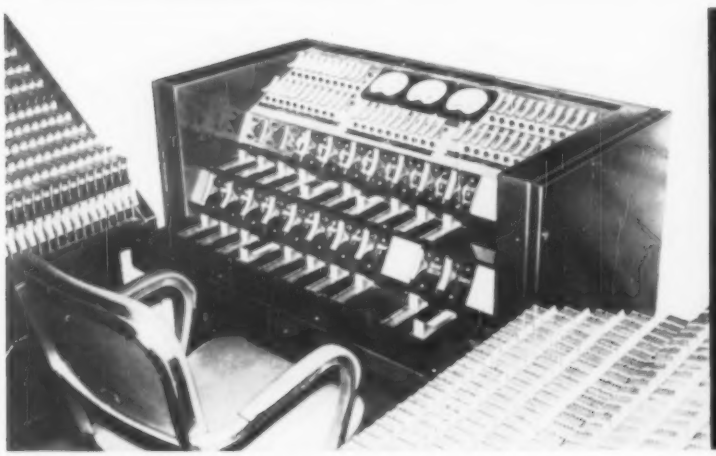
INDUSTRIAL DESIGN

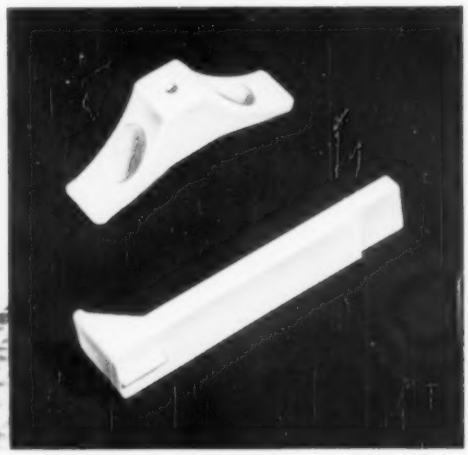
1 January 1958 $1.50 per copy

Market Research: its purpose, its techniques, its effect on American design

CYANAMID

PLASTICS NEWSFRONT





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The new multipurpose NuTone Food Center operates a mixer, blender, meat grinder, knife sharpener and fruit juicer from one motor that can be set flush in a counter top Counter clutter, tangles of electric cords and heavy separate appliances are eliminated. A gleaming white 3½-quart bowl made of CYMEL melamine molding compound serves the mixer and juicer. CYMEL makes the bowl lightweight, dent-proof and easy to handle. The bowl is molded for NuTone, Inc., by Prolon Plastics Division of Prophylactic Brush Co.

New Insulated Beverage Set Joins Growing List of Boilable CYMAC® Housewares

Suitable equally for hot or cold beverages, these new double-shelled Thermo-Serve tumblers and pitchers are molded of CYMAC 201 methylstyrene, Cyanamid's new heat-resistant thermoplastic. This CYMAC ware resists staining by fruit acids, coffee and other beverages, and can be washed in boiling hot water, even in automatic dishwashers, without cracking or warping. All parts are injection-molded by NFC Engineering Company and sealed together under heat.

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JANUARY, 1958 VOLUME 5 NUMBER 1

INDUSTRIAL DESIGN

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

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Coming

In FEBRUARY — Authoritative discussion by leading photographers on the basic problems of photographing products; the second of two parts on Market Research and how it serves the designer.
In MARCH — Packaging I, beginning a new series on leading packaging designers, new techniques, and new approaches to this broad design field.

COVER: The consumer, shown in Jim Ward's collection of on-the-spot photographs of the marketplace, is a central figure in our two-part report on Market Research which starts this month on page 26.

FRONTISPIECE: Metal tube joining, shown highly magnified, was just one of the many technical problems students had to cope with in working out fourteen projects during Operation Scramble, a crash program in design teaching at IIT's Institute of Design which is evaluated on pp 62-67.

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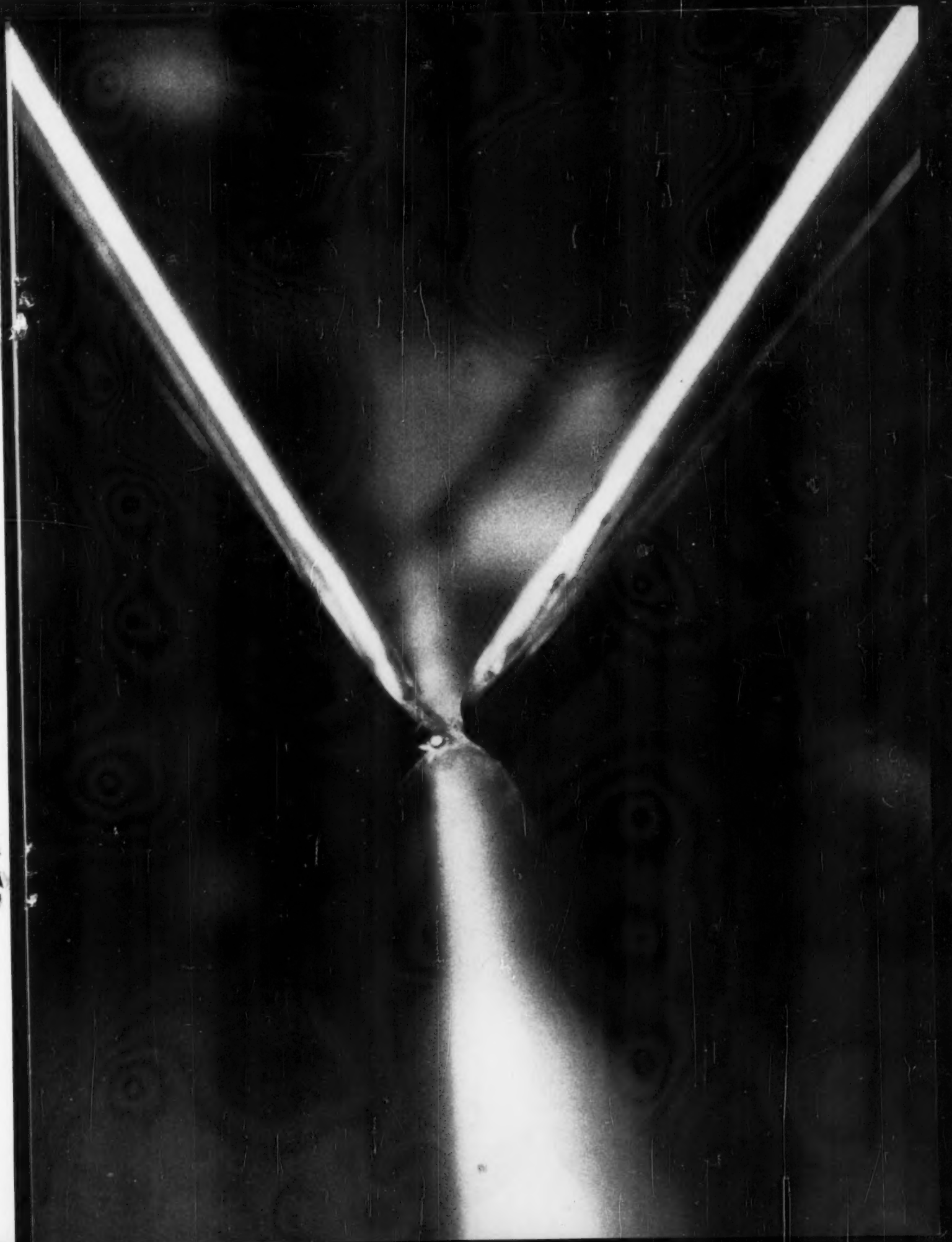
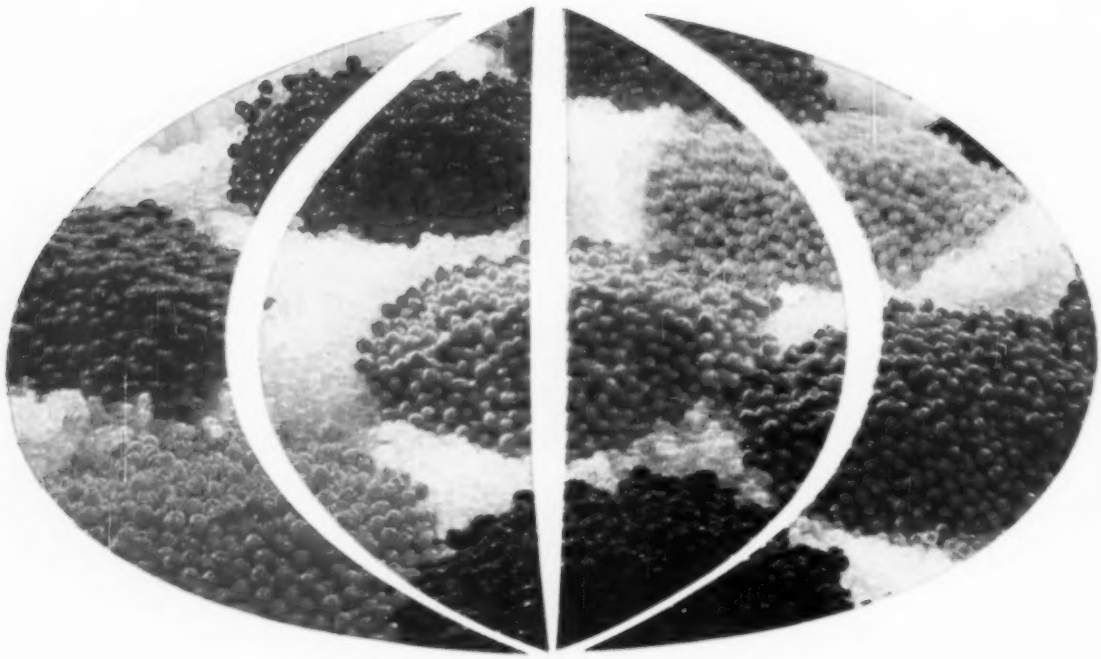
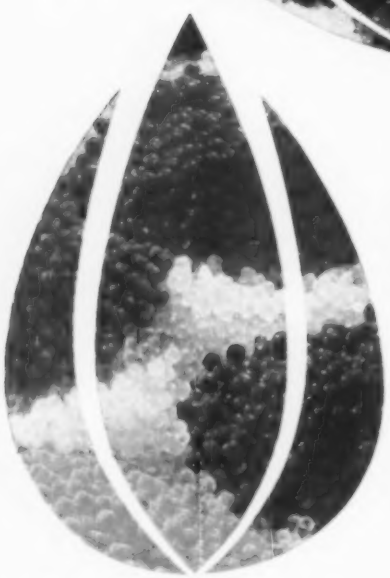
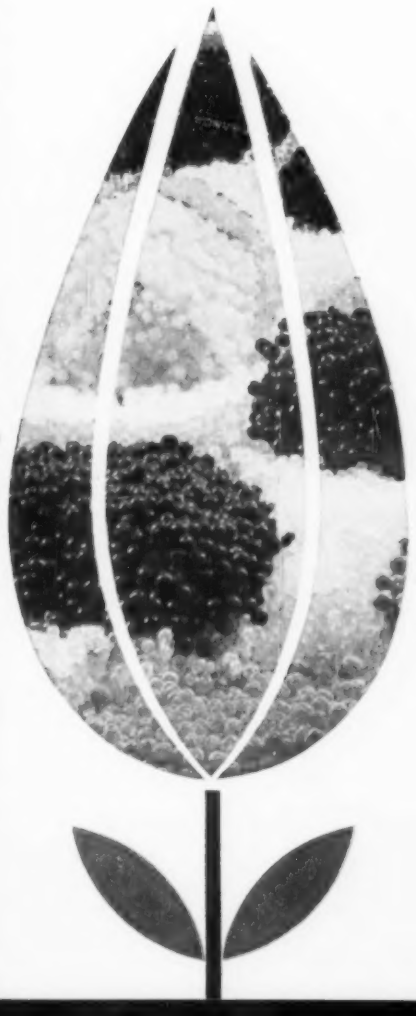




