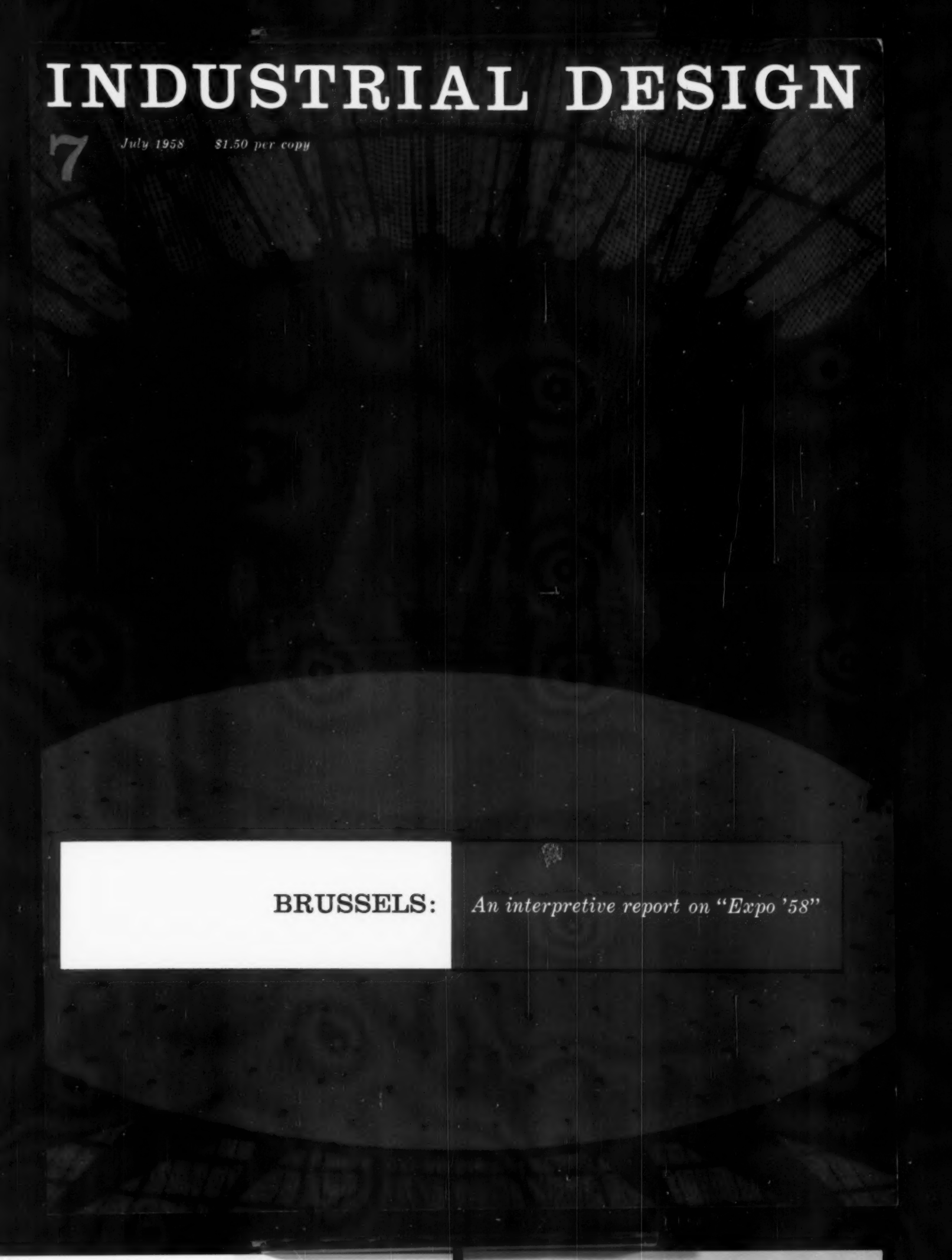
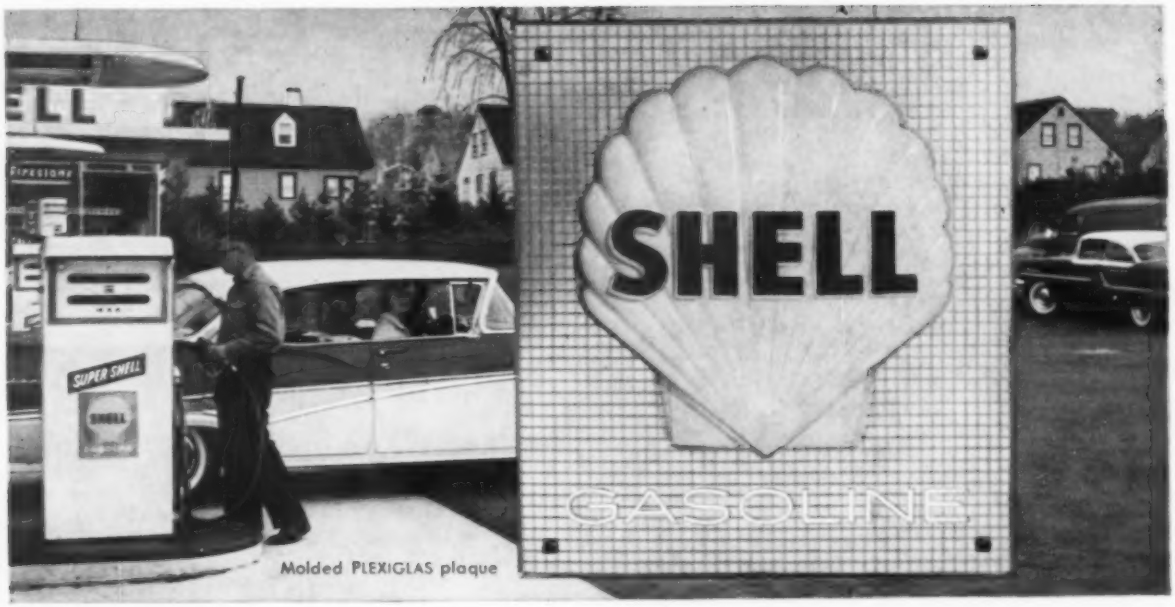
INDUSTRIAL DESIGN

7 July 1958 $1.50 per copy



BRUSSELS:

An interpretive report on "Expo '58"



Molded PLEXIGLAS plaque

Plexiglas ...hardworking and handsome

Molded PLEXIGLAS tuner magnifier panel

It resists weather, discoloration, impact, heat, most chemicals, dimensional change . . . it's *hardworking*.

It has brilliant, gleaming color, or water-white clarity that gives depth and sparkle to back surface paints and metallized coatings . . . it's *handsome*.

It's PLEXIGLAS® acrylic plastic, and it can add sales appeal to *your* product. Our design staff and technical representatives are available to help you.

Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

Canadian Distributor: *Crystal Glass & Plastics, Ltd., 130 Queen's Quay East, Toronto, Ontario, Canada.*

JULY, 1958 VOLUME 5 NUMBER 7

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

Coming

IN AUGUST—The Brussels Fair, Part II: 30 more pages of photographs and text showing design details at the fair.
IN SEPTEMBER—How to be a client: a study of the relationship between designers and their clients.

COVER: The center roof section of the American Pavilion at Brussels has been chosen as a cover design for the first of two issues featuring a comprehensive report on the Brussels Fair.

FRONTISPIECE: A bin of sintered powdered metal wheels for the Lionel Corporation's model trains.

PUBLISHER *Charles E. Whitney*

Directing Editors

EXECUTIVE EDITOR *Douglas G. Meldrum*
EDITORIAL DIRECTOR *Ralph S. Caplan*
ART DIRECTOR *James S. Ward*

CONSULTING EDITORS *Jane Fiske McCullough*
Deborah Allen
TECHNICAL EDITOR *Arthur Gregor*
ASSOCIATE EDITORS *Hiag Akmakjian*
Gregory Dunne
Nina Klippel
RESEARCH EDITOR *Ann E. Ferebee*
ASSISTANT ART DIRECTOR *Matilde Lourie*
EDITORIAL ASSISTANT *Ursula McHugh*
BUSINESS MANAGER *Alec E. Oakes*
ADVERTISING DIRECTOR *Paul R. Kane*
SUBSCRIPTION MANAGER *Judith Paul*
ASSISTANT TO THE PUBLISHER *Sven K. Martinsen*
PRODUCTION *George V. Rickel*

PUBLICATION OFFICES Whitney Publications, Inc.
18 East 50th St., New York 22, N.Y.
Charles E. Whitney, President and Treasurer
Jean McClellan Whitney, Vice-President
Alec E. Oakes, Vice-President
Paul R. Kane, Vice-President

ADVERTISING OFFICES

New York 18 East 50th Street
New York 22
Telephone PLaza 1-2626

Chicago Archer A. King & Company
410 North Michigan Avenue
Chicago 11, Illinois

Boston M. S. Beggs Company
462 Boylston Street
Boston 16, Massachusetts

Atlanta Blanchard-Nicholas-Osborn
75 8th Street North East
Atlanta 5, Georgia

Los Angeles The Maurice A. Kimball Co., Inc.
2550 Beverly Boulevard
Los Angeles 57, California

San Francisco The Maurice A. Kimball Co., Inc.
681 Market Street
San Francisco 5, California

Tyler, Texas Weaver, Incorporated
P. O. Box 3142
Tyler, Texas

INDUSTRIAL DESIGN is published monthly by Whitney Publications, Inc., 18 East 50th Street, New York 22, N. Y. Subscription price $10.00 for one year, $18.00 for two years, $24.00 for three years in the United States, Possessions and Canada. Rates to countries of the Pan American Union are $12.00 for one year, $22.00 for two years, $30.00 for three years. Rates to all other countries are $14.00 for one year, $26.00 for two years, $36.00 for three years. Price per copy $1.50 in U.S.A., Possessions and Canada. $2.00 to all other countries. Second-class mail privileges authorized at New York, New York.

Member of the Audit Bureau of Circulations

Member of the Associated Business Publications

LETTERS

March retrospective

Sirs:
We congratulate you on the excellence of your magazine. All of our staff find each issue informative and inspirational.

Of particular interest to us was your fine editorial in the March issue "By love of *what* possessed?" As you so ably point out, the creation of good designs is the prime function of a professional industrial designer.

The professional designer who overemphasizes the merchandising aspects of design and the slick air brush presentation of visual forms without a perceptive analysis of the function of the device will find stiff competition from the staff engineer who thoroughly understands his product and has a flair for functional form and color.

An outstanding example of the integrated design that can be achieved by an engineer with genuine skills in industrial design is well illustrated by the BDC Contex calculator brilliantly conceived and executed by engineer Henning Carlsen and described in your March issue.
Douglas C. Strain, President
Electro Measurements, Inc.
Portland, Oregon

Sirs:
Your appeal to public relations people to do their jobs better is particularly effective since you also tell them how.

I don't exclude myself from "them," for we all fail, from time to time, to give the service we know our clients and their editorial interpreters deserve.

Your advice that the attitude you want is a design and not an editorial one is a fine point. Failing the ability to give precise information (not out of laxity but from a lack of background), the very best we can do is to put editor and designer together.
Betty Reese
Raymond Loewy Associates
New York

Riffler it is

Sirs:
After spending five years in the industrial tooling business prior to my last few as an independent design consultant, I feel qualified in correcting the caption error on the photo lower right page 67 of the April 1958 issue. The mold maker is undoubtedly using a RIFFLER (Grobet File Co. of America, Carlstadt, N. J.), not a RIPPLER as stated.

May I also congratulate your magazine on the consistent high quality of content since the excellent February 1954 issue.
Jerome Lewis
Brooklyn, N. Y.

Accelerometers

Sirs:
Someone slipped badly in reporting Bernard J. Meldrum's missile talk at the Detroit IDI meeting. (ID. May, p. 63) "Excellerometers" can only be what the Soviet Union fits satellites with; over here the word is accelerometer.
Walter Boyd
The Vermont Workshop
Woodstock, Vermont

Apologies to Hawkeyes

Sirs:
Thanks for the healthy squib and the pictures of our dome and other industrial design products in your News section (ID, June, p. 20), but I should point out that your heading for the report naming us "Iowa State" will cause any State University of Iowa student to see red. Although in a larger, mystical sense we are all Hawkeyes here in Iowa, your unfortunate distant remove from this important locale has merged the battle scene. Iowa State is far, far over at some place called Ames, and we remain defiant in Iowa City, our Design Section busily at work bursting out in all directions.
Hood Gardner
Iowa City

Comments on April

Sirs:
We come to accept each new issue of Industrial Design magazine as par for the course in both editorial and layout excellence. Can't help but send a special note of congratulations, however, on the April issue which just reached my desk. The use of four-color illustration is an exciting addition. The story of the Teague office's design project for the U. S. Air Force Academy was excellent in both copy and illustration (a credit to both your coverage and the cooperation you must have had from the Teague staff to make this story possible.) And the Tomi Ungerer cartoons offered a welcome comic relief in a professional field that we sometimes take almost too seriously under the pressure of responsibility.

Our readership interest doesn't stop here —but this letter must. Our congratulations again to the entire staff for Industrial Design magazine, cover to cover.
Frank Carioti
Dave Chapman, Inc., Industrial Design
Chicago

DAF clarification

Sirs:
I am curious to know whether I am right in thinking that the unusual transmission of the DAF car, p. 71, Industrial Design, April 1958 is incorrectly explained. The explanation given makes me think that it should read ". . . transforms the power ratio from high through to low."
John Boyer
Pratt Institute
Brooklyn, N. Y.

Our explanation may have been confusing, so let's go back to the source—the DAF handbook, section on "Speed control":

"When the car is set in motion, the front pulleys (nearest to the engine) present a small effective diameter to the V-belts, whilst the rear pulleys present a large effective diameter (see fig. 1.) Under these conditions, the engine speed is converted into a slow rotation of the rear wheels. As the engine revolutions increase, a number of centrifugal weights, rotating with the front pulleys, increase the axial thrust on their sliding halves. The results of this is that the belts are forced to run on larger diameters in the front pulleys and at the same time are pulled onto smaller diameters in the rear pulleys. This pull overcomes the force of springs mounted on the rear pulleys to keep the wheel under tension."—Ed.

Erratum

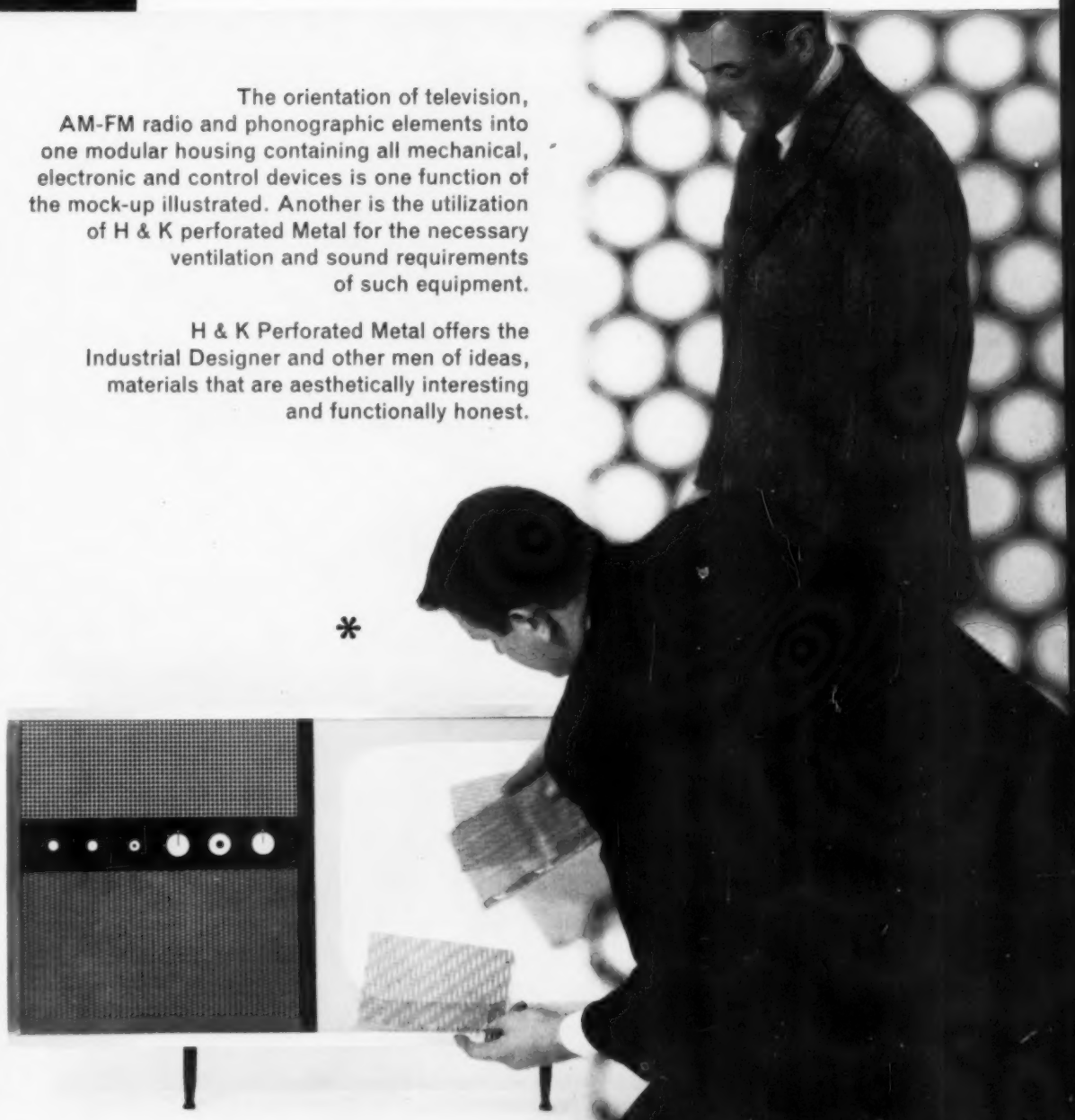
In the article on the Arens lock for the United States Army in the June issue of ID, credit for inventing the lock was given only to co-inventor Whitney A. Stuart. The other co-inventor, as listed on the patent, is Leonard G. Huxtable.

Idea!

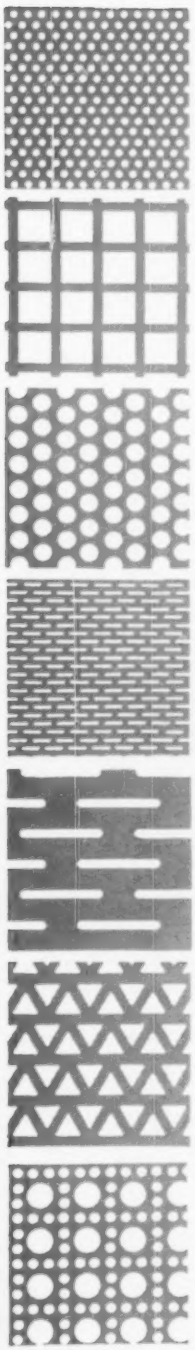
H & K perforated metals serve a function of design

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

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



*



A few of the many H & K Patterns available.

If perforated materials can be utilized in your product, please contact us. Our sales engineers will be pleased to work with you.

Fill in and mail coupon to nearest H & K office

*Product Development by William M. Schmidt Associates.

THE Harrington & King PERFORATING CO., INC.

Chicago Office and Warehouse
5664 Fillmore St. • Chicago 44

New York Office and Warehouse
108 Liberty St. • New York

Please send me—

☐ GENERAL CATALOG
☐ STOCK LIST of Perforated Steel Sheets

NAME_____

TITLE_____

COMPANY_____

STREET_____

CITY_____ ZONE____ STATE_____

CLIPS AND QUOTES

In a season of commencement—and commencement addresses these words of design critic **Edgar Kaufmann, Jr.** *to the graduating class at Rhode Island School of Design seemed to the editors to have significance for the practicing designer too.*

"

Conservatism is a proper respect for and utilization of the achievements of the past; conservatism in design is peculiarly difficult today. In a long history the highest accomplishments of design are rooted in pre-industrial conditions; respect for them yields little of immediate usefulness to designers for modern industry. To be conservative modern design has to prune its tree way back, deriving strength and fruitfulness from its main stem, that is from design understood as a necessary element of human existence.

In the simple, basic sense design is the business of making human environment: taking the raw material of the world and converting it into a shelter where the arrangements and equipment are convenient. Birds, bees, and beavers instinctively do as much and perhaps more; something like human ceremony and superfluous embellishment seems paralleled in their activities. We may suppose that in the natural state utility and delight are inseparable and not in any way distinguished one from the other. Very gradually mankind has learned to make a distinction, and today no one confuses the function of an artist with that of an engineer.

A prophet of functionalism

As early as 1750 the Venetian critic and theoretician of architecture, Father Lodoli, established intellectually a creed and a logic of design free from any authoritarian precepts, the clearest esthetic program of the Enlightenment. "Nothing should be designed but what is actually functional . . . Function and form are one and the same thing . . . Ornament must be rooted entirely in necessity . . . (although) even Nature sometimes indulges in non-essential beauty . . . A material (should be) handled exclusively according to its character, its nature."

In some form these ideas were perhaps known to mid-nineteenth century authors like Emerson and Greenough, who felt fully the vigor and applicability of similar thoughts. But the practical outcome a hundred years ago was no more apparent than it had been a century before; if men thought clearly they didn't know how to translate their thought into action. Yet in the so-called vernacular arts they began to discover forms eloquent of a modern world, forms "frank, sincere, homogeneous, based on reason," to use Lodoli's parlance.

A union of utility and delight

In the United States and Europe there arose gradually an admiration for tools, implements and vehicles intrinsically well formed, free from historic influence. The novelist Cooper in the 1820's, the sculptor Greenough in the 1840's, Viollet-le-Duc in France in the 1860's, Louis Sullivan in the 1880's, Frank Lloyd Wright and Henry Adams in the 1900's, Walter Gropius and Le Corbusier in the 1920's all preached in sympathy with Lodoli's doctrine, and admired the powerful expression of vernacular engineering. It seemed they had discovered a situation where utility and delight were near together. Could not a conscious, controlled modern design arise here?

Reason, sentiment and instinct were aroused, yet only an occasional great man succeeded in bridging the gap—an engineer like Nervi or Torroja, an architect like Wright or Mies, a product designer like Charles Eames or Kaj Franck. These men are alive today; I doubt if six to equal them could be found in any decade since the Industrial Revolution. Here, I think, in the activity of this modern creative galaxy, is an indication of what may come. Without sacrificing the gains of specialization we must reach out for increasing wholeness again. This has been achieved occasionally; it is being achieved more and more. This is the extraordinary opportunity of trained designers, environment-makers for modern man. They can think of man as a whole creature, provide for him thus. They must command the advantages of specialization for the task. It will not do to turn back or to reject what others have fought hard to achieve. The designers' task today is, it seems to me, undeniably a conservative one: to amalgamate the advances of our civilization into a valid, vital everyday environment.

Conventions may be discarded

The goal which has been beckoning for more than a century can not now suddenly be reached without pains. Half the axioms that rule design today I suspect will either go or change drastically, particularly the axioms that define the designers' image of the user, the public. The designer's public today is unlike any public before now. So far market analysts have been slow to seize the new nature of a mass public; the image of individual man taken over from psychiatry still dominates, and it is assumed that *vox populi* is the voice of each individual consumer. Until this confusion clears, mass reactions will be inadequately interpreted (as our present automobiles illustrate) and correlatively the individual's needs will continue to be slighted.

Besides these preconceptions about consumers there is another aspect of design today due for a change if designers wish to work as conservationists of a well-balanced human environment. This is the aspect of style, a double aspect since it comprises a mass-made style and a handicraft style.

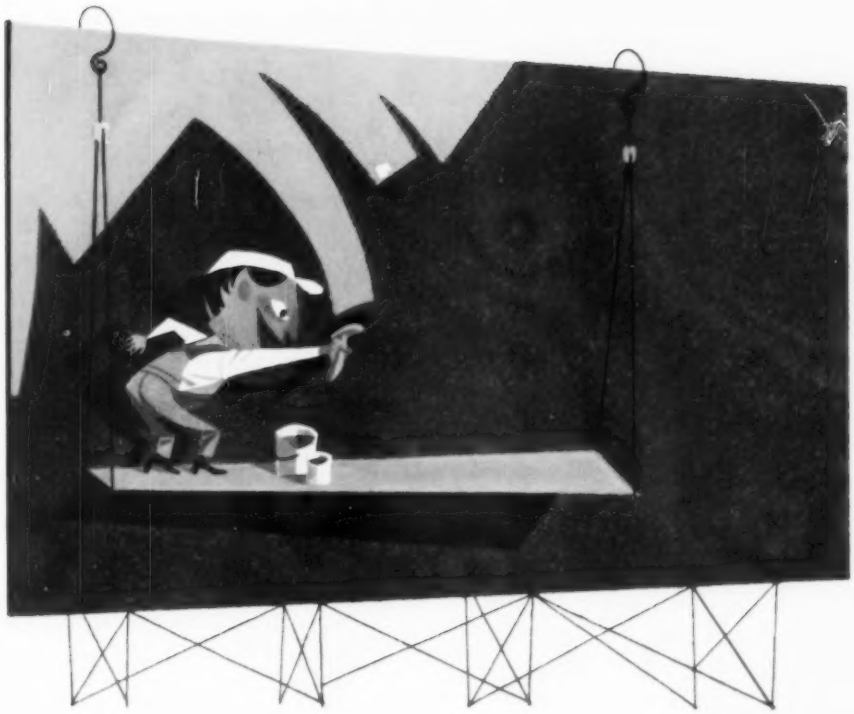
When mass production matured enough to look for a style of its own (early in the century) naturally it took the vernacular of the machine shop and in due time polished it into the slick, shiny, impersonal, meagerly colored, marvellously characteristic machine style we all know. Deliberately in contrast, the handicrafts learned to feature accidental, asymmetric effects, complicated textures, vibrant tonalities and extremely accented shapes. In the course of four decades some remarkable cross-breeding has taken place (again I refer you to our automobiles) but the two strains of the twentieth century's refined design styles are clearly identifiable still today. These conventions like all conventions sooner or later, have substituted themselves for direct feeling, repressing inherent form and intrinsic finish in a preponderance of modern products.

Design for our times

It is no answer to ring out the Bauhaus and ring in, let us say, Danish Modern. They are in a sense complementary, excellent each in its way and day, but ready to cede a new, less formalistic expression of the era that lies ahead. And this expression is certainly not the party-mannered style that rates four-color reproduction today in clothes and cloth, in architecture and in product design, for it is utterly artificial, the counterpart of Hollywood movies, tranquilizers and colored hair rinses. All these are, one supposes, symptoms of a prolonged cultural adolescence. Somewhere underneath this unhappy expression there lies still undisclosed the image of a vigorous and radiant design, natural to our day, neither artificially stimulated nor artificially stunted. The designers who can reveal this image will have accomplished the real purpose of their profession, and of generations of prophecy and arduous preparation. This is bound to mean painful rejections and reconciliations, it is no path for those who would rather just adjust than achieve. But it is the next opportunity in design, the conservative development which must now be opposed to the spendthrift trivialities that in the last few years have nearly exhausted the sturdy inheritance of modern design.**"**

*Product Development by William M. Schmidt Associates.

CITY ZONE STATE



MASONITE MAKES THE NEWS

...with a hardboard that takes any paint, print or laminate... beautifully

wood grains • patterns • veneers • metals • plastics

Whatever your design or production need, Masonite has the hardboard to do the job.

MASONITE® Panel Products

®Masonite Corporation—manufacturer of quality panel products.

Masonite Corporation
Dept. 2-2
Box 777, Chicago 90, Illinois

☐ Please send latest design and production information on Masonite panel products.

☐ Please have your sales engineer call.

Name .....

Address .....

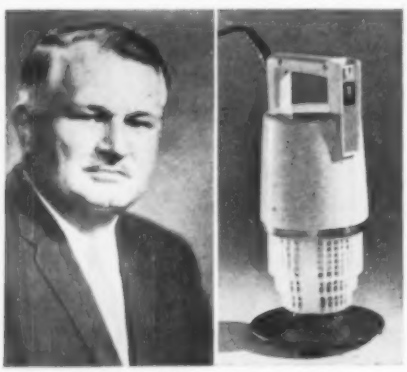
City ..... *State* .....

Zone ..... *County* .....

NEWS

Eero Saarinen and his pedestal chair

S. M. Highberger and his "Secretary"



Mel Boldt and his portable washer

IDI honors three designers

Melvin H. Boldt, S. M. Highberger and Eero Saarinen were honored last month in IDI's Eighth Annual Design Award program. The three medals are given each year to individuals "who are substantially contributing to the betterment of living through design." The awards were presented on June 19 at a luncheon at the Ambassador East Hotel in Chicago.

Mr. Boldt received the IDI award for his design of the AMI portable washer in which, according to the judges, he achieved "a trim, light housing of uncluttered surface design with an excellent distribution of texture." Mr. Boldt has directed his own firm, Mel Boldt Associates, since 1951.

The design of the "Secretary" model of the Thermo-Fax Copying Machine for Minnesota Mining and Manufacturing Company won an IDI award for S. M. Highberger of Harley Earl, Inc. The judges commended the design for its simplicity, and for interesting shape, careful handling of details, and good use of materials. Mr. Highberger was with Sundberg and Ferar before joining Harley Earl, Inc. in 1955. He is now product design director for the firm.

Eero Saarinen, of Eero Saarinen Associates, was honored for his design of the Pedestal Group for Knoll Associates. The judges noticed especially Mr. Saarinen's fresh approach to furniture, his understanding and utilization of modern technology and his appreciation of human anatomy.

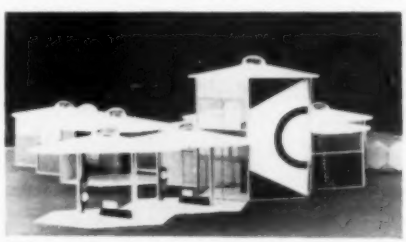
The jury for this year's awards was composed of Robert E. Redmann, president of the IDI, Paul R. MacAlister, former IDI president and founder of the Design Award Program, George A. Jergenson, representing West Coast designers, Leon Gordon Miller, representing the Midwest, and Richard Kostka, representing the East Coast.

The citations and medals were presented by Mr. Redmann. Following the presentation, the specific products for which the designers' achievements were recognized were placed on display. Robert C. Hood, president of the Ansul Chemical Company since 1949, was guest speaker at the luncheon. He discussed "Industrial Design—A Vital Resource to Industry."

ASID names eight student winners

Below are photographs of two of the winning designs in ASID's Third Annual Student Competition reported briefly last month in ID. The contest was held at Northwestern University's Technological Institute in Evanston, Illinois. Twenty-four students, representing nine schools, participated in the contest.

The eight winners were: Rodney Hatanaka and Kenneth Fenne of the Illinois Institute of Technology; William Baron,



Rodney Hatanaka's expandable gas station

Model of a power file, by Kenneth Fenne

Howard Noel, and Ed McCauley of the University of Illinois; Carl Fischer of the Art Institute of Chicago; Robert Filipek of the Minneapolis School of Art; and Theodore Peterson of the University of Illinois, who received a special commendation.

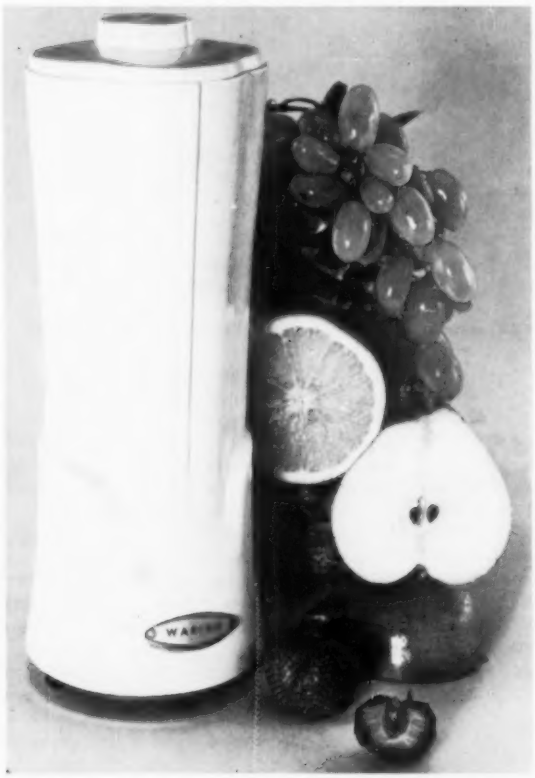
The contest required that each student submit three projects, two of which had to be designed for mass production. The projects could be in the fields of packaging, furniture, display, graphics, architectural design or a related area. Mr. Myers emphasized that all awards were made on the basis of overall proficiency rather than on the basis of any one project.

Judging the contest were Donald Dailey, Carl G. Bjorncrantz, James Teague, Charles H. Newman, and Stowe Myers.

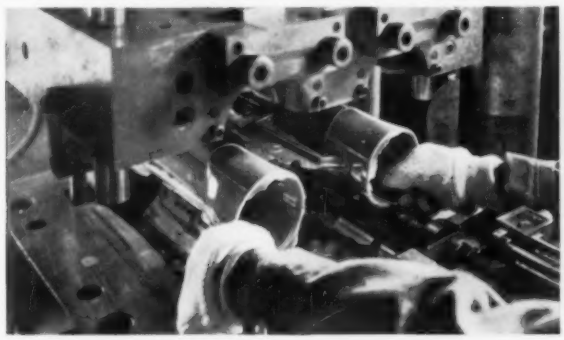
CYANAMID

PLASTICS IN ELECTRICAL DESIGN

Drink Mixer and Server...One Graceful Molding of CYMEL®



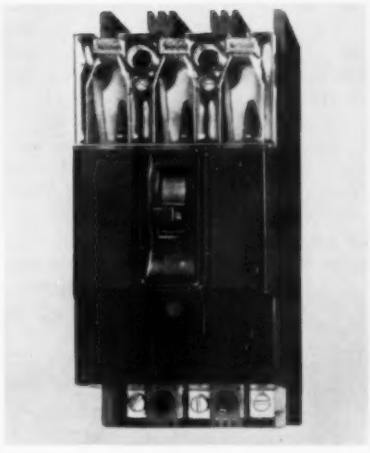
Conceived as both mixer and server of beverages and sauces, the new Waring Drink Mixer serves graciously anywhere in the home. In accord with the need for style, portability and economy, the mixing cavity, motor housing, handle and pouring spout are molded in one unit of CYMEL 1077 melamine molding compound—familiar to consumers in popular MELMAC® dinnerware. This styling in CYMEL keeps down size, weight, and cost. CYMEL provides insulation, strength, resistance to heat and staining, excellent stability, low moisture absorption, permanent rich molded-in color and hard surface.

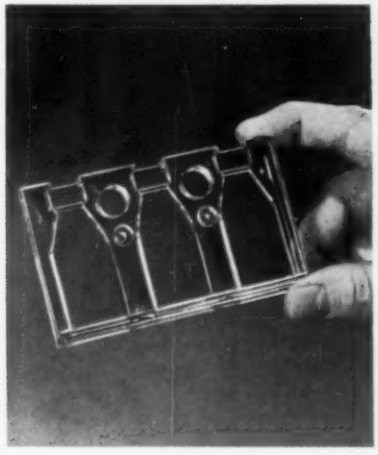


Two complete one-piece mixer bodies are molded of CYMEL in each cycle. Mixing cavities and motor housings are formed by cores. Here, mold is open, motor housing cores have been automatically retracted, and the two mixers are being manually removed from top-cavity cores. Molder is Shaw Insulator Company.

