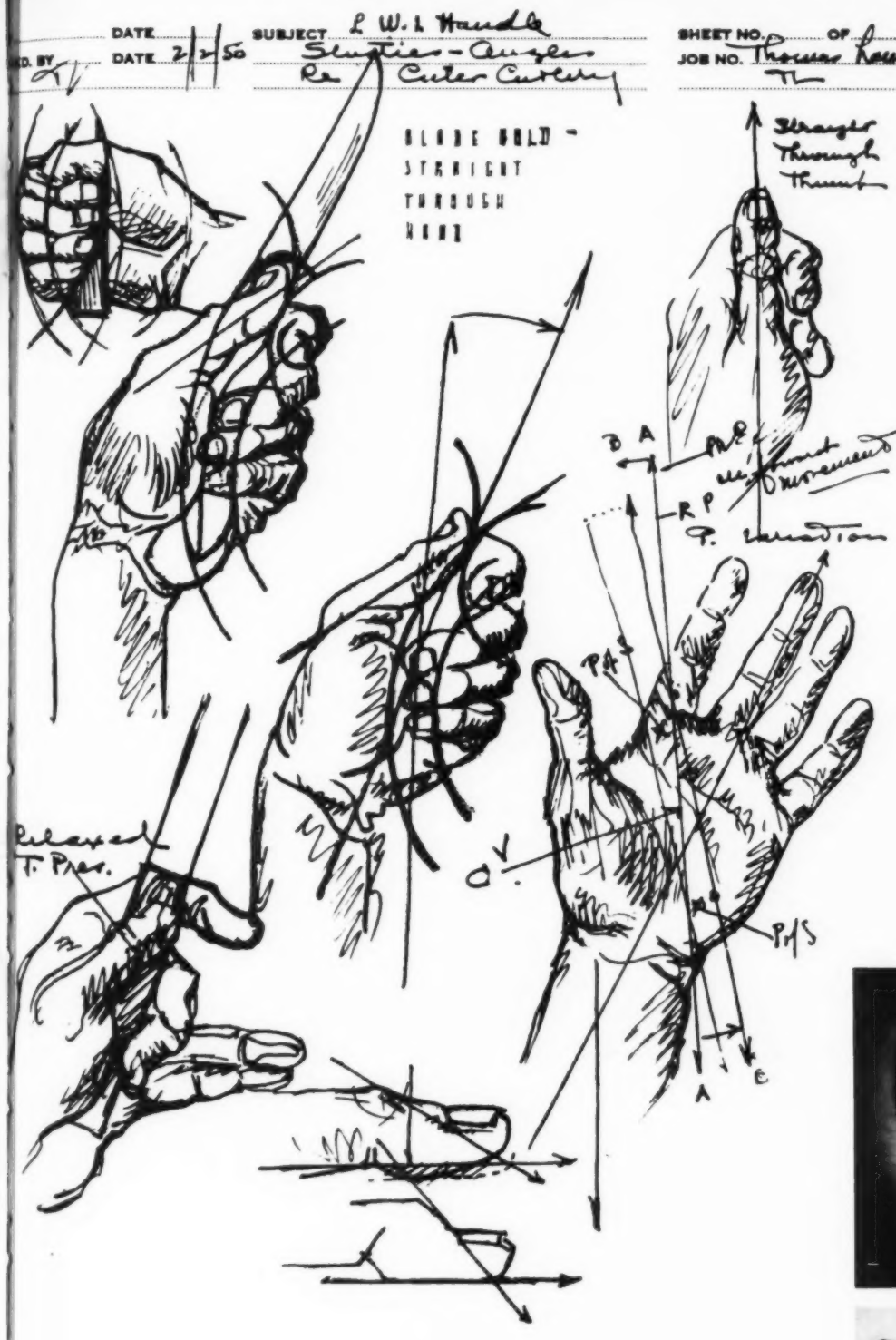
Mr. Lamb's clear-eyed approach to art and business gives evidence of the fact that he is a self-made man. He began the project as a child by studying "good clear thinking." He aimed to be a doctor and chose painting as his avocation, but the family finances and a scholarship in art led him to reverse his plans. From the age of thirteen he worked afternoons with the textile designer Mossehier and shortly thereafter dedicated his evenings to the study of drawing under Robert Bridgeman. Finally, to fill his weekends, he apprenticed himself to a plastic surgeon, who taught him anatomy in exchange for medical drawings. He was ready to open his own office as soon as he finished public school.

The scrap-books make it plain that Tom Lamb, Top-Flight Designer might still be thriving were it not for what Mr. Lamb recounts as his lifelong search for a means of expression. It was his spare-time interest in medicine that finally led him to his goal. During the war he watched crippled soldiers stumble and fall on crutches that could not be managed. He set out to design a new arm rest, but soon discovered that the hand which bore the main burden was the real problem.

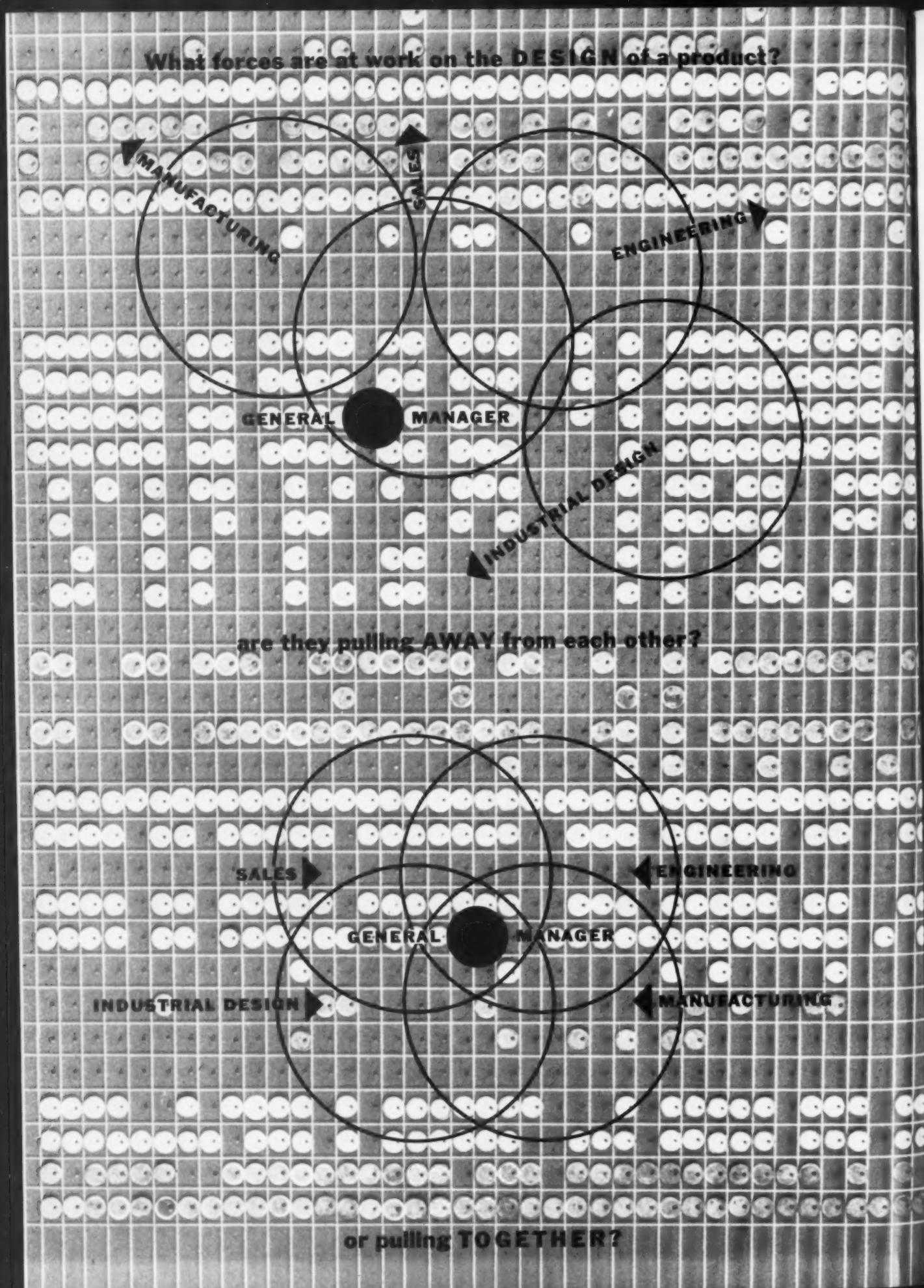
When Mr. Lamb had solved this problem he had the prototype of the Lamb Handle. He also found he had a patentable mechanical principle and an equation that allowed him to solve any "hand-handle" problem. Thus he could come to the assistance, not only of the crippled, but of the housewife with a heavy pot, the traveler with a heavy suitcase, the carpenter, the surgeon, and the pioneer. He is still astounded by his discoveries. "Every time I design a handle," he says, "I go through the same door. How the door was found, I do not know."

Although Mr. Lamb started work on the Lamb Handle in 1941, he kept it under wraps until he felt sure it was perfected beyond the possibility of misapplication. It was publicly shown for the first time in 1946 and published in 1947 in the Home Furnishings Review. One of the first inquiries came from Edgar Kaufmann, Jr., who called at Mr. Lamb's office to propose an exhibition of Lamb Handles at the Museum of Modern Art. It was held the next year and led to wide publicity for Mr. Lamb and his handles.

The crutch handle that was the progenitor of so many Lamb handles is still under development. Apologetically, Mr. Lamb explains that he is trying to make it so moderate in price that anyone can afford it. "I can have one luxury like that," he says. "I make up a few hundred each year and give them away. I've always felt kind of funny about going into crutches to make money. The crutch work was my casting bread upon the waters. It came back buttered."—*d.a.*



At top right is a sickle, below it an array of Cutco cutlery showing how handles vary according to application. Sketches above explore requirements for one knife.


What forces are at work on the DESIGN of a product?
MANUFACTURING
SALES
ENGINEERING
GENERAL
MANAGER
INDUSTRIAL DESIGN
are they pulling AWAY from each other?
SALES
ENGINEERING
GENERAL
MANAGER
INDUSTRIAL DESIGN
MANUFACTURING
or pulling TOGETHER?

Arthur N. BecVar

Manager, Product Planning and Appearance Design, Major Appliance Division, General Electric Company

Design in the Company

Where, What, How?

One of the questions which will fire a discussion in any group of designers or executives is the one which goes, "Where does design fit into the company structure, and to whom should it be directly responsible?"

Numerous companies have managed to answer this question successfully in terms of their own product problems, examples of which are taken up in detail below. Regardless of where the word "design" turns up on the organization chart, however, it is clear that the recommendations of any design department must be properly evaluated by management. This means that design should be given a responsible place as a separate department receiving executive recognition. Unless it does, the contributions of any industrial design department — which can be critical — will turn out to be only token offerings.

Personalities within a firm, certainly, go a long way toward determining the way a design department can function best. All the neatly-boxed organization charts in the world will have less influence on design decisions than one dominant personality. Occasionally there is a strong-willed individual in a key position who knows all the design answers — a vestige of the day when design was regarded as an "unnecessary expense." Sometimes, of course, this works out very well, but it seems more and more apparent to enlightened management that, just as the "unnecessary expense" has become an investment which brings a high return, the design specialist who collaborates produces the best design results.

When it comes to selecting that specialist, companies have the choice of using a consultant designer, of establishing their own design department, or using a combination of both.

Which is best for a particular company? It depends. If few product design changes occur during the life of an item, or if a design is scheduled for a long run, the consultant designer may be the most economical answer. Companies with diverse products and a large volume of design work can operate efficiently with their own design departments — frequently and successfully augmenting them with design consultants.

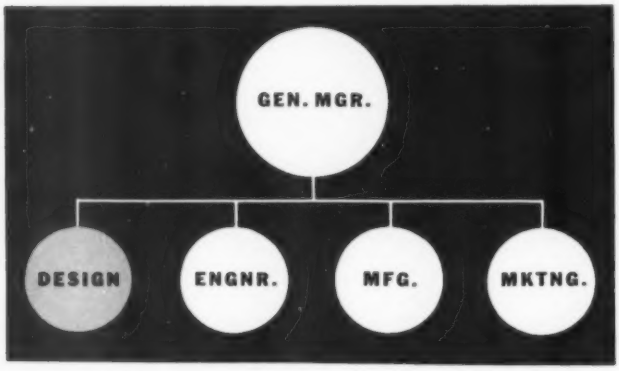
Whatever his relation to the firm, the industrial designer should be included in the team planning the specifications of a new or redesigned product, collaborating with engineers and manufacturing men in working out the details and limitations. The industrial designer is especially instrumental in the selection of materials, finishes, location of components, features, and the total visual effect of the end product.

Generally speaking, in a company in which design is a year-round activity, a design department can function in the following ways: the industrial designer can work primarily with the *general manager* (which may mean, too, the president or other top executives); he may work with the *engineering manager*, or with the *marketing manager*, the *sales manager*, or the *public relations manager*.

Let me give examples of how a number of different companies, with dissimilar products, coordinate their departments to make the most of their designers.

In a firm such as Steuben Glass, in which the visual aspects of the product are of primary interest, the design department is responsible directly to top man-

agement. Prior to last June, the Director of Design reported solely to the President, and was fully responsible for all the company's visual problems. This included the power to make all design decisions, to do not only with products, but advertising, catalogues, packaging and stationery, as well as displays, decoration and architecture. In June an organizational change elevated the Director of Design to Vice President of Sales and Design; his successor as Director of Design



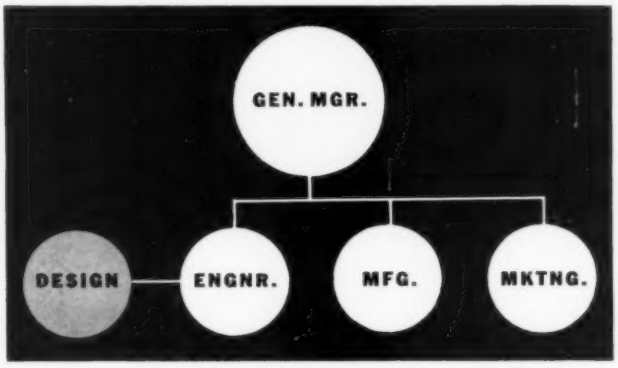
now reports directly to him, instead of to the President.

