INDUSTRIAL DESIGN

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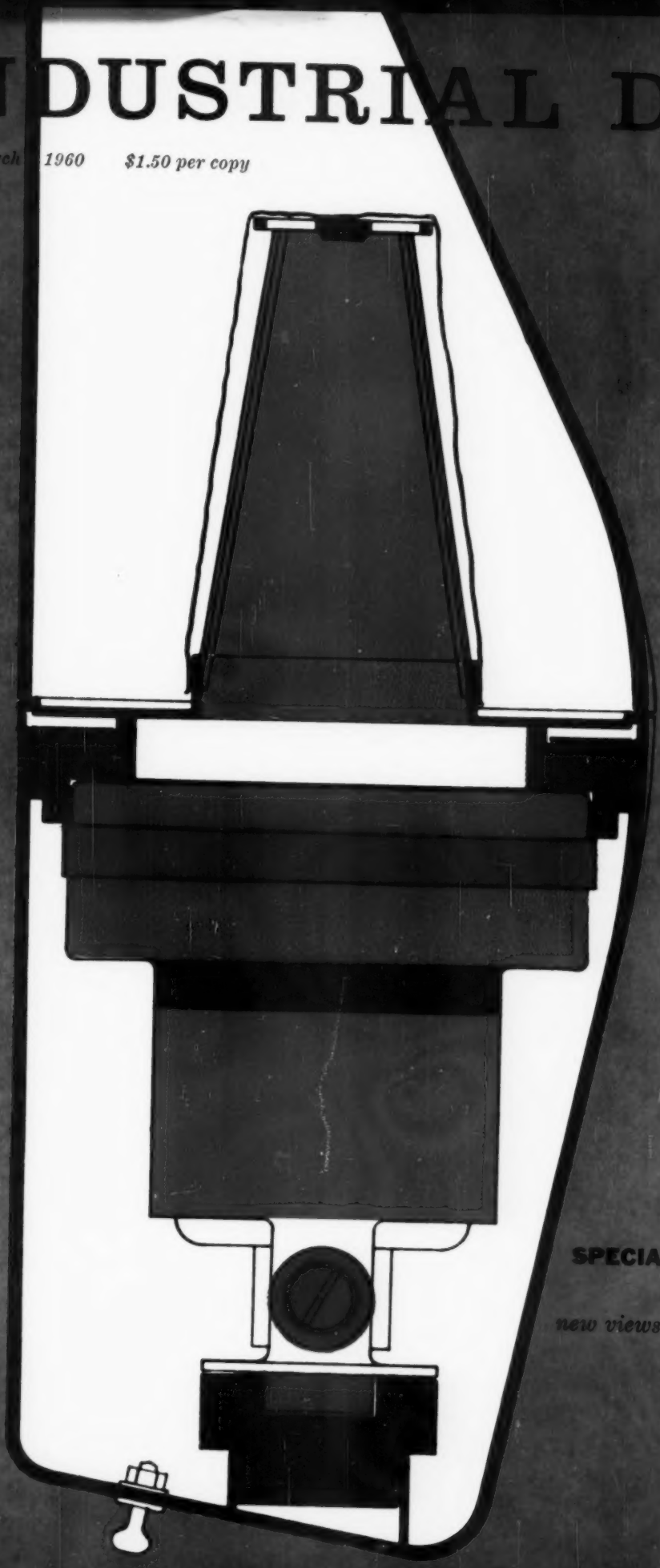
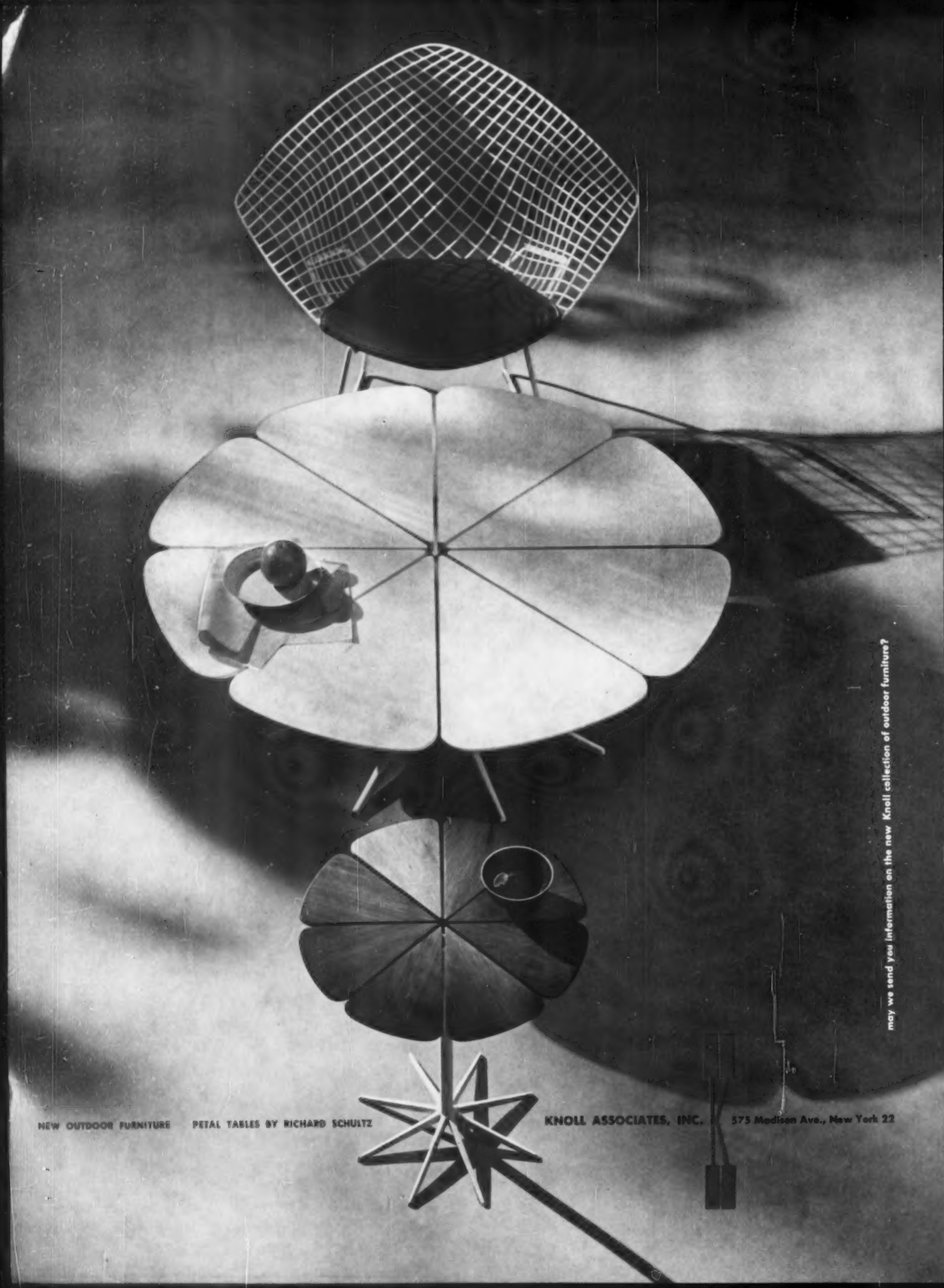


SPECIAL INTERNATIONAL ISSUE:

new views on the problem of Style in design



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INDUSTRIAL DESIGN

...the magazine for the men whose decisions today shape the products of tomorrow

Don McFarland* of General Electric was speaking

to a luncheon gathering at the Waldorf Astoria Hotel . . .

". . . Take, for example, electric clocks. They come in a wide range of sizes, colors, shapes, textures and materials. Yet the inner workings of all are identical."

"Engineering has little to do until we provide the material and design specifications."

"Design determines the uniqueness of each face, each case . . . turns uniformity into variety, and provides a wide range of electric clocks for the marketplace."

Mr. McFarland's remarks are indicative of the importance of the industrial designer today. It is his function to bring the product successfully to the marketplace. To do so he must specify materials, components, colors, textures, finishes, and packaging.

To achieve a unique product, the industrial designer will often select unique materials and finishes which are available only from a single source. His design specifications for woodclad steel, textured glass, specially finished metals and plastics, amount to billions of dollars worth of business each year.

If you have a product, a finish, a component, a material, or anything else that offers original creative opportunity to the industrial designer, you should bring your story to his attention. The best way to do this is in the pages of INDUSTRIAL DESIGN, the only publication devoted to the industrial designer and read by more than 10,000 A.B.C. industrial designers and design minded executives.

Examine this March issue of INDUSTRIAL DESIGN. Then prepare to join our rapidly growing list of advertisers who have discovered the importance of bringing their processes, components and materials to the attention of the designers who are creating America's products today.

Cordially yours,

Paul R Kane

Paul R. Kane
Vice President, Advertising

*Manager of Industrial Design for Housewares and Radio Receivers

ID

MEMO TO ADVERTISERS

March, 1960

MARCH, 1960 VOLUME 7 NUMBER 3

INDUSTRIAL DESIGN

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

CONTENTS

COVER: Section-through of Castiglioni's much-awarded miniature vacuum cleaner for Rem of Milan symbolizes two long-conflicting schools of design: the outer shell represents "personal style," the motor form represents "functionalism" invites most literal interpretation.

FRONTISPIECE: Front end of a yet-to-be-assembled Porsche, photographed by Douglas Kelley at the Porsche factory in Stuttgart, shows the automobile in its pure sculptural form.

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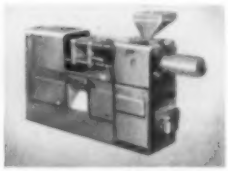
imagination
AND DU PONT PLASTICS

DELRIN®
acetal resin

Du Pont "Delrin" acetal resin is a completely new material that offers designers distinct performance and cost advantages in many applications once reserved for metals. Today, "Delrin" is being used in hundreds of products where die-cast zinc and aluminum, cast and machined brass, stainless steel and cast iron were once considered "standard". Imaginative and cost-conscious designers have taken advantage of the unique properties offered by "Delrin" to make such products better and at lower cost. Household items, sporting equipment, telephone components, gears, housings, plumbing fixtures, valve parts, clothing fitments are examples.

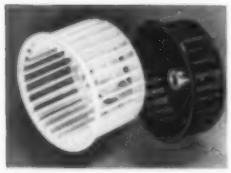
On these pages you will find some of the good reasons why "Delrin" opens the door to improved designs and examples of how industrial designers have profited from these new opportunities.

What DELRIN offers to designers



rapid, economical fabrication: Parts of "Delrin" are rapidly mass-produced via conventional injection molding or extrusion. There is usually no need for finishing operations. Assembly is simplified by a variety of fastening and joining methods. Complex parts can often be molded in integral units, thus making possible savings in costs and simplifications in design. Models and prototypes can be machined easily from stock shapes, which are readily available.

attractive appearance: "Delrin" is available in a variety of colors. In addition, varied surface effects can be achieved by texturing, vacuum metalizing or painting. "Delrin" offers designers new latitudes in décor, in such applications as the integrally colored instrument cluster (left), in bathroom fixtures, in automotive and appliance handles and in clothing fitments.



strength, toughness, dimensional stability: Outstandingly strong, rigid yet resilient, "Delrin" retains its desirable properties over a wide range of temperatures and under exposure to water, solvents, oils and greases and stress and strain. The "squirrel-cage" blower (left) is an example of many of these properties at work. A variety of gears and hardware fixtures takes advantage of the dimensional stability and toughness of "Delrin".

resistance to stains, rust: "Delrin" is unaffected by long exposure at room temperatures to a wide variety of common and usually troublesome substances—among them tea, catsup, vinegar, greases and oils and lemon juice. It cannot rust. The resistance of "Delrin" to body oils and perspiration, as well as its toughness and good frictional properties, makes it a logical choice for zippers (left) and other fitments.

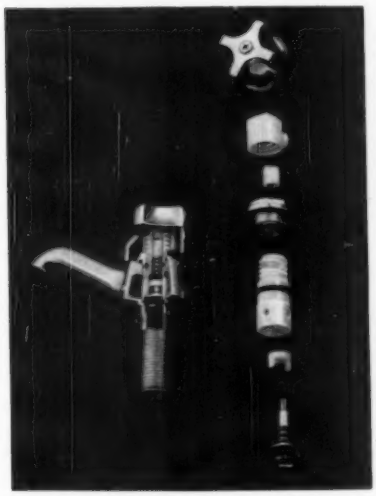
cost savings: Because one part of "Delrin" can frequently replace several parts of another material, because costly finishing operations are usually eliminated, and because assembly is simplified, "Delrin" often permits dramatic cost savings. The textile solution pan (left) costs $25 in stainless steel; injection-molded of "Delrin", it requires no finishing, and costs approximately $3, with a weight saving of 75%.

New designs made possible by DELRIN

The Zebco Company of Tulsa, Okla., cites "Delrin" as making possible a truly corrosion-proof salt-water spinning reel. In their "Fabulous Zebco 88", "Delrin" is used for the housing, thumb control, body, pickup pin and thumb stop. Zebco found in "Delrin" the stiffness, toughness, light weight, wear and corrosion resistance it needed. The "Fabulous Zebco 99" is also made of "Delrin" for long-lasting *fresh-water* spin fishing. (Molded by Ajax Plastics, Tulsa, Okla., and Continental Plastics Co., Oklahoma City, respectively.)

The head unit (top) of the new "Lady Ronson" Superbe electric shaver is molded of "Delrin", saving 80% of the weight of the previous gold-plated die-cast zinc part. Ronson Electric Shaver Corp., Stamford, Conn., specified "Delrin" because it could be molded to and hold the necessary dimensions, have a smooth, attractive luster without finishing and resist body oils and colognes.

The Lionel Corporation, Irvington, N. J., recently introduced a new HO train line featuring a one-piece coupler molded of "Delrin". Because "Delrin" has the resilience to provide the desired springing action, Lionel designed the integral unit to replace a two-part assembly of coupler and coil spring. The result: a significant assembly saving plus a new sales feature. "Delrin" is also used for the axles, journals and two other truck parts. (Molded by Lionel and Gries Reproducer Corp., New Rochelle, N. Y.)



Four parts (in white) of this self-seating faucet are molded of "Delrin", saving 80% of the cost of the machined brass components formerly used by the Kel-Win Manufacturing Co., Inc., Richmond, Va. Kel-Win chose "Delrin" because it resists corrosion and mineral build-up, remains dimensionally stable and keeps handles comfortable to the touch. Cost savings also accrue from the elimination of machining operations and rejects. (Molded by Dominion Plastics Co., Colonial Heights, Va.)

What problems can DELRIN help you solve?

The applications shown on these pages are only a few of the hundreds of remarkable design improvements already made possible by "Delrin" acetal resin. We suggest that you investigate further the many ways in which this versatile new material may help you solve some of your design problems. Du Pont technical personnel are ready to assist you in your evaluation of "Delrin" as well as the other high-quality plastic materials offered by Du Pont, such as ALATHON® polyethylene resins, ZYTEL® nylon resins, LUCITE® acrylic resins. For more information on any of these materials, write us. Address: E. I. du Pont de Nemours & Co. (Inc.), Department T-3, Room 2507D, Nemours Building, Wilmington 98, Delaware.

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Du Pont's problem-solving plastics

in this issue...

Douglas Kelley

Dagmar Arnold

Reyner Banham (left) and Tomas Maldonado

Jane Fiske McCullough

Douglas Kelley's observations on European design (page 66) stem from an 18-month fellowship, spent studying and working with German and Italian designers. A Pratt graduate, and currently a member of its faculty, he has worked for Laverne, Inc. and George Nelson, now has his own New York design office.
Dagmar Arnold collected her impressions of European design and Ulm (pages 87 and 93) during a year's study at Ulm followed by a summer of travel. She is a graduate of Pratt, joined GM in Detroit immediately after graduation to work on Frigidaire products, and on the GM exhibit at Brussels. She is now with IBM on the West Coast.
Dr. Jacob Bronowski, whose statement from 'Shape of Things" (page 59) was published in full in ID, July 1957, is head of England's National Coal Board, also a humanist, poet, author, and a frequent lecturer in the U. S.
J. Christopher Jones, whose long view of automation's effect on design (page 97) appeared in five articles in the British magazine *Design* during 1957-58, is with Metropolitan-Vickers Electrical Company Ltd.
Alberto Rosselli, Italian designer and critic (page 71), is editor of *Stile Industria.* He is one of the founders of the Italian Association for Industrial Design (ADI).
Josef Franck, who questions whether there is a "modern style" (page 39) is a Viennese architect living in Stockholm, where he specializes in residential interiors. He taught for four years (1941-45) at the New School for Social Research, New York.
Tomas Maldonado, who defends the provocative position of the Hochschule fur Gestaltung, Ulm, (page 89), is chairman of the school's faculty. He was at one time editor of Argentina's *Nueva Vision,* is a painter, writer, and lecturer, known for his talk on design education given at the Brussels fair.
Bruno Alfieri (page 48) is an Italian design critic who writes regularly on car design for *Stile Industria.*
Gillo Dorfles (page 57) is an art critic who writes regularly on design for the same publication.
Stephen Spender who comments on design (page 40) from the vantage point of the literary arts, is the distinguished British poet, critic, and short story writer.
Paul Reilly (page 79), director of the British Council of Industrial Design, and editorial advisor to its publication, *Design,* is responsible for much of the CID's propaganda (exhibits, films, booklets) to increase public consciousness of good design.
Reyner Banham, who defends "pop art" (pages 45 and 61), is associate executive editor of England's *Architectural Review.* Trained as an engineer, he acquired postwar art history degrees and lately a PhD. His thesis will soon be published as *Theory and Design in the First Machine Age.*
Arthur Hald, (page 82) currently design director of AB Gustavsberg, is former editor of the Swedish Society of Industrial Design's two publications, *Form* and *Kontur.*
Jane Fiske McCullough has been assembling and editing the material for this special issue since last summer. With Deborah Allen, Mrs. McCullough was the founding co-editor of ID, became its editor-in-chief in 1956, has been consulting editor since January, 1958. With this issue Mrs. McCullough ends a distinguished editing career to devote all her energies to being the wife of a Vermont publisher of children's books and the mother of large, literate Yankee children.

LETTERS

Progress and the Prefab

Sirs:

Your article on the Industrially produced House in the February issue was very thought-provoking.

I find, however, that I differ completely on the reasons why prefabrication hasn't made the "great leap forward" that most of its admirers and critics think it should. Actually much progress has been made and is being made in prefabrication and manufactured housing.

Your article quotes a figure of 80,000 units produced in 1959. Our estimates show that at least 130,000 units were produced, which would be an estimated 12 per cent of the single-family private housing market in 1959. This will be due to increased production of existing firms plus production from many new firms entering this growing market.

We find that the slow growth of home manufacturing is due mainly to two factors, lack of experience in management and capital. Acceptance by the home builder is no problem at all at this time. The builder, of course, is our primary market and the vast majority of the members of the Home Manufacturers Association do not sell to anyone except merchant builders.

I think you will continue to see homes manufactured with conventional materials for the simple fact that home builders and home buyers prefer them. Give this industry 50 experts, with the experience of Jim and George Price of National Homes, William B. F. Hall of General Homes and P. S. Knox of Knox Homes and we can have 50 per cent of the market in 10 years. Prefabrication is blocked by inexperience not by "traditional attitudes."

Conrad Pat Harness
Home Manufacturers Association
Washington, D.C.

To argue that houses will continue to be made of conventional materials because buyers and builders prefer them seems business expediency rather than business sense. The most conventional of materials, wood, is least adaptable to mass-production methods and produces the least satisfactory performance since no proper control can be established over its dimensional stability.

Mr. Blake's figure of 80,000 *prefabricated homes is based on the latest tabulation of that industry by* House & Home; *most accepted statistics in the homebuilding industry have placed the figure somewhere between* 60,000 *and* 80,000 *for the past few years. However, it is difficult to define the term "prefab" with pinpoint accuracy. Almost every builder uses some prefabricated parts; and many of those who do, call their products prefabricated homes. —Ed.*

Research and Design

Sirs:

Mr. John Vassos' letter in your February issue filled me with considerable dismay. For some years now I have been repeating that research which robs a designer of his creative function is poor research—and obviously Mr. Vassos has known little but poor research. As in any field, there are varying levels of capacity among researchers. The skills of research are hard to come by, and the application of them requires an understanding and sense of sociological and psychological forces which is not distributed equally among all men just as the ability to create good design is not everyone's talent.

It is certainly true that there is bad research that is meaningless, inaccurate, poorly planned and conceived, and not properly directed at the real questions at issue in a design problem. But there is also good research which provides data, insights and understandings that give the creative designer new scope for his ability. Mr. Vassos says "Research has its place, but not in the field of industrial design . . ." Permit me to disagree. The designer is, after all, a practical artist. His function is not merely to beautify, but to create an object which, generally speaking will be reproduced in relatively large numbers, and which is intended to evoke the interest and the economic behavior of the potential consumer. (Of course this is not all the designer does, but it is here that research can be of value to him.)

A good designer, in these terms, is one who can accomplish this task. Put in this framework, I do not see how any designer can object to learning fully, and in advance, the way in which the public is responding to the very things which he must incorporate in his design.

To know them permits him to direct his effort, and apply his creative talent fruitfully, rather than barging off in directions which may be completely superfluous to the solution of the problem at hand . . .

Market research in design is not intended to compete with, or throttle the designer; but to bring him information and insights he may not be able to fully achieve alone . . .

Clearly this discussion cannot be resolved in one exchange of views. I cordially invite any and every designer who wishes to explore this matter further to visit us here at the Center for further discussion. Perhaps it will then become apparent that the researcher can work with the designer in a fresh, creative fashion.

William Capitman
The Center for Research in Marketing Inc.
Peekskill, N. Y.

A Sympathetic Muse

The "Package Deal" you wrote of,
In INDUSTRIAL DESIGN
For February "60,"
Echoed feelings that are mine.
Each day I strain and struggle
With containers that won't yield
To anything less drastic
Than a sharpened sword and shield.
I often stop to ponder,
And I'm filled with many fears,
As I wonder who has slaughtered
All the Package Engineers.
For each year the Halls of Ivy
Graduate a brand new crop,
But it seems that package progress,
Is now at a full scale stop. . . .

Harriet Y. Clough
Meadville, Pennsylvania

Errata

The Pan American flight bag which appears in the December, 1959 issue on page 111 was designed by Charles Forberg and Don Davidson.

On page 75 of the February issue, caption #7 goes with picture #6, and caption #6 with picture #7.

The O-Cedar mop on pages 66-67 of the February issue should be credited to both Palma-Knapp Associates and the O-Cedar design staff.

The Dormeyer toaster and electric iron on pages 84-85 of the February issue was designed by Paul Belokin, not by Jack Morgan and Associates.

An open letter to all designers interested in design protection

from George Lucas, Jr. Chairman
National Committee for Effective Design Legislation

You are probably aware that present laws do not effectively protect you from unauthorized copying of original designs. *But the gap is closing . . . fast.* Right now, there are four bills (two in the House, two in the Senate), that would go a long way toward stopping design piracy . . . by effectively penalizing those who engage in this unethical practice.

Many of us have learned about this legal loophole the hard way. For example, although L. E. Carpenter & Company was the first to receive design patents for its original designs in vinyl, we learned in time that existing laws could not prevent others from copying them, generally using inferior materials and workmanship. As with other companies, the result was irrevocable damage to the primary designer.

Without effective design legislation, the economic drain—to business and to individual designers—will doubtless continue to rise. Without it, a healthy moral and cultural climate that spurs progress in creative design could stagnate.

This is a critical moment, climaxing seven years of educational, legal and organizational effort. Supporting this drive are reputable businesses, professional designers, and every society concerned with design . . . the A.I.A., I.D.I., A.S.I.D., N.S.I.D. and A.I.D. All are working with and through the National Committee for Effective Design Legislation.

You can help . . . in two ways. First by finding out how the provisions of this proposed legislation will protect *your* designs. Second, by sending examples of design piracy that have harmed you or your business to the NCEDL.

Add your voice to the growing list of dynamic groups and individuals who have an important stake in design protection. Fill in and mail this coupon now.

N/C/E/D/L

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As a service to America's Designers, this space has been contributed by L. E. Carpenter & Company, Inc., Wharton, N. J., originators and manufacturers of Vicrtex Vinyl Wallcovering & Upholstery Fabrics.

National Committee for
Effective Design Legislation:
Suite 2700
200 East 42nd Street, New York 17, N. Y.

☐ Please send me full details about the NCEDL, and keep me informed of latest legislative developments.

I am enclosing a specific illustration of design piracy that has affected me.

NAME .....

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CITY .....

REVIEWS

Auto styling of boats (above) is not new concept in copying: 19th century steam launch took motif from surrey with fringe on top.

50th National Motor Boat Show

by John Beinert

Barnum, Billy Graham, and the Marines notwithstanding, nothing seems to grip the imagination or stir the blood like the annual motor boat show. This year, for the 50th time, the boating industry showed what it had to offer, and if the show was generally uninspired, the sense of adventure in boating made up for it. At New York's Coliseum the display of latest model hulls, motors, and accessories, gave ample evidence of tremendous technical achievements — and of the industry's eagerness to offer something new.

Three things are worth noting: First, the general acceptance of reinforced plastics for hull construction. A majority of the small planing hulls were so constructed, as were several large and small sailboats. Second, a plethora of electronic devices intended for small boat use, and satisfactorily scaled down in size and price. And third, the use of new plastics in coating materials such as paints and varnishes. Apparently the tremendous potential market has persuaded manufacturers of materials and equipment developed for other fields to enter the boating field.

But the general run of design in this year's show leaves much to be desired. Except for sailboats, whose special hull requirements and propulsion methods dictate form and layout, the hulls of most models—inboard and outboard—still lean toward automotive styling, and interiors of inboard cruisers are designed to resemble motel rooms. The industry has never been able to develop a design theme that spells out "boat". Perhaps it never will: as the photographs on this page show, the fringed canopy of the steam launch was borrowed from the horse-drawn vehicle of its time.

The insistence on copying Detroit extends even to the horsepower race, introducing an element of madness into a sport in which sanity of design for safe operation was once the prime requirement. In fact, the emphasis on speed/horsepower has distorted the perspective of the boating newcomer; he is blinded to the need for such elementary properties as sea-keeping ability, convenience in working the boat (from docking to undocking), and low-speed operation. The consequences of this madness are now becoming evident: state after state has begun to assume the regulatory function of the Coast Guard so that liability for unsafe operation can be controlled at the local level. Stricter operational rules have been proposed, and serious consideration is even being given to licensing of boat operators. It is still too early to determine what effect this may have on sales, but whatever happens, the industry can look to itself for the cause of this revolting turn of events.

Getting away from automotive styling and speed/horsepower thinking, however, presents difficulties. The lack of generic boat design can be blamed in part on the size of the individual boat manufacturers who make up the boating industry. There are possibly three or four moderate-size hull manufacturers who could afford to experiment in new design, but the rest — from backyard operator to small factory — haven't the money or can't risk a bad sales year on an unpopular model. Few hull manufacturers, furthermore, can afford to cast their own hardware, and so must rely on the limited number of marine accessory suppliers, who are also caught in the economic trap. Outboard motors will probably continue to increase in horsepower and cost, and to so resemble appliances in design that they discourage home repair.

The enthusiasm of California sailors for catamarans seems to have spread eastward, and there were several of these twin-hulled sailing craft shown. A water jet propulsion unit was also shown, but this was not a new idea; several previous tries had been made unsuccessfully.

Electronic piloting and navigational devices abounded and were, in general, well designed and reasonably priced. One manufacturer showed a line of put-it-together-yourself kits for units ranging from simple radio direction finders to transmitters. The electronics industry has developed suitable small-boat radar sets, direction finders, and sonar depth finders, and the first small loran navigational unit.

Color continues to range further afield from the traditional white, buff, and black. Paint companies offer tube additives, similar to those used in residential custom-color systems; they come in a wide range of colors and their stability and consistency of color value is remarkable. The newer epoxy paints and varnishes can reduce annual repainting time, and give better protection to wood, metal, and glass.

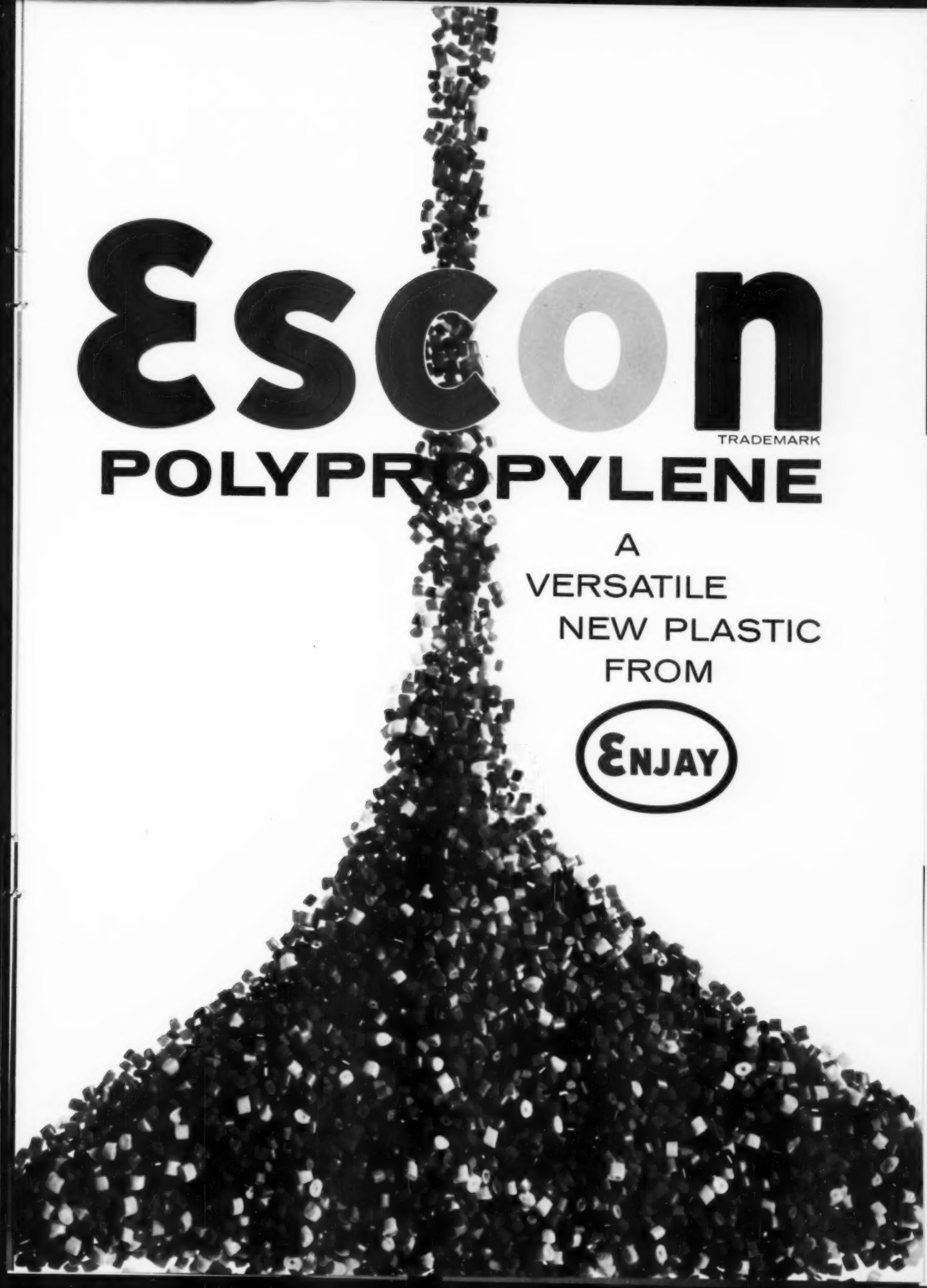
Escon

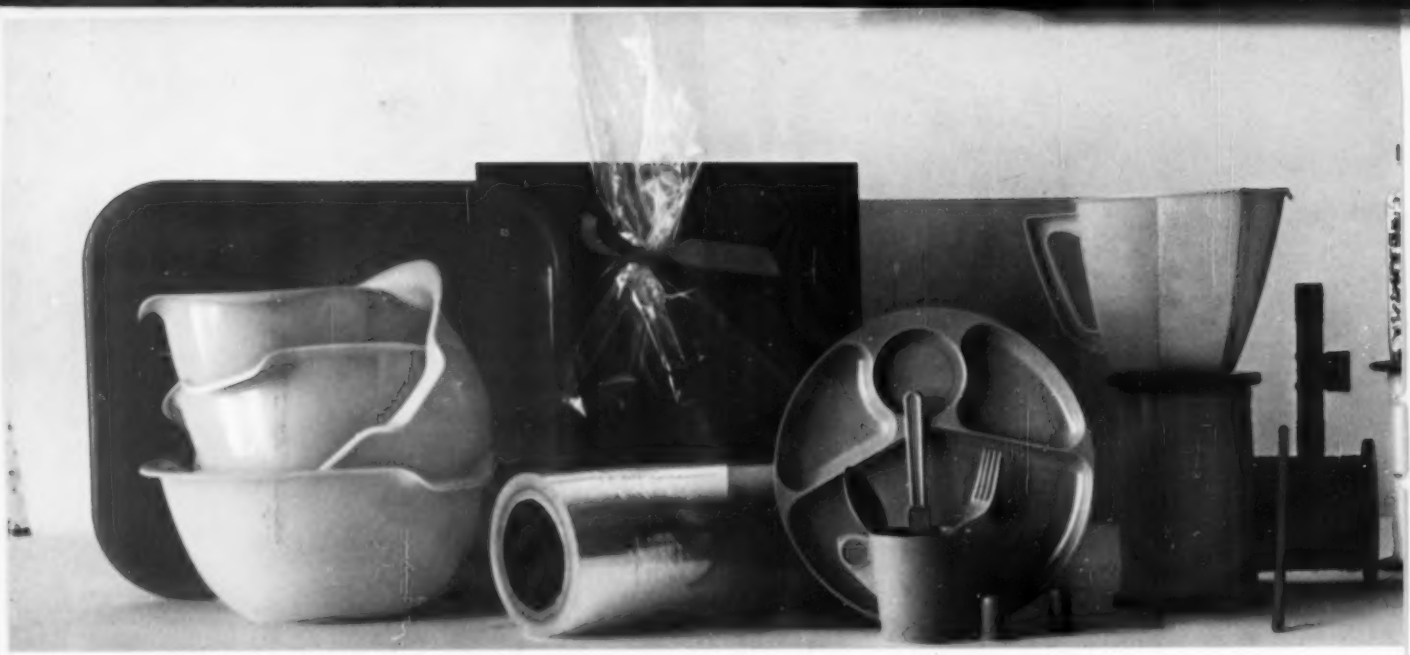
TRADEMARK

POLYPROPYLENE

A
VERSATILE
NEW PLASTIC
FROM

ENJAY





Specify ENJAY Escon

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This new thermoplastic resin is the world's lightest plastic. Yet it provides excellent strength and rigidity. It can be made in brilliant lasting colors with high surface gloss and hardness. Escon also offers outstanding resistance to chemicals and stress cracking. Versatile Escon can be fabricated in a wide variety of ways. For example, it can be injection

FOR PACKAGING. Escon film can be produced by water bath or chill roll technique with extreme clarity and gloss. It offers greater heat resistance than any other polyolefin and can be sterilized by heat or chemical means. In addition, Escon offers excellent stiffness and toughness. Escon clear film can be color printed on either side — or both sides — for extra eye and buy appeal.

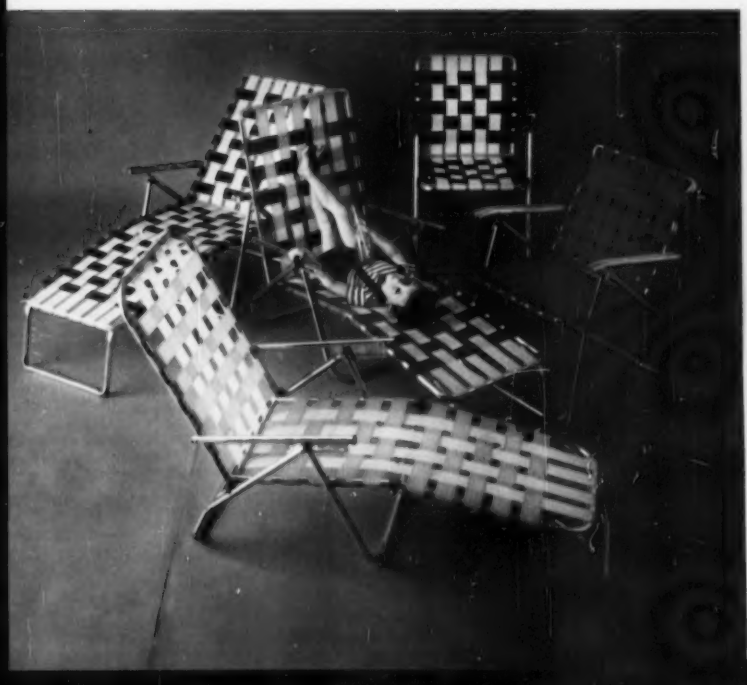
FOR MOLDING. Because of its light weight, Escon yields more pieces per pound. In injection molding, Escon's high strength plus its unique chemical and abrasion resistance makes it suitable for the manufacturing of many consumer products. Escon also allows accurate reproduction of fine and intricate designs with high surface lustre.

polypropylene for new beauty, utility and economy

molded; extruded into film, sheet and shapes. It can also be drawn and vacuum formed, heat sealed, machined and printed. Because of the rigid manufacturing standards of the Enjay Company, molders and designers are assured of high uniform quality whenever they specify Escon polypropylene. Versatile Escon can be tailor-made to meet a variety of product needs.

FOR EXTRUDING. Escon may be extruded in an almost unlimited range of thicknesses and forms. Its excellent physical and chemical properties make it an ideal plastic for such operations as thermoforming, punching, machining, die cutting and welding. Surface details are accurately reproduced too. And pigmentation, before or during extrusion, produces brightly colored sheet stock.

FOR FIBERS AND MONOFILAMENTS. Escon allows more yards of fiber per pound. Its high tensile strength, good knot strength and resilience, plus its immunity to attack by fungus, moths and marine organisms make it ideal for ropes and woven fabrics. Escon fibers show excellent wet strength, wet flexing durability, and abrasion resistance maintained to minus 70°F.



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To order Escon or for complete technical data, contact the Enjay office nearest you.

PROPERTY	DATA	METHOD
density, 73°F., g./cc.	0.897-0.910	ASTM D1505-57T
melt index, @250°C., g./10 min.	1-10	ASTM 1238-57T (load, 2,160g.)
environmental stress cracking (100% Igepal CD-630)	none	Bell Labs.
burning rate	slow	ASTM D635
machining qualities	excellent	
mold shrinkage, in./in.	0.015-0.030	
water absorption, %	< 0.01	ASTM D570-57T
yield strength, psi, 2"/min.	3800-5100	ASTM D638-58T
tensile strength, psi, 2"/min.	3500-4900	ASTM D638-58T
yield elongation, %, 2"/min.	13-18	ASTM D638-58T
ultimate elongation, %, 2"/min.	22-315	ASTM D638-58T
Impact strength, ft.-lb./in.		ASTM D256-54T
Izod notched	1	
Izod unnotched	> 16	
hardness		
Rockwell R	80-90	ASTM D785-51
Shore D	70-75	ASTM D676-55
elastic modulus, psi, 2"/min.	45,000-60,000	ASTM D638-58T
flexural modulus of elasticity, psi, 2"/min.	111,000-176,000	ASTM D790-58T
flexural modulus of rupture (flexural strength), psi, 0.05"/min. (no break-max. load)	65,000-81,000	ASTM D790-58T
compressive yield stress, psi, 0.05"/min.	5,300-6,400	ASTM D695-54
compressive strain @yield, %, 0.05"/min.	15	ASTM D695-54
compressive elastic modulus, psi, 0.05"/min.	53,000-63,000	ASTM D695-54
stiffness in flexure, psi	95,000-150,000	ASTM D747-58T
modulus of elasticity, psi	100,000-128,000	ASTM D1043-51
Taber abrasion, mg. loss/1000 cycles (CS-17 wheel, 1000g. load)	29-32	
melting point, °F.	335	polarizing microscope
vicat softening point (1 kg.), °F.	266-293	ASTM 1525-58T
deflection temperature		ASTM D648-56
°F. @264 psi fiber stress	131	
°F. @66 psi fiber stress	188	
coefficient of thermal conductivity		
cal./cm./cm.²/sec./°C.	2.80×10^{-4}	
BTU/in./ft.²/hr./°F.	1.13	
coefficient of linear thermal expansion in./in./°C.	0.00020	ASTM 696-44
specific heat @73°F., cal./g.	0.46	
ELECTRICAL PROPERTIES		
volume resistivity, ohm-cm	6.5×10^{16}	ASTM D257-54T
dielectric strength, volts/mil		
short-time, 1/8" thickness	660	ASTM D149-55T
step-by-step, 1/8" thickness	650	
dielectric constant, 10^6 cycles	2.0	ASTM D150-54T
dissipation (power) factor, 10^6 cycles	0.0002-0.0003	ASTM D150-54T

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PROFESSIONAL MEMBERSHIP: Professional Membership in NSID is accorded those professionals who have met the rigid performance standards required by NSID, whose work is of the highest taste level, and who have mature and successful experience behind them. They must have demonstrated mastery of execution and information in designing interiors, selecting and coordinating furnishings, and supervising the various arts and crafts essential to good design and achieving beautiful interiors and effects which serve the needs, desires, and utility of clients. They must serve the public as responsible professionals whose obligation is to contribute to its well-being, culture, and satisfaction.

PROVISIONAL MEMBERSHIP: Membership as a provisional professional will be extended to those practicing designers whose qualifications are based entirely or largely upon practical experience who are not graduates of accredited professional schools of interior design and/or architecture, but whose quality of performance and level of taste are compatible with NSID standards, and lack only the full number of qualifying years of experience for full professional membership.

JUNIOR PROFESSIONAL MEMBERSHIP: Membership as a junior professional will be extended to those practicing designers whose qualifications are based entirely or largely upon attendance at or graduation by an accredited professional school of interior design and/or architecture but whose quality of performance and level of taste show achievement and promise, and warrant professional guidance, stimulation, association, and inspiration, but lack the qualifying number of years of professional experience for full professional membership.

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Professional Interior Designers, Industrial Designers, Architects, Scenic Designers, Educators in accredited schools of Architecture and Interior Design, Museum Heads, Lighting Engineers, Color and Design Consultants and Landscape Architects are accorded Professional Membership.

Applications for membership may be requested from:

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NEWS

Sundberg-Ferar's new design center near Detroit. Model shop (right) can produce models of anything from typewriters to trucks.

Sundberg-Ferar move in

After ten years of thinking about what a completely self-sufficient industrial design facility should be, Sundberg-Ferar, Inc., has planned one, built it, and officially last month, moved in. Their new building, designed by Montgomery Ferar (with Nathan Levine, associated architect), is located on an eight-acre plot in Southfield, Michigan, and houses administrative and executive offices, a double-duty conference room, semi-private studios for seven junior associates, a maze of staff designers' working compartments, and a completely-equipped, 35-man model shop.

On the basis of this elaborate model shop (above, right) partners Ferar and Carl W. Sundberg claim that their new design center offers facilities unique in the profession. As a point of policy they provide all clients with finished three-dimensional models, as well as final drawings, of their designs. For this reason, the Southfield model shop, headed up by William Palmer and occupying the entire basement floor of the new building, is equipped to produce models of anything from a Whirlpool kitchen range to an International Harvester truck.

The $300,000 air-conditioned, sound insulated, electronically dusted building, whose crisp rectilinear shape, low silhouette, and front shadow-hood reminded one guest at S-F's house warming last month of the characteristic style of their appliance designs, is constructed of concrete, steel, and glass, with the second floor and roof supported by a four-way cantilever. The exterior of the lower level is finished with split fieldstone, while the upper walls are of glass and precast panels of concrete, quartz, and granite chips.

Sundberg-Ferar began in business 25 years ago with the design of a better mousetrap (called "the Mouseoleum"). Now they have designed what they believe is the best industrial design facility in the country.

Loewy office studies supermarkets

If supermarkets pay attention to the results of a study recently completed by Raymond Loewy Corporation there will be less emphasis on serried ranks of groceries and more emphasis on meats, fresh produce, and non-food items. The Loewy report not only tells food merchants what to emphasize, and why (the big profits are in the perishables and the addenda dry goods, drugs, and hardware), but also how to go about the business of being emphatic through store layout and fixture design. The report was presented at the recent mid-year conference (at Bal Harbour, Florida) of the Super Market Institute, which commissioned the study.

In preparing the report RLA spent 13 months and $75,000, drew upon the resources of its own market research and retail planning divisions as well as those of several outside fact-finding firms. The outcome of the investigation is a long series of recommendations, many of which go well beyond store planning, packaging, and display (although it also includes these).

In the meat department, for example, the report takes exception to the unimaginative array of red flesh and bones, and the terse, factual labeling which does little or nothing to assist the consumer in the most anxiety-ridden of purchases ("the American husband wants meat, and it had better be good"). Among suggested remedies: labels that indicate number of servings, calorie yield, cooking instructions, menu-planning, etc.; arrangement of meat by end-use rather than by cut (i.e., in sections for budget meals, dinner parties, low-calorie meals, small-family meals, quick meals, etc.); and re-design of present display fixtures to improve eye-appeal, to call attention to special sales, and to make shopping a generally more palatable task.

The Loewy office will incorporate many of these proposals into a project for which they have just completed contract arrangements: the design and redesign of some of the stores in the Dilbert chain, which at present numbers 84 supermarkets located in New England, New York State, and Long Island.

Congress will act

Action on four bills to curtail the piracy of original industrial designs is expected to be taken by the appropriate Congressional committees within the next month, according to George Lucas, Jr., chairman of the National Committee for Effective Design Legislation. Consideration of these bills by the House and Senate Sub-committees on Patents, Trademarks, and Copyrights will mark a major success in the NCEDL's seven-year campaign for legislation that will close loopholes in existing legal protection of original designs.