CYMAC® Window on Circuit Breaker Contacts

A removable transparent cover through which contacts are clearly visible is the outstanding feature of a new circuit breaker recently introduced by Standard Control Division of Westinghouse Electric Company. The cover of the Saf-T-Vue circuit breaker, which reveals at a glance whether contacts are open or closed, is molded of CYMAC 201 methylstyrene acrylonitrile copolymer, which provides necessary transparency, heat and break resistance, and surface hardness at comparatively low cost.





AMERICAN CYANAMID COMPANY
PLASTICS AND RESINS DIVISION
37C Rockefeller Plaza, New York 20, N. Y.

CYANAMID Plastics and Resins Division

In Canada: Cyanamid of Canada Limited, Montreal and Toronto
Offices in: Boston · Charlotte · Chicago · Cincinnati · Cleveland · Dallas · Detroit · Los Angeles · New York · Oakland · Philadelphia · St. Louis · Seattle

Package awards to Chapman office

The electric paint sprayer gift box (above) designed by the Dave Chapman office in Chicago has won two first awards in the Eighth Annual Competition of the National Paper Box Manufacturers Association. The box won a first award for best surface design and execution and, in the hardware division, the first award for "general superiority according to end use." The box was designed for Burgess Vibrocrafters, Inc. and manufactured by W. C. Ritchie and Company.

The design of the new box aims at placing a traditional workshop item in the gift market. To answer this purpose the Chapman office designed a box which would serve as a gift box, a counter display box, and a shipping carton. The cover of the set-up box is styled in brown with a profile of the new sprayer. Product identification is carried on an orange panel and the Burgess symbol is set off in brown and white against the orange area.

The paint sprayer is held firm within the box in a die-cut recess in a yellow hexagonal (shape of the Burgess symbol) raised platform. Die-cut areas in the flat brown platform hold two touch-up bottles, plastic case for special nozzle attachments and booklet on "How to Spray Paint." A separate display card slipped into the opening of the kit tray converts the box into a counter display and acts as a point-of-sale mechanism.

GM shows unicontrol automobile

An experimental automotive control system, and new ideas in highway design, were presented by General Motors recently to the Governors Conference Special Committee on Highway Safety in Detroit. The two and a half day conference was sponsored by the Automobile Manufacturers' Association.

GM's experimental unicontrol automobile (ID, March, page 17) has a combined hand-operated, electro-hydraulic steering, braking and throttle system. A four-inch stick, topped by a heavy ball, located to the right of the driver performs all steering, braking, and accelerator functions. Gear shifting is handled by an automatic transmission lever on the stub of the steering column. Unicontrol eliminates the usual mechanical linkage between steering gear and front wheels.

John M. Campbell, scientific director for GM's research staff, says that future development of the unicontrol automobile will depend on the development of electronic and hydraulic devices. At present neither have the reliability of mechanical steering systems.

The new road design plan presented at the conference aims at preventing or lessening severity of off-the-road accidents by removing roadside trees and other obstacles, flattening road shoulders, and grading parallel drainage ditches and ravines.

Museum presents young craftsmen

The work of 114 "Young Americans" will be shown at the Museum of Contemporary Crafts through September 14. The exhibition features 219 objects in the fields of textiles, wood, metals, enamels, and ceramics. The work of a total of 250 young (average age, 25) craftsmen was considered for selection by the jury, which was composed of Bartlett Hayes, Director of the Addison Gallery of American Art; Dorothy Liebes, textile designer and weaver; Margaret Craver, silversmith; Daniel Rhodes, ceramist and teacher at Alfred University; and Wharton Esherick, woodworker and sculptor.

Thomas S. Tibbes, director of the Museum of Contemporary Crafts, said that the exhibition pointed up a variety of experimental approaches and a sound understanding of technique and materials. Mrs. Vanderbilt Webb, founder of the American Craftsman's Educational Council, believed the exhibit indicated that the "artsy craftsy" look in handmade products, so prevalent when she entered the field in 1932, is gone. She attributed this in large measure to the schools established since the war. The craftsman of today, Mrs. Webb said, has become an imaginative designer whose influence is felt even in the area of mass production.

Ashtray innovation in New York

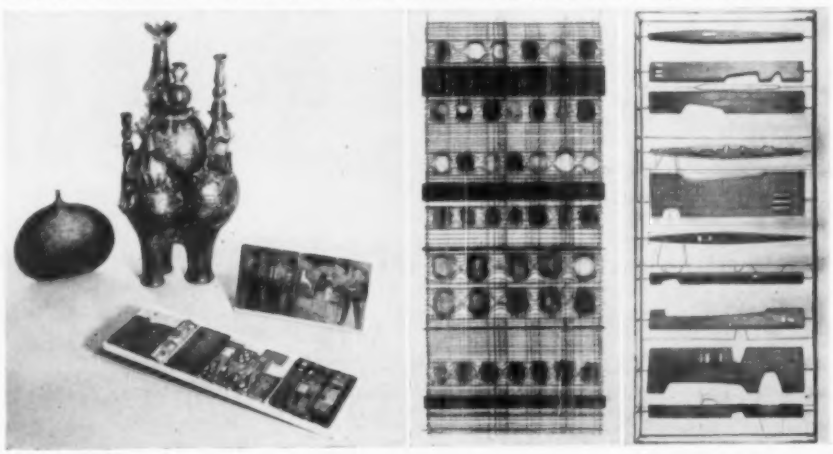
Something new in ashtrays (above) has appeared recently along New York's Madison Avenue. As part of the city's anti-litter campaign 50 experimental public ash trays have been installed along Madison Avenue between 43rd and 60th Street.

A Department of Sanitation innovation, the ashtray was designed by Sanitation Commissioner Paul R. Screvane, who says, "Despite the progress made in street cleaning procedures in recent years the butt-littering problem has continued to be a plague."

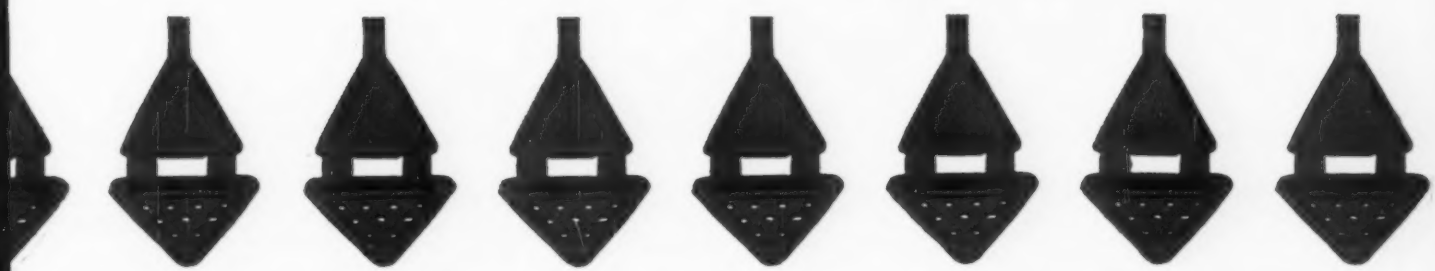
The new ashtrays stand 2½ feet high and are mounted on a base similar to the pipe used in parking meters. The 14" tray itself is cone-shaped and made of spun-aluminum. The bottom is covered with sand. The receptacles will be emptied by Department of Sanitation crews as part of their normal rounds. The trays have been strategically placed near bus stops where cigarette butts are especially likely to accumulate.

Reports indicate that these are the first street ashtrays ever to go into use, and requests for information about them have come from a number of cities.

Items at Crafts Museum include (left) ceramics by Henry Takemoto and Marilyn Fox, (center) room divider by Theodore Hallman, (right) screen by Howard Duell.



New shaker top of **TENITE POLYETHYLENE** sells more salt for Morton



A simple packaging improvement that lets a housewife *sprinkle* salt right from the container has given Morton Salt Company an important sales lead in market after market.

The new patented shaker device, fitted into the top of the salt package, consists of sprinkler and self-hinged sprinkler-cover, molded all in one piece. The material is Tenite Polyethylene in a formulation which affords just the right stiffness to keep the cover erect when open, and ample toughness to guard against breaks in the hinges.

The desired blue color is achieved by using a Tenite Polyethylene color concentrate, added in fixed proportion during the molding process. By this means, Morton secures uniform color results while employing several different molders.

In Tenite Polyethylene, the Morton Salt Company also found the more general characteristics needed to make the idea practical. First of these were low material cost and ease of fabrication. Important, too, were resistance to corrosion by salt or water; moldability that would permit one-piece design; and resilience that would make possible a tight friction-fit between cover and sprinkler.

The shaker top is a good example of how the many useful properties of versatile Tenite Polyethylene can satisfy design needs. If you have a design—or even just an idea—that could be given effective reality in polyethylene, why not look into the possibilities offered by Eastman's wide range of formulations.

For more information on Tenite Polyethylene and advice about its use, write EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

Shaker top molded for Morton Salt Company, Chicago 3, Ill., by: Korris Products, Inc., Lyons, Ill.
Victory Manufacturing Co., Chicago 12, Ill.
Northwest Molded Products Corp., Skokie, Ill.
Ken Hagen Co., Shelburn, Ind.
Federal Tool Corp., Chicago 45, Ill.

TENITE
POLYETHYLENE
an Eastman plastic

GM produces aluminum engine

Three aluminum V-8 automobile engines, in experimental models, have been announced recently by General Motors. "We consider these engines a significant engineering break-through, comparable to the 1947 announcement of GM's first high compression experimental engine," explained Charles A. Chayne, Vice President in charge of the GM Engineering Staff.

Outwardly the engines resemble conventional cast iron V-8 engines, but they weigh about 30 per cent less than standard engines of comparable displacement and horsepower. This saving, according to Mr. Chayne, represents the equivalent weight of one passenger per car. Weight of an aluminum engine block and head is less than half the weight of cast iron components. As the engine becomes lighter, the supporting structure is lightened, and, as this happens, smaller engines may be used to give the same performance as today's cast iron engines.

Use of aluminum in possible future engines depends largely on successful development of castable, wear-resistant aluminum alloys or dependable coatings which may be simply applied and inspected, according to GM officials.

World meeting on highway problems

The International Road Federation's third World Meeting will be held in Mexico City, October 26 to 31. Topics will be discussed under three headings—Social and Economic Aspects of Roads and Road Transport, Highway Financing, and Technical Training—and will include papers on highway design, equipment requirements, traffic engineering, national highway systems, highway economics, and pavement design. More than 1,200 experts from 50 nations will gather for the conference.

Prior to the meeting groups of conferees will inspect industrial installations, highway projects and highway departments across the United States. The trip will start in Washington in late September and end in Mexico City in time for the opening session of the meeting.

The IRF, a non-profit organization which promotes world road building, will publish proceedings of the meeting in English, Spanish and French. The last World Meeting took place in Rome in 1955.

Foreign car sales continue to climb

A record 7 per cent of the United States automobile market was captured by foreign-made cars in the month of April according to a report in *Time* magazine. This figure more than doubles the number of foreign cars sold here last year. The popular Volkswagen alone outsold Chrysler and DeSoto, was more than double sales of Studebaker, Edsel or Lincoln.

Russel Wright, who participated in government program there, did Viet Nam exhibit.

Record crowd at World Trade Fair

The 1958 United States World Trade Fair, held at New York City's Coliseum from May 7 to May 17, brought a 15 per cent increase in attendance over last year's figure. Public attendance reached 386,000, and over 6,000 department stores, chain stores, and national buying organizations were represented. The Fair was considered especially valuable to buyers, making it possible for them to do much of their buying at one time and in one place. Many American buyers who never before had the opportunity of drawing upon foreign commodity resources welcomed the Fair as a means of gaining new sources of supply. Foreign exhibitors at the Fair expect an important rise in their exports as a result of their participation.

More than $60 million worth of goods and services from 60 nations were on display at the Coliseum. Products ranged from handicrafts to heavy machinery, from rare foods to fashions. The nine-acre, four-floor area was covered with 3,000 exhibits including 35 national pavilions by architects and designers from the various nations represented. Many designers "played it safe" by developing a conventionalized national face for their exhibits, and there was a tendency toward conservatism in display techniques and a diffused rather than unified presentation of material. Little of the experimental atmosphere associated with the larger national exhibitions was present at the U. S. World Trade Fair.

Giovanni Stramaglia designed Italian exhibit (above) while Nomura Kogei did the Japanese pavilion (below).

Western Electric Uses Forticel

CELANESE CELLULOSE PROPIONATE MOLDING MATERIAL

Color has turned the practical telephone into an eye-appealing home and office appliance.

And Forticel, the versatile Celanese plastic, has helped to make the trend to telephone colors practical.

Forticel provides the technically vital properties that are demanded in such a precision instrument as the telephone: shatter resistant toughness . . . good dimensional stability . . . and excellent surface lustre. Production-wise, Forticel offers superb molding characteristics including short cycles, virtually invisible weld lines, good flow around metal cores and inserts, and non-critical flow temperatures.

What can Forticel do for your product? The coupon below can bring you the answer. Celanese Corporation of America, Plastics Division, Dept. 152-G, 744 Broad Street, Newark 2, N. J.

Canadian Affiliates: Canadian Chemical Co., Limited, Montreal, Toronto, Vancouver. *Export Sales:* Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Ave., N. Y. 16.

Celanese ® Forticel ®

Forticel . . . a Celanese molding material

TYPICAL PHYSICAL PROPERTIES OF FORTICEL

Flow temperature: (°C.) (A.S.T.M.)	D569-48	145—183
Specific gravity	D176-42T	1.18—1.21
Tensile properties:		
Break (p.s.i.)	D638-52T	1900—5900
Elongation (%)	D638-52T	48—63
Flexural properties:		
Flexural strength (p.s.i. at break)	D790-49T	3300—10700
Rockwell hardness: (R scale)	D785-51	=15—106
Izod impact: (ft. lb./in. notch)	D256-43T	2.7—11.0
Heat distortion: (°C.)	D648-45T	51—70
Water absorption:		
% sol. lost	D570-42	0.00—0.08
% moisture gain	D570-42	1.5—1.8
% water absorption	D570-42	1.6—2.0

Celanese Corporation of America, Plastics Division
Dept. 152-G, 744 Broad Street, Newark 2, N. J.

Please send me New Product Bulletin A2A on Forticel Plastic.

Name_____

Title_____

Company_____

Address_____

City_____ Zone_____ State_____

Everything and the kitchen sink

Ford Motor Company's "push button camper" (above) is a four-bed motel on wheels. When the driver pulls into a campsite he can, by pushing a series of buttons, lower a boat over the side of the wagon, erect a full-size tent atop the roof, locate a kitchen unit on the tailgate and extend a canopy to shade the cook. The camper also includes a refrigerator, sink with hot and cold running water, shower and sleeping accommodations for four persons.

Creation of the new camper has been a cooperative effort between the Ford publications department and the Reynolds Metals Company. The idea originated with a small model built and photographed to illustrate the dust jacket of the Ford publication, "Station Wagon Living." William Moss of Ann Arbor, Michigan developed the design. Ford spokesmen have said that there are no plans at this time for mass-producing the station wagon.

PDC holds panel

The Package Designers Council conducted a panel (above) on significant trends and future developments in package design on May 28 at the Lotos Club in New York. Moderating the session was Walter Stern of Raymond Loewy Associates. The panel included Walter Landor, Walter Landor and Associates; Robert Sidney Dickens, Dickens Inc.; Royal Dadmun, Royal Dadmun and Associates; Dean H. Reynolds, Eastman Kodak; Donald Deskey, Donald Deskey Associates; and Egmont Arens, Egmont Arens, Inc.

Walter Landor remarked that future packages should be less contrived and more straightforward to avoid consumer's mental block against "overpackaging." The inappropriateness of many packaging materials for their packages was scored by Mr. Dickens, who cited the use of aluminum foil for a dog food package and a polyethylene bag for an inner tube. The trend away from "hard sell" packages toward those which are "polite enough to be invited to the table" was discussed by Royal Dadmun.

Seated behind table are (left to right): Dean H. Reynolds, Walter Landor, Gerald Stahl, Walter Stern, Karl Fink, Egmont Arens, and Royal Dadmun.

"If a designer can develop a package that does a better job and is easier to use he gives his client a sales advantage," said Donald Deskey. "Engineering ingenuity is such that eventually every product will be ideally packaged. Therefore, it is increasingly important for the designer to work with his client in the area of technological research," he added. Egmont Arens remarked that "any effective packaging strategy is soon adopted en masse by every manufacturer in the field. When this happens high packaging costs may be the only reward." Mr. Arens stressed that a packaging program of strong and distinctive individuality was the main essential.

Pratt to hold packaging workshop

Robert I. Goldberg, a fellow of the Package Designers Council and a partner in Associated Industrial Designers, New York package design firm, will direct the Second Annual Package Design Workshop to be held at Pratt Institute. The workshop will begin on Tuesday evening, September 16 and continue for fifteen consecutive Tuesday evenings.

The workshop, open to both beginning and advanced package designers, will combine practical lectures and demonstrations on package design with the actual design of a package by each student. Various professional designers will address the workshop.

Registration should be made at the Pratt Institute Evening Art School, 221 Ryerson Street, Brooklyn, New York during the week of September 8.

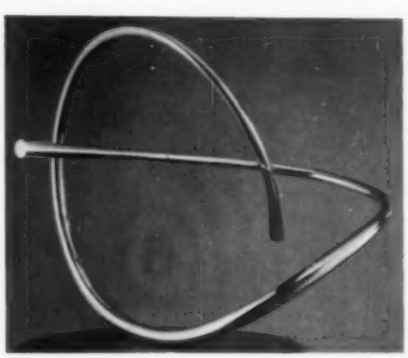
Reynolds Award to six Belgians

The R. S. Reynolds Memorial Award trustees commissioned Jose de Rivera to create the emblem (below) which was presented to the group of architects selected by the American Institute of Architects to receive the 1958 award for outstanding use of aluminum, esthetically and structurally, in modern architecture. Winning building this year is the open-air pavilion housing the Belgian transportation industries exhibits. The building's roof, of corrugated aluminum over latticed trusses, is supported by 28 thin aluminum columns.

Through presentation of a $25,000 prize, in addition to the emblem, the Award trustees hope to encourage collaboration between art and architecture and between industry and the fine arts. The award was made for the first time last year.

According to Mr. de Rivera, whose emblem will tour museums after presentation, sculpture is an art that cooperates harmoniously with architecture and can help to keep architectural shapes in a human scale. "While architecture can stand alone, as a space experience it can be aided by proper painting and sculpture. Painting, sculpture and architecture, when brought together, can produce a total experience beyond that which they express alone," says Mr. de Rivera.

The six Belgian architects who designed the award-winning building are Henri Montois, Robert Courtois, Madame Thierry Hoet-Segers, Frederique Hoet-Segers, Jacques Gossens-Bara, and Robert Moens de Hase.



Manufacturers and Designers are invited to submit entries for INDUSTRIAL DESIGN's

5th ANNUAL DESIGN REVIEW

which will appear in December, 1958

A major feature in each December issue of INDUSTRIAL DESIGN, the fifth Annual Design Review will be a portfolio of the year's major innovations in industrial design. It will also help forecast the effect of these advances and developments in the designs of the coming year.

What Will Be Included?
The Review will cover every facet of industrial design: new and redesigned products, packaging, materials, professional and industrial equipment, as well as appliances, housewares, and other consumer products. A comprehensive review of this scope, highlighting the ideas and accomplishments of an entire year, provides a valuable permanent reference for designers and manufacturers alike. Last year's review served as a check list for the Committee on Selection and Procurement for the U. S. Pavilion at the Brussels Fair.

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

How Do You Participate?
From designs placed on the market since September, 1957, choose those which you would like included in this annual review. These designs should represent the most significant work of your firm or design office. Perhaps a design has made a particular contribution in its field, has overcome special practical problems, offered unusual features or merchandising ideas.

How To Prepare Entries
Send us one or more reproduction photos of each product (unretouched "salon" type), labeling each photograph clearly with the names of the product, the designer, staff member, or department in charge, and the manufacturer. *On the same label please include a brief note stating what you consider is unique and distinguished about the product you have selected, and in what respects the use of materials, components and manufacturing techniques was unusual.*

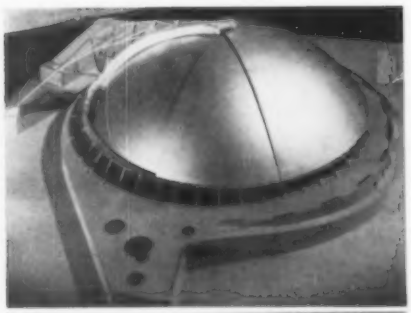
The following categories, though not in any way definitive, may give you some ideas for evaluating your products:

1. inventive designs: solutions based on new practical improvements in function and operation
2. notable solutions to familiar problems and established product types
3. designs without prototypes; that is, designs for objects never manufactured before, which embody new approaches to unfamiliar problems
4. engineering developments
5. apt and unusual use of materials, components, finishes
6. packaging design
7. new ideas for merchandising products
8. designs that had unexpected or outstanding consumer acceptance (with brief sales story)

There is no restriction on the number of photographs or designs submitted. *Closing date for contributions is September 5th,* 1958.

INDUSTRIAL DESIGN

Whitney Publications, Inc. 18 East 50th Street, N.Y. 22, N.Y.



Company news

Mitchell and Ritchey, Pittsburgh, have designed a 415-foot-diameter retractable dome (above) for the new Pittsburgh Civic Arena. The stainless steel dome will be built in eight sections, six of them movable. The Arena, including the mall and parking area, will occupy 20 acres and forms a part of the Lower Hill Redevelopment program intended to transform 94½ acres of Pittsburgh into a cultural center.

The **Hamilton Watch Company** last month presented laboratory and production models of the world's first electric watch to the Smithsonian Institution. The models will form a new museum exhibit showing the development of the watch through a ten-year research period. Also on exhibition will be a working plastic model eight times actual size demonstrating the watch's operation.

The **Educational Developmental Laboratories**, Huntington, N. Y. announce a filmstrip and a 20-page booklet on eye-movement photography (available to colleges at nominal cost). The company will soon release its "Reading Eye", a new eye-movement camera.

Grace Line's new *Santa Rosa* left from New York on her maiden voyage June 26, bound for Venezuela and the West Indies. She is the first ship built under the Government's and the maritime industry's fleet replacement program. The line's new *Santa Paula* will be completed this fall.

The Devereux Company, an organization offering design counsel to management, has opened offices at 405 Lexington Ave., N. Y. The company will serve as a clearing house of information on design services, will analyze its client's design problems, and will propose designers to the client, deriving its fee from the designer finally selected.

Under the title "Fine Arts and Design," **Rasch Wallpapers** recently presented its new collection of designs by European artists. The exhibition, at New York's Associated American Artists Galleries, showed paintings and sculpture by the artists in conjunction with their wallpaper designs to illustrate the interrelationship of fine and applied arts.

Awards

The Palmer-Knapp Associates Industrial Design Scholarship has been awarded this year to **Conrad Majeski** (below), a student at the Art Institute of Chicago.

The National Institute for Architectural Education announces the following winners in its national Spring Term competitions: the William Emerson Memorial Prize of $100 for "An Inter-Faith Chapel" to **Gerard C. Cugini**; the Architectural Record Prizes for "A Resort Hotel" to **L. G. Hildinger** (first prize) and **S. L. Dickinson**; first prize awarded by the Tile Council of America Inc. for "A Comprehensive Out-Patient Rehabilitation Center for the Physically Handicapped" to **L. W. Rylee**; and, at the elementary grade level, the Kenneth M. Murchison Prize for "A Small Office Building in a Tropical Climate" to **J. S. Daley** (first prize) and **J. Mount**.

The Benjamin G. Lamme Medal given each year to an alumnus of Ohio State University in recognition of "meritorious achievement in engineering or the technical arts" was awarded this year to **Harley C. Lee**, vice president of Basic Incorporated, Cleveland.

The Kamerlingh Onnes Gold Medal for 1958 has been given to **Philips Research Laboratories**, Eindhoven, Netherlands, for its new gas liquefier.

People

APPOINTED: **Arthur E. Brooks, T. J. Rhodes,** and **D. Lorin Schoene** as assistant directors of research and development for United States Rubber Co. . . . **Harry Sooy** (below) to the staff of Robert Zeidman Associates, New York . . . **Paul Nelson** (below) to the staff of Ketchum and Sharp, New York . . . **Peter L. Shanta** as technical director of Taylor Fibre Co., Norristown, Pa. . . . **William Cameron** (below) as manager of a new research and development department at the Kaiser Aircraft and Electronics Division, Richmond, California. Mr. Cameron comes to Kaiser from Industrial Design Consultants, Inc., Los Angeles (see ID, October '57) . . . **James R. Bright** as a director of Lamson Corporation of Delaware . . . **J. William Didriksen** (below) as president of Ekco-Alcoa Containers Inc., Wheeling, Illinois . . . **Clarence Dunlop** as vice president in charge of manufacturing facilities planning, Burroughs Corporation . . . **F. J. Close**, General Manager, Sales Development and Commercial Research Divisions, as vice president of Alcoa . . . **James M. Earl** (below) as president of Harley Earl, Inc., succeeding **Harley J. Earl**, who will remain as chairman of the company's Design Review Committee . . . **Hunter J. Hooe** as a research director of Victor Adding Machine Co., Chicago . . . **Edgar Kaufmann, Jr.** as a member of the Editorial Advisory Board of the Encyclopaedia Britannica . . . **Sydney G. Pettitt** as technical director of the Packaging Group of Fibreboard Paper Products Corp., San Francisco . . . **Mayer I. Blum** to the board of trustees of Drexel Institute of Technology . . . **Vernon D. Hauck** as general manager of Friez Instrument Division of Bendix Aviation Corporation, Baltimore, succeeding retiring manager **LeRoy D. Kiley**.

Going places

NEW OFFICES: **John B. Penson**, 400 West Madison Street, Chicago 6 . . . **Nelson-Westburg Design Associates**, 1004 Marquette, Minneapolis 3 . . . **Nels A. Miller**, 946 Pleasant Street, Oak Park, Illinois.

NEW LOCATIONS: **Richard Arbib Company, Inc.**, 250 West 57th Street, New York 19 . . . **Quentin Fiore**, 34 West 58th Street, New York . . . **Croname, Incorporated**, 6201 Howard Street, Chicago 48.

Sooy *Didriksen* *Cameron* *Nelson* *Earl* *Majeski*

DYLITE

expandable polystyrene packages the sweet

Molder: FOAMPAK Corporation, Philadelphia, Penna. **Box Maker:** Walter P. Miller Company, Philadelphia, Penna.

. . . and the supersonic

DYLITE expandable polystyrene demonstrates real design versatility in this double-barreled packaging display.

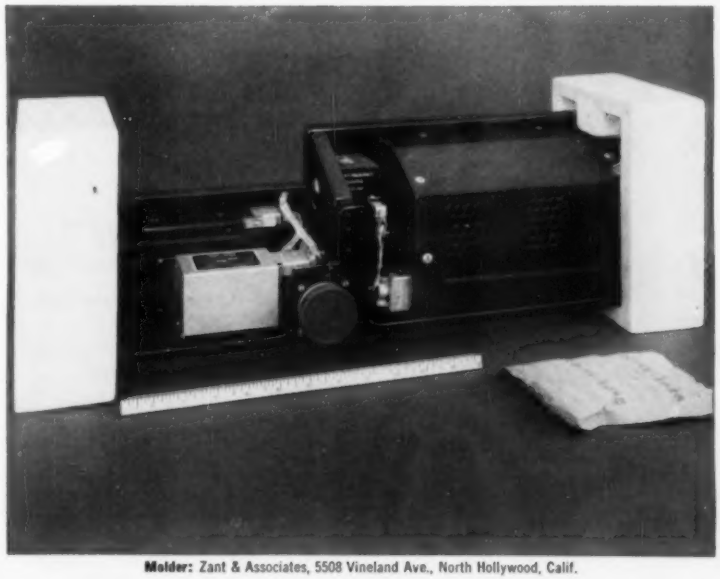
Observe how snugly the DYLITE trays fit into the James candy box. That's because the moldability of DYLITE can be perfectly controlled. DYLITE is strong and lightweight, too!

DYLITE can also boast of superior performance in industrial packaging. For instance, Autonetics, a division of North American Aviation, selected DYLITE for end-pack packaging of a Yaw & Pitch Control Assembly.

The following conclusions made by Autonetics packaging laboratory speak for themselves: increased part protection, reduced dunnage weight 66%, reduced desiccant 24%, reduced packing time 22%, and reduced shipping cost 16.8%.

Perhaps DYLITE can be used to similar advantage in your future design operations. You may also want to consider these other fine plastics: DYLENE polystyrene, SUPER DYLAN polyethylene and DYLAN polyethylene. For more information, wire or write Koppers Company, Inc., Plastics Division, Dept. ID-78, Pittsburgh 19, Pennsylvania.
TWX Call Number . . . PG533.

DYLITE, DYLENE, SUPER DYLAN *and* DYLAN *are registered trademarks of Koppers Company, Inc.*



Molder: Zant & Associates, 5508 Vineland Ave., North Hollywood, Calif.

Offices in Principal Cities . . . In Canada: Dominion Anilines and Chemicals Ltd., Toronto, Ontario

KOPPERS

KOPPERS
PLASTICS

NEW SCOPE

for new ideas with Du Pont ZYTEL®

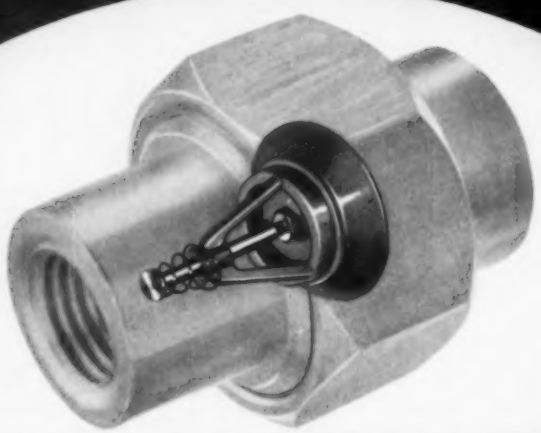
NYLON RESINS

The design equation calls for imagination, plus know-how, plus material. The more versatile the material, the more easily you can concentrate features into a single plastic part, eliminate operations, cut costs. ZYTEL nylon resin is a material that lets you do this. Starting with high strength, it offers a great variety of valuable properties. ZYTEL also gives you major advantages in fabrication. We know you'll supply the imagination, and we'd like to help you with the know-how. So, send for our new, information-packed manual: "DESIGNING WITH ZYTEL® NYLON RESIN." The address is: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 217, Wilmington 98, Delaware.

In Canada: Du Pont Company of Canada (1956) Limited, P.O. Box 660, Montreal, Canada

DU PONT
REG. U.S. PAT. OFF.

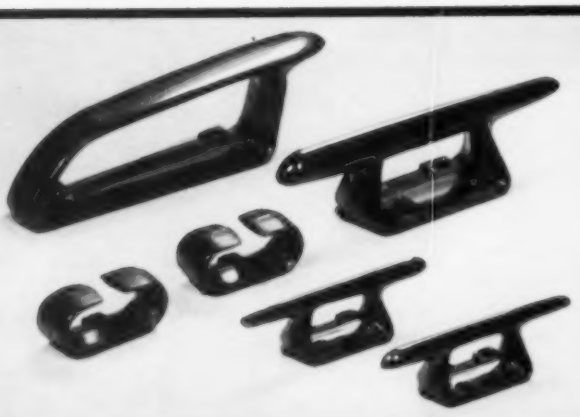
BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY



PLUMBING—Redesigned check valve for gas pumps is made of ZYTEL nylon resin. In this new design, the total number of basic parts has been reduced from 10 to 6 and their cost cut by 68%.

DOOR HARDWARE—Attractive prototype front-door lock set made with ZYTEL features high impact strength and corrosion resistance. Sets can be molded in harmonizing colors.

SILVERWARE—Silverware handles molded of jet-black ZYTEL are attractive and durable . . . unaffected by hot water, soaps and detergents. ZYTEL is impact-resistant, light in weight.



MARINE FITTINGS—Deck hardware features high strength. Molded of ZYTEL in colors, it is resistant to gasoline, oils, sea water.

The recession with a forward look

"Life can only be understood backwards, but it must be lived forwards," according to Kierkegaard. This month, July, 1958, is a very good time to look backward for several reasons: (1) we are half way through the current year, (2) it is the first (and perhaps only) anniversary of the recession which started in July, 1957, and (3) we seem to be at a turning point in this decline (Government statistics for the past two to three months show that employment, industrial production, sales, and personal income are rising again, and those items that have been in a sharp decline are beginning to level off). These conservatively encouraging facts prompt a search through the past, somewhat discouraging, year for new attitudes shown by industry toward industrial design and industrial designers. Some things stand out.

During the past twelve months, several mass-circulation magazines have published feature articles on industrial design, and included statements like these: "U. S. business is looking more and more to a group of men who in 30 short years have done more than any others to change the face of industry — its products, the factories that turn them out, the machines that fashion them, and the work habits of the men at the machines. They are the nation's industrial designers . . ." *Newsweek*, November 25, 1957; or, "They search out uses for new materials for basic suppliers. They develop products for companies that know only that they want to get into new fields. Merchandising, retailing, public relations all come within their province. The designer is beginning to take on the importance as a management prop that advertising and public relations have held." *Business Week*, April 12, 1958. Other publications plan to publish features on industrial design before the end of the year. Recognition itself is not so important as how the profession is represented. And the past year has certainly seen the industrial designer represented more broadly and more properly than ever before.

The recession has caused many large corporations to cut their advertising budgets radically. Some of them have compensated by enlarging their public relations programs. With this change in promotional emphasis, there has been an evident increase in attempts to catch the ear of the industrial designer. At ID, we have noticed that companies we had to seek out for information in the past now seek us out. Is this an indication that our readers — industrial designers and executives concerned with design — are being recognized more widely as an obviously influential group? We think it is.

Industry's stimulation of the industrial designer by other means has also increased within the past year. Although this was expected of some companies, several industries have unexpectedly shown a definite inclination to tell the world that they are design-conscious. This activity has taken the form of a variety of new design awards and competitions and designer service programs, several of which will be announced in the near future. Other companies for the first time have prepared — or are preparing — campaigns and major presentations aimed directly at the industrial designer. All this has occurred during a year of recession.

The industrial designer can look back on this past year as a time when he was presented to the business world through media not intimately concerned with his problems; a time when industry itself capitalized more than ever before on his contributions; a time when industry made a more obvious attempt to communicate directly with him. If this backward look shows that the industrial designer's foothold has been strengthened during a period of recession, it is the designer's responsibility to himself and the industries he serves to project this added strength —to live forward — and to insure that his stand becomes increasingly firm as an influence upon the economic makeup of the nation.—*D.G.M.*

Mango

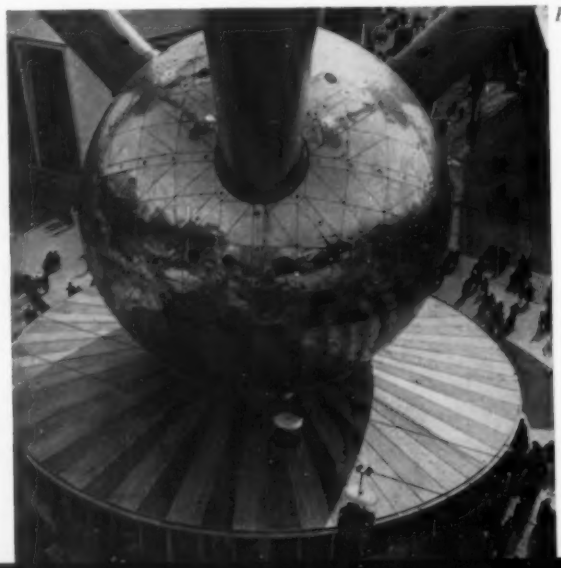
IMPRESSIONS OF EXPO '58:

by Jane Fisk McCullough

A world's fair is like a grab bag. You follow your own string, and your impressions are your prize. Others follow their strings, and only later—when you compare prizes—do you find out all that was in the surprise box.