In any case the design department is autonomous and on equal footing with sales and production. It is interesting to note how influential design is under this arrangement. Under no circumstances can the production group alter any product design. This policy happens to be practical because, at Steuben, the design group thrashes out all production problems before a new design is put into the line, and all authority rests with the designer. Most important of all, the entire line of products is the responsibility of the Design Department, which alone has the right to determine the size of the line, and to make additions or deletions. The sales and production departments at Steuber have no voice other than to make recommendations.

The Container Corporation of America is equally emphatic in giving *carte blanche* to the designer. When the firm's Department of Design was established in 1935, the President (now Chairman of the Board) stipulated that the Director of Design should be consulted about every company activity involving design — a policy which, with minor modifications, is still in effect. Plant managers, sales managers, and company executives consult the Department of Design when a new building is to be built or an old one modernized, when a truck or sign is to be lettered, when offices or plant or even machinery needs painting, when new or revised stationery is needed, when the annual report is prepared, convention displays designed, or facilities such as offices, conference rooms or locker rooms are planned.

This procedure of having management personnel deal directly with the Department of Design serves to keep the department abreast of the design needs of the company's forty plants and offices. The Director of the department is responsible to the Chairman, the President and the Vice-President, and all major activities are cleared with the executives most closely concerned.

In the case of a technical product, where changes might depend on mechanical developments, the design department logically works more closely with the engineering staff. Such is the case at Motorola, Inc. The Consumer Products division, under a vice-president, is responsible for the development of all products, and consists of three major departments: the radio project group, television group, and service group, each with its manager. The Industrial Design Department functions as part of the service group, and works with the



engineering staffs of the other two groups.

In the development of a line of table model radios, for instance, the product manager confers with the heads of engineering and design on the specific requirements of the line, based on ideas from all departments. Idea sketches are made and discussed, and then prepared as definite proposals. At this point mechanical and electrical engineers consider the designs in terms of special mechanism, tooling, and electrical, mechanical and acoustical aspects. After revisions, cost estimates determine how the new models will compare with previous ones. The number of design choices are, at this point, reduced to two, which are made into models by the engineering group. At the final product selection committee meeting, the Product Manager of Radio and the Director of Industrial Design present the new line. This committee, limited to policy-making top management, of which the Director of Industrial Design is a member, makes the final selection.

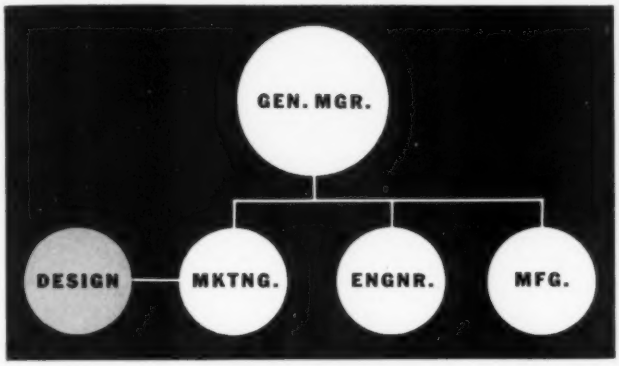
At Motorola the cooperation between engineering and design is permanent; their separation is simply one of departmental function because, management believes, the appearance and the performance of its products are in reality one.

In the Major Appliance Division of the General Electric Company, the development of industrial design programs is the responsibility of the Product Planning function within the Marketing Department. Serving at staff level, Product Planning serves each of the operating departments. It studies requirements and recommends designs for each of them. Continuous liaison between Product Planning and the Division's operating departments is provided by Appearance Design supervisors assigned to each department. Full-line coordination is the job of staff manager of Product Planning and Appearance Design.

To illustrate how this works, let us project a case based on the theory and practice of modern product planning within the marketing unit. The Home Laun-

dry Department manufactures and sells automatic washers, dryers and ironers, and its product planning committee (composed of the managers of marketing, finance, manufacturing and product planning) has just completed a review of its plans for the coming year.

The group agrees, on the basis of market research and other evidence, that operations for the next year should pivot on two objectives: 1) lower product prices which, they all agree, can be made possible only through



engineering developments that permit manufacturing cost to be cut; 2) integrated appearance of the washer and dryer.

The twin problems are tackled immediately by the Appearance Design supervisor. With engineering, he develops components which meet the cost objective. Obviously he must reject all extravagance and concentrate on features which will put the product into the desired price range. He knows, for example, that an illuminated tub, a white porcelain interior, push-button controls, trim of chromium-plated brass — all must be evaluated in relation to manufacturing costs and list price objectives.

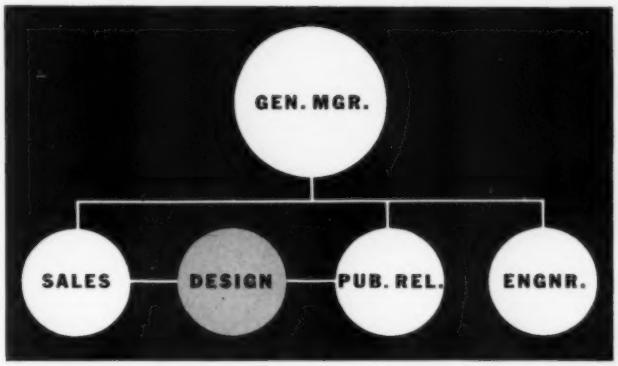
The cost discipline will, perhaps, prompt the supervisor to consider stainless steel trim, rotary plastic switches, and many other materials that meet rigid appearance requirements but cost less than traditional components. Each new development is tested to make certain that it meets established quality standards. The Appearance Design supervisor will normally find that solutions involving the washer can be applied with equal efficiency to the dryer.

His work, of course, is fully related to and synchronized with the two separate engineering groups which are simultaneously developing the mechanical and operational details of both appliances.

Finally design models are prepared. At a meeting with the product planning committee, recommendations are made to the department general manager. Engineering costs and appearance are reviewed for his approval, after which the program is presented to the Division product review committee for release to manufacturing. At this point the design supervisor has solved the problem based on the marketing objective.

Some material suppliers are set up so that industrial designers work with the sales department, and others choose to regard his contribution as part of public relations. In either case, his task in working for a manufacturer of basic materials is somewhat different from that in working for a product manufacturer — the problem being to expand uses and markets for the company's material. Take the case of Reynolds Metals Company's Styling and Design Department. Headed by a General Director, it is comprised of four divisions, each with a director responsible to the General Director and three of them exclusively sales groups.

The Package Design division supplies packaging salesmen with finished foil sketches of newly designed



labels and wraps, or of foil adaptations of a customer's established package design.

The Product Design division works in a similar way with industrial salesmen, to promote the use of aluminum in industry. It produces working drawings, engineering specifications, bills of materials and color renderings.

The Architectural division recommends and illustrates uses of aluminum in building, developing new applications of the material for architectural purposes. The Graphic division, not so fully associated with sales, plays its part in sales promotion by layout and design work on company literature.

Thus the designers of all these divisions are concerned with development design in terms of a particular material. Reynolds' designers do not compete with design consultants who may be retained by their customers, or with the customer's own design department, but prefer to collaborate with them. Because of the close association with the sales force, Reynolds' Styling and Design Department is directly responsible to the Vice President of General Sales.

Whatever the designer's place in a particular organization, his way of solving problems creatively means that he should have a clear concept of the *whole* company, its departments and objectives. He can function best if he is a part of the firm's policy-making group — top management — and is not closeted away where parts and pieces are developed.

Many companies need to study this matter of the industrial designer and his place in the company structure, whether to decide if his talents are being used to the best advantage. A poor design or a careless decision in the early stages can affect many people and many dollars later on. In these days of high volume tooling and production costs, it is worth the trouble of finding ways to check such accidents. In this respect, an industrial design organization, properly set up and implemented with authority, is a good investment.

symbols as identifiers

by Ladislav Sutnar

The butcher, the baker, the candlestick-maker, the barber and scores of other tradesmen once used symbols to identify their work. Simple, self-explanatory, these symbols immediately told passers-by what services or products a shop had to offer. Though today's merchandising methods are more complex, the visual directness of these symbols is still effective in bringing a package, and its contents, to the customer's attention.

There are innumerable ways of using symbols for sales promotion — from a simple package to a billboard or advertisement to the trademark signs which still, occasionally, identify store fronts. The symbols themselves are as varied as their uses. While some of them express a casual concern for design, many symbols are examples of sound design thinking — attractive to look at as well as effective in moving all types of merchandise.

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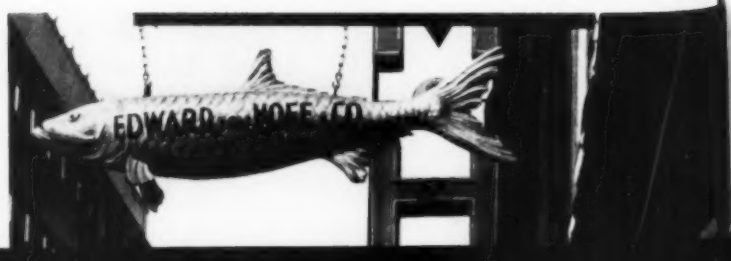

merchants' symbols, past and on the verge of vanishing, photographs from the archives of Standard Oil Co. (NJ)

—1— wooden Indian outside a general store at Old Sturbridge Village, Massachusetts —2— opticians' signs, New York —3— fishing tackle shop sign, Philadelphia —4— shoe repair store sign, New York —5— forge shop sign, Suffield, Connecticut —6— barber shop sign, New York —7— window of company selling nautical instruments, New York —S— letter 'S' used next to the title of this article is trademark of Sweet's Catalog Service, designed by Ladislav Sutnar

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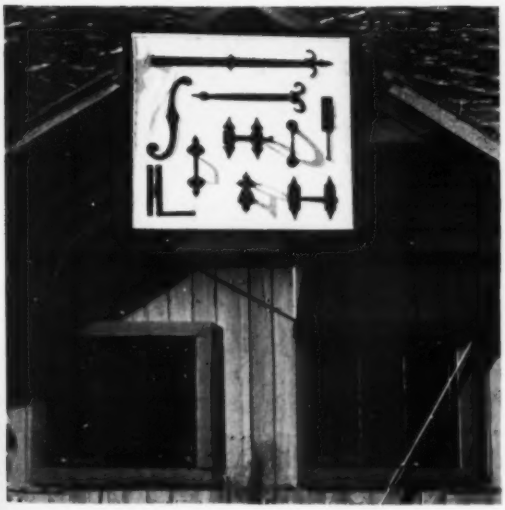

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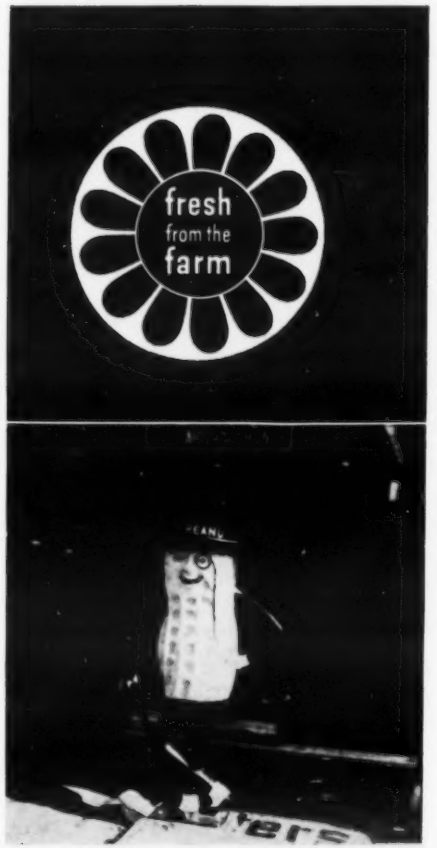
symbols and brand names on current food packages•

▸ *(right) —8/9— 'Dante' and 'Re Umberto' olive oil brands with names and pictures of famous people (Italy) —10— daisy symbol for Hawthorn-Mellody milk packages designed by Art Thaler —11— Planters 'Mr. Peanut' —12— symbol of 'Green Giant' adapted for 'Niblets Brand Mexicorn' advertisement (1953) —13— 'Heinz 57' keystone designed by Jim Nash (1952)*

◂ *(left) —14— 'Birds Eye' frozen food symbol —15— 'Bag and Happy Smile', food store symbol by Hiroshi Ohchi (Japan) —16— symbol of a Swiss food producer by H. Erdmann —17/18— symbols of "Cow Brand' and 'Arm & Hammer' bicarbonate of soda packages (1952) —19— 'Little Quaker' symbol redesigned by Jim Nash (1947) —20 — 'Nabisco' triangular corner seal for packages (1952)*

• illustrations from "package design: the force of visual selling" by Ladislav Sutnar



The symbol is an effective medium for visual selling in our modern self-service operations. In the vast field of packaged products that are marked by brand names, it is employed chiefly as a device for immediate identification and recall. (A brand name may be regarded as the verbal part of a symbolic or pictorial trademark. When the latter is a word, the brand name and the trademark may be the same.) The symbol representing a brand name may be incorporated in the design of a single package or it may tie together a line of products. Again, it may dominate and be the sole illustration used. In any case, it can be successful only if, through persistent association, it has come to identify a product with an expected value or quality. In the face of constant competition, repetition of the symbol during the life of the product's marketing program is necessary to maintain this identity in the shopper's mind.

package content symbolized —(below)—21— New England Fish Co. frozen sea food package designed by Lester Beall (1952) —22/23— *'Sultana Salmon' package design by Egmont Arens* (1931)
package use suggested with symbol —(below right)—24— 'Tomorin' package for a rat poison designed by M. Schmid (Switzerland)

letter-symbol —(opposite page)—25— zipper formed in letter 'W' for 'Waldes' assorted zipper packages designed by Ladislav Sutnar (1947)—26/27—*'ipi' 'Interchemical Printing Inks' trademarks used on all types of packages —28—'H' in form of horse for 'Holgate Toys' designed by Frank Gianninoto—29—letter 'K' on 'Kingsbeer' label by Jim Nash.*

21

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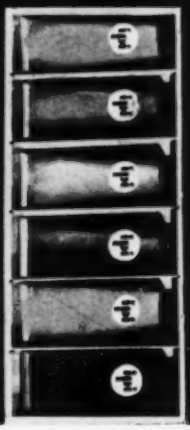

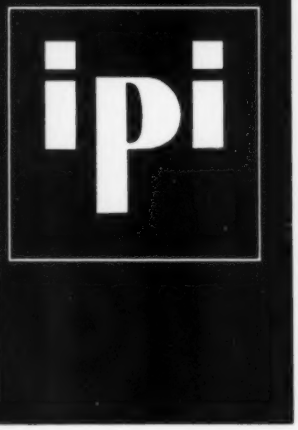

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layout designed by Ladislav Sutnar

A simple symbol which identifies the contents of the package, and a symbol which suggests uses for the product are shown on the opposite page. They are further extensions of the use of the symbol to attract attention and translate this attention into a purchase.