INTRODUCING

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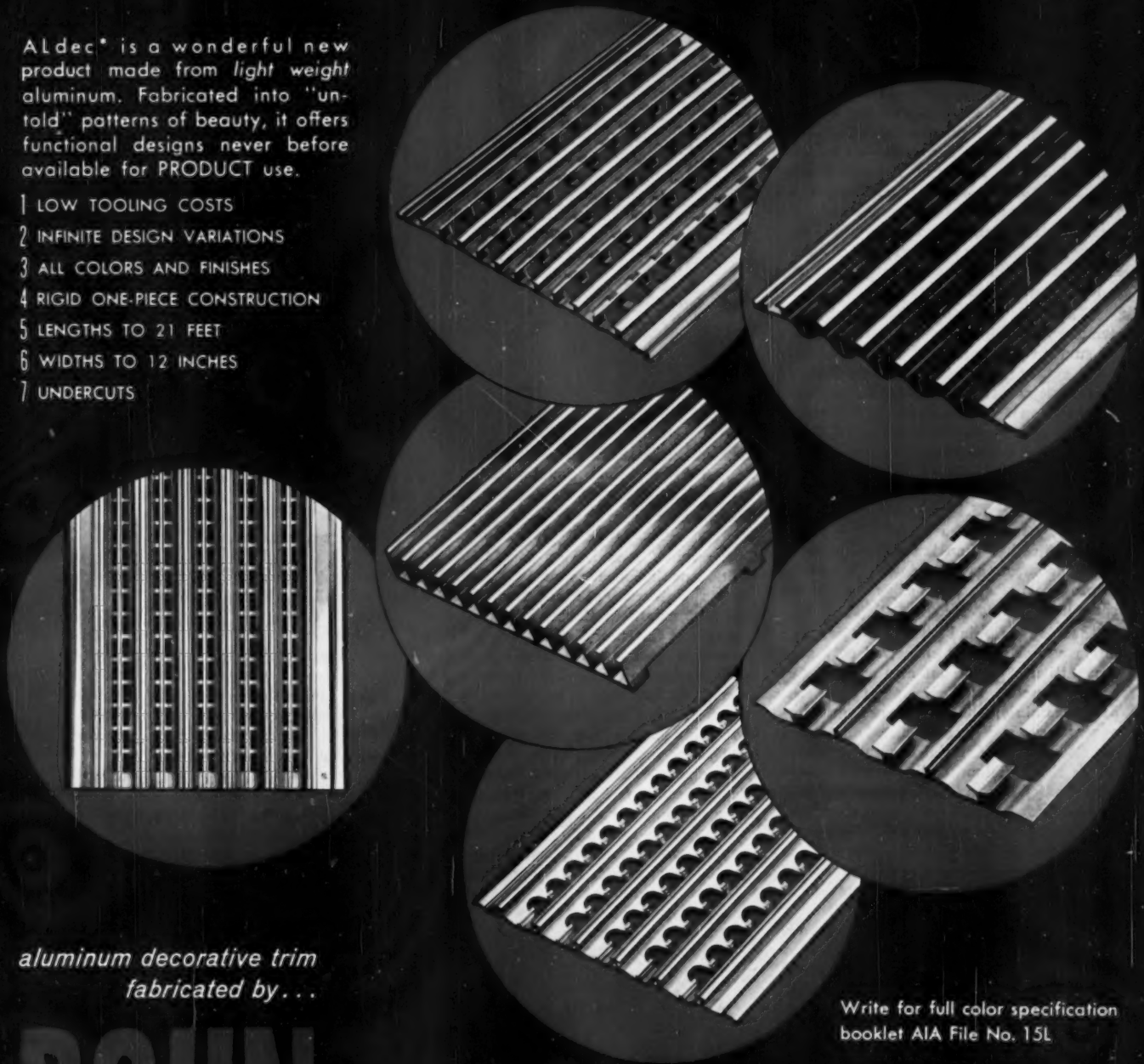

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Crisis in Italy

The awards committee of the Italian grand prize for industrial design (the Compasso d'Oro) has decided that Italian design is crucially weak this year, and will therefore get no award. The international Compasso d'Oro was awarded to the British Council of Industrial Design, for reasons contained in the following statement issued by the committee:

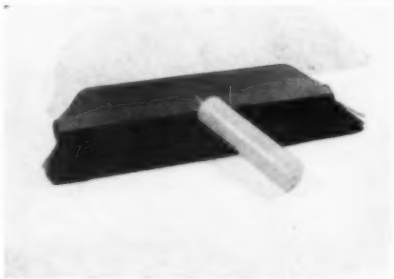
"After a thorough examination of the situation, the Committee for the National and International grand prizes of la Rinascente Compasso d'Oro recognizes the presence of a crisis in design. This crisis takes the form of inadequate coordination between designers on the one hand, and manufacturers and consumers on the other. Among the main causes of this condition is the lack or inadequacy of organizational and educational structures.

"The crisis is particularly evident in the tendency of design to concentrate on fringe or surface problems (e.g., interior decorating) rather than on important problems in methodology (e.g., the industrialization of construction), which alone will make it possible to develop significantly towards social ends. This straying of design from its proper methodological purposes also explains the tendency of some companies to produce objects of high quality only sporadically, almost as a proof of technical capacity, rather than lay down principles of development that would make it possible to produce a whole series of goods with the same high quality.

"Bearing in mind that the Compasso d'Oro award was not conceived only as a recognition of merit but also as a way of giving direction to design, the Committee, after examining the activities of many organizations and individuals, has chosen the Council of Industrial Design in London as the oldest and most efficient government organization for the development and popularization of design. Although the Council to date has not been able to carry on its work with the severest of criteria or to exercise a direct influence on research and production, it has nevertheless created the proper conditions for an activity which the Committee hopes will serve as an example for all those governments which so far have ignored or ineffectively dealt with the need for coordination of studies in design.

"It is this lack of organized guidance that has, at least in part, led to the crisis in Italian design, a crisis which has affected even creative personalities of great renown. The Committee would have liked to acknowledge the merit of these personalities if their recent work had shown any of the brilliance of their past achievements.

"For these reasons, the Committee has decided to award the International Compasso d'Oro to the Council of Industrial Design, and, regretfully, not to award a national prize for 1959."



Above: Pratt; below: Southern Illinois

Good and cheap

Two recent "Good Design for $1.00" exhibits, one included as part of Southern Illinois University's Fine Arts Festival, held last month in Carbondale, the other mounted at Christmas by students of interior design at Pratt Institute, prove that while good design is hard to come by at any price, it doesn't have to be expensive.

Some of the well-designed objects SIU design students bought for one dollar in local shops included a horse bit and harness clamp, a disposable hypodermic-syringe, some tools, laboratory utensils, and a wallpaper brush and candle (above). Pratt students turned up good cheap tablewares, desk accessories, some ornaments from Sweden, puzzles from Japan (above).

Both shows indicate that, on a limited design budget, "form follows function" less as a designer's dream than as a practical necessity.

Permanent trade fair in Rome

A permanent world trade exhibition center will open in Rome in June. Called PERMINDEX (Permanent Industrial Exhibition) and organized by a private Italian subsidiary of the Swiss Permindex Company, the center (below) will provide a continuous display of everything from domestic appliances to agricultural implements manufactured in all parts of the world. The purpose of the exhibition is to permit buyers to make an on-the-spot comparative survey of the latest trends in the world production of manufactured goods.

PERMINDEX will occupy four exhibition palaces (built in 1937-41 for a universal exposition projected for 1942 but cancelled by the war) located on the outskirts of Rome near the proposed center of the Italian Government and adjoining the sites of the 1960 Olympic Games. The exhibition halls contain almost a million square feet of space, over 50 per cent of which has already been sold, which will be used to house 2,500 floor exhibits.

Participation of U. S. Industries in the trade center is being handled by PERMINDEX, Inc., New York.

New products show

New products are the subject of a Conference-Exhibit to be held March 17-18 in Los Angeles. Sponsored by the Los Angeles Chamber of Commerce, it will be held at the Ambassador Hotel. More than 100 inventors are expected to exhibit recent products (none of them licensed for manufacture), and an equal number of manufacturers will show new products, processes, and formulas developed and offered for licensing and manufacture by others.

During the conference, which will run concurrently with the exhibit, such firms as Scientific Industries and McCulloch Motors (both Los Angeles) will present case histories in the design, development, financing, and marketing of new products.

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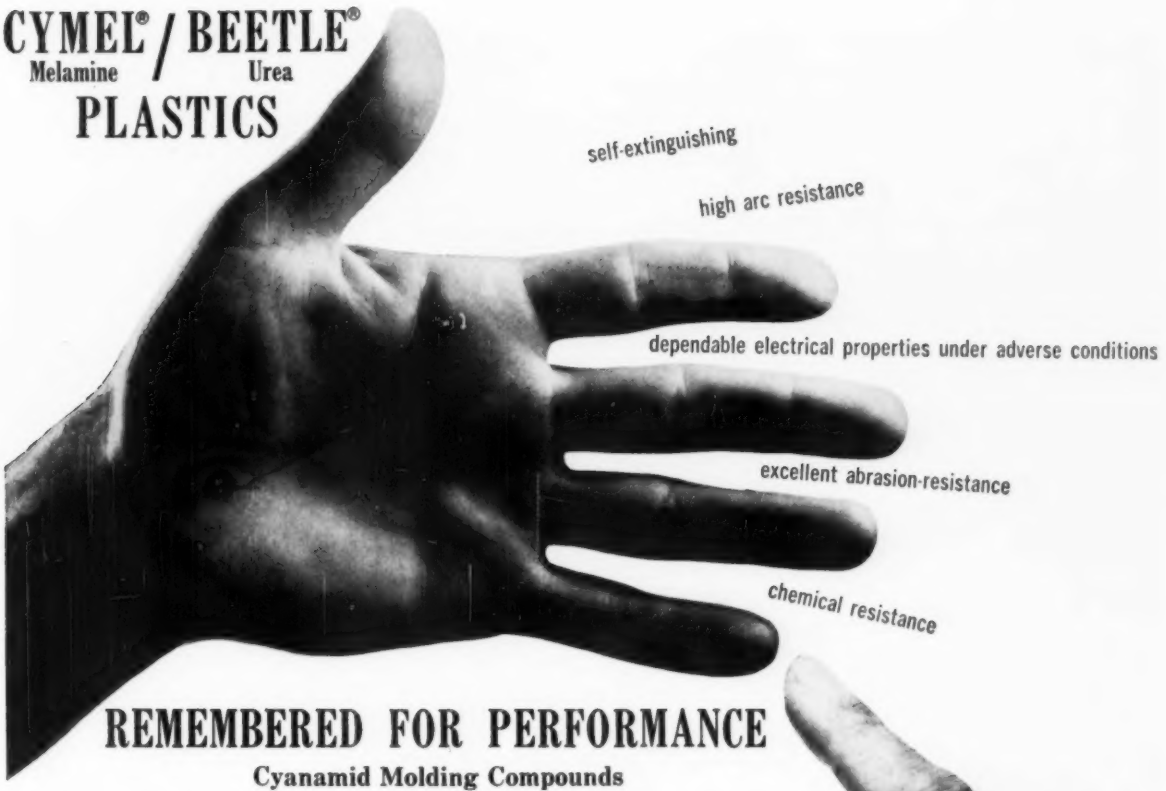

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Cyanamid Molding Compounds

CYMEL 3135-3136 (glass-filled) Additional distinctive properties: outstanding electrical properties; high impact resistance; extraordinary flame resistance; good dimensional stability. Typical applications: circuit breaker boxes; terminal strips; connectors; coil forms; stand-off insulators. Specifications: Cymel 3135 (MMI-30, MIL-M-14E, Federal L-M-181 Type 8; ASTM D704-55T Type 8); Cymel 3136 (MIL-M-19061, MMI-5).

CYMEL 592 (asbestos-filled) Additional distinctive properties: resistance to atmospheric extremes; high dielectric strength. Typical applications: connector plugs; terminal blocks; a/c, automotive and heavy duty industrial ignition parts. Specifications: MIL-M-14E MME; Federal L-M-181 Type 2; ASTM D704-55T Type 2, SP1 SPEC NO. 27025.

CYMEL 1077 (alpha-cellulose-filled) Additional distinctive properties: Surface hardness, heat resistance, unlimited color range. Typical applications: appliance housings, shaver housings, business machine keys. Specifications: MIL-M-14E – Type CMG (in approved colors); Federal–LM 181 Type 1; ASTM D704-55T Type 1, SP1 SPEC NO. 30026.

CYMEL 1500 (wood flour-filled) – **CYMEL 1502** (alpha cellulose-filled) Additional distinctive properties: Good insert retention. Typical applications: meter blocks; ignition parts; terminal strips. Specifications: Cymel 1500 (MIL-M-14E Type CMG; Federal L-M-181 Type 6; ASTM D704-55T Type 6); Cymel 1502 (MIL-M-14E Type CMG; Federal L-M-181 Type 7; ASTM D704-55T Type 7).

BEETLE® UREA (alpha-filled) Additional distinctive properties: Economy of fabrication; economy of material; myriad translucent and opaque colors. Typical applications: wiring devices; home circuit breakers; tube bases; appliance housings. Specifications: Federal L-P-406A, LC 726-1, ASTM D705-55, Grade 1 (Arc resistance limits are in process of revision by ASTM), SP1 SPEC NO. 27026.

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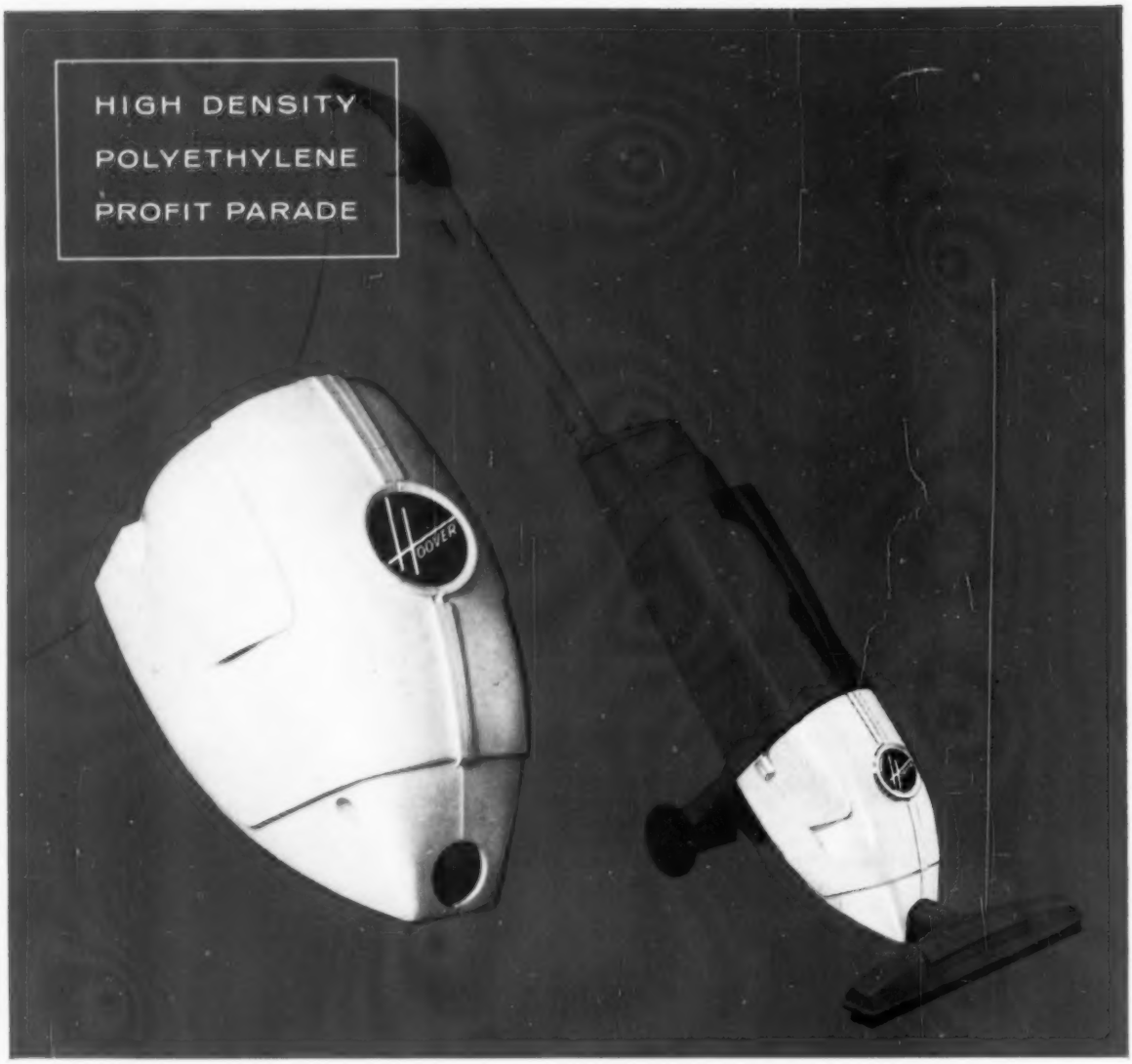


Grace Plastic Goes into New Appliance Concept

Are you working on a "new concept" product? High density polyethylene from Grace could provide a better answer to your product's unique requirements than any other raw material. The Hoover Company reached just such a conclusion in screening plastics for the motor housing of their new home appliance concept—an electric floor washer that cleans with its own detergent solution and dries by vacuum action.

Why did Hoover select Grex high density polyethylene? The motor housing has to be unaffected by moisture and the chemicals with which it comes in contact. It must withstand heat generated by the motor and possess high impact strength. Its color—a primrose yellow—has to be an exact match of the other parts. Just as important, the housing must be light in weight, economical to produce and flame retardant.

By specifying Grex, Hoover obtained the motor housing they needed. Although the requirements for your new product may not be the same as Hoover's, bear in mind that this Grace plastic offers many remarkable properties still waiting to be exploited.

Find out more about high density polyethylene by calling in the experts. Grace has the production facilities, technical service and experience to help put your product in the Grex profit parade. Everyone says we're easy to do business with.

Grex is the trademark for W. R. Grace & Co.'s Polyolefins.

W.R. GRACE & CO.
POLYMER CHEMICALS DIVISION
CLIFTON, NEW JERSEY

Hoover motor housing points up considerations in designing for Grex.

Designing superior parts with high density polyethylene requires knowledge of molding and mold design techniques and the inherent characteristics of the material. A few considerations that went into the motor housing of Hoover's new electric floor washer may be helpful in your own designing for Grex.

Color match. High density polyethylene flame retardant compounds, compared to natural high density polyethylene, are much more opaque white and therefore more difficult to color match. However, it is usually easier to obtain a color match with flame retardant Grex than with any other flame retardant plastic comparable in both cost and performance. In this case, a flame retardant compound was specified for the motor housing. The material was satisfactorily compounded to match a primrose yellow used for other parts of the appliance.

Section thickness. The original mold design for this housing incorporated heavy sections and variations in wall thickness which had to be corrected before actual production. These are to be avoided wherever possible as a cause of differential shrinkage or part distortion. As an added consideration, thinner wall sections result in economies in material and, with proper molding techniques, usually give a faster cycle.

Call us for help. If you are now working on a design for high density polyethylene—or are just thinking about some new project—remember that Grace is ready and willing to provide technical assistance. Bring us into your picture any time—the sooner the better.

Technical Service Department
W. R. Grace & Co., Clifton, N. J.

Coming in the April 1960 issue of

INDUSTRIAL DESIGN

Films for Industry

Although designers are responsible for the appearance of products, they often have very little to say about their public debut. This first of a projected series of articles on "product presentation" will discuss the use of the motion picture to promote products and company images. It will investigate how the film producer works, how business motion pictures are conceived, written, shot, edited, and distributed, and how many of the problems—creative and otherwise—in projecting a product's personality on film are similar to the problems in designing the product itself.

Chemical Fasteners

The third installment in a series on fasteners and fastening techniques takes up the subject of adhesives; in particular, the comparatively new "structural" adhesives—such as epoxies—whose high strength makes them applicable to many situations which formerly required welding or riveting. It will include information on the use of adhesives to join thin materials, dissimilar materials, and parts in the manufacture of plastic products, and it will also explain the advantages and limitations of this fastening method.

Italian Cars

From Fiat to Maserati, the Italian automotive industry produces a product that is among the most-admired and most-emulated in all the world. Its technical design, appearance design, and the methods by which it is produced are explained in text and documented with an extensive and handsome group of photographs.

Printing Inks

The formulation of an ink for package printing is unique for each design; the ink must be compatible with the design, and vice versa. An examination of ink formulae and color matches as they are affected by such variables as printing processes, printing stocks, post-printing conversions, and end uses.

Design Review: Ranges

The 1960 versions of oven and top-of-stove cooking units continue to offer refinements to meet the competition of electric saucepans, rotisseries, and the backyard barbeque.

Traffic-jam at the Coliseum

The Fourth Annual International Automobile Show will drive into the New York Coliseum April 16th for a week-long line-up of foreign cars (including models from ten different countries) as well as all the American makes. Like every trade show, it will be the biggest ever, offering a bumper-to-bumper crop of new Rover, Volvo, Jaguar, and DB-Panhard models not seen before; Simca Fulgur's electronically-controlled and radar-protected "car-of-the-future"; an American home-on-wheels, made by Travelcar, Inc., which provides the comforts of home with the mobility of a vehicle; a German-made "amphicar"; and some do-it-yourself-kit cars from Great Britain.

Mercury launches Comet

Detroit's first small big-car, Mercury's new "Comet," (above) will make its debut in dealer showrooms March 17th. With side-panel chrome trim similar to the one that dressed the 1955 Ford, rear fenders sculptured like Lincoln's front fenders of the past few years, and a rear-window motif taken from Thunderbird, this new Ford Company offspring is obviously a member of the family. A foot or more longer than the "small" cars which appeared last fall, and only a foot or so shorter than the regular lines of the "low-priced three," Mercury's "Comet" also suggests that Detroit's conception of a small car is expanding.

Pontiac, Oldsmobile, and Buick divisions of General Motors will follow Mercury later this year with their own versions of larger automotive miniaturization.

Doner reviews designer's position

IDI president H. Creston Doner, aware of what he terms "a certain amount of concern on the part of some designers as to the future of Industrial Design as a profession," used the occasion of his address to the recent "Design Derby" of the Florida Chapter to re-state the importance of the industrial designer's position in American society. "With the broadened horizons of the space age," Doner said, "the creative ability of the industrial designer is being expanded to meet the problems brought on by these new areas of development. The comprehensive aspect of industrial design is doing much to shape the destiny of this country and to improve our relationship with countries throughout the world. . . . On the national scene, the creative genius of the industrial designer is doing much to shape the pattern of community and city life."

Doner

Copper and Brass award

The opening of the second annual competition for the past year's outstanding contribution to the use, application, or metallurgy of copper and copper-base alloys is announced by the Copper and Brass Research Association. Winner of the 1960 competition will receive $1,000 and a bronze award to be presented May 17th at the Association's annual meeting in Hot Springs, Va. In judging the 1959 entries (which must be submitted by March 31st), primary consideration will be given to: originality of design of new or established applications of copper and copper-base alloys; development of new products or improvement of marketing techniques; contributions to science or research through the application of copper metals.

Steelmark adopted by industry

When U. S. Steel discovered, through a special survey conducted two years ago, that the public thought of steel as being "strong, heavy, and reliable, but not particularly modern or having good styling," the company included in its new corporate identity program a "Steelmark" designed (by Lippincott & Margulies) for use in labeling products made of steel and for the purpose of creating a more favorable public image of the material. USS hoped that the symbol (above right), which was designed to convey the idea of a light, modern, versatile material, and which was not registered, would be used by the other members of the industry for promoting the use of steel generally. (See ID, October, 1958.)

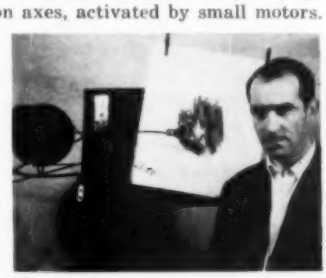
The question however, was, whether competitors of USS would accept a promotion symbol that was part of USS's corporate identity program and which bore so obvious a graphic resemblance to the USS trademark. The American Iron and Steel Institute provided the answer early this year when it adopted the Steelmark for industry-wide promotion, lock, stock, and hypocycloids. So far, 56 companies have set up Steelmark promotion programs, among them such major producers as Republic Steel.

Whether the adoption of the symbol

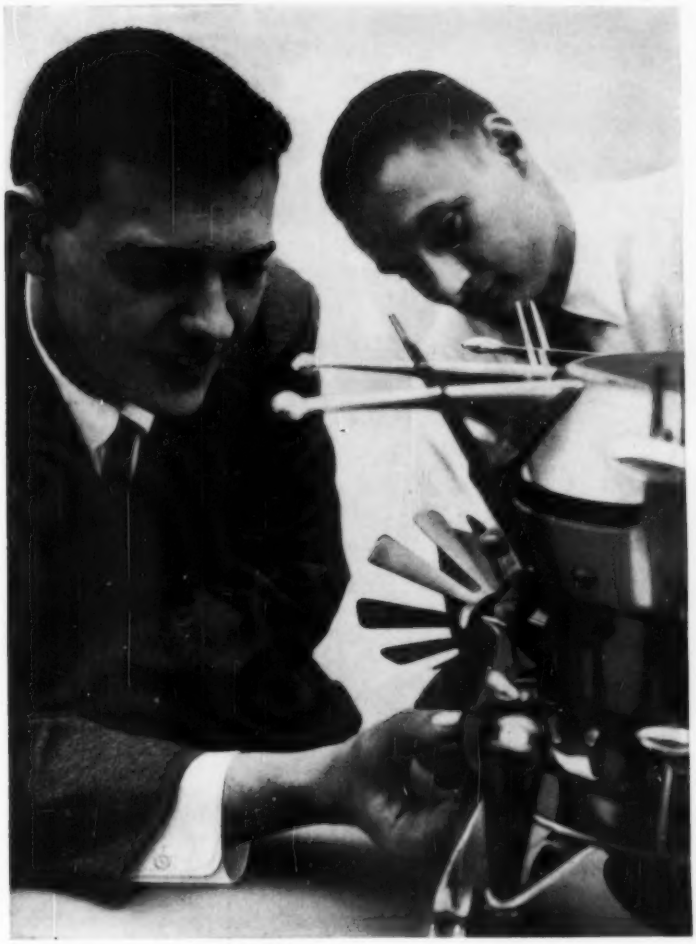
makes steel in fact any lighter than it ever was is still another question, but it hasn't been asked yet.

Put Another Nickel In

A coin-operated machine that paints paintings was introduced in New York last month at the Staempfli Gallery. The creator of this strange machine (and also of sculpture that doesn't stand still) is Jean Tinguely (below), 33-year-old Swiss artist, working, or at least putting nickels in the slot, in Paris. Rather than make drawings himself, Tinguely has invented a "metamatic" machine which, like its creator, is an abstract expressionist. It makes the drawings for him (or for anyone else who has a nickel) by setting in motion long black wire arms whose clamp-hands hold ink pens or colored crayons against paper clipped to a board. These anxiously creative machines, which are moving sculptures in themselves, are actually "anti-machine" in that they never repeat themselves and each resulting composition differs from any preceding it. The philosophy behind Tinguely's work is his belief in the syllogism that if all art is life and all life is movement, all art is movement. His art has no beginnings or endings, only constant transformations. Tinguely's other moving sculptures do everything from the jolting and jangling of his early works (about 1953-4) to the gentle turning and gliding of the recent works in the process of creating an infinite number of compositions. The sculptures consist of pieces of metal—often white, jagged Arp-like shapes—supported on axes, activated by small motors.

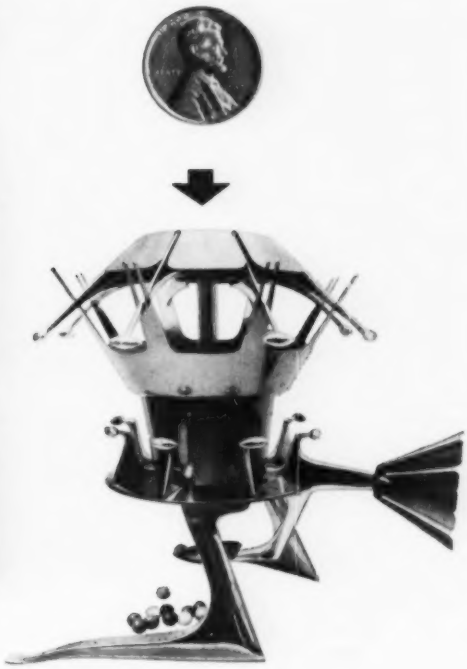


Tinguely



Student Arthur R. Goodbread, Jr. (foreground) and instructor D. Lee DuSell examine the full-size working model of the remarkable gumball machine. It is made entirely of aluminum.

ALCOA
STUDENT
DESIGN
AWARD



ARTHUR GOODBREAD'S AMUSING ALUMINUM GUM MACHINE has earned an Alcoa Student Design Award for the Syracuse University senior. This award is part of a fully integrated Alcoa program with leading design schools and is administered under the direction of the school faculty.

His class was assigned a vending machine by instructor D. Lee DuSell as a problem in creative design. It was to be attractive, entertaining and different. It was an opportunity for the student to invent something. Goodbread's machine was chosen the "most complete" solution, according to Arthur J. Pulos, director, Industrial Design Department, Syracuse University.

Made entirely of aluminum, the machine attracts both young and old with its unusual design and bright colors. When the customer drops his penny into a hole in the top shell, things begin to happen. The penny falls through a shaft and unlocks the handle. The customer slides the handle 180°. This action separates the two shells by raising the top shell and permits the gumball to fall to the base of the shaft. The handle returns to its original position and locks. Gravity then permits the top shell to descend to its original position. Its descent activates a gear system which spins the brightly colored pinwheel and, at the same time, ejects the gumball out into the delivery cup. And, all for a penny!

Goodbread found that aluminum provided the versatility of color and texture at low cost . . . the formability for economical mass production of parts by casting, spinning, stamping and machining. His Alcoa Student Award is another in a series intended to encourage and reward college students who already show great promise as designers.

ALUMINUM COMPANY OF AMERICA • PITTSBURGH 19, PENNSYLVANIA

Events and Awards

Lightolier, Inc. has opened its largest and newest showroom in Los Angeles. (below) Designed by **Neil Oppenheim**, it features individual areas displaying formal and informal residential lighting, garden and patio lighting, and commercial and institutional lighting. A garden area with pool and plantings shows the use of garden lighting.

The Electronic Components Division of the **General Electric Company** has announced the establishment of an "Advanced Product Planning Operation" to study opportunities for developing new products and applications for use in electronic equipment. **Dr. Martin Edwards** (right) has been appointed manager of the new operation, which will be headquartered in Schenectady.

The DuBois Company, Inc., Cincinnati, has adopted a new trade-mark designed by **Jack Gunderman**, the company's exhibit manager. The design is said to symbolize the company's growth into new fields.

The IDI is accepting submissions for the **10th Annual Design Award Program** through midnight of May 14, 1960. The judging will take place on May 20th, and the results will be announced and medals presented on June 23rd, at a luncheon to be held in the Hotel Ambassador, Chicago.

Senior college status has been accorded to the **New York Institute of Technology.** The State Board of Regents empowered the school in January to offer programs leading to the Bachelor of Science and Bachelor of Fine Arts degrees. The school's curriculum includes courses in art and architecture, design technology, business, electronics, and allied fields.

People

APPOINTED: **Pietro M. Audino** and **Joseph M. Pezely, Jr.**, to the product design department of Corning Glass Works. . . . **Christer Barlund**, Finnish designer, to the staff of Sundberg-Ferar, Inc. . . . **David Bishop** (right) and **Dominic Saporito** (right) vice presidents heading package design and product design respectively at Harley Earl Associates. . . . **Gordon Sylvester** as senior product designer in the Roger Mark Singer office. . . . **Michael Farr** as Chief Information Officer of the Council of Industrial Design, London, replaced as *Design* editor by **John Blake.** . . . **David Seidler** as packaging coordinator for Chesebrough-Pond's, Inc. . . . **Joseph H. Zuelke** as Art Director and **William A. Lunsford** as Manager of Research and Development for Consolidated Paper Company. . . . **Charles W. Carvin, Jr.** as Director of Merchandising, **John L. Gillis** as member of the Board of Directors, and **Theodore D. Betsch** as consumer products technical specialist for Chemstrand Corporation. . . . **Lloyd Clark** as director of Bolles Gallery, San Francisco. . . . **Richard F. Smith** (above) as Assistant Director of Styling for Armstrong Cork Company's Floor Division. . . .**Harold L. Dsenis** as staff industrial designer for the Corporate Product Standards Department of Beckman Instruments, Inc. . . . **Don A. Plett** as manager, product design, for the Cincinnati division of Bendix Aviation Corporation. . . . **Richard L. Pelzman** as vice president in charge of Marketing Services for Donald Deskey Associates. . . . **Charles R. Colbert** as dean of the Columbia University School of Architecture. . . . **Frank P. Bennett** as associate with Paul McCobb Design Associates. . . . **Peter Augusztiny** as Director of Design for Superior Sleeprite & Spring Bed Corporation. . . . **James P. Beury, III** and **Earl Mayea, Jr.** as staff members of Harper Landell & Associates.

IN THE NEWS: **Raymond Spilman** participated in a forum discussing "Generalization versus Specialization" at the Philadelphia Museum College of Arts on Feb. 10.

Company News

RETAINED: **William M. Schmidt Associates** by Amana Refrigeration, Inc. . . . **Leon Wirch Associates** by Steelman Phonograph Corporation. . . . **Raymond Loewy Corporation** by Borg - Erickson Corporation, United Parcel Service, Picker X-Ray Company, Atlas Powder Company, Caloric Appliance Corporation, and Hilton Hotels Corporation. . . . **Smith, Scherr & McDermott** by U. S. Department of Commerce's Office of International Trade Fairs to design the U. S. space at the Jeshyn International Trade Fair in Kabul, Afghanistan, scheduled for August 23-30, 1960.

Edwards

Smith

Saporito

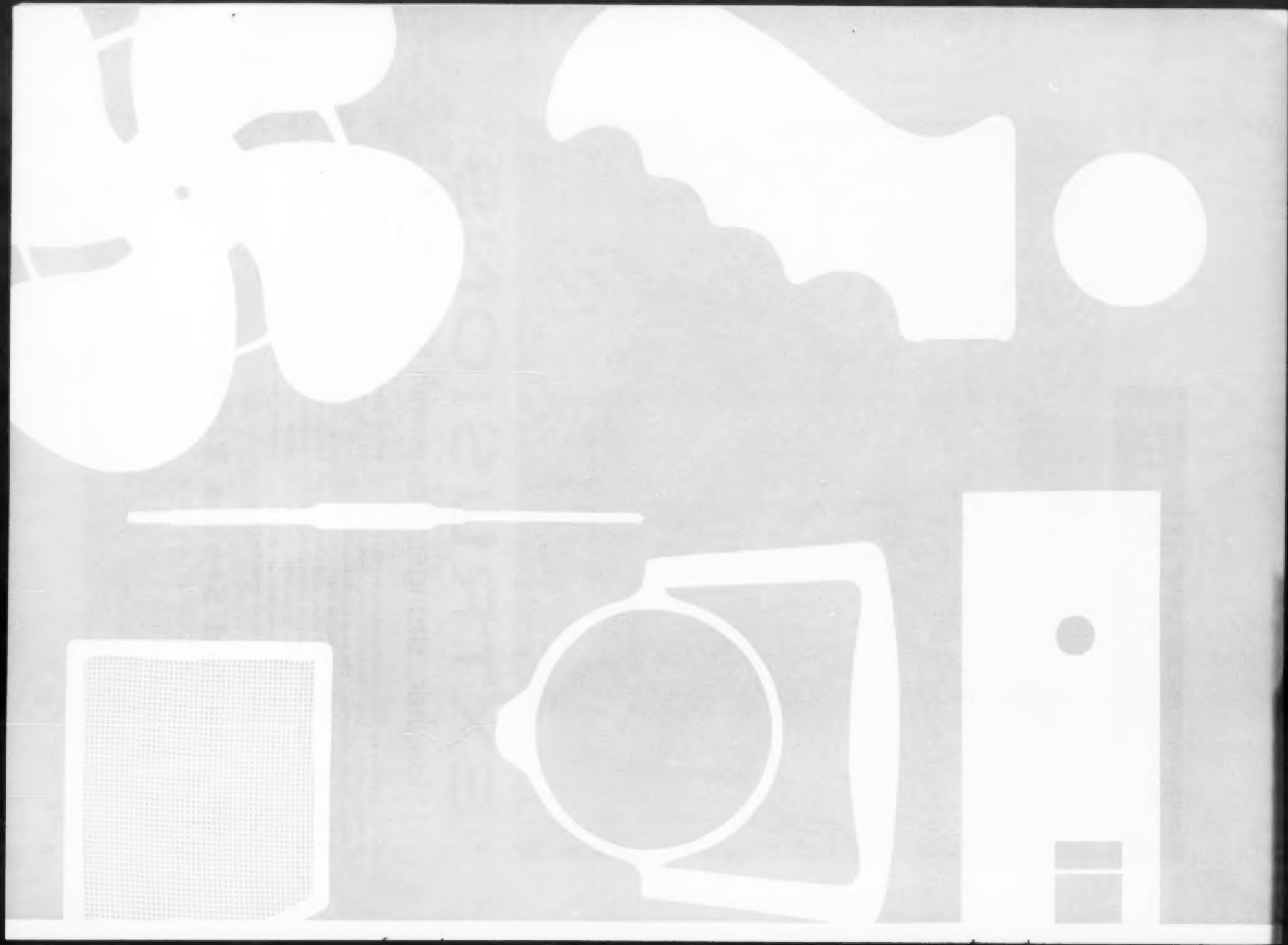
Bishop

ESTABLISHED: **Plastics Chemical Division** by National Cleveland Corporation, 1984 State St., Bridgeport, Conn. . . . **Norman Associates**, 417 Barclay Building 1 Belmont Ave., Bala-Cynwyd, Pa. design consultants for business and industry. . . . **Theodore S. Jones & Co.**, 60 Adams St., Milton, Mass., a national search, evaluation and placement service for designers and supporting personnel. . . . Under the slogan "We Make Stainless Painless," **Albany Products Company**, manufacturers of fasteners, in Chicago.

GOING PLACES: **General Dynamics**, 9 Rockefeller Plaza, N. Y., Sept. 1, 1960. . . . **Ehrman and Reiner, Inc.**, 9 East 45th Street, New York 17. . . . **Brunn Associates**, 13a Old Burlington Street W1, London. . . . **Klein Wassmann/Design**, 11 East Walton Place, Chicago 11. . . . **Norman Hansen**, 8467 Beverly Boulevard, Los Angeles 48.

Adriano Olivetti

Adriano Olivetti, who has probably been responsible for the production of more good design than any other single industrialist in the world, died February 28th of a brain hemorrhage. He was 58. Well known for his profit-sharing and employee-benefit policies, and for his extensive community-development projects, Olivetti won acclaim for the architecture of his company's factories and the design of its typewriters and office machines, and advertising. Himself the winner of the Compasso d'Oro grand national prize in 1955, either his portable or office typewriter (Marcello Nizzoli, designer) has figured in virtually every major design exhibition in recent years, and the Lettera 22 led the list of "100 best designs" compiled in 1958 after a poll taken by I.I.T.'s Institute of Design.



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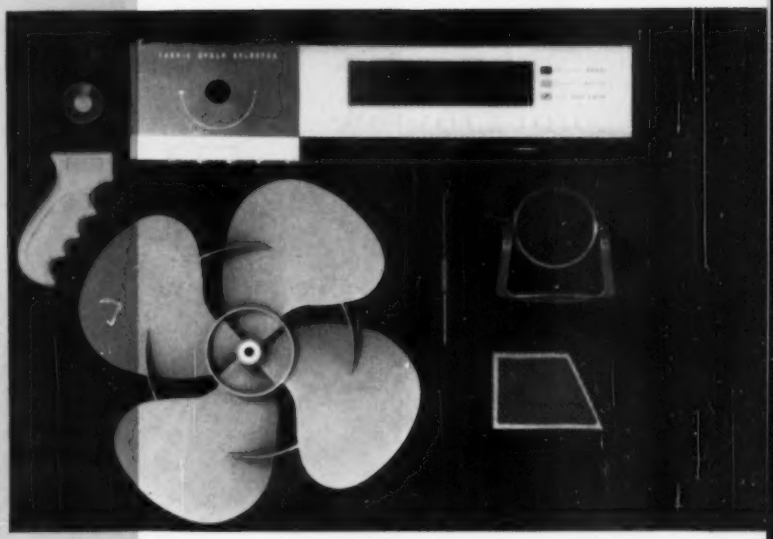

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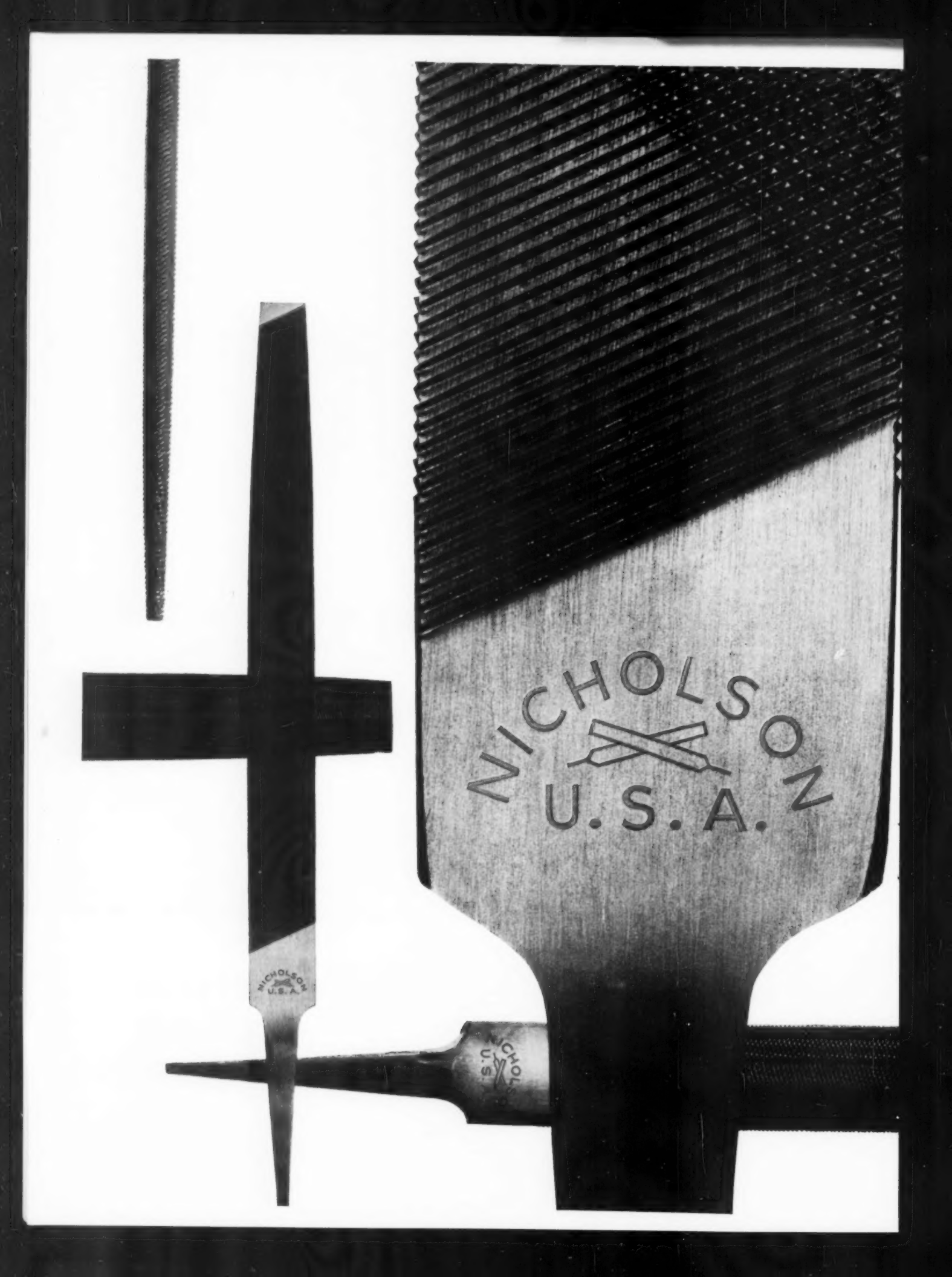
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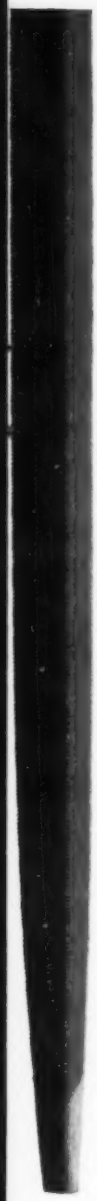

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Nicholson files and rasps, manufactured by the Nicholson File Company of Providence, Rhode Island, are regarded by tool experts as among the finest in the world. A long history of experience and research has taught Nicholson craftsmen how to make good, long-lasting products.

In file or rasp-making, preparation of the steel is paramount. After precision forming, the steel is carefully heat treated to develop uniform internal grain structure. A reciprocating chisel cuts the teeth, then the file or rasp is heated in a lead bath and quenched to develop hardness. It is cleaned and sharpened by sandblasting, the tang is heat treated to improve toughness, and the file is finally inspected.

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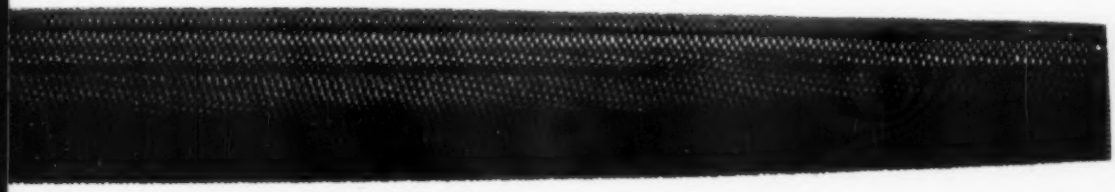

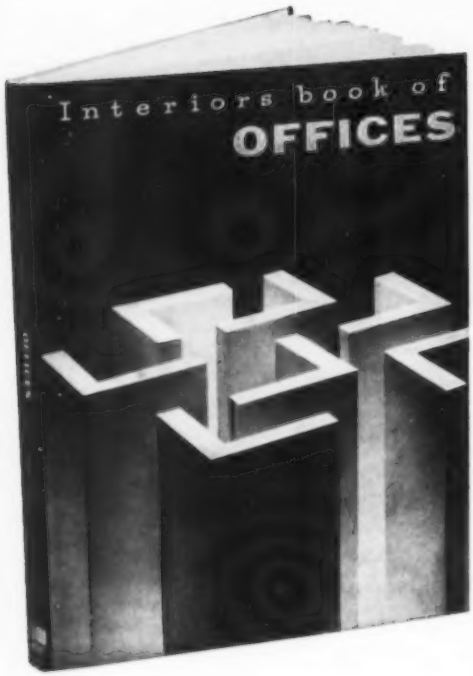

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the Industrial Designers' Institute announces

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the 10th annual design award program

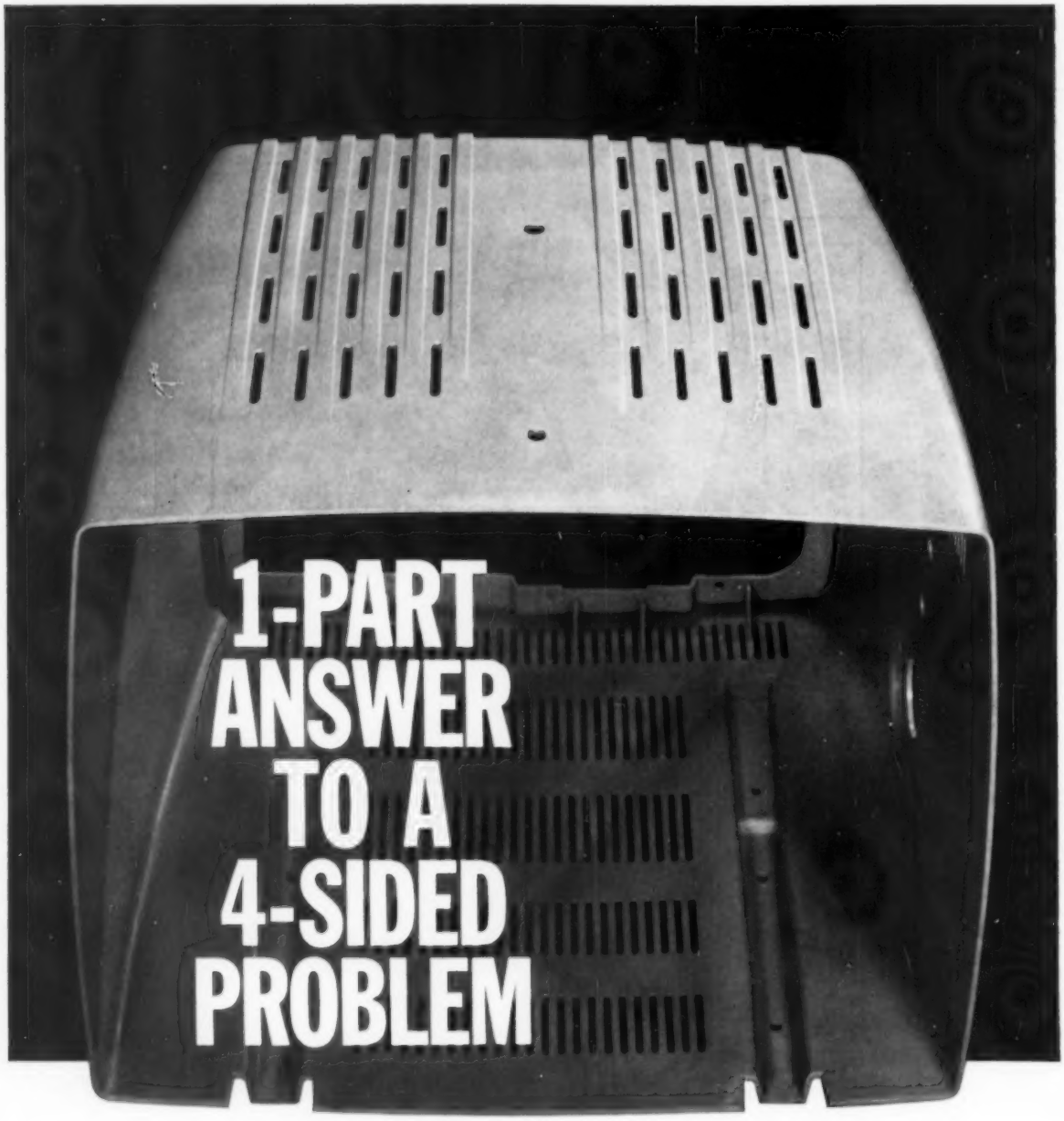
1960 — marking a decade of recognition to designers

The IDI Design Award is a token of recognition bestowed on a designer or team of designers for outstanding design of any product mass produced prior to May 1, 1960. The award is open to all designers regardless of affiliation.