Polyethylene...



fastest growing plastic of all time



The versatility of colorful Tenite Polyethylene means new uses every day for this Eastman plastic

Polyethylene is finding new markets faster than any other plastic in history. Secret of its fast growth is the remarkable range of properties it offers.

Tenite Polyethylene is strong, tough and virtually unbreakable, yet is one of the lightest of all plastics. Inert to most chemicals, this plastic has no solvent at room temperatures. It is an excellent dielectric with low thermal conductivity and high resistance to water.

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Originally a dull, milky-white material, polyethylene has been given a colorful new dimension by Eastman. Today, molders and extruders can order pellets of Tenite Polyethylene in almost any color desired. For Tenite Polyethylene has profited by Eastman's long experience in the coloring of Tenite Acetate and Tenite Butyrate—two other Eastman plastics.

Perhaps Tenite Polyethylene could add longer life, better performance or greater sales appeal to some product you make. For more information on this versatile plastic, write EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

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The world's largest commercial plant to produce polypropylene is now on stream. Pro-fax, Hercules polypropylene, is the most significant new plastic to be developed in years. It has a lower specific gravity than any other plastic material commercially available. Pro-fax has higher tensile strength, hardness, heat resistance, stiffness, resilience and clarity, coupled with the inertness and water resistance typical of a hydrocarbon polymer. Pro-fax is exceptionally easy to mold, yielding parts with a hard, glossy surface available in a broad range of colors.

Among the other important properties of Pro-fax are excellent resistance to grease and oil, water, and many common acids; outstanding electrical properties; and higher impact strength. Altogether, Pro-fax combines more desirable properties than any other plastic now marketed.

There's sure to be a place for Pro-fax in your picture. For further information on properties and uses, call or write Hercules.

NOW THERE ARE TWO

Pro-fax is the Hercules trademark for polypropylene, a hydrocarbon polymer, based on propylene and a new Hercules process. Pro-fax will complement the usefulness of Hi-fax*, Hercules high-density polyethylene, greatly broadening the available markets for plastics, especially those now served by wood and metal.

Pro-fax is the second of many new polymers resulting from a Hercules research program designed to explore the chemical horizons opened by the development of organometallic catalysis systems. Others will follow as Hercules continues its leadership in the important field of polyolefin chemistry.

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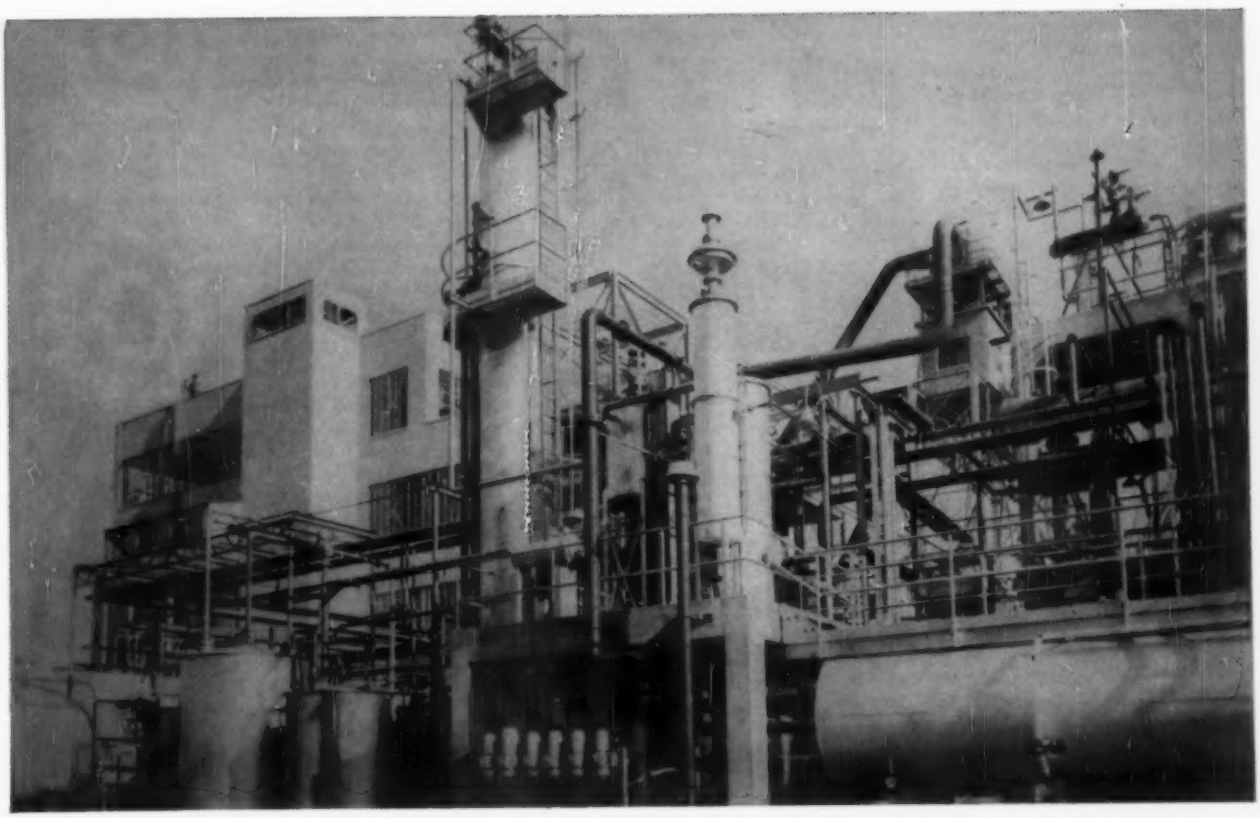


CLIPS AND QUOTES

Chester J. Abend, *Chester Joshua Abend Associates, New York, in a written statement, December,* 1957:

"When the designer, by professional and moral obligation, tries to make his client come to grips with the problem (sometimes through unconventional or unfamiliar means) the emotional reaction to the designer or the design is sometimes more unpleasant than the original problem which created the need for a program. The design relationship is broken off and the client returns to the lesser of two evils, i.e.—living alone with his problem, minimizing its importance and hoping that business will somehow improve. When the competitive struggle again demands that action be taken, he seeks another kind of help, possibly advertising or another source for design; thus starting an endless repetition of this makeup–breakup cycle.

The lack of confidence in designers displayed by such a client indicates the inability to confide in the designers or reluctance to divulge the extremely important facts of his merchandising, price, production, advertising, marketing, etc.—the very tools the designer needs to work with in order to understand the history of the product and to map out a direction that will lead him to create a successful solution. This attitude is sometimes a reflection of the manufacturer's personal regard for the abilities of his own staff in being able to cope with a seemingly complex problem. And thus the pronouncement of ultimate failure may be projected on to the designers even before they start." "

GENERAL ELECTRIC

Dr. Guy Suits, *Vice President and Director of Research,* **General Electric Company,** *in the General Electric Review, November,* 1957:

"We are now well advanced in a metamorphosis in world technology so far-reaching in its implications as to be almost revolutionary. To an ever-increasing extent, technological progress depends upon *scientific advances* rather than upon the availability and variety of natural products. In a primitive technology, the essential raw materials are extracted from the earth's crust and used with little or no modification. Iron, copper, gold, coal, and petroleum are examples of such primary resources.

As technology advances in scope and complexity, the value of primary resources is enhanced by modifications of the raw material. Steelmaking, for example, represents an 'added value' to primary raw materials that has had an enormous influence upon technological progress. The greater the complexity of technology, the more important are the added values contributed by science." "

Vontury, Inc.

Francis Joseph Von Tury, *Vontury, Inc., Perth Amboy, New Jersey, in a speech to the 59th Annual Meeting of* **The American Ceramic Society,** *Dallas, Texas, May* 6, 1957:

"With the growing recognition of the importance of design has come greater awareness of the function of the craftsman—and this is most important. If artistic feeling is the lifeblood of good designing, then craftsmanship is its hands. Without good design, the craftsman is helpless; but without craftsmanship in production, the designer is handicapped.

I recognize, of course, that there is a great difference between the working methods of a studio potter and production under factory conditions. The great challenge to the large scale producer is to keep the spirit of craftsmanship alive in his working force, to regard the craftsman as his most precious tool, and to give him scope to put his spirit into his work." "

NORGE

Harold P. Bull, *vice president of distribution,* **Norge Division, Borg-Warner Corporation,** *at a meeting of utility executives, New York, September* 9, 1957:

"Now the shocking fact is that for more than a decade we have watched our markets get fatter and fatter, our production geniuses, with their automation, produce more and more—more quickly—and our mass communicators, mass motivationists, and mass statisticians lull us into believing that all things from these automated production lines would automatically be distributed to eager outstretched hands which multiply and multiply and multiply.