Letters applied as symbols, shown above, to identify a product or a producer can be used to best advantage in a design that calls for a family resemblance in a series of packages. Such symbols may not only establish visual continuity in packaging but, through consistent use in other media, may also give a distinctive *cachet* to the producer's whole promotion program.

raymor

Over 25 years of pioneering

have made more than a good business

of good design.

Irving Richards

The history of Raymor: original Russel Wright showroom (left), ca. 1935; Wright Accessories, 1938, added lamps, American Modern dinnerware; Paul McCobb showroom for Raymor (right), 1950, showed considerably enlarged line of lamps and ceramics.

"A design is as good as the entrepreneur who promotes it." So speaks Irving Richards of Raymor, or, more exactly, Richards-Morgenthau, the oldest and largest wholesale distributor of home furnishings accessories in the country with a history dedicated exclusively to contemporary good design. The statement may be controversial, but the success of Richards-Morgenthau is a fact. When Richards started, 27 years ago, virtually no store would touch modern. Present volume: over $6,000,000 per year and growing, which, for a firm dealing with small objects, in a relatively limited field, is not at all bad.

What has made good design such good business? Integrity, enthusiasm, and shrewd business sense.

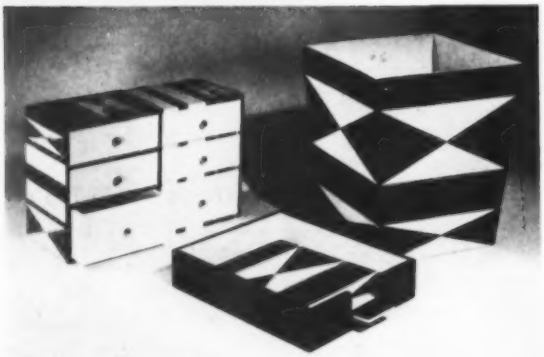
Operating on the principle that the people who buy contemporary design have limited pocketbooks, Raymor offers it at affordable prices. Richards, whose enthusiasm for his merchandise penetrates the organization down to the last carefully-screened salesman, makes no pretensions to purism; neither does he encourage "peripheral hacks," but only "what we believe to be honest, usable, well-priced good design."

The history and success of Richards-Morgenthau is based on meetings and amalgamations, the first of which was the meeting of Russel and Mary Wright with Irving Richards. Richards had been won by what is now historic modern at the Paris *Salon d'Automne* of 1926 and returned fired with enthusiasm and loaded with ashtrays and other small objects for his bookshop. The success of these had led to a brisk trade until the early thirties and the crash, when, after a period of dilettantism, Richards had joined Lightolier. Russel and Mary Wright, meanwhile, had been having considerable success with a new concept in the accessory field—"casual living." Richards joined forces with them as the business end of Russel Wright, Inc., later Russel Wright Accessories. At a time when no one would buy it, all three believed in the future of colorful, functional good design. The business began with spun aluminum serving pieces. Later lamps were added, and finally, in 1937, the original Russel Wright American Modern ceramic dinnerware, which, despite its vogue and the copies it launched, still accounts for about $2,000,000 of Raymor's total yearly sales.

aymor firsts: Russel Wright spun luminum ca. 1935, started informal end; Paul McCobb, ceramic lamp right), ca. 1948, was derived from ntemporary abstract sculpture.

Raymor offspring: American Modern by Russel Wright for Steubenville Pottery (above); glasses by Ben Seibel for Morgantown Glassware; vases by Jack Squier (right) are manufactured by Howatt Kilns.

1953-1954 *line includes Arne Jacobsen (top), Hans Wegner chairs and table imported from Denmark; painted wood desk accessories using adapted Florentine technique and adjustable brass lamp were designed in New York, and made for Raymor in Italy.*



When the Wrights retired from the business in 1940, Raymor was born. Shortly after, it took the name Richards-Morgenthau to include Eugene Morgenthau, whose chief concern is running the Raymor lamp factory (whose products are distributed through the parent firm, Richards-Morgenthau). With the birth of Richards-Morgenthau the firm began to approach its present scope, adding the work of such designers as Scott Wilson, George Nelson and Paul McCobb, whose first mass-produced work Raymor distributed.

His formula for success, Richards believes, is the bringing together of designer, manufacturer and distributor. Like a happy marriage broker, he presides over the union of manufacturer and designer, and he collects his fee in distribution of the progeny.

This works several ways. For example, Richards and his associates may find that there is a place on the market for a fine translucent contemporary china. First he will find a manufacturer with good facilities whose line seems to need restyling. He tells him what Richards-Morgenthau does as distributors and stylists of contemporary design. If the manufacturer is interested, Richards finds a suitable designer and brings the two together, preparing, of course, to act as distributor.

In the last five years, Raymor has even branched into the import field, which now accounts for about 10% of the total merchandise. Richards-Morgenthau is sole U. S. distributor for certain Wegner and Jacobsen chairs. Often he adapts existing European designs to the American taste, or has designers in Europe work specially for the American market. He also designs here for manufacture in Europe.

How Raymor sells is as important as what it sells. Richards says he has approached the gift business with a "little U. S. Steel" formula: an international organization is backed up with publicity, advertising, graphic

Raymor's New York (top) and Chicago showrooms, designed by Ed Wormley, 1952, airy, cheerful and spacious, keep pace with the merchandise displayed.

arts, and above all, top and dedicated salesmen, in the most comprehensive distributing method in the field.

Twenty-four picked salesmen working exclusively for Raymor cover all cities of 25,000 or more. Each man was chosen for his own interest in contemporary design, and preferably has it in his own home. The salesmen are schooled in New York and sent through the factories so that they are not only enthusiastic about their merchandise but usually know more than the buyers they are out to convince.

Because Richards-Morgenthau has never sold anything else, the name is already synonymous to most buyers with contemporary design. Thus stores new to modern are apt to call in Raymor first. Often the Raymor man is called on for advice: because he is so well-versed in his wares and in the contemporary field in general (Richards calls it a "sense of mission"), it is he who can prophesy a trend, and he may end up coordinating a store's whole decorative scheme with Raymor accessories. These now number some 2,200 items, in a line which is expanding to include tables and chairs and will eventually, it is hoped, furnish "every room in the house." If a salesman arrives in a town that has no contemporary outlet, he looks for the proprietor of the most likely (that is, forward-looking) store and tries to prove that customers are going to a neighboring city for their modern. It usually works.

Richards attributes his success to an unswerving faith in the qualities of modern design. Examined more closely, this enthusiasm is backed with good business sense and above all integration of merchandise, public relations, advertising and organization in the promotion of a single standard of taste—happily a good one. Small objects have built a strong business which has, possibly, been this country's greatest single agent in the spread of good design on a mass basis.—*m.s.*

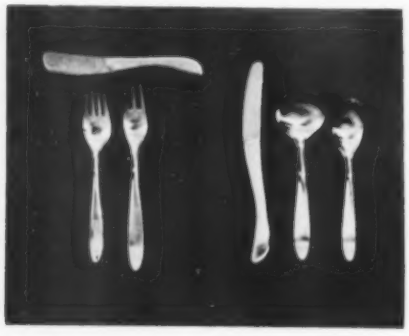
design review

COUNTESS LAVATORY. *The Crane Company, Chicago; Henry Dreyfuss, New York, designer.*

Minimum overall size and maximum usable area as well as low cost were major considerations in designing this lavatory. It can be set into either a shallow or a deep counter with moulding in Formica or linoleum, and without in glass or tile. It is particularly adaptable to small bathrooms, as it is actually a small sink which can be made to have a quite large working surface by setting it into whatever shape or size counter top space permits. Most of the actual porcelain area is the basin itself, and what remains is flat surface which could conceivably receive a hairpin or toothbrush without having it slide irretrievably down the drain or having to prop it messily behind the taps. Soap receives adequate niches, with overflow channels.

Countess lavatory by Henry Dreyfuss can be fitted into any working space.

Design One sculptured stainless steel flatware is engineered to fit the hand.



KLEINSCHMIDT TELEPRINTER. *Kleinschmidt, Inc., Deerfield, Ill. Machine developed by Edward E. Kleinschmidt; housing designed by Morton Goldsholl, Chicago.*

Light weight (45 pounds, about one-third usual weight), compact, and fast (sends and receives messages at 100 words per minute and is actually capable of 150 as against the usual 60), the new office teleprinter is housed in a smooth, warm grey case. The angle of the viewing window is designed to cut down light reflection, a common complaint of operators, and spot welding has eliminated exterior rivets. The trademark, a yellow roll of paper emerging from a dark grey roller to form the backbone of a large, distinctive letter "K", designed to go on the front of the teleprinter, will now become an identifying symbol on all Kleinschmidt machines and advertising, and their newly-designed grey stationery.

One-third the weight of usual teleprinters, new Kleinschmidt weighs 45 pounds.

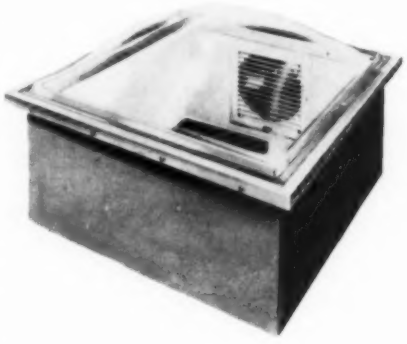
DESIGN ONE. *Made in Germany for the H. E. Lauffer Co., Inc., New York; Don Wallance, Croton-on-Hudson, N. Y., designer.*

Elegant, 3-dimensionally conceived forms and a scientific attention to the needs of the user mark this stainless steel flatware. The profiles of all the handles have a curvature which has been carefully worked out in relation to the normal position of the fingers and hand and to the shape of the plates or bowls with which they are used. The knife has a heavy, comfortable feel, especially at the cutting angle. The neck and middle portion of the fork and spoon handles are concave on the face and convex on the back. The upward curve of the steel at the neck also stiffens the handle at its most vulnerable point. The hollow at the base of the fork tines will hold peas or casserole gravy. The horizontal axis of the oval soup spoon is a logical expression of its ladling function. Design One is the result of 18 months' study and experimentation and is made of nickel-chrome steel with a satin finish.

WASCOLITE VENTDOME. *Wasco Flashing Company, Cambridge, Massachusetts.*

This prefabricated leakproof unit provides both daylight and ventilation through one hole in the roof. A gently swelling acrylic bubble admits the light, while a fan, operated by a switch in the room below, provides the air exhaust. A hood-protected insulated door swings open when the motor is turned on; otherwise it remains tightly shut over the slightly protruding air exhaust fan-and-motor casing (photograph shows only the inside grille). The curb frame, which slopes to assure drainage, as well as the inside retaining frame which protects the fire-vulnerable edge of the acrylic dome, are of extruded aluminum; the Fiberglas-insulated curb, 14½ inches high, is aluminum with heliarc-welded corners. At the bottom, a 3-inch roof flange (not shown) permits the unit to be nailed to the roof deck, and a rigid conduit

Through daylight-admitting plastic bubble, Wascolite Ventdome shows removable enameled grille of ventilating unit.



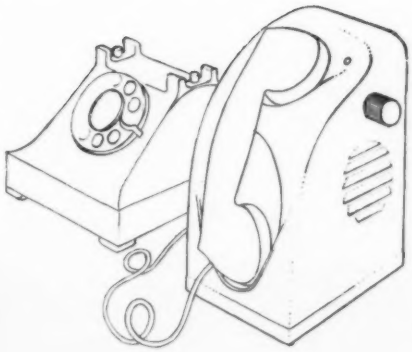
within the curb provides easy access to the motor for wiring it to an ordinary light switch.

By incorporating the fan into their already-known Skydome, the manufacturers have made possible a single, easily-installed prefabricated unit for making an inside room a livable one.

New air circulation principle in Temco Heater (above) leaves top and sides cool.

TEMCO GAS HEATER. *Temco, Inc., Nashville, Tennessee; Howard Bourner, chief design engineer.*

Designed around a new principle of air circulation, the Temco gas heater takes in air for combustion or heating at the lower front grille and expels it through the top front grille, thereby permitting the top and sides of the cabinet to remain cool. The advantages are obvious—the heater can be backed up against a wall or other furniture without danger of warping paint or veneer. The contour of the chrome guard leaves something to be desired, providing just one more pattern, but it is a minor detail in the total conception. The heater was developed for ease of manufacture, maximum interchangeability of parts, and convenient servicing, as well as for appearance, and is the result of teamwork between Temco's departments.



With receiver placed on Fonadek (above), conversation in normal voice may be held without direct contact with instrument.