No two people are following quite the same string at "Expo '58," and few indeed have or will have seen it all, let alone grasped its details. We left unseen as much as we saw, in spite of walking and looking and interviewing for many 13-hour days. Part of the omission was purposeful, conditioned by our task of seeking out things to interest ID's design-minded readers and evaluating what we saw. So we can't pretend to the views of the mythical man in the street who haunts professional shapers of world opinion. But we can gladly share with you the impressions we found at the end of our string.

Pages designed by Roberto Mango



BRUSSELS' UNIVERSAL EXPOSITION

PART I

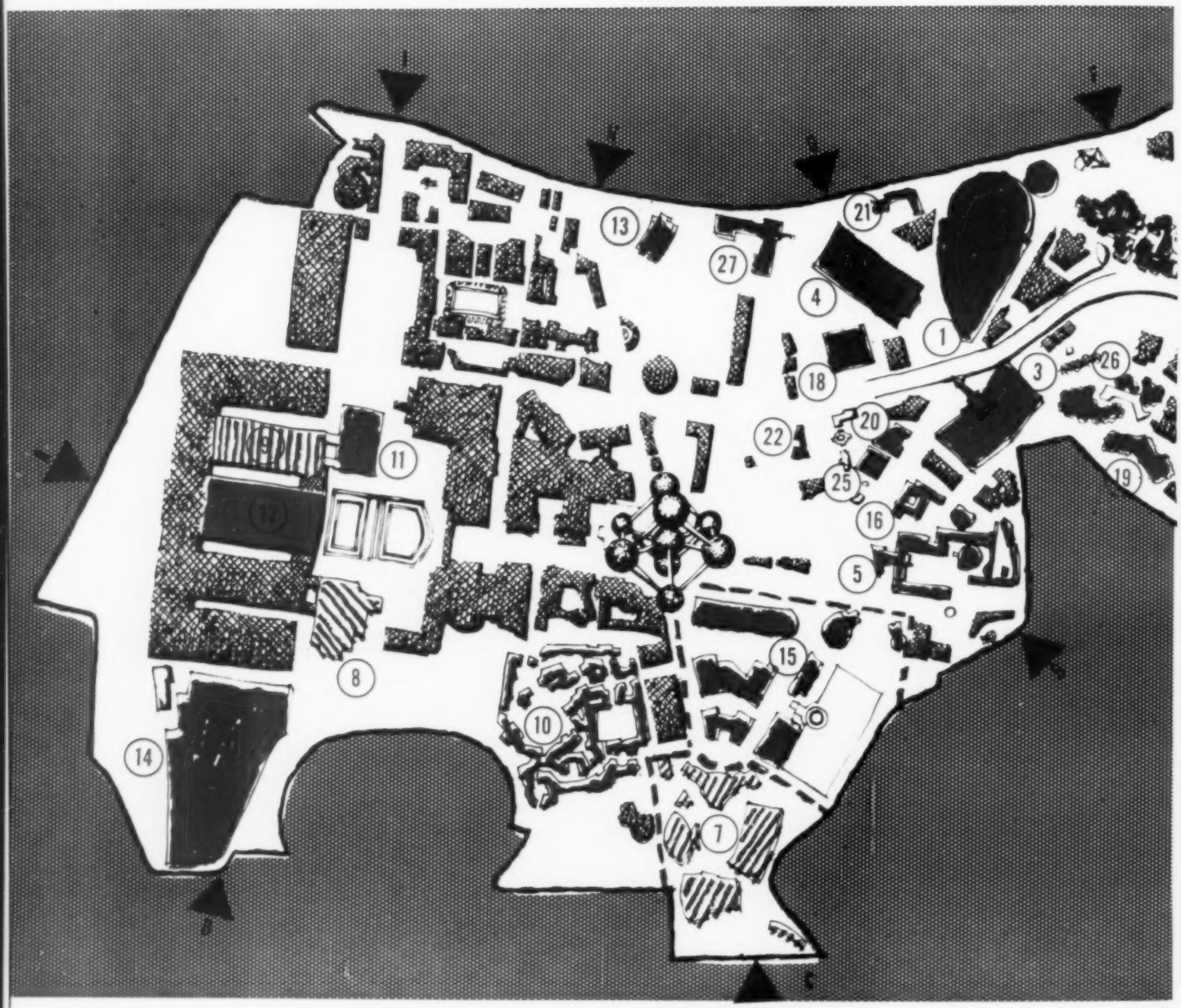
FIRST IMPRESSIONS: *Heysel Park very different from memories of Flushing Meadows. . . . Once a royal park — rolling, wooded, private. . . . There are brooks, there are flowers (tulips when we saw it in May), there are bridges and ponds and tall tall trees. . . . Among all this — 135 new buildings are up and not a major tree felled. . . . There is the tree under which Leopold proposed to Astrid, standing now in the middle of the American pavilion, given as a royal gesture to the U. S. A. along with its legendary site. . . .*

On all 500 acres is new construction . . . some wild, some experimental, some modern and shiny . . . miles of new macadam paths, many of them crooked . . . chair lift clanking overhead, always out of reach when you need it most . . . crowds milling around souvenir stands, ice cream booths, (always out of reach when you need them most) . . . and yet the spot has an undertone of ambling serenity. . . .

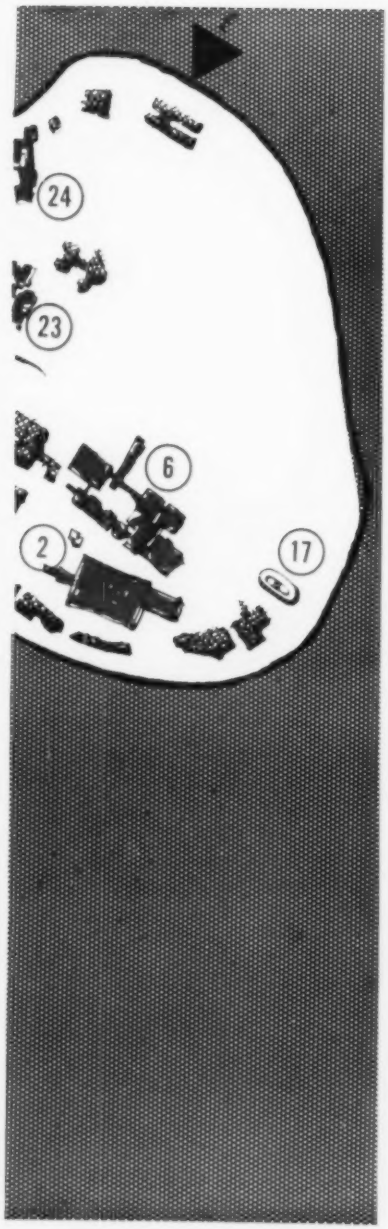
AMBLING THOUGHTS: *40-odd buildings of Belgian industries — huge, endless — but eclipsed by more imaginative pavilions of 40-odd nations. . . . Everywhere the official theme, "Science in the Service of Man," in countless interpretations — some literal, some laborious, few imaginative. . . . Is a giant atom appropriate as the symbol of a Fair dedicated to humanism? Is "Universal Exposition" fair title for Fair of 40 nations? Looked in vain for Mars' exhibit, Neptune and Pluto represented only by huge pavilion that dwarfs them all. . . . Favorite display topic, atomic power, dominates too many exhibits. . . . Russia's Sputnik, Britain's crown jewels suggest more popular issues and overtones. . . . Russia supplies its own overtone, an unceasing beep-beep from outer space, broadcast louder than the noise of crowds inside pavilion. . . .*

LASTING VIEWS: *Everywhere, nations need multi-lingual captions or broadcasts . . . all use French, usually with German and Flemish, sometimes English, Italian too . . . yet every nation, whatever its tongue, tells its story through the language of design. . . . Design is crucial for communication and propaganda, also for understanding and appreciation. . . . Expo '58 makes one feel design is an even broader language than we had suspected. . . .*

WHAT SHAPE DOES THE FAIR WORLD TAKE?



1. UNITED STATES
2. UNITED KINGDOM
3. FRANCE
4. SOVIET UNION
5. NETHERLANDS
6. FEDERAL REPUBLIC OF GERMANY
7. INTERNATIONAL SECTION
8. WORLD ART CENTER
9. INTERNATIONAL HALL OF SCIENCE
10. "BELGIUM 1900", "BELGIUM 2000"
11. AUDITORIUM
12. MAIN ENTRANCE AND RECEPTION HALL
13. CHILDREN'S KINGDOM
14. AMUSEMENT PARK
15. BELGIAN CONGO
16. AUSTRALIA
17. BRAZIL
18. CANADA
19. SPAIN
20. FINLAND
21. HUNGARY
22. ISRAEL
23. ITALY
24. JAPAN
25. NORWAY
26. SWITZERLAND
27. CZECHOSLOVAKIA



A. PORTE DES ATTRACTIONS
B. PORTE MONDIALE
C. PORTE BENELUX
D. PORTE DU BELVEDERE
E. PORTE DES NATIONS
F. PORTE DU PARC
G. PORTE DE L'ATOMIUM
H. PORTE DE L'ESPLANADE
I. PORTE DES GRANDS PALAIS

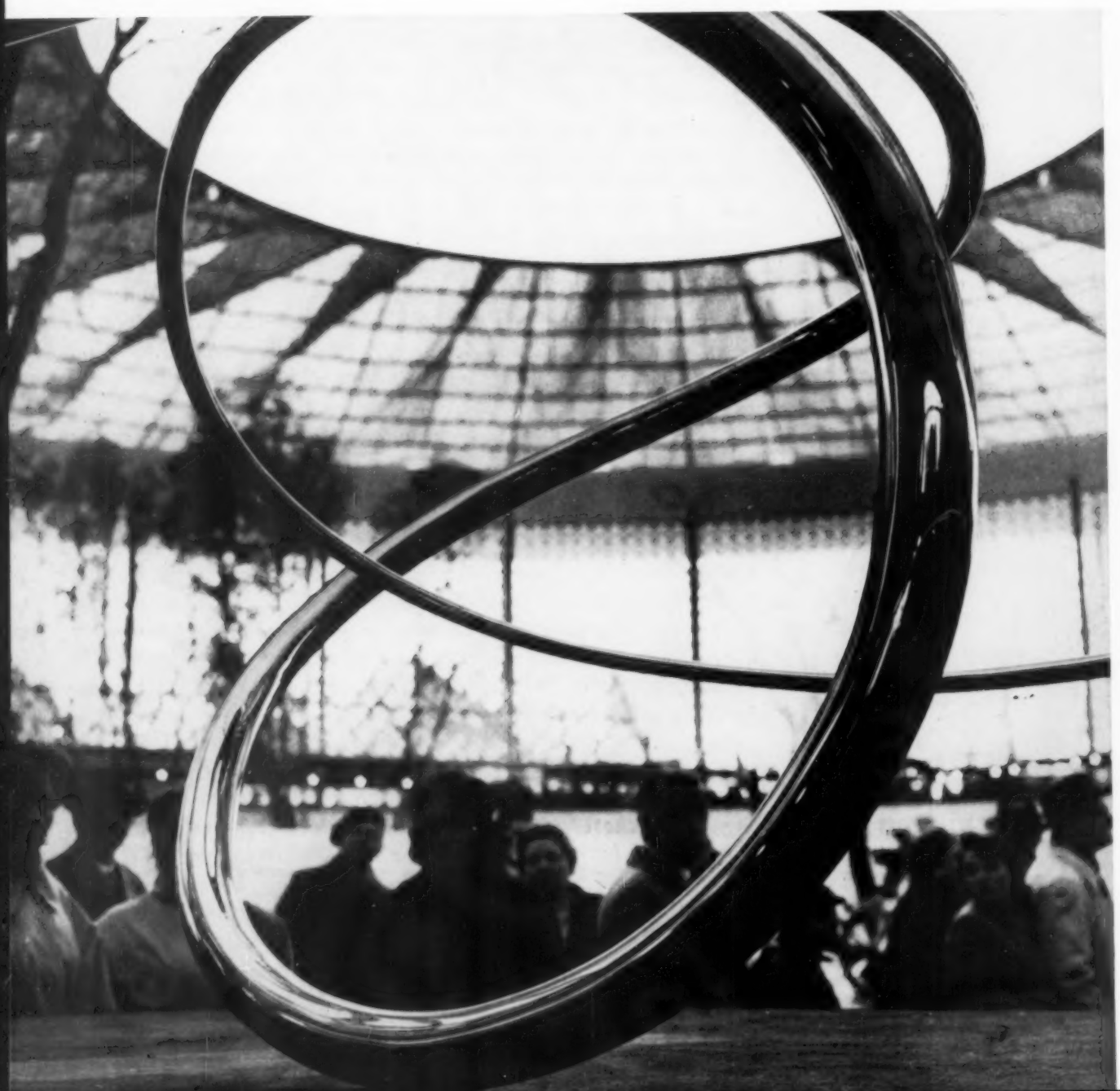
As hosts and sponsors of Expo '58, the Belgians of course masterminded its makeup and physical layout. The planners, headed by Commissioner General Baron de Fernig, took the nearly universal view and invited all nations of the world to participate, save two it does not recognize—China and East Germany. Some decided not to join the expensive fun, and of these Sweden and Australia, India and Greece are most conspicuously absent. From South America there are only Argentina, Brazil, Chile and Nicaragua. Roumania, Poland and Bulgaria dropped out along the way. The 47 who accepted were grouped in the Foreign Section comprising about 33% of the park. Belgium itself contributed exhibits on local industry, plus international art and science exhibits, which take up another 33%, plus a 20-acre section devoted to the Belgian Congo. Nine international organizations, an amusement park, and a miniature village of "Belgium 1900," with the Congo, account for the remaining 1/3.

It was also Belgium's job to parcel out sites to the participants, which was done in relation to their size and importance, and good showmanship. (It was Belgium that placed the U.S.A. and U.S.S.R. face to face over the Arab States.) Largest sites went to the U.S. and Russia, Great Britain and the Netherlands—6½ acres each. All nations were requested to use no more than 60% of their site for actual construction, a request ignored most conspicuously by Russia and France. (The result for France is that its pavilion, in an already crowded section, is almost impossible to see as a whole.)

The nations paid nothing for the sites but had a chance to approve the land assignments, and Chief Architect Van Goethem had the opportunity to review what was put on them. All have had to agree to return the sites to their "original condition" at the end of the fair. For exhibitors this means considerable expense going as well as coming, and accounts for a number of prefab structures (Germany, Spain, Great Britain) that will be shipped back home for other uses in October.

The basic plans centers on one broad straight boulevard from the Grands Palais to the "Atomium." This avenue turns abruptly east under the aerial tramway, heading into the International Section where the U.S. and Russia dominate the far end like two roosters in a barnyard. Except for this one strong axis, the plan is irregular and park-like. And happily so—the charming ravines and streams would have been violated by formal plan. Still, a few more direct vistas and parallel roads could have helped orient and direct the foot-traveller in and out of the meandering and often confusing byways.

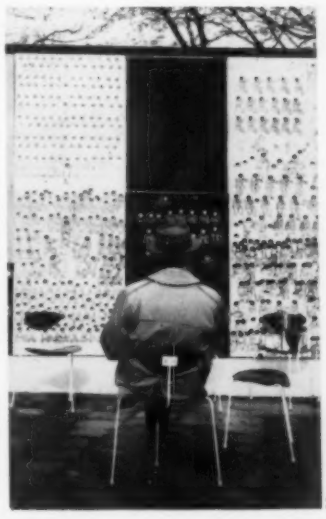
THE VISITOR'S VIEW: WHY HAVE WE COME?



Impressions of visitor's aims: to enjoy the unusual, beautiful, bizarre . . . to revel in a unique and glamorous atmosphere . . . to see the world in one place, as if travelling on a budget . . . to have seen what everyone else has seen . . . to taste the future . . . to eat new food . . . to appraise other nations and cultures . . . .

"Why?" This isn't a question these fairgoers necessarily ask themselves, but they answer it a million time daily by what they seek out and what they like when they get there. It is a basic question for men who plan fairs or exhibits, or take part in them, or design for them.

Is it possible that world's fairs are obsolete? Is the world too much one to produce a colorful show? Everywhere, you sense an undertone of unity, but it is still spiced with differences for every taste. Art and ice cream are available in equal abundance. Rare national treasures and rare national dishes can be sampled side by side. The specialist can find as much to see as the general observer. Serving up such a rich fare, planners of the fair have served up some problems for their invited guests: fatigue, orientation, comprehension, the risk of gluttony. We frequently had to ask ourselves (lacking a guard or a guide to ask), where are we? How do we get where we want to go? What is this exhibit all about? Have we missed anything? Where can we sit down?" The absence of visible maps, bulletin boards, street markers and central resting places (see ID, June) strains the visitor's carnival spirit.



But the most disappointing failure shows up in the shadow of a missed opportunity. Expo '58 is every city planner's dream: a brand new city, free of traditions and relieved of old underground systems or automobiles. It is the pedestrian city, devoted to human scale and human speed. But the absence of autos shouldn't mean the absence of transportation. Rather, it requires imaginative new means of conveying hoards of footsore sightseers where they want to go, at a speed they can enjoy. It means doing this without spoiling the ambience of the city. In entirely avoiding the question of mass transport, Belgium missed a chance to make this the "city of the future" in fact as well as in fantasy.

Germany

Great Britain

Italy

THE VISIBLE DESIGN: WHAT SHAPE DOES THE FAIR WORLD TAKE?

Iran

Germinal restaurant

Netherlands

U.S.S.R.

Pfaff

The Vatican

Philips

Russia, coldly monumental . . . Germany, coldly pristine . . . Spain, bizarre, Thailand, coy . . . Belgian buildings abounding with domes and spires . . . Architecture is conspicuous . . . shaping and surrounding exhibits, often striving to be the exhibit . . . all advertised as the World of Tomorrow . . .

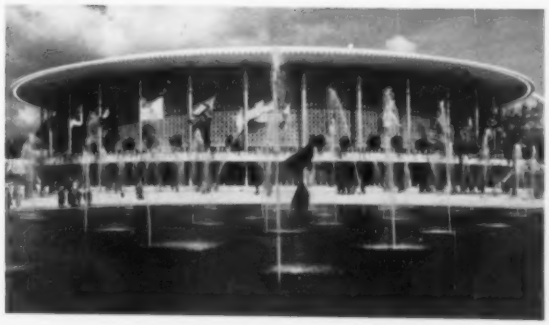
Should Fair architecture be taken seriously? (In the past, architectural reputations have been made at Fairs.) . . . Perhaps, but not necessarily. Showmanship belongs here, and we are prepared to accept anything, monumental or experimental, genuine or jest. It is the mixtures that give mood to the Fair, and as with an impressionist painting, the closer you get the less you see. Happily, a few buildings stand up under scrutiny—Japan, Finland, Norway among them.

Coal and Steel Community

Sewing machines

Yugoslavia

U.S.A.



France

Mango

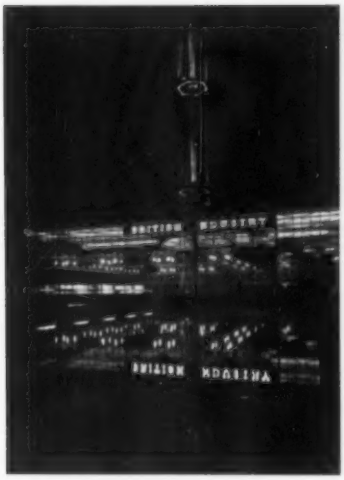
By international agreement, a world's fair is not a trade show; it is a stocktaking of civilization, where hawking and writing up orders are strictly out of line. What, then, does a nation or an industry have to gain by telling its story to an audience so broad and so diverse that it can never be reached again?

Impressions of what national exhibitors want: to sum up national achievements, past and future . . . to cite national contributions to the world . . . to promote trade, tourism indirectly . . . to enlist pride of countrymen . . . to promote a political ideal, arouse sympathy for it, convert . . . .

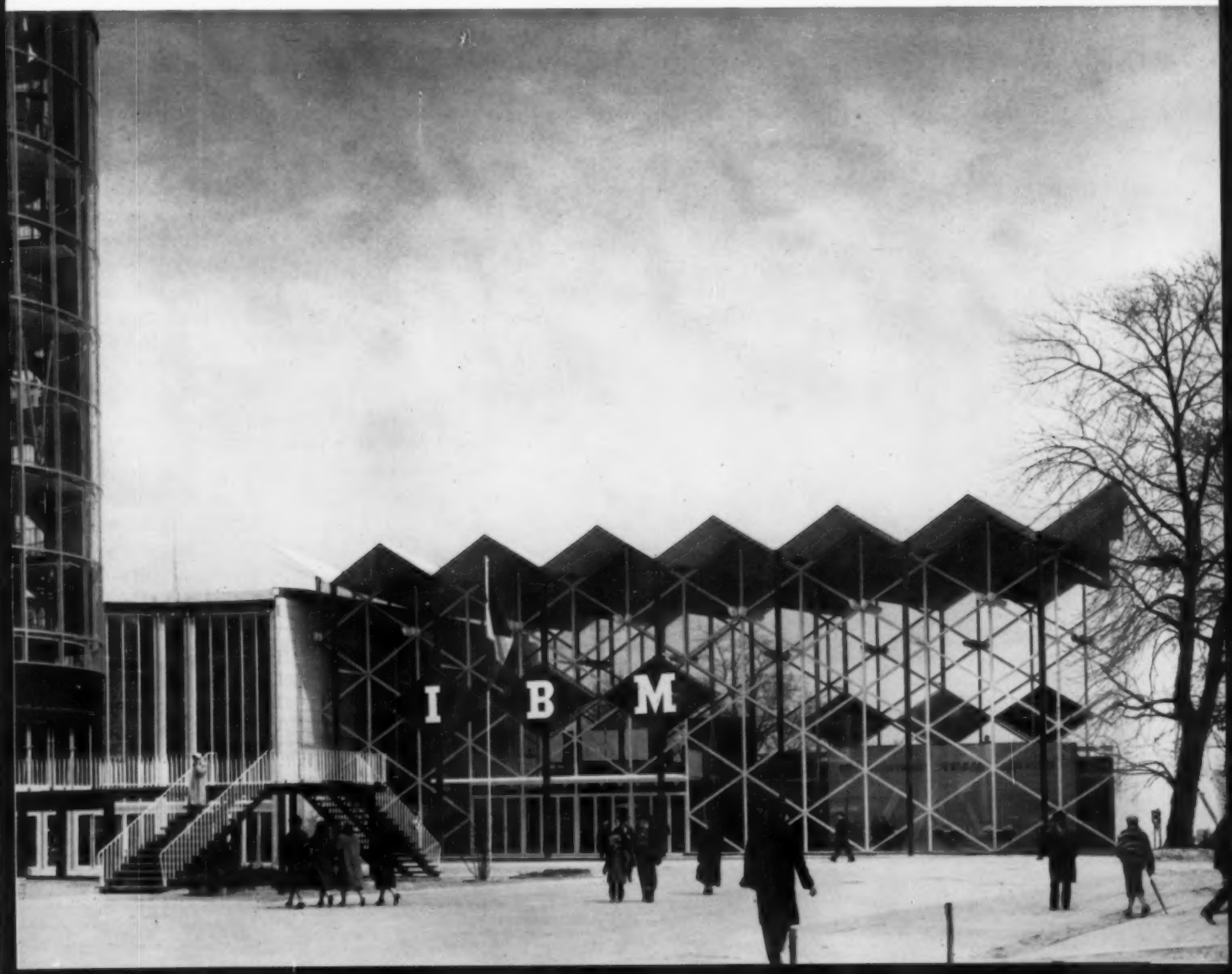
The question of purpose may have been more difficult for industries and private firms entering Expo '58. Six American firms (IBM, Philip Morris, Coca-Cola, Bell Telephone, General Motors, Kodak) entered independently. Without setting out to sell—yet with an undisguised commercial intent—they had to launch their Fair balloons with these objectives:

To spread the international image of the firm . . . to publicize contributions and achievements . . . to display products . . . to promote future trade by boosting the firm's prestige . . . .

The more we looked at photomurals of factories and "typical" homes, at unlabelled and idle machines, the more important it seemed for an exhibitor to know his onions. One is blinded by fuzzy impressions, clichés, commercials. Even worse, there is a staggering amount of fascinating material that slips by with barely a tug for attention. Yet many exhibits turn their own kind of trick on the eye and the nerve endings. Their secret—at a fair as anywhere else —is the art of knowing what to include and what to leave out.



THE EXHIBITORS' PROBLEM: HOW DO WE WIN FRIENDS AND INFLUENCE PEOPLES?



Russian electronics

ABOUT ATOMS, ATOMIUMS, AND AUTOMATONS

Any fair needs a word to describe it and a symbol to identify it. Expo '58 is unfortunately pretentious in both. Its title is "Universal Exposition," its symbol the atom—a schizoid gamut between something too big to comprehend and something too small to see. Both extremes, to be sure, offer ominous threats to man if he stops to think about them. But serious thinking is not provoked by carnival bragging. At Brussels, the viewer strolls past the Atomium and pokes about searching for something hopeful in the world he sees and knows.

Exhibitors, though, have not been quite so unaffected by the theme. Atomic behemoths and industrial automatons are a dime a dozen. Since they are usually as self-explanatory as sphinxes, the public passes by their invisible mysteries to see the latest in weaving or glass blowing. The British and U. S. atom displays are, to us, the only ones that are at all revealing. They left their cyclotrons at home and brought along good display designers instead.

For an event whose focus purports to be humanism, the atom as a symbol is unfortunate enough. As a design, it is more prominent than pleasing. As a piece of 20th century architecture, it is a sort of self-denial. Structurally, it proved dubious enough that some of the cells' original function as display space had to be abandoned. It remains a symbol of nothingness —of power without measurable volume or weight—inflated into tons of aluminum and steel without economy or ingenuity, suggesting that we are still mastered by the unseen atom.

Time was when a world's fair was a rare moment of world exchange and communication—an education to its public, an organ of news for all creative men. It could inspire new ideas and techniques as well as disseminate them. Thus the Eiffel Tower was not only a symbol but a real contribution to man's knowledge of building—an exciting new horizon. In 1958, most of a fair's communicative function is gone. Radio and tv, newsprint and newsreels drain off news value around the world while a fair is aborning. Sputnik II conquered outer space while Expo '58 was rising in Heysel Park, and its model in the Russian pavilion draws crowds to see not hot news but a cold curiosity piece.

Is this the last of the family of international expositions? Some observers feel the atom itself will spell world death, or that colorful national distinctions of artisanship and style will soon be swallowed up in the growing commercialism that already oppresses parts of this fair. We take another view. Commercialism cannot be blamed for a fair's shortcomings, any more than a theme can be blamed. The challenge of an exhibit is to transform workaday material into something communicative. Imagination *can* be blamed. It can be praised, too, for those few exhilarating moments where ordinary substance begins to achieve the kind of artistic expression that must be the real purpose of a Fair in '58—and certainly '68. Overleaf is one of them.

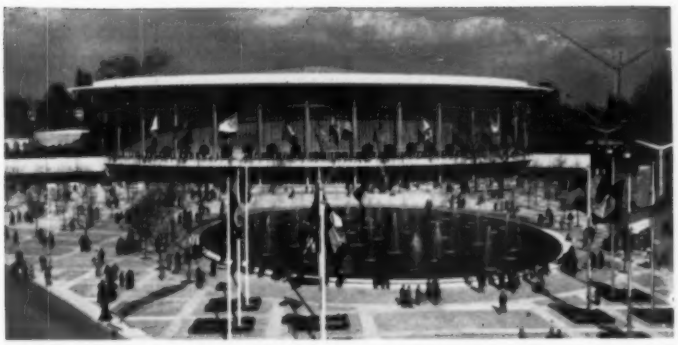
Atomium

German chemical exhibit

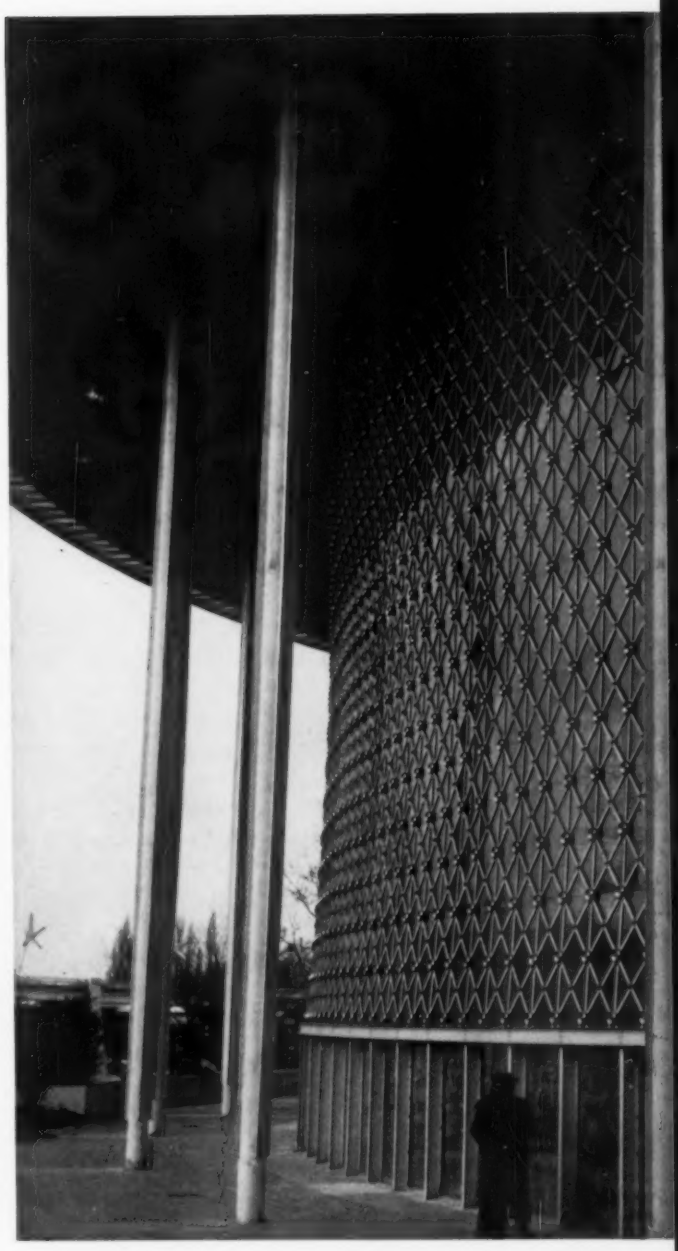
"In the United States there is more space
where nobody is than where anybody is.
That is what makes America what it is."

GERTRUDE STEIN

THE PAVILION OF THE U. S. A.: THE BIG QUESTION IS, HOW ARE WE DOING?



We have done those things we ought not to have done, and have not done those things we ought to have done. Thus say the negative critics of the American pavilion. Thirteen out of 14 critics are American. For reasons that are worth examining, the Europeans seem to like it just fine . . .



Many nations have displays of their national ideals and heros, or their mechanical prowess (extrusion machines and outsized propellors are a dime a dozen). Some countries are full of boasts about how the government loves the people, improves hospital care, cultural conditions, race relations. Some do convincing, earnest graphic jobs on the sound healthy life in Nation X. America does not. It purposely does no snow-job at all. On the contrary, three little rooms outside the pavilion describe graphically not our strengths but our struggle with our weaknesses.

The American pavilion tells no single, inescapable, didactic story. It assumes that the world knows the obvious things about the U. S. A., that millions need no commercials about our big cars and our colorful canyons and our fast-moving factories. It presents itself with the soft-spoken voice of a self-confident nation.

Across the street, no more than 500 yards away, the U. S. S. R. shows its brawn and pounds home its message with a long face, while America smiles, jests, pokes fun at itself, plays music, displays children and fashion models. Is this the way to win friends and influence peoples? By popular response the answer appears to be yes.

"All we want," one of our planners has said, "is the best pavilion and the most beautifully designed exhibit." The exhibit, designed by a top American team, has its weaknesses. But they are weaknesses in terms of its own clear intent. Overleaf, the story of the pavilion design, and a visit to its exhibits . . .

INSIDE THE U. S. CONTROVERSIAL PAVILION

In display and design concept, the U. S. pavilion is one of the freshest and most advanced at the fair. This was neither easy nor accidental. U. S. participation started with several strokes against it, and the American staff in Brussels is still struggling to overcome some of them.

When invitations to the Fair went out in 1954, some nations could turn to experienced government staffs to organize their exhibit, or to a single exchequer for a budget. In the U. S., the first move had to be a Congressional vote, and Congress finally got around to this in July 1956. Magnate Howard Cullman was appointed Commissioner General three months later. With only 18 months in which to bring to life a show that was estimated at $15,000,000, Cullman rounded up a team to plan and design what would go inside, while architect Edward Stone went ahead with the design of a pavilion (completed in three months). Hired, begged, or borrowed from private and government offices, the staff had no two members who had worked together before. Many went without paychecks while Congress mulled over a budget request (finally cutting it down to $12,345,000).

Money notwithstanding, the biggest problem was: what should America say to the world? Cullman's group (which included Executive Director Thurston Davies, former Colorado College president and Town Hall director, and Deputy Commissioner General James Plaut, former Director of Boston's Institute of Contemporary Art) was not so presumptuous as to answer it with personal opinion. They asked 40 prominent business and professional people; they conferred with educational and government leaders at M.I.T. The prevailing winds all blew toward an uncommercial, non-doctrinaire approach. No flagwaving. No tearjerking. We would win more friends by showing ourselves honestly —dynamic but groping, humane, amusing, diverse.

During these early conferences, two other pivotal members of the team were already in action—Peter G. Harnden and Bernard Rudofsky. (Harnden's Paris-

based design firm had created countless U. S. trade fairs; Rudofsky, internationally-known architect, designer and author, was associated as top designer for PGH Associates on this project.) As they worked to bring to life the "feel" the executives wanted, they added a great deal to its dimension through the images and objects they envisioned: there would be no emphasis on graphs, statistics, or quantitative measurements, no solid gold cadillacs, no happy steelworkers. An assortment of shoes would give a better measure of our diversity; a 5-lb issue of the New York Times would better suggest our habits; an array of campaign buttons our fads and enthusiasms. Only the unexpected and unknown, Rudofsky felt, could break down the Hollywood clichés and create fresh impressions in Europe.