Suddenly, in some segments of industry, and particularly in the appliance industry, has come the realization that too many of us charged with responsibility for selling have been 'sitting expectantly on our hands.' Suddenly 'distribution,' the cure-all of the past year for solving the problem of over-capacity with lower and lower prices, has run its course. The mass marketers find that their pat theories of distribution have bogged down.

Certainly, they come up with rationalizations. The refrigerator market is saturated (yet twenty-five million refrigerators are ancient and obsolete) . . . the economy is moving sideways, away from consumer durables (yet every survey shows that increasing millions of people intend to buy a new refrigerator, washer, dryer, range, air conditioner) but the truth is that in too many places person-to-person selling of the benefits and advantages built into our marvelous products has practically vanished." "

SPS

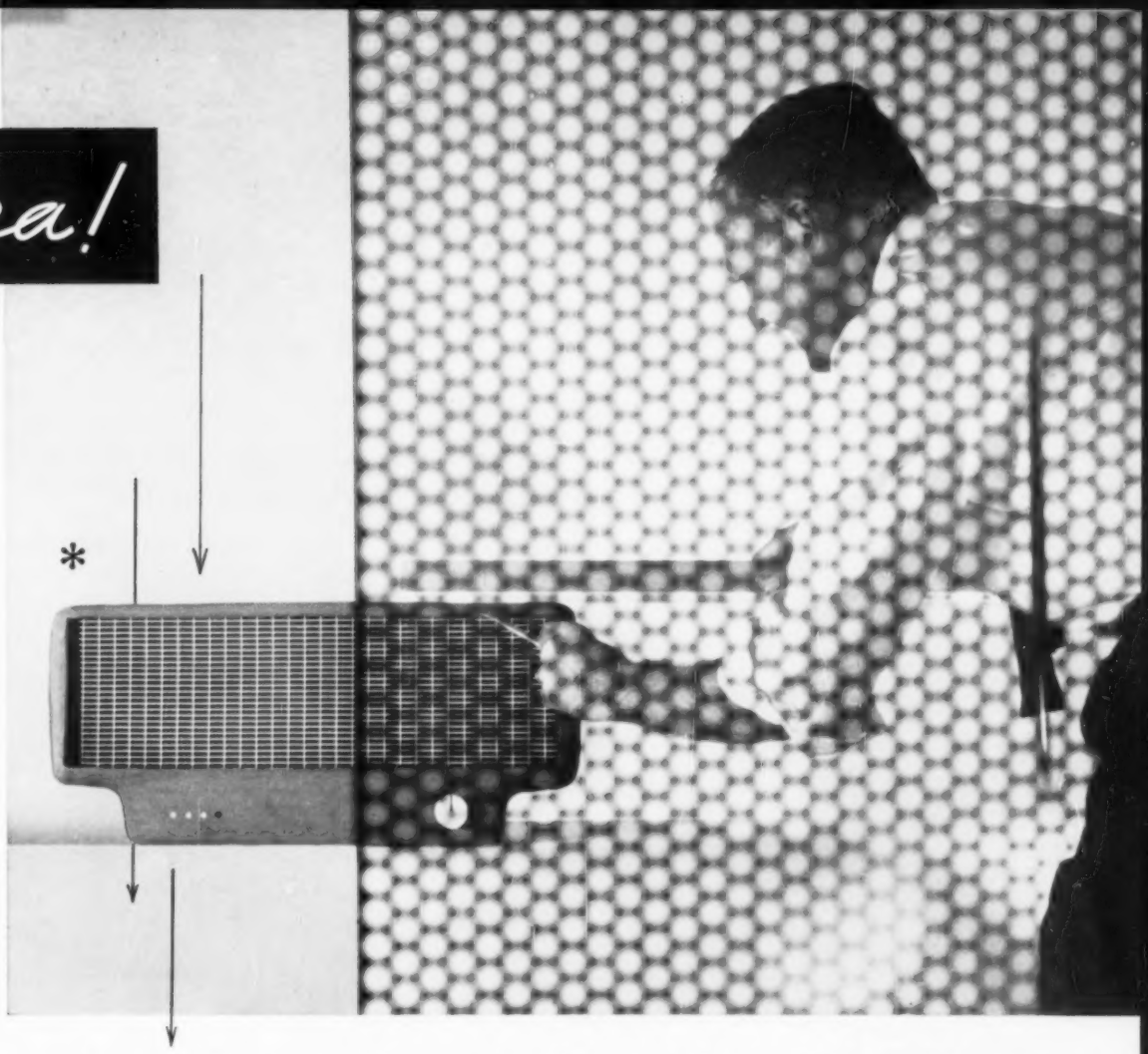
H. Thomas Hallowell, Jr., *President, Standard Pressed Steel Co., Jenkintown, Pa., in an address entitled "Quality Control in Action," presented to* **American Management Association's Special Conference,** *November* 20, 1957:

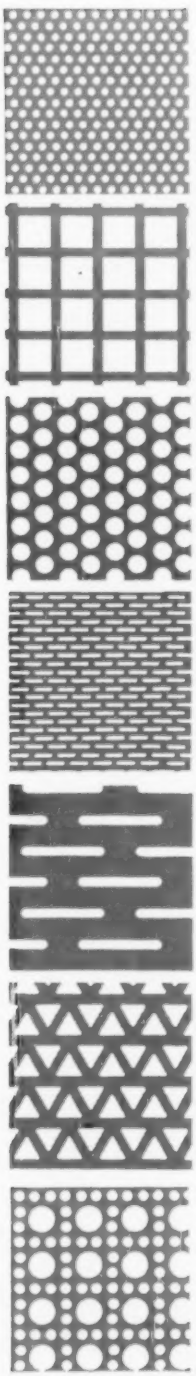
"Automation certainly demands increased reliability. As we string more and more machines together in an automated plant, more likelihood of breakdowns automatically follows—and each shutdown is a more costly one. By the time you have automated a production line you've invested so much capital that you can usually only afford one automated unit and it just has to work.

Then there's miniaturization—that irrepressible need to do more with less—less space, less mass. When we're miniaturizing, in most cases, we're simply cutting down on the factors of safety, the margins of error. We cannot afford the luxury of unknowns. We need increased reliability and we can get it by increased product performance knowledge under working conditions.

But, if you still have doubts of the growing significance of quality control and reliability, let me try to dispel any lingering complacencies. This is no ivory-tower speculation—it's a matter of staying in business—either as a nation or as an industrial enterprise. We can no longer afford to debate the relative merits of quality control as an aid to management. It is and must be considered a vital need —a foremost concern—a way of life." "

Idea!





A few of the many H & K Patterns available.

mock-up projects design with H&K perforated metals

Here you see an actual H & K perforated metal grille utilized in a mock-up of a record player. This greatly helps the Industrial Designer project his concepts as H & K perforated metal is now in its proper element for consideration of use and selection of pattern.

By referring to the H & K General Catalog, the designer can select one or more perforated patterns for his project.

H & K perforated metals provide the Industrial Designer, and other men of ideas, a medium of unlimited opportunities for designing better and more attractive products.

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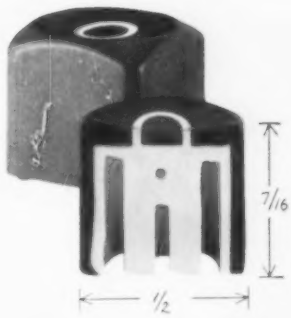

BAKELITE BRAND C-11 PLASTIC forms this "IBM" Electric Typewriter Key. Typical of the intricate design possible in small items with BAKELITE BRAND Plastics. Molded with "double-shot" technique . . . fine detail retained and overall cost cut. Colorful key has a beautiful, long-lasting finish that resists staining. Write for technical information.

Keys molded by American Plastics Corporation.

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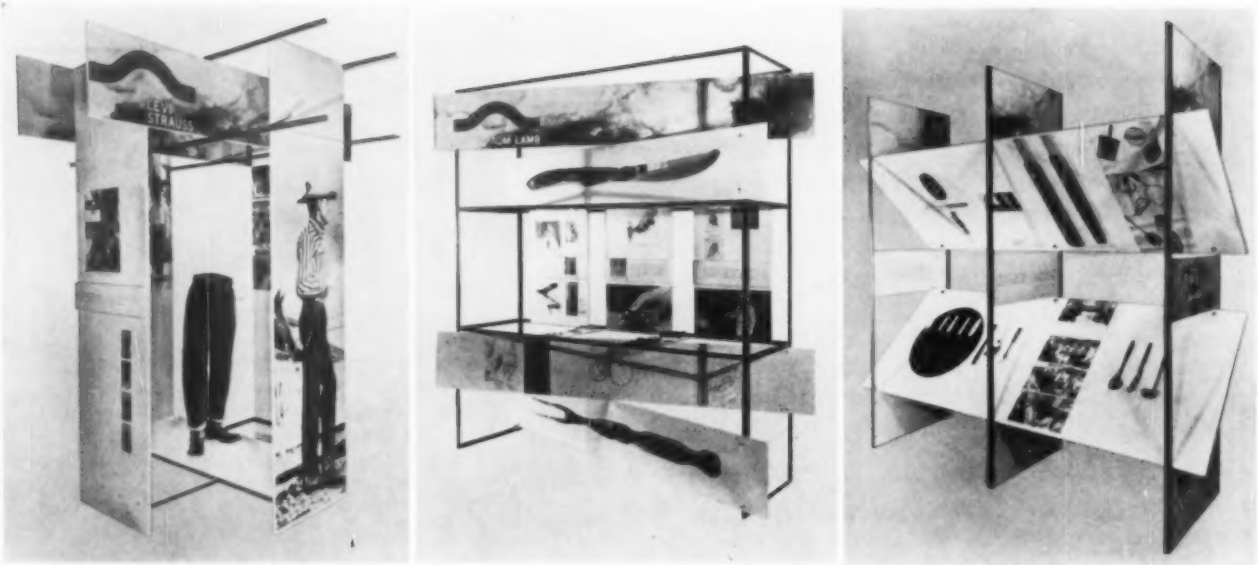
NEWS



Levis at bow-legged attention (left), handles fashioned by Tom Lamb (center), and the Ecko story are three parts of U.S.I.A. show.