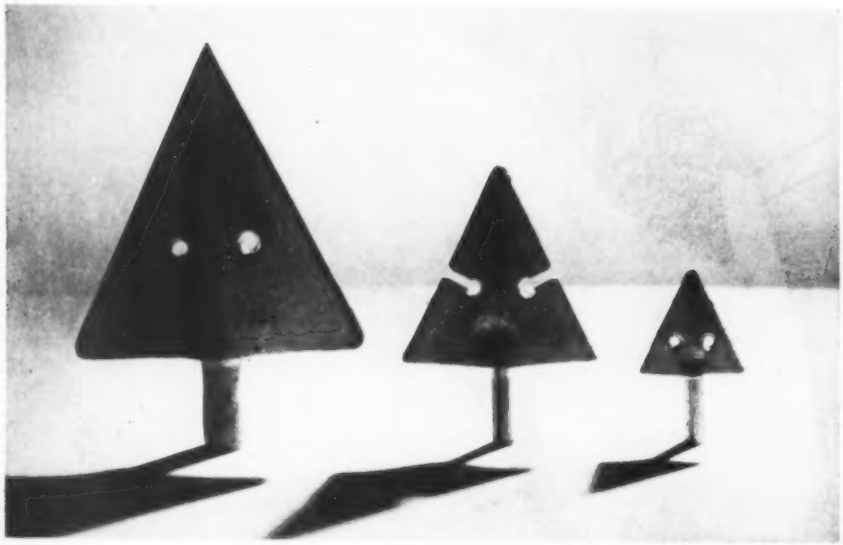
FONADEK. *Manufactured under British patents for Special Devices, Inc., Boston, by the National Company, Malden, Massachusetts.*

Look, no hands! When the telephone receiver is cradled on the Fonadek as in the drawing above, a conversation may even be carried on from across the room. Battery-operated, an electronic core picks up and amplifies the incoming sounds, while the pear-shaped acoustic speaker bowl collects and transmits the user's normal speaking voice from anywhere in the room. A volume control knob regulates the loudness of incoming speech. The advantages of this compact little device are obvious. It requires no installation or wiring. Neither must it be connected to the telephone itself nor does it interfere with ordinary telephone use. It is switched on merely by placing the receiver on the Fonadek; removing the receiver turns it off. Elimination of the slippery and unsatisfactory ear-shoulder clutch is an advantage which needs no explanation to anyone who has tried to write and listen at the same time.

PERMA-KLEEN MOP. *B. F. Goodrich Company, Cleveland, Ohio.*

Made of Geon paste resin, the neat-looking mop below is considerably more absorbent than other sponge or string mops. Close up, the strings of the mop show the texture of the blown sponge-type vinyl which is also lintless. The head can fit on any standard mop handle. The flat base of the cut-paper-like working strands gives the mop a simple, new, uncluttered look, without need for binding. It avoids also the shaggy dog or spaghetti look achieved by most string mops after using.

Geon plastic resin is responsible for the permanently neat look of Perma-Kleen mop.

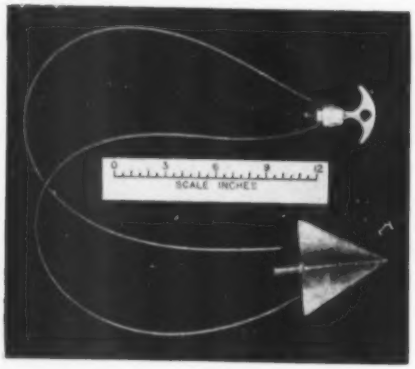


The Universal Ground Anchor (left).

THE UNIVERSAL GROUND ANCHOR. *Developed by M. L. Clevett, Jr., Quartermaster Research Corps., Natick, Mass. Patent pending.*

The Christmas-tree-like objects above, when turned upside down and driven into the ground, will hold down a stress load of up to 8000 pounds. Only 4" high, and weighing 4 ounces, the Universal Ground Anchor was developed by M. L. Clevett, Jr., of the U. S. Army Quartermaster Corps, for obvious reasons. Driven 30" into the ground by hammering straight down on a length of steel pipe slipped over the spindle end, the anchor is self-orienting, and will hold in practically any kind of soil, from sand to frozen clay (only 9" depth is needed for the last). The driving pipe slips off easily because the anchor plate itself, turning as it is driven into the ground, has acted as a drilling tool to make a hole slightly wider than the pipe. The loop of guy wire left above ground can now be attached to an external guy wire to hold down a plane, a silo, a fence post, a portable hangar or a tent in a high wind.

Cheap, light (made of high-strength aluminum alloy around a steel peg), and quick to install (less than three minutes), the Universal Ground Anchor takes the place not only of the conventional light tent pin, which needs a specific direction and reasonably good soil, but also, to the 8000 pound limit, of the bulky, awkward-to-install commercial ground anchor.

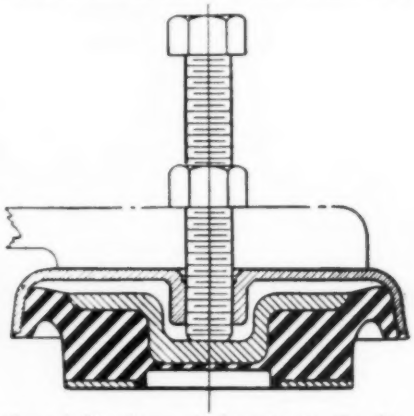


(Left)
Anchor and most of attached guy wire are driven into the ground.

LEVELING BARRYMOUNT. *The Barry Corp., Watertown, Mass.*

A machine that walks is not something out of a grade-B movie; it is just a plain nuisance. The usual procedure against this menace has been to bolt or cement the machine tool's feet to the floor. This, of course, has not prevented floor-borne vibrations from wearing on the machine and the operator's nerves, despite shock-absorbing devices.

The Leveling Barrymount is a new kind of machinery mount which eliminates, at one fell swoop, vibration, "walking" and the need to drill holes in the floor. Developed by the Barry Corporation, Watertown, Mass., it actually isolates the machinery from surrounding building-borne vibrations by means of a neoprene cushion. To install, the machine foot is simply lifted, the Barrymount is slipped under it, and an attaching bolt with lock-nut already threaded on is slipped through the foot's mounting hole into the mount. The bolt is turned down until it hits a steel bed floating on the neoprene. When all feet have been mounted, each bolt is turned down just enough more to level the machine and the lock-nuts tightened. Leveling has been accomplished through the "give" in the neoprene cushion. The result is not only a quieter shop, but a newly-gained mobility of machinery.

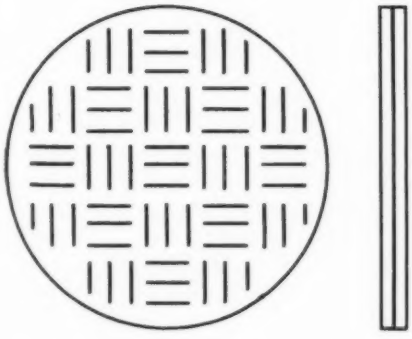


Cross-section of the Leveling Barrymount (above left) shows steel parts. In the diagram, showing a leveled foot (white) on the mount, heavy stripes indicate neoprene.

AROMAT. *Patented by Porzellanfabrik Neuerer, Kg., Oberkotzau, Bavaria. In the United States through the Madison Import Company and Bonniers, New York.*

Heating porcelain was developed in Germany during the war for boiling sterile water for surgical instruments at the front. Now it has been turned to civilian use by its patentee, engineer Hans Neuerer, of Neuerer Kg., Oberkotzau, Bavaria, manufacturer of the Aromat electrified porcelain coffeepot.

Sealed into the porcelain in the actual process of pouring it into the mold, the



Components of the Aromat (top) are of porcelain; heating element is baked in. Diagram (above) shows pattern, double thickness of filter bottom; in cross-section (right), stripes mark electrified part.

electrifying element, a basket of fine wires of a special Swedish alloy which can stand the 2000 degrees F. firing temperature of porcelain, is completely protected and can never, once imbedded, go wrong. Thus the Aromat can be put in the dishwasher; the hard porcelain is practically unbreakable.

Another innovation of the Aromat is the filter (see diagram). A double layer of basket-slitted porcelain, with corresponding slits running in opposite directions, insures that no grounds or tea leaves can get through. Another advantage of the porcelain is that water boiled in it is perfectly sterile, thus not impairing the flavor of the brew. Porcelain also is the best heat conductor, keeping a steady temperature once reached for an hour.

Despite the laborious and exacting hand work making the Aromat (setting the element takes two hours), it will sell here at a price slightly lower than most metal electric coffee makers. The process is now being turned to larger, commercial heated-vessel uses.

KNITKING. *The Knitking Corporation, 250 Park Avenue, New York 17.*

A German engineer and a machinery builder, familiar with the industrial flat-bed knitting machine, worked for years to develop a fully automatic adaptation of the machine for home use. Their product, now called the Knitking, is based on the principles of the industrial model; but in

In one motion, the Knitking user (left) can make up to 164 stitches.

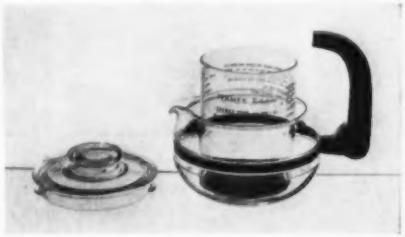
achieving a compact (43" x 6" x 5"), 13-pound home knitting machine, they invented a number of original parts. Over a metal base with rubber feet, the body of the machine is a low-expansion plastic. The needle is steel.

Essentially the operation is one of sliding a needle back and forth, enabling the knitter to make up to 164 stitches in one motion; a dial which controls the yarn tensions gives a wide range of stitches, assures snug fit where necessary, and makes possible innumerable designs. All the knitter needs is a ball of wool and the Knitking, and she can turn out what looks like hand-knitting in a trice.

TEAMEX. *Invented by Dr. Peter Schlumbohm. The Chemex Corporation, 41 Murray Street, New York 7. Patent Pending.*

Dr. Schlumbohm is in the kitchen again, mixing chemistry with our beverages and turning up an object which is both interesting looking and interesting working. His Teamex, successor to the Chemex, approaches better tea-making as a problem of water turbulence. The basic teapot section of the Teamex contains the hot water; a cylindrical plunger with a sieve bottom holds the tea leaves, when the cylinder is plunged into the hot water, liquid jets

Dr. Schlumbohm's Teamex joins his already famous Chemex.



float the tea evenly through the mass of water and produce an economical, uniform brew.

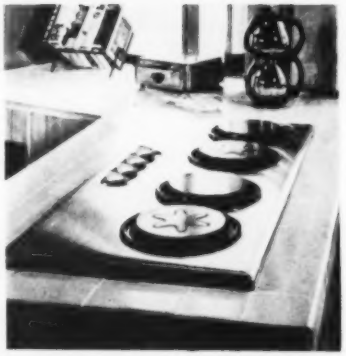
By the quick and total removal of the tea leaves in the plunger, even the amateur tea-maker can control the strength of the beverage, since its color is clearly visible in the vessel of tempered Pyrex flameware (Corning Glass Works).

The splashboards of stoves are getting to look more and more like the instrument panels of Sabrejets, what with ranks of pushbuttons, timers, clocks and switches. Best to our mind from a design point of view are the least expensive models, like the Frigidaire (opposite page), or the most expensive, which skip the chrome apparently demanded in the middle-price models. The real news is in the increasing number of built-in separate units which are neat, workmanlike, versatile, and most attractive, like the Western-Holly range below. Continuing this year are the 24-inch oven, the waist-high broiler (Tappan), infra-red units, and a steadily increasing vogue for copper.

Gas Ranges

Below: Welbilt range (top) has built-in infra-red or radiant gas rotisserie broiler, safeguard gas cocks. Backsplash treatment is fussy. Western-Holly built-in units (bottom) are said to be the only gas burners that can be installed flush into counter tops. They come in stainless steel and four colors.

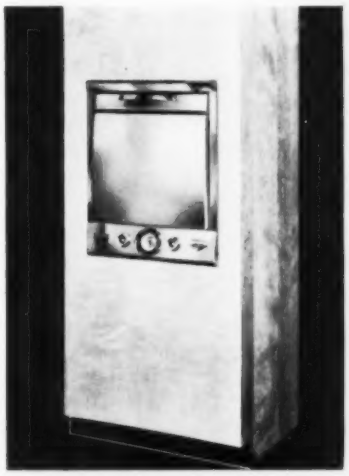
Above: Chambers built-in units (top) now come with copper finish. Tappan "Holiday" model (below), 30 inches wide, has 24-inch oven, waist-high broiler. Trim fluorescent panel above backsplash seems superfluous.

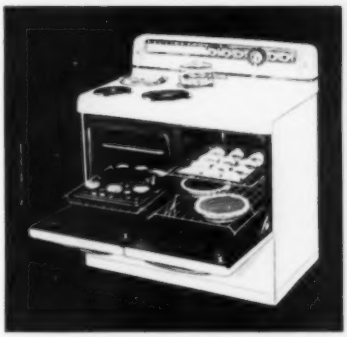


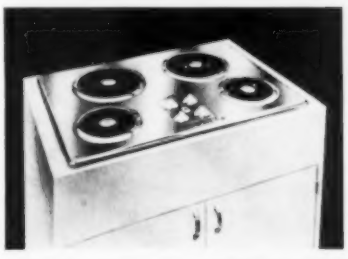
Above: Clean-cut RCA Estate 30-inch range (top) treats the features common this year with taste, simplicity; Enterprise 30-inch model (center), with addiction to ridged chromium, seems fussy by comparison. Grand 40-inch stove offers such features as a folding shelf (not shown), aluminum foil oven-bottom, infra-red meat-oven. Removable key protects gas jets from children.

Electric Ranges

Below (from top to bottom): Hotpoint built-in oven; Kelvinator with extra hook-in broiler (left); Thermador stainless steel built-in cooking top; Coolerator push-button range with seven heat-color controls.





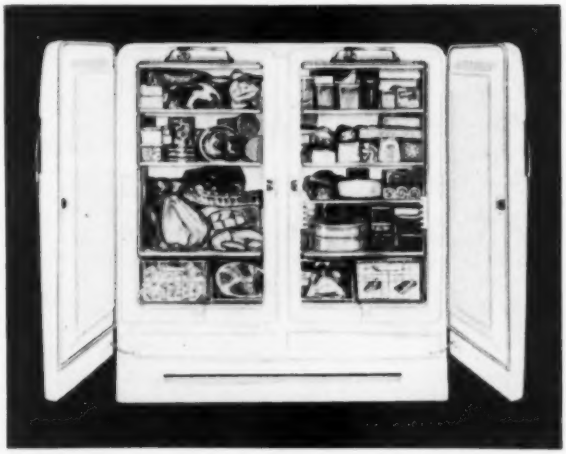


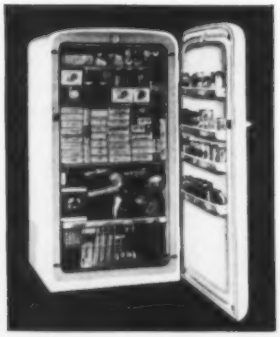
Above (top to bottom): Double-oven Westinghouse Commander measures and guards food temperature electronically. Compact chrome instrument panel with color insert is used for decoration; Enterprise range has controls in framed chromium panel; unpretentious 21-inch Frigidaire apartment model has easily-cleaned one-piece top, no chrome at all. Some of the knob-control models shown also come with push buttons. The best solution seems to have been reached by the Coolerator, which gets along without a Buck Rogers instrument panel. The question of the front control vs. the backsplash control seems to be bothersome—a tossup between the scorched forearm and the accidental turn-on. On built-in units the answer is often a contact panel on the cooking surface.