Submissions Entries may be made either by the designer himself, or by anyone else on behalf of the designer. Copies of the submission form may be obtained from the Chairman. Forms must be returned, postmarked no later than May 14, 1960.

presentation Announcement of the designers to be honored and presentation of the award medals will be made at a luncheon on June 23, 1960 at the Hotel Ambassador, Chicago.

Request forms from Paul R. MacAlister, Chairman, 1226 North Dearborn, Chicago 10, Illinois.



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To the Reader

This is the spot where editorials usually are found, but this is not one. If persistent and curious, you will find an editorial further along the way in a position of commentary on what you will, by then, have read. This page, this month, proposes to explain how and why this issue differs in form, content and purpose from all previous ones. It is devoted to some 40 articles and excerpts by foreign critics and a few designers, distilled from hundreds of issues of design magazines published in 12 countries since 1955 and, with the helpful additions of two traveling young American designers, compiled into an anthology of timely material not widely available in this country.

The question to which all of our articles address themselves is, basically, style: What is it? Is there a valid basis for it today? But the first question that needs answering is: Have Americans anything to learn from Europe about style? One can say flatly that design in Europe is different from domestic design. It is easy to *see* the difference in products, and explain them by conditions, such as economic imbalances and different living standards. Industrial design on the older continent is a younger profession than it is here, because large-scale production and competitive marketing, with its pressure for continual redesign, are only now taking hold in Europe.

Is there a difference, too, in the designer's state of mind? Overseas, he puts out fewer products and more words about design than his busy American counterpart. "We don't have to philosophize," says one U. S. professional, "we take out our emotions in continuous designing." True? Not wholly. Professionals here find time to discuss "the corporate image" and "client relations" while too rushed to discuss "beauty" and "morality of form." But is this really for lack of time and thought? Doesn't this really go back to a traditional belief, as old as the depression-born profession itself, that to sell itself to business, industrial design had to adopt the standards of business, and cut itself off from the American arts? Our self-willed isolation has had curious effects, among them the lack of a critical tradition among designers and the lack of any active school of professional critics who support the designer in his search for valid expression and purpose. There are many ramifications to this critical void, but they boil down to this: U. S. industrial design itself has not believed in criticism or accepted it, because it grew up on business' belief that *you can't criticize design if it sells, daren't criticize it for fear of harming sales.*

Is this perhaps the vital clue to those design differences? The European designer accepts criticism as any artist would—as nourishment, help, insight. He is, or wants to be, an artist, whether he choses to work as a potter, engineer, architect, or designer. His qualification to that title come not from a few courses in airbrush technique, but from early absorption of culture through all his senses, reinforced by tradition, education, environment. This innate sensitivity, this awareness of the rich and varied possibilities of style, seems to be secondary to our tradition, hence to our design education.

Curiously, the European designer today is trying to become a better industrial collaborator by deemphasizing art (which he no longer has to emphasize). The American designer, in turn, is shifting concern from the business image (which *he* no longer has to emphasize) to those esthetic problems that were once openly scorned. The major reason for both shifts is the recent upheaval in the profession's ideology—the mother-concept of Functionalism (see overleaf). It has affected designers on both sides of the Atlantic, and over there, provoked a good deal of published evaluation, too. That is why we compiled this issue: to make available European writing that might be valid or provocative for the American designer as well. Of course we do not agree with all of the inclusions (viz. marginal notes), nor do they agree with each other. Yet perhaps one or more among them will please you or provoke you or "speak to your condition." If you find that all the mysteries of design are not herein explained, take heart from Sr. Sottsass (page 92): "There is simply nothing to explain: that's the way things are, thank God."

Jane Fiske McCullough

NEW PROBLEMS OF STYLE IN DESIGN

Foreground problem: THE RISE AND FALL OF THE FUNCTIONALIST STYLE

Functionalism: Where did the word come from? What does it mean, and did it always? Since much of what follows turns on that word, household familiar as it is, it seemed only proper to pin down a definition. We asked a friend to help out. "My first association links it with the coming of the Machine Age, probably in America. Then I recall the Bauhaus and Morris' misty figure, which suggests a vague triangulation of sources that should, somehow, include Wright and Sullivan as well." Our friend is a kind of visual illiterate redeemed by a broad miscellany of culture. We would claim that our image was more scholarly, but we do confess to some shock when, after a fruitless review of the documents of the Modern Movement where we recalled all kinds of definitions (non-existent), we found ourselves digging back among the Greek philosophers and most of the spokesmen of religion and morality from then to now. In fact, if there is any consistent color in functionalism's chameleon history, we found it to be derived from almost continuous contact with moral preoccupation in art—quite apart from specific styles. Originally, and for many centuries, functionalism was the province, not of artists, but of philosophers, whose job it was to study and define "beauty" as part of their larger pursuit: the nature of reality. Thus functionalism, in the sense of "fitness," began as a step in defining philosophical absolutes—truth, virtue, beauty, or divine law. Finally, in the sense of utility, it became an absolute to check irresponsible (unacceptable) "beauty."

Continuing our scholarly digging, we learned from De Zurko's fine study of functionalist theory in architecture[1] that rationalist philosophers have generated most theories of fitness and utility because they struggled tirelessly to clarify the meaning of "relative" (earthly) beauty vis-a-vis "absolute" (divine) beauty—and fitness helped anchor the definition. This dichotomy, along with numerous other persistent precepts, was inherited from Plato, who believed that Absolute Beauty was "good" and "true", and that contemplation of beauty led to virtue, even if the beauty was only the relative or inferior beauty of material things that merely reflected the order of the divine Idea. Distrusting what was known through the senses, Plato sought higher art forms that could be understood by logic, and arrived at geometric forms whose mathematical proportions reflected cosmic order—therefore, were virtuous.

This whole relativist philosophy proved remarkably adaptable to the quite different concerns of later periods in art history. Gothic: "Integrity and truth to purpose is an expression of divine purpose" (St. Thomas). Renaissance: "Nature's mathematical order is the basis of form" (Palladio). The Age of Reason, bursting with new social and utilitarian convictions, saw in the efficiency of machines the perfection that equalled relative beauty. In Britain, Berkeley, among others, attempted to resolve the ancient split by declaring, "Beauty is apprehended only by relating the form of the object to its use." Across the channel, the architect Ledoux took another strongly functionalist stand with Platonic overtones: What is attractive in machines is their *essential* quality, he maintained, calling for a return to pure geometric forms "whose proportions, symbolic of virtue, can satisfy human needs."

John Ruskin's important contribution to a machine-age esthetic was also based on moral, social, and religious fervor (the very word "esthetic" he denounced for lack of moral content). "Little besides art is moral; life without industry is guilt; industry without art is immorality." Ruskin, too, admired simple forms in architecture, believing there was one "right" way to use ornament to make people happy: derive it from nature. Calling for "truth to nature" in all things, Ruskin deduced from moral principles the practical ones that soon shoved out the esthetic view of art and life—an approach too elusively sensuous for a common-sense age.

Into this simmering pot, the 19th century poured some highly combustible ingredients: vast social and economic changes by industrialization that left a gulf between artist and society; the perceptible breakdown of religious views and the substitution of "natural" morality; wild enthusiasm for the products of mechanization, and equally wild criticism of the physical and human chaos in its wake; a reaction against "beauty" and idyllic sham classicism.

It is not surprising, perhaps, that architects stepped forward to shoulder these problems, for they had both utilitarian ideals and technical skills to contribute. One main result was that "esthetics" passed from the pure realm of abstract philosophy to the real world of social thought and action. The architect became both the esthetic philosopher and the spokesman of society's conscience (and his own). Thus, where earlier centuries had used esthetics to achieve moral ends, the architect-philosopher began to use morality to achieve esthetic ends. The distinction, at first, was very subtle, for he, of course, saw his view merely as the "right" and practical solution to pressing social problems. In England, William Morris protested the "dishonesty of debased industrial production" (1877).[2] In Belgium, Henry van de Velde spoke out for "fitness of purpose in furniture and building," while the Viennese architect Adolf Loos decried ornamentation and defined beauty in art by the degree to which "it attains utility and harmony in all its parts" (1898). George Muthesius wrote in Germany about "Sachlichkeit," perfect and pure utility (1901-02), and stated that "the problem is to create a new style, a Maschinenstil," whose standard was to be set by the new iron bridges and halls whose shapes were "completely dictated by the purposes they serve." And in America half a century earlier, Horatio Greenough greatly admired the perfection and simplicity of machines, and propounded that morality of form came from "absense of concealing ornament." To this kind of

1/2/3 See notes on page 103

fitness he gave the scientific term "function," taken from writings on evolution and later popularized by Sullivan.

Yet there was, so far, no agreement on the exact image of this idealized "utility." Morris designed neo-Gothic artifacts to restore the "virtue of making by hand." Van de Velde expressed fitness in his own language of Art Nouveau ornament. It was the pioneering engineers who finally came up with a strong image—that of their strikingly bare, unornamented structures in iron and steel. This image gave strong support to the Loosian belief that ornament, being useless, was evil and an enemy of true machine art. The image became more specific with the founding of the German Werkbund (1907), to "reconcile Arts and Crafts and the machine style," and with the merging of a craft school and an art academy in Weimar, to form the Bauhaus under Walter Gropius.

Behind these dynamic changes we can detect several drives: A generation of artists sought a meaningful role in a new society, hoping to escape tasteless Victorian eclecticism and the "corruption" of man-made beauty by absorbing the unspoiled approach of engineering into art. They wished, too, to achieve an objective and eternally valid standard of taste for the masses who lacked the guidance of social elite. And, as fine art was finally granted independence from religious purpose, they were perhaps eager for some new moral purpose to guide and regulate its freedom. All of these drives were synthesized in the "modern style" in architecture that took hold after World War I; its "inherent honesty," its "geometric purity derived from utility" offered a pleasing esthetic with strong moral justification and little room for vagaries of taste, emotion, or "art" in the old sense.

What is important, in this crystallization of modern functionalism, is not only its motive force and deviations of logic, but the long-term value of its artistic products. In Europe, as Mr. Banham points out, the architect-philosophers had their own strong artistic image of a suitable machine style, and used functionalism to justify it morally. The fact that the image resembled the machine was functionally fallacious, but artistically important: it was an apt image for the time, and their imaginative treatment of it in architecture and design inspired fresh and creative work in others. In America, on the other hand, functionalism steered a different course. As the echoes of "form follows function" lingered on, as ideas of the "modern style" sifted in from Europe and mingled with the tradition of Yankee ingenuity and the urge to tinker, improve, simplify, Functionalism took root as a word that grew two branches: architecture slowly went its way with it, while industrial design took it on almost as an operating slogan. Since industry here had no handcraft tradition to combat, the emphasis shifted from production-functionalism (which prevails still in Europe) to use-functionalism. For several decades this approach served not only the American consumer, but the designer: it increased his value to industry, gave practical guidance through virgin territory, and supplied an all-embracing vocabulary of beauty-by-example at a time when he was too busy, and too inexperienced, to develop one of his own.

In short, the American brand of design Functionalism grew up not to camouflage an esthetic urge (as Europeans used it) but to *conceal* the early lack of one. This in itself was no discredit to Functionalism or its products, which were creditable as long as designers drew vitality from its modern meaning: since contemporary problems are unique, wholly new forms must be invented to solve them. But gradually the rich blood of invention was squeezed out of Functionalism by a rising wave of stylistic preoccupation with good and bad, essential and superficial, and with a purist ideal of which there were an increasing number of examples. This strangulation was accomplished, we submit, largely by professionals themselves, probably in a desperate quest for visual rules to fill in for esthetic convictions that were slow to develop.

Is this the fallacy that many designers have been recognizing in recent years? In any design task, even the strictest solving of a practical problem, there is no single answer in form, no absolute "truth," no escape from innumerable choices of eye, emotion, and intellect. By following an external style, a designer may be "right" but not often original. Seeking personal expression, he risks looking wrong. In either case Functionalism, viewed only as a style and not an approach, offered no sure answers. So, increasingly, critics condemned it and designers abused or abandoned it.

Certainly this fall from grace has implications for every designer, regardless of his allegiances. For the re-evaluation of functionalism is a breakthrough for the whole profession, and like all breakthroughs this one leaves a trail of questionmarks and faces a sea of uncertainties. That is what this issue is about and why these articles were written. They attack the objective in a dozen ways, but all are closing in on the same uncertainties. What truths are there to hold on to now? What absolutes remain? What, now, can we believe to be a valid basis for style in industrial design?

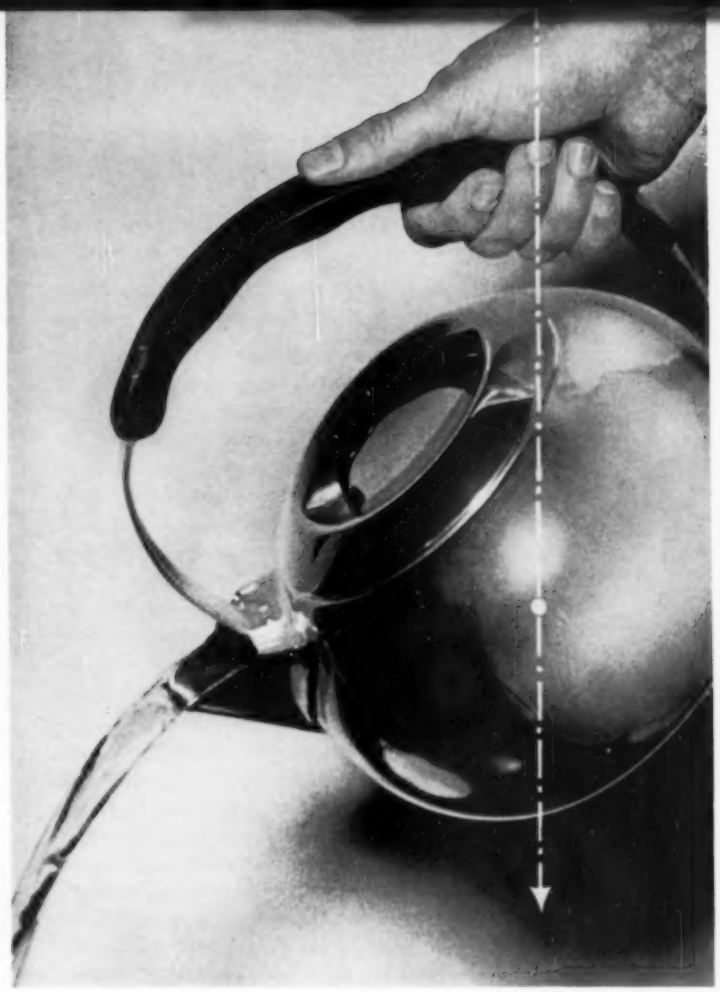
For the following discussion of style, let us define what seems to be its commonly understood meaning: Style is like a language with its own expressive means, and *form* is part of its language. It is personal (whether to man or nation), expressive, and coherent, though not necessarily consistent at all times. It is not *taste*, which is the collective mannerisms of a period that may derive from style. And it is not *styling*, which is the application of isolated elements of style as mannerisms, without unity. *The creation of style is not by styling, but by design.*

In isolating style, we are not turning our back on engineering, materials, technology, or human factors, or the fact that the designer must straddle all of them. Yet, for this moment, we wish to focus on just those aspects that we see, feel, live with, the individual feeling of a product that is its style—and its appeal to people.

J. F. McC.

industrial design must not be equated to "cosmetics" for consumer goods. Beauty is only a part of the problem, although a very important part; the functional concept also includes the economical production processes by which a product is formed. Quite often, well thought-out designs lead to more economical production methods, and economical production leads in turn to improved design of the product. Here is a principle worth contemplating, because it explains "design" in terms of precision and simplification. An example is the new kitchen kettle developed for greater convenience in use. Not only was the elegance of line increased by redesign, but the number of production elements was reduced. This combination of economical and emotional design components also opened up hidden reserves of quality. . . . Success depends on regarding product design as an important part of production planning.

Erich Geyer
Graphik, September 1959



Two views that bracket today's problem

Though in mechanics it is not much different from preceding models, the profound revolution in the form of Nizzoli's Diaspron 82 points out new conditions today:
— Evolution in the form of industrial products is much more rapid than mechanical changes because of market demands, and so far the designer has not been able to control this commercial fact.
— It is no longer true, as many assume, that technological factors completely determine the character of production. It is time to see that, through creative research, cultural and esthetic pressure is extremely influential. The dominance of esthetic over technical attitudes that we see today in many products foretells the end of an industrial phase — it has reached its peak and now prepares for reform or even profound revolution. Nizzoli's recent experience in redesign is not personal or isolated, but a symptom of the changing premise of industrial design.

Alberto Rosselli
Stile Industria #24/1959

You will find on the facing page two views representing opposite and equally current views in European thinking about style. They bracket the problems that our authors explore on the next eight pages: Where have we gotten our current notions of style? To what degree are we victims of our time? How much do we control and understand our

HERITAGE

Is There A Modern Style?

by Josef Franck

February 1955

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Style is not changed by practical causes but by ideological ones. Every new world view, no matter what inspires it, demands a new style. And it almost always develops in the same way: to begin with, the style is very simple, in order to express its core ideas clearly. Then embellishment follows, not only to get away from uniformity but also because the ideology itself becomes blunted with time, and its value starts to be doubted. Then come variations of all kinds, until the style finally collapses in decorative and constructivist play, and eventually a new style breaks through with renewed simplicity.

Now all stylistic architecture of the past was based on a mystic belief. In the spirit of this belief, man's feeling demanded an all-embracing style, because every mystic belief is based on the idea of universal harmony that achieves visual earthly expression in a unity of style, in a universal style. This means that the forms and symbols were not contained within the boundaries of architecture, but were applied to everything, both art works and everyday objects. (We can see in totalitarian states today how such stylistic unity is prescribed as a way of giving support to more or less imposed belief.) By historic styles, I mean what is concerned with something closed and concluded. To whatever school it belongs, its purpose was to express visually the poised and static nature of individual elements: columns, arches, and so forth were so formed that the eye could easily understand the balance of forces, and feel reassured. For the same reason columns acquired capitals and bases to show

Francis: that they could sustain heavy weight, and arches acquired profiles. With the help of such static symbols, sculpture became an essential part of architecture and architecture became art. Not infrequently, particularly in the case of facades, architecture was nothing but sculpture pasted on the walls.

The sculptor invented these static symbols, and according to their coarseness or refinement the building would develop a definite character. And the symbols had not only a static but an ideological meaning, varying with the style, and were the most essential ingredient in all historic architecture.

By modern architecture, I am speaking of all architecture that does not employ static symbols. This omission can take place in various ways, and does not have to lead to any one single style. It would be quite incorrect to assume that these symbols were formerly used only for decoration. They were necessary because of man's belief of the *soul in things*: he saw, in the parts of a building, forces that had to be conquered, and without this static accounting or resolution of them, the inhabitant of the building felt insecure.

Stylistic unity disappeared when metaphysical world views collapsed. Realistic scientific thinking cannot be reconciled with a universal style, but demands rather that each thing be seen for what it is. The dissolution of style started in the 1800's and is still going on. It is easy to see why it takes so long to get rid of superstitions that have held sway for centuries (I will not call it tradition, for it is the European tradition to make use of all possible aids for practical purposes.) The various historic styles of that time received eclectic application — that is, they were taken out of context, and used to characterize any job at hand in the light of the ideology linked to them. Churches were built in Gothic, banks in Renaissance. This results from a very materialistic way of thinking that is unimpeded by any sort of belief. The man who thought in this spirit could say to himself, "Ich kann alles machen was ich machen kann." And he meant that with modern resources

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Design Oration
by Stephen Spender
January 1959

SIA JOURNAL

Of course thousands of different lines can be, and are, arrived at for "efficiency of function." The laws appear quite flexible, as later authors note.

For me, the high point of excitement about the modern art movement was in the early 1930's when I went to Hamburg and stayed often with a friend who had a very modern flat. This flat had white-washed walls with windows like long horizontal slits. The furniture was all rather low and tubular; divans almost like mattresses lying on the floor, chairs of tubular steel, tables of three-ply wood, ceramics from Sweden. It wagered everything on this new life that had to remain eternally new, just as nudism wagers everything on nudists having beautiful bodies. It was really the new emptiness which we were trying to fill with the enthusiasm and glamor of our youth.

The philosophy of functionalism was also rather fashionable in the 1930's, meaning that whatever is designed exactly to suit its function is bound to be beautiful. As an example often given to me, the lines of an airplane are perfectly adapted to the purpose of the machine, which is to fly. They are arrived at by the designer with one purpose only—efficiency of function. An airplane might be described as a sculpture made by laws of aerodynamics achieved through the mediation of human beings acting simply as agents of those laws. The beauty of an airplane, moreover, can be used as a standard by which other objects are criticized. Thus those early machines disguised as columns of the Parthenon, which might turn out to be sewing machines or fire engines, and those exaggerations that characterize American automobiles, all stand condemned for nonfunctionability.

he could form the old styles better than had been possible in their own time. Thus were born not only the ugliest but also the most useless contraptions that the history of architecture knows — but what matters is, the belief in any significance of universal style was broken.

The fact that the man-made world steadily became uglier is often blamed on the absence of a universal style, on the fact that the period was incapable of finding its own expression. This of course is untrue, for it was precisely the mixture of styles that was the characteristic expression of a time that lacked the mystic belief that must underlie stylistic unity. If we now accept the fact that such a belief is the prerequisite of a universal style in any period, it hardly seems desirable to strike again for a channeling of forces that would cost us dearly. I believe that, if we are to re-establish the world's lost harmony, we must attack the problem from another angle: we must accustom ourselves to think and act in *contrasts* — not only in analogies — even if it takes more brainwork.

For example: Architecture today can only in the rarest cases be art, notably when its practical goals are very simple and do not make unreasonable demands on the significance of form, as in churches. Architecture without sculpture is left to its own devices — the grouping and proportioning of masses — and it is our job to create a kind of sculpture, a plastic composition out of these inherent forms. Yet buildings that simply fulfill their mission have nothing to do with art. We are no longer in a position to form all our objects with plastic sensitivity. We also need things that belong in an entirely different world of ideas. These are the mechanically produced objects of use, whose form is determined by use and which we cannot do without. In a plastic sense they belong to a different area, but their usefulness does not demand that all sensitivity be cut off just to promote a common harmony. We must accustom ourselves to a harmony of a new kind, which can include both those objects that are freely and sensitively created and those that are limited by functional demands.

A view quite contrary to those that seek artistic re-integration at every level. It is appealing to think that sensitivity is possible without striving for "art" in everything.

In truth, the growth of art and design concepts in our time has not shown the ability to make these distinctions, but quite the reverse. In the period of Art Nouveau, people tried to turn everything into art, and the movement ran aground on the ever-more-practical demands that could not be satisfied by art

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All the same, functionalism is inadequate as an esthetic creed. It may be true that rockets and aircraft are beautiful (if that is the right epithet) but if one considers them as works of art they do not seem to fulfill some of the criteria that give art its function. They do not stand still, they cannot be put in a museum or gallery (or, if there, cease to have function and become something else). Similarly, any art—like that of Brancusi—that seems to derive from admiring functional mechanistic forms, is not functional for the obvious reason that it creates an object that does not do the things an airplane or turbine does. The functionalism of an airplane is that it creates an image—a model—of natural forces in order to deal with them. Brancusi and Pevsner have made a myth of the functional just as Botticelli used another kind of pagan myth. To make a work that rests upon a myth is very different from making an object that really is the myth—or the reality behind the myth.

Of course, there is some reason in claiming that utility objects can be beautiful because they achieve some exact ideal of the function they exactly perform, as does a turbo-jet engine. But it seems to me that outside a fairly small range of objects, functionalism is often used mythologically. Objects in which function is equated to design are either so complex that there is room for little except function—as in the airplane—or else are so single in function that nothing else can be added to them—the saucepan, for example. It is quite clear that both these are functional. Between these extremes are many objects of utility that are indistinguishable from works of art, and which may in fact occasionally be regarded as the one, occasionally as other, or all the time as both. The most obvious are teacups and vases, but we could extend this to ash trays, curtains, furniture, stamps, coins, and perhaps fountain pens.

Clearly much confusion about the meaning of "functional" now comes from this difference of latitude in free choice, and in defining what "purpose" means.

Franck: objects. With the growing worship of the machine, utilitarianism acquired an outright religious glorification, and the time was ripe for a new style of unity: puritanical functionalism. One of its dogmas was that all form for the sake of art must be abolished as harmful to usefulness (how absurd, for it is axiomatic that every work of art is an end in itself, thus without a specific goal). So there arose a style that sought to prevent all free choice in matters of form; all forms must give the impression that they had been produced by machine. Everything, everything, no matter whether it fitted with function or not, was pressed into geometric forms to create a new universal harmony, and the plastic arts tagged along willingly in the hope of getting in on the bargain.

Reducing free choice was inherent in "standardization" that would create a reliable mass taste. Banham agrees, and has more to say about geometry on page 45.

But it is in no wise desirable to elevate every object to the level of art. The cleavage between art work and object of use is widening daily, and unless we can distinguish the two, neither can fulfill its potential. We do not need a universal style, but we might wish instead that each thing be given its characteristic form. The style we called functionalism, by altering the whole world of form to mere decoration, did achieve a common imprint, but it can no longer impart character. We must be able to see harmony as something else than the common stamp of style and form. All propaganda that aims at reuniting art and everyday objects (including most houses) takes the side of utilitarian art that is trying to insinuate itself into fine art. No artist has expressed this wish in reverse.

We must learn that there are beautiful objects that have nothing to do with art. A residence that is a work of art is not necessarily pleasant to live in, because every work of art exerts coercion, limits our freedom of movement and flexibility, and demands that we adjust to it.

This implies visual chaos, but the question that might reassure us is, "Can we escape some harmony with our time simply because of common conditioning and purposes?"

When these distinctions are made, any sort of unified style will be impossible. But to make up for it, we shall be able to think more freely and imaginatively. Each of our everyday objects must be produced in its own form, with no concern for whether it harmonizes with other objects. This is the only way to avoid the esthetic monotony that is now in the making, and arrive at a variety and richness of form that was never before possible. The harmony we can achieve must be, in principle, unlike that of a universal style. We must at long last get rid of the desire to create a new historic style.

Spender: The desire to fuse two quite different concepts—the beautiful and the useful—within the same object has gone out of our civilization. It is for this reason we pretend that the useful is the beautiful, and hope for the best, leaving it at that. But to say that the functional is beautiful is really sleight of hand, a play on the word beautiful. Things that are opposite also can in some ways be identical; and the beauty of a machine strikes us perhaps perversely, because it is the very opposite of what we intimately feel to be beautiful. The beautiful for us is that with which we identify our own desires or beliefs and which yet transcends them. The identification of our own personal feelings with the object comes first, and then in the beauty of the object we feel that what is personal has become transcended. In the beauty of a machine, of pure utility, the opposite process takes place. There is no identification beyond the feeling "this thing serves its purpose," but there is transcendence, because we feel that the function is completely impersonal. What we feel for the functional perfection of an airplane is really something much closer to admiration than beauty. It is easy to confuse admiration with esthetic satisfaction, and to think that an object, because it is perfect in its own way, therefore gives us the same feeling as does a beautiful object.

He seems to be challenging not the desire to fuse them, but our lack of understanding of what "beauty" is.

Isn't it possible that the symbols we admire come to mean beauty by just the process he describes above?

I think design has concentrated very much on producing objects that express, tastefully and tactfully, the needs that satisfy. But needs are generalized. A nice cup of tea drunk from a nice cup simply expresses the appetite of thirst that may lead us gently to the appetite of the eye, and give it some nice pleasure. But a chair, or cup, or a table, can express a much more positive feeling about life. They can be related to a personal taste for baroque architecture, the clothes we wear, a passion for color, the excitement of rather eccentric shapes . . .

Since so many accusing fingers are now pointed at our "functionalist heritage," one overseas publication has stopped to re-examine that tradition with fresh eyes. These documents, recently republished in Form/revue, bring out the inspired dogmatism of Van de Velde, the predecessor of Gropius at the Weimar school that became the Bauhaus; and the more practical educational concerns of that school, the early fetish about purism and the fact that Functionalism was not the School's earliest preoccupation

form

all excerpts pages 43-44, Issue #6/1959

"We belong among the first of those who established a link between the idea of pure form and the birth of a "New Style." But we committed an error in characterizing this new style: we claimed the principle of rational conception. For this principle is as old as the world. But our confusion can be explained. We condemned all that surrounded us, all styles born since the Gothic period, the last in which we found traces of rational thought. The dogma of pure appearance and morality of form enslaved our souls and spirits to the point of being able to justify many errors and infringements. We sang the hymn of rational beauty with a spontaneity capable of inspiring legions and conquering the world . . ."

Henry van de Velde, 1925

"What we want is to create the clear, organic body of the building, naked and radiant with the truth of its inner laws, which confirms our world of machines, wires and fast-moving vehicles, which makes clear its meaning and purpose through the interplay of its related functional parts, which dispenses with all superfluous additions, and reveals the absolute shape of the building. Constructive building as taught by the Bauhaus culminates in a demand for a great new unity of work, which conceives the creative process as an indivisible whole. The machine will be pressed into the service of the idea, and industry will learn to value comprehensive culture."

Walter Gropius
Bauhaus Manifesto, 1919

bauhaus revisited

Recollections of bauhaus and stijl

Andor Weininger

I came to Weimar in October 1921, early on a Sunday morning. I looked for the Bauhaus and finally found it on the way out of town, near a park. The door stood ajar, and in the distance I could hear singing. I followed the tune up two flights of stairs. Through the keyhole of a large door I espied a group of young people singing "Salem Salem Aleikum." It was very impressive. Soon there issued forth a remarkably clad colorful crowd, very gay and lively. I was struck by their loose clothes, sandals and unusual hair styles, and above all by their unique non-bourgeois appearance. I learned it was the Sunday service of the Mazdaznan group; vegetarian cuisine was later served in the canteen.

Ittens' preliminary course was exciting. At that time the Bauhaus had made a decided stand for feeling, and all techniques of representation to be developed from feeling; acquired mannerisms had to be eliminated and "knowledge" to be forgotten in order to allow the pure impulse to be expressed. Relaxation was achieved by breathing and exercises before and during work. Quite important were the studies introducing us to various materials. Many of the students felt the preliminary course to be a kind of necessary purging, and others withdrew.

In the winter of 1921-22, I heard of Theo van Doesburg and the "open" Wednesday afternoons in his atelier. My first visit remains vivid. In a cloud of smoke, Doesburg and his charming wife Nelly were involved in a discussion about color theory. He showed photos of the Stijl group in Holland, commented on them, and read from the new "De Stijl" magazine. Doesburg was a man of the world, elegant, witty, and in his way a downright radical and fighter. As propagandist of the Stijl movement, he showed himself an idealist. His demand for "clarity not haziness" was distinctly aimed at the Bauhaus, as were many of his criticisms. Coming from Holland, he could hardly understand the wild romanticism of the Bauhaus. Only at the prodigious Bauhaus parties could differences be forgotten in good fellowship and a joke.

. . . In May 1923 I returned to Weimar after five months' absence, and found much changed. It looked like a battlefield after the battle. Itten was gone. Doesburg was gone and the new master Maholy - Nagy had arrived. What had happened? Had the two protagonists of the opposing poles of art decided on a mutual separation? We heard talk of a discussion between Gropius and Doesburg, in which Doesburg had wanted too much in wanting to turn the Bauhaus into a Stijl Institute, perhaps in fact wishing to obtain the directorship of the Bauhaus.

In the summer of 1923, the great Bauhaus exhibition already showed two faces. Next to the old "feeling-derived" works there was much that was new: horizontal-vertical forms, two-dimensionality, squares and red cubes representing a house; in short, the Stijl influence. I found it in effect superficial and formalistic, at least from the Stijl viewpoint, since little attention was paid to the ideas and principles of Doesburg. From then on, the Bauhaus took up the horizontal-vertical idea and also Doesburg's "elementary means of forming." Within the Bauhaus these ideas were revised and developed on the basis of more dynamic movement.

Did not Bauhaus and Stijl have the same basic ideas and aims in spite of their contrary attitudes? Both

were concerned with putting building for modern man on a new basis, excluding all ornament, decoration, tastefulness. The Bauhaus looked at the revolutionary task in terms of feeling, but in the period of change I suspect that the clear, adjusted nature of Stijl helped the Bauhaus by providing a standard for the future which I consider more important than influences of form. It led, in Weimar, to a constructivist revision, and to the new Bauhaus in Dessau. My impression is that the typical Dutch qualities inherent in Stijl remained foreign to the Bauhaus. The realization of the importance of function became increasingly important—of function in everything produced by the Dessau Bauhaus and everything that originated there.

Training in handcraft, seen as an educational approach to designing for the machine, led to technical misunderstanding and stylization, was later disavowed in many schools. Was it invalid, though, as training in understanding materials?

"The Bauhaus approves the machine as the most modern means of fashioning materials, and therefore wishes to achieve a compromise with the machine. But it would be senseless to send the creatively gifted student into industry unprepared, in order to recreate the lost relationship of art and craft, for he would certainly be stifled by the materialistic attitude toward work in today's factory. Work done by hand, however, conforms in range to his mental attitude, and is therefore the best means of training him in this field."

"The best method of instruction is the free teaching of the master, as it used to exist in earlier centuries. The old masters possessed in equal measure the abilities of artist and craftsman. That our time does not know such masters of creative practice is due to the disastrous isolation of the highly gifted from the working life of the ordinary community. Free teaching by a master is now impossible. The Bauhaus has therefore established these principles: Every pupil and apprentice learns from two masters, a master craftsman and a master of form, each in close working connection with the other, never one without the other."

This practice was later revised when a new group of teachers had been trained; but it describes what remained the ideal of design training.

"Forms and colors in a work gain significance only through their relation to our own inner being. They can either be individual, or in relation to each other, expressive of different degrees of excitation and movement. They do not exist on their own. Red arouses feelings that may be different from yellow or blue; round forms elicit a response different from pointed or serrated forms. These are the sounds from which the basic grammar of shape is constructed. Sounds and grammar can be learned, but the most important thing—the organic life of the created work—originates in the creative force of the individual, which seeks its own expression and creates after its own inner law."

Bauhaus Manifesto, 1919

This seems a broad and flexible basis, while Weininger (left) suggests that Stijl influence brought a style into being, that "function" was later emphasized to check what appeared as a strong urge toward a static style.

From the diaries of Oscar Schlemmer, *1921*

Itten and a few others have been living according to the (Mazdaznan) rules for some time. Itten extols the monastic ideal, saying that Fra Angelico is a purer type of artist than Rembrandt. I could only reply that supervision of nourishment could only be prejudicial to freedom and distract from the important things of the world and intellect; and that I doubted whether the purity of these things was in any case conditioned by pure digestion . . .

"In Heinrich von Kleist I read a painter's letter to his son: 'You write that your feeling for the completion of your painting of the Madonna seems too impure and physical, that you would like to take Holy Communion each time you take your brush. Now let your old father tell you that this is an entirely false notion, and has nothing to do with the perfectly natural and honorable business of getting the fruits of your imagination onto the canvas. Man is a sublime creation, but in the moment one is creating him, it is not necessary to take a very holy view of him. The man who takes his communion beforehand, and goes to work merely to embody his conception in the sensual world, will produce a frail and miserable result. The man who kisses a girl on a clear summer's night without further thought of the matter, might well produce a child whose later robust progress between heaven and earth will provide matter for philosophy.'

Purism in esthetics would seem to have strong psychological as well as moral roots.

"Itten wants to make a monastery of the Bauhaus, full of saintly people, or perhaps even monks. He believes this will create an atmosphere of purity, in which everything will become pure of itself. In my replies, I shelter behind the Kleist letter: those old men, after all, were altogether tougher than we are today and were vigorously able to fulfill what was required by the laws without any diluting of feeling.

Looking back with some anger and much bemusement at the famous "machine esthetic," a British critic challenges its validity as a technological expression. Singling out auto design, he derides the style as an artistic preference owing homage to painting and architecture. Then, sounding the horn for "borax" as a style that is appropriate to the business of transportation, he salutes the death of machine art in an

epitath

Machine Esthetic
by Reyner Banham
April 1955

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The "Machine Esthetic" of the pioneer masters of the Modern Movement, merely one limb of their reaction against the excesses of Art Nouveau, came nowhere near an acceptance of machines on their own terms or for their own sakes. One sees this in the pre-1914 factories of Peter Behrens, which are a long step toward a mechanistic architecture but remain, for all that, neo-classic temples in form and silhouette. Both at the Bauhaus and in the circle of *L'Esprit Nouveau* this approach continued, making it possible to bracket together architecture and machinery with the least mental strain for the architectural side.

Because Bauhaus theory as we now receive it is very fragmentary, *L'Esprit Nouveau* is a more immediately rewarding field of investigation. With its neat corpus of signed articles, its effect upon the growing concept of the Machine Esthetic is clearer and easier to follow. Throughout these writings, one will find the manipulation of the superficial aspects of engineering in the interest of a particular concept of architecture. And in those later published in *Towards a New Architecture,* one can see Le Corbusier advancing a view of machinery that progresses shortly from special pleading to false witness.

One should perhaps be careful of imputing any sinister intent in all this, for in the world of engineering the author was not even a provincial, but a complete backwoodsman. His background in his native Chaux-de-Fonds was watchmaking, still in an 18th-century condition compared with the production line industries; his architectural apprenticeship was with Behrens and Auguste Perret, both old-time classicists; and his "industrial experiences" were in an aircraft industry that was barely out of the box-kite phase. These facts remembered, his naive belief that machines are by their very nature highly finished can be understood—a watchmaker could hardly think otherwise. But can such naiveté explain the crooked argument of his chapter entitled "Automobiles"? The hinge of the verbal argument is the virtue of standardization; the hinge of the visual argument is the confrontation between automobiles and the Parthenon, and the totality has been read by two generations of architects and theorists as meaning that a standardized product like a motor-car can be as beautiful as a Greek temple. In its context that is how it must be read, but the crux of the argument is a disingenuous pretense—none of the motor-cars illustrated is a standardized mass-produced model; all are expensive, specialized, handicraft one-offs which can justly be compared to the Parthenon because, like it, they are unique works of handmade art. Mass-produced vehicles like the Model T Ford do not sully these classicist pages.

Banham: Naiveté? Sharp practice? Wishful thinking? A certain esthetic *parti-pris* is undoubtedly there; a desire that certain wishes should come true; that architects should in reality assume the moral stature of engineers, on whom, in the opening chapter, Le Corbusier has wished the virtues of the Gothic Craftsman and the Noble Savage: "Engineers are healthy, virile, active and useful, moral and happy." The particular wish-confusion that lies at the bottoms of this complex structure of distortion is easiest to identify in *La Peinture Moderne* (Le Corbusier and Ozenfant). Here they say of Purism, their own style of painting: "Purism has revealed the Law of Mechanical Selection." And this law, which they clearly intend to share the status of Darwin's Law of Natural Selection, they explain as follows: *'It establishes that objects tend toward a type which is determined by the evolution of forms between the ideal of maximum utility, and the demands of economical production, which conforms inexorably to the laws of nature.* This double play of forces has resulted in the creation of a certain number of objects which one may call standardized—and, the argument runs, are therefore good, and have been selected as the Purist's subject matter. The authors have thus set up an abstract model of the design process in mass-production, and their paintings show us what class of objects we have to interpolate as the last term of the proposition in order to test its truth.

The engineers so much admired in retrospect had built the Eiffel Tower, London Bridge, Crystal Palace — all pioneer forms that appealed to the imagination of anti-traditionalists.

This law very neatly ties together all the moral goals of the day — utility, production, natural law, standardization.

They prove to be bottles and jugs, glasses and pipes, or forms which approximate the cylinder, sphere and cone which had been canonized in post-Impressionist painting, regular geometrical forms with simple silhouettes. If we make these the last term in the Ozenfant-Corbusier model of the design process, we get a proposition of this order: *Objects of maximum utility and lowest price have simple geometrical shapes.* To most architects this proposition would appear watertight, but to most production engineers it would appear demonstrably false in outcome.

To the engineers, utility, in the rationalist sense which the authors clearly intended, is a marginal factor—only one among a number of other factors bearing upon sales. To manufacturers, utility is a complex affair which, in certain products for certain markets, may require the addition of ornament for ostentation or social prestige. Similarly, the demands of economic production do not, as the authors of the model supposed, follow the laws of nature, but those of economics. In fields where the prime factor in costing is the length of the production-run, simplicity, such as would render a handicraft product cheaper, might render a mass-produced one more expensive if it were less saleable than a more complex form. High finish, too, is another Purist mirage, for the quality which interests engineers is not finish but tolerance — the factor by which a dimension may vary from the designed figure without injurious effects. This renders high finish a purely negative characteristic, and where it is extensively applied it is nearly always by hand labor, and has some bearing on sales — on consumer preference, as in luxury cars and watches, or performance, as in surgical equipment.

A point that needs making every now and then.

The story goes that Bauhaus students spent much time polishing up their hand-made products to look machine-made.

All these qualities then — summed up as simplicity of form and smoothness of finish — are *conditional attributes* of engineering, and to postulate them as necessary consequences of machine production was to give a false picture of the engineer's methods and intentions. But such a picture was clearly of the greatest polemical utility to the Purists in their search for a justification of their esthetic preferences. It is also clear that they were not alone in this, for the Machine Esthetic was a world-wide phenomenon, nor was its mythology noxious at the time, for it answered a clear cultural need in offering a common visual law which united the form of the automobile and the building which sheltered it, the form of the house, the forms of its equipment and of the artworks which adorned it. Nor — and this is the heart of the matter — was its falsity visible at the time, for automotive, aeronautical and naval design were currently going through a phase when their products *did* literally resemble those of Functionalist architecture.

As is so often the case!

But these days were numbered. Already, in 1921, aeronautical design was

launched upon a train of development in which a third quality, not mentioned in Le Corbusier's original Support-Propulsion formula, was to dominate the field. That quality, now common to all forms of motion research, was Penetration, and in pursuit of ever better factors of penetration typical aircraft forms were to ingorge their structure, and turn from complex arrays of smooth simple shapes, like those of Functionalist architecture, to simple arrays of mathematically complex forms. At the period when the crisis of this development was reached in the early thirties, with the general changeover to monoplane configurations and retractable landing-gear, the process was doubled in the field of automotive design, with the liberation of bodywork from horse-and-buggy concepts. Long manufacturing runs and rapid repeat orders led inevitably to vehicles that were very different from the hand-made art-works which had graced the pages of *Toward A New Architecture*. It was not merely that pressed steel technology works most efficiently with broad smooth envelope shapes, but also that the need to chase the market led to an anti-Purist but eye-catching vocabulary of design which we now call Borax.

The tone of architectural response to these developments was to complain that machine-designers were failing in their task. Under the turbulent conditions of the thirties most intelligent men had bigger and more urgent things to occupy them than the complaints of architectural Purists. But after World War II, in which a whole generation had been forced to familiarize themselves with machinery on its own terms, the disparity between the observable facts and the architects' Machine Esthetic had become too obtrusive to be ignored. In the Jet Age these ideas of the twenties began to wear a very quaint and half-timbered look.

This, of course, made it easier for some feeble intellects to 'adopt a modern style,' as if it were a finished period style, with all the answers in the books. But the position of another class of modern academics is tougher—those who genuinely desire a universal product esthetic, and are sincerely alarmed by defections of whole categories of manufactured objects from what they consider the true principles of design. Unaware that these principles stem from false or irrelevant premises, but committed to a mechanistic concept of architecture, they are left to rail against the world's growing vulgarity. In them, the architect's fear of machinery re-emerges, and they set up the outworn categories of the Machine Esthetic as a defense against situations which cannot be managed by purely architectural standards. But to do this seems not only cowardly, but also presumptuous; why should other aspects of design be subservient to architectural preferences? To blame the automobile, for instance, for not answering to a code of visual practice adapted to buildings is as inconsequential as to censure the apple for not having a rough bark. It is not merely that car and building are differently made, that one is mobile and the other static, but that the manner of consuming the two products is so different. Like the tree, the building is a long-standing investment. Compared with it the motor car is, like the fruit, a deciduous affair. Its season is the four- or five-year tooling cycle, and like the fruit it must have an appetizing exterior.

As Ozenfant later remarked, "Lovers of machinery by preference collect implements long out of date. Imagining they worship mechanism, in reality they offer sacrifice to a taste for antiques."

Time has overtaken him only to reinforce the point.

In this situation Borax is entirely proper, though there are plenty of other design situations, notably architecture, in which it is grossly inappropriate. Basically its propriety to automotive design lies in its symbolic content, which is concerned, more than anything else, with penetration, is germane to the business of transportation, and as firmly built into the technical history of the product as were the useless flutings and triglyphs of Greek Doric temples.

This is not an attempt to set up Borax as next week's fashionable gimmick, or to require a suspension of judgment from it. It is a design language that can be used badly or well, but the good and bad are not identified by setting up an exclusionist standard. The Machine Esthetic is dead, and we salute its grave for the magnificant architecture it produced, but we cannot be sentimental over its passing. As Le Corbusier said in the days of L'Esprit Nouveau, "We have no right to waste our strength on outworn tackle. We must scrap, and re-equip."

More about this by the same author on page 61.

Bertone coachwork by Franco Scaglione

The automobile, as the previous article suggests, is an appropriate subject for a new approach to style in industrial design. Certainly in both Europe and America, the car remains a subject for debate: should mechanical function, human function,or personal expression most influence the designer? The examples and opinions here are as varied as the nations they come from. Yet they point to one common agreement: "style" in auto design is neither purely functional nor in any way arbitrary. Beyond that, how to merge technical, commercial and artistic requirements remains the hub of

the car question

Speed and Streamlining
by Bruno Alfieri
#19/ 1958

STILE INDUSTRIA

In the choice of car bodies, the importance of aerodynamic phenomena is growing proportionately to the speed required from the new cars or airplanes. Industrial design thus becomes more and more intermeshed with the requirements of aerodynamics and, consequently, gives rise to some interesting problems in esthetics. Other problems concerning the reciprocal relations between modern taste and mass production needs, and between mathematical equation and the necessity (not yet demonstrated, though) of creating a "technical artistic style," also arise. The mathematical side of the problem allows the industrial designer no half-way solutions; he either has to give precedence to aerodynamics over esthetics, finishing off his creation as best he can, or he must leave a door open to esthetics through these same finishing touches, or else he must sacrifice, when possible, purely aerodynamic solutions in favor of others that combine scientific requirements with esthetic needs.

In our opinion a vehicle which is aerodynamically perfect is not necessarily esthetically so as well. First of all, aerodynamics is an abstract science, i.e., the designer has to adapt scientific formulas to practical needs such as the unforseeable behavior of the airstream, the necessary presence of wheels, the road conditions, etc. Secondly, construction problems do not also solve aesthetic problems, but just *suggest* solutions compatible with our antibaroque modern tendencies. Technical problems of series production are comparable to the mathematical problems related to aerodynamics.