Traveling exhibit tells story of American craftsmanship in a changing world to Europeans

A portrait of craftsmanship in American design, created by Don Wallance in his book, "Shaping America's Products," and published in part by INDUSTRIAL DESIGN (April, June, August, 1956), has been translated into a traveling exhibit by Edgar Kaufmann, Jr., under the auspices of the U.S.I.A. It will be seen this month at the Musee Municipal d'Art Moderne in Paris before going to other major European cities. The project was executed by Paul Mayen, industrial and graphics designer on the staff of Cooper Union; most of the photographs were taken by George Barrows.

Taking the material of Mr. Wallance's book—the expression of craftsmanship in industrial society as reflected in some thirty case studies of classic contemporary products—Mr. Kaufmann has created an exhibit about designers rather than about products as such. Each of the fourteen display sections, devoted to a single company or designer, describes the kind of people—their hobbies, their families—who design in the U.S.A. Included are designers, like Arthur BecVar of General Electric, who work within large companies, as well as independent craftsmen like Leo Mahsoud.

Display concepts include the technique of devoting each of the fourteen sections to a single designer or company. When only portions of the exhibit are shown at the smaller museums, it will still retain its meaning. And a frieze of white clouds against a blue background creates a sense of continuity from section to section, lending the only color to the black and white photographs and text, with the exception of bright color splashes made by the actual display products: textiles, furniture, appliances.

Mr. Mayen has used a strictly rectangular vocabulary, creating varied three-dimensional compositions by means of interlocking flat and tilted panels and trays supporting objects. The wooden panels are joined to one another by means of the newly-developed fishbone connector (ID, August, 1957) and to the transparent plastic trays by metal rods. The rather lengthy text, at present in French, has been photographed on separate paper panels which may be replaced easily when another language is required. Packed "jack style" for quick assembly, the kit for each section contains 25 per cent extra hardware, diagrams and instructions on what to do first, as well as photographs showing what the completed section should look like.

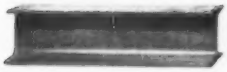
The exhibit includes the work of Eames, Nakashima, Natzler, Heath, Tillett, Sitterle.

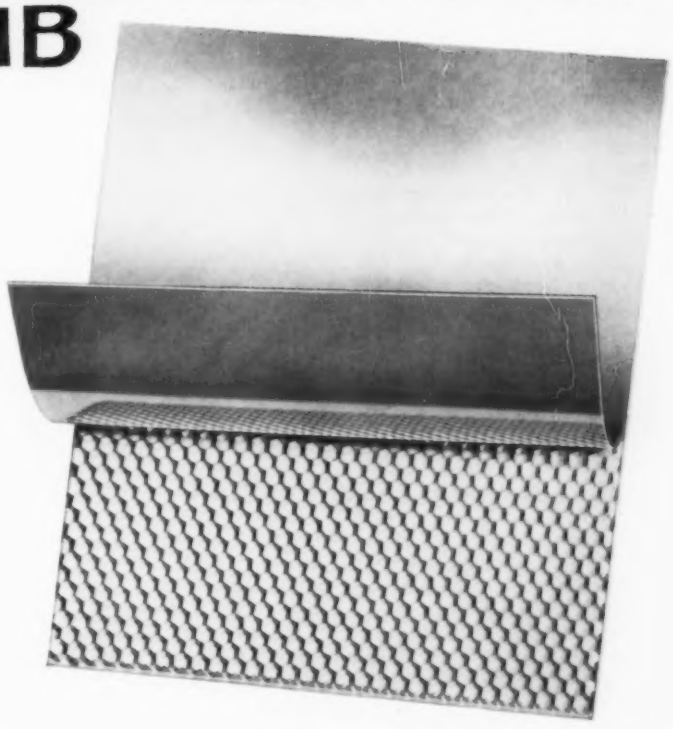
Smith describes '57 design trends

In a year-end round-up of 1958 design developments F. Eugene Smith, secretary of the A.S.I.D., said on December 31, speaking from the Akron office of Smith, Scherr and McDermott, "there have been notable advances in taste, function and simplicity in home appliances, while the rest of industry has in some cases taken a flight into flamboyancy, the results of which are still hard to evaluate."

Mr. Smith believes that the emergence of a crisp, rectangular look in home appliances is due to two important influences. "One," says Mr. Smith, "is architecture. The lighter, squarer look comes directly from such building silhouettes as the Seagram building, while the trend toward built-in appliances has made it necessary that they fit flush to the wall and group together better than the early 'jelly mold' units did."

In contrast, some fields, Mr. Smith believes, have moved in the direction of "American baroque." "High tailfins, and escape jets in the 1957 cars are examples."

IT WOULD TAKE A PIECE OF ALUMINUM  WEIGHING 10 POUNDS OR A PIECE OF STEEL  WEIGHING 16 POUNDS TO EQUAL THE RIGID STRENGTH OF 1 POUND OF STRUCTURAL SANDWICH MADE WITH HEXCEL ALUMINUM HONEYCOMB



And this amazing strength-to-weight ratio is only one reason why "sandwiches" of Hexcel honeycomb cores with lightweight steel or aluminum facings are the structural materials of the future.

Hexcel honeycomb sandwiches also give protection against heat, and vibration, and possess excellent acoustical qualities.

Hexcel Products Inc. originally developed its honeycomb cores for the American aviation industry. Today, however, the uses have multiplied to include curtain wall construction for buildings, and Honeylite® (aluminum honeycomb without facings), the newest name in lighting. Honeylite® ceilings or fixtures produce soft, glare-free light with nearly perfect efficiency.

Backed by continuous research, testing, and engineering sales-service, Hexcel honeycomb cores are giving more and more manufacturers and builders the closest thing to a perfect structural material.

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Brussels exhibit shown in Boston

The industrial design exhibit for the Brussels World's Fair (ID, September, 1957), a selected preview of which was on display at the Institute of Contemporary Art, Boston, until January 5, has been shipped this month to its final destination in Europe.

According to Joseph Carreiro, administrative director for industrial design and crafts in the American section of the fair, the exhibit attempts "to give people of the world some insight into American life, express our aspirations and our strivings to realize them, and not only the idealized results of our efforts." The more than 150 objects shown at Boston carry out this idea. For instance, to suggest the range of toys available to American youngsters, both a soap-box racer and a sleek convertible (right) will be shown. And to express America's mobility, a portable tent (above, right) as well as simpler objects related to America on-the-move will be shown. Mr. Carreiro feels that "better understanding will be created if we avoid proving any one thesis and honestly express our diversity as a slice down through our culture rather than the usual slice off the top of a single segment of our society."

Altogether, seven product categories—mobility, portability, flexibility, outdoor living, toys, decentralized kitchen, disposability—were selected as representing qualities peculiar to the American scene. At the Boston preview a broad ramp provided spectators with a vantage point from which to see the whole show and bays under the ramp were used as exhibition spaces.

Chicago IDI elects officers

The Chicago Chapter of the Industrial Designers Institute recently elected as officers for 1958: Henry P. Glass, Henry P. Glass Associates, president; Orville G. Bolte, Montgomery Ward and Company, vice president; Benjamin E. Werremeyer, Henry P. Glass Associates, secretary; and Carl Bjorncrantz, Sears, Roebuck and Company, treasurer. Lionel C. Algoren, Walter Granville, and James Hvale were elected to the executive committee for three-year terms.

Four unit terminals at Idlewild

Plans are now underway for the construction of four new unit terminals at International Airport outside New York City. The facilities will feature new methods of passenger and baggage handling.

In American Airlines' $14,000,000 terminal (below, left top), to be built by Kahn and Jacobs, planes will be parked directly alongside the lounge area, where one of two loading bridges may be extended automatically to the plane. Passengers will then board by means of these completely covered and soundproof bridges. A glass wall 30 feet high, running the 340-foot length of the building, will afford a view of the entire airport.

The new Pan American terminal (left, bottom row) will substitute for the conventional entrance a 100-foot-wide curtain of air to eliminate pushing through doors while carrying baggage. Planes will be boarded from the second floor by means of an elevated passageway leading directly to cabin level of the plane. Passengers will be protected from the weather by the 176,000 square-foot cantilever roof which extends over the planes themselves. Baggage handling will continue, unimpeded by passengers, on the ground floor. Architects for the $8,000,000 building are Tippits, Abbett, McCarthy, Stratton, with Ives, Turano, and Gardner, associate architects.

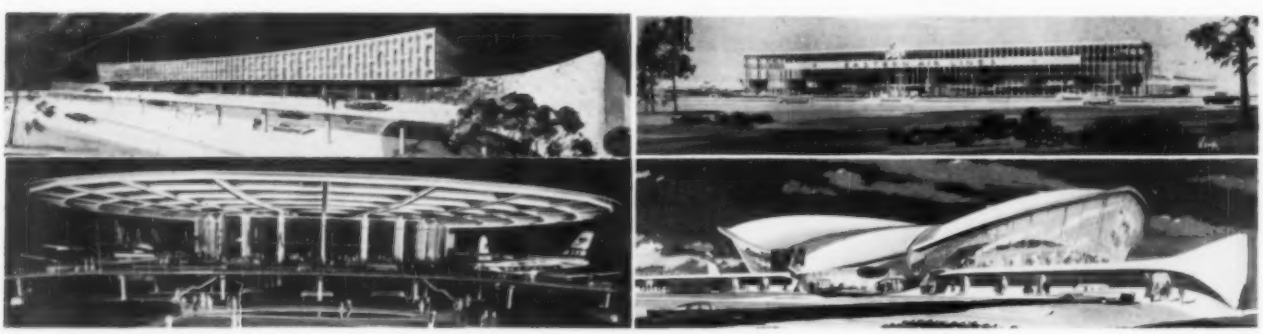
Designed by Chester L. Churchill, the Eastern Airlines unit terminal (below, top row), with a depth of 300 feet and a 450-foot facing ramp, will be one of the largest terminals built for use by a single airline. An unusual feature will be the two 350-foot finger ramps running perpendicular to the building. They will provide embarkation facilities for sixteen aircraft and underground service tunnels for baggage. From ramp level a second ramp drops four feet to the lobby (there are no stairs for public use anywhere in the building), where baggage may be claimed at a counter running across the front of the terminal. Baggage then need be carried only a few feet to a covered roadway for loading. The building will be completed next year at a cost of $14,000,000.