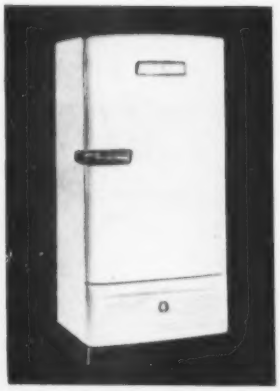
Below (from top to bottom): General Electric deluxe 36-inch push-button model with flattened, spaced-out surface units; Norge showing profusion of scattered controls, storage space; Presteline built-in units in enamel or metal colors; Lindemann & Hoverson 40-inch model with double oven, high broilers, six surface units requiring full panel of controls.

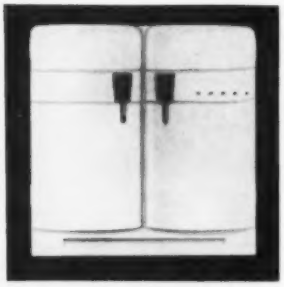
The color which has been sneaking into kitchen ranges has burst into bloom on refrigerators. Sea Green, Cerulean Blue, the omnipresent copper, and now Frigidaire's Stratford Yellow (not shown), embellish not only insides but exteriors as well. Gadgets of course persist, such as the beverage dispenser on the outside of the Deepfreeze (not shown) and the Hotpoint aluminum foil roll. But the real innovations are important: the Kelvinator thin-wall freezer and even more the General Electric LW-10 wall-hung refrigerator-freezer, using a new vacuum insulation only one-half-inch thick, herald a new era when bulky appliances will literally disappear into the architecture.

Freezers



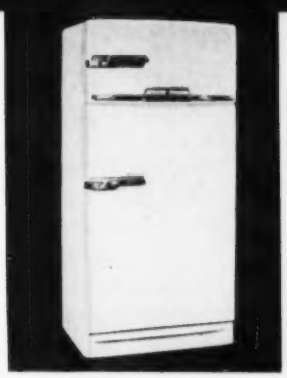


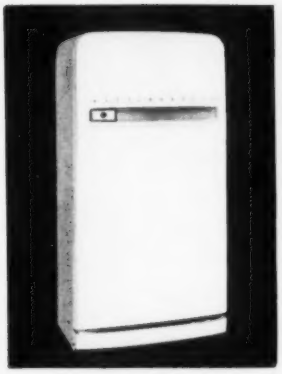




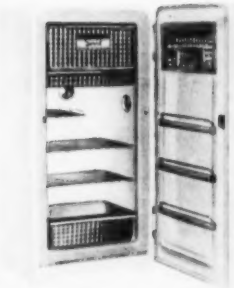
Although chest freezers continue to be made, upright models are increasingly popular.
Far left: square-cornered General Electric seen closed (top) and open (below) measures 71 by 33⅞ by 30½ inches, holds 15 cubic feet.
Small Jordon, seen closed (center, left), 60 by 28 by 28½ inches, holds 12 cubic feet. Above it the open Kelvinator shows thin walls, engineered space which permits its 61¾ by 31¼ by 35⅛ inches to hold 18 cubic feet, take up no more space than 11 cubic foot refrigerator with which it is shown closed at left below. Massive two-door Norge (above), shown open and closed, holds 19 cubic feet, measures 57 3/16 by 55 by 26 11/16 inches.

Refrigerators

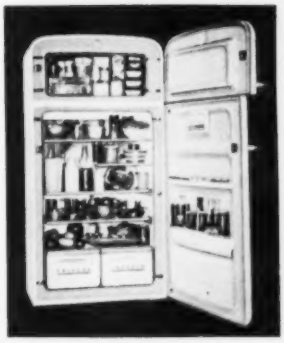




Far right (top to bottom): General Electric split-door combination refrigerator-freezer; same opened to show revolving shelves; open Servel low-priced electric model; Hotpoint; and (bottom) open Kelvinator split-door refrigerator-freezer.
Center column (top to bottom): neat Westinghouse closed, showing electric touch-plate replacing handle; and open to show food compartments; Coldspot refrigerator-freezer closed, showing distinctively-styled handle; open (bottom) to reveal convenient rearrangement of interior with freezer on bottom, progressively less cold areas toward top. Admiral (not shown) also has reversed freezer.
Near column, from top: open Servel with automatic ice-maker which spews ice half-moons to keep basket filled; another, split-personality, model, closed, with copper top door, white below; open Quiefrēz (bottom), 24 inches wide, revealing 32-pound freezer.

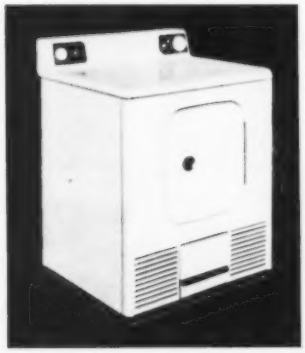


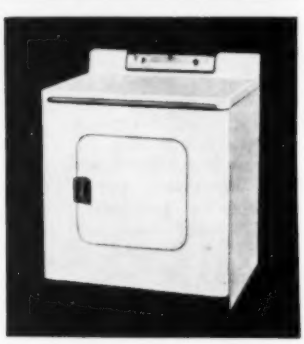
General Electric's LW-10 (above), operating experimental model of a wall-hung cabinet refrigerator using ½-inch insulation wall instead of usual 3-inch one, points the way to the kitchen of the future which, like Frigidaire's open-plan modular, electronic, sliding-paneled experimental room (next issue), will be as flexible and as architecturally imaginative as the rest of the contemporary house.

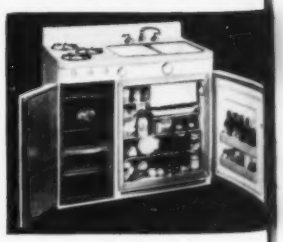


Only in the laundry does pristine white prevail this year. Washers have top openings; dryers have front ones; both are square and clean-looking, and tend to come in matched pairs. Air conditioners, rapidly becoming a very major appliance, are also taking to color. While they tend to assume the aggressive variety of toothy grilles formerly reserved for automobiles, they are gradually backing out the window as manufacturers recognize the need to integrate them as part of the room decoration. Finally, General Air Conditioning rolls all kitchen appliances into one to delight our transient population.

Utility Room and Rooming House



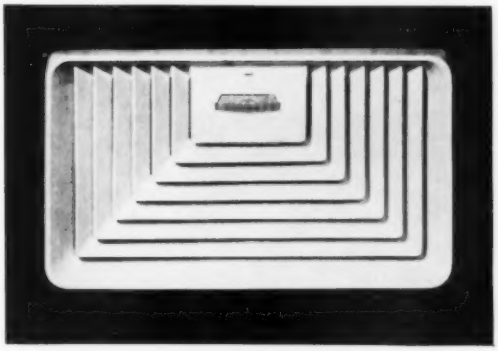


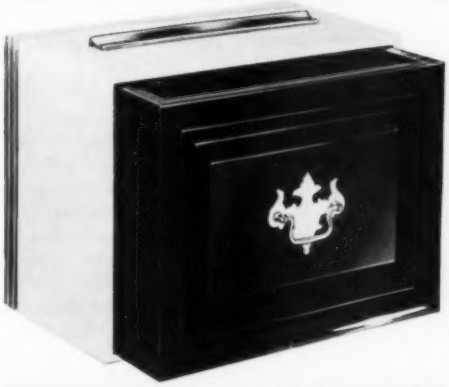


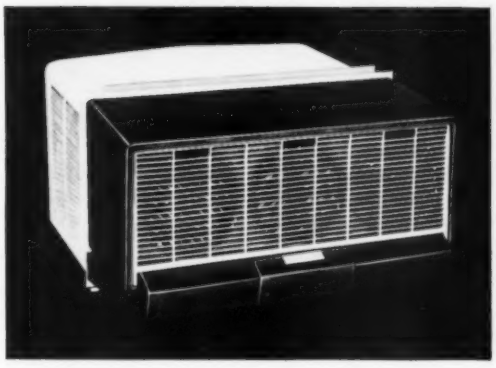
Near column (top to bottom): Frigidaire automatic dryer plugs in on 120-volt 20 Amp. circuit, has filter-condenser to catch lint, moist air; Whirlpool automatic washer and dryer have illuminated dashboards, with colored light following wash through cycle, which is completely flexible; Norge electric water heater (bottom) offers counter top, 30 or 40-gallon capacity. Center column (top to bottom): Easy automatic washer has spiral action, two cycles, gratuitous chrome trim; General Electric automatic washer cycle can be stopped, re-started at same point or partly repeated; matching dryer (bottom) has sprinkling attachment, lint trap, knee-push door latch; both wear unexplained chrome line. Far right (top to bottom): Frigidaire porcelain-top water heater is neat, offers work surface; Norge low-priced automatic washer has flexible cycle operated by single line control; at bottom, a different kind of appliance is the General Air Conditioning combination sink-stove-oven-refrigerator which provides all kitchen appliances in one unit for rooming house or motel.

Note: On all appliances on these and preceding pages, we regret the absence of designers' credits. With the manufacturers' cooperation, we hope to be able to rectify this omission on all products shown in future issues.

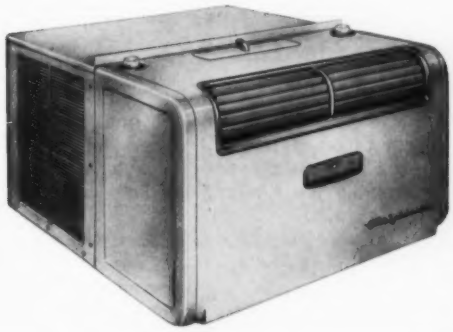
Air Conditioners

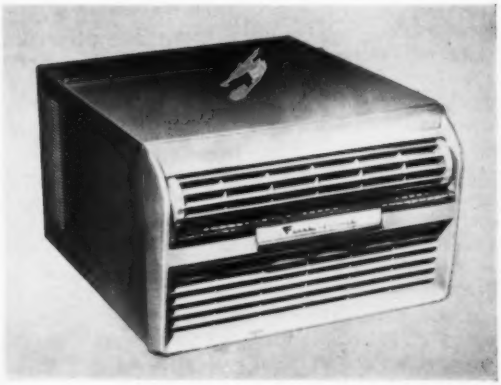




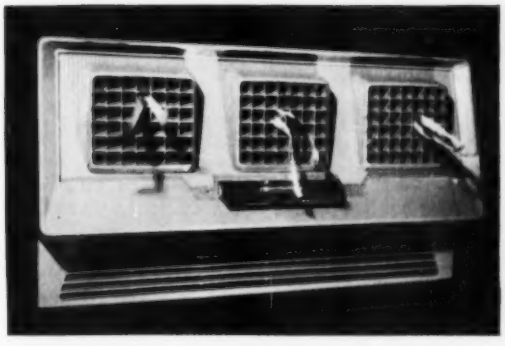


Below (top to bottom): bright beige Frigidaire with gold and chrome trim encases two conditioners in one; Fresh'nd-aire offers push buttons, heater, automatic thermostat behind pastel green and gold, projects only 3 inches; neutral-metal Jordon projects little, displays knobs, push-buttons, two kinds of grille; blue-grey Hotpoint, new to market, is said to offer highest circulation capacity, hides auxiliary heater, knobs or buttons behind formidable split-level facade.





Above (top to bottom): Kelvinator, behind cocoa-and-dusty-rose grimace, offers push button controls, winter heater; spruce Mitchell extends only 2¼ inches past window pane, neatly hides control panel; Servel fits narrow casement window, operates by pulling French-provincial handle on mahogany polystyrene drawer, opening to one of three positions; businesslike mahogany-grain enameled General Electric hides three louvers, powerful exhaust, dehumidifier behind pleasingly unaggressive gold grille.



technics

A catalog of new products, materials, processes and finishes

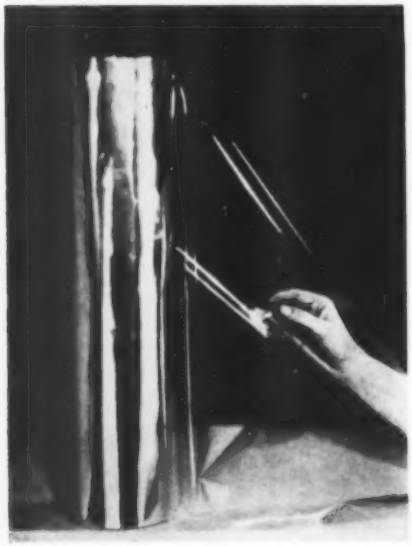
Mylar Polyester Film

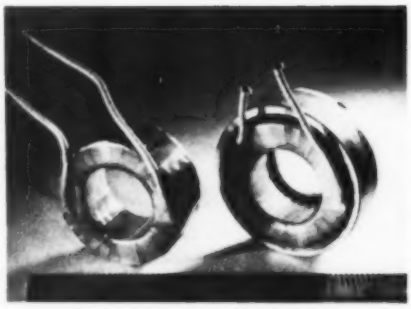
A transparent sheeting whose tensile strength is a third that of high quality steel, known as Mylar, will be available for general use after completion of a manufacturing plant now being built by Du Pont.

Now produced only in small quantities, Mylar is similar to cellophane in appearance and can be made in transparent or translucent form, yet offers strength from two to eight times that of other commercial film. Its tensile strength is 23,500 pounds per square inch, and impact strength is at least twice that of any available film. It can, therefore, be made in much thinner gauges than other films, down to one quarter of one thousandth of an inch. In addition to its great strength, Mylar retains its dimensions and other properties through a great range of heat and cold. It also offers excellent insulating properties, and retains these in temperatures ranging from 95° below zero F. to 390° above zero F.