Lastly, we notice that aerodynamic forms and shapes are really much nearer to the surrealistic sculptures produced by Arp, Brancusi, Pevsner, and Viani, than anything created for series production and dryly influenced by functional technicalities only. We think it is very important to deny any formal value to aerodynamics, pointing out, instead, its very valuable role *suggesting* to industrial design new formal solutions for mass-productions, which might result in a quality improvement. By improving we do not mean creating a new neo-classical technical style; we mean completing and integrating forms. As a functional hammer may happen to look ugly before having been "completed" by the designer, in the same way a streamlined car, without being ugly, might be improved by the designer. This particular kind of work is of course influenced by contemporary art and culture; modern design reflects modern art, even when dealing with a typewriter lever, and modern sculptors might find a new inspiration in industrial design and aerodynamics.

Alfa Romeo Giulietta S.S.

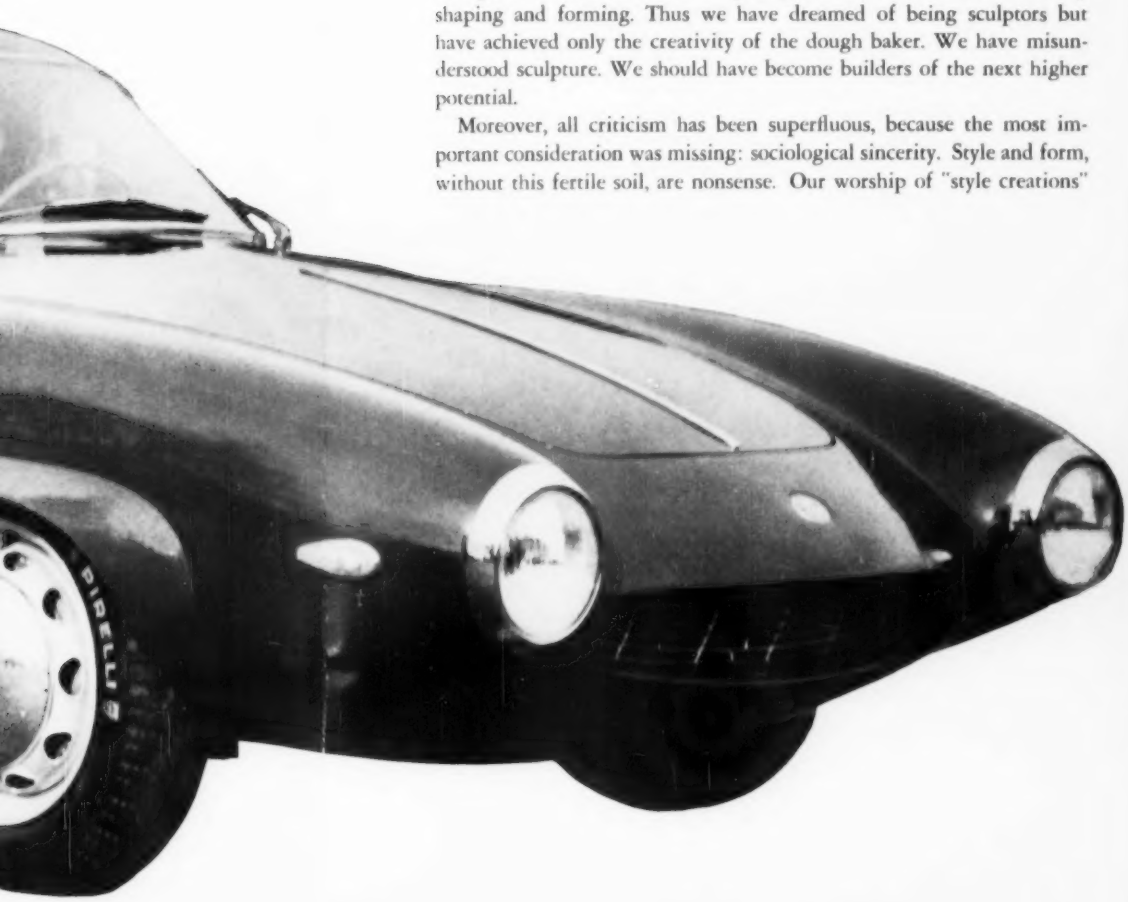
Construction vs. Sculpture: Too Much Beauty in Autos

by Walter Gotschke

We are concerned here with our attitude, as European car designers, of idolizing the sterile "modeled" form and being shocked by geometric construction of American automobiles. In human history, the "first man" evolved from the cave to the geometric blockhouse; we now seem to be regressing to both: just as the construction of contemporary building lapses into the purely geometric, so European automobile construction regresses even further into the pre-geometric stage. It is not unusual to see today, overseas, an ultra-geometric automobile produced by sociological impulses. This same geometric impulse was visible in Europe until 200 years ago, in various forms from the cathedral to the snuffbox. It is a most elementary style, but is it so very objectionable only because it appears in present-day objects somewhere else?

Consider the logical sequence of development in structure: we begin with a point, move via the straight line, plane, the cube, to the curve, via jet forms. In this, there is one point where the automobile suddenly takes on its form. It is related to the cube (or house) on the one hand, to the jet (flying body) on the other. Our strange fate in Europe was that we saw the car literally as a problem of modeling. That is, we thought from the outside as a sculptor forms a figure—and, alas, as the baker fashions his dough figures. Here lies one of the reasons for our esthetic eccentricity. We believed we were artists only if we modeled, neglecting the fact that the automobile is not a pure form problem but a building problem. Building, however, with curved surfaces or three-dimensional elements is a complete novelty in history. Our poor brains considered everything that is curved to demand only shaping and forming. Thus we have dreamed of being sculptors but have achieved only the creativity of the dough baker. We have misunderstood sculpture. We should have become builders of the next higher potential.

Moreover, all criticism has been superfluous, because the most important consideration was missing: sociological sincerity. Style and form, without this fertile soil, are nonsense. Our worship of "style creations"



in some cases is mere idolatry. We must, therefore, be more careful when censoring "taste," asking first what "taste, estheticism, and style" actually mean if the whole subject is not to be basically misunderstood.

Too much has been said about "ideas." In the U.S.A., nobody perceives yearly innovations in car construction as "ideas." Neither does one call the change from childhood to adolescence an "idea." The American is prepared to be open minded, and this fact is evident in the criteria of car construction:

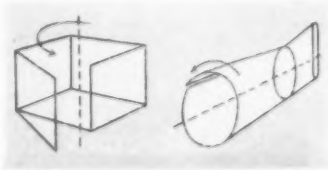
The American auto is, in principle, a piece of tubing (the dynamic polyphone tube) with a severely classic separation between statics and dynamics (between front and lengthwise development.) This results in:

1) classic clarity at corners and ends
2) ultimate simplicity of part production
3) independence of dimensions (optimum variability for each size)
4) independence of use (for various vehicle types).

Let us look at the drawings that visualize the building of the American automobile. In a house (1), plane surfaces (two dimensional elements) are wound around a vertical axis; while in a jet (2), curved surfaces (three dimensional elements) are wound around a horizontal axis. Just as the house can form a multi-part unit (3), the same is true of the dynamic tube; thus the American auto is formed, retaining the same basic elements: geometric penetration of space, building in steps, enlargement, tapering (4).

All previous stages of change in car construction were just as geometric as this present-day American principle. This is important simply because geometry first made construction changes possible, as well as mastery of the whole subject. It was not, therefore, the craziness of the country, not its monetary wealth, but rather geometry that caused this car style to shock us without our knowing why. We Europeans lost geometry at that instant when the traditional sharp-edged square automobile was replaced by the modeled one. In the American style, the characteristic feature is that the structure itself is expressed. It contains an elegant mastery of mathematical physics, a continuously effective power of development. The modeled form, on the other hand, is governed by an alien law (the tear drop and similar forms) and shows only the usual pleasantness of a form shaped from the outside, a raw and sterile form.

Graphik, September 1957



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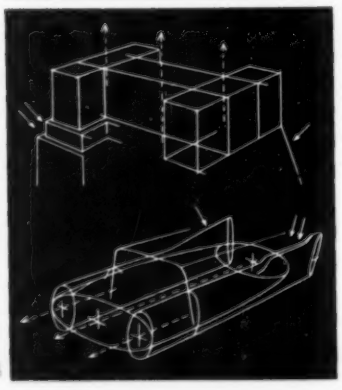

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Por

Porsche, 1960

Letter from Ferry Porsche

In explanation of the recent changes of shape: the new bumpers had to be lifted to meet American specifications, unavoidable in light of the fact that 40 per cent of our total output is now exported to the U. S. The earlier solution, i.e., adding steel tubes to achieve the required height, was just an improvised solution.

The raising of the headlamps was also made to meet police regulations, but apart from this, the higher lamps are more efficient.

In my opinion, in shaping a car one should consider two facts only:

1) functioning
   a—roadability in transport
   b—aerodynamics
   c—production facilities
2) matters of taste

We do our best to meet the requirements under (1). I can only renew my previous comment that there will be no further change unless there is a mechanical reason.

Stuttgart, February 1960

Pinin Farina

by Bruno Alfieri

Lancia Flaminia
by Pinin Farina

"Style" may be defined not only as the formal characterization of a work of art or industrial design, but also as method and moral commitment. Pinin Farina is the greatest coachmaker of our time because he has successfully resisted the temptation to work out a scheme, a system of symbols, habits, esthetic clichés, which we know from experience are the first symptoms of the involuntary process in the designer. From the very start, Farina's vehicles have avoided reflecting recent taste as manifested by the upper middle class, the most important market for the car maker; his designs represent something much purer. Often a designer has sufficient power to impose his design on society. While a painter may legitimately be the fruit of a decadent limb of contemporary culture, a designer—who is an intermediary between this culture and technological progress—cannot reflect this decadence without failing the very task he was assigned: a "Baroque" designer is not a designer at all, but a decorator. Farina's cars witness his tireless research and insatiable curiosity, his neatness and plastic severity. He has created hundreds of models with carefully defined features without ever worrying about their "artistic" appearance. It has been his aim to create *new* complete models with their own vivid personality, and we must remember that his experience as a racing driver gave him considerable know-how as a mechanic. For all their variety, Farina's cars are marked by an apparent absence of "style," by the severely organic and coherent quality of their beauty.

The stylistic adventures of Studebaker from '48 to '53 reflected certain surrealistic themes. The Mercedes sports model and the BMW could be called dramatic and expressionistic. Outside of these two great streams of modern artistic expression lies the immense grey-

ness of anonymous productio
at the center, between surrealis
expressionism, we find the
styling of Farina.

Implicit in Farina's rejecti
all superfluous forms is his
ance to all hints of surrealis
expressionism. This gives his
an authentic tone. But this
reserve conceals a first-rate
for formal composition: he
lates in exacting detail all
connections, surfaces, curves,
ing, but emphasizes the rea
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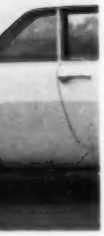
his highly technical style.
consequence, all of his model
to say the last word for the
mobile at any one stage of te
development, to be supersede
by further technical ad
which, for Farina, ultimately
mine design.

Stile Industria, #1

Ferrari coupe, by Pinin Fari



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, #19/1958

Visit to the "dream cars"

by Hugo Lindstrom

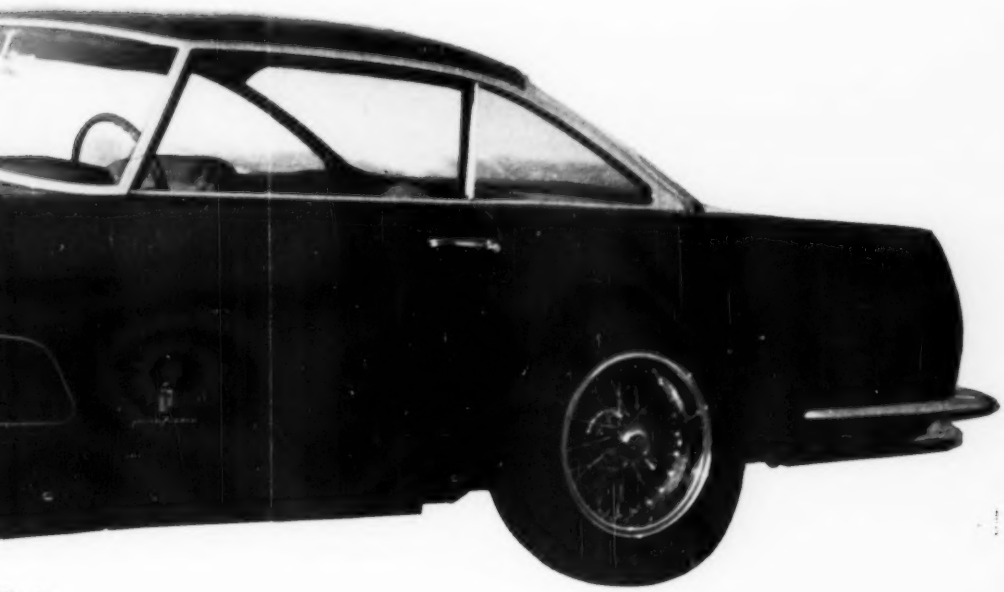
That the Italians have done very well designing special bodies we must admit, and therefore I had high expectations when I visited Pinin Farina of discovering some secrets first hand. I pictured a firm with Farina at the head, with a large design department at his disposal and just a small factory producing what had been designed.

In reality? No Farina at all, a very small design department, a very large factory. Let me explain. Farina himself has practically retired, and his son-in-law and son are responsible for design, assisted by two men who work mainly on construction of projects for large-scale production. They had such a project: building 50 bodies a day for Alfa Romeo in a factory of 700 men, with little room for romance.

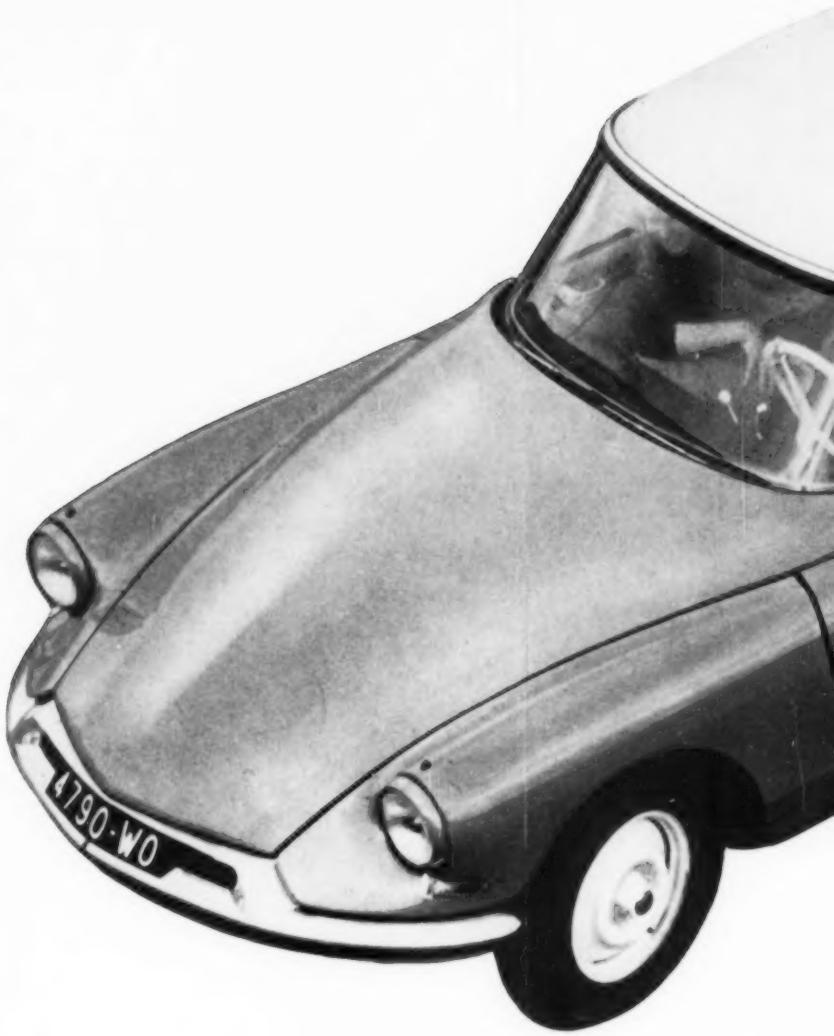
Was there no sign of a genuinely inventive atmosphere? Yes, but not so much in the designers as in the highly-skilled modelmakers. Alongside the factory there was a little shop for body building. Do not think that the designers produce studied, beautifully rendered, multi-colored drawings of an idea, then model it in quarter-scale, then draw it up and build a full scale model. No drawings were made. A few sketches on a paper bag, on an empty cigarette pack, was all that guided the modelmaker. If he later found that something was not quite in line, he would cut off a piece and replace it. In this way a car is gradually built. And I believe that the modelmaker's understanding of form has a great deal to do with the finished product. Mass produced bodies are usually handled in the conventional way, however.

A word about Ghia, a great body builder. It was said once that he had designed his Volkswagen body in a happy moment of inspiration. What a mistake! For many years the Ghia concern has been owned by an engineer, Segre, who was, in fact, the chief designer of the VW body. He laughed in amusement at the story. We could not talk to him at length. "Besides, there is nothing to see," he said. "We do not work with beautiful drawings, only with my personal direction of each step."

Form #3-4/1958



Farina



Citroen: Too little beauty?

Report by Citroën engineers

When the DS-19 first appeared, it certainly created a sensation. Some comments were enthusiastic, others disparaging. To some, its overall style and many of its details were only a deliberate attempt to attract attention, while others regarded the car as the expression of a new esthetic creed. It was neither.

Originally, the designers had no particular aim in mind. They neither intended to create a radically new car for the sake of originality, nor had any determined style to express. On the contrary, their approach was complete subservience to bare *facts*—downright compliance with the requirements of reality that is the requisite of a truly "technical" approach to any problem. They wanted a car that answered satisfactorily the three basic needs of the "man in motion": comfort, safety, speed. The design was completely governed by technical considerations, and no attempt was made to adopt even a single solution that would not be justified by the strictest practical and functional requirements.

The fact that what is the expression of a truth may also be found beautiful should not be grounds for wonder. For it is just another proof of the long-established fact: the search for the scientifically sound solution is often crowned by the achievement of that beauty that has never been one of the designer's aims. The often unusual features of the DS-19 are only pertinent answers to the questions that we have tried to solve. If the style looks pleasing, it is only because it is the expression of the natural agreement between harmony and efficiency.

Stile Industria #14/1957

Comment by Jupp Ernst

I met Lothar Schreyer at the
to the Bauhaus in Weimar. W
a beautiful car and she look
As we breezed through along
thin."

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about its safety and comfort,
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such verdicts. Maybe in the
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A mere engineer can solv
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ar. When he saw my DS-19 he said, "This is
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long a narrow alley he said, "Moby Dick grows

f a person who lives by his eyes and knows
qualities of the car. Much has been written
fort, but we also read often, "We are not con-
f this car." I must admit I do not understand
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g to put on the naked functional form like
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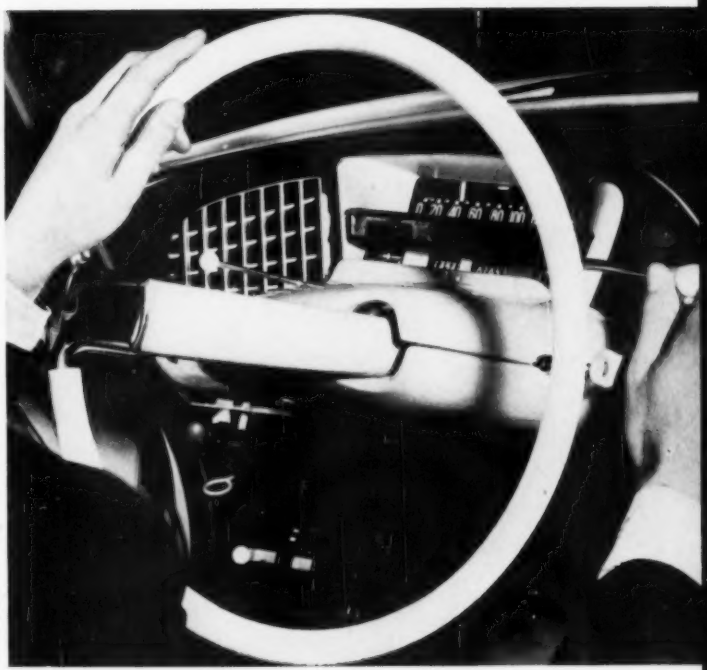
eem to float, a kind of visual music without
. The criteria of technical beauty has been met.
solve his technical problem in one way or
engineer will choose from the technical possi-
make the construction a visual experience. The
then be raised to a more spiritual level . . .

Form/revue #2/1958



If old standards are crumbling, what measure of quality and validity can a designer apply to his work today? Several critics outline here the facts and pressures that influence industrial design. Fashion, environment, culture, science, technology are all weighed and measured. Finally, the old conundrum "Is it art?" receives a resounding and unorthodox answer in the form of a new set of design

YARDSTICKS

The formative process in design

Gillo Dorfles

#7/1956

STILE INDUSTRIA

On the international market today, we can find a number of products that really strike a balance between new forms and new functions. Yet for proof that form can often detach itself from function, we need only look at some contemporary plastic-forms (I am thinking of Moore's string figures and some sheet-metal compositions by Franchina and Lardera) whose artistic forms plainly correspond to no function whatever, other than that of being esthetically "pleasing." Some may object that they come under the heading of sculpture, not of architecture or industrial design; to which I would reply that in a great many successful mass-produced products, form is only partly conditioned by function; it is also in part determined by current esthetic demands.

At this point there arises the question: what relationship exists between the formal elements of industrial design, of craftsmanship, and of so-called "pure" art? It is an old theory of mine that every age is dominated by what I would call a *formative process*. I think that every period of history, every artistic culture, has its own characteristic formative will, specific and autonomous; and this *vis formativa* animates the work of art and the artisan product, the architectonic structure and the household utensil. There is no real distinction, therefore, between all these different sectors, but only a *hierarchy of values*.

In a great deal of contemporary art, we find certain formal patterns repeated, almost obsessively, in the work of painters, sculptors, and architects of the most widely divergent geographical and social origins. A typical example is that of Miro and Aalto, Arp and Aalto—of the trend which I would define as *neo-baroque*. By this I do not at all

mean to imply a return to baroque mannerisms or inspiration, but simply the re-emergence of certain *constant elements of style* which can perhaps be traced back to the Baroque period, and which in any case are typical of the tendency of much contemporary sculpture and architecture to abandon geometric rigidity and return to a greater plastic fluidity.

If we consider some of the outstanding examples of contemporary industrial design, we shall see—perhaps to our astonishment—a remarkable "family likeness" (if I may be forgiven the comparison) recurring in a statue by Henry Moore and a wash-basin by Gio Ponti, in an electric iron and Brancusi composition. How do we explain it?

With a dual explanation, in my opinion. First, there is an element in art that I might call anticipatory. Second, art always has an influence, direct or indirect, on technical and industrial designing, and vice versa. The exceptionally sensitive artist may create a pattern that anticipates or prophesies the discoveries of technological and scientific research; but it is equally true that there comes a moment when, finding ourselves surrounded on all sides by a vast array of manufactured objects with new and peculiar shapes (motor-cars, scientific and household gadgets, etc.), our eyes become accustomed to this new panorama of forms and structures which at first we had thought of only as being practical and utilitarian, but in which we now begin to discern artistic values.

Think how the skyline of every great city has been transformed by the building of blast furnaces, reservoirs, serpentine pipe-coils and so forth. New shapes have arisen, with a plastic, chromatic and architectonic beauty of their own, to rival the domes and spires bequeathed to us by the past. This is not the place to discuss the problem of whether the two kinds of "beauty" are of equal value or equal spiritual content, whether the monuments of the past and the monuments of the present can be esthetically measured and compared. This much, however, is certain: architectural style has acquired a new element, and we shall see this element transformed in public and domestic architecture, the catalyst for a new kind of esthetic sensibility.

What we are witnessing is the converging and amalgamating of two different kinds of taste—the taste of the public, and the taste of the artist or specialist. Only yesterday they were two separate things, but now they have found common ground and will surely continue to merge into the unified taste that has always characterized the periods of highest cultural achievement.

Once you accept the fact that the same canon of taste can—and indeed must—govern a work of "pure" art and an artisan or manufactured product, you can judge them both from the same standpoint.

Seen in this light, industrial design ceases to be merely the blueprint for a machine or a manufactured object, mass-produced solely in order to meet the practical needs of the moment; it becomes the focal point for all the different *types* of design required by modern man: from executive architectonic design to advertising, from graphic art to lettering, (including, therefore, visual design, product design, shelter design etc.). It takes its place in the great graphic family, neither as a tyrant nor as an underling, raising industrial achievement to an artistic level which, if not as high as the level of the "traditional" arts, is certainly very close to it.

Good Form

J. Beresford-Evans
September 1956

Design

... There are no rules of good form, but neither are there rules of good living or good management. There are, however, attitudes of mind based on underlying universal characteristics that can usually give us the guidance we want.

One characteristic, whose effects are most clearly seen in detailing, is the innate nature of the eye. The things that the eye will do, or the directions in which it will move in given circumstances, are often predictable and capable of control. They are more like the probabilities of modern physics than canons of design. Thus we can predict that the eye will usually be attracted into a *round spot*, and may be held there for some time, whilst it will wander away from a *less definite form* and *may* be actively thrown out by cusps. It is likely to settle on an *accentuated line*, and more especially on a *group of parallels*, and will run along the trace until interrupted. But most important in the detailing of design is the need for certainty. If the eye should meet *conflicting shapes*, so that it wanders aimlessly or is in any doubt as to where it should next go, then there is marked sense of discomfort. Much of the practice of design, all the corrections, and nearly all the development of such corrections into the small overstatements that we call refinements, are aimed at relieving this uncertainty and providing a clear guidance. But it must always be guidance, cajolery and persuasion, for if the task is too hard the eye will refuse to follow and will go off on a *track of its own*.

Good form, then, is an amalgam of a number of qualities which combine to give us a complex sense of pleasure, security and well-being. There is no single path by which it may be reached, but we can be led towards it by a way of thought and an awareness of the possibilities. Craftsmanship and observation—the practice of design—tell us what to do much more surely than anything which can be written about it.

I have very little patience with the false opposition between the designer and technician. This is the fallacy of the ivory tower: the notion that we live in a world whose measurements are inexorably fixed by science, and that the designer can do no more than languidly embellish it here and there with a silk bow and a lily. Nevertheless, this false answer does remind us that, behind it, there is a fundamental question. If the designer is not merely to decorate the thing made, what is he to do to it? And if he must understand the techniques that go into it, how far do they fix what he is to do?

The object to be made is held in a triangle of forces. One of these is given by the tools and processes that go to make it. The second is given by the materials from which it is to be made. The third is given by the use to which it is to be put. And if the designer has any freedom, it is within this triangle of forces or constraints. How should he use his freedom there? There was a time when there was a ready-made answer to this question. Thirty years ago it was believed that the triangle, under careful scrutiny, would be found to have no area of freedom at all. The tools, the materials, and the use were thought in themselves to imply and fix the design. Let the designer steep himself in the industrial processes they said, and beautiful works will flow from his hands of themselves.

We have come to see that this is also a fallacy: The triangle without freedom was the technician's fallacy, which I call the fallacy of the iron tower. Indeed, it is difficult to see how anyone could have been deceived by it. Here we live in a world in which a thousand daily objects surround and encumber us. Could it ever have been sensible to suppose that each has a best form? Even so universal a thing as a bottle, or so specialized a thing as a watch, does not have a best design. There is of course a truth hidden in the fallacy of the iron tower, a negative truth: You cannot be certain how to design something well, but you can be certain how to design it badly. If you make a thing that goes counter to the tools with which you make it, or counter to its materials, or counter to its use, then you can be sure it will be bad. This truth has a place, and industrial design has profited from it in the last 30 years. But, alas, everything within the triangle will not necessarily be good. The triangle is not a point, and it does not help us to prefer one point in it, one acceptable design to another.

J. Bronowski
ID *February* 1957

Fashion and the Constant Element of Form

Edgar Kaufmann, Jr.
July 1958

DESIGN .....

Some elements of form are found in human artifacts throughout changes of time, place, or culture. Color, line, surface, and mass seem constant raw materials of form, no doubt rooted in sensory perceptions. Other elements apparently derive from man's sense of his own automatic movements and intentional actions, and of related processes in the world around him — rhythm, balance, dominance, direction. These, too, may be considered constant elements of form.

Such elements, to be effective, must be embodied and employed in forms. At this level what constancy can be found? Despite all the theories that have been propounded, I believe the modern Western way of looking at the world (a way of comparisons, analyses, experimentations) permits only one constant to appear in analyzing effective form — that constant is, of course, change itself.

Those who prefer convention and rules are uneasy with what is thus revealed as an inevitable multiplicity of forms valid today. Those who are introspective, intuitive, mystic are also dissatisfied, particularly with the more rational utilitarian forms that develop naturally from this attitude. The modern way of looking at the world may be inadequate, but it is the matrix in which present-day forms develop. Some modern forms — a minority it seems — express a protest against this way of looking at the world; but none are liberated from its influence.

If we can agree that change is one constant to expect in man-made types of form, I think we will want to become more familiar with change, to study and master it. One aspect of change is already widely recognized: change

may be profound or superficial, and correspondingly slow or quick to attract notice. Yet, there always seems to be some connection between the frivolous changes of fashion and the big changes of form that parallel changes in the form-makers' beliefs and comprehension.

Fashion was fickle and reckless in some of the most respected cultures that preceded mass production and widespread advertising: consider the histories of Greek pots, Renaissance clothing, Japanese architecture, or Western lettering. Today, sound American designing seems to me to progress from inception to trial, from trial to improvement, and from improvement to maturity without real hurt from the pressure for seasonal novelty, and indeed sometimes benefiting: first because interest in new things welcomes progressive products early in their development; second because the drive for improvement and for renewed sales-appeal exerts a constant pressure for a reconsideration of form, function, production, or availability.

It is a question whether this maturing in public is as good as a more cautious process, where only perfected products are allowed out into the world. The question can be given different answers: believers in rules and standards will prefer to wait until a design is jelled; believers in a give-and-take between art and life will welcome the more adventuresome procedure of early exposure and revision, and the potential of continuing improvements. Of course, the procedure that prevails in the United States, which is closer to the second alternative, does nothing to sort good from bad; fake, foolish, and tawdry forms flourish alongside conscientiously developed ones. A more active scrutiny of results — more discussion of good and bad form — would improve every level of design.

In my opinion, few native American forms have been launched with esthetic intent, though in the course of time many of them have been refined by excellent designers. For example, consider the open plan in residences, skyscrapers, simple envelopes for complex machines, the prefabricated look in private kitchens, laundries and bathrooms. These American expressions have been enduring. I believe they have developed not from form for its own sake, but out of functions and symbolisms. Their formal development has been in the open, not in drafting rooms alone.

So I believe that in the United States where form as a rule develops and is judged empirically, fashion is no enemy of form; nor is it a factor for good. Fashion is merely one manifestation of that constant change, which we need increasingly to observe, discuss, master and put to use.

Fashion in Design

Excerpts from a debate published in
ESTHETIQUE INDUSTRIELLE #28

L. C. Kalff (Holland)

We believe that one can speak of fashion in industrial design if the following elements are found to be variable:

a) If the desire for variety is not inspired by the function of the object (i.e. variety as a sales tool).

b) If function does not play an important part in the object's use (for example, travel souvenirs) or if design is more or less independent of function (printed fabrics).

c) If the object is one that demonstrates wealth (jewels) position (large cars), or power (sports cars).

d) If it is meant only to please (bathing suits and summer hats). Thus, the less important is function and the more important is variety, the more fashion enters into the realm of industrial design. To the stylist, this means that his function as a technician becomes less important and his creative and artistic gifts come more into play. We believe that fashion is necessary and inevitable in our life, and would not like to consider its influence on design as inferior to the other factors that play a role.

Maurice Barret (France)

After three wars, three destructions, we Europeans cannot accept the American values of waste and obsolescence to encourage sales. Our neighbors in Italy, on the other hand, remind us of the theme of permanence in Latin culture. My conclusion is that true creators do not follow fashion; they make it. The human quality of their work evokes admiration and copying all over the world. Fashion is artificial; the truth is to be, rather than appear to be. It is the essence of the object that is the realm of creation.

Robert Delevoy (Belgium)

In the development of a style for our industrial civilization, we hope it will go beyond transient boundaries and establish a fixed order, a style of life that will give each man a sense of identification, of material well-being within a moral framework. There is something esthetic in every finished object, and one of its indications of beauty will be its power to endure.

Paul Reilly (England)

There is something we might call the "spirit of the time" that definitely influences forms, but it should be grounded in historical knowledge in order to keep fashion and history in proper perspective. Otherwise, the designer may confuse the shadow and the reality and apply motifs and decoration in an arbitrary and mannered way. This was a major fault of the 19th century, from which the continual change in product design in our time actually stems.

In accepting social and economic factors and giving way in part to fashion, let us remember that this is a temporary compromise until the public and the designer are able to see eye to eye.

Should industrial design be regarded as a member of the fine arts family, as previous critics have suggested? For reasons that few designers might imagine, critic Banham replies with a firm No. The very basis of fine-arts evaluation is permanence and eternal validity—which openly conflicts with the impermanence of our mass-produced culture. What we need, he proposes, is an esthetic that speaks in popular symbols, that wears out as fast as our cars and rockets—we need, in short,

a throw-away esthetic

Industrial Design and Popular Art
by Reyner Banham
November 1955

CIVILTÀ DELLE MACCHINE

It is still little more than a century since the idea arose that the design of consumer goods should be the care and responsibility of practitioners and critics of fine arts. This conviction was part of the 19th century democratic dream of creating a universal elite, in which every literate voter was to be his own aristocratic connoisseur and arbiter of taste—the assumption being that the gap between the fine arts and the popular arts was due only to the inadequate education of the "masses." This view of popular taste drew much of its strength from a romantic misconception of the Middle Ages: it assumed that because only well-designed and artist-decorated artifacts had survived from Gothic times, then all medieval men, from prince to peasant, must have possessed natural good taste. (Actually, all the evidence suggests is that only the expensive objects warranting elaborate decoration were sufficiently well-made to last five or six centuries, and we know practically nothing of the inexpensive artifacts of the period because few have survived.)

Nevertheless, this view of medieval goods did not entirely perish even after Art Nouveau's floridity had been rejected by the generation of designers and theorists who established themselves after 1905. Adolf Loos, rejecting all ornament, read the evidence to mean that later generations, with debased taste, had allowed all undecorated medieval craftwork to be destroyed, while carefully conserving the depraved and untypical ornamented examples. Loos, while an extremist, is fairly typical of his contemporaries who rejected all forms of ornament because they could find no meaning in it, and turned to the concept of "pure form" because it offered proof against fallible human taste.

Banham: This and other attitudes of their generation were synthesized after World War I by Gropius and Le Corbusier, in writings that postulated a sovereign hierarchy of the arts under the dominance of architecture, and a common dependence on laws of form that were objective, absolute, universal and eternally valid. The illusion of a common "objectivity" residing in the concept of function, and in the laws of Platonic esthetics, has been a stumbling block to product-criticism ever since.

In the century of fine art product-criticism now finishing, every school of thought, every climate of opinion, has had to formulate its attitude toward industrial production. In contrast to all earlier formulations, the "neo-academic" synthesis just described—a mystique of form and function under the dominance of architecture—has won enthusiastic acceptance. It is the result of telescoping the Loosian ideas of pure, undecorated machine forms and futurist ideas of the mechanized urban environment as the natural habitat of 20th century man. But this telescoping, which brought machine products within the orbit of pure esthetics, was achieved at the cost of ignoring three fundamental fallacies, which may be labelled: simplicity, objectivity, and standardization.

Geometrical *simplicity* has been identified as a basic preference of Platonic esthetics since the end of the last century, and Plato's celebrated quotation that absolute beauty is found in "forms such as are produced by the lathe, the potters' wheel, the compass and the rule" has been one of the most frequently quoted justifications for abstract art, and for supposing that product design should follow its laws. Neo-academic critics of 1900-1930 could see in such fields as bridge-building and vehicle design, quite accidentally, the same sort of rule-and-compass geometry of which Plato approved.

Although these resemblances are obviously a mere coincidence depending on the esthetic atmosphere of the period and the primitive condition of vehicle design, the neo-academic critics took them as proof of the *objectivity* of their attitude. Engineers were believed to be working without esthetic contamination and according to immutable physical laws. To this misconception, they added a confusion between the meaning of objectivity in mechanical engineering laws and in the laws of esthetics (the latter meaning that their logic is impeccable, not that their factual basis has been subjected to scientific evaluation). The neo-academics then succeeded in circulating the belief that all mechanically-produced articles should be simple in form, and answer to abstract and supposedly permanent laws based on architectural practice. The final absurdity of this view is found in Herbert Read's influential book, *Art and Industry*, epitomized in two quotations. The first draws an unwarranted conclusion from an impeccable observation: "The engineer's and the architect's designs approach one another in esthetic effect. Entirely different problems are being solved, but the same absolute sense of order and harmony presides over each." The esthetic prejudice suggested in this conclusion reveals itself in another, quite meaningless as a statement of fact but instructive as a rhetorical flourish: "The machine has rejected ornament."

For more documentation of this idealizing of engineers, see the author's earlier remarks on page 46.

Somewhere in this confusion lies the third of the concealed difficulties—*standardization*. This word has been used in a muddled way by many "machine esthetes" in a manner that suggests a mark, an ideal, at which to aim. But in engineering, a standardized product is essentially a norm stabilized only for the moment, the very opposite of an ideal because it is a compromise between possible production and possible further development into a new and more desirable norm.

A bright probe that points up the wide gulf between this esthetic reasoning and technical reality.

This double expendability, which involves not only the object itself but also the norm or type to which it belongs, is actually what excludes mass-produced goods from the categories of Platonic philosophy.

We live in a throw-away economy, a culture in which the most fundamental classification of our ideas and worldly possessions is in terms of their relative expendability. Our buildings may stand for a millenium, but their mechanical equipment must be replaced in fifty years, their furniture in twenty. A mathematical model may last long enough to solve a particular problem, which may be as long as it takes to read a newspaper, but newspaper and model will be forgotten together in the morning, and a research rocket—apex of our technological adventure—may be burned out and wrecked in a matter of minutes.

It is clearly absurd to demand that objects designed for a short useful life should exhibit qualities signifying eternal validity — such qualities as *divine* proportion, *pure* form or *harmony* of colors. In fairness to Le Corbusier, it should be remembered that he was the first to raise the problem of permanence and expendability in engineering: "Ephemeral beauty so quickly becomes ridiculous. The smoking steam engine that spurred Huysmann to spontaneous lyricism is now only rust among locomotives; the automobile of next year's show will be the death of the Citroën body that arouses such excitement today." Yet, recognizing this much, he declined to accept the consequences. He singled out the work of Ettore Bugatti for special praise, using components from his cars as examples of engineering design that supported his fine-art view of product esthetics.

This sounds as if it were written about the DS-19 in 1955, but happens to have been said in 1923, when Citroen introduced its duck-tailed roadster (two models prior to the 1955 redesign), which suggests that expendability is here to stay.

As a result, the engine of the Bugatti cars have been regarded as models of the highest flights of engineering imagination—*except* by some of the most distinguished automobile designers. Jean Gregoire, for example, on whose work in the field of front-wheel drive all subsequent vehicles of this type depend, has refused to find the Bugatti engine admirable. He speaks from inside engineering:

> **In a particular component, mechanical beauty corresponds to the best use of materials according to the current state of technique. It follows that beauty can vary, because the technique, upon which the utilization of material depends, is progressive.**

He goes on to develop a type of product criticism that is unique and instructive:

> **As might be expected, Bugatti was proud of his eyes. He loved engines that had straight sides and polished surfaces behind which manifolds and accessories lay hidden. . . . At the risk of making the reader jump six feet in the air, I consider many American engines, surrounded as they are by forests of wire and bits and pieces, and designed without thought for line, to be nearer to beauty than the elegant Bugatti engines. An engine in which the manifolds are hidden in the cylinder-head, the wiring concealed under the covers, and the accessories lurk under the crankcase—all for the sake of "beauty"—is less good-looking than the motor where the manifolds are clearly seen.**

Detroit take note.

This deliberate rebuttal of neo-academic standards must make us ask by what standards he judges what he sees. A comparison between the Bugatti engine and an American V-8 will serve for study. The Bugatti offers a rectangular silhouette with a neutral, unvaried handicraft surface, compartmented into forms that answer closely the Platonic ideals of the circle and square. (With these words one might also describe, say, a relief by Ben Nicholson, and we should remember that Bugatti had been an art student of the same generation as the pioneers of abstract art.) The Buick V-8 of 1955, on the other hand, presents a great variety of surface materials, none of them handwrought, in complex, curving, three-dimensional forms composed into a block with an irregular and asymmetrical silhouette. No doubt impeccable functional reasons could be found for these differences, but one should also note that both engines show considerable care in their visual presentation.

The Bugatti, riding high between the sides of a narrow bonnet, is meant to be seen (as well as serviced) from the side. The Buick, spreading wide under a

Bonhom: low "alligator hood," has its components grouped on top, not only for easy access but also to make an exciting display. The Bugatti, as Gregoire noted, conceals many components and presents an almost two-dimensional picture to the eye, while the Buick flaunts as many accessories as possible in a rich three-dimensional composition, countering Bugatti's fine-art reticence with a wild rhetoric of power. This difference—basically the preference of a topological organization to a geometrical one—might be likened to the difference between a Mondrian painting and a Jackson Pollock, but this would be no answer to our present problem because it merely substitutes one fine-art esthetic for another.

If we examine the qualities that give the Buick engine its unmistakable and exciting character, we find glitter, a sense of bulk, a sense of three-dimensionality, an deliberate exposure of technical means, all building up to signify power and make an immediate impact on whoever sees it. Now these are not the qualities of the fine arts: glitter went out with the gold skies of Gothic painting, Platonic and neo-academic esthetics belong to the two-dimensional world of the drawing board. But if they are not the qualities of the fine arts, they are conspicuously those of the popular arts.

The words "popular arts" do not mean the naive or debased arts practiced by primitives and peasants, since they inhabit cultures in which such artifacts as Buicks have no part. The popular arts of motorized, mechanized cultures are manifestations like the cinema, picture magazines, science fiction, comic books, radio, television, dance music, sport. The Buick engine, with its glitter, technical bravura, sophistication and lack of reticence admirably fulfills the definition of "pop art" of Leslie Fiedler:

We are puzzled only that he confines his comments to the engine. Could the same be said of the car's whole form?

> Contemporary popular culture, which is a function of an industrialized society, is distinguished from other folk art by its refusal to be shabby or second rate in appearance, by a refusal to know its place. Yet the articles of popular culture are made, not to be treasured, but to be thrown away.

This short passage (from an essay on comic books) brings together practically all the cultural facts that are relevant to the Buick.

We have discussed the absurdity of requiring durable esthetic qualities in expendable products, but we should note that esthetic qualities are themselves expendable, or liable to *consumo* or wastage of effect, in the words of Dorfles and Paci; and this using up of esthetic effect in everyday objects is due, precisely, to that daily use. We can see the correctness of this in communications jargon: the "signal strength" of many esthetic effects is very low; and being unable to compete with the "random noise" aroused in situations of practical use, any low-strength signal (fine arts or otherwise) will be debased, distorted or rendered meaningless where use is the dominant factor. Such situations require an esthetic effect with high immediate signal strength; it will not matter if the signal strength is liable to taper off suddenly, if the object itself is expendable, since the signal strength can always be kept up if the signal itself is so designed that use acts on it as an *amplifier*, rather than as random noise.

In other words, if one opens the Bugatti hood and finds that motor covered with oil, one's esthetic displeasure at seeing a work of fine art disfigured would be deepened by the difficulty of repairwork when the ailing component proves to be hidden away inside the block "for the sake of beauty." In similar circumstances, the Buick would probably be far less disfigured by an oil leak, and its display of components makes for much easier repairs, so that visual gratification is reinforced by the quality of the motor as an object of use.

As it turns out now in our merchandising economy, esthetics die before engineering, leaving a different set of mourners over the corpus delicti.

More than this, the close link between the technical and esthetic qualities of the Buick ensures that both sets of qualities have the same useful life, and that when the product is technically outmoded it will be so esthetically. It will not linger on, as does the Bugatti, making forlorn claims to be a perennial monument of abstract art. This, in fact, is the solution to Le Corbusier's dilemma about the

imminent death of the "body that now causes excitement." If these products have been designed specifically for transitory beauty according to an expendable esthetic, then they will fall not into ridicule, but into a calculated oblivion where they can no longer embarass their designers. It is the Bugatti that becomes ridiculous as an object of use, by making esthetic claims that persist long after its functional utility is exhausted.

We may now advance as a working hypothesis for a design philosophy this proposition: "The esthetics of consumer goods are those of the popular arts." But this still leaves us with the problem of how such an hypothesis may be put into a working methodology.

Unlike criticism of fine arts, the criticism of popular arts depends on an analysis of content, an appreciation of superficial rather than abstract qualities, and an outward orientation that sees the history of the product as an interaction between the sources of the symbols and the consumer's understanding of them. To quote Bruno Alfieri about the 1947 Studebaker, "The power of the motor seems to correspond to an aerial hood, an irresistible sensation of speed." He sees a symbolic link between the power of the motor and the appearance of its housing, and this is made explicit by the use of an ikonography based on the forms of jet aircraft. Thus we are dealing with a *content* (idea of power), a *source* of symbols (aircraft), and a *popular culture* (whose members recognize these symbols and their meaning.) The connecting element beween them is the industrial designer, with his ability to deploy the elements of his iconography—his command and understanding of popular symbolism.

Yet the car, greatly underpowered, didn't sell well. Could it be that the speed symbolism, not verified by actual power, worked against this design? If so, a strong demonstration of symbolism's suggestiveness, and a good reason not to misuse it.

The function of these symbol systems is always to link the product to something that is popularly recognized as good, desirable or exciting—they link the dreams that money can buy to the ultimate dreams of popular culture. In this they are not, as many European critics suppose, specific to America. They can be found in any progressive industrialized society. An example in Italian design is the Alfa Giulietta whose diminutive tail-fins might be defended in terms of body fabrication, the need to carry the tail-lights, or the abstract composition of the side elevation. But how much more effective they are in evoking the world of sports cars and aerodynamic research that is one of the ultimate dreams of automobilism. Not all ikonographies are so specific; such concepts as the good life in the open air, the pleasures of sex, and conspicuous consumption are other sources of symbols, and it is clear that the more specific any symbol is, the more discretion must be used in its application.

These trends, which become more pronounced as a culture becomes more mechanized and the mass-market is taken over by middle class employees of increasing education, indicate the function of the product critic in the field of design as popular art: Not to disdain what sells but to help answer the now important question, "What *will* sell?" Both designer and critic, by their command of market statistics and their imaginative skill in using them to predict, introduce an element of control that feeds back information into industry. Their interest in the field of design-as-popular-symbolism is in the pattern of the market as the crystallization of popular dreams and desire—the pattern as it is about to occur. Both designer and critic must be in close touch with the dynamics of mass-communication. The critic, especially, must have the ability to sell the public to the manufacturer, the courage to speak out in the face of academic hostility, the knowledge to decide where, when and to what extent the standards of the popular arts are preferable to those of the fine arts. He must project the future dreams and desires of people as one who speaks from within their ranks. It is only thus that he can participate in the extraordinary adventure of mass-production, which counters the old aristocratic and defeatist 19th century slogan, "Few, but roses," and its implied corollary, "Multitudes are weeds," with a new slogan that cuts across all academic categories: "Many, because orchids."

Clearly this is a prerequisite for "popular" art, but no small assignment for either critic or designer.