Moving sidewalks in the finger area of Trans World Airlines $12,000,000 terminal (bottom row, below) will carry passengers to and from their flights at a rate of 2 feet per second. Passenger rooms will be built around an indoor skylighted garden area, and all-glass walls in the semi-circular seating lounge will allow a view of airport activity. Designed by Eero Saarinen and Associates, it will be completed in 1960.

Design show for India

An exhibition on "the history of 20th century design in Europe and America" is being assembled by the Museum of Modern Art at the request of the Government of India and will be circulated throughout India with the aid of a grant from the Ford Foundation. Greta Daniel, Associate Curator of Design, heads the museum's selection committee.

The collection will duplicate objects in the museum's permanent collection wherever duplication is possible, and will remain in India on permanent exhibition.



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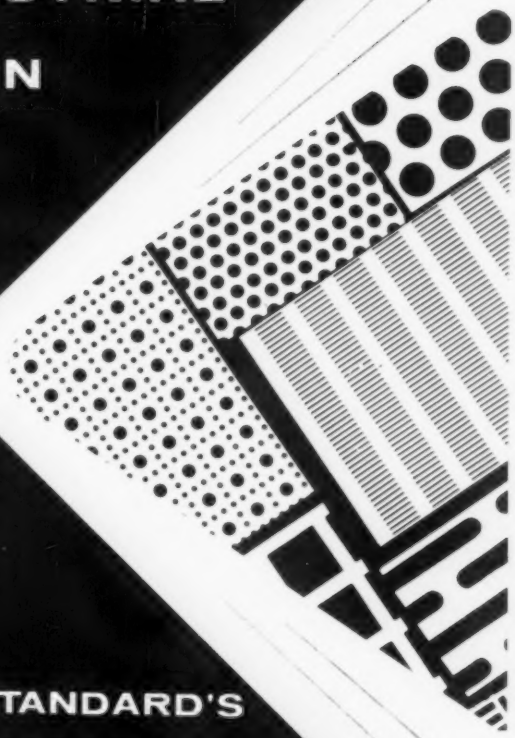

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Highway signs of the times

Two developments of the past year may soon be common sights on the nation's highways, and both may increase automotive convenience and safety.

Pictured above is an experimental model of the new "drive-in" telephone developed by Bell Telephone Laboratories. Now being tested in Chicago and Mobile, the phone is mounted on a metal stand beside roadways. A bright-colored plastic hood shields the instrument from bad weather and the directory is enclosed in a metal box below the phone.

A highway monitoring system (top picture, above) to warn drivers when they have exceeded the speed limit has been tested in Concord, New Hampshire and at the Portsmouth Air Force Base. Developed by Andrew J. White, director of Motor Vehicle Research, Inc., Lee, New Hampshire, the device, patented three years ago, may be constructed for under $1,000.

In the new system every automobile entering a given segment of the highway will be scanned by radar coming from a small box located just in front of the 4' x 5' "billboard" (above). When the waves bounce off a speeder's car and back to the billboard they trip a switch which turns on the warning neon letters of the sign. If he continues to speed, a second billboard warning will be given. Finally, the offending car will set off a camera which calculates speed and records license numbers. From this record tickets can be mailed to violators and studies of accidents made.

Mr. White is currently working on a system to subject speeding motorists to high-frequency sound waves, making them slightly nervous and uncomfortable until they return to the required speed limit.

European Common Market Panel

The European Common Market and its implications for American trade will be the subjects of a conference sponsored by the International Management Division of the American Management Association, February 3-5 at the Biltmore in New York.

Four European experts will discuss the common market itself, and, from the American point of view, there will be an analysis of the ECM treaty, a review of United States trade policy and ECM by Thomas C. Mann, assistant secretary of state for economic affairs, and a panel discussion of ECM's impact on long- and short-range planning. The conference will be followed, February 6-7, by two workshop seminars.

Registrations may be made in advance by writing to Conference Registration of the International Management Division, 1515 Broadway, New York.

Breuer does Hunter College library

The new library, below, by Marcel Breuer, and his staff architect Robert Gatje, now under construction on Hunter College's Bronx campus, will have one of the first hyperbolic paraboloid roofs in the United States. The intricately curved surface, actually constructed of straight lines, is formed of thin concrete shells insulated with lightweight perlite concrete.

The hyperbolic paraboloid shape has only recently been developed in Mexico and South America, and, with only six columns supporting an area of 120 by 180 feet, combines economy with maximum interior space. Each column has a hollow core open to the roof for drainage.

The walls are glass, protected on the two sun sides by honeycomb sun-control grills made of terra cotta flue tiles. The 12- by 12-inch tiles will be set in a screening wall four feet in front of the glass to permit effective shading yet permit straight-through vision.

Connected to the library, which will be completed in 1959, is a companion classroom-administration building (below, rear) with 30 classrooms facing an inner court.

ICA design course

A fifteen-week evening course called "Industrial Design: Its Practices and Strategies" will be offered by the Institute of Contemporary Arts, Boston, beginning February 19.

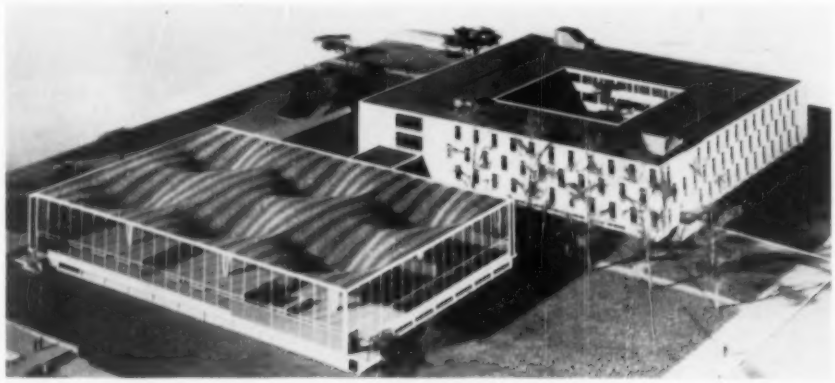
The course, exploring the philosophies, responsibilities, and practices of the design field, will be led by John E. Alcott, professor of industrial design, Rhode Island School of Design, and director of product development, Alcott Associates. Through lectures, seminars and critiques, various projects will be considered from product development phase to final marketing to the consumer.

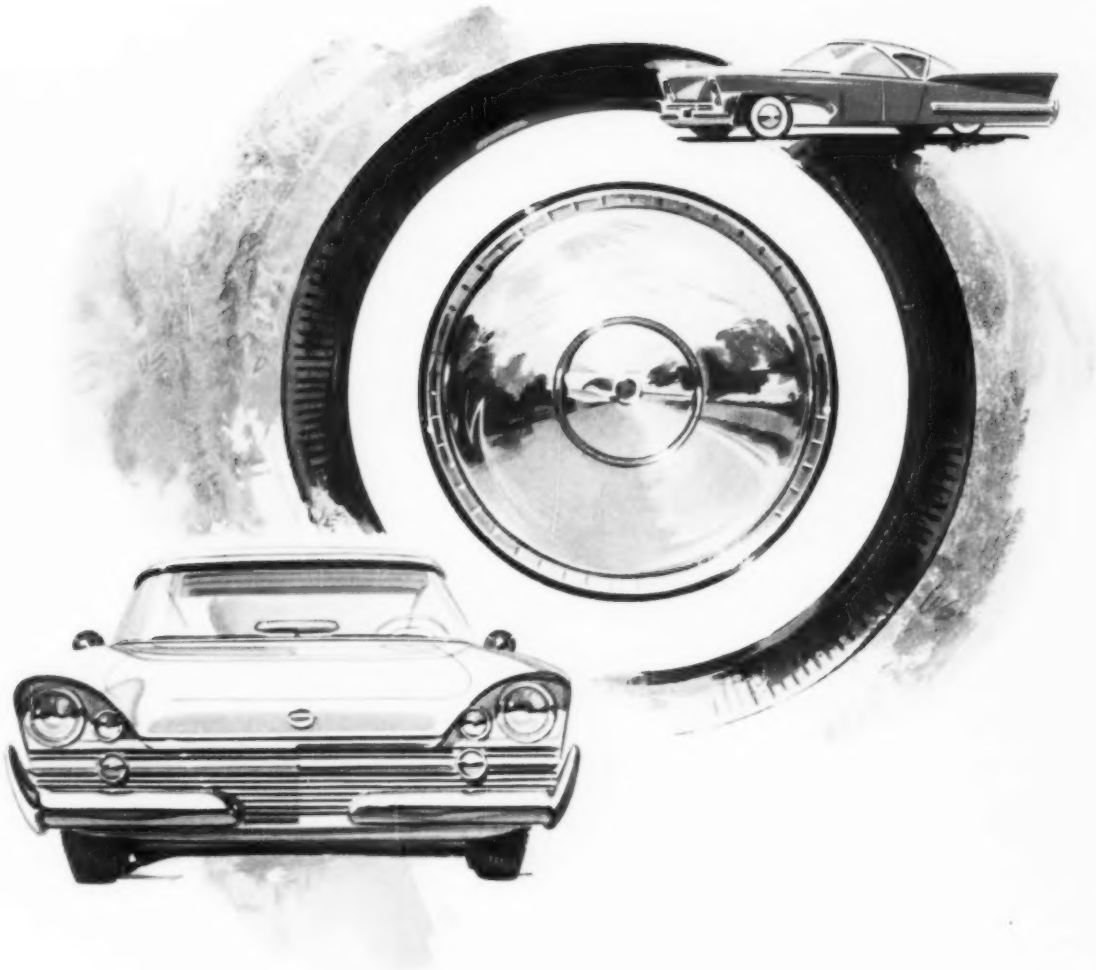
Tuition is $90 or $65 for those with Institute membership or for corporations holding memberships, and registration deadline is February 5.

AMA to hold packaging clinics

The American Management Association's Packaging Division will hold fourteen small-group meetings — mostly covering new subject areas — from February until June. An expected 400 executives will take part. The packaging clinics, which have been part of the program for the past three years, will cover four new topics: problems of packaging for department and variety stores; pitfalls and cost reduction possibilities of export packaging; the purpose, make-up and successful operation of the packaging committee; and training and appraisal programs for operators, supervisors and mechanics. These will be held in New York; fifth clinic, on materials and equipment in flexible packaging, is planned for March 17-19 in Chicago.