By the time the exhibit was ready to be designed, Stone's pavilion was complete: an open-span "doughnut" 340 feet across, capped with a now-famous "bicycle wheel" roof of translucent plastic panels suspended from the rim of thin steel cables. In mood, the open

W. Heino

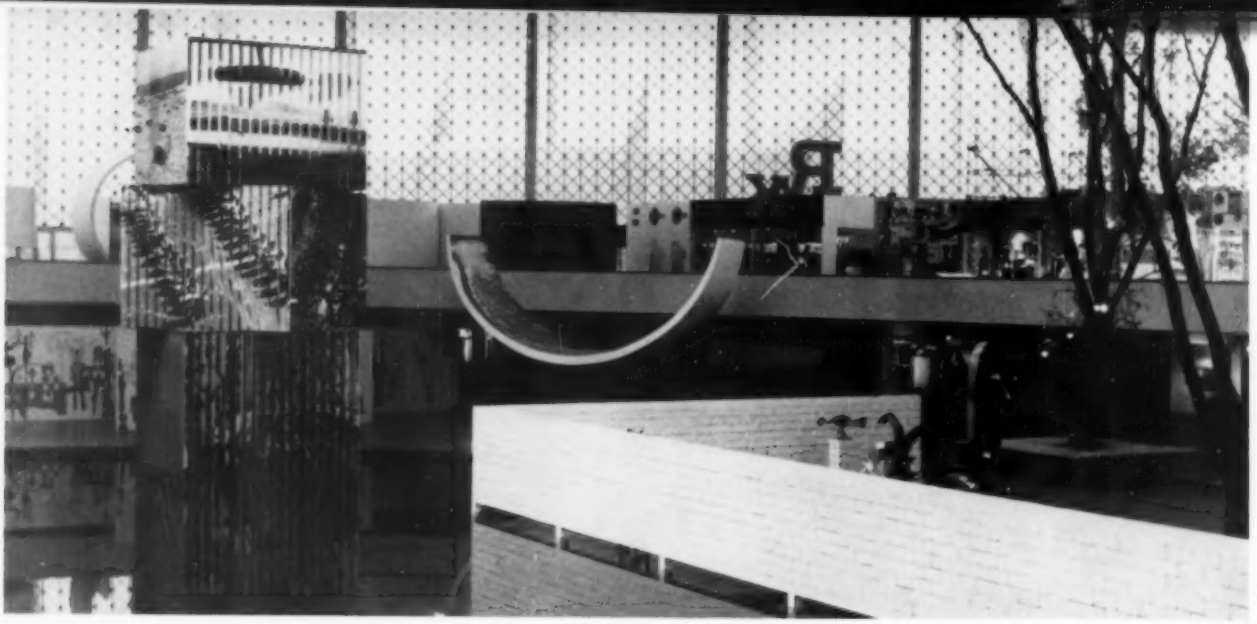
Saul Steinberg murals

interior with its pool and willow trees offered the tranquillity that the designers wanted. As a display space, it wasn't so easy to solve, as anyone knows who has tried to organize a circular interior. With its continuous round gallery, the pavilion suggested the use of a consecutive story line, yet the path was too wide and the center too free to serve this purpose. (Besides, the designers had firmly agreed that the visitor to the American pavilion would be free to circulate as he pleased.) The circular perimeter and formal balcony arrangement left the designers little leeway for placing objects and exhibits that were inevitably rectangular.

One can't help feeling at times that the result of all this was two exhibits—one a pavilion (showing our spirit to the world with a daring but somewhat oversimplified formalism); the other, what is inside. Yet, considering their separate conceptions, they clash remarkably little. Wherever it made good display sense, the designers have echoed the circular forms inside—in the bold round walls of Cityscape, in the pools, in some of the display stands. Elsewhere, they have gone the reasonable way and played rectangles and planes against the round architecture with considerable success. The exhibit is not, by overall Fair standards, spectacular in a technical way. It strains relatively little for effects and its devices are usually pertinent.

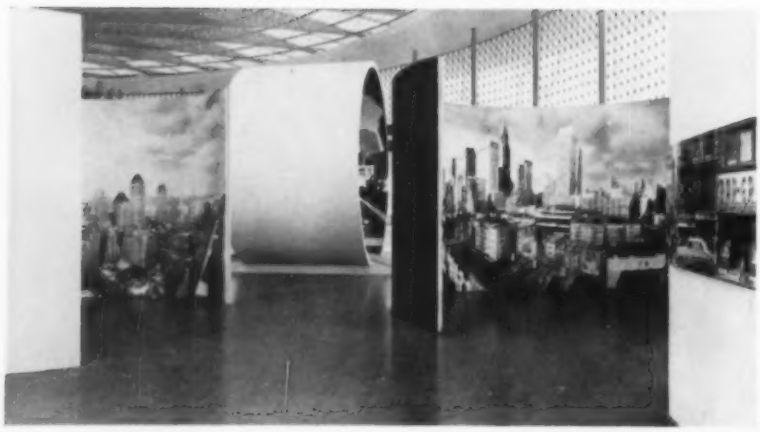
There are certainly some noticeable failures. Some sections are much more vivid than others in exhibit terms, others suggest good ideas that fall short in execution. "Street scene", for instance, succeeds in being neither typically homely nor dramatically brilliant. The product displays in their cubicles come off, one feels, with less vividness than is suggested by the total plan. Sequence, where it is required (e.g. nuclear energy) is almost impossible to figure out. And the architectural material has far more coherence and meaning than one can get from virtually unlabeled photos and models. All captions and titles, in fact, are sorely underplayed. Yet, despite shortcomings of technique, the pavilion serves up an experience to the visitor. He gets no party line except the message that these things—music, science, dress, the subway rush—are part of us. What this concludes is his own business—a mature and sophisticated approach that seems to flatter foreign viewers and go over the heads of some of our letter-writing countrymen.

Face of America *greets visitors to U. S. pavilion at main entrances. California redwood slab isn't our biggest (ceiling wasn't high enough) but in Europe, where wood is scarce, even a medium-sized slice is impressive indeed . . . Under a 20′ ceiling map of the U. S. A., 48 license plates catch nostalgic Americans exchanging addresses . . . Nearby, lacy tumbleweed, Idaho potatoes, rural mailboxes, a football outfit likened to knight's armour, and backlighted aerial views of checkered land grids with the caption, "Surveyers were important from the earliest days . . ."*



W. Heinz

Cityscape *envelopes the viewer like the skyline itself, with a series of drums you walk through and duck into viewing* 180° *and* 360° *photographs. Looking from the street level to the top of Rockefeller Center and down again at the buildings behind you, or viewing the horizon as if from the top of a midtown skyscraper, you get an illusion so strong that the wind almost blows. Dallas, Chicago, San Francisco and New York are the cities included. Europe has its cathedral-scapes and boulevard-scapes that the U. S. cannot match. But this skyscraper-scape doesn't exist anywhere else in the world. This exhibit, unlike any other at the Fair, gives an illusion that is almost as much fun as the real thing.*



W. Heinz

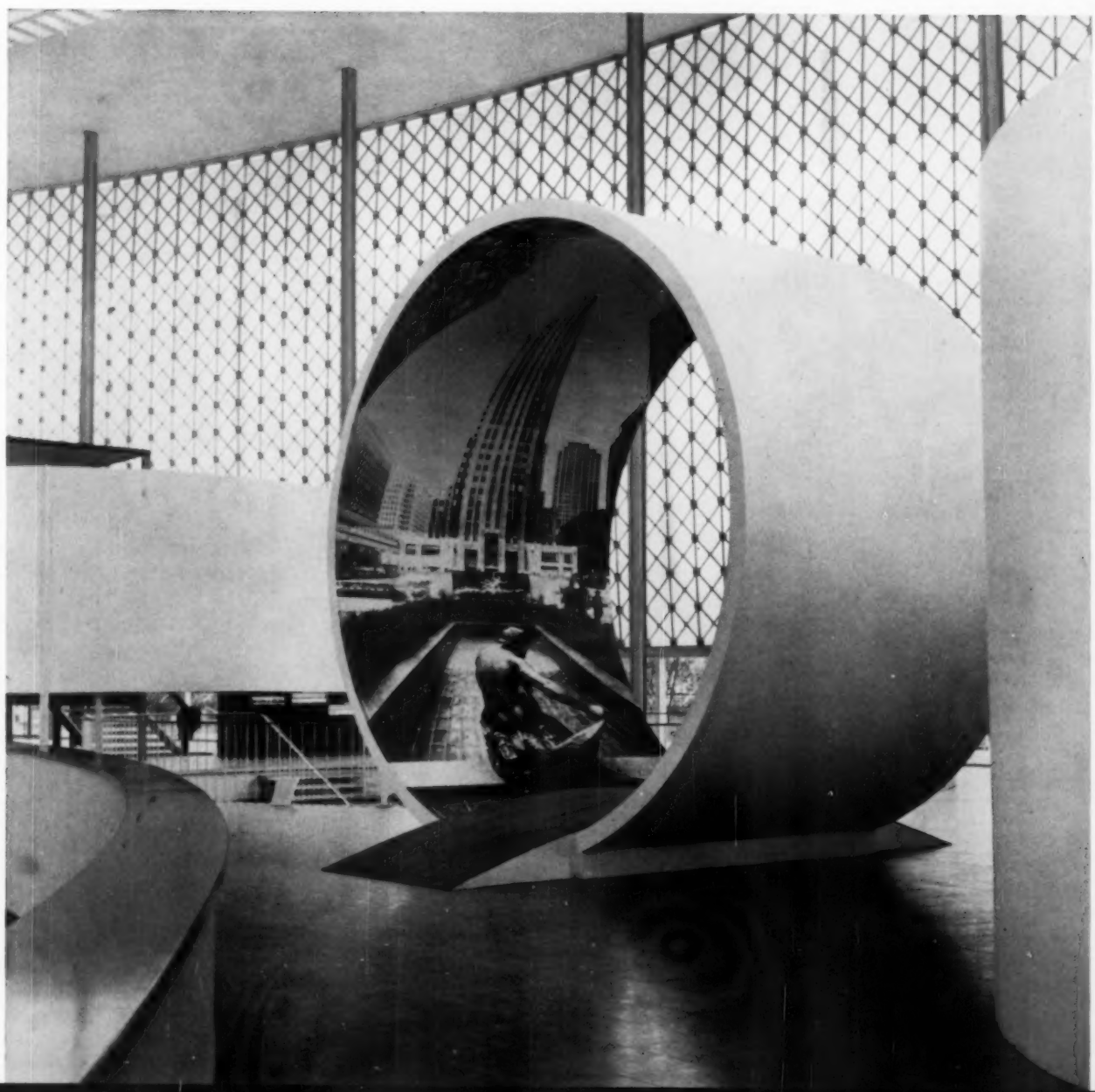
Displays included in the U. S. pavilion:

VISUAL: Face of America; Map Room; Industrial Development; Photo Tower; New York Times; Islands for Living; Cityscape; Streetscape; Domestic and Industrial Architecture; The Unfinished Work; Saul Steinberg murals; Young Contemporaries; American Primitives; Indian Art.

ANIMATED: Strip films; Circarama; Nuclear Energy; Color Television; Philadelphia Planning; International Geophysical Year; Fashion show; Children's Creative Center.

PARTICIPATIVE: Voting machines; Automation; Drug Store; Music Room.

W. Heinz



W. Heinz

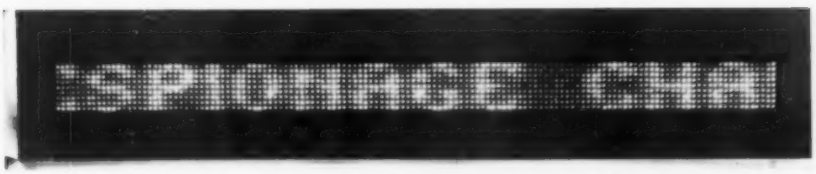
Art, U. S. A.: *Our established painters show at the International Fine Arts Palace; here the emphasis is on folk primitives (above), American Indian artifacts, young contemporaries (45 years old or less) and modern sculpture.*

Heinz

Heine

Streetscape *invites you to wander down an American shopping street, not intended to duplicate a real one but to catch its flavor by the drama of window contrasts. Despite whimsical accessories (mailbox, streetlight, barber's pole, colorful graphics) the contents of windows (books, clothes, canned goods, sundries) seems more displayed than dramatized. At street's end, newsstand sells U. S. periodicals beneath an operating "illuminated headline," à la Times Square, and drug store serves up sodas and cones to capacity crowds, just like home.*

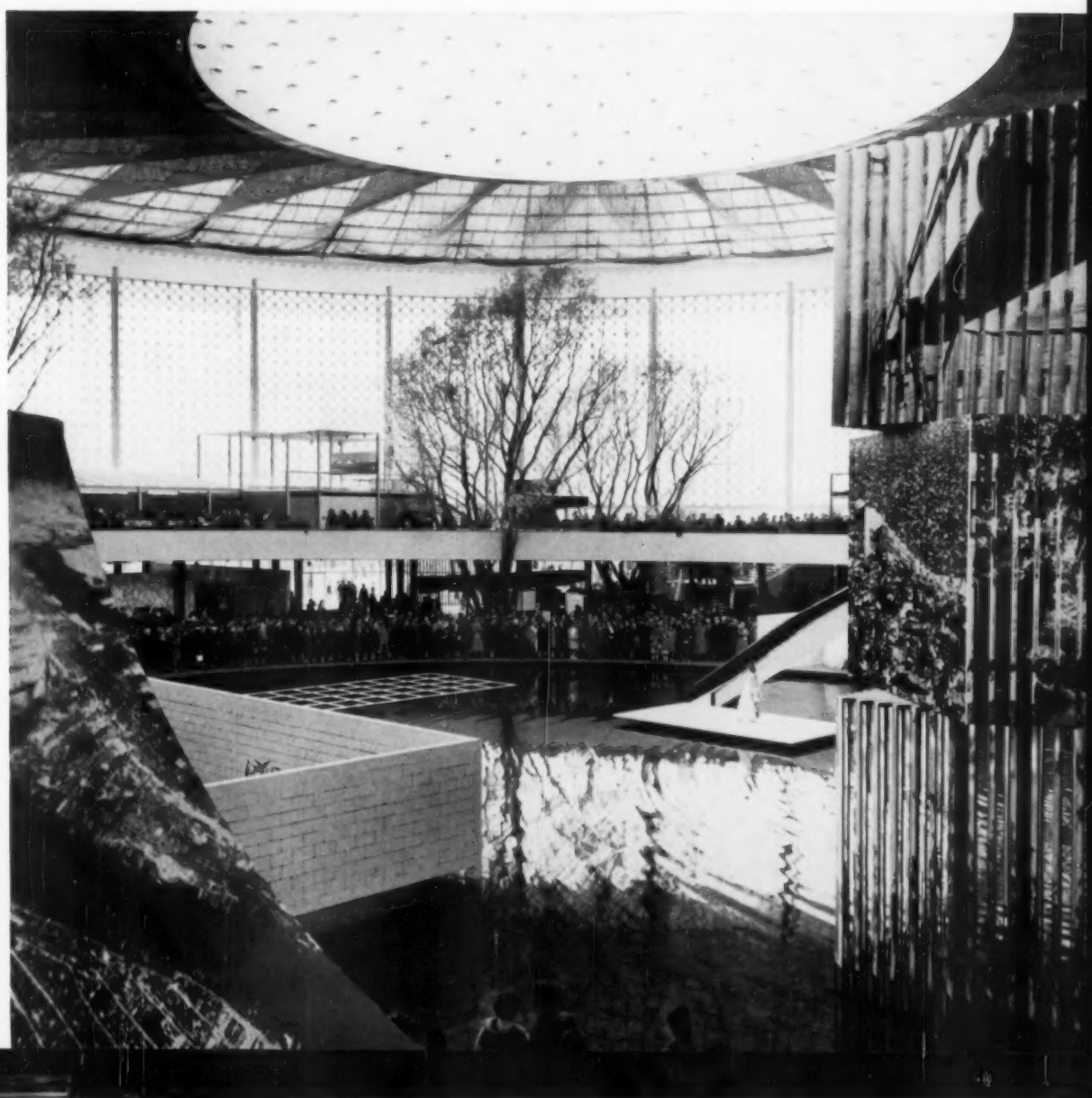
Heine



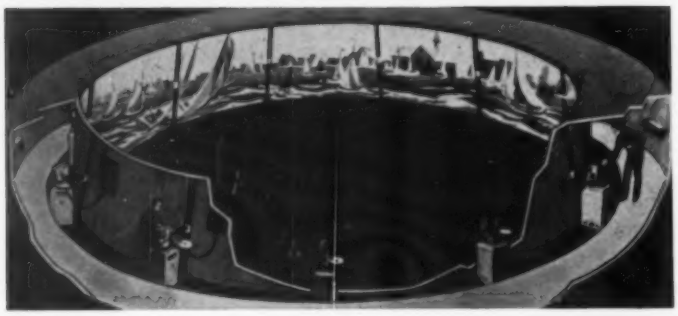
Heine

Participation *is point of children's creative center on balcony, where kids of all nations have access to gallons of paint and cartons of art materials. Adults can be sidewalk superintendents . . . Color tv studio broadcasts regular programs before audience of 400; results show on receivers in pavilion . . . Music Room is a place to rest weary bones as well as hear latest recordings on superb binaural equipment.*

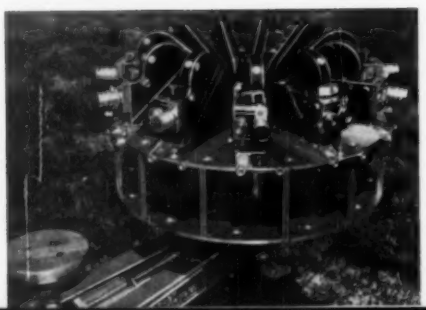
Fashion show, *organized by* Vogue, *is greatest attraction and most controversial exhibit. Models stroll down ramp to pool platform, draw enormous crowds. Many American visitors and reporters have criticized the emphasis: should we encourage the idea that ours is a land of fancy duds and wolf whistles? Pavilion planners were worried by the unexpected hit, but had no ready substitute—and considered its pulling power good for the whole American show. A cautious canvass of non-Americans revealed a surprising twist. In most countries fashion shows are open only to wealthy clients of exclusive designers, hence something the populace is never permitted to see. The great curiosity seemed to be more for the event than the clothes, or even the girls. In having that curiosity satisfied, Europeans were getting a feeling that the U. S. is a democratic land where everyone can really see everything.* (*The show continues.*)

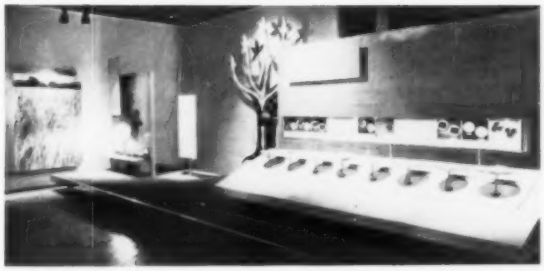


Nuclear energy *exhibit animates the atom on a large lighted panel, and unravels the development of peacetime uses. Here a guide explains how a pressurized water reactor only* 3 *times larger than this model will supply all the electricity for houses, streets, and factories of Rome, Mass. by* 1960. *Another part of the exhibit, one of the most popular corners in the pavilion, shows "robot" hands maneuvered remotely for the handling of radioactive materials.*



Circarama, *a new movie technique for those with eyes in the back of their heads, is created by simultaneous projection from* 11 *cameras. Showing an* 11*-minute film, "America, its Land and People," in a small round auditorium behind the pavilion, a miniature twin to the larger theater building, Circarama is usually mobbed. Below is mounting of* 11 *cameras to take circular films.*





Radioisotopes *are shown in agricultural section of nuclear energy exhibit designed by Becker and Becker Associates. The International Geophysical Year is dramatized in a black room with luminous animated charts and illustrations, designed by James Carmel.*

Architecture *in America comes across through models as well as photographs, mounted on these display tables, which are easy to view. Emphasis is on U. S. diversity in building—a happy contrast to Russia's displays of architectural monotony. Scale models include G. M. Technical Center, House of Seagram, Monsanto's "House of Tomorrow."*

McCullough

McCullough

Islands for Living *describes display filling almost 1/3 of balcony with images of American life. Goal was to suggest our living habits without underscoring Hollywood's propaganda that every house is a dream house, or that any one house is "typical." The scheme suggests some rooms and sections of rooms and spreads out the things accessible there. Result: not an impression of any place to live, but of nice things to live with. Below, an abbreviated wood structure approximates an American house, furnished casually on various "levels" with current furniture, accessories, and even such details as women's cosmetics and nicely packaged beauty items.*

Products, U. S. A., *are arranged throughout Islands for Living. Most concentrated display is in two-sided kitchen, where new appliances are lined up back to back under a counter. Tablewares and small plastic items are visible from either side through glass shelves above counter. An adjacent section shows more appliances, topped by electric housewares. A direct, unspectacular presentation, it has more information value for foreigners than novelty for American viewers. Other "islands" hold arrangements of camping and sporting goods, toys and juvenile equipment, all selected for their design by an Industrial Design and Crafts Committee directed by the Institute of Contemporary Arts, Boston.*

See ID, Sept. 1957

Mango

Great Britain's *government exhibition team first planned a story line and visualized a display to go around it. Only then was the architect called in to build a shelter. Result is a professional display, little concerned with pure design but communicating more completely than any other what it chose to say. Viewer is led through three sections: first, in a "chapel" sparkling with purple light, ceremonial objects express meaning of British tradition; next, in a darkened gallery, illuminated well-captioned photos depict Britain's achievements in science and industry. Course ends in an intimate open air garden set with whimsical backdrops about national culture (every man's home is his castle, above.)*

U. S. S. R. *prepared its exhibition with maximum of free enterprise: it turned problems over to* 18 *separate ministries, asking each to include material of its own choice. Result is hardly better than the worst industrial shows, in chaos if not in quality. Inside the so-called "ice cube," which covers maximum space without architectural subtlety, vast numbers of big photos, polemic murals, heavy machines and weighted statistics are jammed together without focus or direction. Main attractions of terminal-like ground floor are Sputnik II and pair of lush limousines.*

Mango

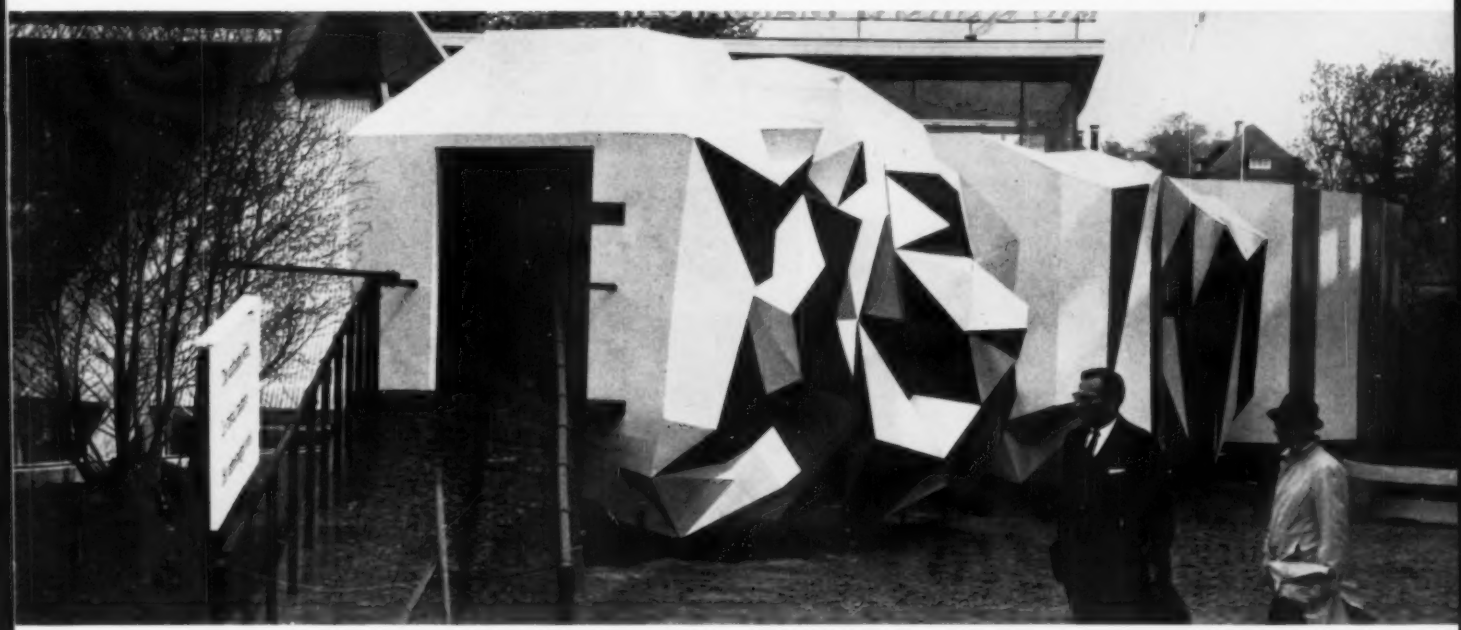
Unfinished Work

DO WE SUCCEED? DO WE COMMUNICATE?

And *what* do we communicate, and is that what we should be saying? The definitive answer to the effectiveness of the American pavilion would require vast opinion study at a very subjective level, which no one is attempting to do. Our opinion, if surveyed, would run something like this:

What we have tried to do we have done stylishly and well. Despite the shortcomings already listed, the design touch has been sure, sensitive, and (for us) communicative. The means is original, and a credit to our nation's culture. To be sure, this has implied certain choices and the elimination of proven techniques. There is no effort for the unity or continuity of Great Britain's presentation.

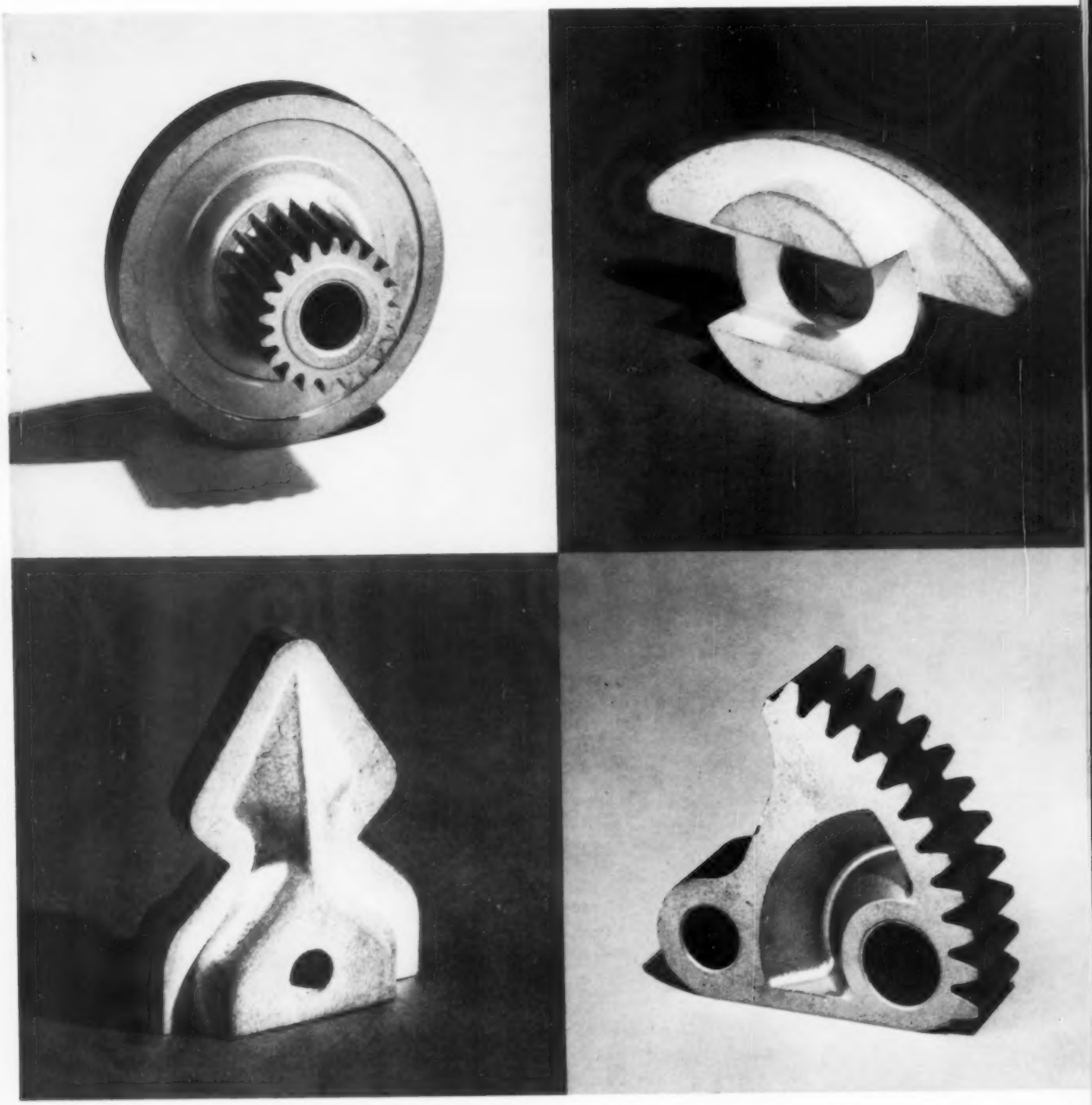
Our designers acted with foresight as well. The U. S. fits freshly into the total context of the Fair. A setting is important to a jewel, and by just enough second-guessing they have achieved a spaciousness that contrasts with a chock-full fair, yet is not empty.



Our planners guessed without too much difficulty that we wouldn't be up against an undersell from our powerful competitors across the street. After aspiring and perspiring up a pyramid of steps to reach Russia's endless polemic about the future of man, we suspect "man" is content to drop into one of the 2000 comfortable chairs that are slyly strewn around America's upper terrace, and have a Dairy Freeze. And after wading through thousands of square feet of numerical measurements of Russia's achievements, the same man may be more touched by what he sees in Leo Leonni's exhibit of "Unfinished Work," where such national imperfections as segregation and slums are presented without any hedging.

For all these reasons, Europe's press and people seem to like our exhibit. And for the same reasons, we suspect, some Americans, accustomed to textbook interpretations of "America," don't quite get it. The designer's deviation from the standard viewpoint is in this case not only valid but vital: in previous exhibits Uncle Sam had been less casual, more serious, more preachy, more powerful. He has seldom been more winning.

NEXT MONTH: EXPO '58's PROBLEMS OF DISPLAY DESIGN; OUTSTANDING PAVILIONS



POWDER METALLURGY

Number five in a fabrication series explores a new-old process which brings major economies in the production of small parts. And for the future, experimentation beyond conventional techniques holds promise for new concepts in metal-working.

by GREGORY DUNNE

With the fifth installment in its fabrication series, *Industrial Design* continues its policy of attempting to put each production method in its proper perspective. Powder metallurgy is a close tolerance, high volume method for producing small component parts which are used by a variety of industries, including appliance, hardware, and automotive manufacturers. The pieces are fabricated by pressing metal powders into a mold or die to form a low-strength "green" (or unsintered) briquet. This briquet is then sintered to a service strength by a temperature somewhat below the lowest melting point of its constituents.

When compared to equivalent procedures, powder metallurgy has both advantages and disadvantages. Die casting, for example, allows greater design freedom unhindered by size limitations, but it cannot be adapted to the production of ferrous metal parts. Investment casting permits greater design flexibility, but it cannot compete with powder metallurgy's high volume operations. Stamping, screw machining, and forging offer higher strength characteristics, but the type and shape of parts which can be made are limited.

But despite these analogies, many extravagant claims have been made by some apostles of powder metallurgy about the comparative assets of their process. More conservative members of the metal powder industry are quick to reply that powder metallurgy is not a panacea for the infinite variety of fabrication problems, but that at its best, it is just another excellent tool in the hands of the metalworker that has now assumed its place with the more conventional methods of small parts production. As one methods' engineer in charge of an in-plant powder metal department states: "Quality is not the function of a fabricating process, but of personnel and equipment. Each process, primed by cost considerations, has its own limited area in which it is, if not the best, the most economically logical production method."

Therefore, eliminating the factor of cost, one can conclude that no production process far outstrips any other. All things being equal, each has its liabilities and assets. Unfortunately, however, one cannot negate the cost factor; economy is an essential element in the designer's considerations. And production economy is the main rallying cry for powder metallurgy.

Contemporary history and advantages

Although the production of useful powder metal parts dates back to ancient Egypt, powder metallurgy as we know it today had its inception after World War I when the research departments of both General Motors and General Electric discovered the commercial possibilities of the self-lubricating bearing. The porosity of these bearings could be controlled in the pressing of the powders to produce special lifetime oil-retaining characteristics which provided a cushioning effect in gears, cams, levers, and other machine parts. With the absorption of the self-lubricating bearing by the automotive industry, powder metallurgy became a respected, though highly specialized, fabrication process. Other exclusive outlets were found in the tooling industry, where the exceptionally high melting points of the tungsten carbides used in cutting tools made molten flow production methods impossible. Electrical contacts utilizing copper for conductivity and tungsten for wear and heat resistance were also formed by powder

metallurgy, as were friction bearings combining ceramic and metal powders.

Shortly before World War II, structural iron parts made from powder were being tested in various automotive applications, such as an oil pump gear which showed impressive cost reductions over the fully machined casting it replaced due to its scrapless forming. War needs and the scarcity of machine tools further augmented the production of structural parts, greatly increasing the horizons of powder metallurgy.

With the growth of structual applications, powder metallurgy began to pick up converts among a wide variety of industrial manufacturers. Successful case histories within the specified design limitations emphasized the economies of the process. "And cost," states the supervisor of one captive powder metal department, "is the one reason why you switch fabricating methods."

There are several factors contributing to the economy of the process, as well as various proven advantages whose benefits are relative to specific applications. Generally speaking, powder metallurgy produces little or no scrap because of its one-step forming except in critical tolerance cases where special machining after sintering is required. Thus, while the starting powders cost more than an equal weight in cast metal, scrap loss is usually less than five per cent, in contrast to the almost fifty per cent scrap loss produced in machining bar stock. This low scrap loss permits a lower cost end product which can result in per piece savings of up to seventy-five per cent.

Perhaps the most spectacular feature of powder metallurgy is that it lends itself to the production of combinations of metals and non-metals in parts that often reflect the characteristics of the several components. As in the case of the cemented carbides, useful items are sometimes fabricated which cannot be produced by any other method. Unusual properties can be fashioned from special powders which will insure these properties. Most prominent among these specialized applications is the previously mentioned self-lubricating bearing. Its oil retaining characteristics are the result of interconnecting capillaries being naturally formed in the sintered part. Pore volume is controlled over relatively wide limits (sometimes up to forty percent of total volume). Oil is then impregnated into the pores of the sintered compact creating a reservoir which is drawn to the bearing surface when lubrication is required.