What is that elusive quality that says "German" equipment, "French" fashions, "Italian" cars? It is an attribute of style—the ability to inject individuality into a product no matter how commonplace. In the face of Common Market demands, this precious identity is being widely re-examined in Europe today. Below, a traveling American designer shares his visual mementos of this indigenous style, and illustrates some of Europe's ways of achieving the stamp of national and individual design

CHARACTER

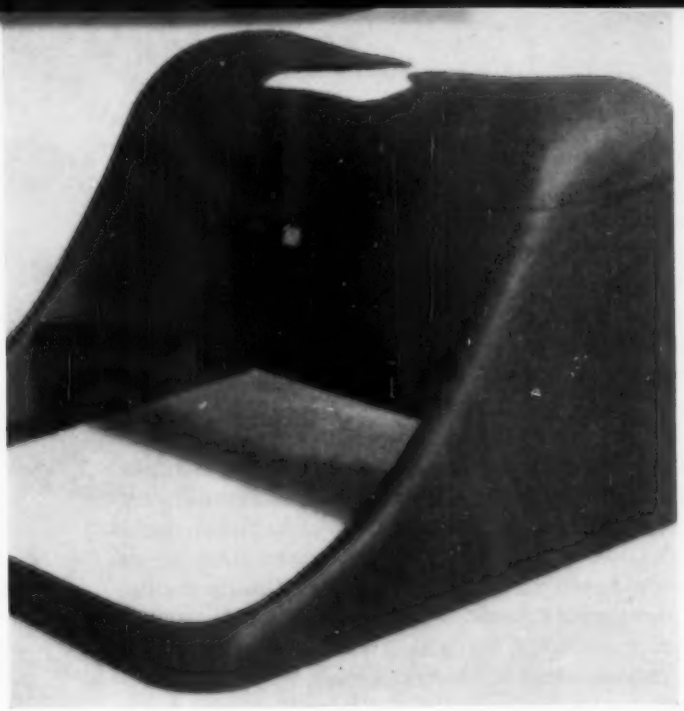
Form in National Identity

by Douglas Kelley

Traveling in Europe, I have become vividly aware of a visual phenomenon: if you shut out all background, close your ears to language, and focus on almost any functional object in isolation, you get a strong message of national identity from just what you can see—from surface form. This appears to be irrespective of materials or technical complications, for similar products in wood, steel, plastic, ceramic, appear everywhere

What is the basis of these strong national identities? Obviously they stem from deeply rooted traditions of people, their temperaments, values, and ways of using products. To explain these is the job of the anthropologist. What the designer can detect are mainly visual symptoms of these deeper conditions. Yet isolating these symptoms to get some understanding of individual design expression is useful and valid, too, because it makes us aware of the choices we make—or ignore—in our own work.

In Germany, for instance, we see products that look neat, controlled, well-made, and remarkably anonymous, rarely offensive but not always strongly appealing, either. Looking closer, we see that rational rather than intuitive form is their unifying quality. The German designer seems to work with an intense urge for clarity, unity and directness. Any unexpected elements in the design are restrained and, if possible, pressed into forms that are as disciplined as the problem will allow. In the DG4 tape recorder, (facing page) the surface form does not seem to be a personal statement, but a description of the job of enclosing the structure in the most efficient way. To sharpen a corner, to emphasize one surface, would by definition be less efficient. Yet this efficiency is sensitive to form, and rarely literal. Home equipment (Braun mixer, page 69) often expresses it with pure geometrical shapes, which keep curves under control and simplify the need to establish relationships

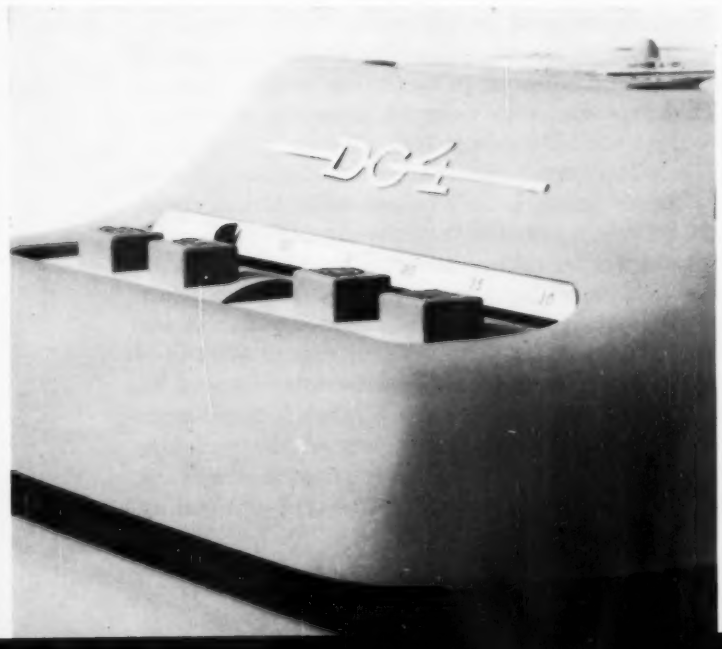


Italian: *Discerning and personal feeling for form achieves free and uniquely integrated expression: curves and flat surfaces subtly follow one another in a composition that holds together from every angle. (Olivetti Lettera by M. Nizzoli)*

Swedish: *Interest in exploring visual form is not lacking here, but the joints and bends and surface changes are handled in a restrained and unemotional way. (Facit typewriter, by Sigvard Bernadotte)*

How to turn a corner in four languages

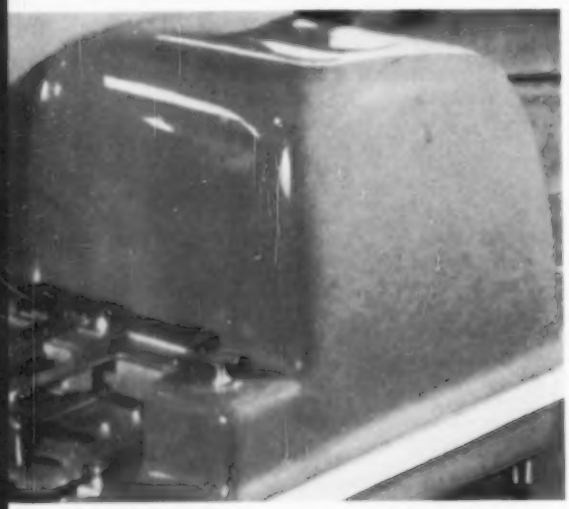
German: *The decisive integration of this shell conveys a no-nonsense attitude toward efficiency. It surrounds the inside structure with a feeling for directness, not nicety, makes transitions with pleasant geometric neatness that is neither assertive nor subtle. (DG4 dictating machine, by G. W. Hornig)*



English: *Engineering considerations and national organization are strongly expressed in the controls, but formal problems of the housing are timidly solved, almost by abdication from design control. (Sumlomatic adding machine)*

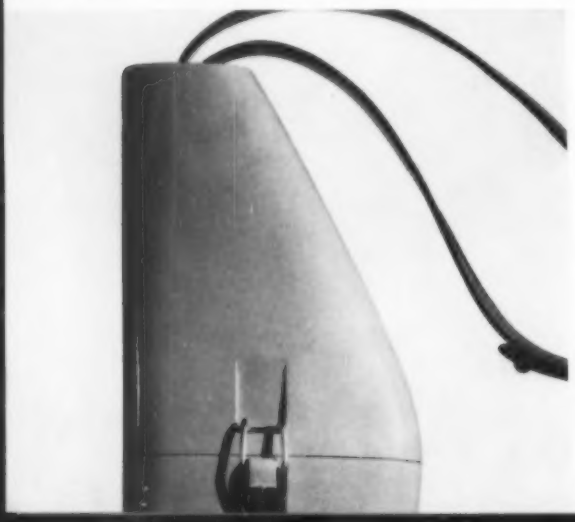
THREE ATTITUDES TOWARD FORM:

Three mechanical elements are sensitively integrated in a taut housing developed strictly to enclose the underlying structure. (Bewi lightmeter, by Dr. Deiter Oestreich, Germany)



Housing for reproducer merely covers existing masses without attempting to integrate them or achieve any form expression. (Powers-Samas desk reproducer, by M. W. Schejbal, England)

Form-initiated product goes beyond demands of internal mechanism, yet finds sculptural justification in human use factors. (Vacuum cleaner, A. & G. Castiglioni, Italy)



Kelley:

between segments and surfaces. In products with numerous controls (Braun radio page 70) there is a graphic precision that appeals to our sense of order. Yet, note that it is achieved by equating all controls in size, position and color, even though their functional demands may be quite different. If a single control is the problem (light meter, left) it is more likely to be well integrated.

An almost total antithesis to Germany's impersonal conciseness is the typical image of Italy's products: shape, color, strength of expression are immediate impressions. How the Italian designer achieves this is obviously not reducible to a formula, to judge by sad worldwide attempts to copy the spirit. Clearly the Italian designer is inherently and spontaneously a sculptor. Leaving geometry far behind, he finds shape in even the most mechanical objects (switch, page 69), and he takes it quite as a matter of course that each design should be his own esthetic statement. But beneath this apparently rampant estheticism, we find that most Italian designers are able to resist arbitrary contouring; they show a controlled and practical ability to derive sculptural possibilities from the problems to be solved (vacuum cleaner, below). Or, if the process works in reverse, they match their sculptural fascination to the demands of function. (We can almost imagine the amusement an Italian designer gets from discovering an appealing shape that also fits the human hand or hip or backbone—a kind of visual joke on functionalism). The Italian expression in sculpture is true: it feels in three dimensions and views from all sides and angles, to achieve a flow of surfaces and transitions. Often it seems to initiate engineering developments, which again is a way to circumvent irresponsible "styling." Yet however important overall shape may seem, it is integral to a subtle and complete concept. Italian products show great sensitivity to the role of color, texture and detail in supporting shape, i.e. the dull surface gloss that does so much to emphasize the roundness of the early Olivetti, the delicacy in placement of the cover break that avoids interrupting the side curves. In controls, too, Italian products give us fine examples of how effective freedom from geometric formulae can be—in the right hands (see page 70).

The often-noted understatement of British character is certainly borne out in what we see in English products. This is not to say that understatement is necessarily ineffective, but as an approach to form it obviously holds back positive expression. In any product, the articulation of masses and the integration of secondary forms may be handled to give a total effect of gentleness or boldness, softness or assertiveness, according to choice. But often the English designer seems too polite to choose at all, and retreats self-consciously, leaving esthetic decisions to chance. On the other hand, absence of design suggests its own style, and in Eng-

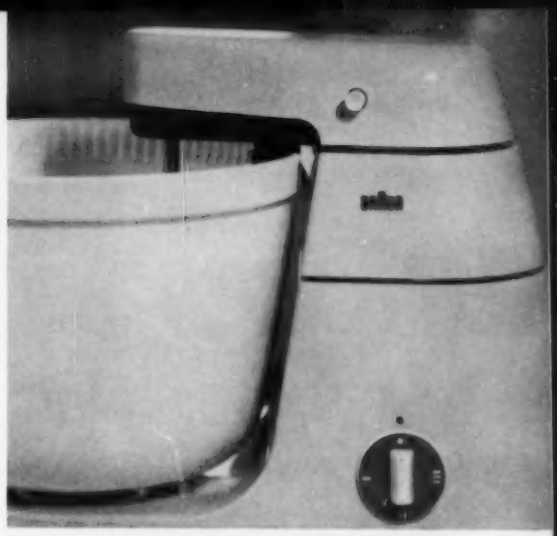
land what comes through is the designer's concern for the human rightness of the product—utility, economy, and organization are as important in an adding machine as in a subway system. This forte—a brilliant ability to define problems, analyze solutions, evaluate results—is, so to speak, ethical rather than sensual design.

Scandinavian countries, in spite of their great identity in furniture and craft production, do not have a sufficient amount of mass production to allow generalizations in that area. A few examples, such as office and photographic equipment, suggest a style that falls between the less self-conscious German designs and the more personal Italian ones. Because of its subdued quality the work seems to have much in common with English design, but it is distinguished by greater interest in, and understanding of, surface control. It derives from a culture with a developed sensitivity to form, not sculptural in the Italian sense, but with an urge to develop line freely, in profile, silhouette and continuous motion in two dimensions.

In France, too, there are barely enough new products to indicate whether a new identity is taking root. The Citroën, primarily, hints that it might emphasize the inventive possibilities of form, technology, and production. The car is certainly a lodestar: its thorough engineering, its unique (though not really *individual*) expression, is as "rational" as anything German, yet full of imaginative leaps that leave pedestrian logic behind. A certain nonchalance about tradition is perhaps the requisite for real freshness in design.

Each of these generalities can be proved as well as disproved; we are interested not in making vignettes but in tracking down possibilities for national character. Certainly the very basis for this is being challenged today. At one time designers and manufacturers were mainly concerned with the needs and tastes of their local scene, and design problems could be solved close to the soil—in a vocabulary heavily influenced by traditions and indigenous feeling. Today it seems widely agreed that industrial design needs greater emphasis on the rational approach and on all manner of new factual considerations. This comes up strongly in designing products of a technical nature for an international market, and in coping with new materials and new means of production that are multiplying daily. Yet, almost because of this, I strongly feel that an educated intuition is now needed more than ever.

In this transitional period, as there is growing intercommunication of design attitudes and commercial goals, the validity of individuality and national character will be put to severe tests: it may be falsely submerged (for misunderstood commercial reasons) or it may survive on the designer's ability to maintain his artistic imagination while increasing his rational and technical skills.



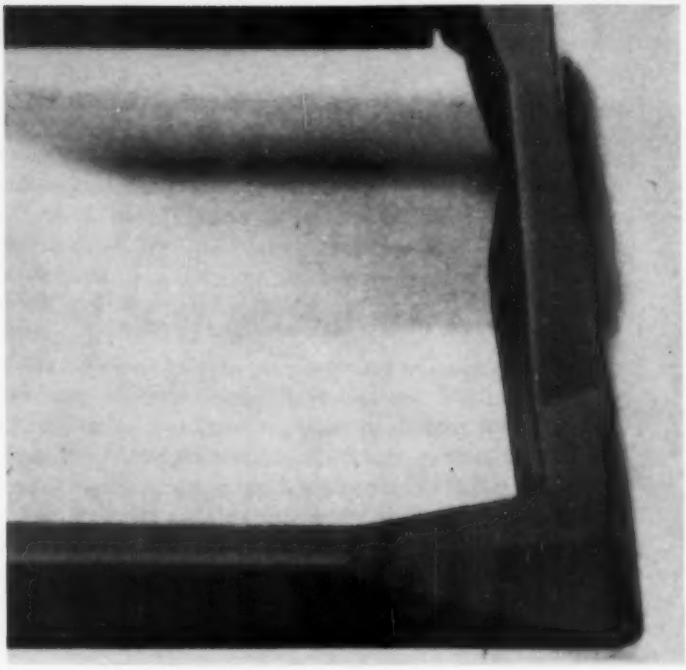
THREE FORM VOCABULARIES:

Geometry: Solid feeling of form and proportion derives mainly from strictness of its geometric voids and solids—controlled, rational, finite. (Braun mixer, by Gerd Müller, Germany)

Anonymity: Clever construction with identical shells is clearly stated, but their anonymous form is somewhat in contradiction to the sweetness of the profile. (Zeiss projector, Germany)

Expressive: Free linear breaks in shell make emphatic form statement not required by function, but intelligently and pleasingly integrated with this purely functional product. (Osbe hand switch, by Calvi and Rancati, Italy)

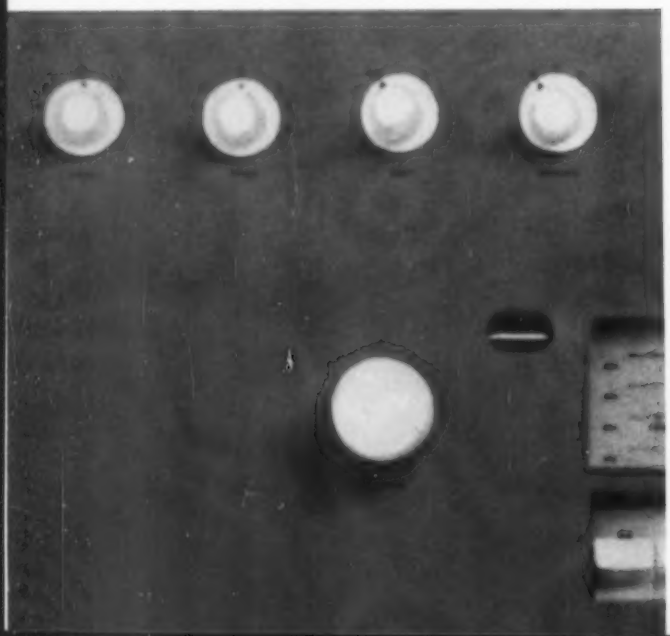
Untraditional: *A good example of inventive engineering expressed through practical forms with little esthetic tradition behind them. (A. Citroen & Cie., France)*



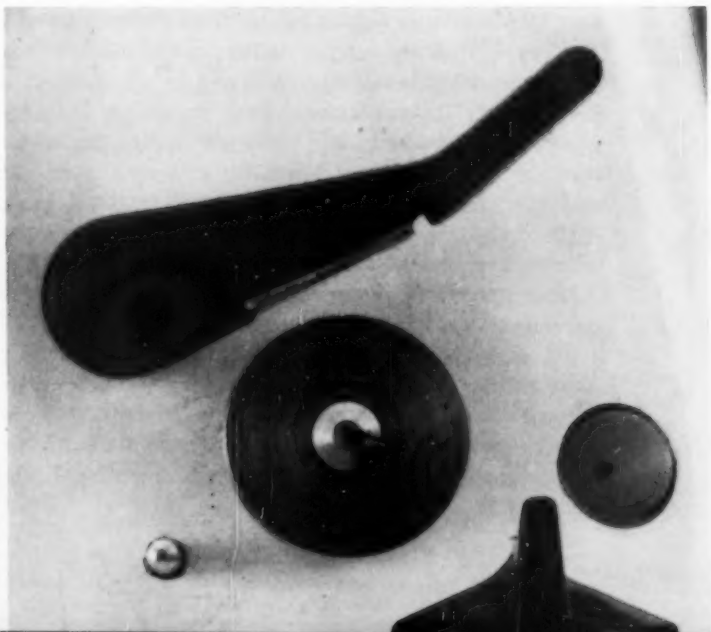
Stylized: *The hollow shell of redesigned keyboard framing emphasizes the tense angular patterning that seems to defy metal forming techniques. (Olivetti Diaspron 82, by M. Nizzoli, Italy)*

Departures and details

Orderliness: *Identical radio knobs in exact linear progression express strong two dimensional order with no individual emphasis. (Braun radio, by Hans Gugelot, Germany)*

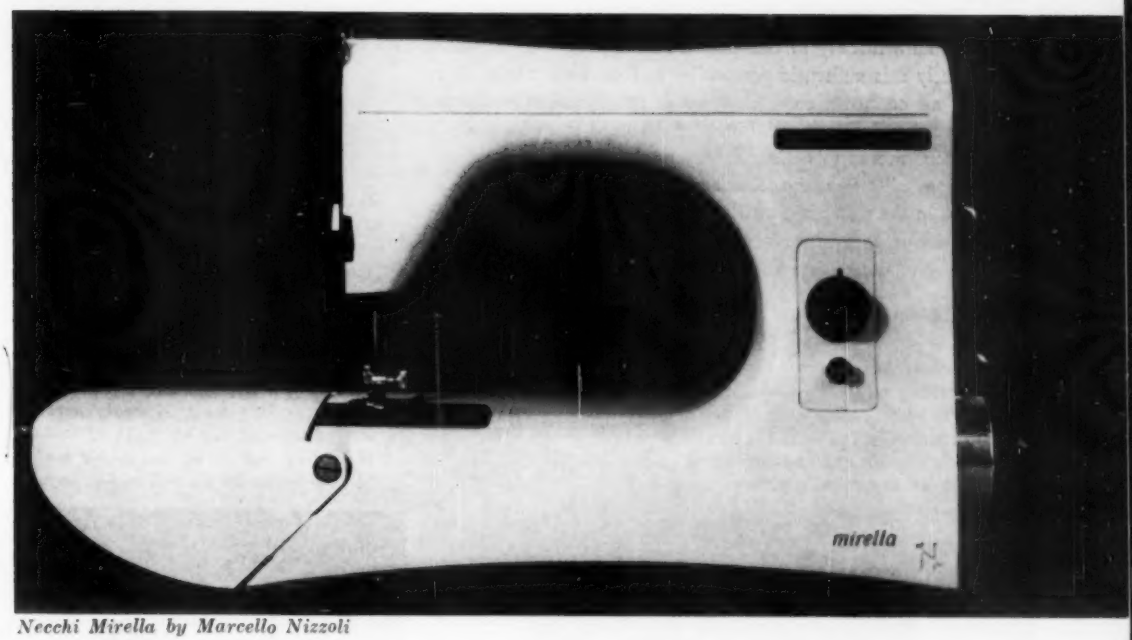


Expressiveness: *Individual consideration of purpose of each sewing machine control creates vivid, useful composition. (Salmoiraghi, by A. Manqiarotti, and B. Marassuti, Italy)*



National character in design, a kind of unique combination of varying proportions of tradition, culture, and individual personality, is rarely static, or for that matter consistent. To illustrate the preceding observations on national form, we present a 16-page portfolio of recent products and relevant comments by spokesmen and designers. The significance of their product style is separately evaluated by our guide Douglas Kelley in a

PICTORIAL TOUR OF DESIGN CHARACTER IN 7 COUNTRIES



Necchi Mirella by Marcello Nizzoli

Why Italian Design? A problem for all nations

Alberto Rosselli
#20/1959

STILE INDUSTRIA

As we see it, Italian design is that particular form of creativity that springs not just from the temperament of a few artists, but from our environment in its most complete sense. It is nourished by the nature and character of the population, a people that expresses its cultural temperament and talent, its traditions in design, its average level of taste and sensibility. Italian design seems to us to be the sum of tradition and inventiveness, defined by a great number of minor statements, from the simplest household articles to fabrics and motor cars. And the atmosphere of Italy today still seems homogeneous enough to express a clear personality, when its work is seen alongside the equally characteristic workmanship of other countries.

We view this cultural unity not as something that makes us superior to others, but as part of a common problem in the total view of design tradition, particularly in Europe. Do industrial artists and designers, and industrialists themselves, believe in the importance and vitality of this tradition in Italy? Do they feel, as we do, that the preference for Italian design among other nations is not a matter of chance, but springs from the recognition of a particular sensitivity to form, color, and design that is characteristic of our temperament and tradition? Do they realize that this design level derives partially from the admirable and still isolated efforts of a few men, who have succeeded in carrying on a tradition of design that is often in contrast with official positions and temporal fashions? (We refer to those who, by first creating a series of high quality products, have set new

ROSSELLI:

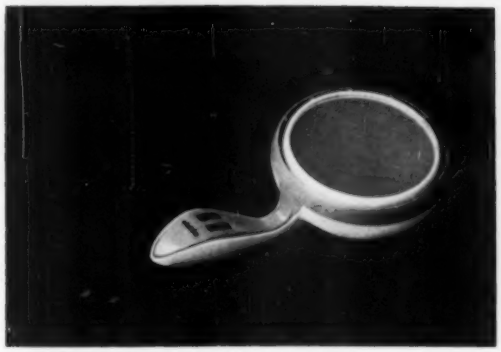
international standards.) Do they realize, above all, that copying, giving up original research, and leveling off with a convenient and anonymous international standard, means throwing away what is our greatest strength today—personality?

All countries entering the new industrial era with an heredity of creative craftsmanship face this problem: how to harmonize a technical revolution, which necessarily involves international exchange, with the idea of creative competition among nations; how, in short, to safeguard authenticity against conformity in production. One difficulty lies in the idea of "environmental acclimatization." That is, should a product designed for a foreign market be conceived and designed in the spirit of that country, or should it merely be modified for that market? This preoccupation is based on non-existent psychological factors, as we can see from the success of many plainly "foreign" products, conceived authentically in one nation and appreciated elsewhere for precisely this authentic personality and obvious origin. It is time for all countries to work towards more authentic design. To believe that design research can be detached from its cultural environment means to believe in the myth of a form-world detached from all personal accent and influence; means to reject "creating" in the true sense of the word. That is why speaking of "Italian" design today is not out of place if we mean clarity and authenticity in production, the courage of a style of our own, the freedom from preconceived schemes, a dedication to our ideas.

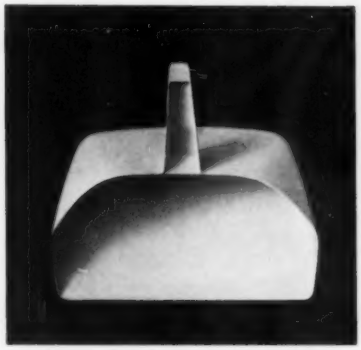
Refuse scoop *by G. Colombini (Kartell-Samca). A basic, in fact pedestrian, object of everyday use achieves individuality and plasticity by the sensitive relation of tapering lines and forms.*

Desk chair *by Alberto Rosselli (Arflex). The necessary elements—base, seat, back, supports—are subtly shaped yet connected architectonically, i.e., with the clear spatial relationship of an object constructed rather than organically grown.*

Folding chair *(Techno). In this technically-oriented solution for series production, there is nevertheless a strongly personal interpretation of the strength of materials, channeled into forms not stiffly mechanical but organically shaped and ordered.*

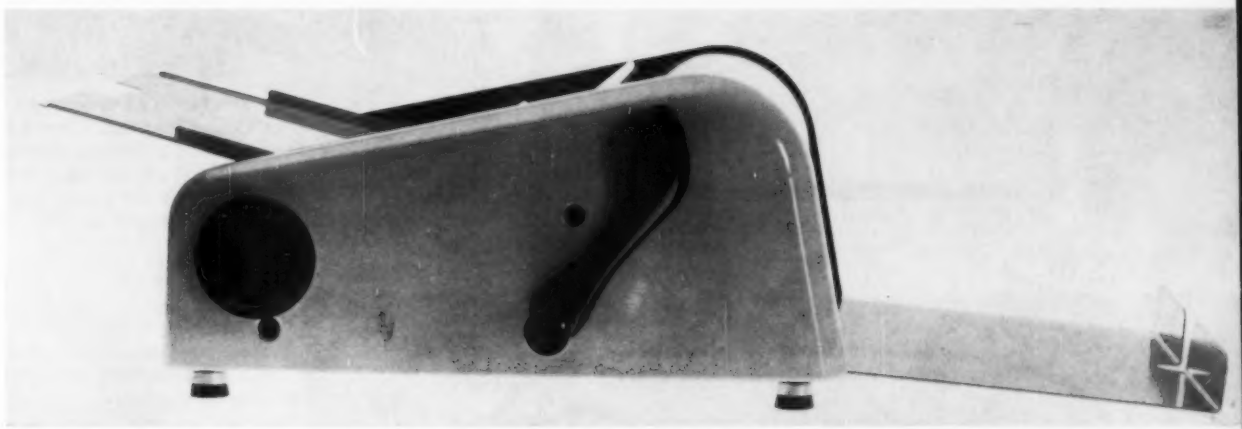


Electric hair dryer *(Elchim). Motor, mirror, and handle are sculpturally integrated in a housing that suggests something agreeable to hold. Structural sections and breaks are made decorative by color contrasts.*

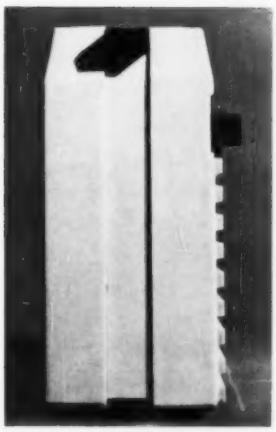


Dust pan *by G. Colombini (Kartell-Samca). The designer has expressed amusement and delight in the shape of this modest plastic pan.*

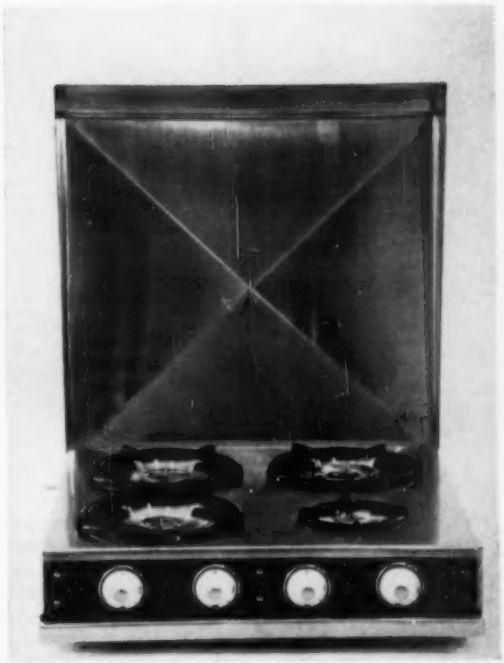
ITALY



Duplicator *by M. Nizzoli (Sada). There is only a touch of individual sculptural feeling in this otherwise fundamental shape, suggesting disunity or incompleteness.*



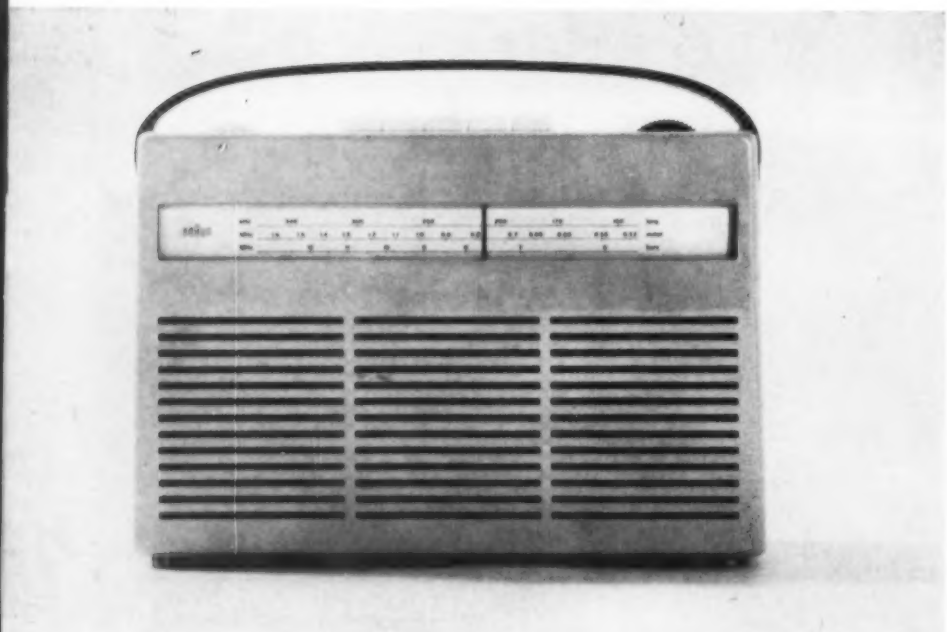
Plastic radio *(profile) by Montagni & Griffini (Fimi). This form is architecturally scaled, achieving solidity and boldness but little immediate identification with its purpose.*



Gas hotplate *by Gian Case. Italian forms are not always personal. This quite impersonal compact stove for the "hi-fi" modular kitchen nonetheless achieves individuality by careful detailing.*

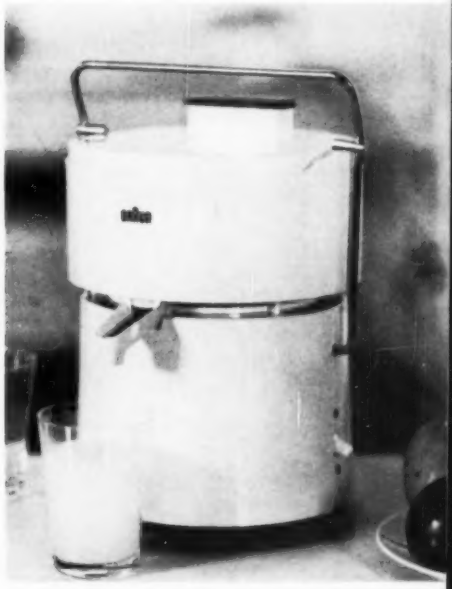
GERMANY

Portable phonograph *by Dieter Rams (Braun). Though parts and details are not symmetrical, control and articulation put them to work for overall balance. Tone arm is retractable.*



Strobe unit *(top) by Dieter Rams (Max Braun). Unit's order and functional clarity are achieved by simplified forms based on straight lines and flat surfaces.*
Transistor radio *by Dieter Rams (Braun). This is "everyman's" radio, its orderly universal character built up by graphic symmetry, its sense of quality by the depth of forms and voids.*

Orange squeezer *(Max Braun). The impersonal geometric form is neat and unobtrusive, yet reveals little awareness of scale or identity with the product's function.*



Plastic fan (*A.E.G.*).
A bold and shapely effect is achieved, in reality, by rational and controlled tapering of forms. The result is not an expression of fantasy in air motion, but a solid look of powerful output.

Flash attachment *by Dieter Oestreich (Voightlander AG). Simple geometric squares, circles, and rectangles are meaningfully related by expressing mechanical requirements in structure and color.*

Electric razor (*A.E.G.*). *The overall shape is strongly geometric, yet there is a restrained personal accent in the modeling that conveys a relation to the human hand.*

Lightmeter *by Dieter Oestreich (Bertram). Geometric forms, this time functionally required, are unified and enlivened by the surface tension of the plastic housing.*

GERMANY: WILHELM WAGENFELD

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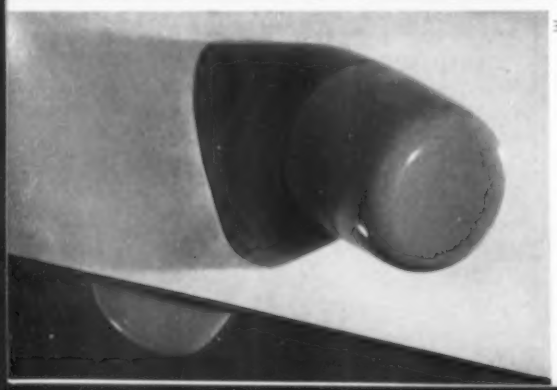


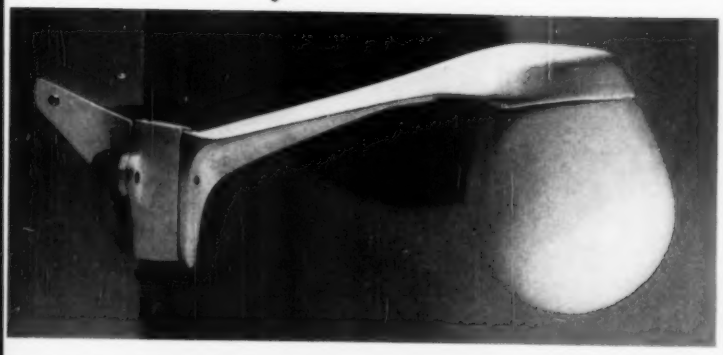
3

"Formgestalten" is a piece of contemporary nonsense. "Form shaping?" Why not shape forming?" Or "shape shaping?" Before the war, we used to speak of designers, of draftsmen and modelmakers, and also — for or against—artists. Thus Peter Behrens, artistic advisor of A.E.G., was highly valued by Emil Rathenau, whereas for many of the staff there he was only an "artist." Since then Behrens and his colleagues have been promoted to patron saints of form-design, which only indicates how misunderstood the pioneers are today. At the turn of the century, when factory-made goods were of very good repute, and the middle classes still clung to the hand-made, the buyers of mass-produced goods were the poor. It was the pioneers who affirmed the growing industrialization of Europe in word and action. Creative by nature, inspired by a belief in a new cultural heyday through industry, science and art, they knew their call was in this field. They are now called "self-taught" because none of them completed a formal course in industrial design, while today's industrial designers are made on the conveyor belt, an appropriate salary scale waiting. Such comforts only reduce the intellectual level, to the point of contentment with the superficial, with "decent" form. Should I teach in schools for such an end? What should I teach? No pupil would hear any advice than to take the path I myself took, not to become a fully-fashioned form-shaper, but simply a useful collaborator in the factory. Thus I am a maker of models and patterns, who acquired various handicrafts skills, and went to workshops and schools to learn and to see, became a worker in factories, a draftsman and silversmith. He who has been here and there might perhaps become qualified to do things correctly by learning from others. . . . It is our business to go into factories and work on practical problems with the technicians, knowing the unison that can exist when economy, industry, knowledge and art are a whole. Without this, an ordered existence for humanity is no longer possible. . . .

1, 2. *New lightbulb design in milk glass, screws into porcelain base.*
3. *Bulb and porcelain socket designed to go over bathroom mirror. Both are part of continuing series manufactured by Lindner, GmbH.*
4. *Record player turntable, designed for Max Braun in* 1955-56.
5. *Vegetable dish for cooking and serving, enameled steel with plastic handles.*
6. *Plastic model of outdoor lamp.*
7. *New designs for sugar shaker, preliminary models and final model (third from right).*
8. *Plastic watering can.*

5

6



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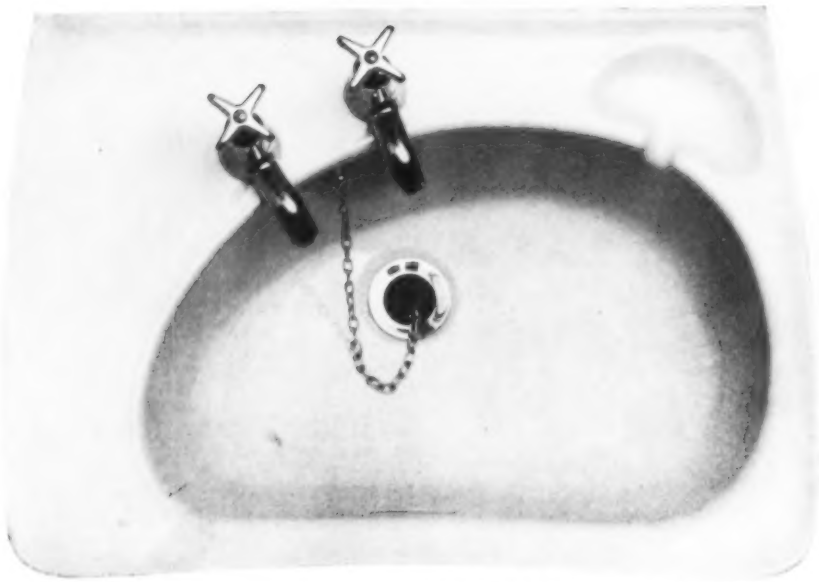
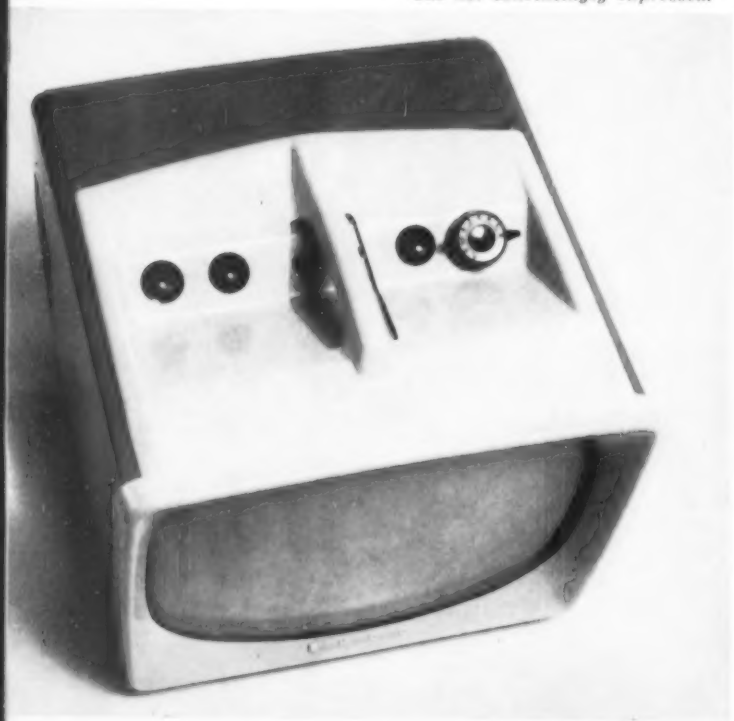
ENGLAND

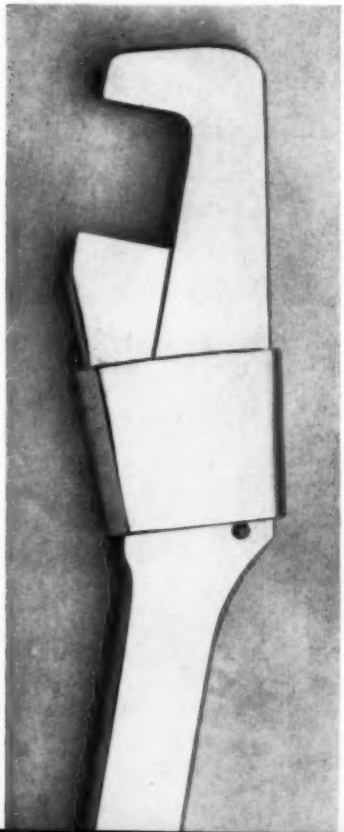


Lavatory basin *by W. M. Goslett (A. Goslett & Co.) Redesigned for convenience and easier hair washing, the basin's amorphic interior shape is functionally valid, yet bound to tradition by its outer form, hardware, stopper.*

Portable tv *by J. K. White, F. W. Wilson (Eckho Works). Side-by-side station tuning placed in top cavity is an interesting practical idea, but not convincingly expressed.*



Self-locking spanner *by C. W. MacDowall (Macdowall Equipment Co.) New sliding collar adjusts instantly. Its strong contemporary form seems foreign to conventional handle shape.*



National design character

Paul Reilly
December 1956

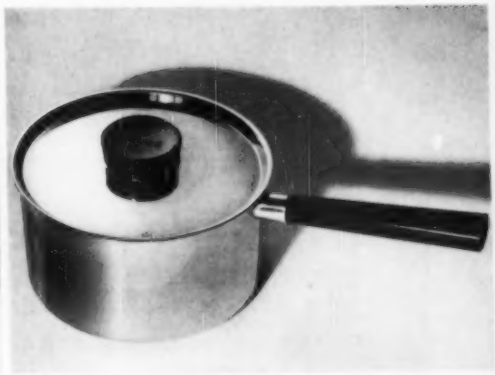
SIA JOURNAL

There are, of course, many undeniable national characteristics in design, particularly in their bourgeois manifestations. Yet even in the area of creative work (among designers whose ambition is to liberate their contemporaries from preconceived notions) some national influences are discernible. The picture divides into three tiers. At the bottom are the conventional ideas and habits that stem from social preferences or prejudices—national characteristics, if you will, though not necessarily the fruits of national character. In the middle, there is the field of conscientious personal design, in which I include the advanced output of established industries (furniture, pottery, glass, printing) in which different treatments are recognizable in different countries. At the top, the new world of technology, in which considerations of efficiency and productivity take preference over national ambitions and expressions (i.e., modern molded fiberglass chairs being made in many countries to almost identical patterns).

The challenge for the British designer working in craft-based industries is somehow to produce designs acceptable to the modern eye and still exploit the industry's exceptional capabilities, to "strike a British note" as I have heard several designers put it rather wishfully. But in a large sector of industry, the problem is not how to strike a British note but how to strike a modern one. The targets will be efficiency in use and ease of manufacture (as in the engineering industries): there is no call for the designer to study tradition, or consciously seek a British style. If he sticks to his last and yet is at the same time an artist, he may strike as individual a note as has Nizzoli for Olivetti, and then critics may read into it some expression of national character.

National character today, as yesterday, stems as often as not from the world of a single outstanding individual who colors the thinking of his contemporaries. A Wirkkala or an Eames will so impress his personality that a national school will develop around him. The results will then be published in several countries, students abroad will become infected with it, and in next to no time another international idiom will be born. It will only then remain for the art historians to rediscover the source of the original inspiration. As far as I can see, we in Britain have not yet produced a designer of such stature that he will, in Wordsworth's assessment of a great poet, "create the taste by which he is appreciated. . . ."

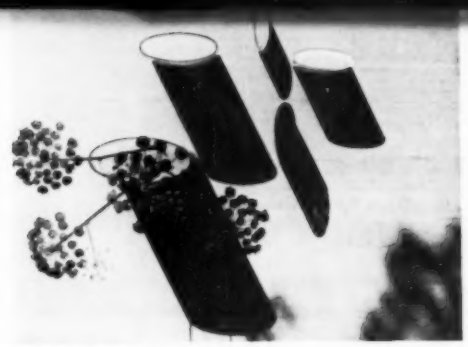
Flat-topped kettle *by A. W. Ryan (Ryan Co.) Kettle top doubles as hotplate, with side vents for steam. Its form is a straightforward statement of usefulness, while handle seems arbitrary.*



Stainless steel *saucepan by Mischa Black, Ronald Armstrong (Judge). The clearly-conceived expression of volume and closure is transmitted logically to the handle. The lid knob, though tastefully formed, looks functionally dubious by contrast.*

Knifecut pruner *by Hulme Chadwick (Wilkinson Sword Ltd.) A strongly individual yet organically logical form results from a fundamental approach to the problems of holding and cutting.*

FINLAND: TAPIO WIRKKALA



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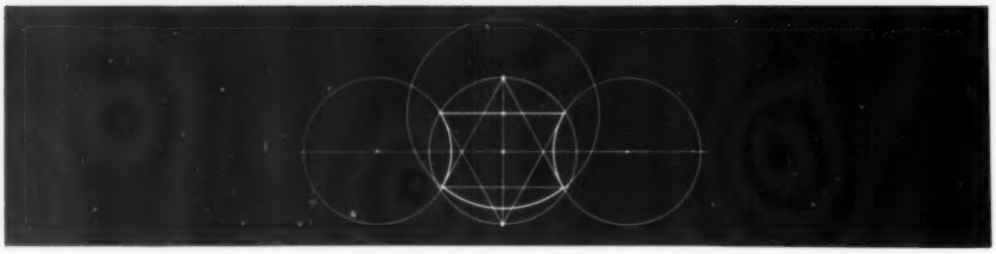

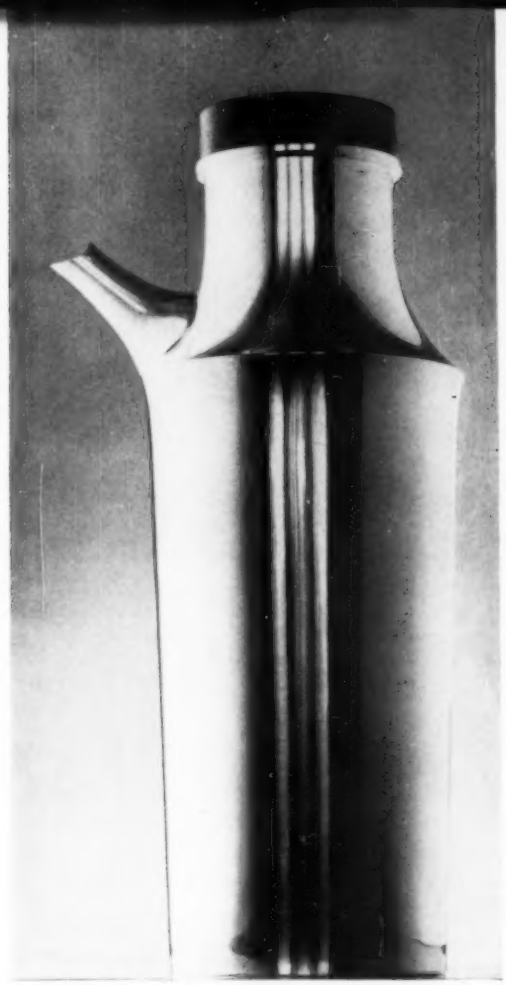

3

4

I work not to create theories but because I regard it as natural as eating, drinking, and loving. Work gives satisfaction.

What is right and wrong? Who can answer that? Often, lack of skill is made up for by heart, by love reflected in a piece. Such a piece will endure, and when it is seen a century later may still put a heart in flames.