For the first time the Packaging Division will hold a series of workshop seminars (in New York) designed for intensive discussion and limited to 15 members. The seminars will cover packaging research and its new sciences; writing specifications for folding cartons, corrugated containers, glass and closures, drums and cans, and formed plastic and flexible packaging (five separate meetings); and the traffic manager's place in packaging.





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Lighting contest results

One hundred and thirty-five lighting installations (among them J. D. Harrison's for West End Library in Ontario, above), were awarded prizes in the 1957 International Lighting Competition co-sponsored by the McGraw-Hill electrical publications and the National Electrical Manufacturers Association. Each of the four divisions of contestants (electrical contractor, electrical distributor, architect/engineer, and electric utility) was further classified by lighting installation type: industrial, store, office, institutional, outdoor, or residential.

Individual high scorer was Everett H. Schaefer, lighting specialist for the Wisconsin Electric Power Company, with six awards. Second highest scorer was the team of S. J. Brochstein, Houston store designer, and H. G. Hrivnatz, lighting engineer for the Houston Light & Power Company, who won five awards. Six prizes went to installations in other countries.

Competitions

The Division of Housing of the State of New York, working through the National Institute for Architectural Education, is sponsoring student competitions requiring solutions to architectural problems, and aimed at discovering new economies in housing construction. The competitions, carrying cash prizes of $200 and $100, are open to students at the elementary, intermediate and advanced design study levels, whether registered in a school or working independently. A student may obtain a copy of the program for his grade by applying to the National Institute for Architectural Education, 115 East 40th Street, New York 16. Since the solution must be completed in any six consecutive weeks prior to April 30, 1958, the competitor must specify the dates of the period he has chosen for the presentation of his solution.

Artists in the Ohio Valley region are eligible to submit their oil paintings, sculpture, or drawings to the **Second Interior Valley Competition**, sponsored by the Contemporary Arts Center in Cincinnati, from which entry blanks may be obtained. The exhibition will open in Cincinnati on May 15, 1958, and the purchase prizes will be added to the permanent collection of the Contemporary Arts Center.

Industrial photographers are invited to compete for ten cash prizes totaling $1,375 in the forthcoming **Annual Graflex Photo Contest.** Entries will be accepted until March 1, and entry blanks may be obtained from local Graflex dealers or by writing to Contest Manager, Graflex, Inc., Rochester 3, N. Y. In addition to industrial photography, there are four other classes: news, professional, non-professional, teen-age.

Preliminary plans are being made for the Society of Typographic Arts' 31st Annual Design in Chicago Printing Exhibition, Chairman Hayward Blake has announced. The theme of this year's show will be "The Printed Word."

Events

Litter basket design search has been announced by Ben R. Paris, Director of the Bureau of Street Maintenance of Los Angeles in conjunction with the Los Angeles Beautiful Clean Community Crusade. Materials and suggestions should be submitted to Mr. Paris, City Hall, Los Angeles.

The Positano Art Workshop, which conducts summer courses in an Italian fishing village near Amalfi, has announced an "Italian Mosaic Tour", to be conducted by Joseph L. Young (*see People*). In addition to the Byzantine mosaics, tour members will visit modern European mosaic workshops.

Company news

The **American Society of Industrial Designers** has moved into new offices at 15 East 48th Street in New York. The new quarters are convenient, modern, and, ASID feels, more in keeping with principles of good design than its former location. The offices are being redecorated by a committee headed by William Renwick.

Sears, Roebuck & Co. has expanded into the German market, as a result of a new regulation facilitating import shipments up to $23.80 in value. The mail order house launched its campaign with a 48-page English-language catalog sent to 10,000 German families. Consumer interest has thus far been concentrated on textiles, leather goods, small appliances, electrical products, watches and coffee. The principal suppliers have been Swiss, Italian and British firms.

People

Andrew K. Nelsen, art director of Hazard Advertising Company, was awarded "Best of Show" in the Art Directors Club of New York exhibition of "After-hours" work.

James J. May (below), Inspiré Design Studios, of New York, has been appointed design and color consultant for Allied Rubber Inc., Montreal. He will be responsible for styling Allied's line of vinyl upholstery fabrics.

Joseph L. Young, California mosaic muralist, has been invited to be artist-in-residence next summer at the Positano Art Workshop in Positano, Italy. He has also been asked to conduct an advanced course for architects at The Institute of Industrial Design in Haifa, Israel, during 1958.

The designer of the pinwheel symbol below, is **Gabryel de Million-Czarnecki** of the Specialty Division, Design Laboratory of the Container Corporation of America. His design is the winner of a contest sponsored by the Point-of-Purchase Advertising Institute to select a symbol for its annual symposium and exhibit to be held next April in New York. Mr. Czarnecki was educated in Poland, at the Academy of Fine Arts and the Institute of Design, and has been a lecturer, instructor and painter, as well as a designer in the merchandising, display, and packaging fields.

We took a tip from a typist

The question came up at a Heads-of-Departments meeting. Production told Personnel that his new typist asked that a portion of her salary be set aside for U. S. Savings Bonds. Could it be arranged?

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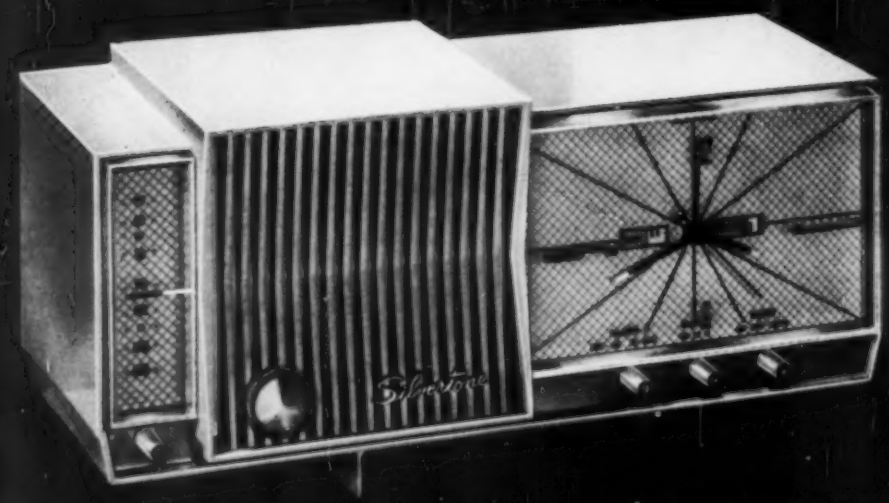

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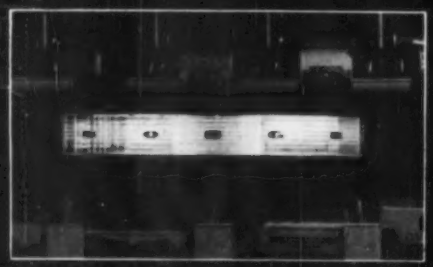

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The last of the magicians

In the elevator of a big New York furniture store during the holiday crush, we found ourselves jammed against the side of the car that sported a small advertisement: "Our decorators are not magicians; they are simply skilled artists prepared by experience to solve your furnishing problems." What stopped us was the negative restraint: the apologetic note seemed to hit a new low in Low Sell tactics. What, we wondered, was the psychology of the anti-magic claim? The car stopped and the crowd dispersed like an aerosol spray, propelling us out over sofas and chairs, and we completely forgot about getting the whole thing doped out.

When an out-of-town designer dropped by our office to chat a few days later, the chatter turned to the condition of the world of design. Looking alternately intent and perturbed, he launched into his troubles with a client he had just visited. "Just because they hire me to change their package," he began, "they think that miracles are going to happen. I presented three solutions for a new graphic program, all of which I consider O.K. as 'designs.' But when they asked which one I'd recommend as the focal point of a big promotion campaign about their new 'identity,' I had to say, frankly, none of them. They looked at me as if I were nuts."

"So I went on to explain to them," he went on to explain to us. "Some of their competitors have changed their packages drastically — lacking a chance to do much about the product, which is consumable. The results have been phenomenal. But," he paused, "there's the trap. Those first changes had an idea behind them. They went over because the redesign communicated a new type of package, a new personality for the company and product. The designer's work was backed up by ideas and material — and by the fact that he was first to do it. Now the by-standers think that all they need is a new face — any new face — and their product will do as well. I had to keep telling them that it doesn't work like that: design in a vacuum can't generate magic."

"The irony of it!" he nearly groaned. "Once there was a time you could claim that a new design would turn the world upside down — and plenty of us said just about that — and still industry was wary. Now some clients are so desperate for new directions that they've swallowed the story whole, and nothing you can say can get us out of this soup and get them back to the real point."

"What's that?" we ventured.

"Half the burden of *our* success in designing rests on *their* facing their own problems," he concluded.

And so it is, as we start to pen a few words of introduction to our fifth year of publication, that we can think of no more pressing theme than this designer's refrain. This magazine has devoted some thirty issues to backing the industrial designer's effort to serve American industry. We have tried to describe his abilities as fact and not fiction, to portray him as the skilled generalist that he is, and not as the Great Magician that legend once made him out to be. And we shall continue to act on the belief that realism is the firmest kind of support. For over-selling is ultimately un-selling, and if the profession fails to bury its old legend and its old mask, damage to its reputation can only be compounded by reality.

Not that design service doesn't need to be *sold* — especially to the large segments of American business that have had no experience with what it can do. But the sales pitch can be lowered to a more credible note. Design, like statistics and practically everything else, is only as good as the use one makes of it. And there are plenty of uses that do not demand voodoo claims. There is the designer's service in analyzing a problem and finding original ways to solve it, in helping a client formulate the real problem before he decides how to tackle it, in . . .