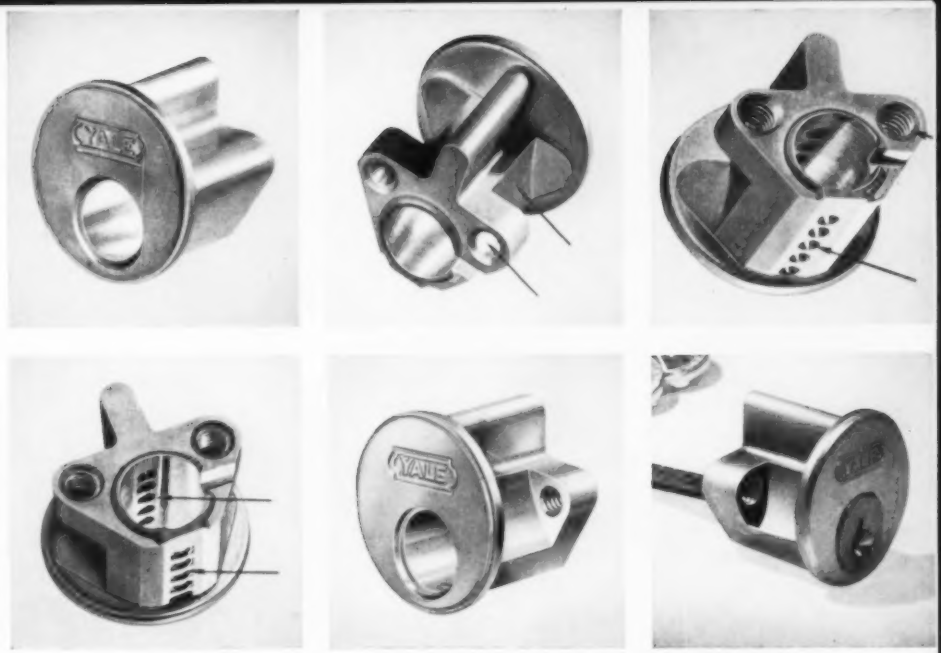
It is a common failing for designers who are accustomed to working with wrought materials to specify equivalent mechanical properties for powder metal parts even though these properties may be far in excess of service requirements. Powder metal parts are homogeneous—that is, they are free from the voids and gas pockets common in cast parts. Because of this homogeneity, parts produced under conditions yielding comparatively low strength, can sometimes replace cast parts theoretically having superior strength qualities. To complement these strength characteristics, additional hardness, or more uniform density for parts having non-uniform sections, can be obtained by infiltrating the pores of a compacted iron part with molten copper or brass. The effect of this infiltration is a part of close to one hundred per cent density with high strength, elongation, and wear characteristics. Such post treatment is especially effective in parts like gears where high stresses are encountered.

Further surface hardenability for parts needing harder surfaces than are normally produced can be obtained by additional operations like carburizing, hardening, and tempering. Usually, unless given these special treatments, the average powder part is both porous and relatively soft. These operations add a higher degree of dimensional accuracy, greater strength, and superior surface finishes for applications where they must be provided.

Close dimensional tolerances usually can be maintained without the necessity of secondary machining operations. Radial tolerances of $\pm.001''$ per inch and axial dimesions of $\pm.005''$ per inch are commonly held, though closer tolerances, i.e., $\pm.0005''$ per inch on radial and $\pm.001''$ per inch on axial dimensions can be provided by sizing, or post-sintering repressing, operations. Dimensional stability is maintained even under high heat and humidity. Inspection costs are minimized, because once a cycle has been established, all subsequent parts will be accurately duplicated. Therefore, tooling equipment can be storehoused in lieu of space consuming inventories; repeat orders can be supplied with the same uniform tolerances and the same properties as the original order.

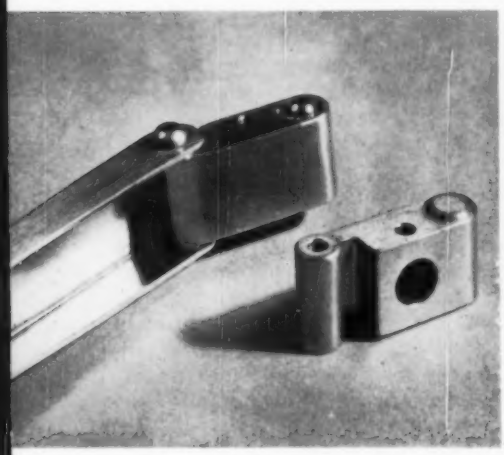
Limitations

But as stated in the opening paragraphs, powder metallurgy is no panacea for small parts fabrication. There are some very definite limitations to the process, both with regards to design and to production. High volume runs are usually necessary to amortize costly dies and tools and to realize per-part savings. Where runs are low, the uses of powder metallurgy are limited,



Finishing economies

The lock cylinders seen at the right were formerly sand-cast. Since the surface finish of a sand casting is rough, machining was necessary to obtain smooth surfaces and close tolerances. Finishing operations were reduced from twenty-five to thirteen by fabricating the cylinders from brass sinterings. The use of powder metallurgy saved the lock manufacturer 35 per cent in man-hour costs. The picture sequence shows the cylinder at various stages of fabrication (from left to right from the top): cylinder as sintered; the next four steps show machining, finishing, and threading operations. The last picture shows the completed lock cylinder assembly. The sand castings had a high ratio of rejects whose sub-surface defects were not discovered until machining operations uncovered them, resulting in wasted machining time and excessive tool wear.



Tolerance control

The crank hinge for the new camera pictured at the left possessed design features that were too costly to be produced by any of the usual machine processes. The part had to fit tightly over the end of the crankshaft and be drilled for a hinge pin and ball friction catch. The handle must fold back over the hinge, lock into place, and be out of the way when not needed. Nickel silver sinterings were chosen for this application because they were not only corrosion resistant, but because they could be given a permanent, light satin finish instead of more expensive plating. On the other side of the camera, metal powder technicians suggested the use of brass sinterings for making the film-loading door knob and key. The required close tolerances and counterbore steps could be maintained at much less cost by the use of metal powder sintered compacts than by parts formed from other materials. Drilling operations were confined to two small holes in each of the pieces for assembly purposes. With high labor costs a major factor in increased production budgets, powder metallurgy's one step forming limits the necessity of a large labor force to assist in the production process.

Key components in electric saw

In order to obtain the orbital blade motion which increases the flexibility and cutting speed of its new portable power saws, engineers decided to fabricate the bayonet saw drive block and bearing retainer slide by powder metallurgy. Machining the parts from bar stock was found to be too expensive, while manufacturing difficulties made it necessary to abandon the idea of stamping the pieces from sheet metal. The drive block (lower right) moves in bearing retainer slide (upper left) to produce the orbital blade movement which increases flexibility of motion and cutting speed. The retainer slide was designed from high density iron; the central hole is pressed to a size that produces a sliding fit with the drive block. The bronze drive block is oil-impregnated for life-time self-lubrication.

One part replaces five

Tremendous savings and performance advantages resulted when an automotive equipment manufacturer wished to redesign the five piece cam and ratchet at left as a single powder metallurgy part. Excellent bearing qualities plus the self-lubricating abilities of the iron-copper part eliminated the need for the bronze bearing insert and thrust washer. The cam is now integrally formed; heat treating provides the required surface hardness. Since the ratchet no longer has to be machined from stock shapes, the most efficient contour can be employed and formed right in the part. The piece is held to close tolerances with a high surface finish. Inspection needs are minimized and inventory problems are simplified because tools can be shelved and used again when repeat orders are necessitated. Since the discovery of the oilless bearing, the automotive industry has maintained its position as the major user of powdered parts. (Components courtesy of Dixon Sintaloy Company).

except in special cases within captive powder metal departments where time, manpower, and equipment are capital assets. Tooling costs run high, especially in situations demanding high volume tools for a complex part. Where sizing or coining tools are needed, they must also be made to the same exacting tolerances as the primary tools, and, therefore, generally cost as much as the regular sets. All tools should be mirror-finished by hand-lapping and polishing.

Because of the limited plasticity of metal powders, design complexities are often confined within rigid boundaries. Inasmuch as the powders will not flow when compressed in the tool, a part will have its greatest density at the ends in contact with the punches. Since a direct relationship exists between density and tensile strength, unusual variances in cross-sectional thicknesses should be avoided. As length increases, the differences in density between the ends and middle sections becomes correspondingly greater. A practical length-to-diameter ratio in compacts is 4:1 for a part less than one inch in diameter. As diameter increases, this ratio, of course, decreases.

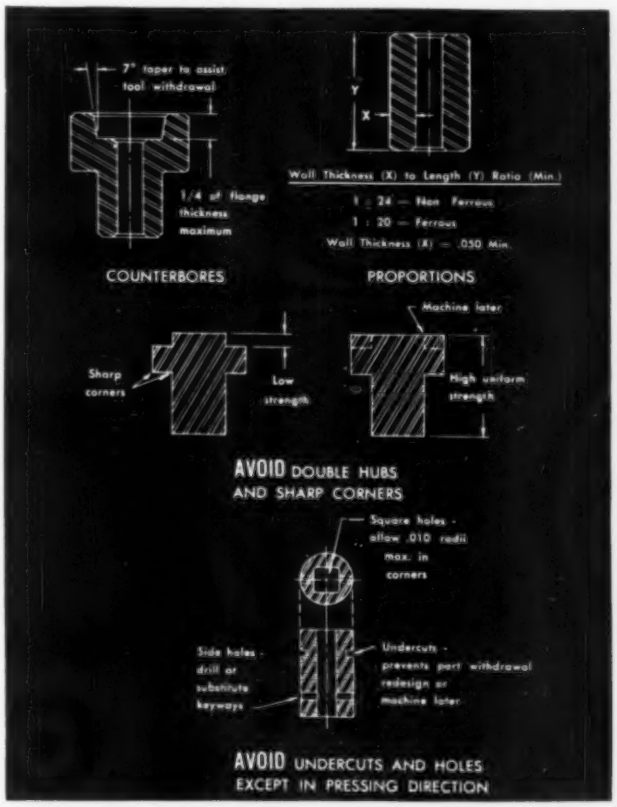
Furthermore, since today's high-speed presses have relatively low total capacities, the overall areas of practical powder metal parts are limited. The majority of the structural parts which are made are pressed at less than 80,000 psi which limits total area to between four and five inches. To compound the complexities of these size limitations, a minimum wall thickness of .032″ is recommended for lengths up to ¾″. In general, the ratio of a part's length to its wall-thickness should not exceed 24:1 for non-ferrous alloys, or 20:1 for ferrous base alloys.

Besides these restraints on size, there are design configurations which must be avoided. Because compacts are formed by compressing powders in a die cell with two or more punches operating vertically, undercuts have to be eliminated, as well as parts with internal or external threads. As the tool sets normally eject the compact upwards without any parting of the die as in die casting, these contours are impossible without expensive machining.

Good design practice will also avoid pieces whose designs call for feather edges, extremely small pins, and very narrow and deep splines. Parts designed with shallow re-entrant angles or curves are not possible to mold directly without expensive tooling; however, these configurations can be machined in on the sintered part. Holes at right angles to the axis of the compacting also cannot be formed in the die, but again, can be machined into the finished piece if the machining operations do not destroy the per-piece cost savings.

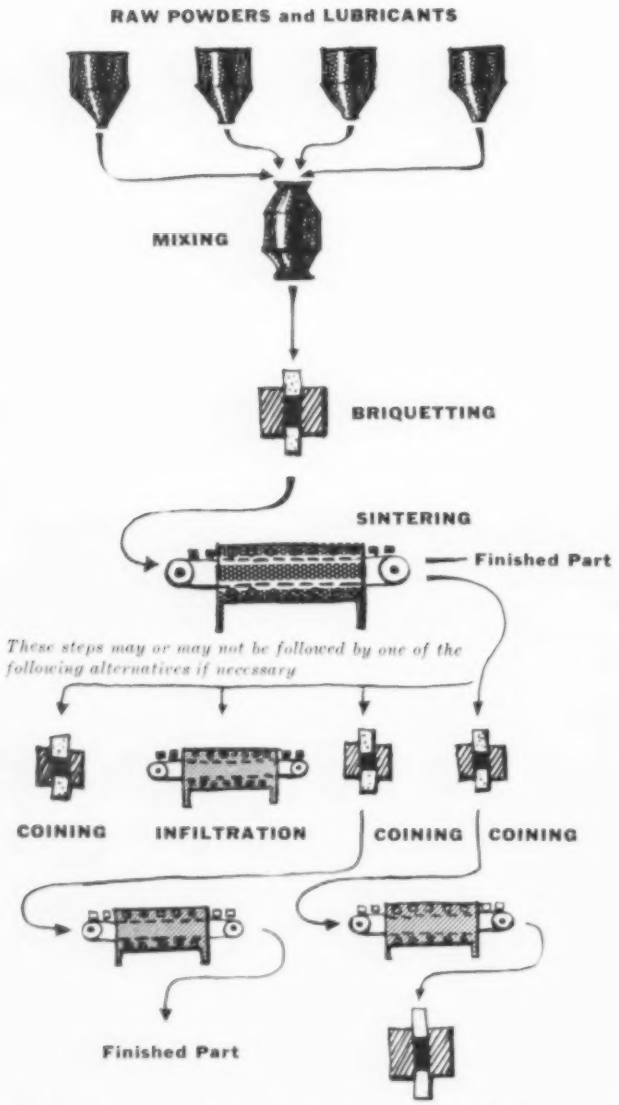
In general, powder metal components should be designed either with straight walls or with the larger end up if curved or tapered. Where flanges or other projections must be incorporated, they should always be at the top of the part so that ejection from the die can be easily accomplished. Flanges below the top of the piece must be machined in, as must tapers in all flanged items.

When contemplating designing with powdered metals, it is necessary to consider every feature of the fabrication procedure. In order to realize the inherent cost saving advantages of the process, a step by step appraisal for each particular problem must be made. If the simplified design of the proposed parts offsets the expense of tooling and materials (which are correspondingly greater than comparative processes), and if necessary subsequent machining operations do not unbalance cost saving ratios, then powder metallurgy can be effectively utilized in the production of structural and specialized components.



Drawing shown above illustrates some of the contours to avoid when designing a powder metal component.

Production methods vary little despite myriad design and powder combinations



Production process illustrated in chart above. Post-sintering operations are to improve part's tolerance, configuration, strength, and wearability where needed.

Despite the multiplicity of available designs and powders, there is little variance in production methods to be found in powder metal fabrication. Briefly, there are four basic steps involved in the making of any part: design of the tool, mixing of the different powder constituents, compacting, and sintering.

Powders are produced to application specifications dependent upon desired properties which can be controlled by particle size, distribution, and purity. A zinc or calcium stereate to the amount of 0.5 - 1.0% of the total mix is added to the powders as a lubricant to facilitate the ejection of the green piece from the press. The powder mixture is then fed into a die and cold pressed in multi-action dies designed to yield the required finished shape. Exerted pressures usually range between 40 - 50 tons per square inch depending upon the size of the part and the density called for. This green compact, though it has assumed the shape of the end product and can be handled without damage, is still friable and will not withstand severe treatment of any kind.

The briquet is next sent through a sintering furnace and heated under a reducing or non-oxidizing atmosphere to a temperature below the melting point of the major constituent. The rates of speed at which the compacts advance through the pre-heat, hot, and cooling zones of the furnace are definitely controlled in order to maintain characteristics of the parts. The longer the sintering time, the greater the strength of the part.

Where closer dimensional tolerances are essential, the sintered parts are inspected and returned to production. Here they are automatically fed into special sizing dies and repressed to the required dimensions. Still another post-sintering operation is coining, or the final pressing of a heat treated compact to obtain a definite surface configuration.

While the basic production steps in powder metallurgy are relatively simple, there are several prefabrication procedures which are important factors in the effectiveness and economy of the system. The first step in a powder metal set-up is a comprehensive study of the metallurgical, functional, and dimensional requirements of all proposed parts. Following this evaluation, the parts are designed for fabrication. After a part has been designed, the formulation of its composition as well as its subsequent processing is developed in accordance with the characteristics of the application.

Depending on the metals and applications, there are a variety of ways for producing the powders used in powder metallurgy. Among those which find wide acceptance are the gaseous reduction of metals from their

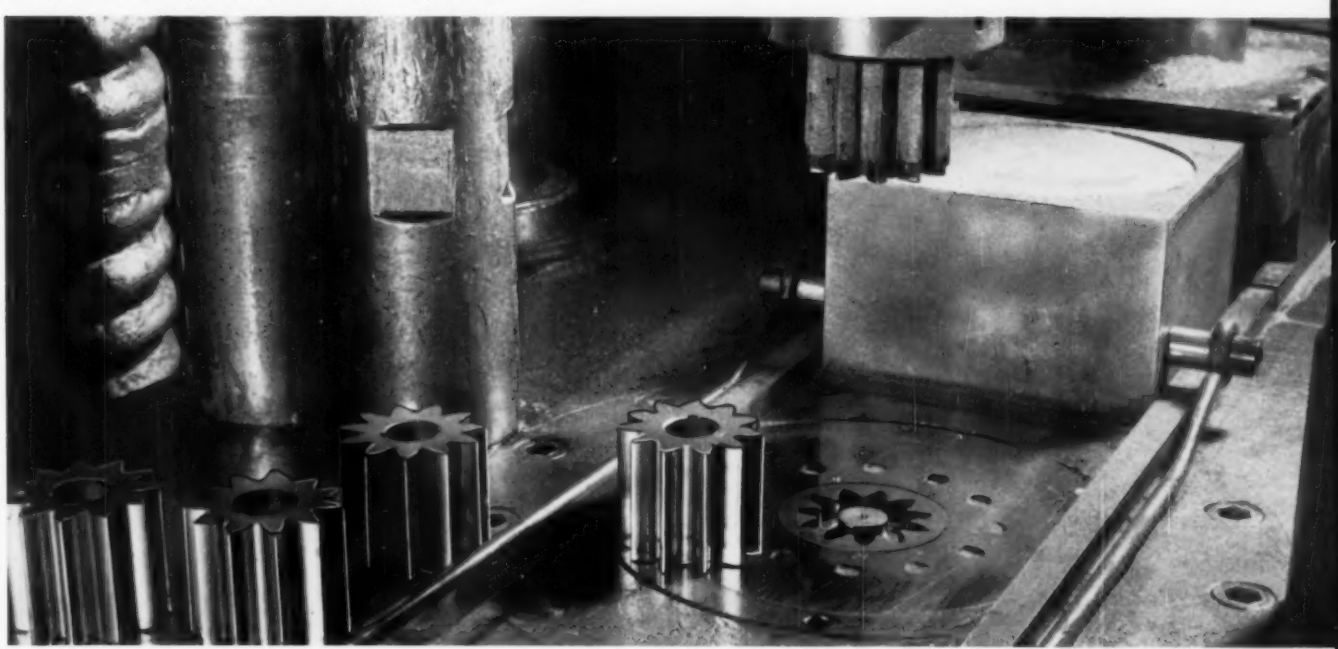
Bags of metal powders being poured into the mixing machine. Types and mixtures are pre-determined by test lab.

Powders being removed from tumbler after being mixed to specification. Below, green piece is ejected from die.

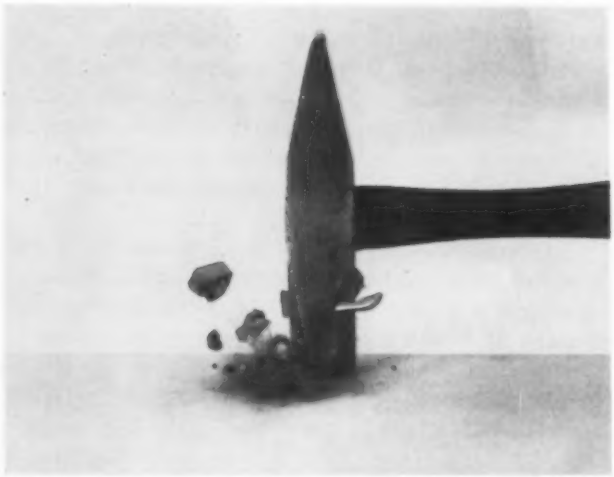
oxides and the gaseous or liquid atomization of molten metals and alloys. Powders are dried (if necessary), screened and analysed before they are ready for use. All powders will pass through a 60-mesh screen, and a substantial portion of them can be produced to run through a 325-mesh screen. Shapes vary according to function of the part.

Representative samples of all powders to be used are completely tested for particles, size distribution, flow rate, apparent density, and compressibility. Laboratory tests are then run to determine the green strength of the unsintered metal powder specimens. Finally sintering characteristics are established under controlled standard conditions of time and temperature. These characteristics are generally reported in terms of density and dimensional changes, final density, strength, and ductility.

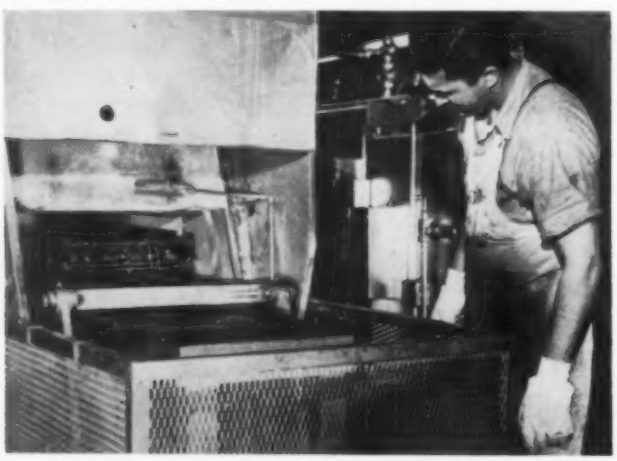
When powder tests have been completed, briquetting and sizing tools are constructed for the part in accordance with piece specifications, production quantities, and the operational characteristics of the press. Die materials depend on many factors, such as the nature of the powders, the volume of production, allowable tolerances for the finished part, unit pressure to be used, and the surface finish in the cavity. Dimensional distortion due to die wear and the shrinkage of the compacts during sintering can be anticipated and allowances made in the design of the die.



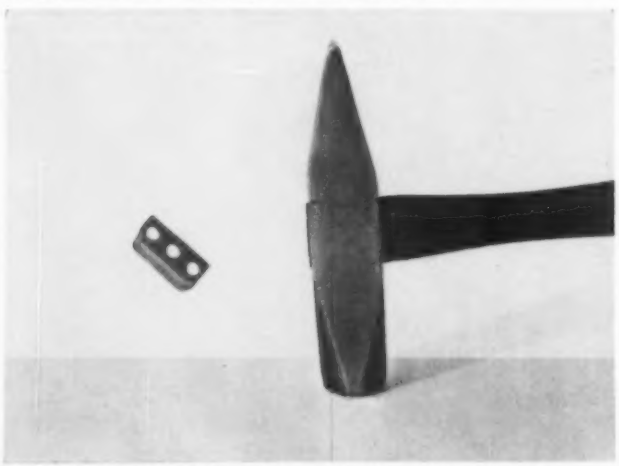
Experiments beyond basic pressing methods point to a greatly expanded future.



Unsintered parts will fragment when subjected to all but minimal pressures. Die presses powders to final form.



Properties of components can be controlled while sintering by temperature and length of time in the furnace.



Sintered compact will not fragment when subjected to the same pressure as piece pictured at the top of the page.

As powder metallurgy has grown in stature from highly specialized process to a high volume operation dealing in countless, intricate, structural parts, it has exhibited an amazing willingness to take advantage of every opportunity offered to broaden its horizons. Since the revival of the metal powder industry in terms of the methodology of the self-lubricating bearing, the growth curve of the industry has been staggering. From figures supplied by the Metal Powder Association, one can see the increase in the domestic consumption of iron powders from 2,000 tons in 1943 (when structural parts were found to be suitably adapted to powder metallurgy) to a total of over 30,000 tons in 1957. Converts have been summoned from a number of dissimilar industries which were attracted to powder metallurgy's high volume economies. A number of reasons can be advanced for this growth, reasons which are not original with powder metallurgy, but which form the pattern for the wider acceptability of most industrial methods, materials, and equipment.

The various components within the powder metal industry—powder producers, fabricators, press and furnace manufacturers—have carried on extensive research and development programs to widen the adaptability of metal powders in a varying number of applications and to improve the characteristics of powder metal parts already in use. These activities were in some part necessitated by the over-promotion of the process as a metal-working panacea—which it is not—and a lack of adequate controls which soured many designers and fabricators on the potential of metal powder fabrication.

As a result of these industry-wide R&D programs,

Acknowledgement is made to the following companies and individuals for the data and personal help which they supplied:

Aluminum Company of America
American Metal Climax Co.
Baldwin-Lima-Hamilton Corporation
Henry Bower Chemical Manufacturing Co.
Burgess-Norton Manufacturing Co.
Dixon-Sintaloy, Inc.
Lindberg Engineering Co.
Lionel Corporation
New Jersey Zinc Co.
Pitney-Bowes, Inc.
Presmet Corporation
Republic Steel Corporation
Dr. Henry Hausner

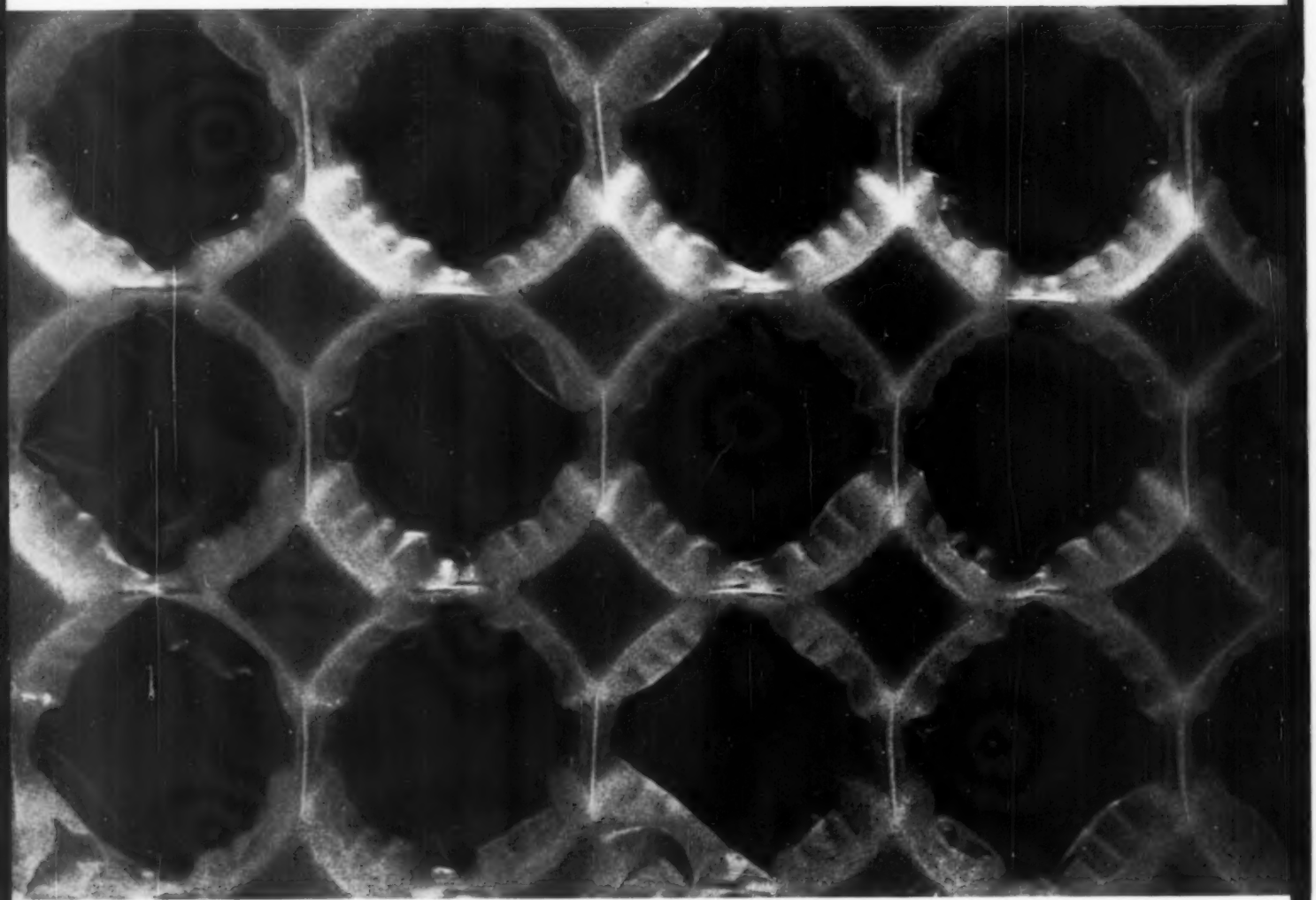
the effectiveness of powder metal components was increased by the availability of purer, more economical and uniform powdered materials, more exact testing and quality control procedures, and more powerful and versatile presses. Press manufacturers, constantly aware of the contour and size limitations of powder parts, have striven to develop presses and tooling capable of increasing the complexities and the size of pieces without endangering the densities and physical characteristics presently obtainable in smaller parts. One custom fabricator has a giant 125 ton press in operation which it claims can exert pressures of 3,000 tons and produce parts with an outside diameter of up to 30″. And on the other end of the size scale, fabricators are using presses capable of making parts not much larger than the head of a common pin. Forty thousand of these parts can be held in the hand, yet they are still held to close tolerances.

But besides the advances in size and complexity, quality control, and better powder properties, powder metallurgy has also made great progress in areas not strictly related to conventional metal working techniques. For example, the direct rolling of metal powders into a solid strip has become a commercial reality. A basic drawback to powder metallurgy heretofore has been the cost of processing ingot metal into powder. This cost becomes considerably less than a liability when the rolling of metal powders into sheets offers a means of producing not only high volume specialty items such as parts utilizing powders with extremely high melting points, but also of providing strip, rod, wire, and tubing with specially controlled characteristics. The further development of this procedure enhances the possibility of greatly increased metal powder tonnage in areas where it has previously been impossible to utilize powders.

Along this same tack is the formation of aluminum compacts made from fine unalloyed aluminum powders with each flake coated with aluminum oxide. When this powder is compacted and worked, the oxide coating greatly strengthens the product and contributes stability at elevated temperatures. When formed by any one of a number of fabrication methods, certain of the aluminum powder metallurgy products can withstand temperatures up to 900°F, an advance of 300 - 400 degrees above the point at which conventionally produced alloys can function efficiently.

It is because of this willingness to experiment and learn by trial and error that powder metallurgy has so expanded its vistas in a scant half century. Its steady advance toward larger, more complex parts—while still maintaining its inherent cost saving factors—has increased its utility as a design tool. The research which has been undertaken toward the development of powdered strip, tubing, and compacts could open a whole new area to the process by which a vast variety of objects with rigidly controlled properties could be formed by any number of conventional metalworking methods. Yet even should these experiments prove impractical, or too tentative for forseeable utility, bread and butter powder metallurgy still offers the designer a unique combination of economy and controlled properties and composition for a variety of component parts in a wide industrial area.

Matilde Lourie



1. *Pantasote's new cushioning medium is light, strong, impermeable.*

Packaging Show: '58

by WALTER STERN
Technical director of packaging and graphics,
Raymond Loewy Associates

This year the National Packaging Exposition of the American Management Association was held in New York for the first time in fifteen years. One hundred and twenty-eight exhibitors of materials and supplies, 73 exhibitors of container supplies, 160 exhibitors of machinery and equipment, and 39 exhibitors of services, associations, and publications were gathered on all four floors of the Coliseum to present the latest packaging advances to an attendance now estimated at over 40,000 people.

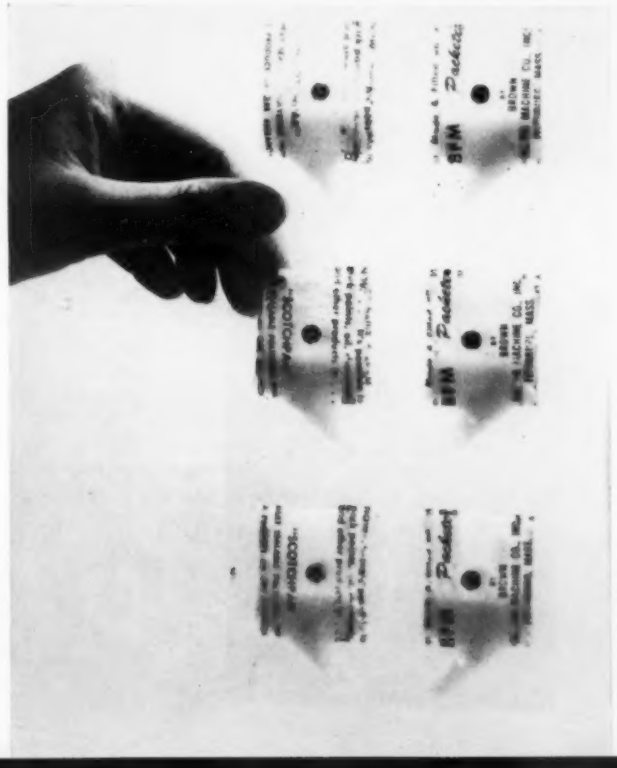
In our review of the 1957 Packaging Show we stated that in contrast to the ingenuity and improvement in many branches of the packaging industry, the paper and paperboard industry seemed, to judge by its exhibits, to have made few significant advances in the past year. We indicated that constant and continuous inroads by plastics and other materials seemed inevitable unless paperboard applications and processes were similarly stimulated.

Because of the size of the show, and because of the overpowering showmanship of institutional exhibits put up by basic packaging materials producers, it becomes increasingly difficult for the designer, unless he studies the exhibit exhaustively, to find the exciting new development raisins in this overwhelming large packaging pudding. However, even a cursory analysis shows the striking advances made again this year in the plastics and metals field, with improvements in paperboard and other packaging materials few and far between — and, incidentally, frequently achieved with the assistance of plastics.

While many developments demonstrated in the show are the results of industrious perfection of previously explored principles, there are two fields in which the term "break-through" seems to be fully justified: plastics films, and new uses for aluminum foils and sheet aluminum.

Amazing new possibilities and potentials were demonstrated in the field of polyethylene films, and exciting new developments in vinyls and cellulosics were shown. In addition to that, an entirely new film never previously produced was demonstrated in limited quantities. The following were some of the Show's highlights:

The Panta-Pak Division of the Pantasote Company of New York demonstrated a totally new cushioning and spacing medium for fruit such as plums, apples, and cherries. Now being tested by West Coast commercial fruit growers and the Department of Agriculture, "Panta-Pak" consists of vacuum-formed nesting trays of .005 polyvinyl chloride, which is being manufactured in many colors and shapes. The trays are said to be competitive with paperboard, and are already being used widely in Europe not only for the cushioning of fruit, but also for confectionery, pharmaceuticals, and other articles which need cushioning and protection. Combining the advantages of light weight, impact strength, impermeability to most olis, grease, and acids, and the possibility of sterile packaging, this packaging method was introduced in Italy, Holland, England, and Israel by the Compagnia Italiana Nest-Pack S.P.A. in Bologna. The trays have been especially useful in shipping Italian fresh fruits to England, which is said to involve truck or rail transit time of



J. S. Ward

2. *Liquid hand lotion is automatically packaged in polyester film.*

five to six days in refrigerated equipment. (See Illustration No. 1).

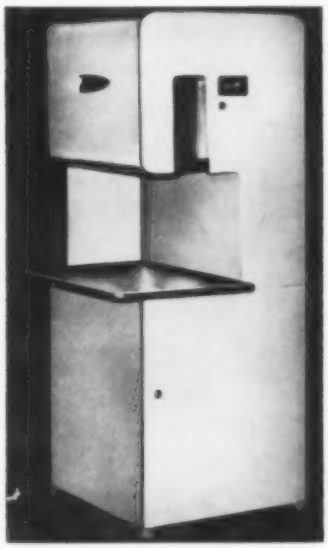
The Brown Filling Machine Company of Fitchburg, Mass., demonstrated a fast and fully automatic operation for packaging liquid hand lotion in the new "Scotch-Pak" heat-sealable polyester film developed and produced by Minnesota Mining and Manufacturing Co. (See Illustration No. 2).

A whole group of interesting innovations were shown in the field of polyethylene films, whose pronounced downward price trend during the last ten years has been matched by an increase in the price of cellophane to such an extent that in 1956 the price per pound of 1½ mil polyethylene film dropped below that of 300 gage MS cellophane. According to a recent article in *Modern Packaging* magazine, the present cost advantage of conventional polyethylene film has now increased to 9 cents per pound.

While there has been a great deal of publicity about the possibility of high-density polyethylene's approaching cellophane in clarity and sparkle, any comparative qualities of this type are found at present only in the very light gage films, at the most up to 2 mil.