Tapio Wirkkala

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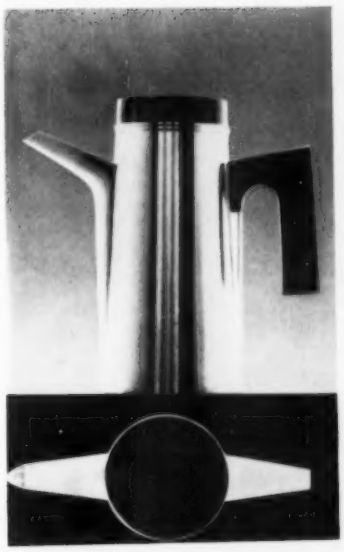
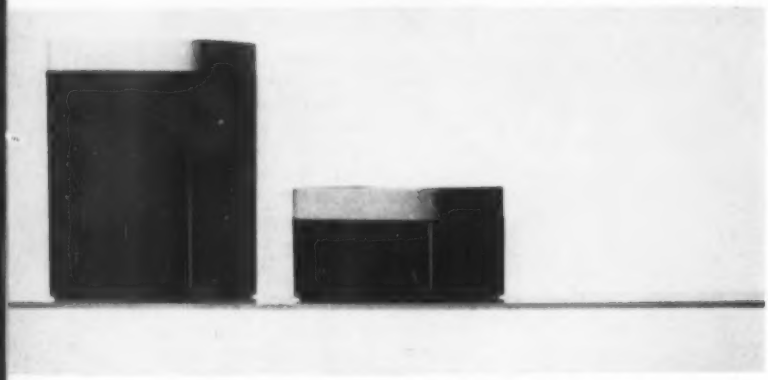
1) *Glass and decanter: Though the diagram suggests that the artist relied on geometry, comparison with the actual glass shows that geometry is only a fantasy. Wirkkala determined its final form intuitively, by observing the 3-dimensional interplay of curves between horizontal and vertical planes when seen in a three-quarter view. Thus the base radius is not identical with the rim, the side curve not a true circle.* 2) *Elliptical vases, seen in plan, show subtly graduated curves.* 3) *and* 4) *Glass and pitcher: A decided personal intention is clear here, an intention to go beyond merely expressing the obvious (though beautiful) shapes inherent in glass and metal, and to work in pure form.* 5) *Pitcher: The bold geometry of shape is related both to function and the artist's desire. The relation of body to spout and handle, while clearly practical, ends in an intensive conformity of shape that seems to strive for balance.*

5



SWEDEN



Plastic cannisters *by C. A. Breger (Gustavsberg). The appropriate restraint of these forms is nonetheless arresting because of the articulation of edges, corners, and color areas.*

Single-burner gas hotplate *by Folke Arstrom (Bahco). Using the popular spherical triangle, the designer makes a simple direct statement that manages to be personal in detailing.*

Polystyrene watering cans *by C. A. Breger (Gustavsberg). Typically ceramic forms adapted to plastic production gain in in practicality: they are lighter, more easily gripped without handles.*

What is Swedish?

by Arthur Hald
#3/1958

KONTUR 3

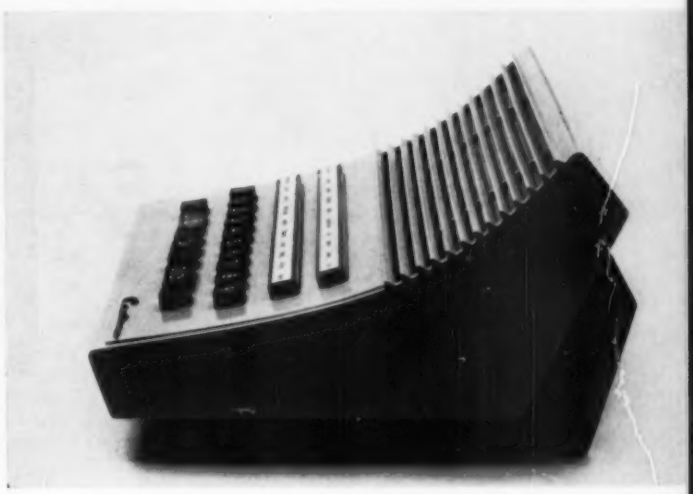
Although a search for national characteristics may not seem essential in light of the international problems that confront us today, one cannot, in presenting current Swedish production, overlook the economic and esthetic traditions that form a sounding board for contemporary design. We seek the content behind similar forms—the overtones that otherwise dissimilar things may have in common.

Let us start with the concept of simplicity, the interrelation of economy of materials and the esthetics of economy. For centuries Sweden has been a poor country. It has been geographically isolated. Its economy has seldom permitted magnificent royal or feudal splendor. Precious metals, woods and stones are not among our national resources. Here the design language of the continental styles has been translated in a spirit of severity and thrift. The compact granite church, the log cabins, the heavy Renaissance castles all bear the imprint of harsh and inarticulate simplification—even baroque is spartan in Sweden. Everywhere there is an element of simplification, a law of limitation which, dictated by material and geographic conditions, affect both the type of material and its decoration.

The esthetics of economy are, it happens, excellently suited to the techniques of modern in-

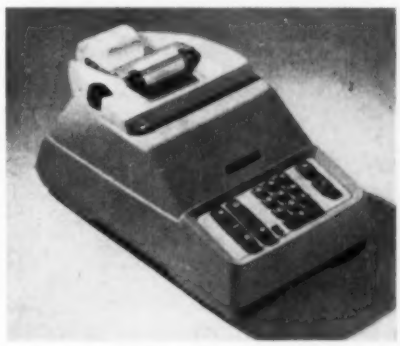
Loudspeaker telephone *by Ahlgren, Olssen, Silow and Smith (L. W. Ericsson). Separate units of the old apparatus are combined under pyramidal cover enlivened by decorative yet functional slits.*

Loudspeaker intercom *A sophisticated combination of curves and angles achieves an original form well related to its cradle base. Deep-formed ridges with sharp edges give a fabricated look in plastic.*



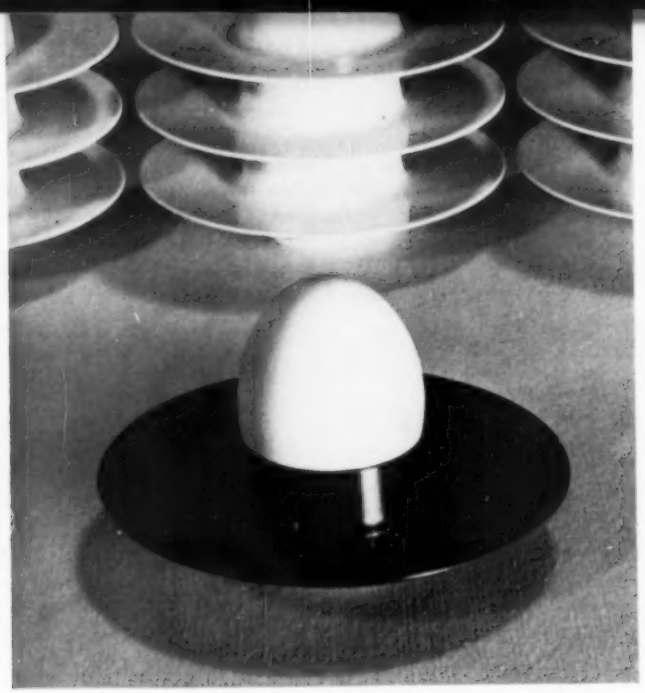
dustrial production. Constructive clarity and unity are qualities that much of our historic design and today's mass production have in common. This is not a confession to simplicity per se, which would be mere formalism. Through our tradition, we have inherited a specific feeling for form that can be naturally applied in contemporary design. Our social ambition to create everyday objects available to all, leads to a demand for what is matter-of-fact and generally valid. But tradition never has just one theme, and efficiency is just one aspect of anonymous architecture and handcraft. Inside, the simple log farm house is alive with the generous, naive colors of textiles and decorated walls. The festive richness of primitive art, and its tender lyricism, have in Sweden achieved considerable local variety. Industrialism has brought about new patterns of living, but folk art has not died. With stubborn energy, feeling for material and the joy of making and decorating have survived. These two feelings, simplification on one side, lyric feeling for material on the other, blend and balance in our contemporary design. Perhaps there is something of a national flavor in this, just because it is not an artificially developed style but an expression of tangible economic and social conditions.

Casserole *by Sigurd Persson (Forbundet). The designer's craft instinct achieves a satisfying rightness of form and material, neither imitative nor shockingly unique.*

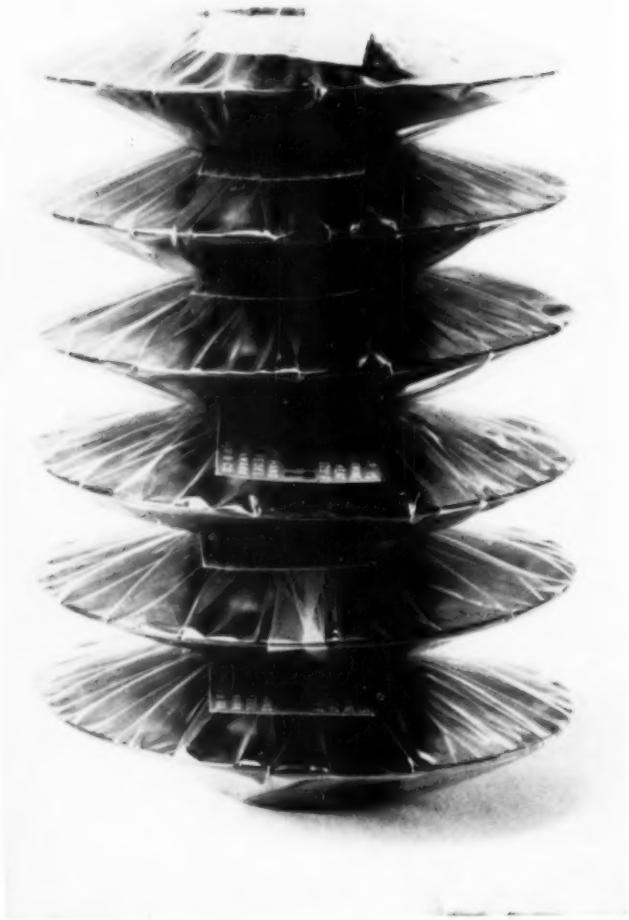


Adding machine *by Bernadotte & Bjorn (Aktiebolaget). The efficient housing gains character from a personal interpretation of the concept of pyramidal build-up of forms.*

DENMARK



Peppermill *by J. Quistvaard (Dansk Designs). This is not an industrial but a traditional wood-turned craft form that is appropriate to the job of holding and turning a pepper grinder.*



Child's chair *by Kristian Vedel (Torben-Orskov). Both material and form are simple, but joined with an ingenuity that makes a versatile chair with a unique and memorable image.*

Stacking melamine egg cups *by Kristian Vedel (Torben-Orskov). The vivid plasticity of form is entirely appropriate to the function of holding eggs and shells, and suggestive of it. The designer's pleasure in crisp linear form is graphically extended into the towers of cups packed for shipping in plastic film and cork separators.*

Reversible nesting trays *by Finn Juhl (Torben Orskov). This admirably succinct solution allows easy lifting without cumbersome protruding handles.*

Teak ice buckets *by Jens Quistvaard (Dansk Designs). These apparently simple forms, sensitively shaped for many uses, are meaningfully detailed in terms of wood craftsmanship.*

Souffle casserole *by Jens Quistvaard (Dansk Designs). The form is partially impractical (though suggestive of the shape of an idealized soufflé), handsome in the mode of African folk motifs.*

What do European designers think about their future? In casual conversations, they appear worried about things that do not trouble us here: American design itself is a big worry, and a negative force in molding their design attitudes. Here an American observer reports its effect on their goals. She also points out that the spearhead of intellectual opposition is in Ulm, where the "new Bauhaus" has recently shifted to a strongly anti-esthetic position. Ulm in fact has started a raging controversy about style in industrial design, and its future

OUTLOOK

Letter from Central Europe

by Dagmar Arnold

September 1959

The impact of American design (and not necessarily the best of it) is being felt more and more in Central Europe. Yet, I have been impressed, in talking to younger people concerned with design problems, by a core of ideas, direction of thought and purpose, that is quite different from what I have found in the States:

Here the central question is: What is "industrial" design? Is the product designed for the specific industrial process by which it will be made, in close cooperation with production engineers? This is industrial design, but if the product to be mass-produced does not allow you to answer "yes" to the question, it faces the stigma of being considered poor and dishonest design. Thus production efficiency is likely to color the judgment of any industrial product.

Art is viewed as a danger point. The designer is not a frustrated artist and not a Sunday painter. Art can enmesh one in styling, according to a common view. And questions of taste and styling are considered extraneous to industrial design problems and make communication between manufacturer and designer difficult. European designers are determined to fight the concept of the "artist-craftsman" and "stylist" working for industry, to establish that theirs is a more basic contribution. Designers on the continent are attracted by the idea of rationalism in design, and try to work toward relying only on "objective" knowledge. Because they enjoy a longer client relationship during the period of product development, their working method for the most part excludes or minimizes the drawing phase. After research is done, the next stages

Arnold

alternate between drafting and developing a prototype through several model stages to eliminate bugs, until everyone concerned is satisfied. This of course has esthetic as well as practical advantages, by creating products that are worked out in their real dimension — in the round. In most cases, designers retain responsibility for a client's products, which results in a more unified design statement over a period of time. The old idea of "star" designer is now rejected in favor of the team designer. If the designer works alone, the subordination of the individual to the industrial process and to a teamwork of "ideas" is the ideal, though the lone designer need not be anonymous as a result.

Interesting point that bears out what Lindstrom says (page 54) about car design. Could American design benefit from this method?

The importance of export markets has focused attention on many questions about the American market. Can the European designer create for the American market? Will he have to change his ways? How? Will U. S. merchandising habits and mammoth budgets for yearly styling, wasteful design, promotion of prestige, and overconsumption have an effect on their own home markets in the future?

Ulm's Hochschule für Gestaltung, in a way, represents an extreme stand on this general line of thought — and while it highlights many of the problems, it includes the disadvantages of any extreme position.

Ulm in Review

by Richard Hamilton

June 1959

Design

See ID, March 1957 for original report.

In 1948 Inge Aicher-Scholl, Otl Aicher and Max Bill conceived the idea of establishing an "institute for promoting the principles of the Bauhaus." The municipality of Ulm, having already created a people's university of some distinction, was approached, and in 1953 a site was donated by the town, and the design and construction of a new school building was undertaken. The inauguration of the Hochschule für Gestaltung by Walter Gropius took place in 1955. On the staff invited by Max Bill to develop the curriculum was the Argentinian painter Tomas Maldonado. Maldonado joined Bill as his deputy in 1955 and a period of intense polemic ensued. Until 1956 Max Bill's word was law, then a faculty board of five members was established with Maldonado as chairman. In 1957 the board was reduced to four and during that year Max Bill's resignation from all the school's activities brought it to three, its present number. This brief outline of changes in the administration points to a dramatic and vital discussion of the pedagogical objectives.

The reasons for the violent shift, and some more positive words on the new attitude, are given on the following pages as Maldonado sees it.

The controversy centered upon a reassessment of the fundamental conception of the school as a new Bauhaus. What was the role of a new Bauhaus against the technological background of the nineteen-fifties? The Bauhaus had promoted an ambience of freedom for *self-expression,* it advocated *learning by doing* and *re-education of the senses,* it demanded that this activity should have a *practical application* in human affairs and that *art* was the prime motivation. These five principles were the rocks on which the Hochschule für Gestaltung had been built and these are the rocks which subsequently have been painstakingly dug out and discarded from the foundations. The major difference between the HfG and any other school of design in the world is precisely in the rejection of those principles which gave the Bauhaus its meaning and which color the attitudes of almost every school now available for the design student. . .

(Mr. Hamilton's conclusions about Ulm on page 96 follow Mr. Maldonado's statement.)

This is Ulm's controversial new stand on

education's future

New perspectives on Industrial Design Education

by Tomas Maldonado

#20/1959

STILE INDUSTRIA

Comments:
Max Bill:
(Form/revue 6/58)

Compared to the program which I introduced, and which was a continuation of the old Bauhaus "vorkurs," the new Ulm program offers what is, in fact, no basic instruction. It lacks precisely those components of esthetic training that are most decisive, i.e. "training and experiment in the field of visual phenomena of perception" and "practice in, and analysis of, the elementary methods of representation."

The idea of the school at the start was that of a unity composed of complementary departments: product design, architecture, the building of towns, information, and visual communication. Today the school consists of two groups:

1) The design of industrial products (industrial design and building departments)

2) The design of visual and verbal means of communication (visual communication and information departments).

This alteration in structure corrupts, first of all, through its simplicity. Some very important points of view are lost which were unique to Ulm. In place of a functional interdependence, the duality of production and communication is artificially emphasized. The development of means of communication has become a separate investigation, extended without limit, and no longer has the primary aim of dealing with the problems inherent in the cultural effect of environmental design. That, however, was the original intention behind the creation of the two communications departments, visual communication and information—particularly the latter . . .

The ideas that form the foundation of what we might call the Bauhaus ideology are, a quarter-century after that institution's closing, hard to translate into the terms of today's preoccupations. Several of them, in fact, deserve to be refuted with great vehemence and great objectivity. But first I should like to consider several isolated questions that are of special significance in the present state of industrial design.

The primary one is the so-called "esthetic factor": how to incorporate esthetics into the industrial product is the favorite theme of all design theorists, a theme tied up with the equally important one of industrial design as an "art" form. Such speculations have very complex historical roots which are, in fact, inseparable from the history of industrial design itself. Interestingly, one of the main precursor movements, the artisan revival inaugurated by Morris and Ruskin in the mid-19th century, was the one that contributed most to spreading the idea of industrial design as *art*. For Ruskin and Morris, art was the sole means of dignifying the life of man and the objects around him. The artist, for his part, was the only one capable of deciding where beauty was to be found—and where it was not. He needed to re-discover his paradise lost, and regain his role as judge.

Nonetheless, if we draw a line from "arts and crafts" to industrial design, it does not turn out to be a straight line. The relation between them is indirect, often established through by-ways, in the face of sharp differences, too. Obviously the artistic romanticism of "arts and crafts" in its original form had little chance of adapting to the new demands of the growing industrial world.

To understand how industrial design was able to survive this arts and crafts influence, we must consider other early movements. There were the great builders of bridges and utility buildings of the 19th century, known as rationalists. Indifferent and in fact hostile to esthetic considerations, they advanced a new image of "design," identified with notions of productivity in fabrication, economy in materials, function in use.

At the turn of the century, several architects were thinking somewhat vaguely about the need to reconcile "arts and crafts" and engineering rationalism: in America, Wright; in Europe, Berlage, Behrens, Wagner, Muthesius. Adolf Loos alone took a courageous stand against the dangers of this reconciliation. Remember, for example, his critical and sarcastic attitude toward the foundation of the Werkbund. His position had one grave failing: industry was foreign to him.

The original manifesto of the Bauhaus in 1919, announcing the union of arts and crafts and the future integration with a superior entity, architecture, could easily have been signed by Morris and Ruskin. A few years later the Bauhaus adopted several attitudes of the rationalist school. "Neoplasticism" and "contructivism" came to replace to a degree "art and crafts" and expressionism. So esthetics became socially acceptable, and reconciliation was possible. The Bauhaus had achieved a miracle: the *rationalist esthetic* of industrial production was made a reality. Of course industrial products posed a problem of form, to be solved artistically. Though one artistic vocabulary had just been suppressed, it was now replaced by another, equally artistic—the so-called formal purity expressed mainly

Comments:
(Following from Stile Industria, #31/1959)

Bruno Alfieri

We would like to object that, at the time of the Bauhaus, the relationship between art and industry, the standing of art, and even that of industry itself, were not yet clear. Industry was still immature. The operational research which so pleases Maldonado would have been impossible. The Ford miracle in Detroit was just that, a "miracle," a unique case, although a harbinger. Standardization for mass production was not ready yet, except in very few areas (electrical products and motorcars). Inasmuch as civilization is always the fruit of slow elaboration, we can see why the Bauhaus, in the years between 1924 and 1933 was in no position to elaborate the problems of pure productivity, but only those much more pressing problems of formal and socio-philosophical nature. It was important for Gropius to design "his" handle, just as important as the problems that Henry Ford brilliantly solved in the field of mass production.

Reyner Banham:

Curiously enough, the popular arts as a discipline of design possess a further attribute that should particularly appeal to systematic and objective thinkers like Maldonado. Being superficial, rather than deep-seated, stemming from causes that are not lost in the mists of history, they can be understood by objective mental disciplines, such as market research or the iconographical techniques used by art-historians. Thus, they would take the esthetics of product design out of the field of "Art" as it is taught in academies of fine arts, and into the field of what might be called "esthetic technology" or "the communications industry." It would enable the product designer to take his place, not as an alien creature armed with dubious mystic powers, but as an equal member of the design team as a man with objective mental disciplines and precise information based on experiment.

Maldonado

by elementary geometric forms and "truth" to materials. On the other hand, the ideal of function inherited from the engineers was considered essential too, but had lost some of its original clarity; no one knew very well what it related to.

In the American depression of the 1930's styling won the day, a new variety of industrial design whose influence is widespread today. It was denounced from the start by the Bauhaus men and their followers, for its commercialism and indifference to cultural and art values. But the problem wasn't easy: at times the stylists created products that Bauhaus partisans were obliged to approve.

The problem of styling has been widely discussed lately. One of the most lucid critics of industrial design, Reyner Banham, asked us some time ago to consider styling as "popular art." The thesis at first seemed seductive, but deeper analysis reveals some frailties and contradictions in his theory.

Banham deplores the madness of judging industrial design as *art*, yet proposes that we judge it as popular art. The thesis that styled products will be the folk-expression of our century no doubt has a grain of truth, and I would agree with Banham if he could convince me that the great rolling dinosaurs of Detroit actually are an authentic art of the people. But I am not convinced that the aerodynamic fantasies of Vice Presidents of Styling have much in common with the artistic needs of the man in the street.

Today nobody denies that a competitive system needs constant change in consumer goods. No one has proven, however, that this change must always be achieved in the same way, i.e. exclusively by esthetic changes. An "esthetics of expendability" is not, as Banham supposes, the only answer to the need for change. It favors surface modifications, but hinders fundamental changes. And the main criticism we can level at the auto industry is not concerned with too much change but too little. The industry is stagnant because it cannot manage to move from superficial change to genuine revolution. A change like Henry Ford's switch from Model A to Model T has never been repeated in the history of his firm. Many people despair of the disheartening diversity of products in a competitive society, whereas we should actually deplore the depressing uniformity.

Finally, the English critic fails to see that the responsibility for the present crisis in industrial design should not fall exclusively on the "neo-academic formalists" but also on the stylists themselves. He does not wish to admit that formalism and styling are only two faces of the same coin: the idea that in product creation the esthetic factor is fundamental, that industrial design is in fact "art."

The esthetic factor is only one among many with which the designer must operate, not the principal one. Production, construction, economy, and perhaps symbolism, also exist. Industrial design is not art, nor is the designer necessarily an artist. Most of the objects displayed in museums and exhibits of "good design" are anonymously conceived and created, often in technical offices by subordinate workers who would never dream of creating "art." On the other side, the worst horrors of modern industry are brought about in the name of "beauty" and "art." A few years ago General Motors published a kind of catechism of auto styling, an elaborately illustrated brochure in which the words "beauty" and "art" occur on every second line and finally in the definition: "For stylists, creativity is the ability to materialize beauty." And "neo-academic formalism" is rich in parallel examples. In the name of good form, horrors no better than styling are created. Naturally, the question of how to know what is and is not a horror can be debated endlessly. The only certain thing is, esthetic considerations have ceased to be a solid conceptual base for industrial design.

This brings us to the economics of design, a very difficult subject to illuminate since we lack scientific studies on the relation of industrial design to production and consumption. The available reports of market researchers do not inspire confidence. What we do know, however, is that in every past period, the consumer-

producer relationship has been different, because the product itself plays a different role. As a result, the designer can never have the same function or significance. In the first period, the designer was the inventor, builder, planner. Henry Ford was the great "designer" of that period. In the second phase, the designer was the artist, no matter whether a popular artist or esthetic purist. In the third period, he will be the coordinator. His responsibilities will be to coordinate, in strict collaboration with a large group of specialists, the many varied demands of fabrication and product use. He will be responsible, too, for achieving maximum productivity in manufacture, for achieving maximum material and cultural satisfaction for the product's user.

One of the difficult questions in all this is to know objectively, without abstract theories, who the user really is. Even though each of us knows one consumer (or perhaps for that very reason) the investigations to date are insufficient. We can only hope that the many human sciences will sometime be able to band together for a systematic study of the subtle aspects of consumption: I am thinking of sociology, cultural anthropology, physical and behavioral psychology, perception theory, among others, as the disciplines that can help us.

Some things we know about consumption, but other aspects are not so easily labelled. The Frenchman Henry LeFebre recently wrote about this lack of a concrete theory of needs, a theory that might investigate where needs come from, how they are created, and what a system or structure of human needs might be. The designer of the period now beginning will need a scientific answer to such questions. They are the only way he can replace abstract generalizations about the consumer with objectively useful material.

The final question deals with the relationship of productivity and design. Productivity expresses itself in three dimensions: 1) increase of production; 2) decrease in unit cost of production; 3) increase in quality. In today's large-scale industry, there appear to be two corollary ways of achieving these ends: 1) operational research; 2) automation.

Here it seems possible that we must return, at a higher level, to Henry Ford's belief in productive efficiency as the dominant factor in well-run industry. Little by little, vast sectors of industry begin to see that frantic competition to ornament products can seriously compromise industry's real interests in productivity. Others naturally assert that even an industry well on the way to complete automation can produce the most absurd products. I don't doubt that the subtle stone lacework of a Hindu temple could be turned out by mass production if a maharajah was feeling capricious. Only in the critical light of productivity can we judge the merit or falsity of such activities, and the cost will surely not be persuasive.

Others argue that the designer has always been obliged to account for materials, fabrication, and productivity. I agree. But let us not forget an important difference of degree: the demands of productivity today are greater than they ever were. In future years, productivity and industrial design will become inseparable. The demands of automation will contribute greatly to this, and the new phase of industrial development will be characterized by a new theory about the relationship of machines and products. If heretofore end products have determined to a large measure the operative behavior of machines, in the future it will be the machine that determines to a certain degree the product, according to the thesis of Laever and Brown. In other words, the designer will more than ever have to reckon with factors that fall outside his private sphere. One of the most typical activities of this new period is what John Diebold calls "redesign." "Totally automated production," he writes, "often necessitates replanning the product as much as replanning the industrial units that must perform a predetermined function." Redesign can also have internal causes: miniaturization, for instance, poses some exceptionally interesting problems for the future, just as

Bruno Alfieri:

It is obvious that we should all recognize the figure of the designer in an industry as one of the industry's principal directors. It is equally clear that the designer of the future should be a highly experienced man capable of sensing, more from the air than from statistical tables, the solutions to problems of operational research. But the fundamental point is the esthetic training of the designer, which should not necessarily lead to "formalism." His esthetic training should only be the fruit of a profound study of form and an indispensable artistic sensibility.

Reyner Banham:

I would maintain that industry disposes of a third means of extension besides automation and operational research. That is, quite simply, styling. For this reason: productivity is related to the quantity produced (below certain total output figures, it would be pointless to mechanize), and the quantity produced is limited by the quantity demanded, among other things. The quantity demanded is demonstrably affected by the esthetic appeal of the product as well as by material and functional considerations.

Mischa Black:

I should like to agree that the function of the designer should be the rational increase of productivity. But does that really make sense in the Western world situation where ever - productivity marches proudly with 5,000,000 unemployed in America alone? And does it conversely explain the situation in the Soviet Union where under - production in consumer products results in furniture which is as bad as the worst in Great Britain and motor cars which are poor imitations of Detroit?
No logically precise theoretical exposition can fully explain human action or motivation, and thus the teacher should himself be as humble and as tentative as the student.

Ettore Sottsass:
What then is the Utopian type of designer envisaged here? Well, the feet of this future god stand on shifting sands, and the industrialists, merchants, mathematicians and scientists know this, as do all men who possess truly modern culture. These people say little and have few illusions. Their problems are minute and short-lived because fear and doubt, ignorance and uncertainty are growing and becoming more serious daily. **It is now clear that as possibilities increase, the unknown quantities grow instead of diminishing.**
If we must have the key to everything, it is to be found in the fact that the bridges of Maillart—an engineer free from any vague ideas on beauty and art, a dry and logical personality—thrill us, satisfy our needs as consumers, whereas the products of standardized industries designed by equally precise engineers, disgust us. How do we explain it? We can't, and we shall never be able to explain it because there is simply nothing to explain: that is the way things are, thank God. Life is a much more complicated device than the most complicated electronic machine; it proceeds in fits and starts, and above all it is very short, so short that it will not suffer programs and concepts but only brief apparitions.
As I see it, these are the things to teach young men: the scepticism and faith which derive from the clear perception that civilisation and history do not advance by theories, but by apparitions, which are certainly not miraculous but are miraculously generated by traditions; and these in turn proceed and evolve, thanks to the very miracles that they themselves have permitted, and so on. As I see it, the worst thing to teach a young man is presumption of whatever kind, whether scientific or artistic, progressive or reactionary; and this can be achieved by teaching young men not only Truth, but also the truths, and immediately after, those other truths which are exactly the opposite of the first ones.

Maldonado
atomic energy opens up completely new areas of design activity.

With all these considerations in mind, I believe we are in a better position than ever before to draw several conclusions about the training of the designer.

For some time, it was thought that industrial design teaching could be isolated from the general context of higher education. This misconception was fostered by the habit, inherited from the time of the Bauhaus, of considering the education of the designer as a task that was principally artistic and only peripherally pedagogical. But in truth, many of the problems of industrial design teaching—I do not say all—must be seen and resolved in the framework of the larger problems of education. We should, for example, relate them to the present crisis in the teaching of technical and scientific subjects, and the daily cry that we should produce more scientists, engineers, technicians. Statesmen, educational leaders, and journalists seem to view the problem purely quantitatively, as if it would be solved by turning out more teachers, schools and students. This is not enough. What educators really need is to know on what philosophy we should base our teaching. "Neo-humanism" and "progressivism" no longer help us.

And this deficiency extends to industrial design, for the philosophy on which schools still operate is totally outmoded. While the 1924 geometric teapots of Marianne Brandt are considered museum pieces, people expect us to take the pedagogical ideas of that period as highly up-to-date.

Actually, what does the Bauhaus mean to educational history? In practice, its tradition narrows down almost exclusively to its Foundation Course. What, in reality, did it stand for? Although many qualified historians doubt the existence of any unifying belief in the Foundation Course, let us suppose for the moment that such a belief did exist— a synthesis of the contributions of Itten, Kandinsky, Klee, Albers, and Maholy-Nagy. Overlooking their profound disagreements, we can discover a core belief that goes like this: The Foundation Course student should, through manual and artistic practice, liberate his creative and expressive forces and develop a personality that is free, active, and spontaneous; he must re-educate his senses, regain his lost psycho-biological unity, which is an idyllic state in which to see, hear, and touch are adventures; finally, he must acquire knowledge that is not only intellectual but emotional, not only in books but through work. "Education through art. Education by practice." These are the constants we are able to disentangle from the masters, and they show clearly enough that the Bauhaus was not a miracle. It grew out of several movements that represented the most advanced educational thought of the day, whose challenge was to oppose verbal "neo-humanism," philosophic idealism, and academic crystallization of teaching. It was a question of elevating self-expression, intuition, and action, above all "learning by doing." But this theory now proves incapable of dealing with the new relationship between theory and practice brought about by the recent scientific revolution. We know that theory must be saturated with practice, and practice saturated with theory. Today it is impossible to do without knowing, or to know without doing. Scientific operational thought has outmoded the naive dualisms and pseudo-problems that disturbed the early pragmatists.

A new educational philosophy is in the making, equally opposed to "progressive" and "academic" trends. Scientific operationalism is at its base. It no longer concerns the names of things, or things alone. It concerns knowledge, but that knowledge must be workable, effective, real. The designer will have to work at the nerve center of our civilization, where he will encounter many conflicts and irreconcilable interests. What will determine his success? It will depend on his inventive abilities certainly, but also on the fineness and precision of his methods of thought and work, on the breadth of his scientific and technical knowledge, and on his ability to interpret the most secret and subtle processes of our culture.

Since Dessau, no point on the European map has drawn such attention in the design world as Ulm—for unquestionably Maldonado's protests have described problems that trouble professionals everywhere. But what are the fruits of "scientific operationalism" in practice? As the first results have become visible, designers and critics have made pilgrimages to the German mountaintop to judge for themselves. Below, a report from Miss Arnold during her year as a Fulbright-sponsored student at HfG, is the first of three descriptions of

ulm in the flesh

Letter from Ulm

by Dagmar Arnold

Spring, 1959

From my first days at the HfG/Ulm, I found that the school readily accepted the term "new Bauhaus" in the sense that it wants to be heir to the tradition of intellectual and theoretical leadership in design. But it makes clear daily that it has no interest in art's relation to industry other than to reject it. This total rejection blurs any distinction between arts-crafts and art-industry. All other camps have blended into a huge outgroup.

The first year is devoted to exercises to develop a way of thinking according to a few problem-solving processes, coupled with a beginning in shopwork and presentation techniques. The basic lesson of the year is to learn that once a problem is formulated and a method is chosen, the method not only produces analysis and revision, but forms the entirety, thereby eliminating extraneous factors such as intuition and taste.

At no time does training lead to a three-dimensional understanding of space, color, line, or visual sensitivity, unless it happens to fall in some field of scientific study. For all intents, there is complete reliance on current ideas and knowledge, and a rejection of the past as irrelevant to today's problems.

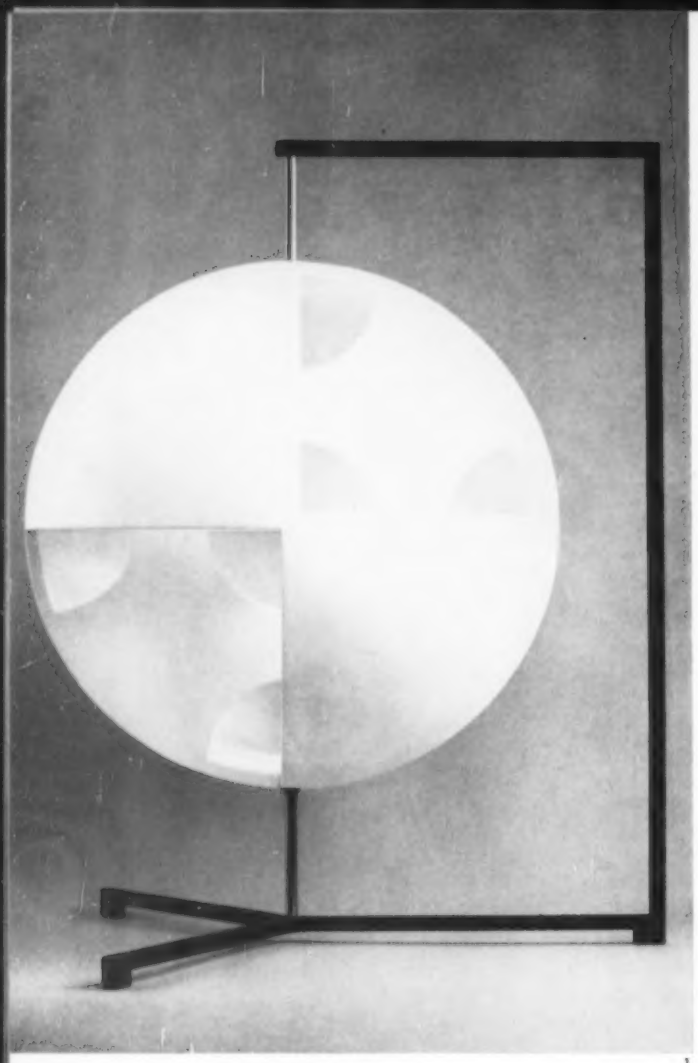
The concern with social and cultural responsibility seems to be aimed at making priceworthy, functionally-examined products. Toward this goal, in the last three years, the student spends mornings doing a maximum of three problems a year, from first analysis to finished model. The function of a given product is examined, but seldom is the relation of need, function and visual expression subjected to deep scrutiny. This emphasis on industrial processes and "realistic" problems turns out students who are oriented to the redesign of individual products by a step-by-step rationale, not by imaginative leaps of concept that might lead to real innovation.

The HfG designer becomes an interpreter limited to the language of the "machine." In this, certainly, esthetic citeria play a silent role, while their loud denunciation of them rest on excesses done in the name of esthetics—American car design is cited endlessly. Will ignoring esthetics and emphasizing function insure them against esthetically offensive products? Certainly it does mean that any choices of an esthetic nature will be intuitive rather than sensitively perceived.

Oddly enough, in the face of these professed aims, the products stemming from the faculty stand out from others on the German market not for any real functional contribution but for their neater *look!*

Possibly, because the school is so young, a fairer line should be drawn between what it actually offers and the more idealized picture of itself. Certainly it offers students contacts with many ideas and subjects that in general relate to the problems they face, of a kind that, to my knowledge, are not available anywhere else in a design school. It has uniqueness, spirit, and its physical plant is excellent.

One is interested to note that this is true, (Anselmi too remarks about it on the next page) but not consoled: for the sensitivity that one German designer may be able to draw upon quite unconsciously, may in many people be the result of the very training and stimulation Ulm wishes to dispose of. Perhaps it follows that those who disparage "art" training are those best equipped with its results already.



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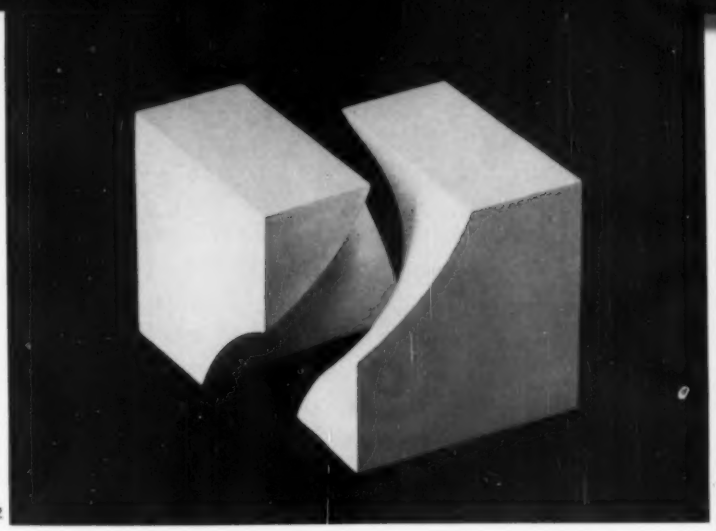

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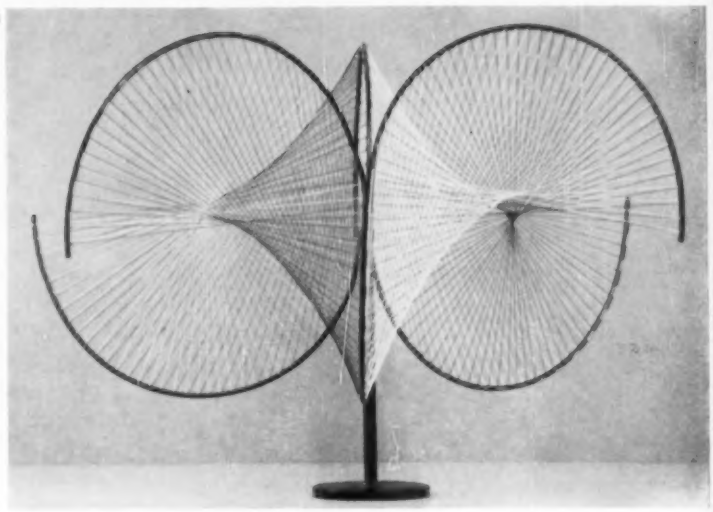

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EVIDENCE FROM ULM'S WORKSHOPS CONFIRMS THAT SYSTEM AND LOGIC DOMINATE EVEN

Visit to Ulm
by A. T. Anselmi
#21/1959

STILE INDUSTRIA

During our trip to Ulm and throughout the region we could not help noticing a now almost constant part of the German landscape, the Volkswagen motor-car. The Volkswagen (you will hear it mentioned even in conversation with managing members of the school!) represents for the German people the symbol of Germany's recovery by means of a policy of productivity. But for Ulm it seems to represent nothing less than the symbol of a philosophy of design based on productivity and on the prevision of the effects of automation on industrial equipment and on the characteristics of manufactured products. Moreover, for Ulm, a bad design that is easily mass-produced is better than a good design (in the sense of form) which is difficult to produce (at least this is the over-simplified conclusion which the hasty interviewer is tempted to reach). The reality is not quite so elementary. Meanwhile it should be made clear that to speak of a "bad design easily mass-produced," at least at Ulm, is meaningless. The fact that a product is easily mass-produced means that it is not a "bad" but a "good" design. This is more or less the reason for the indulgence with which they consider the fruits of a policy of productivity that is esthetically rather unsatisfying, such as the Volkswagen.

But the kernel of the matter is a different one: the designs which are produced by the Ulm school are not "bad" designs from the esthetic standpoint although "accurate" ones from that of production. On the contrary, the pages of our magazines prove that they are unexceptionable and inspired, perhaps, by a kind of rigor which distinguishes them from others, even from the formal point of view. (While neither we nor those responsible at Ulm may like it, we are obliged to use rather equivocal phrases like "from the formal point of view" in order to make ourselves clear). We must suppose, therefore, that for discussion purposes and when speaking of their own activity, they insist on describing a kind of reluctance when faced with esthetic problems concerning form

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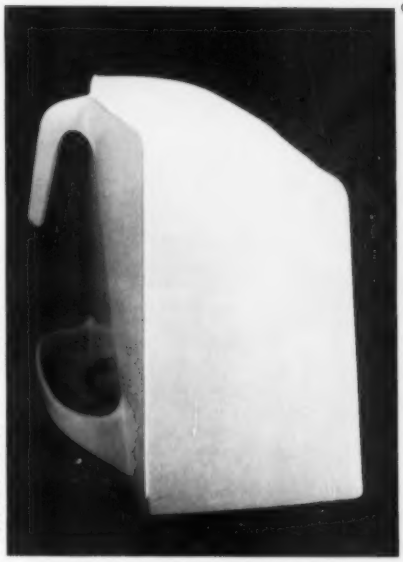


6

1, 2, 3. *Foundation problems in shape formulation. Geometric forms are dissected by logical formulae.*

4. *Fine-gage calipers designed in consideration of use possibilities and production efficiencies, achieve a distinctive and personal form unusual for Ulm.*

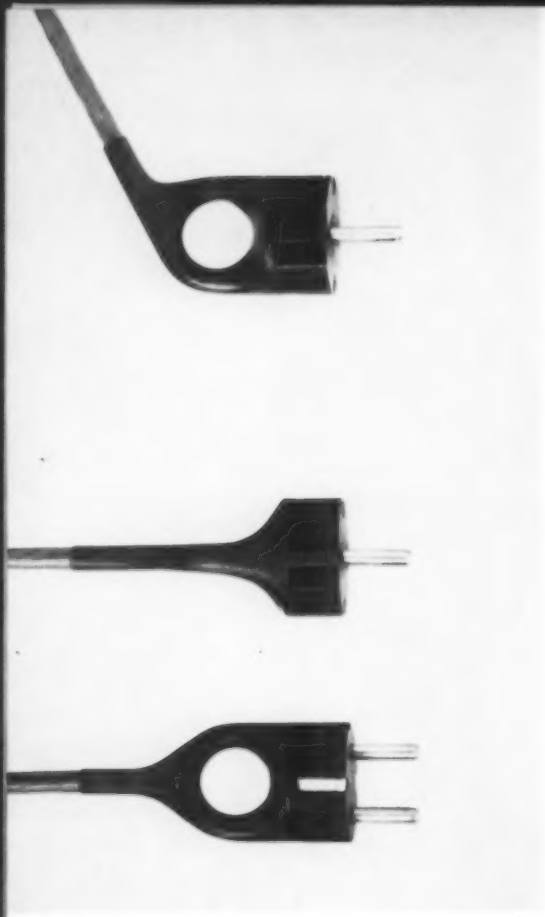
5. *Espresso pot, reorganized internally for easier opening, loading and cleaning, arrives at a symmetrical external form that is more intellectual than expressive.* (*Prof. Leowald, and von Klier*)

6. *Plastic bin. Despite a thorough and logical approach to problems of hinging, angles of use and storage, and ease of manufacture, designer arrived at sculptural forms that have stamp of individual character.* (*R. Weiss*)

HUMBLE PROBLEMS, YET INDIVIDUAL FEELING FOR FORM SOMETIMES BREAKS THROUGH, TOO

when, on the other hand, during planning, they are able to dominate these problems with as much mastery as they would any other. One can only conclude (with relief) that the legendary rigor, the "Calvinism" at Ulm lies more in polemic discussions (and therefore reaches gigantic proportions in the conclusions drawn by distant interlocutors), than in the reality of the designing process. Those who have visited Ulm can affirm that this rigor and extreme care, this cult of research and, in the last analysis, everything which goes to make up the Ulm way of working, does not wholly exist in the imagination of distant observers. It merely concerns an error of attribution. The rigor, emphasis on organization, careful and methodical study of phenomena connected with design exist, but only as an instrumental factor limited to a method. In this sense it is only right that they should be the boasting points of a whole attitude to work; all the more so as this attitude involves the line followed by a school.

In the controversy between the completely modern concept of high specialization and the "do all" concept of the 19th century opinion of the artist, we believe that we can identify the feeling of uneasiness that colors Maldonado's talk when he mentions the word "artist," and on the other hand, the perplexity of European observers at seeing these artistic components placed in an apparently secondary position. In his conversation, Maldonado continually emphasizes the need for the organization of teaching programs in the light of a full-production economy. One of his favorite expressions is: "We do not want to do beauty treatments, we want to have a hand in designing the product." Like all decidedly polemical standpoints, this one, too, limits the person who says it as if he were ignoring or neglecting allied and corollary phenomena. But those who have spoken to Maldonado realize that he is well aware of the limits of such an economy. He is certainly not unaware that a full-production policy may lead to over-production and that during the crisis of over-production the designer readily becomes an accomplice in the free-for-all struggle for new customers. His position might appear to be rigid if he practiced it on the professional plane, but one can hardly deny that he is correct and coherent when he refuses to teach short cuts to his own pupils at school.



1. *Pull-plug: A rarely-challenged menial form is improved functionally, yet in form fails to express a unity of pulling forces.*
2. *Slide projector fits on tripod, a problem in balance and optics solved with a coherent form more like a machine than an optical instrument.*
3. *Essential sewing machine elements, tube, cylinder and rectangle, are dryly linked without deviations to accommodate wheels, dials.*

THE CRISIS AT ULM, A CRITIC CONJECTURES, WILL INVOLVE ITS ATTITUDE TOWARD STYLE

Ulm in review
by Richard Hamilton
June 1959

Design

Industrial design is in many ways the least novel of Ulm's four departments. Its products do not strike one as remarkably different from those of the leading industrial design schools in Britain or in America. Many of the published examples of work have been consultancy jobs by lecturers, sometimes assisted by students. One is more aware of the differences when the ***methods*** of designing are compared. Many problems will be approached statistically before forms are sought. Lighting research, for example, will first examine every known lighting product—these are then cataloged under type groups. These given solutions are then broken down into constituent elements and the documentation is charted according to characteristics. A pattern, analogous to the periodic tables of elements in chemistry, locates areas of new possibilities. Permutations of the analyzed functions give deduced types and practical experiments can be conducted with the derived elements to establish new forms. These methods are, of course, slow—it will be some years before their value in terms of evolved products, and evolved designers, can be assessed. The formulation of principles has been the first task of the faculty. It is upon the validity of its objectives and the methods created for their achievement that the school must be judged. No new forms or new product solutions should be demanded from Ulm at this early stage. What might emerge is a new type of design specialist with a brain tuned to the technological background in which he will work—subject to pedagogical disciplines as severe and reasoned as those of his partners in industry, technicians trained in scientific and philosophic thought.

The dangers in such training when applied to the designer lie in those sectors where a freedom of choice exists. Sooner or later one or more solutions in a complex of decisions must be adopted simply as "preferred." As soon as freedom of choice becomes a factor, style is involved. The crisis at Ulm will occur in the margins—its general theory is irrefutable, its attitude historically right. Style: what is it? How is it disciplined and rationalized? These are already key questions at Ulm; when Ulm has answered them, or refused with sufficient clarity to accept them as real issues, a new style will have arrived.