The first important applications for the new film, it is expected, will be electrical. Its strength and physical properties make it a good insulator, and it is well suited to the manufacture of capacitors. Many other possible applications are being explored—industrial tapes, sound recording tape, light-weight storm windows or tack-on glazing, and packaging. It is generally suitable where a thin film of great strength is required. Its present high cost ($3 to $4 per pound) will prevent Mylar from replacing other plastic films in many places, but the cost is expected to drop as production volume increases. Because of its more complex chemical composition, however, its cost will always remain somewhat higher than cellophane.

Du Pont Mylar polyester film, which can be made in either transparent or translucent form. Its tensile strength is 23,500 *pounds per square inch—about one third that of some high quality steels.*





These small magnetic coils use Mylar polyester film for insulation in place of the more bulky impregnated glass cloth tape. Coil at right is shown in case.

Chemically, Mylar is polyethylene terephthalate, made from ethylene glycol and terephthalic acid. It is chemically similar to Dacron, the latest Du Pont textile fiber. Dacron is spun while Mylar is made in sheet form.

A seventeen page technical bulletin giving detailed information on Mylar may be requested from the Film Department, E. I. du Pont de Nemours Co., (Inc.), Wilmington, Del.

Fast Drying Interior Paint

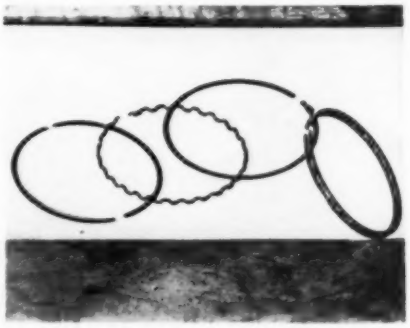
Socoplex, produced by Socony Paint Products Co., is a new interior water paint that is quick drying and free from solvent odors. Two coats are normally all that are necessary. The first may be a special primer, or simply a coat of the regular paint, depending on the kind of surface being painted. The second coat may be applied within a few minutes. No special care is required to maintain a wet edge since no visible laps will result from brushing over a dry edge. The finished paint film is tough and elastic and washable almost at once.

The paint is based on a Rohm and Haas acrylic emulsion known as Rhoplex AC-33. This base is considered superior in keeping qualities to the various synthetic latex bases used in water paints, and can be used with a wider variety of pigments to produce the widest possible color range. It does not yellow or discolor with age. The new paint is being sold primarily for industrial and commercial interior painting. Full information about Socoplex is available from the Socony Paint Products Company, Metuchen, N. J.

Disappearing Adhesive

A special problem posed by the Muskegon Piston Ring Company has been solved by Minnesota Mining and Manufacturing. For automobile pistons, three-piece oil rings made up of two thin rings separated by a corrugated separator are more desirable than the ordinary solid ring; the cost of installation, however, has generally made them unsuitable for production use. By preassembling the three parts with an adhesive they can be installed at once as the ordinary ring would be. When the motor is placed in operation, however, the adhesive must let go and burn away without damage to the inside of the cylinder or other motor parts. Minnesota Mining has developed a rubber-based flexible adhesive that is both oil-soluble and sufficiently strong to hold the parts together during manufacture of the motor. Circulation of oil dissolves the adhesive as soon as the motor is placed in operation, so that after about 300 miles of driving the adhesive is completely dissolved. When the oil is changed at 500 miles, all the dissolved adhesive is

Three part piston ring shown before and after assembly with adhesive which dissolves in oil when motor is placed in use.



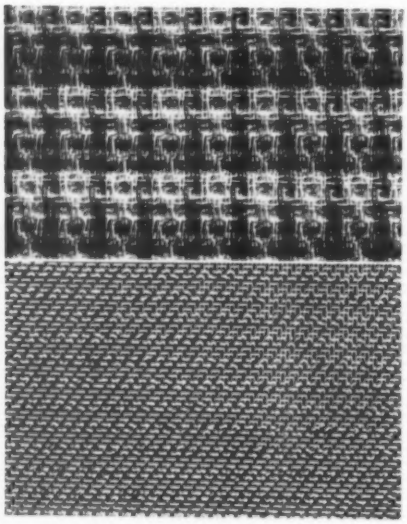
drained out, leaving the separate ring components to operate just as if they had been separately installed. Detailed information about the technique may be requested from the Adhesives and Coatings Division, Minnesota Mining and Manufacturing Company, 423 Piquette Avenue, Detroit 2, Michigan.

Woven Plastic Speaker Grille Cloth

The Lumite Division of Chicopee Mills, Inc., is calling attention to an application of Lumite Saran fabrics that some designers, faced with the problem of a amplifier grille, have discovered independently.

Radio speakers must be protected by a grille cloth, and it is well known that most fabrics have a sound-absorbent quality, particularly in high frequencies, that tends to muffle the outcoming sound. For this reason, open weaves and hard fiber fabrics are generally desirable for speaker grilles. Woven Saran fabrics are especially good—ideal in fact—for speaker grille use since the strands are hard and smooth and have little tendency to absorb the high frequencies, and even open weaves maintain a fair degree of stiffness. Lumite fabrics designed specifically for this use are now available. Open weaves are maintained in fabrics that have excellent durability, little tendency to collect dirt, and good acoustic properties, along with sufficient density to conceal the outline of the speaker opening when necessary.

Two weaves in Lumite Saran suitable for radio speaker grille cloth.



A Magnavox radio phonograph utilizing a Lumite grille cloth.

When tests were run on some of these fabrics to check their effect on the acoustic properties of speakers, it was found that the Saran grilles actually improved the sound production, whereas almost any other fabric interfered with it. The reasons for the improvement have not been fully explained, but it would appear to result from the ability of the hard plastic fiber strands to distribute the sound more perfectly than is possible with the exposed speaker.

Detailed information and samples are available from the Lumite Division, Chicopee Mills, Inc., 47 Worth Street, New York 13.

Baked Enamel for Aluminum

Aluminum and most of its alloys require treatment of some kind to prevent oxidation, the accompanying grey appearance and, eventually, serious pitting. Although anodizing does the job in many cases, there has been no technique for finishing aluminum that provides an unlimited range of colors without metallic appearance.

Enameling has been impractical because its high firing temperature was incompatable with the low melting point of aluminum.

Now, with the development of a new enameling technique by the Du Pont Laboratories, it is possible to use a high-quality baked enamel finish on aluminum. The stock, which must be clean, is pretreated in a special caustic bath, after which it receives two spray coats of enamel with a firing of about 1000° after each. The manufacturer will supply frits to match any color sample.

When properly applied the finish has excellent durability, and is able to withstand impact, thermal shock, chemical action and fabrication operations such as cutting and drilling without cracking or spalling. Even very thin stock can be welded on the back without any damage to the enameled face. The coating actually contributes to the rigidity of thin stock and will make possible the use of lighter gauge metal than would otherwise be required.

The enameling process is sufficiently complex that it should be attempted only by an experienced metal enameler with facilities for milling the frits and coping with some hazardous chemicals and operations. Because of the high lead content of these enamels, enameled surfaces cannot be used in applications where they may come into contact with foods.

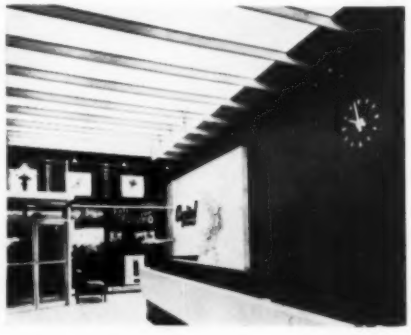
The manufacturer is prepared to give detailed advice and technical help to designers and manufacturers who are interested in applications for the technique. Information is available from the Electrochemicals Department, Ceramic Products Division, E. I. Du Pont De Nemours and Co. (Inc.), Wilmington 98, Delaware.

Luminous Ceiling

An overall luminous ceiling has been developed using corrugated sheets of translucent Bakelite rigid vinyl as the light diffuser. Small steel I-sections are hung from the ceiling, spaced about 36 inches apart. The corrugated plastic strips (which are shipped rolled) are slipped into the I-members to form a ceiling which conceals any beams, pipes or other clutter above, and provides uniform light distribution when you turn on the fluorescent strips which are installed above. The corrugation of the plastic running across the strips provides sufficient rigidity to maintain the plastic in a smooth, flat plane.

Sprinkler systems may be used with this ceiling, since the plastic will soften and drop out at temperatures below the release point of the sprinkler system. In case of fire the plastic would drop and leave the sprinklers free to operate normally. The system has the approval of the Underwriters' Laboratories. Air conditioning can be integrated with the system by treating the space above the luminous ceiling as a plenum. The slot which occurs at the sides of the sheet is sufficient to provide air inlets in such a system. Access to the plenum space for relamping or any other purpose is had by rolling back a section of the plastic. Where acoustic treatment is desired, fins of sound absorbent material can be added to the bottom of the steel I-sections to give sound absorption without any interference with the distribution of light. The principal problem with any luminous ceiling system using horizontal diffusing surfaces is that

Rolled, corrugated Bakelite vinyl rigid sheet for installation in luminous ceiling. An interior with "Acusti-Luminus" ceiling installed. The projecting ribs are of acoustic material and are sound absorbent.



NEW PROTECTIVE COATING CHEMICAL FOR ALUMINUM

ALODIZING

Alodizing with "Alodine,"* a new technique in the protective coating of aluminum, was made available for production-scale use in 1946. Since that time Alodizing has largely supplanted the more elaborate, costly and time-consuming anodic treatments in the aircraft and other industries.

Continuous and successful industrial use has clearly demonstrated the simplicity and economy of the Alodizing process as well as the effectiveness of the "Alodine" amorphous coatings, particularly as a base for paint. In fact, the paint-bond that Alodized aluminum provides has been found to be superior to that possible with chromic acid anodizing.

The corrosion-resistance of unpainted aluminum Alodized with "Alodine" Nos. 100 or 300 is excellent, easily meeting the requirements of Specification MIL-C-5541. However, a need for protection of unpainted aluminum, even better than that obtained with chromic acid anodizing, has long been recognized.

NEW IMPROVED "ALODINE" DEVELOPED By ACP RESEARCH CHEMISTS

Several years of intensive research have now led to a new type of "Alodine," designated as "Alodine" No. 1200. This new protective coating chemical forms an amorphous mixed metallic oxide coating of low dielectric resistance that provides unusually high corrosion-resistance for unpainted aluminum. In addition, it forms an excellent paint bond that approaches closely the high quality obtained with the earlier types of "Alodine."

After having been tested for conformance with Specification MIL-C-5541, "Alodine" No. 1200 is now about to go into production.

PROCESS DETAILS

"Alodine" No. 1200 is the only essential chemical needed to prepare the coating bath and the final rinse bath. One of its unique features is that it can be used in tanks in an immersion process, or, in a multi-stage power washer in a spray process, or, with a slight adjustment of pH, with brush or portable spray equipment in a manual process. This means that even where the simple production equipment is not available, or where touching up of damaged coatings previously Alodized or anodized is required, excellent protection and paint bonding can still be obtained with practically no equipment.

All three methods of application easily meet the requirements of Specification MIL-C-5541.

Process sequence for all three methods of application is the same as for other standard grades of "Alodine" such as Nos. 100, 300, and 600, viz.: 1. Pre-cleaning. 2. Rinsing. 3. Alodizing. 4. Rinsing. 5. Acidulated rinsing. 6. Drying.

Coating time in an immersion process ranges from 2 to 8 minutes and in a mechanized spray process is about 30 seconds. "Alodine" No. 1200 baths are operated at room temperatures (70° to 100°F.) and heating is required only if the bath has gotten cold after a "down" period.

RECOMMENDED USES FOR "ALODINE" No. 1200

"Alodine" No. 1200 is specifically recommended for coating wrought products that are not to be painted or are to be only partially painted; and for coating casting and forging alloys whether or not these are to be painted. "Alodine" Nos. 100 and 300 are still recommended for coating wrought products such as venetian blind slats, awnings, etc., that are invariably painted.

RESULTS OF TENSILE TESTS

This new "Alodine" not only retards visible corrosion and pitting, but as shown in the table below, the loss of ductility with "Alodine" No. 1200, both brush and dip, after 1000 hours salt spray was less than for chromic acid anodizing after 250 hours, and for "Alodine" No. 100 and a conventional chromate treatment after 168 hours exposure.

PROCESS	SALT SPRAY EXPOSURE	COMPLIANCE WITH TENSILE REQUIREMENTS OF MIL-C-5541
CHROMIC ACID ANODIZING	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	fails
	1000 hrs.	fails
BRUSH "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 100	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails
CONVENTIONAL CHROMATE TREATMENT	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails

"Alodine" Trade Mark Reg. U. S. Pat. Off.

CHEMICALS ACP PROCESSES

AMERICAN CHEMICAL PAINT COMPANY

General Offices: Ambler, Penna.

Detroit, Michigan **Niles, California** **Windsor, Ontario**

of maintenance. In this system the dirt that will inevitably collect on the plastic sheet is removed by taking down the plastic and dipping it in a cleaning solution. It can then be hung up to dry and replaced in position.

The system is sold under the name "Acusti-Luminus Ceilings" by Luminous Ceilings, Inc., 2500 W. North Ave., Chicago 47, Ill.

Silicones

A number of developments have occurred in the field of the silicones, chemical products with a variety of specialized uses. The two principal producers of silicones, Dow Corning and General Electric, have now been joined by a third manufacturer, the Linde Air Products Co., a subsidiary of Union Carbide and Carbon. Linde is planning construction of a 13 million dollar plant to bring their silicone production to a point which will make them one of the major producers of the chemicals.

Dow Corning has announced a new silicone product called Silastic 675. It is a new silicone rubber stock with low shrinkage, low compressive set values and

Molded parts made from silicone rubber.

a very high tear strength. In addition, it is serviceable at temperatures ranging from —100° to above 500° F. Silastic 675 is suitable for a variety of industrial molded products such as gaskets and seals, and the absence of toxic additives makes it suitable for applications where it may be in contact with food or drug products.

Information about Silastic 675 should be requested from the Dow Corning Corp., Midland, Michigan.

General Electric has announced a new silicone rubber compound known as SE 100 which is intended for coating on glass, asbestos, cotton, nylon or orlon fabrics for the manufacture of electrical tapes and coatings, tubes, gaskets and seals, and similar products. SE 100 has excellent electrical properties, good life under heat, and high strength and moisture resistance.