The flexible packaging materials division of the Bakelite Co. exhibited high-speed, fully automatic bread wrapping equipment. A recent test showed that through the adoption of polyethylene film wraps, stale refunds were sharply reduced, and the soft feel of polyethylene film apparently accentuated the freshness of the bread and stimulated sales considerably.

Various exhibitors at the Exposition were using or displaying film made from high density polyethylene, which added stiffness to polyethylene's excellent moisture and grease resistance. This enables it to be used on many existing types of automatic packaging machines for filling and sealing in one operation, and for the production of transparent bags and envelopes now being made of more expensive materials like cellophane, acetate, and polyester films. Bag making machinery of this type was demonstrated by Bartelt Engineering Co. of Rockford, Ill., and overwrap equipment was demonstrated by the Hayssen Manufacturing Co., of Sheboygan, Wisconsin, and by the Wrap-King Corp. of Holyoke, Mass. A unique package made entirely of "Grex" (W. R. Grace) high-density polyethylene was displayed by Packaging Industries Limited, Inc. of Montclair, N. J. This consisted of a shallow container, vacuum formed, and sealed with clear high-density polyethylene film with an imbedded tear-tape for easy opening.

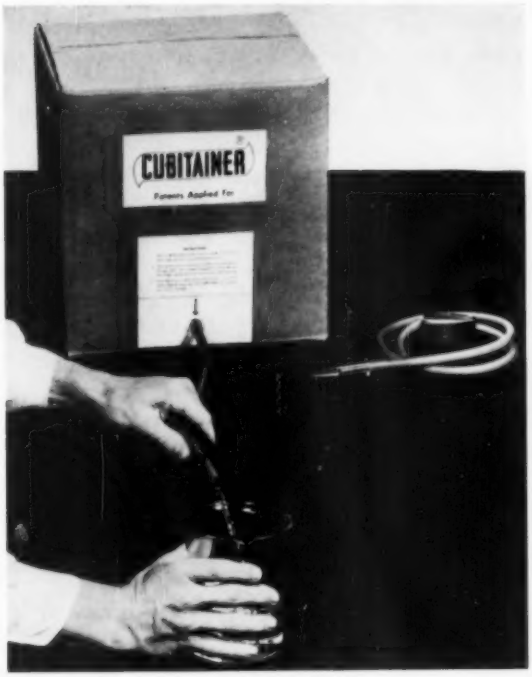


3. Automatic bagger for clothes by E-Z Packaging Corp. uses continuously extended film tubing.

4. Chippewa's film shipping bags are for heavy duty industrial use and are made of polyethylene films.

5. Polyethylene tubes for liquids do not drip when the cap is off and show color of product.

6. Cubitainer brings savings in weight, space, cost. New heat sealer for closing spouts is now available.



7. New heat sealer closes up to 1,200 cubitainers a day.
8. Cubitainer pours smoothly since any vacuum caused by liquid discharge is compensated for by folding of container.

A medium density polyethylene resin, developed in cooperation with Crown Zellerbach Corp. by the Spencer Chemical Co. of Kansas City, was also indicated for use as bread wrapper on high-speed automatic over-wrapping machines.

Several exhibitors showed packaging machines to form polyethylene film bags which then are automatically wrapped over dry-cleaned garments in less than five seconds. One of these was the Universal "Poly Pack" displayed by E-Z Packaging Corporation of Chicago, Ill. (See Illustration No. 3). This machine uses continuously extruded film tubing which is pulled over the garment to be packed, and is then sealed and cut off by foot pedal action. Said to sell under $1,000, f.o.b. factory, this machine claims cycles up to 3,000 per hour, "5-minute installation", and other advantages.

Chippewa Plastics, Inc. of Chippewa Falls, Wisconsin demonstrated the first heavy duty industrial shipping bags made of polyethylene films. The bags, which have undergone a thorough series of test shipments of a number of products of the Monsanto Chemical Co., are fabricated from 10 mil Monsanto Polyethylene No. 706. The price is apparently estimated at from 20 to 30 cents each in large lots, depending on size and printing requirements, and their main advantage is obviously their inertness to moisture or contaminants. (See Illustration No. 4).

A new and ingenious application of polyethylene tubes manufactured by Bradley Container Corporation of Maynard, Mass. showed Prell Concentrate Shampoo in clear, completely transparent, tubes which allow the consumer to see how much shampoo remains at any time. Important advantages of clear polyethylene tubes for liquid products are that they will not drip if the cap is left off, and that a particularly handsome product color, such as the deep green of the Prell Shampoo, can be strikingly promoted by direct visual stimulus. (See Illustration No. 5).

Another new and imaginative use of polyethylene was demonstrated by Lermer Plastics Inc. of Garwood, N. J. in their "Poly-Opal" polyethylene containers, whose appearance successfully competes with opal glass in the packaging of drugs and cosmetics, and which are at the same time lighter in weight, and

9. *Semi-automatic unit wraps meat sturdily in Goodyear polyester films.*

10. *Machine packages irregular shaped items with stretchable cellulose bands.*

11. *Rigid styrene container by Gaylord Packaging Corp. holds hamburger.*

obviously unbreakable. Made of "Fortiflex" rigid linear polyethylene as produced by the Celanese Corporation of America, they are virtually identical in color, surface lustre, and rigidity with the glass jars, and are rapidly intruding on an opal glass container market reported to exceed 1,152,000,000 a year.

Of particular interest to designers is the manner in which the "Cubitainer" manufactured by Hedwin Corp. of Baltimore, Md. has been perfected since it was first reported to you approximately two years ago. Savings of 75% in storage space, 55% in weight and 66% in cost are said to have been shown in a recent investigation by the U. S. Government Quartermaster Corps. (See Illustration No. 6). As a part of the Cubitainer package development program, a new heat sealer for closing Cubitainer spouts has been perfected and is now available for delivery under Model No. HS-7.

The equipment is apparently capable of closing up to 1,200 Cubitainers a day on a production basis, and consists basically of a radiant heater and hand-operated clamp mounted above a 5 foot roller conveyer section set at a 45 degree angle. (See Illustration No. 7).

A dramatically new method for dispensing liquids from the Cubitainer was demonstrated under the trade name "Probe Dispenser". This system takes advantage of the "memory" characteristics of polyethylene, which cause it to clamp tightly around a sharp-ended tube, thus allowing the Cubitainer contents to flow freely through the tube without leakage. Because the polyethylene Cubitainer is basically flexible, any vacuum caused by the discharge of liquid is compensated for by the folding of the Cubitainer, and an even liquid flow without bubbling is therefore accomplished. (See Illustration No. 8). Other new films or film usages demonstrated at the show are the Videne and TC polyester films introduced by the Goodyear Tire and Rubber Co. of Akron, Ohio, for general meat and food packaging applications. Machine wrapping of fresh meat with Videne TC was demonstrated on a semi-automatic unit, which showed its crystal clear appearance, and unusual strength and flexibility —even at low temperatures—somewhat unusual in a shrinkable wrap with enough rigidity and dimensional stability to run on commercially available packaging machines. (See Illustration No. 9).

Multi-packaging of irregular shaped objects even for small runs was demonstrated on a manually operated power-driven machine displayed by Tee-Pak of Chicago, Ill., using stretchable cellulose bands. (See

Illustration No. 10). This packaging method takes advantage of the fact that the conventional cellulose films used by the meat packaging industry for casing processed meats have a "built-in" memory by which they will reduce to their original shape after being stretched under great pressure. The machine was designed and built by the Capital Engineering Corp. of Chicago, Ill., and is said to attain speeds up to 30 per minute with automatic cycling.

Gaylord Packaging Corp. of Hackensack, N. J. exhibited a new concept in on-the-spot marketing of hot hamburgers, by packaging them in rigid Lustrex styrene plastic vacuum formed two-piece containers. Aimed at spectator sporting events and restaurant take-out orders, these containers may be instrumental in opening up an entirely new market in direct competition with the traditional hot-dog. (See Illustration No. 11).

Several spray coatings for re-use beer cartons were demonstrated at the Packaging Show. Developed by cooperation of the Arvey Corp. of Jersey City, N. J., which developed the lamination, and the Kieckhefer-Eddy Division of Weyerhaeuser Timber Co., the new high-gloss cases have been adopted in tests by the National Brewing Co. of Baltimore, Md. They consist of a lamination of Mylar polyester film, which is said to reduce substantially the cost-per-trip over cases previously used, (which were coated with polyvinyl acetate.) The new cases are coated with half mil caliper, and are primarily being tested in the Florida and Maryland markets. (See Illustration No. 12).

An entirely new thermo-plastic film for packaging, so far produced only in laboratory quantities, was demonstrated by the Spencer Chemical Co. of Kansas City. The film, called Nylon-6, is now being pilot produced in gages from 1 to 5 mil, and its price is said to lie half-way between the low of polyethylene and the high of Mylar. Very likely, DuPont's extrudable nylon resin Zytel-42 is the basis for this film.

Vacuum forming equipment for high speed mass production of blister packaging has come a long way since 1957. A completely automatic skin packaging and blister forming machine that fabricates and splits packages to size, operating from roll stock, was demonstrated by Comet Industries of Franklin Park, Ill. Slitting and cutting accuracy is controlled by electronic registration, and the machine is said to handle plastics up to .020 of an inch in thickness. (See Illustration No. 13).

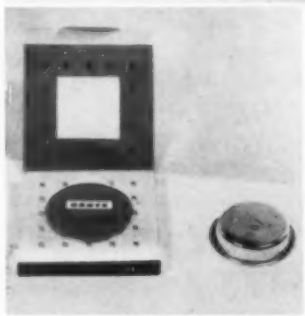
Further automatic blister sealers were exhibited—among many others — by the Tronomatic Machine Manufacturing Corp. of New York City, (whose sealer was used in the first distribution of sewing threads in supermarkets and chainstores, plastic packaged by Coats & Clarke at a rate of 72 blisters per 22 second cycles,) and by Eastman Chemical Products, Inc., (a subsidiary of the Eastman Kodak Co.,) and by the Plast-O-Craft Co. of Boonton, N. J., which demonstrated a table model test vacuum forming machine with a 9 x 9 inch forming area, with 4" maximum depth draw, available under the model No. "Test-Vac" 81 at a cost of $155.00, weighing approximately 35 pounds, for test forming.

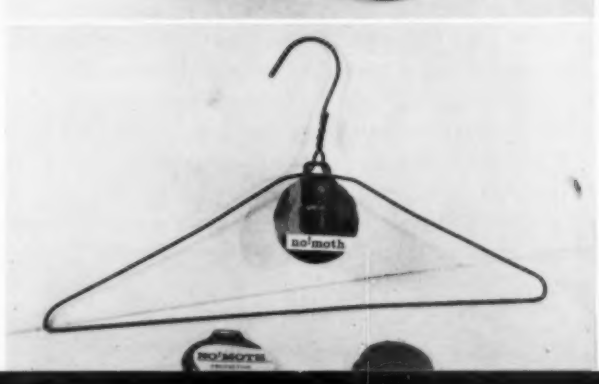
As mentioned before, news in the applied metals field was almost exclusively limited to aluminum foil. Dominating the foil exhibitors by the sheer imagination and design consciousness of its inventive new packaging proposals, Alcoa stole the show just as it did in 1957.

Completely smooth walls and rims were the major feature of a new "smooth-foil" container introduced by Ekco-Alcoa Containers, Inc. Representing an important new development, they are now produced in nesting, high-polished shapes in casseroles in sizes up to 12 fluid oz., and in unit serving containers in the ½ to 2-oz. size range. These containers are very obviously aimed at the individual portion marketing concept, and were demonstrated containing peanuts (see Illustration No. 20), ready-to-eat beef stew, (No. 14), individually foil packaged eggs without shell (No. 19), pharmaceutical sample mailings for physicians

12. *Lamination of half mil "Mylar" polyester film makes cartons re-usable.*

13. *Completely automatic skin packaging machine fabricates and splits packages to size.*





A new development in the ribbed foil containers previously only produced for cheese-spreads and other snack servings, is illustrated by No. 15, which shows these containers as used for powder shakers and packages for bath salts and powder puffs, or as small unit containers for single use of shampoos, bath powders, sun tan creams, and other products.

The extensive impact of the impressively merchandised aluminum industry was also shown in the field of aluminum aerosols, which were demonstrated in the dispensing of instant coffees at a coffee bar. It is said that Victor Metal Products Corp. has been testing these items, and that this company is also testing such products as catsup, mustard, and cake frosting for packaging in aluminum aerosol containers.

In an ingenious wedding of the previously discussed plastics and aluminum foils, Shaw Randall Co., Inc.

14	
15	
16	17
18	19
20	
21	

14. *Ready-to-eat beef stew.* 15. *Ribbed foil containers.* 16. *Drug sample mailings for physicians.* 17. *Combination paint brush and hue package.* 18. *Single service detergents for travel.* 19. *Individual foil-packaged eggs.* 20. *Single serving peanut package.* 21. *Individual mothicide for use in single garment.*

of Pawtucket, Rhode Island, was exhibiting a combination of aluminum foil pans with polyflex oriented styrene plastic covers, which gave the re-heatable pans a glamorous transparent dome of vacuum formed plastics, making powerful use of the appetite appeal of cream-cheese cakes, roll clusters, coffee cakes, fruit cakes, pies, and casseroles.

Additional uses for this package demonstrated at the Show by others were in the nut and candy field, in which the package also served first as a display and then as a serving tray combination container.

Finally, an interesting development in modern packaging utilizing aluminum foils and rigid aluminum packaging was shown by Gulton Industries, Inc. of Metuchen, N. J., in their "ultra-sonic" foil welder model UW-100 A. Said to replace completely any thermo-plastic heat sealing method of aluminum to aluminum foil, or the previously necessary waxing and coating processes connected with this sealing method, "ultra-sonic welding" is based on the principle of fusion through ultra-sonic vibration. Welding of continuous seams proved comparatively easy, and no unsightly joints such as are usually encountered in standard welding techniques were visible. Welding without heat and without pressure, and without any foreign material or coatings, the hand welder demonstrated at the Show handled metal foils from .003 to .0003 inch.

The use of vacuum-deposited aluminum powders was strikingly demonstrated by a display of vacuum metalized paper produced by the Vaculite Corp. of Cambridge, Mass. The metalized paper had a highly reflectant coating with the approximate appearance of polished aluminum, but with the obvious advantages of considerably lower expense than that of any foil paper lamination. Many of the usual converting problems in web handling such as curl, drying adhesives, delamination, and moisture mold, sometimes encountered in foil laminations, are obviously overcome by the vacuum aluminum deposit.

22. *Fiberboard shipping container shaped to give greater storage*

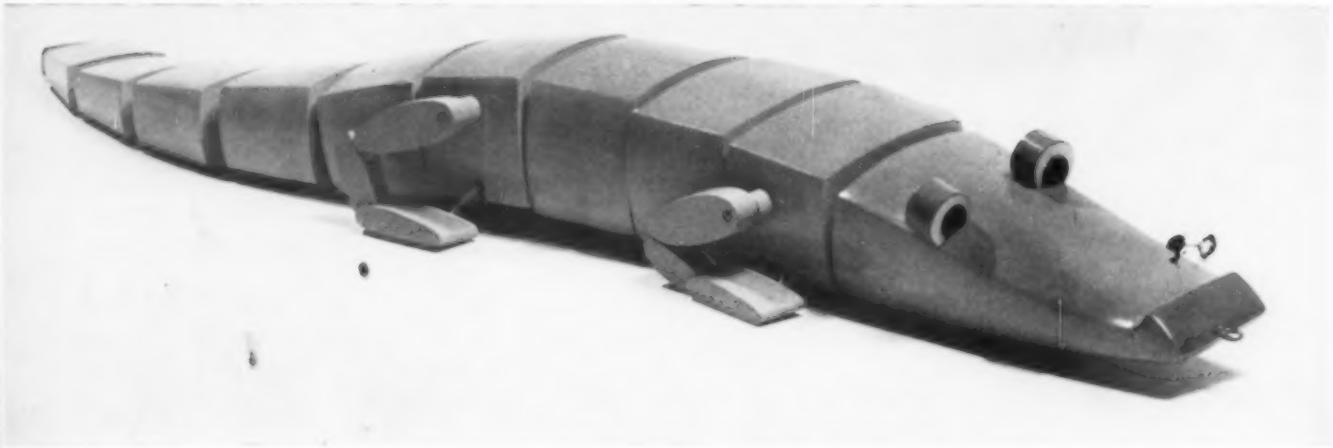
It is our understanding that vacuum metalized paperboard, however, as originally reported on last year in connection with our discussion of the National Research Corporation project, is still not available in commercial quantities.

In spite of the most conscientious efforts it is obvious that much material, possibly of considerable importance to the designer, may have escaped this reporter, and possibly the brilliant advances shown in the plastics and foil field have to some extent dulled our appreciation of more subtle advances in paper and paperboard packaging.

Be that as it may, the only paperboard item of sufficient novelty to merit inclusion in this report is a convolute wound fiberboard drum shipping container of revolutionary square cross section, round corner, convex side construction which was exhibited for the first time at this show by the Greif Bros. Cooperage Corp. of Delaware, Ohio. This "Ro-Con" fiber drum, as it is called, is said to provide approximately 25% greater cubic capacity per unit of space occupied in shipping or storage than does the round drum, and obviously follows the approach so successfully used several years ago by the square milk bottle. Designed especially for the packaging of sensitive and delicate products, the drum is now available in a wide range of stock sizes varying in cubic capacity from 1 gallon to 41 gallons (and from 231 cubic inches to 9,471 cubic inches). The drum was found to be extremely attractive in appearance, and is apparently well-suited to multiple strapped units as used in palletization and shipping. (See Illustration No. 22).

These are, then, some of the more immediately apparent advances considered of outstanding significance in the 1958 AMA Packaging Show. The dominant and forceful message of this Packaging Show to the industrial designer is that of the need to become acquainted, and re-acquainted, and keep acquainted with the fields of plastics and foils as the most imaginative and creative contributors of new processes, methods, and materials in the packaging field today.

Alligator pull-toy by William Koster, with its humorous near-abstraction of natural forms, is intended for machine-age children.

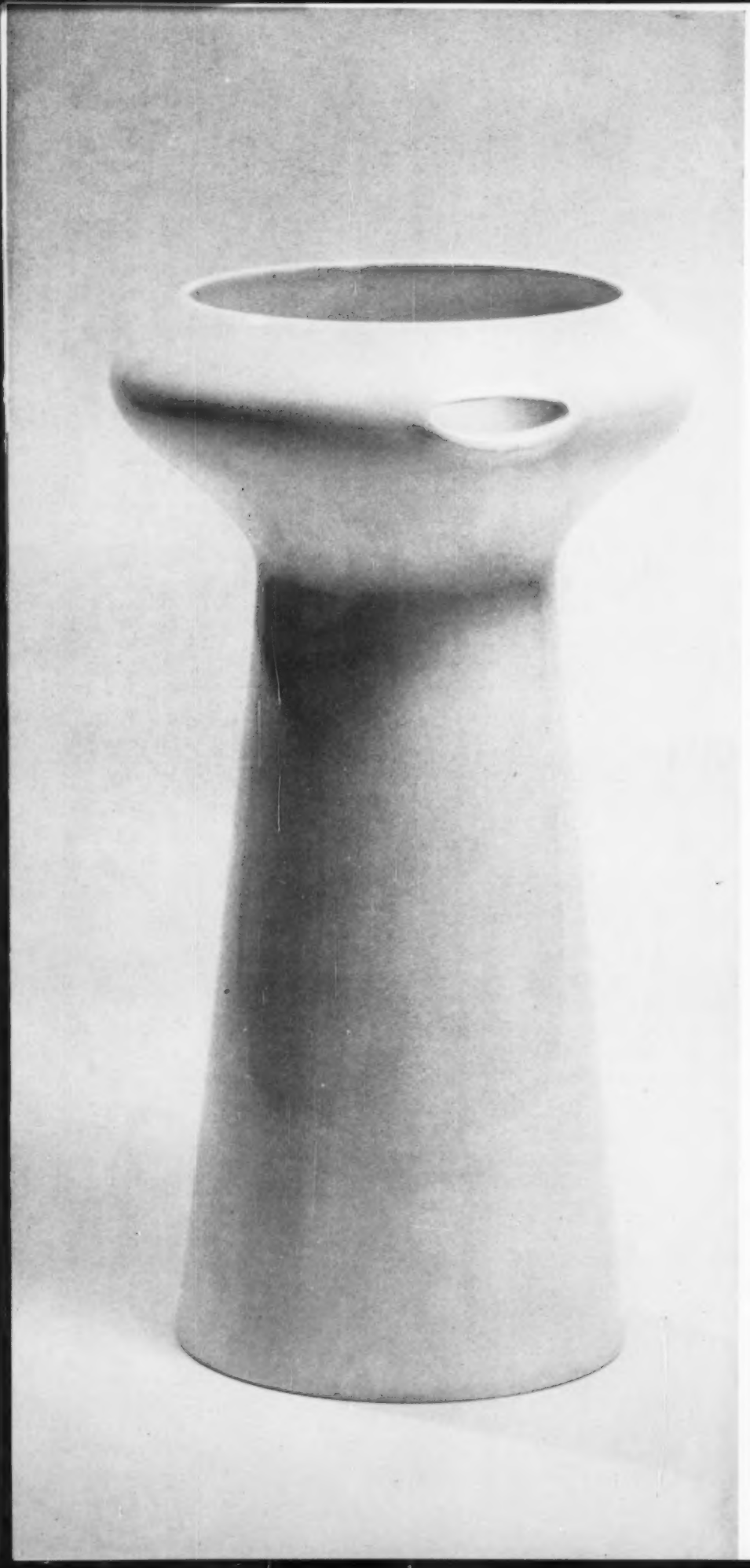


PRATT EXHIBITS ONE YEAR'S WORK

IBM opened its Gallery of Arts and Sciences last month to a show with as smoothly professional a surface as any of the other exhibitions on 57th Street—a selection of the year's work of the industrial design department at Pratt Institute. Their show was well-received: streams of New Yorkers on their lunch hour wandered through the gallery to admire some of the most sophisticated student modelmaking in the country.

In their four-year course, Pratt students are given a wide variety of assignments, and this diversity (sculpture, graphics, and interiors, as well as product design) was reflected in their exhibit. Almost all their work showed a remarkable preoccupation with the tactile and visual qualities of their subjects, sometimes to a fault (the jukebox on the opposite page is much handsomer than the tavern variety, but would take up a great deal more expensive space.) But when the students succeeded in uniting their newly-acquired aesthetic ability with a more practical view of the demands of the product, the results were often as happy a solution as the pitcher shown here.

Less restricted by functional demands, their exercises in form and material showed a pleasant feeling for texture and their playthings had an unaffected charm (see the alligator above). One of the most striking exhibits was a case of tools—axes, saws, hammers—whose glittering blades and polished wood handles showed an elegance and refinement of form more suggestive of a jeweler's counter than of a carpenter's bench. Pratt has made a specialty of these glamorous hand tools for some time (ID, April 1956), and this section, like the whole exhibition, self-assured and technically skillful, bespoke neither the awkwardness nor the experimentation to be expected in a student show.—*U. McH.*



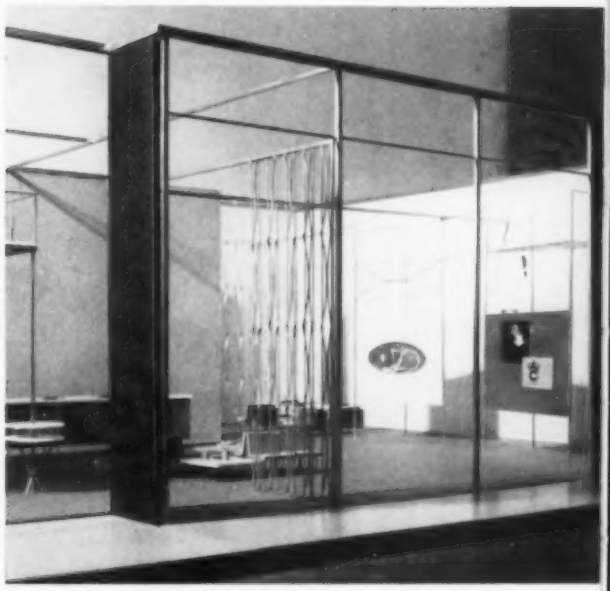
Unconventional jukebox by Joseph Roy has circular rim for record selection.

Columnar pitcher by Constantine Raitsky eliminates handle and projecting spout.

Pratt students present accomplished, careful models of a year's projects.

Sculpture, a second-year project, by Cristian Felix.

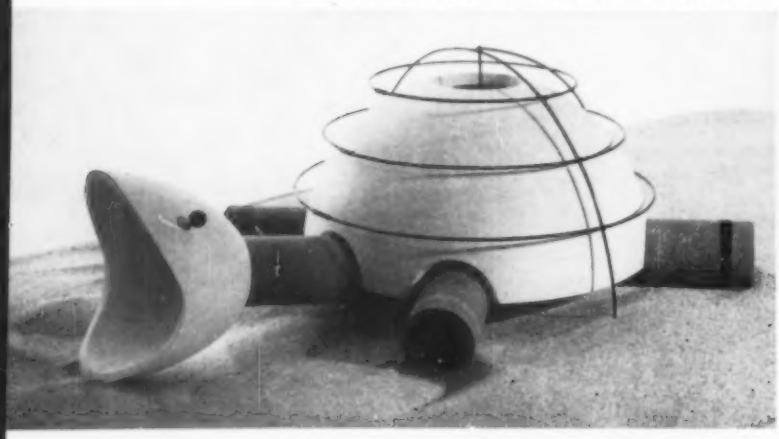
Upright tape recorder by Leonard Kleinman.



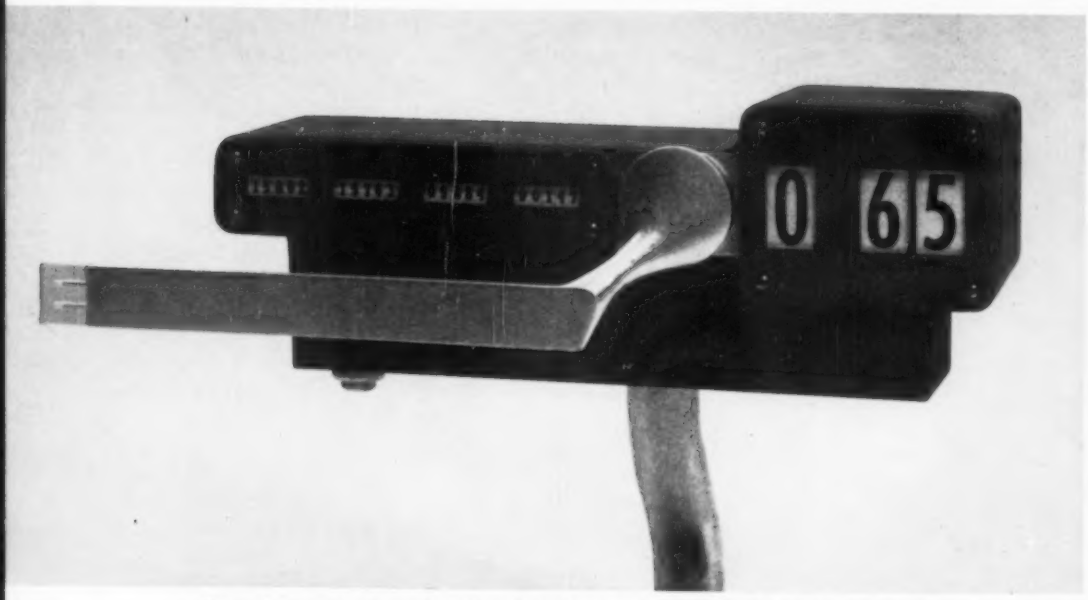
Ronald Emmerling's model of a bank interior.

Lawnmower (sports-car model) by Vincent Cooper.

Crawl-in playground turtle by Kenneth Skrivanek.

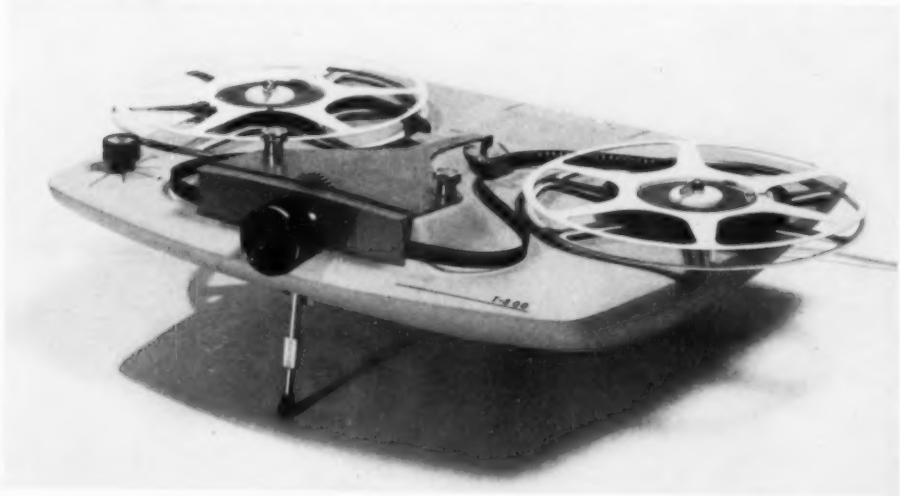


Stable effect of typewriter's flattened surface is counteracted by curved base; by Louis Nelson.



Trim form and clear visibility of taxi meter by Walter Erlebacher is a needed improvement.

Simple construction of Ernest Califano's movie projector uses film itself as a design element.



DESIGN AT WESTINGHOUSE: A CONSULTANT ASSISTS

Behind the locked doors of Westinghouse's new Appliance Design Center in Mansfield, Ohio is a staff of 34 designers whose job is chiefly to design an appliance so that it blends into the Westinghouse line and to complete its final production drawings. The department's principal job is to redesign existing products for yearly model changes, which is an appliance industry custom. But long before designs are implemented, of course, there is a program of pre-design: extensive thinking and planning—and also dreaming. And to some extent this thinking, planning, and dreaming was not done by Westinghouse.

In a company whose corporate standing is reckoned among the industrial giants, whose products are marketed internationally, and whose manufacturing, distribution, and sales operations touch whole areas of American business enterprise, a staff design department—even one with 34 men in one branch alone—cannot resolve all its yearly-recurrent design problems with maximum efficiency and minimum expense while keeping abreast, or ahead, of competition, and still afford the time and the means to anticipate all design trends. It can with outside help. And one form of such help is the enlistment of the services of a consultant design office to work with its staff department. The consultant's primary role in this bi-partite arrangement is to jump ahead a few years in order to outline, and to some extent develop, a program of advance ideas, and to give these ideas a planned direction. In the case of the Mansfield plant of Westinghouse Electric Corporation, the outside consultant chosen to perform this special function is the office of Peter Muller-Munk Associates.

This plan, to use both staff and consultant designers, is a recent innovation at Westinghouse. It is part of its new program to take advantage of the sales potential inherent in industrial design and styling—an advantage only lately fully perceived and fully appreciated by its top management. The brief history of the program goes back to a turbulent beginning.

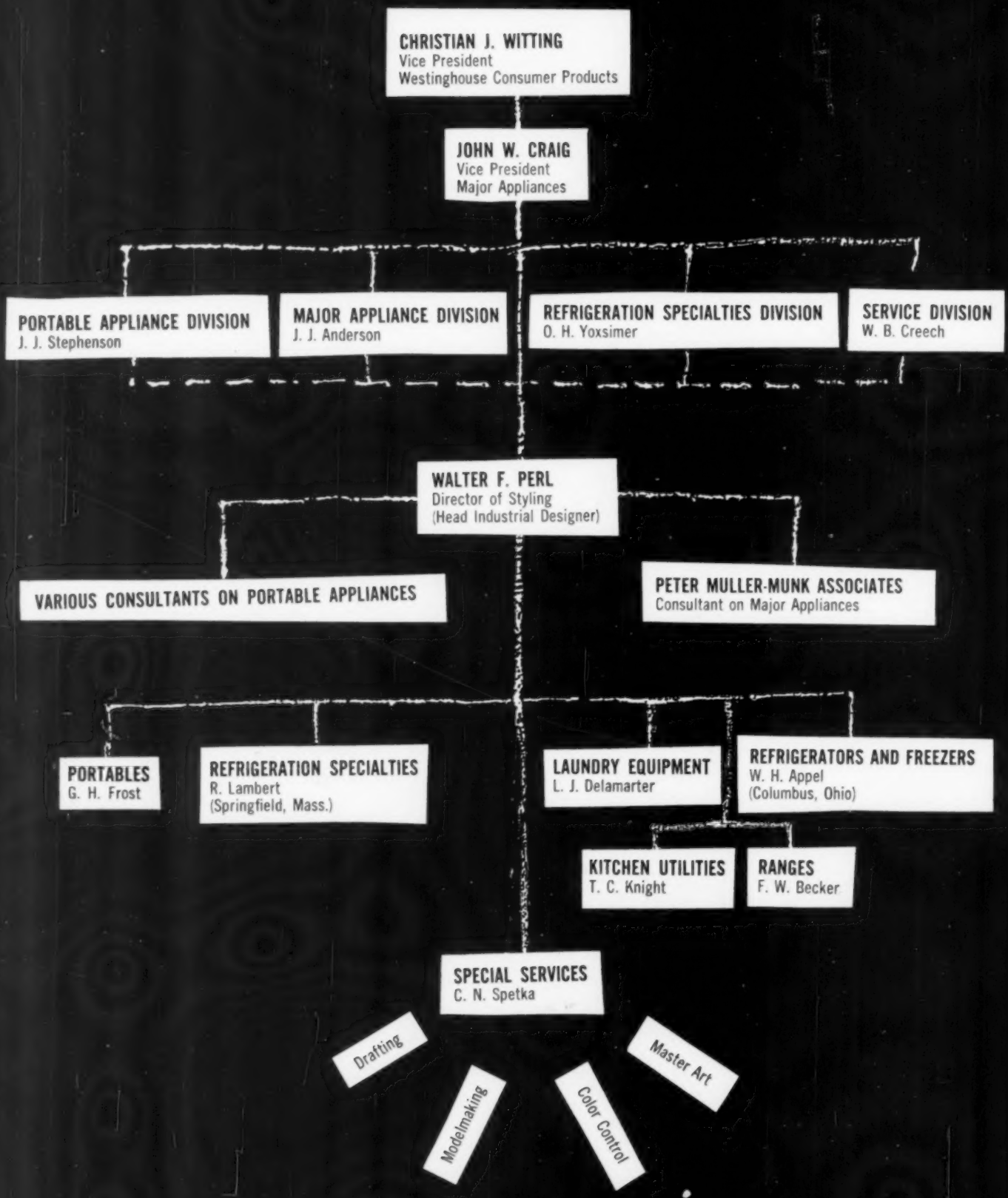
Back in 1955, around the time that Christian J. Witting was appointed Vice President of Westinghouse Consumer Products and John W. Craig was made Vice President in Charge of Major Appliances, the company faced two powerful problems. One problem was a delayed action post-war economic letdown which was unique to Westinghouse: during the two recent wars, its manufacturing costs had swelled as the military drove it to produce fast and in abundance at a time when wages and labor standards were placed at a more liberal level. The other problem was the repeated complaint of its dealers: Westinghouse's merchandising techniques were not effectively directed to the consumer, the dealers said, and research and development of new products was too slow to meet competition. These difficulties were annoying enough in themselves, but as it turned out there was more to follow. At the end of 1955 and extending well into 1956, Westinghouse suffered – and weathered – a crippling strike crisis which shut down 40 of its plants across the nation; and, to add to its economic discomfort, in 1956, General Electric, the acknowledged leader in electrical consumer-appliance sales, announced a 30% across-the-board cutback in its prices.