In our automated future, will the machine inevitably call the tune while designer and public merely keep step, as HfG believes? Or is there a chance for men to retain control of machines and products? There is a chance, says Mr. Jones, if designers are prepared to put calculating devices and analytical methods to work in their search for a deeper understanding of human needs and reactions. And there is a chance for a humane new esthetic to develop in our future too, summed up in what he terms

the bio-technic hope

Automation and Design

by J. Christopher Jones
October 1957; February 1958

Design

. . . The stage is set for the adoption of analytical techniques in design. The recent emergence of ergonomics, consumer research, motivation research, method study, and many forms of statistical analysis, foreshadows such a change. But it is also clear that exhaustive and logical design methods are not often used at the moment, even in engineering. This is because they are relatively costly in time and tend to involve a tremendous amount of research and analysis to fix the simplest of variables.

At the moment, the less exact but much quicker and cheaper methods of relying on informed intuition are often acceptable, and anything more is usually considered to be a waste of time and money. But when automation is complete, such methods will not suffice and the full rigor of analytical design will be forced on the designers. Such methods will then become acceptable because the economics of automation allow a more generous budget for pre-production research.

It is characteristic of automation that it provides its own answer to this problem. The digital computer, which is the most important of the information handling devices that make automation possible, can be used to cheapen and shorten analytical methods so that they become a practical possibility. Used in this way, the computer enables the designer to initiate and carry out the most arduous and protracted analysis of design problems, without resort to guesswork and without the tremendous labor of doing the counting and calculating involved in such analysis.

Not only can the computer be used for analysis of data, it can be used by the designer to try out and predict the consequences of using any of a large number of possible designs, so that the correct shape can be discovered with certainty. It is already possible to see how this might be done in a relatively simple case such as the determination of the effects of varying patterns and positions of glazed and opaque areas in a curtain wall on the light and heat distribution inside. A computer could be programmed to work painstakingly through the countless possibilities until the optimum design was discovered. There seems to be no theoretical reason why such a procedure — the replacement of informed but intuitive designing by logical analysis — cannot be extended to any design problem of three dimensional complexity, so that design, within the limits of automatically manufactured and assembled system of unit construction, would become automatic itself.

In this account, design-by-computer sounds like the ultimate dream of human engineering and the Ulm approach, with all decisions determined by "data." Yet in practice, it seems that the designer, programming the analysis of data, would be the important data coordinator and the one who finally selects among numerous possibilities and alternatives that will arise.

This does not mean that the things being designed would become less varied or more stereotyped; it does mean that designing would have become sufficiently fast and reliable and exact a process to translate human requirements into the shapes that more naturally and correctly fulfill them, at a far greater speed and

certainty than can be undertaken at present. Instead of products that only approximately meet our most easily discoverable needs we might have products that were matched to our most diverse and subtle requirements.

But, before logical design methods can be widely used and before computers can be exploited in this way, there must be accumulated a much greater and more detailed knowledge of the relationship between all the factors involved in any design problem, and a comparable increase in the availability and capacity of computing machines and programming techniques. These can happen only after much more research and greater reductions in the cost of computer parts. The possibility of much smaller and cheaper computers is hinted at in the miniature computer for aircraft use . . .

In a subsequent article in this series, the author made significant points about the "inhuman" effects of design based on nature, logic, and a disciplined environment.

"Survival through Design" is the title of a recent book by Richard Neutra — a book concerned with the very high level of mental stress to which we are all subject when we participate in industrial life and all that goes with it. This stress, which Neutra believes to be a result of the inhuman aspects of a mechanized environment, and to which he attributes the appalling incidence of mental illnesses, is likely to be the end of us if we do not bring it under control. And as an architect and a designer he naturally sees the means of doing so in a reshaping of that environment by design. We have seen that all the unpleasant inhumane elements of the stage before automation, in which we live at the moment, are attributable in the main to the lack of wide and fast information channels in our mechanized system. Rush hours, clock-watching, the "soul-destroying" tasks of manual and mental repetition work, over-designing and over-emphasis on the shape of things so that they shout at us and force their way into minds made vacant both by the lack of deliberate memorizing and by over-reliance on the written word, all these, and many more, are the agents of our unenviable mental condition.

This "advanced form of functionalism" describes quite clearly what was missing from simple functionalism, and still is—knowledge of effects.

Insofar as these things can be expected to disappear of their own accord as the more proper and potentially humane information channels of electronics come into being to discover people's real needs, we can say that Neutra's view is too gloomy and that his remedy is not needed. But considering the very long time that may elapse before a state of true automation is reached, it may be well to take careful note of the argument of "Survival through Design." This argument is based largely on the assumption that caprice, taste, fashion, guesswork and all intention to excite the users must be removed from the designer's mind and replaced by an imaginative and humane and disciplined interpretation of all the many contemporary studies of behavior that are called by such names as experimental psychology, anthropology, social science, physiology and so on. The use of all these means of obtaining the data for design is what we now call ergonomics. The designing that Neutra conceives to follow from such studies is an incredibly subtle and advanced form of functionalism that takes account not only of the most obvious, or even the least obvious, requirements of structure, manufacture and use, but is particularly attuned to the unconscious effects that are not obvious at all.

An interesting and logical twist that warrants further exploration. If indeed nature is a rational and inhuman model, is it nature's apparent (surface) irrationality, disorder and spontaneity that accounts for its romantic appeal for mankind?

In endeavoring to design things that will not harmfully disturb the user's mind, the designer will find himself measuring and taking account of each and every effect that the environment can have on the senses. Pattern, texture, absorption and reflection of heat or sound, smell, psychological effects of enclosure, exposure and every intermediate stage, all these and many more would be considered and allowed for in the design of every part of every article or building. Difficult as it is to see how we might find time to take so many pains (although the electronic computer could assist us) it is easy to see that the results would be to create a world much more like that of nature than is our own. The artificiality of a man-made thing might itself be lessened and we would certainly be relieved of the horror of our own creations, which at present drives us out and away from them to seek what sunlight and natural scenery remain unpolluted by our industrial activity.

But even to this picture there is something to add. To design in this calculating and exacting way is to a great extent rational, logical and inhuman, as is the world of nature, which forms a model of what such impersonal designs might be like. This tremendous rationalism, that of nature itself, seems to underlie and prevail in every aspect of automation that has

been described. Unfortunately, perhaps, it is in itself an inhuman thing and in its much more subtle way is as much a source of strain to us as any of the evils of crude mechanization. Already it has been noted that people who are regularly confronted with industrial rationalism acquire "a paradoxical want for irrationalism and an unpreparedness to accept inevitable things." Even the change to the more humane environment of automation is such a thing and can be the cause of anxiety and uncertainty. The prevalence of the seemingly irrational in much modern art, and the more demonstrative aspects of jazz, and so on, may well be important symptoms of an overdose of industrial rationalism and may also foreshadow a much greater social acceptance, or even encouragement, of irrational and capricious behaviour in the art and life of the society towards which we move. Possibly the irrationalism of action painting is typical of the kind of activity that will provide us with a release from the inevitable orderliness of automation and all its effects. This development may result in certain artifacts being designed much more freely and much more "artistically," so that we may live out our fears and anxieties without social disapproval or mental unrest. If this is the case then art in the extreme and wild forms in which it appears today will turn out to be a curiously necessary thing. This and other connections between automation and modern art are extremely interesting.

The newness, importance and vitality of automation make it a likely source of new and significant images in art that can be widely recognized and felt. There appear to be three such esthetic images, each one arising from and symbolizing one of the components of automation. These components are *mass production*, the *mass market*, and the *individual user*. Mass production can be symbolized by the *anonymity and repetition* of the central mechanism (a large plant where, in automation, materials and information are processed); the mass market can be symbolized by the picture of *randomness;* the individual user can be symbolized by the image of man and machine in a *biotechnic intimacy*.

The dull and inhuman esthetic of anonymity can seldom be seen by the users of automation, but has already become a significant one for artists, architects and designers of patterns. More recently, the random image has become significant and contemporary in much the same way. This reminds us that the concept of randomness is a much studied one today. (Information itself, the basic ingredient of automation, can be mathematically described as the absence of randomness.) It may not be true to say that these things were directly inspired by the sight of industrial equipment; it is quite possible that such forms were symbolically or decoratively used before their industrial equivalents appeared. But the presence of so many similarities between symbolic and industrial forms must surely imply a common source of concepts and ideas. Using the word in a most general sense, that source can be called automation. As has been explained, the products of automation still wear the dress of sales appeal and, apart from the telephone and a few others, have not yet acquired the *biotechnic look*. This last esthetic is too new to be clearly seen and as yet has no specific parallel in the visual arts, but it might be correctly identified with articles that are most obviously adapted to human use. Certainly it should be the esthetic of the input/output device and it could also be that of the automatically manufactured domestic product.

These three esthetics, or images, are related in a most interesting way to the human scale or size. As in nature, so in automation, the things that are far removed from the human scale are bleak in their inhumanity. The straight line itself—the ideal of automatic production—leads in each direction to a remote and unimaginable infinity. When things are large, either in size or because they cater for larger groups of people, the cold geometric esthetic of the central mechanism is to be seen. There is perhaps a lesser inhumanity in the image of mass humanity, but here again we see the connection between inhuman, or superhuman, scale and the statistical, impersonal, vision. A painting by Paul Jenkins, for instance has affinities with both interstellar and microscopic photographs. This resemblance reminds us that the image of randomness is also that of humanity seen from afar—it could be called the machine's view of man.

To sum up: it would appear that the most novel and the most promising esthetic of automation is the biotechnic one that springs most directly from the human scale and the human anatomy. While it is now obscured by styling and commercial pressure it remains but a hope. The biotechnic esthetic may not be divined by the artist's pencil or obtained from a storehouse of preconceived esthetics, but can be more painstakingly uncovered by the imaginative and systematic designing that is based on all the many kinds of behavior research. It seems that in this direction lies the future of industrial design.

Is this why one feels wild and extreme when confronted with positive proposals that design shall henceforth proceed entirely from logical and scientific premises?

This is an anti-esthetic in its way, but only because it sees in esthetics not solutions but expressions of real solutions and new attitudes. It is positive in its assertion that an approach to esthetic expression will exist with automation, as with any other human condition, and the designer now has the possibility of achieving style based not on abstraction but on humanity.

Persuading Image

by Richard Hamilton

Following are excerpts from an article in Design, *February 1960, using illustrations from pages of American glossies to show how an image of the "fabulous fifties" was created by designers, advertisers and industrialists to instill in the consumer a ceaseless desire for possession, to sustain consumption and production. The image of "America entering the age of everyday elegance" was, according to the author, largely the work of designers, who have had a change of heart about esthetic standards and are willing to sell the promotional power of design.*

Coming to terms with a mass society has been the aim and achievement of industrial design in America. The task required a rethink of what was so convincingly an ideal formula: the rational yardstick of functionalism. The trouble is that consumer goods function in many ways; looked at from the businessman's point of view, design has one function—to increase sales. . . . After the much-researched design of the Edsel, when the "dead cert" came home last, industry realized that the dynamic of industrial production was creating an equal dynamic in the consumer, for every new product and marketing technique affects the continually modifying situation. Industry needed something more than the promise of purchase — it needed accurate prophecy about purchasers of the future. Motivation research prepared itself to give the answer. . .

A decade of mass psychoanalysis has shown that, while society as a whole displays many of the symptoms of individual case histories, analysis of which make possible shrewd deductions about the response of large groups to an image, the researcher is no more capable of creating an image than the consumer. The mass arts, or pop arts, are not popular in the old sense of arising from the masses. They stem from a professional group with a highly developed cultural sensibility. As in any art, the most valued products will emerge from a strong personal conviction and these are often the products that succeed in a competitive market. During the last 10 years, industrialists have gone to research for the answers rather than to the designer — his role has been a submissive one, obscuring the creative contribution he can make. . .

Giving the consumer what he wants is a ludicrous exaggeration of democracy; propaganda techniques could be exploited more systematically by industry to mold the consumer to its own needs. Industry needs greater control of the consumer. This is not a new concept . . . but it will take longer to breed desire for possession when the objects to be possessed have not sprung directly from the subconscious of the consumer himself, but from the creative consciousness of an artistic sensibility — but the time lag will have advantages for industry. New products, programmed five years and more ahead of production, need market preparation to close the gap. Industry, and with it the designer, will have to rely increasingly on the media that modify the mass audience. Then the time lag can be used to design the consumer to the product, and he can be "manufactured" during the production span. Thus product and consumer can come from the same drawing board.

Within this framework the designer can maintain a respect for the job and himself while satisfying a mass audience; his responsibility to that amorphous body is more important than his estimation of the intrinsic value of the product itself — design has learned this in the fifties. The next phase should consolidate that understanding of the essential service he is providing for industry and consumer, and extend the use of new psychological techniques as part of the designer's equipment in finding more precise solutions to the needs of society.

If the implications of Europe's attitudes are grasped in the U.S.A., it may urge designers to develop their power of communication. Styling by its nature makes more communication "noise" than design. It is really a negative force in characterizing the U. S. overseas, so much so that the real common problems of design are obscured in the process. If there are designers, manufacturers, and educators in the U.S.A. who don't believe in designing from the machine out, and do believe in designing for the human being and his rational and emotional needs — if there are Americans who have a positive design philosophy to counter the one here— then it remains for them to get this image across to people of the world who cannot rely on yearly changes and advertising campaigns to structure their existence.

Dagmar Arnold

TEATIME WITH MSSRS. HARE AND HATTER

an Editorial attempt to have the last word on this unending subject

"Very well," said the March Hare, as he polished off a pot of tea and the advanced proofs of this issue. He had stopped by on behalf of his design firm, and we were joined at teatime by his colleague, the Mad Hatter, who had a new product under his hat. "Very well, but what about the critical questions that aren't answered?"

"Which ones?" we asked politely, making more tea.

"I mean, how do we preserve art in designing for a mass culture? How do we teach consumers to tell good from bad? How do we eliminate ugliness? The *ultimate* questions . . ."

"Are you willing to do a little hunting on a do-it-yourself basis?" we asked, with dormouse modesty.

"For instance?" asked the sceptic.

"Take the art question. It persists like a voodoo chant, as if a few magic definitions would transform all design into art or, as Mr. Maldonado would have it, as if bad art could be swept from our conscience by defining art out of industrial design. Isn't it a matter of skill more than will? Definitions abound, whichever way you want to play it. The materials of art exist in industrial design, and if you can and will, just go ahead and create art. . . . But of course that doesn't solve a lot of other problems."

"I find Banham's popular art idea most attractive," offered the Hatter. "He lets us hold hands with commerce and our own artistic conscience at the same time."

"It's like a green light for bad design" the Hare said.

"Obviously," we put in, "it's bad taste by fine-art standards, just like jazz and dirty fingernails. But if you join the popular camp, there's a new set of rules of good and bad and lots of people happen to follow them."

"But who wants to design in bad taste? asked the Hare.

"Isn't the question rather, 'who is able to?' Who thinks as an artist and feels with the masses? Can Stravinsky stand in for Oscar Peterson? True, some American designers already fall into the popular art category, but that's about what happened—they fell into it. They don't seem to know what their standards should be. Comparing themselves to Michelangelo one day, Ted Bates the next, they haven't evolved 'esthetics of expendability' but 'esthetics of expedience,' which is no esthetic at all."

"But in commercial design," the Hare almost wailed. "is there really any *room* for esthetics?"

"What you probably mean," we replied, "is, 'How do *we* design for *them* without becoming pop artists?' Yes?"

"Precisely, I guess," answered the Hare.

"Ah—and you assume, do you not, a chasm between 'our values' and theirs that can be bridged only by controlling the consumer, by teaching him 'our' values?"

"Is it so objectionable, our helping to 'stabilize American industry', as Mr. Hamilton describes it?" the Hatter intervened amiably.

"I can't deny that selling is industry's basic purpose. I can't argue that motivational research has greatly aided sales. All I object to is his image of this fabricated 'image', which I suspect greatly exaggerates the power of advertising, the motives of designers, and above all the potential of MR." We drew a mousy breath, uncertain whether we were dealing with critic's fantasies or designers' vagaries. "Do you really think it's possible to take on this big job with nothing but MR and a little courage to help? MR is not the key to life; it's a measuring and manipulating device. Sure, it's told us a lot about the behavior of masses. But where does it fail? Precisely where the mass splinters into individuals. While research is measuring the mass and the designer is creating to measure, the individual plods steadily into the future where all past measurements are obsolete."

"Of course," the Hatter smiled patronizingly. "We must now do more—design the consumer's desire as well."

"A slick technicolor dream idea, and it just makes life's real problems more drab than ever. Here we have the designer impotently detached from 'the customer' — an anonymous statistical legend for whom he dares create only impersonal, unfeeling products. Result? MR not only substitutes for his own objective knowledge, but polices his sympathies and convictions. Yet in truth not only are researchers unable to create a persuasive image to 'lead' the mass, but the images they *can* suggest to designers are only mirror images of latent public sentiment. Was 'elegance' a manufactured image or a projected desire? Has 'prestige' been foisted on the public, or rather laboriously discovered from obvious human clues? No, evidence suggests that the consumer will, voluntarily or subconsciously, retain control of his own choices—so much the worse for those who are ignorant of the inner processes that affect those choices."

"Very pretty speech," stumped the Hare, "but how do *we* guarantee acceptance with a growing production lag?"

"Acceptance? Of what? Of electronic ranges, supersonic washers, family helicopters? The consumer rarely has a chance to 'accept' real innovations at the outset without paying a premium. Yet does he often fail to accept good ones when they are sold at just prices—deep freezers, ballpoint pens, electric typewriters, or whatever? If you worry about conditioning acceptance in the U. S., you're really worry about style, how to *look* five years ahead when you may not *be* five years ahead. Then, indeed, there is a problem . . ."

"Finally you get my point," exclaimed the Hatter. We must raise standards, not give the public what it wants.

"That, of course, assumes fixed design values," we said.

"What values do you accuse us of?" the Hatter pouted.

"What do you mean by 'good design,' and why?"

"At Dobbs, Cavanaugh, Knox Associates," the Hatter rattled on, "we strive for functionalism, simplicity, honesty, truth to materials, and saving the client money. Simplicity makes products easier to clean; simple things are less expensive to produce, appeal to people of good taste."

"True, but not absolute enough to moralize about."

"What's wrong with a little moralizing, if it works?"

"Purely pragmatically, it doesn't work any more. When art was a step-child of philosophy, its job was to moralize

and be absolute. Today, society no longer regards art as a passport to eternity for viewer or doer. Yet in design, some people cling to that outdated passport, to a static image, an absolute value, a tight little style that . . ."

". . . May well be *best* for everyone," asserted the Hare.

"You mean that, if everyone can be persuaded to go for 'high style,' then your problems are over. No need to wander the streets in search of mass symbols, if the masses can be persuaded to come to Mohammed. But assume they are persuaded (the fifties made a good start); tomorrow, high style isn't so high because it isn't so exclusive. And the next day it's a bore. Then what? Do you throw up your high-low standards and ask MR what to do?"

"Come, come, are you implying a designer has no right to personal standards in his work?" the Hare retorted.

"Rights? No—necessities. Life is animated by decisions and beliefs, and every creative person must arrive at his own deep sense of what is 'good' and what is not. It may take a lifetime of experience imposed on knowledge and knowledge altered by feeling. And when he arrives at this pinnacle and sits back smugly, what does he get for his pains? Those other men, who care little for his beliefs except to re-examine them, tell him things aren't like that at all. The cosmos defies Plato's neat geometry and decides to turn corners. Time stands still, and electrons refuse to. Between the twin infinities of microscope and telescope, what is there to hang onto? To our esthetic beliefs, which seem almost immune to scientific intrusion? Not at all. We are quickly informed (by Mr. Jones, for instance) that 'survival through design' may be a private mirage, not a social platform, that our personal esthetic needs are far from universal psychological truths."

"Your crystal clarity confuses me utterly," sighed the Hare. "If you reject MR *and* 'survival through design,' are you in favor of a scientific approach or an intuitive . . ."

"Must it always be either-or? Down with feeling, up with logic! Down with parents, up with children! Down with art, up with scientifical operationalism! Does simple-minded logic ever solve complex problems, or only conceal them? We don't need more 'intuition' *or* more 'logic,' more 'objectivity,' *or* more 'art,' we need all of them. The big question is, can *designers* survive through design? Can they grow from amateurs to professionals in the very area where their survival, and possibily their leadership rests: people, individual feelings, meanings, reactions, values? Do they dare leave the safety of numbers and explore the singularity of the human heart, which grows not more illuminated but more mysterious with the new knowledge of each passing day? Can they learn to use research, not follow it in desperation? In short, can they face the unnerving relativism of an age of anthropology, psychology, biology, and still manage to progress—step-by-step, retreat-by-retreat — toward humane convictions and a working philosophy? Can they decide what's good and what's bad with compassion, not disdain, for the values of people not identical to themselves?"

"Peace! Peace!" the Hatter swallowed, smiling. "You're talking about *us* and we're talking about *them*, and anyway I thought functionalism had answered these questions."

"Where *does* it leave Functionalism?" asked the Hare.

"I suppose it leaves it just where it is, a little more clearly revealed for what it could be. If we can be done with literal, moral, and pseudo-scientific exaggerations of the idea, it leaves a positive philosophy that can be uniquely useful in our social context. After all, functionalism is the only philosophy, to date, that accepts technology as part of the pattern of culture. It holds out the hope that men can at last satisfy their desire to express themselves in their work, and again to find satisfaction in the products of our culture. In other words, its modern meaning is not only to exploit technology but to humanize it. If we accept that premise, we may have a good start toward a more knowledgeable condition of practice—toward that 'subtle and advanced form of functionalism' that Mr. Jones describes, which not only measures the profound effects of design on people, but continually re-evaluates what those effects *could* and *should* be. Yet, what makes it hard is the fact that this kind of functionalism is an approach, not a style. It gives us so much freedom—esthetic freedom."

"Esthetics! That again?" the Hatter complained.

"Why must we talk about esthetics in commercial design? Since you ask me—because it is there. Because beauty is as much affected by abdication as by dictation; it cannot be ignored into oblivion or voted out by law. Beauty, they tell us today, is mostly a learned value, mercurial, elusive, influenced by emotion and experience. Around the world sit perfectly intelligent men debating whether or not the Citroën is 'beautiful', or 'unbalanced', or 'grotesque.' Do they include, in their 'standards,' the fact that this is the only car on our planet that has been re-studied, re-organized, and redesigned with compassion for the human being who must ride in it, operate it, repair it, and look at it? Its unclassic proportions may be momentarily jolting or irritating—but however its look came about, it is neither accidental nor unfeeling. It was designed. The person who knows and experiences the car will learn that it is beautiful without giving two sous for your academic standards."

"Freedom? It sounds like chaos," the Hare grumbled.

"Freedom always invites chaos in some people, retreat in others. But think of it—the designer today who won't be incriminated by old standards, by pressures to conform, has an opportunity unparalleled in history. He's free of religious purposes and enforced styles, free to seek a personal vocabulary, to discipline that vocabulary into a personal statement, into Style in the best sense. This is the kind of freedom the Greeks disbelieved, the Morrisites disapproved, the modern pioneers distrusted. Still . . ."

"You aren't satisfied that's enough?" the Hare scowled.

"No, no, I mean yes, yes, I see," the Hatter exclaimed, sounding almost convinced. "It's enough—or nothing. It's the shell, not the substance. The possibility, not the fulfillment . . ." He beamed at the Hare.

"Freedom for what," we carried on, "unless the designer understands the *self* he seeks to express? Style for what, unless he has something to say? Statement for what, unless he seeks to touch us . . ."

The Hatter nodded furiously and the Hare was gone before we could explain . . .

DIRECTORY TO SPECIAL INTERNATIONAL ISSUE

The following foreign publications are quoted in in this issue:

Architectural Review 9-13 *Queen Anne's Gate* *Eng.*
London SW1, England
J. M. Richards, editor

Bonytt *Bygdov Alle 9*
Oslo, Norway
Arne Remlov, editor

Civilta delle Macchine *Via Versilia, 2* *ES*
Rome, Italy
F. Arcais, editor

Design *The Design Centre* *Eng.*
28 Haymarket,
London SW1, England
John Blake, editor

Design, Magazine of the Arts *Ionic, Colaba* *Eng.*
Bombay 5, India
P. Singh, editor

Esthetique Industrielle 79, *Rue Michel-Ange*
Paris XVI, France

Form/Internationale Revue *Koenigsplats 38* *ES*
Kassel, Germany
C. Schweicher, editor

Form *Box 7047* *ES*
Stockholm, Sweden
Ulf Hard af Segerstad, editor

Graphik *Verlag K. Thiemig KG* *ES*
Pilgersheimerstrasse 38
Munich 9, Germany
Anton Sailer, editor

Kontur *Nybrogatan 7* *Eng.*
Stockholm, Sweden
Margit Svedberg, editor

S.I.A. Journal *Society of Industrial Artists* *Eng.*
7 Woburn Square
London WC1, England
Herbert Spencer, editor

Stile Industria *Via Monte Pieta 15* *ES*
Milan, Italy
Alberto Rosselli, editor

Additional foreign publications related to industrial design:

Dansk Kunsthaanverk *Palaegade 4* *ES*
Copenhagen, Denmark
Bent Salicath, editor

Domus *Via Monte Pieta 15* *ES*
Milan, Italy
(architecture, interiors)

Qualita *Aut. Tribunale de Milano 3933*
Milan, Italy
(plastics)

Projekt *Krakowskie Przedmiescie 5* *ES*
Warsaw, Poland
(applied arts)

Forum *Herengracht 406* *ES*
Amsterdam, Holland
G. van Saane, editor
(architecture, design)

Kenchiku Bunka *The Shokou-Sha Publ. Co.*
11, 2-Chome, Hirakawa-cho
Chiyoda-ku, Tokyo
(architecture, design)

Industrial Art News 313 *Shimonaruko*
Ota-ku, Tokyo

Modulo *Avenida Atlantica 3940 10 andar*
Rio de Janeiro, Brazil

Baukunst und Werkform *Marienplatz 5,*
Nuzberg, Germany

Art in Industry *Indian Institute of Art* *Eng.*
15 Park Street
Calcutta 15, India

Zodiac *Via Manzoni 12* *ES*
Milan, Italy

Industria *Sociedad de Fomenta Fabrio*
Santiago, Chile

Werk *c/o Dr. Benedict Uber* *ES*
Minervastrasse 33
Zurich, Switzerland

Note to abbreviations:
Eng: In English
ES: English summaries

NOTES (pages 36-37)
1) E. R. De Zurko, **Origins of Functionalist Theory.** Columbia University Press, 1957. This volume, which documents the philosophic peregrinations of functionalism in architecture from Greece to Ruskin, is recommended for detailed study of the material covered here. 2) Nicholas Pevsner, **Pioneers of Modern Design.** Museum of Modern Art, 1949. Pevsner's useful account of the lives and views of modernists from Morris to Gropius includes the quotations, but not the interpretations, in this section. 3) Meyer Shapiro, "Style," in **Anthropology Today** (University of Chicago, 1953) provides the basis of this definition.

DESIGN REVIEW

Westinghouse center-drawer refrigerator provides a 21-pound capacity low-temperature meat keeper which preserves even unfrozen hamburger for 7 days. Second section of the drawer is a half-bushel capacity crisper which maintains vegetables at ideal temperature (36°, six degrees above that in meat section) and humidity conditions. Drawer is cooled by a cold injector system in which air is drawn over a cold plate, then forced into the refrigerator and center drawer by a circulating fan. After every 60 openings of the freezer drawer, the unit defrosts automatically. Textured vinyl color panels mounted on sheets of steel are optional. Staff design; Peter Muller-Munk Associates, consultants.

Major Appliances 1960: *Manufacturers market some new refrigerator and washer miracles, but dress them in last year's styles*

REFRIGERATORS

Although some really important technical developments loom from the jungle undergrowth of press announcements on the 1960 refrigerators, it is difficult to find new styling ideas in the products themselves. Only Westinghouse, with its specially refrigerated center drawer, really looks different. The rest still conform to squared-off architectural styling—whether as GE's "straight line design" or as Frigidaire's "sheer look." What designers helpfully *have* done is modify free-standing units for easy adaptation to built-in treatment. But the major 1960 refrigerator news is technical, and at least three engineering miracles have indeed come true: 1) elaborate systems of zonal temperature control give each type of food optimum refrigerator temperature; 2) special defrosting cycles eliminate frost in freezer area; 3) radical reduction of wall thicknesses nearly doubles interior space. The chart at far right shows which manufacturers offer which miracles in 1960.

Zonal Refrigeration

Of course, refrigerators have always had at least two zones of refrigeration: one for ice cube trays and one for the rest of the unit. But in 1960, zonal control of temperatures reaches a new height of refinement, Westinghouse pushing the concept furthest with *four* separate temperature areas. Philco's system is similar in that it isolates a special area of the unit, its "Air Wrap Compartment," at a specific temperature and cuts *moving* air to a minimum, thus reducing the destructive dehydration process which moving air encourages. Amana and Whirlpool use different refrigeration methods to achieve specific temperature areas, but both offer special low-temperature shelves within their units. Amana uses direct contact freezing, RCA uses forced cold air.

RCA Whirlpool hollow glass "jet cold shelf" quick-chills desserts by means of direct current of cold air passing through shelf ducts. Activated carbon filter absorbs food odors. Staff design; Sundberg-Ferar Inc., consultants.

Amana places freezing coils directly on the prime freezing shelves to freeze food more than twice as fast as other methods, according to the manufacturer. Contact freezing eliminates excessive air flow, reduces dehydration of food. William M. Schmidt Assoc., consultants.

Philco wraps the sides of its airtight bottom compartment (below and facing page) in cold air to store fresh meat up to 11 days, vegetables up to 14. The compartment maintains a temperature just above freezing, provides maximum humidity, minimum air movement. Staff design; Harper Landell Associates, consultants.

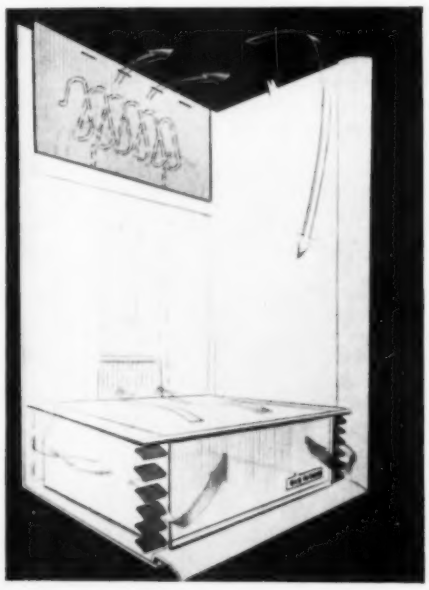


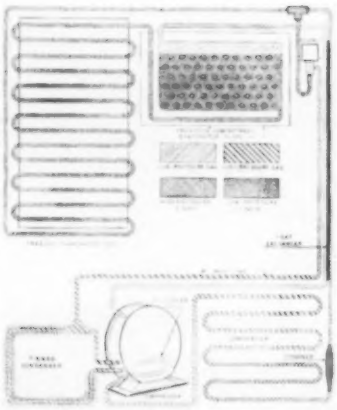
Chart shows which of seven advances (not all new this year) manufacturers offer on their top-line 1960 models. No firm offers all features, and only Westinghouse gives a fourth temperature zone.

	Three-zone refrigeration	Thin-wall insulation	Frost-free freezer	Built-in adaptability	Automatic ice maker	Pull-out shelves	Interchangeable colored panels
RCA Whirlpool	✓	✓	✓	✓	✓	✓	
General Electric			✓	✓	✓	✓	✓
Hotpoint		✓	✓	✓		✓	
Philco	✓		✓	✓		✓	
Amana			✓	✓		✓	
Westinghouse	✓		✓	✓		✓	✓
Frigidaire	✓	✓	✓	✓		✓	
Norge				✓	✓	✓	
Kelvinator	✓		✓	✓	✓	✓	

Frost-free refrigeration

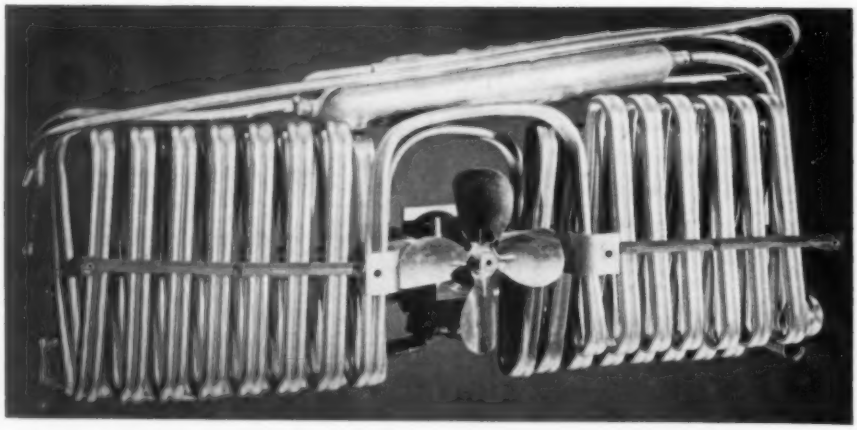
Introduction of frost-free refrigeration in the freezing area means that for the first time the label on a frozen food box can be read without first scraping off a layer of snow. The new system also means that as much as a cubic foot of space may be added to the interior of the freezer, and that the owner never has to touch the defrost system at all. Although automatic defrosting has been on the market for some time, only now has the utilization of quite short freezing cycles completely prevented the formation of frost. Manufacturers have not settled on a single best system. Three most common methods appear here.

Amana's shelves are maintained at zero by coils imbedded in them. Warm air is attracted to the colder (-8°) surface of the frost magnet (above), located behind the freezer area. Thermostat daily activates electric heater which melts frost. William M. Schmidt Associates, consultant designers.



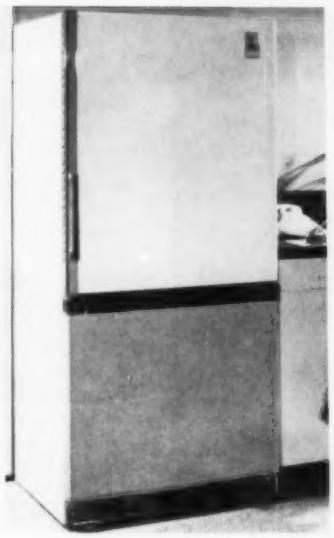
Kelvinator uses fan to circulate air cooled by a refrigerated plate at back of unit. A separate system maintains zero temperature in the freezer. Every day a thermostat activates the solenoid coil which allows hot gas to run through the freezer coils, melting frost. W. E. Reddig, styling director.

General Electric circulates air through freezer with aid of fan. Frost is deposited on evaporator tubing. Circulatory system reverses daily so that hot Freon gas flows through the smaller set of parallel tubes (larger ones carry normally cold Freon gas). Defrost cycle takes only 5 minutes. Arthur Bec-Var, manager of industrial design.



Hotpoint makes "Wonderwall," a plastic film and Kraft paper laminate, by inserting fiberglass batting into an envelope formed by the laminate. A charging chamber removes air from the envelope, forces a refrigerant in. Raymond C. Sandin, manager of design.

Thin-wall insulation

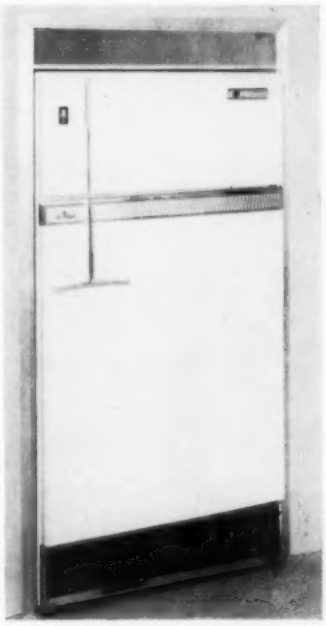


Refrigerator walls have been sliced in half by some manufacturers, with use of new insulating materials creating up to a third more interior space. Hotpoint's "Wonderwall," one of the most successful of the new insulating approaches, cuts previous 3-inch wall thickness to 1½ inches, creates 18 cubic feet of storage space in a 14 cubic foot area. Frigidaire introduced their version of thin-wall insulation, a combination of Freon gas and urethane, last year, announcing that it could double interior space. Here liquid urethane poured between the walls of the refrigerator rises like dough before becoming rigid. Freon gas trapped within the foam acts as an insulator. RCA Whirlpool also uses a urethane foam insulation in its gas refrigerators which increases volume by nearly a third.

RCA Whirlpool's first gas refrigerator (below) looks almost identical to the electric model (far right). But it does require at least four inches of clearance at the top as well as a vent in base for warm air. (Norge introduced gas this year too). Sundberg-Ferar, consultants.

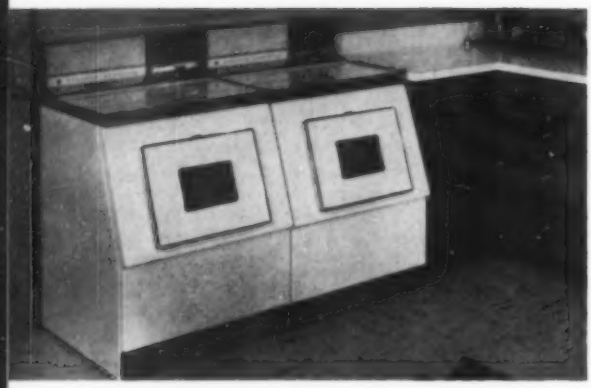
Built-in Adaptability

Appearance designers have done little to alter the looks of the 1960 lines. What they have done is to develop a series of small but significant innovations which make it possible to use many models as either free-standing or built-in units. Most important, they have removed the coils from the rear of the refrigerator so that it can fit flush to the wall, line up in front with adjacent base cabinets. A vent at the base of the refrigerator prevents overheating of the motor and makes most mechanical parts available. Flush hinge construction on the doors now eliminates the need for side clearance. The new models can fit flush in a corner or they can combine with base cabinets as a room divider. And the Hotpoint swings out on rollers for easy cleaning of inaccessible surfaces.



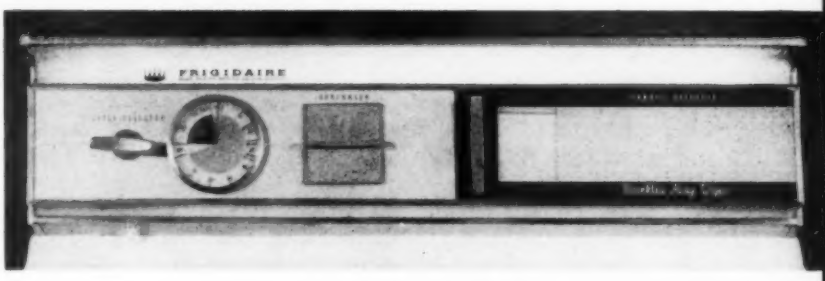
HOME LAUNDRIES

The inevitable "riot of color" that home-fashion commentators annually discover, assumes the proportions of a small insurrection among this year's washing machines, with hues and harmonies ranging from Frigidaire's "Aztec copper" to Whirlpool's "aqua mist" with gold trim. If co'or seems chaotic, mechanics seem even more so; to operate these complex machines women may indeed have to become kitchen engineers, not to say space-age scientists. Of course, the trend toward automation really does require a growing forest of dials and push-buttons. And automatic cycles do imitate the almost limitless variations of the non-automatic machine with increasing precision, if not with simplicity. Yet it's hard to see what some of the shouting is about. If multiple controls are required, what, for instance, is the purpose of the big, empty left side of Westinghouse's control panel (dials are behind right panel)?

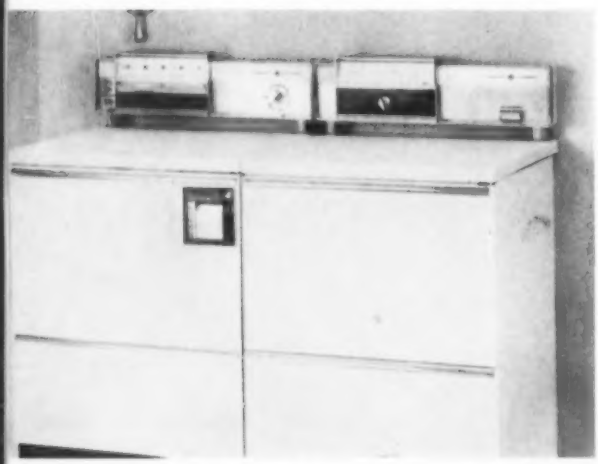


Westinghouse offers 11 pre-set wash programs on its push-button computer, which controls the proper combination of wash times, water temperatures, rinses and spins. Lint ejector sweeps out lint and soil. Peter Muller-Munk Assoc.

Hotpoint combines a three-cycle color-keyed dial with push buttons to operate its washer and dryer. Full width fluorescent lamp shines through translucent white plastic lens section. Charles D. Dushek, project head; R. C. Sandin, manager of industrial design.



Frigidaire dryer has neat looking panel arrangement illuminated by full-width prismatic light. Panel includes touch-bar fabric selector for correct water temperature, sprinkler fill, and cycle selector. Frigidaire engineering department and General Motors styling staff.

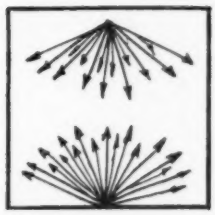


General Electric Filter Flo washer offers five automatic cycles controlled by a newly designed five-button panel. Automatic bleach dispenser and automatic lint and soil remover. Choice of four colors. Arthur BecVar, manager of industrial design.

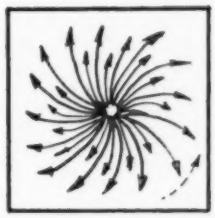
Philco Duomatic undercounter washer-dryer allows for a counter top backsplash strip across the top and for installation in places where a control panel top would be impossible. Operates automatically and has optional "power soak." Harper Landell and Associates, designers.

AUTOMATIC DISHWASHERS

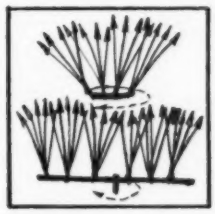
Dishwashers present no radical styling innovations for 1960, but there have been a number of performance improvements. GE, for instance, introduces a "power shower" which reaches areas inaccessible on earlier models. And Westinghouse "boosts" water temperature to keep it the same in the machine as in the hot water heater. Flush-away drains now prevent waste from rising back in the machine, and a water softener dispensed in the last rinse, forms sheets of water instead of droplets, helping dishes dry literally spotless. On the whole, the 1960 models are quieter, have greater capacity, and better-designed racks. But, as the water pattern diagrams below show, manufacturers still do not agree on the best way of cleaning dishes without aid of human hands.



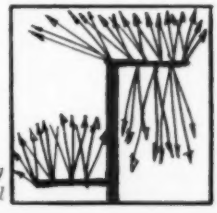
General Electric



Frigidaire



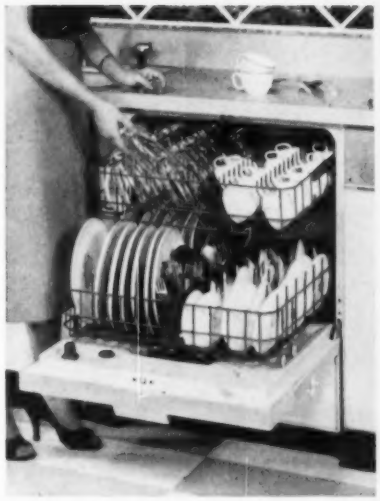
Hotpoint



Waste King Universal

Westinghouse booster heater gradually raises water temperature to 140° before washing starts. Choice of both automatic and manual operation permits skipping or repeating any operation. Interchangeable front panels. Staff design.

Hobart Kitchenaid features two stainless steel strainers to filter water. Food particles can't re-circulate. Independently rolling racks load from the front. Must be closed and latched to operate. Appearance design by Hobart staff.

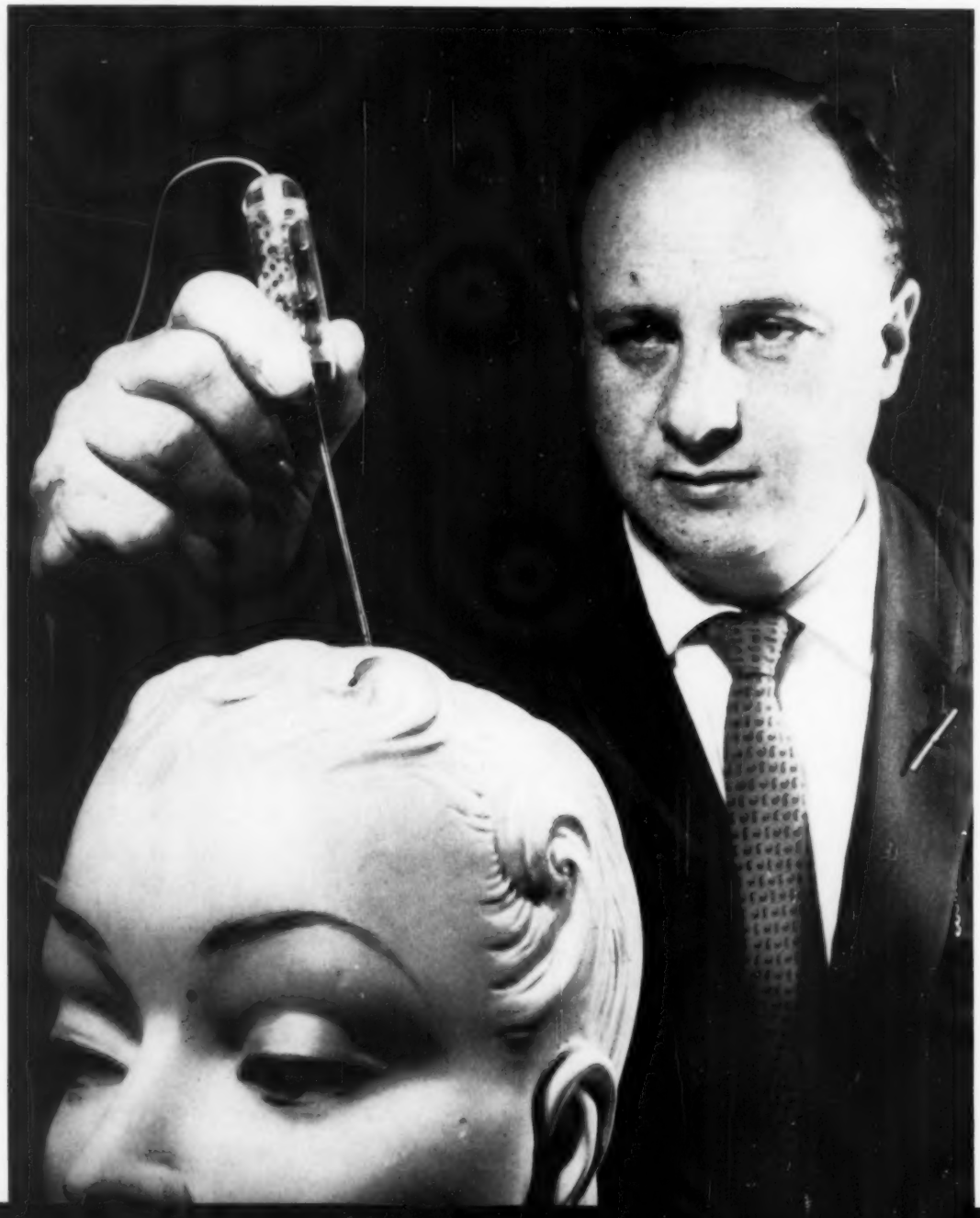


RCA Whirlpool automatically prerinses dishes. After each wash and rinse cycle, water is flushed back through the filter, washing food particles down the drain. Model offers two special cycles, built-in heater, interchangeable panels. Sundberg-Ferar, Inc., consultants.