Now we see just why they were holding back in that elevator ad! — *J. F. McC.*

M/R

to students of marketing, M/R means statistical research into broad patterns of consumption

to students of consumer behavior, M/R means probing the motivations of the man in the marketplace

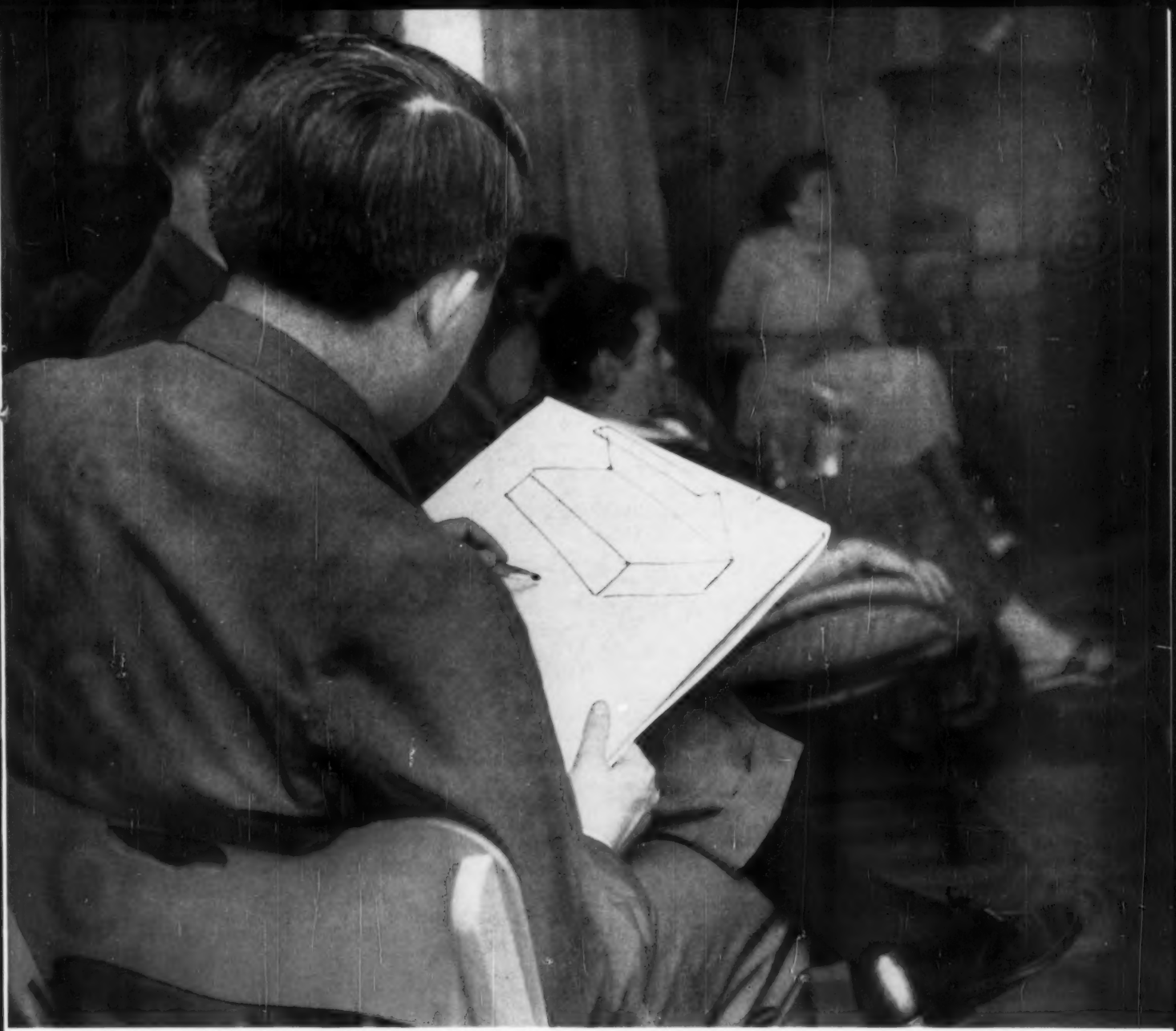
to planners and designers of products, M/R means the challenge of a new discipline—sometimes helpful, sometimes threatening—that is slated to affect the entire design process.

A survey of problems, techniques, schools of thought in market research: Part I of a series

by AVROM FLEISHMAN

As designers work their way up the corporate ladder these days, they often find themselves rubbing shoulders with another new breed of specialist: the market researcher. Upon checking, designer and researcher usually discover they are both called in to minister to management's progressive ailment: uncertainty about the consuming public. They are often asked to diagnose the same problems: When should a package be changed? What kind of image should the corporation put up for the public? What does the consumer really want from its product? How can it be changed? Or why does he refuse to buy it at all?

The industrial designer, who has staked his reputation as a general practitioner on his own way of answer-



Designer visualizes consumers' ideas at Center for Research in Package Marketing

ing such questions, frequently finds his methods challenged by a man with a slide rule in one hand and a copy of Sigmund Freud in the other—and the sight, even when viewed philosophically as an inevitable development in a scientific age, has proved unnerving to many a professional. Some designers have gone so far as to complain that the research consultant's influence constitutes a "straight-jacket" on their creative answers, while others fear that it lures some professionals down a too-easy road to hard answers.

Yet the conduct of business today, in an era of planning, programming and fact, is such that few designers for industry can seriously hope to avoid contact with market research of some sort. Probably the most dangerous thing about this research is ignorance of it: it is a vast young field bounded by many dissimilar techniques, plagued by controversies and uncertainties, yet peopled by many serious students of human behavior who can demonstrate growing proof of their usefulness to American business. Before the designer decides whether to lick 'em or join 'em, he needs to know how they go about gathering facts and figures, how they put them to work to build conclusions, and what potential use this might be to his own line of problems. It is to this end—first exploring the types of research organizations and the techniques they use, then studying the forms in which research is influencing design—that ID devotes these articles.

Introducing M/R: how it shapes up today, how it got that way, what people are saying about it

What is the market for M/R?

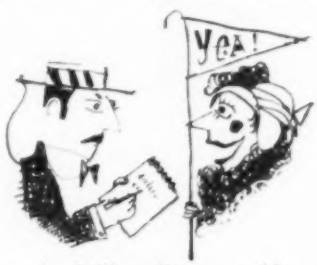
The fact is that M/R has been around for some time, and the designer has been in contact with it for some time—but only in the last decade has the touch been felt as a rub. There are probably several objective reasons for this irritation. First is a sharp increase in the money American business is willing to spend for research into marketing problems—somewhere between $150,000,000 and $250,000,000 is estimated to be spent on market studies and analysis each year. To put themselves in the path of these funds some 250 firms—as listed in Bradford's Directory of Marketing Research Agencies—have grown up or sprung up. The number of business concerns that engage, formally or informally, in analysis of their own markets is legion, and the list of some 125 advertising agencies that have added their own special research staffs indicates that what was once a flirtation with figures has become a lasting marriage of convenience.

There is also the fact that "motivation research"—more accurately defined as depth probing—has been capturing headlines during this booming decade of marketing. Actually it represents only a small share of total M/R activity (it is estimated in the neighborhood of $12,000,000 a year.) Yet the recent billion-dollar bustle over motivation studies and their promises of plumbing new depths of data has tended to obliterate the fact that a less sensational kind of M/R, economic analysis of changes in sales, has long been a tool in corporate planning—and still is.

In many companies market predictions on buying power for projected new products are made by a department known variously as Market Development, Sales Development—or simply as Market Research. In an increasing number of cases, this department is integrated with a product planning operation, where it tends to change from an impersonal manipulation of facts to an interpretive guide for "line" designers and planners in tailoring new products to a future market. In such cases, under the aegis of an influential planning coordinator, all of the creative forces that fit out a new product—engineering, design, and marketing—draw on a central core of information. What does the potential customer have now? What does he need? What are his standards of acceptability? In what way could existing products be revised, or new ones created, to meet anticipated needs? A company that pursues such questions with a specific research program can be said to have moved from "quantitative" to "qualitative" research—from asking *how many* have purchased something and are likely to purchase it in the future, to seeking the reasons that underly the consumer's actions and his probable response to any given new overture.

Growing up—in theory and practice

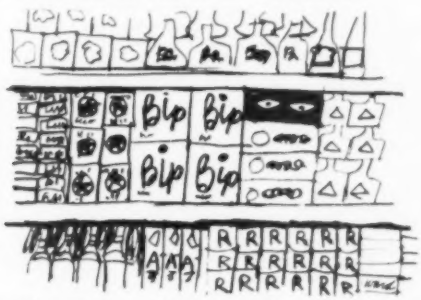
The current debate on "subjective" depth probing vs. "objective" questionnaires is only the most recent of the conflicts that have flared up in the wake of the transition from quantitative to qualitative research; but it is by no means the first. The original survey on a marketing problem has been traced back to 1879, when an advertising agency telegraphed grain merchants across the country to determine whether, on the basis of the year's crop, a new piece of equipment should be pushed by a maker of agricultural machinery. By the turn of the century, marketing men were using the less extravagant but more thorough method of mail questionnaires to find out what they wanted to know about cereals, farm equipment, textiles and automobiles. But for every clue they found, they also found themselves faced by the very issues that still dog M/R today: the accuracy and adequacy of samples, the possibility of questions that command biased answers, the problem of objectivity in interpreting data. They soon learned statistics were only as good as the use made of them — and went on making use of them according to their individual lights. It was not until the '30's, when the Depression demanded greater marketing efficiency, that researchers began to turn to the methods of the social sciences both for improved procedures, like statistical sampling, and for approaches to more penetrating and revealing questions. This marked the cross-pollination of the two lines from which the modern market researcher is descended: the early advertising and marketing fraternity, primarily amateurs in this field, were later joined by the economists and statisticians, to form the first branch of researchers; the second sprang from quite the different root of psychology and the social sciences. The emergence of the professional market researcher and his complex trade proceeded, from then on, to be stimulated — and alternately disturbed—by both branches.



The background of Elmo Roper typifies the way many marketing men evolved more sophisticated research methods in this period. As a sales manager for clock and jewelry manufacturers, Roper began backing up his views to management with the statements of retailers, then consumers, whom he had personally contacted. Perceiving the usefulness of the approach, and reinforcing it with more thorough methods of interviewing and preparing questionnaires, Roper set up his own firm in 1933 to take on product surveys. As he found his clients asking for tighter break-downs of results, he found himself involved in an ever larger number of interviews. It was in direct response to business's need to know just how many "women with two children in cities of over 5,000" preferred Wheatsies that scientific statistical sampling was introduced to market research.