Details may be obtained from the Silicone Products Department, General Electric Co., Waterford, N. Y.

Illustrated are a group of custom molded silicone rubber parts which are made for automotive, aircraft and electrical applications by the Stillman Rubber Co., 5811 Marilyn Ave., Culver City, Cal.

Miniature Fastener

The Southco Division of the South Chester Corporation of Lester, Pa., is producing a latch-type fastener for use on small doors and access panels up to 25/32 inch in thickness. The unit is mounted on the inside of the door in a housing only ¾ inch in length. In addition to the small round knob, only two rivets need be exposed on the outside of the door, and in the case of a metal door even those may be eliminated by spot welding the housing to the door. Twisting the exposed knob brings a pawl against the inside of the door frame. An adjustment is available for the different thicknesses of frame. The pawl is held in tension in the closed position by a spring and sufficient pressure is available to pull a door up against a gasket in cases where this is desirable.

Precision Metal Rolling

For designers and manufacturers needing extra thin gauge metal for precision parts, the American Silver Company in Flushing, N. Y. is prepared to roll metal to unusually precise tolerances. The company was originally a manufacturer of rolled metals for the jewelry trade—their product then being stamped into watch cases and similar products. The equipment and skills accumulated in this work has turned out to be suitable to the production of metals for many other purposes. In general, American Silver is prepared to roll almost any metal down to thicknesses as small as .0008 inch and to maintain tolerances as close as ±.0001 inch. Metals that can be worked include the ferrous metals (including stainless steel), aluminum alloys, copper and its alloys, nickel alloys, precious metals, and such unusual metals as tantalum, titanium and zirconium. Width of strips may be up to eight inches.

In addition to the precision rolling of individual metals, it is also possible to

Precision slitting equipment for cutting rolled strips to width.

laminate various metals to take advantage of a surface of one metal on a less expensive base of another metal. "Braze-Clad" metals, for instance use a silver-brazing alloy on any desired base metal. This makes silver brazing, particularly of small parts, much easier, since a shim of the "Braze-Clad" metal can be accurately placed and will stay in place during heating—making a strong and precise joint much easier than it would be if brazing alloy were used in the usual way. There are many other special applications for the clad-metals. Bimetallic elements for themostats can be made up in this way, and in many instances where plating is difficult the rolled clad-metal is suitable.

The American Silver Company has no stock line of products, but encourages orders for almost any conceivable rolled metal with almost any desired tolerance specification. Small quantities are a specialty of the firm; orders for amounts as small as one pound of metal are accepted regularly. Engineering advice and detailed information about any rolled metal product is available from the American Silver Company, Inc., Rolled Plate Division, 36-07 Prince Street, Flushing 54, N. Y.

Sendzimir rolling mill for production of metals to exact tolerances and extremely thin gauges.

Somewhere in your business...

in the making, the labeling, the packaging or the shipping of your product—you use adhesives....We operate on the belief that for each particular application, there is only one adhesives formula that can serve you best.

Somewhere near your business...

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A nationwide organization of 10 plants and warehouses serving major users of industrial adhesives

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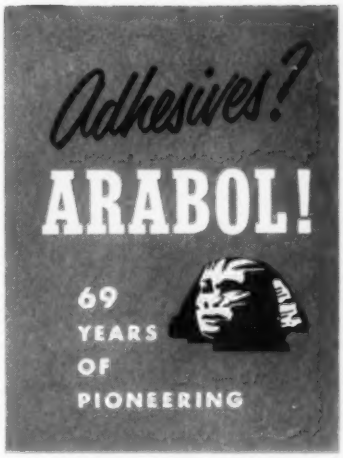

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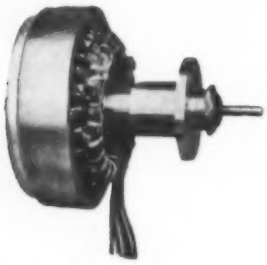
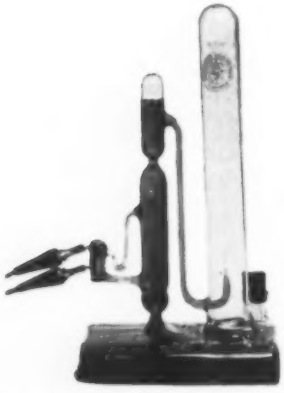
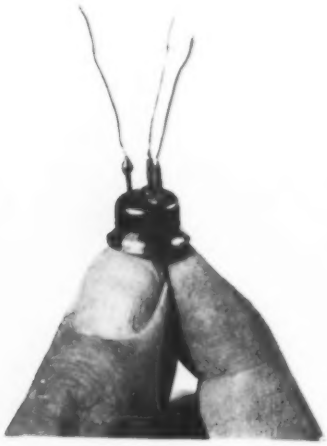


Synchronous motor for high-quality tape recording machines shown with dust cover removed.



All-glass model of heat-powered Thermo-Pump, operated by electric or flame heat.

An aluminum casting in a Rollbrite finish.



This miniature transistor is capable of 20 watt output—100 times as powerful as any commercially available unit.

Aluminum Faced Panels

The Reynolds Metals Company has introduced a new light weight high strength panel material to be known as "Reynocell." The panel is a sandwich of an impregnated paper honeycomb core with aluminum facings. Sizes range up to 57 by 192 inches, in thickness of 1 to 4 inches. A number of different edge treatments are available, including open edges, closed box edges, a shiplap type with a projecting flange on one side and a channel type. The typical face is of natural finish stucco embossed aluminum although other textures and finishes are available on order. Weights range from about 1 lb. per sq. ft. for 1-inch thick panels to about 1½ lb. for the 4-inch thickness. A plywood panel of 1-inch thickness would weigh 3.8 lb. per square foot. A plywood panel of rigidity equal to the 4-inch thick "Reynocell" panel would weigh 6 times as much and a steel panel would weigh 23 times as much. Panels have a crushing strength of at least 70 psi for the thickest panel, more for the thinner panels.

"Reynocell" panels also have very high insulating value. The combination of the hollow internal space, the low conductivity of the paper core and the reflecting value of the aluminum sheet produces heat transfer coefficients (U) as low as .16 for the 4-inch panel. This value is higher than that of a typical insulated residential frame wall. A 1-inch panel has a higher value than a 12-inch brick wall. Its fire resistance is greater than that of a typical frame wall. A variety of joining details have been developed and a consultation service is available to offer advice on the use of the panels in specific applications. Prices begin at $.71 per square foot for 1-inch panel in large quantities, and run upward with thickness and edge detail to a maximum of $1.16 for 4-inch panels of box type (with edges closed).

Advice and detailed technical information may be requested from the Reynolds Metals Company, 2500 South Third Street, Louisville, Kentucky.

"Inside Out" Synchronous Motor

A hysteresis synchronous motor designed especially for high-quality tape recording machines is being produced by the Technical Development Corporation. By placement of the rotor on the outside of the stationary primary windings, it can be made in maximum diameter (about 5") and weight, so will exert maximum flywheel action in maintaining precise synchronous speeds. The tape transport capstan is made as an integral part of the rotor and flywheel assembly and is designed to maintain peripheral velocities of the standard tape speeds of 7½ and 15 inches per second. Separate low and high speed windings permit changing of speed (as well as reversal) by external switching. The shaft is double-ended to permit the attachment of a cooling fan operated directly by the motor. The motor is manufactured by the Technical Development Corp., 4060 Ince Blvd., Culver City, Cal.

Heat Operated Pump

A pump powered entirely by heat has recently been developed by Jet-Heet, Inc. It eliminates all moving parts except check valves. Since Thermo-Pump, as it is called, can be made entirely of glass, it may be hermetically sealed to permit the safe pumping of dangerous liquids. Operation is based on a simple principle of vaporizing and condensing liquids. The unit is of lower efficiency than mechanical pumps, but is suitable for such applications as small stoves and furnaces, automotive accessories or refrigeration units where waste heat can be used to help power the pump. Small units will operate dependably on very small amount of either electric or flame heat. Even a very small unit can develop pressures up to 25 psi and pump up to eight gallons of fuel oil per hour. Pumps of this type can also be made of metal, or metal and plastic.

Information about the "Thermo Pump" is available from Jet-Heet, Inc., 152 South Van Brunt Street, Englewood, N. J.

Economy Finish for Aluminum

A money-saving substitute for buff-finishing aluminum die castings is now available in Roll Brite finishing, a technique which involves no skilled labor. The Roll Brite system is a barrel polishing technique in which the parts to be finished are fixed in position in the polishing barrel. A bright clear finish appearance is produced on all surfaces of the object, with good resistance to finger printing and excellent brightness retention. The technique is applicable to objects not suitable to loose tumbling because of size, presence of sharp edges or fine detail. Detail and surface patterning is well preserved, the only special design requirement being that large flat surface areas be broken up. Casting must have good surfaces and parting lines must be closely trimmed.

The process is being released on a license basis to interested manufacturers by the Roll Brite Corp., 231 Ferris Avenue, White Plains, N. Y.

New Transistor: Tiny but Powerful

A transistor capable of an output up to twenty watts has been developed by the Minneapolis Honeywell Regulator Company. Transistors now available are capable of only very small output; the new transistor, while a miniature unit, produces sufficient power to operate motors, valves or relays. It will be enormously useful in the development of indicating units, automatic control devices and similar applications where the small size and high power output make an advantageous combination. The transistor is not in commercial production at present, but pilot production is being used for the manufacture of a new fuel gauge.

Xeroradiography

The Cleveland Research Division of the Aluminum Company of America is now testing a prototype unit of a new X-ray

DISPLAY In launching this volume, INTERIORS has bound into one book some of the most ingenious and remarkable displays that have set new patterns in interior design thinking and techniques . . . in museums here and abroad . . . in shops from Minneapolis to Milan . . . in the Merchandise Mart in Chicago, the Triennale at Milan, the Festival of Britain . . . wherever creative designers have put prophetic ideas into three-dimensional designs planned to "show something." Edited by George Nelson, DISPLAY is a book that fairly crackles with fresh ideas. Its three main sections show the new systems, the outstanding displays and exhibitions created by more than 125 designers and architects of international note. It is a fertile source of new thinking . . . a basic book for every library of interior design—including yours.

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CHAIRS In planning this series it seemed natural to devote one of the first books to the chair. The greatest names in architecture since the Renaissance have been connected with the designing of seating pieces. Le Corbusier, Mies van der Rohe and Marcel Breuer have been notably attracted to this important design problem. In CHAIRS, George Nelson traces the evolution of the chair and examines those produced today in bentwood, laminated wood, molded plastic, solid wood, metal and upholstery.

New ideas and new applications of materials in furniture find their most important expression in the chair. The work of 137 designers is represented in this volume. CHAIRS is arresting reading, a valuable permanent inspiration and reference book and a handsome two color pictorial record of the chairs of today.

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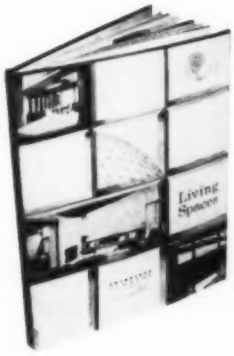

LIVING SPACES is a book of contemporary interiors by 80 designers including Finn Juhl, Le Corbusier, Mies van der Rohe, Richard J. Neutra and Frank Lloyd Wright. In 232 photographs, LIVING SPACES shows outstanding contemporary designs selected by the editors of INTERIORS with unfailing taste and a keen perception of what is basic, rather than ephemeral. George Nelson's witty, informative, often provocative comment adds greatly to the value of the book—and to your reading pleasure. LIVING SPACES is the only complete collection of interiors reflecting the best designs, based on the new philosophy—freedom to use space, as Nelson puts it, "for living as one damn well pleases."

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development. In Xeroradiography (pronounced "zero radiography") a re-usable dry plate records the X-ray image in place of the usual film. A fine-grain powder on a specially coated aluminum plate is arranged, by the charges of static electricity falling on the X-ray screen, to form a visible image corresponding to the image that would be developed on photographic film. The advantage of the technique is that the image is visible and available for inspection within 45 seconds. A permanent record of the image can be made photographically if desired. There is no need for a dark room and the usual delay for the development of an X-ray is eliminated. The re-usable plate can be used with conventional X-ray tubes in existing equipment.

The almost instantaneous availability of the image makes X-ray inspection techniques practical in places where they formerly were not, and will greatly simplify present X-ray inspection techniques by saving time, labor, space, and materials. Continuous production line X-ray inspection in the foundry industry may also be an eventual result.

General Electric and Haloid as well as the Battelle Memorial Institute participated in the development of the process. Information is available from the Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pa.

High Density Metal

The development of light-weight metal alloys is well known; it is less often remembered that for certain uses metals of *maximum* weight in relation to volume are needed—as in cases where balancing weights are required for rotating parts. This has become a particularly important consideration with the increasing use of X-rays. Metal density is the only protection against the penetration of X-rays and other radiation produced by nuclear fission.

Lead has become the standard material for radiation shielding. A new Firth Sterling product known as Firth Heavy Metal, about 60% heavier than lead, is able to produce the shie ding action (or any other performance involving mass) of lead with correspondingly less bulk. The specific gravity of Firth Heavy Metal is 18.2 as compared to 11.3 for lead. In addition to this, its tensile strength is about equal to that of good quality steel; up to 120,000 psi. The metal also has excellent workability, similar to that of grey iron. It is largely composed of tungsten, about 95%, with the balance of nickel and copper.

Typical applications of Firth heavy metal include counterweights, accelerometers, balance weights, flywheels, X-ray and radium screens against nuclear radioactivity. Detailed information is available from Firth Sterling, Inc., 3113 Forbes Street, Pittsburgh 30, Pa.

Non-Fading Metallic Yarn

The Metlon Corporation has developed a gold metallic yarn known as "Permagold" primarily to glamourize automobile upholstery fabrics. It is recommended for use woven along with synthetic fibers for slip covers and upholstery fabrics. It is suitable for regular drapery and upholstery fabrics as well, but the fading problem in automobile fabrics makes it especially appropriate there. The manufacturer reports that after one hundred hours' Fadeometer exposure no fading results.

Metlon yarns are available in a number of other metallic colors in standard widths. The yarn is actually a lamination of aluminum foil between two layers of colored plastic film. In addition to extraordinary color-fastness, the yarn will not tarnish, launders and dry-cleans well and is, of course, mothproof. Detailed information is available from the Metlon Corp., 432 Fourth Avenue, New York 16.