General Electric uses pushbuttons to control four special cycles to give proper temperature and water power for loads running from fine crystal to heavily soiled pans. Lights indicate whether machine is washing or drying. Arthur N. BecVar, manager of design.

Most important element in new solid-state ionization detector is tiny slice of "doped" silicon being examined with magnifying glass by scientist at Hughes Aircraft. The detector measures the number and energy of atomic particles traveling at speeds too fast for standard detectors.

Detector is so tiny it can be embedded in tip of surgical probe. At right, Dr. Stephen S. Friedland, who directed development of device at Hughes Aircraft, demonstrates how self-contained instrument is used to signal "hot areas" in treatment of disease. It will enable doctors to determine the exact amount of radiation to which a patient is exposed.



Tube-like units like the one shown here include detector, battery and amplifier. Units like these can be used by troops to determine radiation levels in open areas.

Development News

TINY RADIATION DETECTOR REVEALS MORE DATA THAN ITS LARGER PREDECESSORS

A radically new nuclear radiation detection element has just been developed; and it promises to have wide industrial and military applications. Called a "solid-state ionization chamber," the new device—vastly smaller and cheaper than those now in use—will be able to indicate radiation with an accuracy and speed not possible with existing equipment. It will "unlock" radiation "secrets" in the fields of space exploration and nuclear power control, in military ground uses, cancer treatment, industrial processes, and other areas, such as basic nuclear research.

Like other solid-state devices (the transistor, tunnel diode, silicon rectifier, etc.) the tiny detection element vastly reduces the size and simplifies the design of the equipment in which it is used. It is likely that its impact on all fields concerned with nuclear radiation will be comparable to that of the transistor on radio, tv, and other electronic products. Made possible—like the transistor—by the unique properties of semi-conductors, the device consists of a slice of silicon so small it can barely be seen without magnification. The silicon is "doped" with another element, which gives the semi-conductor unit its required inner structure and behavior. Just what this element is, the nuclear electronics laboratory of Hughes Aircraft Company, which developed the new ionization chamber, has not yet disclosed. The research project responsible for the development of the tiny detection unit was headed by a team of nuclear and solid-state physicists at the Hughes Laboratories in Los Angeles and Newport Beach, California.

According to Dr. Stephen S. Friedland, manager of the company's radiation physics department, the value of the Hughes detector lies in its ability to make measurements that up to now could not be made: it measures the number and energy of atomic particles traveling at speeds faster than man can comprehend. In announcing the new ionization chamber, Dr. Friedland also set forth six applications of the detector which he described as "either immediate or certain for the near future." These were: 1) Space exploration: a package containing hundreds or even thousands of detectors, propelled hundreds of miles into space, will transmit back to earth precise measurements of cosmic rays and the limits and nature of the Van Allen radiation belt. 2) Military uses: A simple device to supply field troops with instant information on radioactivity in their immediate area. 3) Nuclear power control: instrumentation which will provide rapid response to changes and accurate measurement of radiation level in nuclear reactors. 4) Cancer treatment: measurement and control of radiation therapy in the destruction of malignant tissue. 5) Industrial process control: flow measurement, thickness gaging, liquid level measurement, oil well logging. 6) Basic physical research: determination of location, time, and energy of nuclear particles in laboratory experiments.

How the new ionization chamber can outperform existing equipment was indicated in an example given by Dr. Friedland. To measure the speed, direction, nature and energy of cosmic outer space radiation, photographic plates are inserted in the nose cone of a missile; the rays define their courses by penetrating the film on the plates. But to develop the data from the film, the nose cone must of course be recovered. A package made up of the new devices however (coupled with amplifier and telemetering setups) will make it possible for scientists on earth to immediately determine the radiation measurements.

It is also expected that, on the basis of the new solid-state unit, solid-state detection will become an important quality control factor in hundreds of industrial processes—flow control, thickness measurements and other control operations in which accurate registration is needed.

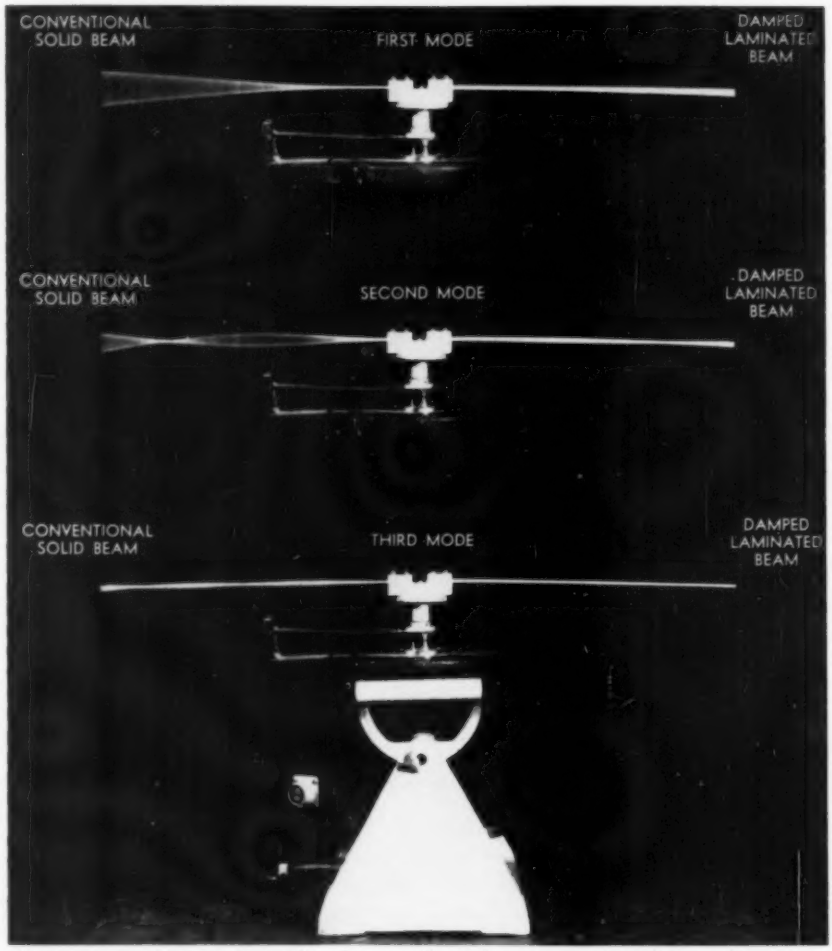
Vibration-resistant materials

Structural failures caused by resonant vibration in enclosures for dynamic environments can now be controlled by a new process for building-in damping characteristics in structural materials. A dynamic environment is usually created by the high vibration and noise levels that exist in high-energy power plants. An application in which the new structural materials will improve vibration problems is in aircraft and missiles, in which amplification of the vibration caused by the power sources creates dynamic stresses in the material causing problems of structural failure due to fatigue. Other areas in which the new vibration-resistant materials are applicable are in structures for electronic equipment (circuit boards, chassis, relays), dust covers, aircraft parts, test fixtures, missile skins, and with various types of equipment for high performance aircraft.

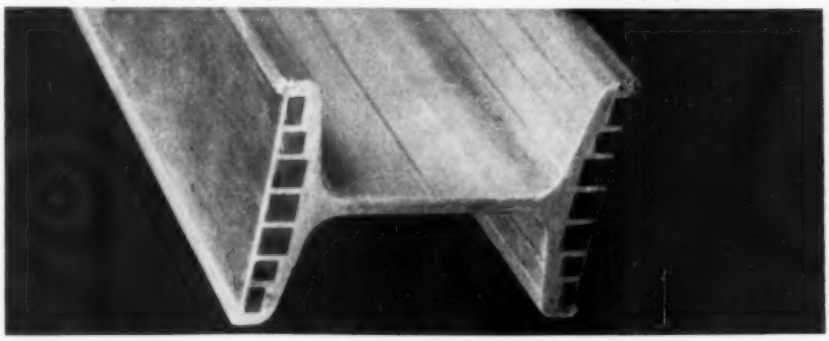
The damping action of the recently announced structural members labeled RIGI-DAMP is obtained by special laminated and cellular constructions (see below). The shapes—cantilever beams, I-beams, channels, angles—are "damped" by various means. Sheets and thin rectangular section beams are laminated of conventional materials, metal or plastic, separated by a visco-elastic damping medium. I-beams, channels and angles are of cellular construction rather than laminar. This means that throughout the length of the member longitudinal cells are formed, each containing an insert separated from the cell walls by the visco-elastic material.

According to the engineers, this is the first practical development of the concept of structural damping in which all portions of the structural fabrication act as load-carrying members, and materials and structures can be designed for optimum damping characteristics in all frequencies normally encountered in dynamic environments.

The manufacturer suggests that the new materials will be most effectively used if considered in the early design stages. The manufacturer does not plan to market the structural members as materials, but will provide design and fabrication services to solve specific problems. Manufacturer: Barry Controls, Inc., Watertown, Mass.



Above, comparisons of damped and conventional beam at various frequencies.



Speedier hard-coating of aluminum

A method of hard-coating aluminum parts ten to fifty times faster than processes now in use has been developed by a manufacturer of lawn mowers. The company was trying to find a way to protect aluminum reels for power mowers from the erosion of normal wear. A tough finish was needed, and according to the manufacturer, the process which was evolved to meet these demands can lead to expanded use of hard-coat aluminum for such items as helicopter blades, pistons, gears, architectural components, kitchen utensils, automotive and other parts.

The chart below illustrates the various results achieved when, as in this method, greater current density is used in hard-coating aluminum. Like other aluminum anodizing processes, the new method electro-chemically produces on the surface of the metal a film of aluminum oxide whose degree of hardness places the anodized metal in the range of such truly hard materials as diamonds, sapphires, etc. The process, however, differs from those now in use in its ability to use very high current densities without "burning" the aluminum. According to the manufacturer, the new coating process can increase 20- to 40-fold the standard current densities, which are between 25 and 100 amperes per square foot. As a result, a protective surface coating .001 inch thick can be built in only one minute, as compared to the 10 to 50 minutes now required.

The lightness in color—ranging from silver gray to medium gray—results from the very brief exposure to the acid of the electrolyte. The light coatings make dyeing possible in a wide range of colors. The new process is operated at an electrolyte temperature of about 70°F; this eliminates much of the refrigeration needed to obtain the 25° to 50°F required by other methods.

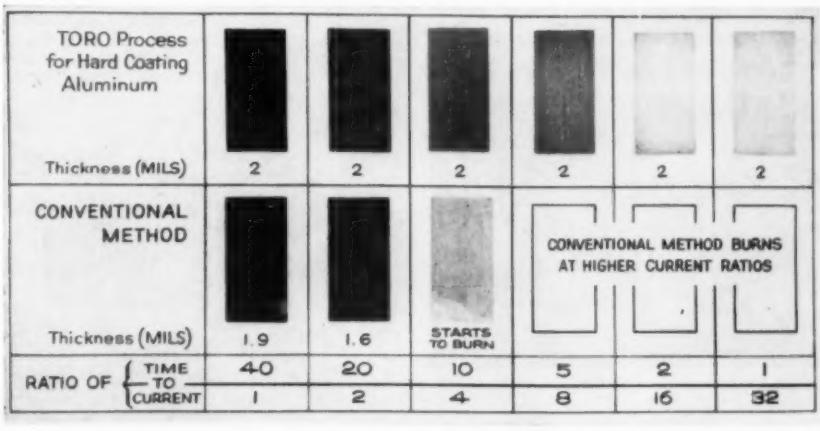
Physically and chemically, the characteristics of the new coatings are similar to those produced by conventional methods. The difference is largely in the use of more concentrated current densities which coats the metal in far less time.

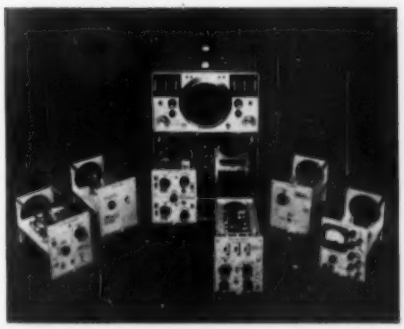
To determine the physical and chemical characteristics of these new coatings, the Armour Research Foundation of the Illinois Institute of Technology ran comparative tests between conventional anodic hard coatings and the new type and found these to be "essentially the same in hardness, abrasion resistance, frictional properties, corrosion resistance, electrical resistance and density." The manufacturer has not yet announced the method's availability. Manufacturer: Toro Manufacturing Corporation, Minneapolis, Minn.

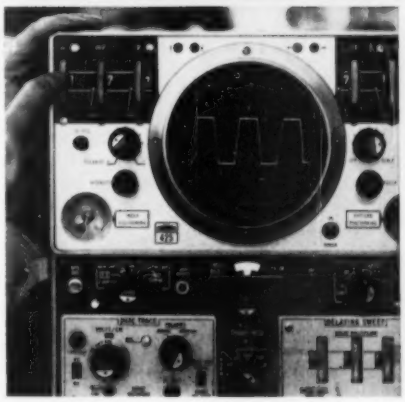
Potentiometers shrink again

A new series of miniature variable resistant elements (potentiometers and trimmers) has been announced by a California manufacturer of electronic instruments. The potentiometers, whose trade name is "Turnquate", are said to be less than half the size of present instruments, to weigh half as much, and because of their compact design, to be applicable to lightweight electronic products. They range in size from ⅞ of an inch to 3 inches in diameter. The smallest size contains dual outputs or two circuits, and the unit 7¾ inches long contains 10 or 20 output circuits.

The "Trimquate" line of trimmers can be mounted in two planes without additional brackets. They have a shaft torque of 3 ounce inches, friction clutch, and are adjustable from either side. Manufacturer: Subminiature Instruments Corporation, Riverside, California.







Digital readout oscilloscope

A recent innovation in electronic measuring equipment will make it possible for untrained personnel to make direct readings of circuit characteristics in laboratories, hospitals and on the production line. Heretofore the manipulation of oscilloscopes for waveshape indication and volts-versus-time measurements required trained technicians. The new scope, the Du Mont 425, has direct numerical portrayal of time and amplitude which appears on the front panel of the instrument (above), and which is accomplished through the manipulation of measuring dots on the face of the scope; these are moved by controls until the dots are aligned with the waveform under study. The scope offers many advantages. In radar range indications, the readout can be made to show radar distance directly in yards; in tv work it will be possible to pinpoint wave shape characteristics through the digital readout. The model 425 is also able to transmit measurements directly to computers, printers and punch card machines, significant in process controls.

The 425 is modular. Five basic modules are built into a main frame (top picture), and the construction by units makes it a simple process to replace any damaged module. Manufacturer: Allen B. Du Mont Laboratories, Inc., Clifton, N. J.

Wide aluminum roofing sheet

The width of large aluminum sheets has grown from 93" to 96" to meet the specifications for one-piece highway trailer roofing. The wide sheet is rolled at Alcoa's Davenport (Ia.) works on what the company claims to be the largest operating cold finishing mill in the world. The previous width of 93" fell just short of the design requirements of many truck-trailer constructions. The manufacturer claims that the one-piece roof not only eliminates the possibility of leaking seams, but yields a stronger, more rigid structure. The product is available to trailer manufacturers either in four-ton coils (which will produce 50 roofs) or in sheets up to 42 feet long. Manufacturer: Aluminum Company of America, Pittsburgh 19, Pa.

Device for sequence timing

Three stopwatches can be actuated for sequence timing with a device recently marketed for time-and-motion studies. Labelled the Multi-Sequence Board, the product—which looks somewhat like a standard clipboard (see below)—will ease time-and-motion study problems in such applications as field action-studies, laboratory research, process control, materials handling, production timing, and traffic analyses. The unit is said to time sequential steps with no time loss between them. The proper procedure is to start with the first watch at zero, the second watch stopped at any desired point, and to leave the third watch in motion. This way each step under observation is timed in with the same motion with which the preceding step is timed out.

The board itself is made of 3/16" black Plexiglas, shaped to permit the arm to rest against it. The watches can be wound and operated without removal from the board. The product is available in both right- and left-hand models. Data can be recorded in hundredths of a minute and, by interpolation, in thousands. But differently registered timers are also available. Manufacturer: Heuer Timer Corporation, New York 17, N. Y.

Air filter has longer service life

A new air filter has been introduced whose service life—according to field tests in the New York metropolitan area—is said to be six times longer than that of the conventional air filter types: throw-aways, and permanent metal-type filters. The high filtering action of the new unit, called ULOK Cube Air Filter, results largely from the filtering medium—a lightweight Dynel modacrylic. A differently processed filter batt and open-side cube construction also contribute to the high performance of the new filters, which can be used in commercial and industrial air conditioning and heating, dust entrapment, and process air systems. The ULOK units are made up of three components (see below): the disposable high loft Dynel filter medium which is 2" thick; a "basket," or retainer into which the medium fits; and a rust-proof retainer wire that fits inside the medium to give it a firmer structure.

In operation the air stream carries the dirt into the cube to the front surface of that section of the filter called the downstream face. As dirt builds up on that part, air flow is shunted to the sides of the cube. Since the filter medium consists of a synthetic fiber, it is unaffected by moisture, and the 20-inch cube ULOK unit offers a low-pressure drop service in a high velocity system. When the unit has been filled with dust to capacity, it can be discarded by collapsing it; the dust remains in the bag.

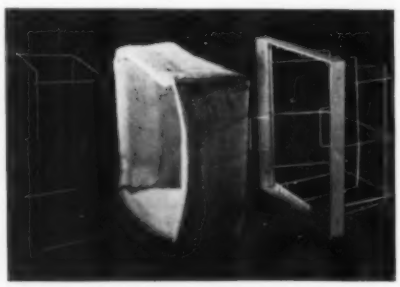
ULOK air filters are available with standard face areas measuring 20"x20", 20"x25", 16"x20", 16"x25". For each of these there are units that measure 8", 11", and 20" in the direction parallel to the air stream. The manufacturer also claims that the ratings of the new units give design engineers the opportunity to reduce the size of a filter bank in large capacity conditioning applications. The new cubic air filter design was announced recently at the Southwest Heating & Air Conditioning Exposition, in which the manufacturer participated. Manufacturer: Union Carbide Development Company, Division of Union Carbide Corporation, New York.

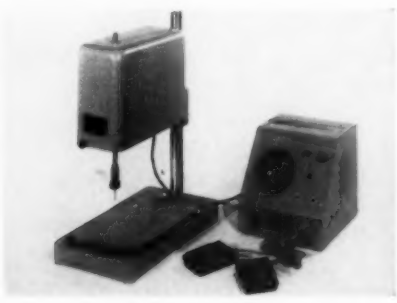
Glues for wood and plastic

Two new types of glue have been added to the line of glue products known as UHU. UHU-Hart is used for wood, balsa and other non-resilient and non-porous surfaces; UHU-Plast is used for plastics and polyesterols. Both are packaged in tubes with pin-point applicators, useful in getting to hard-to-reach places. The wood glue sets quickly and dries at once; it is hot-fuel proof, waterproof, transparent, and is especially suitable for modelmaking. The plastic glue is also hot-fuel proof, transparent and fast-drying. Imported from West Germany, UHU glues are distributed here by UHU Products Corporation, New York 14, N. Y.

Tapping machine for hard metals

A California manufacturer is marketing an automatic screw tapping machine that can tap such tough and hard-to-work materials as stainless steel, beryllium, titanium, and tungsten steel. The machine, known as the T-100 B (see below), incorporates an automatic or semi-automatic tapping cycle which can be preset for any speed and length of stroke, a feature that distinguishes it from previous models. Although previously it took a highly skilled machinist to perform the precision tapping jobs, the new model can be worked by an unskilled operator. Preset for a desired operation, the machine feeds the tap into and withdraws it from the work piece at a rate controlled by a single master lead screw. With this master screw and a set of change gears, the machine can be set to tap any standard pitch from 32 to 120 threads per inch in sizes 000 through 10; changeover from one pitch to another is said to take less than two minutes. The torque delivered to the tap is controlled by adjustment of a friction clutch. Appropriate spindle speeds for any tap size and material are obtained by powerstat control of the ¼ hp motor and speed change gears in the drive mechanism. Manufacturer: Milman Engineering Company, Incorporated, Los Angeles 25, Cal.





THIS IS GLASS

A BULLETIN OF PRACTICAL NEW IDEAS FROM CORNING

A GOOD OLD-FASHIONED GUARANTEE AGAINST DRAINLINE CORROSION

It's the sort of thing that drives stolid corporation lawyers to scribing frantic memos, *but* we are offering a hard-rock guarantee against corrosion and leakage with our PYREX® lifetime drainline.

We use "guarantee" in the old, unweaselworded sense of the term: we replace any piping material damaged due to corrosion and/or leakage *during the life of the building*.

We insert just one escape clause: we cannot tolerate, nor can the drainline, *massive* volumes of hydrofluoric acid, *hot* alkalies or *hot* phosphoric acid. Even here, check with us just to make sure. Anything else goes—acids, alkalies, or whathaveyou.

So throw away those drip buckets, stop giving the "new man" the desk under the leaking joint . . . the next time you install or replace a drainline, make sure it bears the "PYREX" trademark.

Look at the coupon.

Longevity under adverse, even hostile, conditions is a well-known trait of Corning glasses . . . a fact to consider, even ponder, when you run up against materials with but a modicum of stamina.

WHO WANTS TO TRANSMIT 80% to 90% OF INFRARED THROUGH A WINDOW AT 900°C. OR IN THE PRESENCE OF CORROSIVES?

Ours not to reason why. Ours only to inform you that there are two VYCOR® brand glasses that service both conditions admirably.

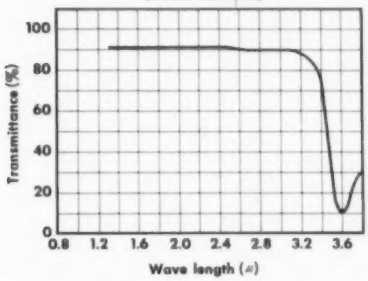
There is VYCOR No. 7905 glass. A sheet of this 2 mm. in thickness will transmit 90% of the wave lengths up to and including 3.0 microns. A ⅛ in. thickness will transmit 80% of a wave 2.75 microns across.

Then there is VYCOR No. 7950 glass. It is stained red. It does like work with infrared, but absorbs most of the visible light waves from a tungsten filament humming away at 2700°K.

Both glasses function continuously in the manners stated at 900°C. even in the presence of corrosives and will take intermittent jaunts into the 1200°C. plus region without damage.

Both will take a sudden thermal shock from these empyreal heights right down to 0°C.

INFRARED TRANSMISSION FOR GLASS NO. 7905
(2 mm. Thickness)

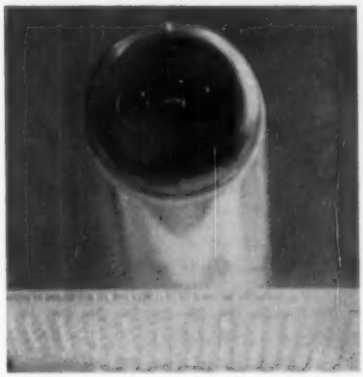


Both actually increase in mechanical strength as the temperature goes up. Odd, what?

There's much more you ought to know about these and the other VYCOR brand glasses, but we'd like to find out just how many and what kind of people are interested in such matters, so we've put the rest of the data away in a bulletin which you may have in exchange for the information asked for in the coupon.

silent light (fluorescent)

Making an electroencephalogram under fluorescent lights can be as nightmarish as listening to Leonard Bernstein conduct



in a subway. The same holds true for any sensitive electronic device that can pick up unwanted noise from a hot tube.

From now on, anyone seeing unworldly blips or blurs on his trace of a monkey's *alpha* waves might find our new PYREX brand E-C No. 70 panel helpful.

E-C No. 70 is a glass panel with an electroconductive coating fused to one side, a coating grounded with a ¼" strip of silver running around the perimeter of the panel. The coating is "tuned" to pick up and throw to the ground all radiation from 0.018 to 25 mc.

Add a simple line filter and a GBM ballast to your fixture, and all that comes out is clear, clean, quiet light, free from both radiated and conducted radio noise.

E-C No. 70 is optically designed to give low brightness to the light it lets through, this being 70 to 78% of the light emitted by the tubes.

E-C No. 70 is made of borosilicate glass, so it takes a goodly amount of corrosive atmosphere and thermal shock in stride.

E-C No. 70 meets all the many requirements of MIL-I-1690A—ships.

E-C No. 70 may be had in panels up to 28" in width, up to 48" in length.

Still more may be learned about E-C No. 70 by posting the coupon.

CORNING MEANS RESEARCH IN GLASS

CORNING GLASS WORKS, 54 Crystal St., Corning, N. Y.

Please send me: ☐ PE-30, PYREX lifetime drainline
☐ B-91, VYCOR Industrial Glassware
☐ A2, PYREX E-C No. 70 Glass Panels.

Name..... Title.....

Company.....

Street.....

City..... Zone..... State.....

Manufacturers' Literature Supplement

A bibliography of currently available technical brochures

dealing with materials, methods, components and machines

Materials—Metals

1. **Stainless Steel Gage Blocks.** The DoAll Company. Brochure describes stainless steel gage blocks and gives information about the available sets, grades and prices.

2. **Aluminum Bronze Alloy.** Ampco Metal, Inc. Ampco Welding News describes a new aluminum bronze alloy that resists stress-corrosion cracking. Other articles include: the repair welding of drop forge hammer guides; the overlaying of automotive trim molding dies; and the fabrication of office furniture.

3. **Stainless Steel Tubing.** Allegheny Ludlum Steel Corp. 34 pp. Booklet gives details on the various sizes, grades, design data, corrosion resistance, and other information. 25 tables are included, along with photographs and other drawings and data.

Materials—Plastics

4. **Mylar Paper Capacitors.** Plastic Capacitors, Inc. Catalog sheets including graphs, illustrations, life data, sizes and other technical information are available on Mylar paper capacitors and metallized Mylar capacitors.

5. **Flame-retardant Laminated Plastics.** Taylor Fibre Company. Bulletin describes two new copper-clad, flame-retardant laminated plastics called Fireban 321-R (with rolled copper foil) and Fireban 321-E (with electrolytically deposited copper foil).

6. **Insurok Laminated Plastics.** The Richardson Company. 8 pp. Catalog covers Insurok laminated plastic sheets, rods, tubes, and fabricated parts, their grades, properties, and sizes. It provides engineering data, product descriptions and uses for the laminates.

7. **Plastics Table of Properties.** Cadillac Plastic & Chemical Company. Table shows significant physical, electrical, chemical and optical properties of nine thermoplastic materials. Materials covered are acrylics, acetate, butyrate, Teflon and Kel-F fluorocarbons, nylon, polyethylene and vinyls. Data is compiled from test reports submitted by manufacturers.

8. **Polypenco Industrial Plastics.** Polymer Corporation. 16 pp. Booklet outlines properties, applications and availabilities of Polypenco nylon, Teflon, Fluorosint TFE base resin, Nylaflow nylon tubing and braided hose, Nylasint sintered parts, Nylatron molding powders, specialty nylon formulations and the Whirlclad coating system.

9. **Textolite Industrial Laminates.** General Electric. 16 pp. Catalog lists Textolite industrial laminated plastic sheets, tubes and rods. It also lists applications, special features, detailed characteristics and sizes available in over 50 grades.

Methods

10. **Custom Molded Plastics.** Chicago Molded Products Corp. Brochure includes value analysis check list, case histories including purchasing and design analysis and performances, and characteristics, properties and uses of plastic sheet and film.

11. **Silvercel Batteries.** Yardney Electric Corp. 8 pp. Bulletin contains technical data on three new Silvercel batteries for the missile field. It describes the battery system in general and lists electrical, physical, environ-metal and typical application characteristics and discharge curves.

12. **Superalloys by Vacuum Induction Melting.** Metals Division, Kelsey-Hayes Company. 36 pp. Brochure describes the process which produces alloys for aircraft and missiles. It discusses present and future applications of superalloys, and photos illustrate the production techniques and equipment used.

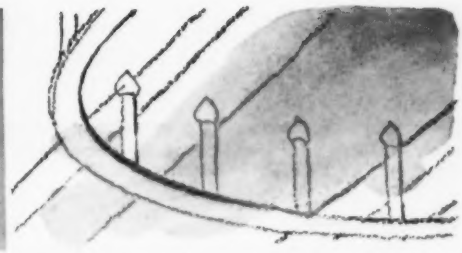
13. **Fireproofing System.** Columbia Acoustics and Fireproofing Company. 4 pp. Bulletin describes Cafco Blaze-Shield fireproofing system for decks, ceilings, beams, girders and columns. Contains installation drawings, U.L. test data and ratings and typical specifications.

14. **Application of Coating Compounds.** Conforming Matrix Corp. Brochure describes method of application of coating compounds to small articles, such as electrical and electronic compounds at a rate of 4,000 per hour. It tells how sprayable resinous compositions, such as epoxy compounds, can be used to completely form a light, tight seal for selenium diodes.

15. **Electric Transmission Systems.** Instrument Division, International Register Company. 4 pp. Brochure describes Acragage Electric Transmission Systems for remote pressure reading and maximum or minimum signals at one or more locations. It describes uses in chemical or petrochemical plants, power plants, oil refining, food processing and other applications.

16. **Feedwater Quality Control.** Graver Water Conditioning Company. 12 pp. Technical reprint, "Research Problems Relating to Production and Quality Control of Ultrapure Feedwater for Eddystone Station" presents the results of investigations undertaken as part of the Eddy-

"When we talked about the Plan person-to-person, participation jumped 30%!"



In our company we've made the Payroll Savings Plan available for some time. I thought, naturally, that we had a large participation. But when I checked up a few weeks ago I discovered that only about 22% of our people were making use of the Plan. It's so easy to say, "Sure, this is a fine idea, and I'll sign up next payday."

What our people needed was someone to explain this convenient savings plan *in person*; someone to show them that just signing the card would put this fine thrift program into automatic operation. They needed somebody to invite them to *start right now*.

When I contacted our State Savings Bonds Director, he helped us set up a thorough, informative canvass of everybody on our staff. As a result more than 30% additional employees signed up for this easy, systematic way to buy U.S. Savings Bonds, *regularly*.

Perhaps *your* organization, too, has a large percentage of employees who have *never been invited* to combine patriotism with basic thrift through the Payroll Savings Plan. Companies with high employee participation are enthusiastic about its benefits in terms of lower employee turnover, better safety records, and the satisfaction engendered by helping large numbers to contribute to our Nation's Peace Power. The greater your employee participation, the more substantial your company benefits will be. Contact your State Savings Bonds Director for prompt, practical help in spreading Payroll Savings information, *person-to-person*.

NOW! U. S. SAVINGS BONDS EARN 3¾%

INDUSTRIAL DESIGN

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE.

stone research program into production and quality control of ultra-pure condensate feedwater for Eddystone Station.

Miscellaneous

17. **Marine Hydraulics.** Denison Engineering Division, American Brake Shoe Company. 12 pp. Brochure outlines the use of hydraulic pumps, motors and valves for commercial and military marine use.

18. **Lighting Fixtures.** Heifetz Company. 64 pp. Catalog includes photographs, drawings and specifications of lighting fixtures.

19. **Corrosion Resistance Chart.** OPW-Jordan. 4 pp. Chart lists over 150 different chemicals and their recommended usage with ductile iron, iron, steel, 316 and 304 stainless steel, monel, brass, bronze, copper, aluminum and plastisol plastic.

20. **Rolling Steel Doors.** Rolling Steel Door Division, R. C. Mahon Company. 16 pp. Maintenance and parts manual for Mahon's doors includes sections on typical door construction features, inspection periods, door adjustments and continuing maintenance procedures, and illustrates all door components, and mechanical and power operators.

21. **Gasoline Driven Electric Plants.** D. W. Onan & Sons Inc. 4 pp. Folder lists entire line of Onan gasoline engine-driven electric generating plants. Includes specifications and chart of representative models.

22. **Magnetic Performance.** Magnetic Metals Company. 24 pp. Bulletin gives design data, test data and magnetization curves for centricores, stamped ring cores, and precision die-cut DU laminated cores.

23. **Acid Gold-Plating Process.** Sel-Rex Corp. 6 pp. Technical paper describes metallurgical properties, operational data, and uses of a patented acid-type industrial gold electroplating formulation, trademarked Autronex. Deposit characteristics, corrosion resistance, equipment requirements, solution makeup and maintenance, gold consumption, trouble shooting, analytical procedures, metal content chart, are all given in outline.

24. **Sealless "Canned" Pumps.** Chempump Division, Fostoria Corp. 4 pp. Bulletin describes use of sealless "canned" pumps for leakproof service in high temperature hot water heating systems.

25. **Metering Pumps.** Lapp Insulator Company, Inc. 28 pp. Catalog describes use of Pulsafeeder metering pumps in process industries such as pulp and paper, petroleum, natural and propane gases, textiles, pharmaceuticals, ore flotation, filling operations, breweries, distilleries, as well as in rubber, food, and chemical applications.

26. **Round Chart Recorder-Controller.** General Electric Company. 4 pp. Bulletin describes features, application, measureable parameters, and specifications for GE's new line of round-chart single- and double-pen recorders. It includes dimensions and a list of available charts and scales.

27. **Hydro-Valve Line.** J. E. Lonergan Company. 4 pp. Bulletin describes Hydro-Valve line for liquid service. It gives details and specifications on sizes, capacities, materials and other data.

28. **Radio Frequency Bridge.** Wayne Kerr Corp. Bulletin describes features, specifications, principle of operation, performance, and gives applications of the Wayne Kerr B-601 multi-ratio bridge.

29. **Ultrasonic Thickness Testers.** Branson Instruments, Inc. 8 pp. Bulletin describes two portable thickness testers which permit measurement of thickness from only one side of a variety of materials—metal, glass, plastic—by relating a variation in thickness to the change in resonant frequency.

30. **Air Directional Valves.** Westinghouse Air Brake Company. Catalog lists 1172 different air directional valves. Fifty-five operators and nine basic valves are shown with dimensions, capacity, weight and J.I.C. Symbols.

31. **Tabulating Punch.** Data Processing Division Royal McBee. Style sheet illustrates step-by-step punching-tabulating and reading-tabulating operations of Keysort data processing device.

32. **Safety Hats and Caps.** Willson Products Division, Ray-O-Vac Company. 8 pp. Booklet illustrates and describes complete line of Willson head protection equipment and describes the new Geodetic strap suspension which dissipates impact shock waves over a wide area of the head by fitting the "great circle" or "geodetic" lines of the head.

33. **Data Collecting System.** Friden, Inc. Booklet describes Collectadata system which automatically channels information from numerous work stations to a central processing point.

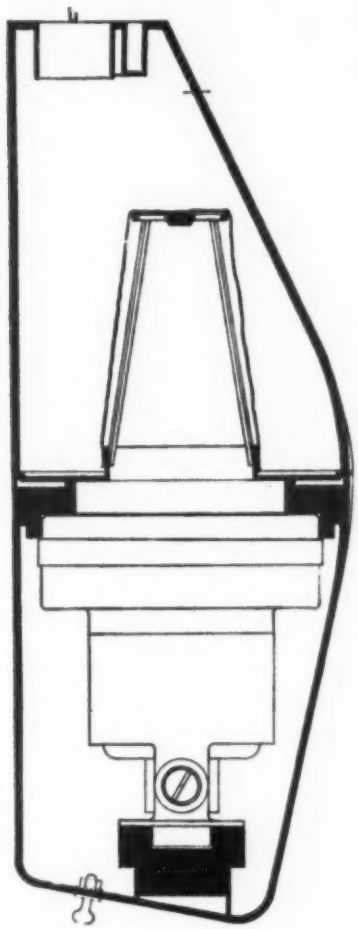
34. **Straight Thread Ports.** Hannifin Company. Bulletin covers benefits derived from the use of Straight Thread cylinder ports. It also contains table for determining proper Straight Thread port sizes for 1½" through 8" bore cylinders.

35. **Chemical Processing Facilities.** Chemical Products Div., Chemetron Corp. 12 pp. Brochure discusses company's Crestwood plant facilities and research laboratory, including buildings, equipment, and installed utilities. Processes are listed.

36. **Miniature Accelerometers.** Columbia Research Laboratories. 2 pp. Bulletin describes a new line of true compression accelerometers for use in applications where size and weight are critical factors. It includes data and illustrations on features of these crystal accelerometers and lists complete electrical and physical specifications of Models 200 and 201.

37. **Die-Cast Zinc Alloy.** Gries Reproducer Corp. Bulletin describes recent additions to the line of zinc die-cast findings for the clothing, leather goods, accessories and jewelry industries.

38. **Sensing Devices.** Dynapar Corp. 24 pp. Application Data Book describes use of transistorized digital preset counters, process controllers, and Roto-pulsers and other sensing devices which are used to provide precise numerical readout and actuation of automatic control functions.



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39. **Silicone Products.** General Electric. 8 pp. Guide to silicone products lists major product uses and benefits, such as anti-foam and release agents, lubricants, paper release, cosmetics and polishes, masonry water-repellents, paint and paint additives, textile finishes, and electrical insulation.

40. **DC Power Supply Data.** Dressen-Barnes Corp. 16 pp. Catalog contains complete specification data for every dc power supply in Dressen-Barnes' standard line. Includes selection chart.

41. **Spring-Loaded Thermocouple Adapter.** Thermo Electric Co., Inc. 2 pp. Bulletin describes new spring-loaded bayonet-lock thermocouple adapter which converts any ⅛" or 1/16" diameter metal-sheathed thermocouple to a spring-loaded, bayonet-lock type with adjustable immersion lengths.

42. **Custom Tool Facilities.** Custom Tool and Mfg. Company. 8 pp. Brochure describes available plant facilities, with illustrations and photos showing the range of equipment and processes in use. Other photos show parts and assemblies.

43. **Paper Coating and Machine Fabrication.** Charles Bruning Company, Inc. Booklet describes company's manufacturing and processing facilities for engineering, drafting, and drawing materials and machines.

44. **Thermal Design.** Research Council Inc. Report describes and analyzes thermal problems affecting electron tubes in modern electronic equipment. Applications of Thermion, a thermal analog tube, in evaluating and alleviating these problems are presented.

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For Your Calendar

March 1-2. "Workshop in Optical Tooling Methods in Manufacturing." March 3-4. "Metal Forming for Tomorrow's Manufacturing." Seminars sponsored by the American Society of Tool and Manufacturing Engineers. Ambassador Hotel, Los Angeles, California.

March 6-9. Fifth National Electrical Industries Show. New York Coliseum, New York.

March 6-9. Gas Turbine Power and Hydraulic Conference, sponsored by the American Society of Mechanical Engineers. Rice Hotel, Houston, Texas.

March 8-9. "Problems of Machining Space Age Metals." Seminar sponsored by the American Society of Tool Engineers. Sheraton Palace Hotel, San Francisco, California.

March 8-11. Seventh Annual Western Convention and Professional Audio Equipment Exhibit, sponsored by the Audio Engineering Society. Alexandra Hotel, Los Angeles, California.

March 14-18. Sixteenth Annual Conference of the National Association of Corrosion Engineers and the 1960 Corrosion Show. Dallas, Texas.

March 21-24. Institute of Radio Engineers Show. New York Coliseum, New York.

March 28-30. Advertising Essentials and National Sales Aids Show. Hotel Biltmore, New York City.

March 29-31. American Power Conference sponsored by the American Society of Mechanical Engineers. Sherman Hotel, Chicago, Illinois.

March 30-April 3. Science and Industry Show. Berkshire Hall, Danbury State Teachers College, Danbury, Connecticut.

April 4-7. Twenty-ninth National Packaging Exposition, sponsored by the American Management Association. Convention Hall, Atlantic City, New Jersey.

April 4-7. Atomic Exposition. New York Coliseum, New York.

April 5-7. 1960 Spring Conference of the Building Research Institute. Statler Hilton Hotel, New York City.

April 5-June 5. Victoriana Exhibition. Brooklyn Museum, Brooklyn, New York.

April 8-9. Annual meeting of the Industrial Design Education Association. University of Cincinnati, Cincinnati, Ohio.

April 9-16. Third Annual Exhibition and awards dinner of the Dallas-Fort Worth Art Directors Club. Sheraton-Dallas Hotel, Dallas, Texas.

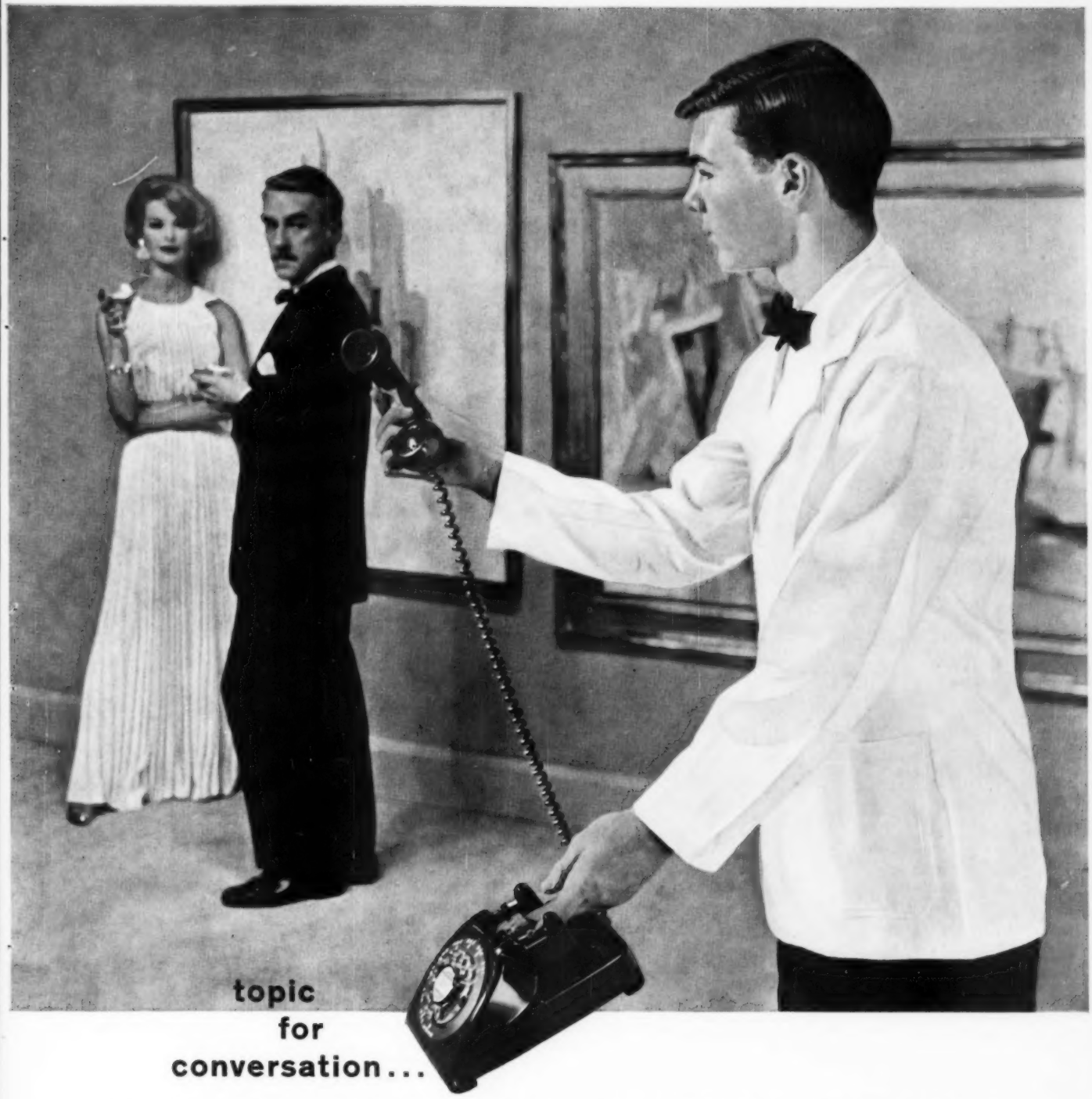
April 11-12. Twenty-ninth Annual Meeting of the Inter-Society Color Council. Philadelphia Museum College of Art, Philadelphia, Pennsylvania.

April 16-24. Fourth International Automobile Show. New York Coliseum, New York.

April 18-19. Third Annual Conference on Automatic Techniques. Cleveland-Sheraton Hotel, Cleveland, Ohio.

April 20. Plastics Technical Conference, sponsored by the North Texas Section of the Society of Plastic Engineers. Hotel Texas, Fort Worth, Texas.

April 20. Sixteenth Annual Quality Control Clinic, sponsored by the Rochester Society for Quality Control. University of Rochester, Rochester, New York.



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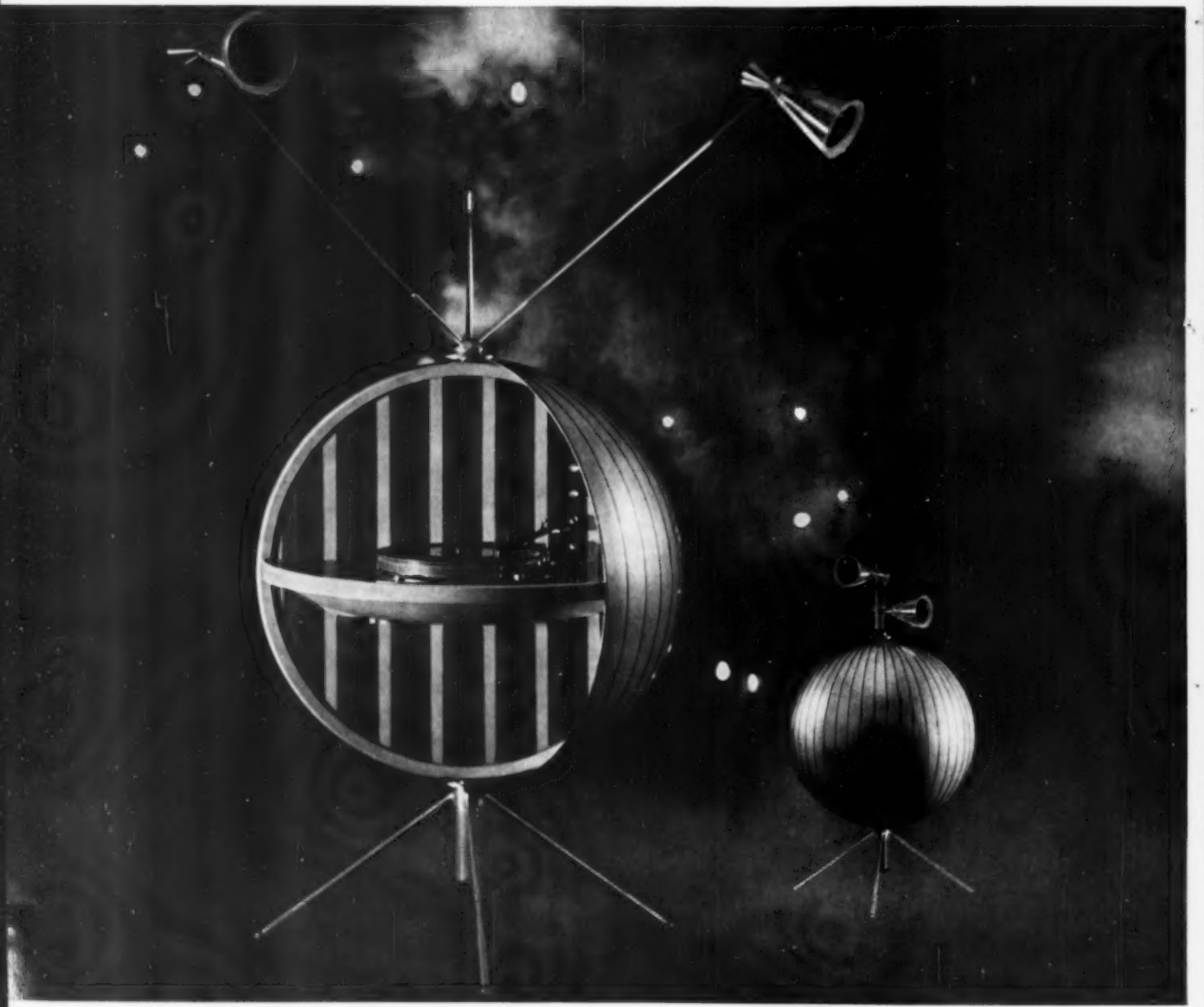

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