The shift is to consumer products

It was patently a time for decisions, and decisions that had to be forceful and supremely positive. Starting as it did from a position of comparative weakness in the production and merchandising of consumer products, Westinghouse's biggest initial decision was to shift some of its emphasis from industrial production and marketing to consumer production and marketing, without weakening the former. The appliance field is an intensely competitive one, and the competitors, almost all, are giant or near-giant corporations with, perforce, an unusually heavy background in volume

In a major consumer-product industry, the staff design department faces special and rather complex problems, including diversity, volume, and family resemblance. But perhaps the most crucial problem of all is the plan and development of future design. One solution to this problem is the enlistment of the services of an outside consultant. How—and why—this combined effort of internal design and outside consultant is effected at one large company, and how it works, is described here.

Internal staff and consultant meet at the beginning of a design program. Around the table are (left to right): Peter Muller-Munk, Frederick Hill, Eugene Barnett, W. M. Kline, Jr., Roger Protas, and F. Walter Perl. Barnett, Kline and Perl represent Westinghouse.


CHRISTIAN J. WITTING
Vice President
Westinghouse Consumer Products
JOHN W. CRAIG
Vice President
Major Appliances
PORTABLE APPLIANCE DIVISION
J. J. Stephenson
MAJOR APPLIANCE DIVISION
J. J. Anderson
REFRIGERATION SPECIALTIES DIVISION
O. H. Yoxsimer
SERVICE DIVISION
W. B. Creech
WALTER F. PERL
Director of Styling
(Head Industrial Designer)
VARIOUS CONSULTANTS ON PORTABLE APPLIANCES
PETER MULLER-MUNK ASSOCIATES
Consultant on Major Appliances
PORTABLES
G. H. Frost
REFRIGERATION SPECIALTIES
R. Lambert
(Springfield, Mass.)
LAUNDRY EQUIPMENT
L. J. Delamarter
REFRIGERATORS AND FREEZERS
W. H. Appel
(Columbus, Ohio)
KITCHEN UTILITIES
T. C. Knight
RANGES
F. W. Becker
SPECIAL SERVICES
C. N. Spetka
Drafting
Modelmaking
Color Control
Master Art

production and merchandising. Westinghouse, though one of the giants, has had, compared with its competitors, shallow experience in these spheres. Also, although technologically it has been strong, its design of major appliances has not, competitively speaking, been advanced enough, and its volume of consumer production has only been adequate to what it once thought were its needs.

With this new decision, it had to learn—and it is still learning, though rapidly—to compete with its fellow consumer-appliance manufacturers on their more tremendous scale of mass production; to improve the design of its consumer products; and to be willing to merchandise more adeptly and effectively these consumer products.

Westinghouse hires Muller-Munk

It was with the arrival of Witting and Craig on the scene that this new resolve was formulated and boldly acted on. Perhaps because Witting has in some quarters the reputation of being a cross between a businessman and a showman (he was once comptroller for the U. S. O. and later became managing director of Dumont Television in Pittsburgh), and perhaps because he is one of the youngest executives to fill his top position, part of his influence at Westinghouse has been of a peculiarly intangible kind but highly desirable for this situation: enthusiasm—a contagious enthusiasm which seeps down through the strata of the organization. At the same time, Vice President Craig, prompted by his head industrial designer, Perl, contracted for the services of Peter Muller-Munk Associates. It might not be too much to say that Witting's personality and Craig's decision alone probably account for some of the new changes in attitude in the corporate structure of Westinghouse.

As a continuation of his new program to strengthen the position of consumer products at Westinghouse and to emphasize the importance of design, Witting stated last year:

"The electrical industry's economists say that by 1973 householders will be using more power than industrialists. If that happens, homemakers will have to use many more appliances and communication aids... and [for this], manufacturers of things electrical for the home can't afford to overlook the importance of industrial design...." In connection with this last, he pointed out that while most consumers have had several cars in the past ten years, few have had more than one refrigerator. "Why the difference? Because in cars, the consumer is acutely style-conscious. Electrical manufacturers must make him feel the same way about appliances."

As optimistic as it may sound, the first result of the collaborative effort of the Muller-Munk office and the Mansfield internal design department has been to put Westinghouse back in the design running. But it has had another result, and an equally important one, and that is a heightening of the appreciation, on the part of Westinghouse, of industrial design as a potent competitive tool.

The design department at Mansfield has in the upper echelons of its staff of 34 men, seven managers, one fellow industrial designer, four industrial designers, five associate industrial designers, three junior industrial designers, and twelve specialists. The man who directs the design function is F. Walter Perl, who left his own industrial design office in Mansfield to join Westinghouse in 1941. Perl, aside from being greatly instrumental in increasing the importance of the design department, was chiefly responsible for persuading top Westinghouse management to eliminate the confusion caused by engaging the services of several outside consultants. It was for this reason that, in Major Appliances, he proposed that only one consultant be used. And since the work of the Muller-Munk office, in designing the "square look" refrigerator, had proved satisfactory to Westinghouse, they were his choice.

By contrast, the Muller-Munk office is a David to Westinghouse's Goliath (although the analogy stops there): working on the Westinghouse account there are three men and their assistants, all of them under the supervision of the project director, partner Raymond A. Smith.

The relationship of consultant to staff

As this collaboration is set up in theory, each group has its own particular job to do. From the company's point of view, Richard J. Sargent, Vice President of Marketing for Consumer Products, describes it in this way:

"The arrangement works out successfully because each group's job is explicitly delineated. We expect staff men to design for the current line, dovetailing the ideas of the consultants and at the same time maintaining an awareness of the immediate future. We look to the outside consultants for advance design thinking, for study and interpretation of trends, for information on changes in ways of living that we may capitalize on."

Although it is true that "each group's job is explicitly delineated," it would be somewhat superficial to attempt to draw too strict a line by way of neatly dividing the func-

First step: review of drawings and mock-ups from past development programs. Design objectives are outlined and timetables tentatively established. Shown at this consultation are: Eugene Barnett, W. M. Kline, Jr., Howard Anderson, F. Walter Perl, Roger Protas, Frederick Hill, and Peter Muller-Munk. The actual design development program gets underway.

tions and duties of one group as opposed to the other. Both the internal department and the outside consultant have common areas of planning and design, but what distinguishes each group is its area of emphasis.

The Muller-Munk Associates' primary responsibility is to provide a motif, or visual theme. The motif of an appliance design, aside from determining the extent and nature of major retooling, creates a continuing design unity to succeeding models of an appliance. However, while it is working on this, the Muller-Munk office also contributes ideas to the line of appliances that the staff men at Mansfield are currently concerned with. That is the theoretical relationship; but it also, to some extent, works the other way round: while the internal staff is working on the current model of an appliance, it is at the same time accumulating ideas for advance designs of that model, and these ideas are submitted through the department heads to the consultant for its consideration and possible inclusion in the next motif. It is precisely this interchange and mutual stimulation of ideas that keynotes the basic pattern of the relationship.

A step by step outline of the various stages involved in a design problem with Westinghouse would in this pattern be necessarily broad because the consultant deals with three or four areas of different products (refrigerators, ranges, laundry equipment, and dishwashers). The first step is a meeting between the consultant designers and the staff department to review product planning charts and mock-ups of ideas resulting from the previous long-range development program. Design objectives are outlined, and tentative timetables established. Once this has been accomplished, the actual design begins.

At the beginning of a program, the Muller-Munk staff in Pittsburgh is briefed on the over-all project, and then split into three task forces: Refrigeration, Range, and Laundry Equipment. At the head of each of these groups is an associate designer. Roger Protas supervises development for Refrigerators and Freezers, Howard Anderson for Ranges, and Ernst Budke for Laundry. The work of the three men is coordinated and supervised by Muller-Munk partner Raymond A. Smith.

Design begins

The preliminary stage of the development at the consultant's office allows the designer's imagination freedom to suggest a wide range of possible solutions. Generally, he is guided by the objectives agreed upon, such as the tentative budget allowance, but effort is made not to restrict him. Smith encourages the designer to be flexible and to question everything, to come up with ideas which have a more or less logical reason.

Rough sketches are made, and the most promising ideas are selected for further development. In designing for the appliance industry, the transition from sketch to mock-up is a swift one: mock-ups are put up almost at the very outset of a design program. They are generally constructed of paper over wood frames, with metal foil to simulate chrome

Raymond A. Smith, standing at center, discusses project with the men who work under him. Left to right, Protas will take refrigerators, Anderson ranges. Partner Parisson stands at left.

Mock-ups are put up early. Refrigerator mock-up undergoes first of many critiques. Shown here are Howard Anderson (standing) and Ernst Budke, designers at the Peter Muller-Munk office.

trimming, or any material that would be easy to fix in place, or untack, change around and put together again.

Critiques and consultations

As the ideas begin to take shape, the consultant calls meetings with the Westinghouse departments concerned. These meetings are held with only one division at a time, and usually include the engineer of the department, some representative designers from the Westinghouse staff, and the product planning manager. (There is a product planning manager for each division at Westinghouse and he acts as liaison between design, quality control, sales, engineering, manufacturing, tooling, purchasing, advertising, and home economics. He reports to his division head.) These presentations of ideas to Westinghouse result in a further narrowing down of direction, while at the same time the number of people present at succeeding meetings grows steadily. All suggestions are honored from all staff men. And, sensibly enough, since they are dealing with household consumer goods, staff designers are free to have their wives attend those meetings at Westinghouse that are in the nature of a design critique. Engineering begins to run comparative piece and tooling costs, production people study methods involved, and the division managers tentatively approve fi-

nal direction. At this point, a totally coordinated presentation of work for all the divisions is submitted to John Anderson and John Craig—respectively the division head and the vice president of Major Appliances.

Meanwhile, final mock-ups have been prepared by the Muller-Munk staff for each product category, along with diagrams indicating possible stepping down of designs—starting from the deluxe models and going to the stripped. The consultants make no attempt to style models within each product group: their goal is to provide a satisfactory —and adaptable—motif for each of the categories, with suggested applications for each model.

By this time, cost estimates have been reckoned and production methods resolved, and Craig, who has final say, either accepts, rejects, or calls for modification.

Usually, of course, some modification is necessary, and, as they are required, they are constructed and incorporated in the mock-ups for Westinghouse's final approval.

For the outside consultant, the last step in this process is the turning over of all mock-ups and working drawings to the internal design staff. The staff relates the motif and general concept to all the other models in each line of appliances. During this phase, there is a particularly close collaboration among the company engineering department, Westinghouse management, and the Muller-Munk office.

As they become necessary, engineering test models are prepared, and the definitive mock-ups of some hundred models constructed. Engineering details and assemblies are worked out at Westinghouse, as are final costs. The design is then released for tooling and production.

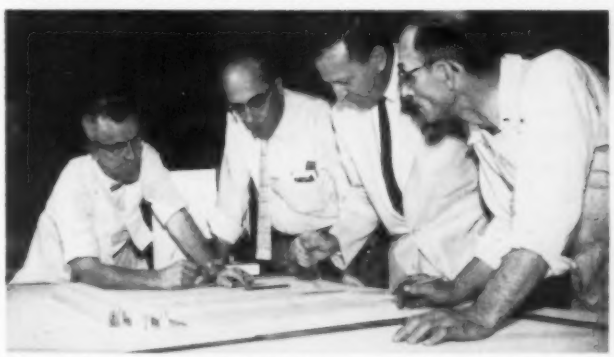
There are for Westinghouse some advantages implicit in this arrangement. The establishment of a motif, for example, determines the design direction for a sequence of years. The Muller-Munk office feels – and Westinghouse agrees – that management is therefore more able to make logical decisions with respect to current designs and can also more accurately budget present and future tooling expenditures. And this procedure would tend to insure each year's design as part of a pre-determined evolution based on long-range marketing, tooling, and product concepts.

Consultant's responsibility to management

Part of Muller-Munk's responsibility is to devote a substantial amount of time to meetings with Westinghouse's staff designers and engineers in order to pull ideas from the long-range development and planning area back into current projects, wherever they are suitable. Thus, the planned evolution can enable Westinghouse to come out with the most advanced ideas at its disposal at the earliest possible time.

Another service the consultant performs is to help coordinate the numerous products manufactured by the Major Appliance Division, so that a strong family resemblance across all products is achieved and maintained, and so that new ideas and techniques can be brought to the attention of engineers for all products. Because it is the consultant's function to be concerned more with basic approaches and

Left to right, consulting with Barnett of Technical Section of Appliance Engineering and Kline (Custom Kitchens) is Protas.



Range development at Westinghouse. Studying drawing are, in the usual order, H. Marshall, C. Spetka, F. Becker, E. Taylor.

Donald Behnk, associate designer at Muller-Munk, makes last minute inspection. Mock-up now goes to internal staff for styling.

All design roads of the Muller-Munk office lead to Westinghouse's Perl

trends in the market than with the more purely technological aspects of an appliance, it can at times provide the management with perspective: in a large and complex organization, it is the outside consultant who is less likely to lose sight of the advance design forest for the current departmental trees.

Although in theory the internal staff and the external consultant are assigned their separate functions, the relationship as it works out in actual practice is so intimately close that Smith and his men sometimes find themselves thinking they are a part of the Westinghouse structure, and Westinghouse designers tend to regard the Muller-Munk staff as an extension of their internal design department. This feeling is fostered by the fact that either Westinghouse or Muller-Munk Associates can call collaborative development meetings to discuss ideas which affect the direction of a program. The benefit of these frequent meetings is that as a program is pursued, each group fully knows what the other is doing and thinking, not by channeling each other routine progress reports, but by being physically present at the innumerable consultations and critiques at which new ideas are considered.

Generally, all design roads of the Muller-Munk office lead to Perl, who, though he is called Director of Styling, is Head Industrial Designer at Mansfield. As a consequence, Perl is constantly aware of all plans and all phases of development. Where expedient or necessary, Perl may give Smith the go-ahead to work directly with internal designers and engineers. And since the internal designers and engineers are also free–and encouraged–to do "daydream" or "blue sky" design, the Westinghouse group and the consultant group glean ideas from each other for use in stimulating one of the company's most important design activities, its advance thinking.

Design creates technology

Perl expresses a succinct view of the industrial design profession: "Industrial design is both the tool and the creator of modern technology. Modern technology employs industrial design to make more attractive, functionally efficient, and saleable products. And industrial design, in striving for and achieving these goals, literally creates new technology. Industrial design is change, not stagnancy, as life itself is change."

Smith, whose views are usually thoughtful and responsible, thinks of his team arrangement with Westinghouse as something exciting: "Our responsibility to Westinghouse in relation to major appliances offers one of the most stimulating areas of activity in our profession today. This is not primarily as a result of important contributions we may have made for a more exciting next year's line, but rather as a result of a pattern that is being indicated for the future of major appliances. In these appliances, there will be conveniences undreamed of by today's housewife; but they are no longer in dream areas for the industrial designer.

Experiment in thermo-electrics — a hostess cart: refrigerator with oven on top. Acting manager W. H. Appel examines panel.

A carefully coordinated program is now under way which will make possible the introduction of some of these new concepts within the next two years."

To this he adds regarding the internal staff he deals with: "The most crucial single factor in our Mansfield design operation is total, and equal, cooperation."

Peter Muller-Munk concurs in this opinion, and feels that his office represents the homemaker before Westinghouse management. "In the old days, the manufacturer forced the homemaker to use an appliance the way he built it. Now homemakers call the turn on manufacturers – through designers. And a consultant, with his research, is well equipped to represent them to the manufacturer."

In Muller-Munk's concept, the consultant designer "works with the staff department to help the corporation establish design leadership. It's his very special job to alert his manufacturer to changes in living habits and to have him ready for a new market as soon as it's profitable to cultivate it."

To illustrate his idea of a consultant designer's responsibility to his consumer-appliance manufacturer, he states: "The emphasis on the single appliance as a unit in a home is pretty much over. We must start to design for an entirely new industry. We must concern ourselves increasingly with the design and organization of fully integrated kitchens and with the many complex problems of the gradual evolution of this idea in terms of both replacement and the new–and

Westinghouse staff design conducts new experiments in thermo-electrics

"Bottle Warmer 'n Cooler." Cools at 40°F., warms up to 100°. Present at this critique: designers Long and Lee, director Perl.

growing home market."

The mutually beneficial influence of the company and the consultant extends beyond the realm of the drawing board and the mock-up: they apparently even think alike. If Muller-Munk says that his office is starting to think of a new home market with its new products and many problems, Witting cites some of those new products. At the openings of the 26th National Housewares Manufacturers Association convention in Atlantic City early this month, he listed, among other things that Westinghouse design is experimenting with, a combination electric heat-and-cooling blanket; a portable refrigerator; combination freezer-cooker; and a hostess cart refrigerator-oven.

Westinghouse's new thermo-electrics

These items were designed and engineered purely by the internal staff, and one of the more interesting ones is the last. Designed by Perl's group, this appliance is an enclosed four-wheeled serving cart, the central portion of which is a refrigerator and the top a warming oven. Still in the experimental stage, this and the other new products will not be marketed yet; Westinghouse is using them to dramatize the break-through in thermo-electrics as an important field for new products, and a field that will certainly call for more ingenuity on the part of the designer. "We clearly foresee the day," said Witting, "when thermo-electric cooling will replace the conventional compressor as a 'cold-maker'. When that happens, what we know as a refrigerator will be broken into components of various types of cold storage drawers, cabinets, and closets around the kitchen and in other rooms, wherever their particular function is required."

The 1958 line was the first to feel the influence of Westinghouse's new shorter retooling period. The major retooling period used to be between five and seven years and has recently been made two to four years as a part of management's strategy to make consumers appliance-style-conscious. With the development of new materials, notably plastic, retooling could some day be shorter still.

Witting, who sees the refrigerator as an evolving product, and thinks that the designer will have a lot to do with widening its sphere of usefulness, cites as an example of a new material with potential a new plastic-sandwich type of construction for built-in models. The sandwich is polyesterene and Fiberglas as one layer, a 3" Dow styrofoam layer on the inside, and a layer of polystyrene. The new plastic construction promises to lend itself ideally to production of small quantity runs heretofore too costly to be practical. The material is already being used in built-ins where limited quantities previously forced manufacturers to amortize tooling over several years with little or no model change possible.

Says Witting: "No one has been able to develop completely different types of refrigeration design because literally tens or hundreds of thousands of models have had to be produced by a given set of tools before they could be amortized while the product was kept priced competitively. With the new plastic, our designers show that it is possible to build a few hundred or a few thousand refrigerators of one model, quite different in design from traditional ones and still priced competitively."

The 1958 line was also the first completely coordinated line of consumer appliances produced at Westinghouse, and was the first result of the collaboration of the internal staff and the outside consultant. The success of the combined effort is demonstrated by the fact that the Muller-Munk office was in the beginning assigned only the refrigerator, but before the program was completed, Westinghouse asked the consultant to design the prototypes of all the appliances in its Major Appliance Division.

The relationship becomes less intimate

But because the 1958 and 1959 lines have seen service as a pilot operation, the relationship in the future will not be as intimate as in the past. Having established the pattern of the operation, the consultant will now need only to suggest the direction of a design program and lend occasional guidance to staff men as they proceed with a given current line if they should desire it. As new as the collaboration is, the first fruits have been borne. Both sides seem pleased with the results.

DESIGN REVIEW

What's happening in the gas industry? Perhaps the most spectacular answer (and one reason for posing the question) is the Teague-designed gas appliance wall shown below. But it's not the whole story. With the development of automatic controls and some significant product improvements, the industry has something to sell besides the low cost, speed—and now, the natural abundance—of its fuel. Straws in a high wind: AGA's $4.5 million promotion budget; Whirlpool's new commitment to gas; and cries of alarm from the electric industry.

Section of steel counter of Gas Wall forms broiler door, swings out and down as broiler glides forth. Above: Inner door to water heater contains second, smaller door which gives access to temperature controls.

The gas appliance industry is a curious one. Composed of scores of small firms (there are 78 different makers of ranges alone), it is led—even inspired—by the utility companies. For them, the phenomenal growth of natural gas has been a spur to product development, research (into air conditioning, for instance) and promotion. AGA's $4.5 million promotion budget has, in fact, so jarred the electric industry (whose own budget is just half that) that men like GE's Charles Rieger have been prompted to state that the electric industry is in danger of being pushed off the map by a resurgent gas industry.

Such is the context of Whirlpool's newsmaking decision to buy the Servel plant and thus put a gas refrigerator back on the market—a decision encouraged by utilities' assurances of orders amounting to about 150,000 units during the next three years. (Now there is talk of a gas refrigerator from Norge as well.)

Whirlpool's new role as a full-line gas appliance maker is something of a *coup* for the gas industry, which is delighted to have at last a giant in its midst—and to have perpetuated the concept of the all-gas kitchen, which was threatened by Servel's demise.

The Multimatic Wall, designed by Walter Dorwin Teague Associates for the American Gas Association, expresses this concept in a complete package, aimed at the lucrative builders, market. Milton Immermann, a partner in WDTA, surveyed a group of large-scale builders to learn what appliances they would want in a package—if one existed. The prototype shown here, which took two years to develop, is based on this survey, but it goes a great deal further, and indicates some of the advantages that can be obtained by designing gas appliances as one unit.

Most notable is the fact that no chimney need be built, for unit has a special, self-contained, sealed venting system, which draws all air—for both combustion and cooling of unit—from outdoors, and vents waste gas through the same outside terminal.

The wall, which is shipped and installed as a unit, can replace an interior partition; and, since it includes two appliances usually found in the basement or utility room, these areas of the house could be eliminated or reduced. For the homeowner, the fact that all appliances can be serviced or removed from the front of the wall will be a boon.

What the wall contains, in a space 10′ wide, 8′ high and 33″ deep, are: 1) oven and broiler; 2) five foldaway burners, with a special safety device engineered by WDTA and AGA which shuts off gas when burner is folded back, re-lights it when burner is lowered; 3) washer-dryer, whose controls are safely concealed behind panel next to oven panel; 4) water heater; 5) refrigerator; and 6) warm-air furnace, which lies within upper storage compartments. Wall provides 18 cubic feet of storage space, and plenty of leeway for builders' or owners' preferences. Thus, a sink and dishwasher are omitted for flexibility of kitchen arrangement (and for simplified installation); certain appliances may also be omitted, or others substituted.

To make the point that such a wall can be an immediate reality, WDTA used currently available appliances — with modifications. The washer-dryer had to be set 2″ into the floor to conform to counter height; the refrigerator (WDTA would have preferred a wall-cabinet type) was raised a few inches to permit air circulation below, and make lower shelves easier to get at. It also got a new Teague-designed door.

Yet, this prototype is only a beginning; for while WDTA were designing it, they were also developing two alternate and radically unconventional systems, in which the gas used is darkly alluded to as the "source of energy." Thus, the Multimatic Wall, and the appliances shown on the following pages, may prove to be the sign-posts of a resurgence that is yet to come.

B

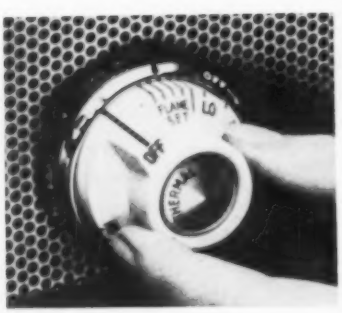
C

A

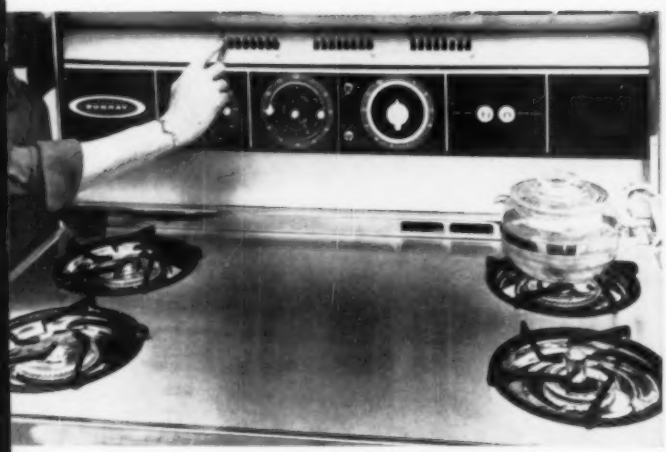
D

F

E



G H



Kitchen appliances:

According to designer Montgomery Ferar, gas appliances may surpass electric ones in time. Certainly the development of automatic controls enhances gas's traditional virtues of speed, efficiency and "infinite" setting; and now that ranges have annexed the griddle and the rotisserie, there seems little left that the electrics can call their own.

Latest control, by Robertshaw-Fulton **(E)**, regulates flame height to size and material of pot; sensing head, in contact with pot, automatically controls food temperature. Other controls time ovens, signal "doneness" of meats, time even the appliance outlets many ranges include.

Conventional burners have been newly designed to give anything from a tiny simmer to a super-hot flame. As used on ranges by Tappan and O'Keefe & Merritt, they release flame through an encircling slot instead of portholes.

All gas appliances now have an automatic safety control: if pilot goes out, gas shuts off. Automatic oven ignition, already common, will next year be an AGA requirement.

The longevity of the gas range (with no moving parts to wear out) has turned out to be a sore spot with manufacturers. To hasten obsolescence, therefore, their "glamor" features grow yearly more complex: one range now offers a contrivance which is at once a range-top rotisserie, a vertical broiler, and an automatic griddle.

O'Keefe & Merritt's new "Satellite" range **(A)** flourishes a triple rotisserie, a meat probe, a fifth burner under its griddle, and a new power broiler-height adjuster.

Calculated to dramatize the new virtuosity of the range is the styling seen, for example, in Tappan's "Revelation" **(F)**. Designers Smith, Scherr & McDermott have invested it with an elegant control panel poised against a concave backguard; and, with thought for the hand as well as for the gas cock, have turned unwieldy knobs into slim finger grips.

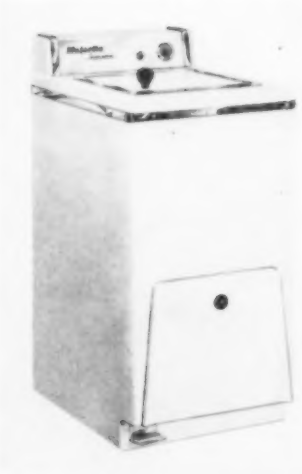
On the other hand, a range which hasn't been redesigned in years is the Chambers **(D)**. Its stately contours would intimidate anyone thinking in terms of a TV dinner—but they are the direct expression of the way it works: by retained heat. Thick insulation, cast-iron oven doors, and a vent that shuts when gas is turned off seal in heat; a half-hour of gas does three hours' cooking. Chambers has long had a range-top broiler and griddle; what it has added, in acknowledgement of progress, is a thermostatic burner and automatic oven ignition. For safety, thumb keys come off to lock range against inquisitive children.

At the opposite extreme, this year has seen the introduction of what might be termed the electrically-operated gas range. It is Sunray's push-button model **(G)**, which can even offer remote control, thanks to its solenoid-operated burner valves a system already familiar in oven timers.) Read Viemeister was design consultant.

Tennessee Stove's new drop-in surface unit **(H)** with a depth of just 3", can be set over a drawer. Since controls (with vents) are mounted on top, installation requires just one cut-out.

Automatic controls, plus gas's efficiency for clothes drying, account for its new share of the dryer market: about one third. Many, like Easy's Regent **(C)**, are made to team with electric washers.

Whirlpool's first gas refrigerator **(B)**, with the automatic ice maker acquired from Servel, attempts no more than a face-lift of the Servel box. Real change is expected in three years, when Whirlpool will have redesigned the power unit so that gas and electric refrigerators can run on one production line.



A

B

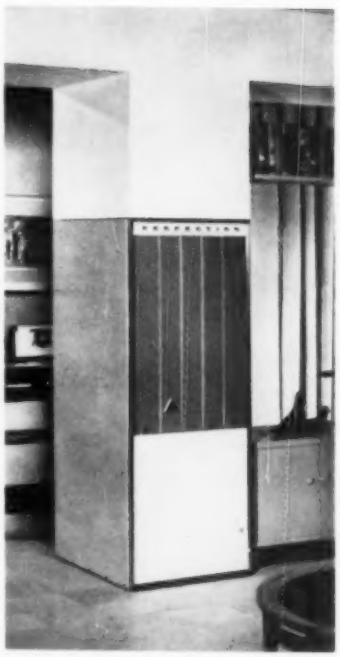
Service appliances:

A notable development this year was the smokeless, odorless incinerator. Home incinerators answer the problem of poor garbage collection; but, used en masse by a community, they may pose another one: air pollution. The new incinerators overcome this with a system of double burning which consumes waste gases as well as garbage. Drawing **(C)** shows how gases, released from burning refuse in first compartment, are forced between heavy baffles to pass through flame of after burner before they can escape. (Operation varies somewhat with each maker; the one shown is from Locke.)

Besides automatic timers, most models offer other conveniences, like the foot pedal on the Majestic **(A)** or the concealed controls on Caloric **(B)** behind small door. Both make display a kitchen-conscious styling which might prove deceptive, for incinerators, unlike other gas appliances, require brick or masonry chimneys — which could rule out kitchen installation.

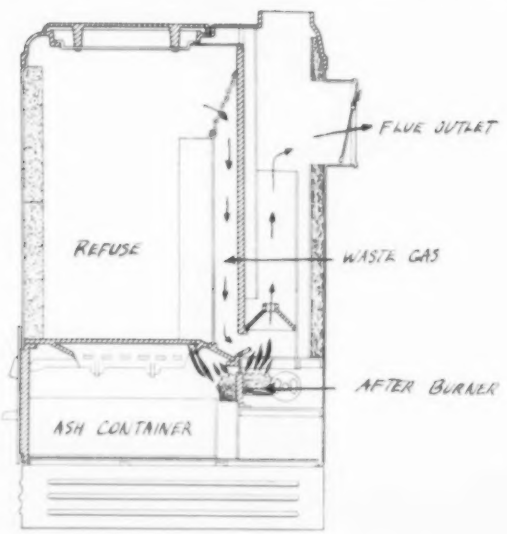
The chimney is vanishing, however—at least from room heaters. New heaters like the Safti-Vent by H. C. Little Co. **(E)** vent directly through the wall, using a sealed combustion chamber that works on outside air.

Probably the first furnace to stand in anyone's living room is the Perfection **(D)**, which achieves this status through special insulation and hidden duct work. It features automatic air flow control and has a three-stage gas fire. Designed by Smith, Scherr & McDermott for Hupp Industries.



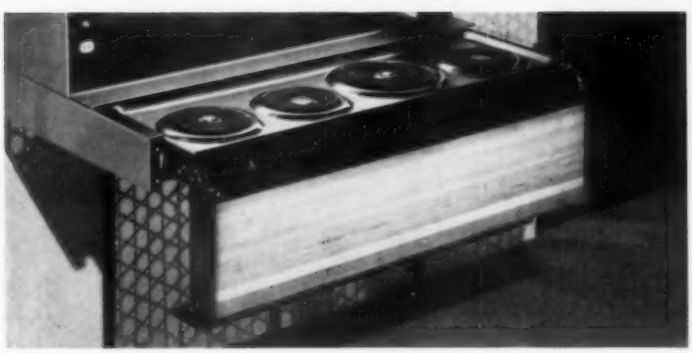
D

E



C

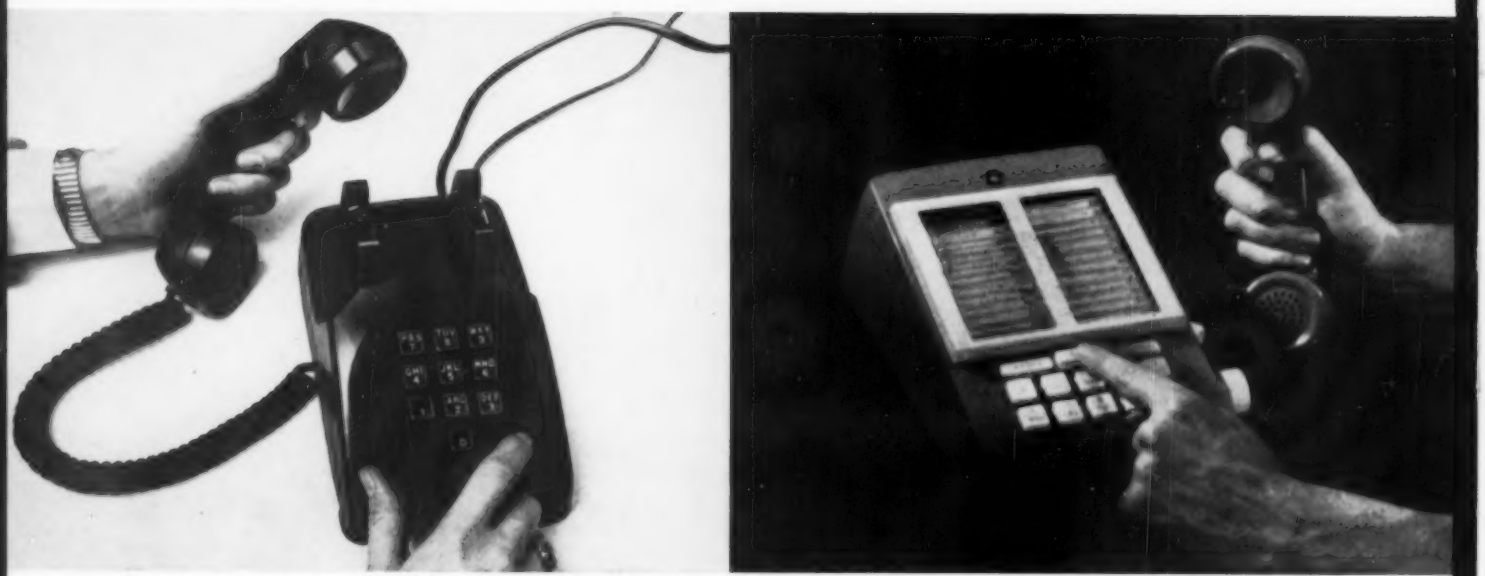
Meanwhile, the electric range becomes . . . the built-in that isn't



While gas range makers hasten to catch up, electric ones keep moving ahead. An example is the new wall-hung unit from Tappan, which combines the look of the built-in with the compactness of the range.

Designed by Smith, Scherr & McDermott in conjunction with Tappan's product development director, Tru Clark, the "400" is an imaginative reinterpretation of range space in terms of the horizontal dimension: in this case, 40". Key to their solution is, of course, the sliding burner counter, which maintains unit's flush look when closed, but opens out far enough for burners to clear oven. (An automatic shut-off disconnects current when they are slid back.)

Range's two ovens (a 21" one and a 12") presumably overcome the limits of a mere 15" depth by taking full advantage of their width. Thus the rotisserie, for instance, is mounted parallel to door, and engages automatically when tray with spit is slid into oven.