Planned Expansion

(*continued from page* 108)

tooling were to be avoided whenever physically possible. Now there was a choice, and the decision was to tool up—but to price the product for the most rapid possible amortization. This was possible because there was nothing in existence to which the product or its price could be compared. Another problem was given consideration: if the bubbles were successful, the design pirates would again close in and bring out inferior copies for less money, and here too the acquisition of tools offered real protection. The day the first copies appeared, the factory was able to cut prices up to forty per cent without reducing quality. A semi-automatic production setup, permitting a handful of workers to turn out a large dollar volume in a minimum space, was largely responsible. That this setup had paid for itself by the time the copies began to appear was another expression of the planning which has characterized more and more of the company's moves.

The role of the designer in a situation like Howard Miller's is absolutely crucial.

With total responsibility for the creation and development of new products in the designer's hands, he must not only handle day-to-day problems of styling but constantly evaluate and re-evaluate all possible factors involved in production and sales. Take the question of tooling alone: in one case it would be a mistake to make the investment, in another it would be a disaster not to. In the Miller setup the designer functions as a member of the top policy group and his recommendations carry the same weight as those of the production and sales executives. The program has functioned successfully and the company will continue to operate with a constantly enlarging base. The secret of this kind of program lies in the vision and nerve of the manufacturer—he needs the vision to see beyond the present scope of his business and the nerve to trust the people who work for him. Most small producers stay small because they lack one or both of these qualities.

The weakness of the typical company lies in its very real inability to compete with giant corporations on the latter's terms. The strength of the non-typical company lies in the clear realization that it can compete perfectly well—if it competes on its own terms. The role of the industrial designer, in such situations, is to explore the nature of these terms and to give them substance in the actual products he designs. This kind of role demands the exact opposite of routine performance, because the answers are never the same for two different client companies and they are sometimes different even for the same company, as we have seen. Howard Miller has done well with its electric clocks. But had Telechron, say, operated on the same basis it would have gotten into some pretty serious trouble.

The difference is that Miller is not committed to sales of 100,000 units on a single number. If a Miller design is "knocked off" by another company and sold for less, it has one answer in the best national distributor in the field, another in low tooling costs, a third one in a rapidly increasing diversification of lines. At the present time, for example, four new groups of products are under development. In the business of manufacturing accessories for the home this last is especially important because tastes are shifting rapidly and a given marketing situation can change overnight. Here too the broad program is a bulwark against surprises, not only through its diversification, but through the policy of promoting the best and most radical solutions to a given design problem. Even in today's fast-changing market, a good design has a better survival value than one superficially styled for the moment.

From the industrial designer's point of view the appeal of the large manufacturing enterprise lies in the magnificent tools it can put at his disposal, and in the satisfaction of working on products which reach large numbers of people. The excitement afforded by the problems of the small or medium-size producer stems from the nature of the challenge—a challenge which must often be met with ingenuity and imagination as substitutes for tools and capital. Here, too, the work is not without its rewards, particularly if one happens to believe that the existence of a large, healthy community of independent producers is an irreplaceable national asset.

Iron Horse

(*continued from page* 93)

either side of the locomotive. The road engine provides an enclosed engine room for inspection and adjustments under way, while the switch engine provides open walks and platforms for the brakeman. The road engine—generally more consciously designed—shows more external evidence of streamlining in the slant and curve of the nose, shape of the windows, and other minor details. It is not surprising that the switch engines are, on the whole, more successful from a visual point of view, having the honest, work-a-day look of a tractor or steam shovel. The exterior of the road engine not only carries more superficial trim but also suffers from having its internal organization more completely concealed.

The diesel is, of necessity, secretive in its operation. The transformation of fuel into kinetic energy cannot take place before our eyes as it does in the steam engine, since all the units—diesel engine, generator, and motors—give little outward trace of their performance and, too, require weatherproof housings that make

them invisible. Perhaps it is true that the vital visual symbols of motion must now be sought elsewhere—in such machines as airplanes, whose external parts still play a role in performance. Nonetheless, it is hard to understand why the diesel locomotive makes a particular effort to appear unpleasing.

The answer may lie in a situation having little to do with design. All diesel locomotives are made to standard designs by a few manufacturers. Where almost every type of steam engine was the original creation of a designer, and displayed the pride of its origin, the diesel is a standard product in the sense that the Detroit automobile is. The individual railroads owning these machines apparently sense a loss of individuality; abandoning the universal black of their steam units, they try to regain originality with paint schemes. The result is about what might be expected if each automobile owner devised a paint scheme for his car. A riot of color, stripes, zig-zags, arrows, cannonballs and other devices now adorn the diesel, vainly trying to take the place of the old steamer's honest individuality. It is easy to find cases which, by negative example, demonstrate the rules of coloring and decoration of any design. Changes of color must occur only when an important change of form or function justifies them. Linear decoration is appropriate only when it can emphasize forms that are important in themselves. Lettering and numbering are the most vital means to visual identity which can be applied to an external surface, but they must follow the rules of typographic design or they will do more harm than good. Oddly enough, the steam engine in both England and America always followed these rules. It is only through rediscovering them that the diesel can ever hope to achieve reasonable dignity—not to mention a really high order of design expression.

Will there be time? The diesel may also turn out to be a transitional machine that will only begin to find its own forms when it is supplanted by such new machines as the gas turbine. But, in fact, the bodies of most new diesel locomotives are so designed that a simple change of internal mechanism can convert them to this, or to almost any other type of power that may develop in the next few years.

In any case, it seems certain that the external form of the modern locomotive will be, henceforth, a housing and not the body of the machine itself. This means that the responsibility of the designer, as compared to the mechanical engineer, will continue to be large. Let us hope that the diesel will eventually be clothed in a way that locomotive worshipers, among others, can admire—a way which will carry on the railroad's tradition of providing some of our most beautiful examples of industrial art.

Manufacturers' Literature

Adhesives, Coatings, Sealers. Minnesota Mining & Mfg. Co., 417 Piquette Ave., Detroit 2, Mich. 12 pp, ill. Describes principal aircraft adhesive applications and some of the 3M products used.

All-Purpose Terra-Tile. Robbins Floor Products, Inc., Tuscumbia, Alabama. 4 pp, ill. Describes advantages in economic and physical aspects.

Ardil Protein Fibre. Imperial Chemical Industries Ltd. 'Ardil' Fibre Factory, Dumfries, Scotland. 19 pp, ill. Describes properties, uses, and finishing of 'Ardil' Protein Fibre.

Braze-Clad. American Silver Co., Inc., 36-07 Prince St., Flushing 54, N. Y. 4 pp, ill. Definition of this metal, describes in what 2 ways to use Braze-Clad Metals, and where Braze-Clad Metals are useful.

Design & Color News. The Borgers of Modes & Fabrics, 150 East 35th St., N. Y., N. Y. 4 pp, ill. News bulletin for all industries concerned with product development.

Dow Corning Silicone Products. Dow Corning Corporation, Midland, Michigan. 4 pp. 1953-54 reference guide to Silicone products, enumerates and abstracts all Dow Corning Silicone literature.

Electronic Temperature Controller. Minneapolis-Honeywell Regulator Co., Wayne & Windrim Aves., Philadelphia 44, Pa. 8 pp, ill., tables. Describes applications, operation, adjustments, and specifications of Honeywell's New 077.

General Purpose Vinyl Plastic Film. Commercial Standard CS192-53. Superintendents of Documents, Government Printing Office, Washington 25, D. C. The copy covers methods of testing, requirements of general purpose plain or embossed vinyl plastic film to insure satisfactory products for consumer use.

Industrial Casters. Faultless Caster Corp., Evansville 7, Ind. 80 pp, ill. Detailed featured example of casters produced by this company.

Lumite Woven Fabrics. Chicopee Mfg. Corp. of Georgia, 40 Worth Street, N. Y. 22 pp, tables. Describes properties and other technical data or specialty fabrics, decorative fabrics, and insect screening.

Metlon Metallic Yarn. Metlon Corp., 432 Fourth Ave., N. Y. 16, N. Y. 10 pp, ill. Gives story of metallic yarns, facts about Metlon for consumer, designer, manufacturer.

Mylar Polyester Film. E. I. duPont de Nemours & Co., Wilmington, Del. 17 pp, graphs, tables, No. 1-2-53. Gives detailed variety of types, gauges, general physical properties of "Mylar" film, and other technical data.

New Products Bulletin. Firth Sterling, 3113 Forbes Street, Pittsburgh 30, Pa. 1-3 pp, charts. Bulletin describes characteristics, needs for and uses of new products.

Reynocell Panels. Reynolds Metals Company, Louisville, Kentucky. 18 pp, ill. Brochure covering sizes, properties, and other technical data.

Silicones. General Electric, Waterford, N. Y. 4 pp. Gives properties, suggestions for handling, and applications of silicone rubber compound.

Index to Advertisers In This Issue

Aluminum Extrusions, Inc. 28

American Chemical Paint Company 141
Agency—May Advertising Company

The Arabol Manufacturing Company 143
Agency—R. T. O'Connell Company

Barnes Printing Company, Inc. 19

Celanese Corporation of America .....2nd Cover
Agency—Ellington and Company, Inc.

Chicopee Mills, Inc.—Lumite Division 13
Agency—Lennen & Newell, Inc.

City Photo Engraving Corporation 147

Corning Glass Works 7

Dictaphone Corporation 9
Agency—Young and Rubicam, Inc.

Finnish American Trading Corporation 17
Agency—Abbott Kimball Company, Inc.

Grand Rapids Brass Company 24
Agency—Wesley Aves and Associates, Inc.

Heli-Coil Corporation 146
Agency—O. S. Tyson and Company, Inc.

Homasote Company 21
Agency—R. T. O'Connell Company

Kay Manufacturing Corporation 25
Agency—Hirshon-Garfield, Inc.

Kent Plastics, Inc. .....3rd Cover
Agency—Keller-Crescent Company

Knoll Associates, Inc. 15
Agency—The Zlowe Company

A. J. Lipp Company, Inc. 147

Metaplast Process, Inc. 151
Agency—C. J. Herrick Associates

Herman Miller Furniture Company 11
Agency—Alfred Auerbach Associates

Polyplastex United, Inc. 6
Agency—Atlantic Advertising Company

Reichhold Chemicals, Inc. .....Back Cover
Agency—MacManus, John and Adams, Inc.

Reinhold Publishing Corporation 22, 23
Agency—Anderson and Cairns, Inc.

Richards Morgenthau and Company 139
Agency—Ben Sackheim, Inc.

Rigidized Metals Corporation 151
Agency—Melvin F. Hall Advertising Agency, Inc.

Walter P. Sauer and Sons, Inc. 27
Agency—Alfred Auerbach Associates

Soss Manufacturing Company 149
Agency—Stockwell and Marcuse Advertising

Whitehead and Alliger Company, Inc. 26

Publisher's postscript

The naming

Recalling Mark Twain's comment that the difference between the right word and the almost right word is like the difference between lightning and a lightning bug, we undertook the naming of this new professional magazine well aware of our responsibilities. It was not a question of consulting a thesaurus, nor were we allowed the free and relaxed choice that inspires the lyric titles we see on newsstand magazines. We felt we must condense in plain words the serious objectives of both the designer and the management executive.

We scored our scratch pads with words like "Form," "Technique," and "Appearance," but these marginal descriptives did not cover the purpose of the magazine. Then it struck us that we need not search for a title; we had been using *Industrial Design* as a subtitle for our associate publication, *Interiors*, for over a decade. This name accurately maps the area in which the designer operates—namely, the planning and design of products for volume manufacture, and such related design projects as packaging, visual promotion, display, and interior architecture.

Background

The copy of INDUSTRIAL DESIGN you are now holding reflects a dozen years of participation in the development of contemporary design. As far back as 1941, we recall many informal conversations among the staff that centered on the remarkable growth of industrial design. Even then a prophetic colleague observed that the day would soon come when we would have to produce a separate magazine to serve this lusty new profession.

Our ideas on design in industry first took shape in a special editorial section that appeared in *Interiors* in 1941. This was the beginning of a regular department which subsequently acquired its own editor, the late Donald Dohner of Pratt Institute. At length the subtitle *Industrial Design* was added to the *Interiors* masthead as evidence of design's growing influence.

The establishment of a new magazine was made almost mandatory by a series of developments in the last decade: the ascent of the product designer to a position of executive authority in industry; the vigorous demand by designers for a publication edited exclusively for them; and more particularly, the enlightening contacts we made at Walter P. Paepcke's Aspen Design Conference two years ago. The encouragement we received from scores of management and design executives during the past year finally inspired us to take the great step.

Of the making and the makers

We set to work on the new magazine with fairly definite ideas as to what it should cover and how it should look. The format, the typography, and the art work of a magazine devoted to design are inherently formidable problems. We felt that a professional publication must incorporate notable graphic work in addition to the information that would make it a practical working tool. The translation of these ideals onto the printed page required the intimate collaboration and unreserved interest of outstanding designers and executives. Their thinking and experience played an important part in developing a publication that we could feel was commensurate with the requirements of the profession.

A final, special word of appreciation is due the companies whose advertising is represented in this initial issue. The manufacturers of materials, accessories, finishes, and processes will share constructively in the growth of this first professional magazine and the designers and design executives it represents.

Here, then, is your magazine. We hope it will serve you as a worthy companion, a loyal critic, and a creative stimulus for many productive years to come.

—Charles E. Whitney

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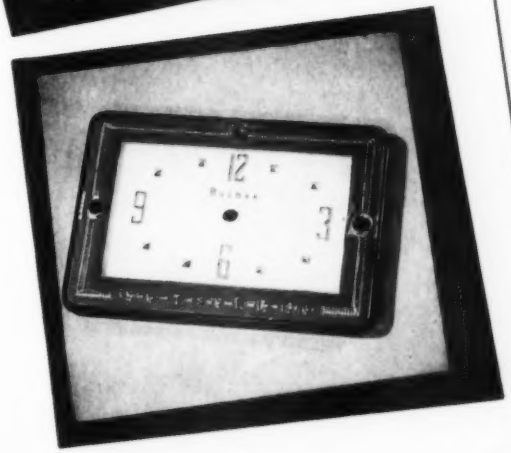

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