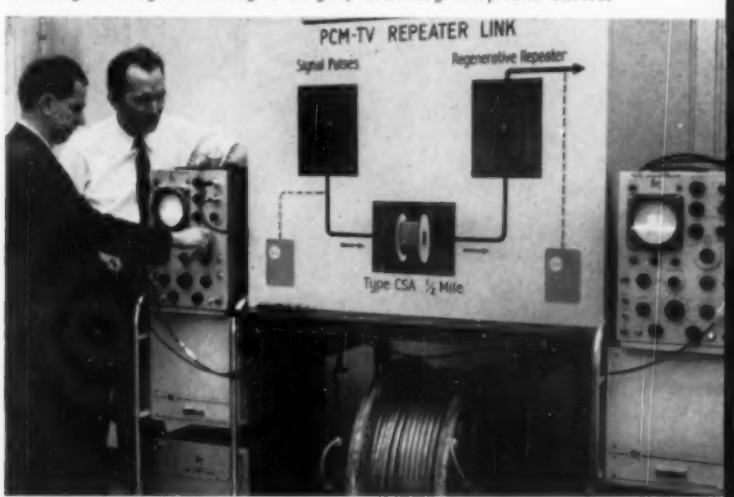


Bell's model of an experimental transistorized telephone instrument (left) uses push-buttons in place of conventional dials; telephone numbers are pre-set in trial telephone instrument (right) and automatically dialed by pushing appropriate button.

Technics

Bell introduces experiments at transistor birthday party

PCM (pulse code modulation) is new experimental theory for increasing message handling ability of ordinary telephone cables.



The pictures on these pages demonstrate the current status of transistor application in experimental communication products and electronic circuit research. The spirit in which these are being presented is commemorative—the transistor is ten years old (see ID August 1957 for full coverage on the transistor), and to celebrate its birthday Bell Telephone Laboratories entertained reporters and editors at their Murray Hill Laboratories, Murray Hill, N. J. The guests were addressed by Dr. M. J. Kelly, President of Bell, Dr. W. J. Pietenpol, director of development, semiconductor devices, Dr. J. P. Molnar, Vice president, military developments, and Dr. J. A. Morton, director of device development. The speakers discussed the transistor's brief history and its future. During a tour through the laboratories, new products and technological developments made possible by semiconductors (transistors and diodes) were demonstrated. Some of these are shown here.

The research projects discussed during the laboratory tour and the models of new products exhibited in the auditorium backed up the statements and predictions made by the speakers. Before touching on the contribution of the transistor and diode to the wide range of electronic products, Dr. Kelly pointed out the products and services that resulted from the transistor's predecessor, the electron tube. He stated that, "Until the advent of the transistor, the electron tube had no competitor for implementing this vast range of electronically based services. The transistor gives promise with time of replacing the electron tube in a major portion of the facilities that provide these services. It will materially extend the areas of coverage of these established services and will be the driving force in the creation of many new facilities and services, some of them yet undreamed." These, and other predictions made by the speakers, are based not only on the spectacular achievement of the transistor in its ten-year life-span (90,000,000 semiconductor devices were used last year in computers, radios, hearing-aids and in many industrial and military electronic systems) but mainly on the characteristics inherent in the device. These are: small size, low power for operation, indefinite life. Two factors have kept the transistor from replacing the electron tube in all applications: distortion at very high frequencies, and manufacturing costs. But it was the conviction of the speakers that further maturing of this new technology will bring with it reduction of manufacturing costs to a point well below the level of corresponding electron tubes.

The new devices

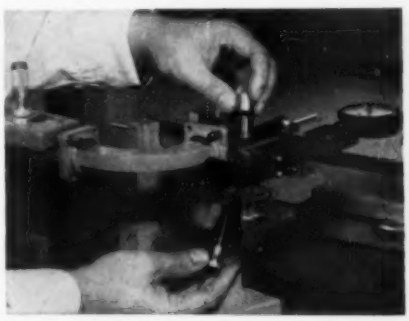
Various new telephone instruments using transistors are now under study at the Bell laboratories. The trial model of a new electronic telephone instrument (far left, opposite page) contains transistor circuits for both speech transmission and tone ringing, and replaces the conventional dial by push-buttons. The instrument shown next to the experimental telephone is a transistorized automatic dialer. A list of some fifty frequently called telephone numbers is pre-set into the dialer; pushing the corresponding button automatically dials the number from the list.

A transistorized telephone equipment used on rural telephone systems, is shown at right (top) on this page. Providing adequate telephone service to rural areas has long been a difficult problem facing the telephone industry. It is being solved to some extent by the use of transistorized plug-in units at sending and receiving terminals; (transistors are used here to amplify and regulate the signals).

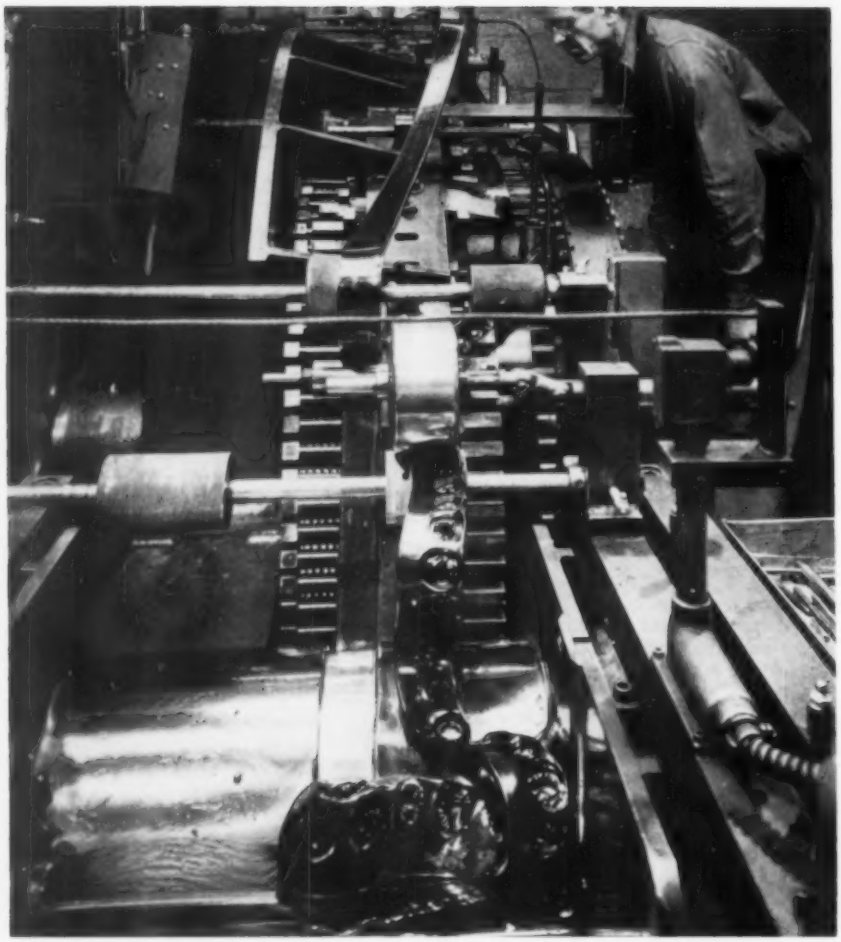
Further research in communications circuitry was also demonstrated. Pulse code modulation (bottom picture, opposite page) is being explored to increase the information handling capacity of conventional telephone cables. Using this transistorized system, it may be possible that a single pair of cables will handle 176 telephone conversations simultaneously, or that seven pairs will carry a complete tv signal. The low noise amplifier (bottom right, this page) uses diodes as the active element for amplification of microwave signals. The very low noise of this new device will greatly improve the performance of radio receivers used in radar, radio astronomy, and u.h.f. tv systems.

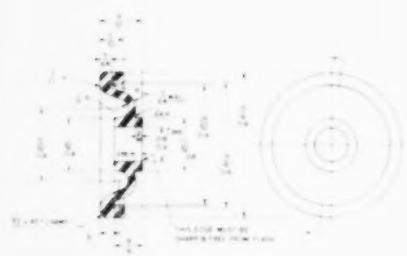
One of the high points of the transistor-day festivities was a short luncheon address by Dr. W. H. Brattain, who with Dr. J. Bardeen and Dr. W. Shockley was a co-winner of the 1956 Nobel Prize in physics for the discovery of the transistor. Dr. Brattain pointed out that a major breakthrough in technology is generally stumbled upon, not planned, and cautioned against favoring planned experiments.

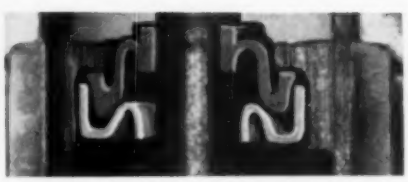
Plug-in transistorized units at rural terminals have increased phone service.



Diodes are used as active element in a new low noise amplification system for radar.







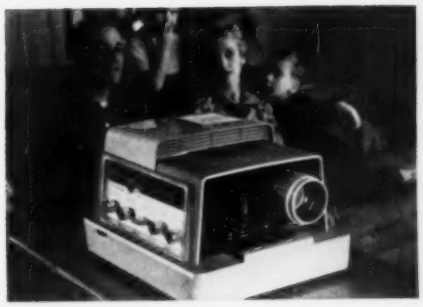
Molded rubber parts are manufactured by an automatic process

The Ohio Rubber Company is mass producing rubber parts by an automatic process that offers production and product features not obtainable with earlier methods. At their Stratford, Conn. plant, the company has installed new equipment for continuous molding of precision rubber parts that can be turned out in runs as high as 200,000 pieces per day; the continuous automatic rubber molding machine shown above, can be manipulated by a single operator. The process can be used to mold natural as well as synthetic rubber, but it is not yet equipped to handle any but high grade compounds — low grade compounds require a curing time too long for the current operation cycle of the automatic machine. It is mainly for that reason that the process has so far been used exclusively for molding such precision industrial parts as precision seals for automotive shock absorbers, electric condenser caps, aerosol container valve parts, etc. But when the operation method will be adjusted to accommodate low grade rubber compounds, it will be able to form parts for less specialized application, including such consumer goods as toys.

The continuous operation cycle of the new machine runs in this sequence: the job of the operator is to keep the machine supplied with the rubber compound, and to remove the finished parts. The rubber is loaded onto plasticizing rolls and automatically fed into the rotary molding portion of the machine; individual molds mounted on a rotating wheel automatically take the amount of material they need, carry it through the molding and curing stages, discharge the finished parts into containers, and return for more rubber stock. Molding time, temperature, and pressure are variable, but remain under precise automatic control for each operation. The process can maintain a fairly high dimensional tolerance. Plus or minus .005" require no special adjustments, but it has been possible to produce parts to a plus or minus .002" tolerance by adjusting the present set-up. Because it offers this kind of precision, the method is best suited to small industrial parts which are functional and consequently require dimensional accuracy and consistency in material quality. A typical product manufactured by this method is the fuel pump part shown in cutaway above. The dimensional drawing of the part (above) illustrates the shape complexity and dimensional properties obtainable. The tooling costs for this equipment are high. It would take quantities of approximately a million pieces to amortize tooling investment.

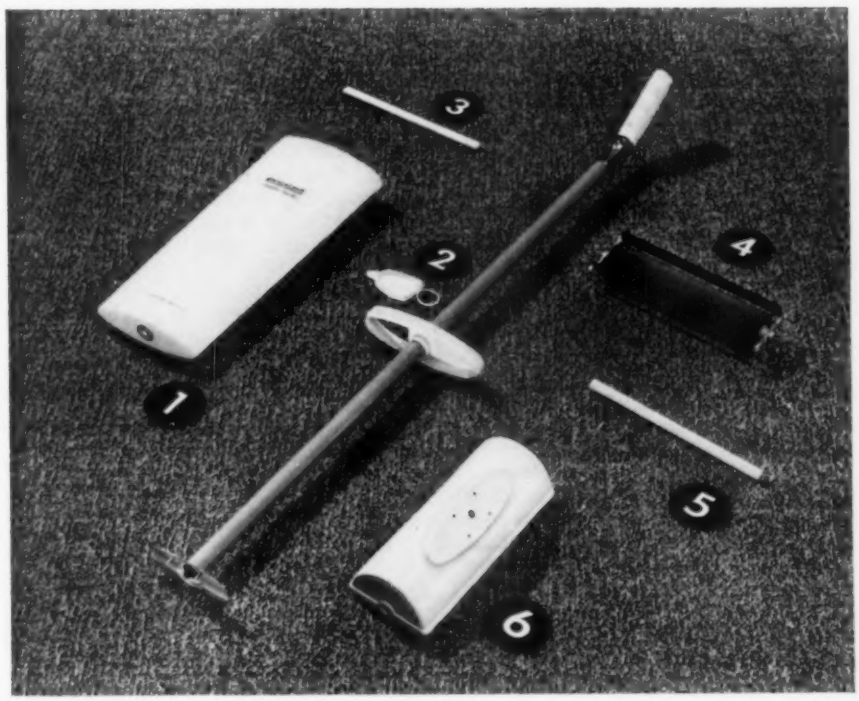
Although the automatic operation of this new process offers a considerable cost reduction, its most unique feature is the single-cavity self-registering mold used in the process. Advantages of this type of mold were evident before, but its use in conventional methods has been too costly due to the low production rate per machine-hour. Combining this mold type with automatic production has made possible the high precision, product variety, and low cost for large runs, all of which are offered by this new production method.

Although parts are turned out automatically, inspection of each separate piece is still done manually (or visually) at the Stratford plant. Before the finished parts are discharged into shipping containers, they are fed past two inspectors (top picture.) Manufacturer: Ohio Rubber Company, Stratford, Conn.



VERSATILE STYRON 440M was used for the top cover and slide holder of this handsome slide projector. Its outstanding moldability permits thick side walls and extremely thin separator sections for the slide holder. Other characteristics of 440M include heat resistance, high impact strength and a wide range of colors. The crystal clarity of Styron 666 allows second surface finishing on the escutcheon, and its easy flow reduces weld lines to a minimum.

Dow plastics bring your design ideas to life!

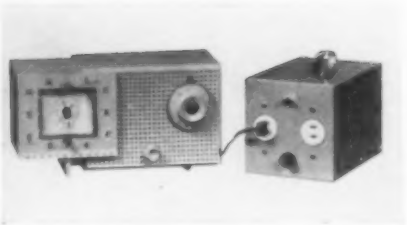


FOUR DIFFERENT Dow plastics were used in this modern, functional rug shampooing appliance. Styron® 480 was selected for dimensional stability and extra high impact strength. Attractive finish, chemical resistance and imperviousness to water made Styron 475 a good choice. Ethocel® was used because of its super impact strength and glossy finish. Saran was selected for the bristles because of its ability to maintain stiffness, its resistance to chemicals and water absorption.

1. TANK Styron 475 2. TANK COVER Styron 480
3. DISTRIBUTOR STRIP Styron 480 4. BRISTLES Saran
5. APPLICATOR AXLE Styron 475 6. APPLICATOR HOUSING Ethocel

The list of designs like these—with Dow plastics improving both appearance and performance—is growing longer every day. If you're designing or producing products, keep abreast of the fast-moving developments in Dow plastics. Contact the Dow man near you or write to THE DOW CHEMICAL COMPANY, *Midland, Michigan, Plastics Sales Department 1515C.*

YOU CAN DEPEND ON DOW



Small power inverter

Test equipment and appliances rated at 115 v ac that are to be operated in remote locations where no ac supply is available can be run from a battery source provided an inverter is inserted between the equipment and the batteries. Lincoln Electronics has recently put on the market a small, transistorized power inverter designed for just that purpose. The new unit measures 4" x 5" x 8" and uses only transistors in the power circuits that convert dc battery power to ac. The miniaturized inverter has no moving parts, no brushes, and operates at a conversion efficiency of 85%. The box-like inverter has a front panel incorporating plug-in receptacles, an off-on switch and overload fuse. The power handling capacity for the available models are a 200 and 500 watt output at 115 v ac for a 12 and 24 v dc battery input. Manufacturer: Lincoln Electronics, Anaheim, California.

Nuclear inspection-apparatus

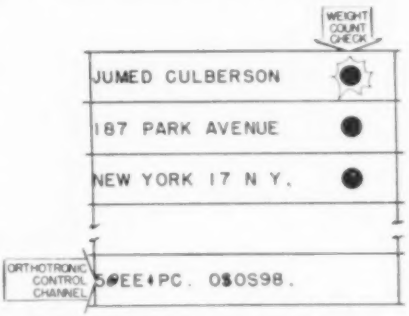
Nuclear Corporation of America is making use of the high penetration properties of radioactive energy in an apparatus designed to inspect production-line assemblies for the presence of vital performance parts embedded in a mechanism. For example, the new apparatus, called the "Atomonitor," is being used by the U.S. Army Ordnance Corp. for checking artillery-shell fuse heads to make sure they contain a complete firing-pin assembly. Generally, the Atomonitor, is suited for inspection of instruments, motor components, and any small assembly in which the vital part cannot be seen or felt once the assembly is complete. Parts whose presence are to be checked by the apparatus must be coated with 1/100th of a microcurie of radioactive silver to be seen by the equipment's "atomic eye." This is, in fact, a geiger counter which checks each inspected unit for the presence of radioactivity. If none is detected, the defective assembly is automatically kicked off the conveyer on which the assemblies move past the Atomonitor; units in which parts are found to be missing are automatically dropped into a drawer. A control board is part of the checking assembly; counters on the board indicate how many units have been inspected and how many rejected. An alarm rings if the rejection rate exceeds a predetermined maximum. Manufacturer: Nuclear Corporation of America, 400 Park Ave., New York 17.

Tube shaped battery holders

A new battery holder made of high-density polyethylene is on the market by Mayfair Molded Products Corporation as an aid for designers of radios, toys and other battery operated equipment. Shaped like a tube, the holders are available in lengths and

sizes to hold two, three or four "D" or "C" size dry cells of the flashlight battery type. This means the holders can be used for 3, 4½ or 6 volt applications; it is also possible to combine two or more tubes for higher voltages. The holders come supplied with attached leads for connection into the circuit of the equipment in which they are installed. The main advantage of the plastic used in the holder make-up is the material's resistance to battery leakage. The new holders are particularly well suited for use in transistorized portable radios which are generally powered by flashlight type batteries. Single unit cells of the flashlight type have the advantages of low price and easy installation by the consumer; the batteries are widely distributed and easily obtained. The holders sell for around $.25 each. Manufacturer: Mayfair Molded Products Corporation, 3700 N. Rose street, Schiller Park, Illinois.

New self-regulation for computers



A new system known as Orthotronic Control, makes it possible for a computer to check and correct its own data. It was recently introduced by Minneapolis-Honeywell's Datamatic division. Based on the Greek word for "correct," Orthotronic Control is intended for the company's Datamatic 1000 computer, into which the new control system will be incorporated by the middle of next year.

Essentially, the main attribute of the new system is its ability to check and correct data as it is being processed through the computer. This is accomplished in the following manner: all data handled by the Datamatic 1000 is carried on a three-inch-wide magnetic tape. A typical item would be an insurance policy holder's name, address and policy number. Data is recorded on the tape in electronic language —a code that consists of a series of zeros and ones. The tape carries 31 rows of such information; at the end of every 48 bits of information, a check number is inserted. The data bits (zeros and ones) must add up to the check numbers which verify their accuracy. If they don't add up the machine detects that there is an error. However, present Datamatic set-ups cannot detect precisely which of the 48 bits are wrong, it can only indicate whether or not the word is correct in its entirety. With Orthotronic Control, an additional tape track is added to the now standard 31. On the 32nd track every bit that is recorded makes possible a simple arithmetic check of the 31 bits recorded in the column above it. If it is zero, the sum of all the 31 bits must add up to zero; if it is one they must add up to an odd number. Thus, by regularly checking every bit of recorded data—48 bits at a time lengthwise, and 31 bits crosswise—the machine locates an erroneous bit; it corrects the error by changing the bit, either from a zero to a one, or vice versa.

A typical case in point is illustrated above. The information in the top track is wrong; the fact that an error has been made is signaled by the Weight Count Check; thus the Orthotronic Control track at the bottom is alerted—it seeks out the error and corrects it (detection and correction are done in a split second.) Manufacturer: Minneapolis-Honeywell Regulator Co., Newton Highlands, Mass.

Manufacturer's Literature

Abrasive Products by Carborundum for the Construction Trades. The Carborundum Company, P. O. Box 337, Niagara Falls, N. Y. This envelope-sized pamphlet lists available sizes and other information for masonry blades, diamond blades for concrete cutting, grinding wheels, abrasive rubs and stones, sandpaper sheets, discs and belts, and abrasive products for floor and stair installations.

Ampco Welding News. Ampco Metal Company, Inc., 1745 South 38th Street, Milwaukee 46, Wisc. This issue contains a number of applications regarding the use of aluminum bronze electrodes and filler rod. Feature articles are devoted to the fabrication of culvert valves for river locks, repair of battery molds, and the fabrication of aluminum bronze expansion blocks.

Anchor Pak. Hinde & Dauch, Sandusky, Ohio. 4 pp., ill. This folder details the advantages of a new corrugated interior packing material and shows how important savings can be made in packing and materials handling through Anchor Pak's unusual adhesive and cushioning qualities.

Breakthrough in Condensate Purification. Graver Water Conditioning Company., 216 West 14th Street, New York, N.Y. This paper discusses the use of the new principle of internal self-purification of condensate in sub-critical as well as super-critical operations. Internal self-purification is accomplished by a scavenger-de-mineralizer system within the boiler-turbine cycle.

Centrifugal Compressors. Clark Brothers Company, Olean, New York. 64 pp., ill. Catalog includes an introduction to centrifugal compressor features and applications, sections on horizontally and vertically split compressors, and a general section dealing with compressor fundamentals, parts, drivers, and engineering data and specifications.

Drilling Generators. General Electric Company, Schenectady 5, N.Y. 4 pp., ill., GEA-6692. Provides basic application data, specifications, operating characteristics, and features of the GE752J and GE752K oil well drilling generators.

Flexible Tubing. Pennsylvania Flexible Metallic Tubing Company, Dept. 57, 7200 Powers Lane, Philadelphia 42, Pa. 36 pp., ill. Booklet covers all types of flexible tubing and hose, together with the many types of coupling which can be used with tubing.

Reference Book on molded, extruded, and die-cut rubber, synthetic, plastic parts. Miller Products Company, 27 Warren St, New York 7, N.Y. 28 pp., ill.

Simmons Fastener Corporation Catalog. Simmons Fastener Corporation, North Broadway, Albany 1, N.Y. 40 pp., ill. Detailed specifications, engineering drawings, applications, and installation information is supplied in the catalog.

Specialized Stainless Steel. Alloy Steel Casting Co., 103 County Line Road, Southampton, Pa., 4 pp., ill. Specialized stainless steel and alloy casting facilities using economical "plastic steel" patterns are described in this brochure.

Stampings. The Staver Company, Bay Shore, N.Y. 4 pp., ill. Folder details the services of the company in the fabrication and production of stampings from rare and specialized metals, and includes a handy reference chart covering the properties and typical uses for 20 different types of rare or special materials.

Helium recovery process

Through a new process lately developed by Bell Telephone Laboratories, vast quantities of helium gas which are now being wasted may soon be recovered for essential industrial and scientific uses. Helium will be separated from natural gas, the only present source of the element. Depending upon producing area, unprocessed natural gas usually contains from one to six percent helium.

Bell's discovery separates helium from other gases by diffusing it through the thin walls of fine glass tubing. According

to Bell officials, the glass walls of the tubes act like sieves to the helium atoms, but resist the passage of other gases. A bundle of these fine glass tubes, each with one end sealed off, is encased inside a large glass or steel pipe, through which natural gas is passed. The open ends of the capillary tubes are sealed into a common header and the helium which diffuses through the walls is taken off in it. The volume and efficiency of the process is said to increase as temperature increases. Tests so far have revealed no impurities in helium recovered by the Bell development.

Over the past ten years, the demand for helium has increased over 600 per cent. The use of the gas as an inert blanket in the welding and melting of exotic materials like zirconium and titanium has helped to stimulate the call for larger quantities. In addition to such a conventional use as the dilution of anesthetic gases in surgery, helium is a component of the air pumped to men who are under atmospheric pressure. Manufacturer: Bell Telephone Laboratories, New York, N. Y.

One-man conveyor

Only one man is needed to load, weigh, transport and discharge bulk materials with a new, low-cost, bulk scale conveyor manufactured by Suttle Equipment Corporation. Called the Eze-Move Bulk Scale, this 1000-pound capacity conveyor is said to be able to measure bulk materials accurately to within an ounce. Equipped with a Fairbanks-Morse scale, the conveyor eliminates the need for special stops at floor scales, or the necessity for built-in scales at the hopper. The hopper has a capacity of 18 cubic feet, and will handle from 500 to 1000 pounds of various materials. The conveyor bin is electrically welded of heavy 14 gauge steel with sharply sloping sides to provide complete gravity discharge. A rear extension handle controls the 8" x 10" dump gate. The two-wheel foot brake, the scale, the dump handle and pushing handle are all within easy reach of the operator from one position. 10-inch rubber-over-steel wheels with 6-inch roller bearing swivel casters make movement easy even when the conveyor is fully loaded. Manufacturer: Suttle Equipment Company, Chicago, Ill.

Stereo-Daptor

Stereo-Daptor, a new hi-fi component which acts as a control center for a complete stereo system using two separate amplifiers, has been introduced by H. H. Scott, Inc. The new instrument has a master volume control over both amplifiers so that rebalancing is not necessary when volume is changed. The hi-fi owner plugs his present amplifier into the back of the Stereo-Daptor, then connects the new system. This activates both amplifiers.

Stereo-Daptor allows the hi-fi owner to play stereo records, tape, or stereo AM-FM. He can also play monaural records with a stereo cartridge. The new component also provides tape monitor control and switch positions which let the user reverse channels and play a monaural source connected to either amplifier through both amplifiers and speakers, effectively doubling the power of the system.

No internal changes are required to use the Stereo-Daptor with most systems. Scott officials state that the instrument will provide a simple method for component owners to convert to stereophonic sound. Manufacturer: H. H. Scott, Inc., Maynard, Mass.

DC meter with raised scale

A dc volt meter for use on test panels that minimizes reading errors when scale is read from a distance or at an angle has been made available by Marion Electrical Instrument Company. The main feature of the new panel meter is its raised scale which is set at an angle from the plane of the dial face. Elimination of reading error is accomplished mainly by the

arrangement of the indicating needle. The tip of the pointer swings under the scale so that calibration marks appear to be a continuation of the pointer. In addition, the new models include a scale with length 40% greater than that of the standard 3½" panel meters. The front of the redesigned dc volt meter is made of Plexiglas; models are available in a wide variety of colors, and all standard types and ranges. Custom dials with customer's names and/or trademarks can also be incorporated if desired. Manufacturer: Marion Electrical Instrument Company, Manchester, New Hampshire.

Sponge rubber stripping

Johns-Manville has developed a new sponge rubber stripping that is capable of holding its original dimensions during and after application. Called Rub-R-Shim, the stripping can be used on any irregular surface, and is effective as a sealing agent. Manufacturer: Johns-Manville, 7800 S. Woodlawn Ave., Chicago.

Look for it in October . . .

INDUSTRIAL DESIGN's comprehensive research report on

Reinforced PLASTICS

in product design and manufacture

It will be your opportunity to know everything of importance there is to be known about:

1. **The types of plastic materials that can be reinforced, and their physical characteristics.** This virtual catalog of available materials will be complete, authoritative and so freshly compiled that it will include the first-time published facts about a number of laboratory-perfected new materials which are only now being readied for market.

2. **Fabrication Methods.** This section will include a review of the standard methods of shaping, forming, finishing, etc., but major emphasis will be placed on the many ingenious new techniques which merit the designer's interest.

3. **A review of the present-day uses of plastics in all the product fields.** This section will include a pictorial display of actual products, components, etc., demonstrating the many ways in which plastics are now being used — with excellent success — to improve product appearance, increase functional utility and decrease production or assembly costs.

Those who have seen and read any of our previous reference reports, such as "Product Planning in American Business" or "Market Research — Its Applications in Product Design," etc., will know that this announcement, of our special PLASTICS issue for October, outlines an important publishing event for everyone concerned with product planning and design.

Don't miss the big October PLASTICS issue of

INDUSTRIAL DESIGN

Classified Advertisements

15¢ A WORD PER INSERTION, $5.00 MINIMUM, PAYABLE IN ADVANCE. BOX ADDRESS COUNTS FIVE WORDS.

Positions Wanted

INDUSTRIAL DESIGNER, *7 years in plastics with unusual and varied experience seeks challenging position as account executive, sales promotion, market development. Age: early 30's. Will relocate. Resume and full information available. Box ID-180,* INDUSTRIAL DESIGN, *18 East 50th Street, New York 22,, New York*

ENERGETIC, CREATIVE DESIGNER, *38, with merchandising experience seeking responsible position in product development and design. A unique talent in creating new treatments in pottery, glass, plastics and metal.Currently salaried. Box ID-181.* INDUSTRIAL DESIGN, *18 East 50th Street, New York 22, New York.*

YOUNG BEGINNING DESIGNER, *25, with industrial management degree and 2 years study each in architecture and Industrial Design, desires position in product development and design. One year development and design experience with prominent firm includes toys. General shop experience including plaster and plastic. Box ID-183,* INDUSTRIAL DESIGN, *18 East 50th Street, New York 22, New York.*

INDUSTRIAL DESIGNER WITH EXPERIENCE AND ADAPTABILITY *to develop and direct design program, coordinate with engineering and manufacturing on high level, wishes position with future, challenge and responsibility. Excellent background in human engineering, material, production and merchandising of consumer and industrial products. Capable of conveying complete scope of project to top management through reports, graphics and visual media. Presently employed as Senior Stylist, Design Studio Superisor with multi-plant manufacturer of varied line of mechanical, electrical and pneumatic capital goods equipment. Age 31, married with two children. Location preferred; New York City or vicinity. All inquiries answered. Box ID-184,* INDUSTRIAL DESIGN, *18 East 50th Street, New York 22, New York.*

Help Wanted

HELEN HUTCHINS PERSONNEL AGENCY—*Specialist Professional, Sales, Administrative Personnel for Industrial, Architectural, Interior Designers; Home Furnishings Manufacturers, Distributors, Stores, Publications, etc. Helen Hutchins' long association with a leading industrial design organization insures intelligent screening. 767 Lexington Avenue, New York, TE 8-3070. By appointment.*

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

MEDIUM SIZED AAA1 CHICAGO METAL FABRICATING FIRM HAS OPENING *for experienced man to direct its complete product design program. This unusual opportunity offers a creative and imaginative person recognition for accomplishments. Good starting salary plus profit-sharing and other benefits. Reply giving education, experience and salary desired. Box ID-182,* INDUSTRIAL DESIGN, *18 East 50th Street, New York 22, New York.*

CREATIVE INDUSTRIAL DESIGNER *with from five to ten years experience. Ability to render and knowledge of materials and fabrication are necessary. This is a supervisory job which encompasses interesting diversified projects and client consultation. Reinecke and Associates, 155 E. Ohio Street, Chicago 11, Ill.*

Miscellaneous

FRESH IDEAS IN TOY DESIGN NEEDED *by a leading manufacturer of educational toys. Large eastern firm, marketing a prestige line, interested in any new marketable toy idea. Excellent royalty and fixed fee arrangement along with necessary facilities to promote and advertise any item in production. All ideas will be given personal and prompt attention. If interested please write for submission forms. Box ID-185,* INDUSTRIAL DESIGN, *18 East 50th Street, New York 22, New York.*

Index to Advertisers

A reminder to manufacturers and designers

September 5th is the deadline for submissions to

INDUSTRIAL DESIGN's

Annual Design Review

Be sure to send unretouched photographs of outstanding products placed on the market since September, 1957. All photographs must be labeled with the following information: 1) name of the product and the manufacturer, the designer, staff member, or department in charge; 2) a brief note stating what you consider unique and distinguished about the product you have selected.

Your contribution is invited.

For Your Calendar

Through September 1. Exhibition of school architecture at the Octagon, Washington, D. C.

Through September 14. Exhibition by young American designers at the Museum of Contemporary Crafts, New York.

Through October 14. A small replica of the Brussels World's Fair at the Commercial Museum, Philadelphia.

July 14-18. Semi-Annual Auxiliary Furniture Market. Shrine Exposition Hall, Los Angeles.

July 21-August 1. "Color in Art and Science." Special summer program at M.I.T.

July 29-31. The 2nd Symposium Conference on Creative Arts Education. Syracuse University, Syracuse, N.Y.

August 1-10. Danish Industries Fair. Fredericia, Denmark.

August 7-9. Meeting of the Electron Microscope Society of America at the Miramar Hotel, Los Angeles.

August 19-21. Western Electronic Show and Convention at the Pan Pacific Auditorium, Los Angeles.

September 3-5. The 1st National Conference on the Application of Electrical Insulation, at the Pick-Carter Hotel, Cleveland.

September 12. Society of Plastics Engineers regional technical conference: "Plastics in Automotive Application" at the St. Clair Inn, St. Clair, Michigan.

September 15-19. The 13th Instrument- Automation conference and Exhibit, Convention Hall, Philadelphia.

September 17-18. Building Research Institute's Conference on Floor Construction Systems, Sheraton-Park Hotel, Washington, D.C.

September 23. Opening of "Swedish Textiles"; Museum of Contemporary Crafts, New York.

September 23-26. The 1958 Iron and Steel Exposition at the Cleveland Public Auditorium.

September 29-October 3. American Society of Tool Engineers' semi-annual meeting and Western Tool Show at the Shrine Exposition Hall, Los Angeles.

September 29-October 3. National Hardware Show at the New York Coliseum.

September 30-October 4. Annual high fidelity show sponsored by the Institute of High Fidelity Manufacturers, at the New York Trade Show Building.

October 1. SPE's regional technical conference: "Plastics in packaging" at the Hotel Statler, Hartford, Conn.

October 1-22. "Good Design in Switzerland." A Smithsonian Institution Traveling Exhibition at Yale University, New Haven, Conn.

October 8-10. IDI's annual national conference at the Sheraton East Hotel, New York.

October 11. The 5th annual symposium of the Southern New England Chapter of IDI, at Silvermine, Conn. "Design Universale" is the theme.

October 18-21. ASID's 14th annual design conference and meeting at Bedford Springs, Pennsylvania. The meeting is open to all industrial designers, who may register by writing to the ASID national office, 15 East 48th Street, New York 17, N. Y.

"Every effort we put into the SAVINGS BOND PROGRAM will be richly rewarded..."

a statement by ***Julian B. Baird,*** *Under Secretary of the Treasury*

"America's great productivity has been made possible by the willingness of Americans to save a part of their incomes for investment in productive enterprises. The Payroll Savings Plan of the Savings Bond Program implants and helps to sustain the habit of regular savings, and this benefits our whole economy as well as each individual saver.

"We need savings as a continued affirmation of our way of life. The right to build up personal savings and to choose individually our savings objectives is one of our cherished freedoms.

"I am convinced that every bit of effort we put into Savings Bond promotion as part of a broad thrift plan will be richly rewarded in the contribution we shall be making to the strength and security of our country in this critical period."

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

INDUSTRIAL DESIGN

FORECAST: THERE'S A WORLD OF ALUMINUM IN THE WONDERFUL WORLD OF TOMORROW . . .
where your children will climb, slide, hide, seek or create their own fairyland of fun in playgrounds sculptured of light, smooth aluminum . . . weatherproof, long-lasting aluminum in entrancing shapes and colors as playful and uninhibited as a child's imaginings. ALCOA ALUMINUM, Aluminum Company of America, Pittsburgh

ALUMINUM PLAY SCULPTURE DESIGNED FOR THE ALCOA COLLECTION BY DAVID AARON, CREATIVE PLAYTHINGS, INC. PHOTOGRAPHED BY WINGATE PAINE.