At about the same time, the academic researchers — interested in methods of understanding and measuring the subtleties of human behavior — were first heard in marketing circles. Columbia University sociologist Paul Lazarsfeld, whom many regard as having "made" the field of market research by outlining its basic concepts and techniques, wrote a series of articles in the mid-Thirties that had wide influence. In particular, his essay of 1935, "The Art of Asking Why" focussed attention on the limitations of direct questioning in unearthing the reasons for the consumer's actions in the market-place. Such concerns spurred a growing realization that feeling, not pure reason, often dictated the action of the American as consumer, voter, or citizen; and that often those feelings and motives were unknown even to him when he answered a question. Clearly, there was need for understanding the consumer as a complex human being, not simply as an economic unit. Today, reflecting some of the results of the turning of that corner, Lazarsfeld is a consultant to the Roper research firm; research teams in even the advertising agencies boast numerous Ph.D.'s, some of them dong research about research.

Market research is a natural companion to the growth of Marketing as a concept of modern business. Both have flourished in a period of heightened business risk — when investments in product development must be greater, yet the capacity to control a market or even to know all the variables is usually less. Never before have buying patterns been more complex and more changeable, and never before have decision-makers so needed the steadying arm of reliable information on which to rest their decisions.

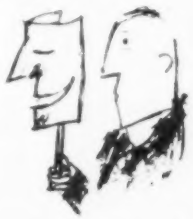


In the marketplace itself, the eclipse of personal retailing by the impersonal supermarket has demanded that the sales talk be built into the product and its package. This in turn opened the way to new importance for advertising that presells the consumer before he gets to the product. and keeps him convinced after he has tried it. All this, amid population booms and class upheavals and new patterns of transiency, has placed a premium on effective methods of communication and control from producer to consumer — first on advertising, then on design — and now, when it is apparent that feedback is required to perpetuate any effective communication, on market research.

Some reservations on research

There are many common, and often justified criticisms of market research as it is practiced: some claim that it is touted as "scientific" while conducted on a hit-or-miss basis, often by unreliable or unskilled field workers; that it does not make full use of existing sources of information, such as company records; that it tends to neglect practical problems, in favor of the more theoretically interesting ones; that it boasts 20-20 foresight but sometimes demonstrates 20-20 hindsight. Even marketing men who rely on it will reveal misgivings: that abstruse reports often conceal voids or exhibit highly imaginative theses without sound backing in fact; that its conclusions may be vague, impractical or irrelevant to business decisions; and that at best it merely verifies the common sense or intuition of the experienced specialist. For researchers and businessmen alike, there is always embarrassment over the fact that two independent studies on the same subject frequently come up with contradictory facts.

To this catalog of complaints, the industrial designer has added a few of his own, drawn from his dual experience as businessman and artist. The most common spring from the old question of science vs. art: that decisions based on scientific investigation leave little room for a "creative" person to function. This may be expressed in various ways: by doubting the relevance of factual data in esthetic problems; by fearing the effect of standard answers in encouraging conformity of design; or by claiming that too much

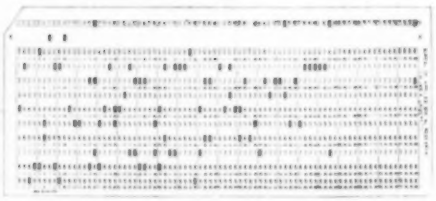


obedience to what someone can prove the public wants forces "bad design." The designer has a traditional doubt about the researcher's ability — particularly in motivation work — to understand the consumer better than he can, with his highly intuitive methods that have always obtained the kind of data a creative person needs.

Yet there are indications of real change in these attitudes. In a recent informal questionnaire from this magazine to fifty independent and staff designers (a purposely biased sample from which incomplete answers were desired for unscientific purposes), a number of the respondents were frankly interested in and eager to accommodate research data in their design projects; others indicated that they had been doing it for years and didn't know what the fuss was about; and most package designers questioned, who once felt acute competition from M/R, seemed to have made peace with it and in many cases have hired their own research.

Professional researchers are well aware of the resistance to their influence on design decisions. It is almost axiomatic in their field that, if their data is to be objectively received, the research staff must report to someone superior to the man whose work is affected by the research findings. But to reassure designers, researchers who work closely with product or packaging problems chorus their intention not to inhibit creativity but to guide its application to the problem.

At some point all generalities about M/R break down, and the judgments must be referred to individual schools of thought and practice. Perhaps the only valid generalization about this many-headed hydra, one that can at once reassure the designer and help him trust and utilize it more effectively, is this: M/R is based on scientific methods, but to a large degree this means the science of people. These studies will always be inexact, impure, and ultimately useful to the extent that they too are creatively researched — and creatively applied to problems at hand.



The oldest, and still the most popular, way of getting information—asking people what they think, want or feel, then tabulating their answers—has grown into an elaborate and highly controversial technique. As it grows, new approaches and methods are added to the complex of activities known as **SURVEY RESEARCH**

Survey research of the American market has come a long way since the turn of the century when advertising agencies sent letters to client's mailing lists and salesmen were instructed to make inquiries along their routes during the slack season. Their questions were straightforward enough, and the answers hinted at a desirable direction to take, or at least bolstered their confidence. *Do you use our product?* and *How do you like it?* were standard fare, reflecting the anxieties and most pressing curiosities of the man with his eye on the sales charts. But when it came to knowing how successful his product was, "counting noses" of those who bought and liked his product didn't tell him much more than the sales figures themselves. Also—since in many cases only those who used the product were consulted—the question of limited and biased samples was raised. As for doing something about the results, there was nothing to go on but the vague generalities of likes and dislikes, often contradictory and usually impossible to act on directly.

This direct approach is not just an antiquated relic of primitive days: simple as it is, neither long experience nor scientific sophistication have been able to improve it much as a method of getting basic issues straight before proceeding to the subtler ones. But research organizations have tended to take increasingly sophisticated views of new methods, and they try to meet the vital question of underlying causes. A consumer questionnaire today is like a set of geological strata; it generally leads off with questions like those above, then proceeds to less easily defined matters, and finally includes teasers that the answering housewife may well wonder why anyone would want to ask. The most advanced survey *design* (a key word, and a suggestive one) attempts not to find out what the respondent thinks, or thinks he thinks, but to measure consumer *reactions* by simulating the buying or using circumstances with questions.

Although some surveys limit their objective to simply describing the market—or other—situation, most of them try both to describe and to explain. A special type of survey (for example, the election polls) is designed not to describe or explain a current state of affairs but to predict a future one—although some researchers insist that *all* surveys must be predictive to be of any value for the client. The progress of market surveying may be traced from the descriptive to the explanatory to, in some cases, the predictive.

Much as it has changed and grown in accomodating itself to marketing realities, objective survey research has retained its popularity. Reasons: it is fast, relatively impersonal, and, compared to the cost of bringing a product to market, relatively cheap; since it offers objective answers to objective questions, it lends itself to standardized procedures in coding, interpreting, and reporting results—hence, to "semi-scientific" use.

But the virtues that allow it to function so efficiently and, in large measure, mechanically are shortcomings in relation to other means of gathering data; investigation is restricted to a fixed pattern which, while valid to social scientists and coherent to businessmen, often seems inflexible and inhibiting to marketing problem-solvers. It is too rigid for some subtle but possibly important differences of response; it does not delve adequately into emotional areas; it is open to nuances of word and form that may bias the question and distort the answer; and, in a nation as large and varied as this, and it must be careful to take into account where the poll was taken, and who was polled.

By definition, survey research is based on tabulating the views of fairly large and representative groups of citizens. This brings up the critical matter of "sampling," of choosing respondents that truly represent the desired cross-section. Most surveys in the past have been based on the "quota sample": first the groups of people able to act (i.e. to purchase, vote, etc.) are determined; then from some published source of information (usually the national census) the relative proportions of people to be interviewed can be calculated. For example, if a product is bought by married women and teen-age girls, and the population shows them to be in a 60%/40% ratio, the sample must be 60%/40%.

A currently more popular method is the "random sample," which gives each potential user in the total population an equal chance of being interviewed, without depending on even an expert's judgement on which is the relevant group. Such a survey might check every tenth house on every fourth

street in each of thirty-four cities of various sizes, corresponding to the national distribution of population.

Where the quota interviewer chooses arbitrarily among the people in his assigned groups, the random interviewer is, paradoxically, much more closely tied: he must follow a statistician's instructions on which doorbells to ring for "pure probability" selection. Since results must be projected widely from a relatively small number of interviews, precision techniques such as *pre-listing* are used. Here the precise addresses to be visited are selected randomly from a census chart of the neighborhood to be studied or from a fieldworker's list of all the addresses. The method is not only painstaking, but it becomes expensive when it requires "callbacks" to "not-at-homes" (who may differ in certain characteristics from the "at-homes", and whose omission might therefore introduce a bias in the sample).

How survey firms are organized

The science of research had to adapt itself to marketing, but the researchers themselves more often than not grew up in marketing and hold its requirements in the front of their minds. A prominent example of this type of survey organization is Elmo Roper's office, where Roper's background in sales has set the operating pattern for many years. Like many firms in the field, Roper and Associates considers itself a marketing consultant to management, using research methods to back up its counsel. It also does opinion polls in such areas as politics—where it gets its widest publicity—and employee relations, but these make up only a fraction (about 10% in public affairs studies) of its work. As a working organization, Roper is typical of the field in its strongly *merchandise*-oriented approach to commercial problems, and it takes a "hard facts" attitude in setting up inquiries and interpreting them. Businesslike thinking is reflected in Roper's choice of personnel: like most research executives he has surrounded himself both with people who know their way around research labs and with those who are at home in the labyrinth of the market-place.

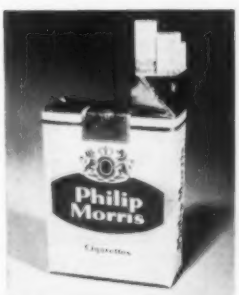
A medium-sized organization, Roper and Associates maintains a New York staff of thirty-five, including ten research directors who are responsible for dealing with the client, designing a tailor-made study for his problem, supervising the administration of the questionnaire, and interpreting the results. To ask the questions, Roper has a staff of about two hundred part-time interviewers around the country, supervised by eight regularly employed regional supervisors. The range of organizational sizes in other firms working with these techniques goes up into four figures: Alfred Politz Research, for example, has an office staff of two hundred and a field force of thirteen hundred (only six hundred of them exclusively with Politz). At the other extreme, an academic researcher who takes on commercial work—like sociologist Robert S. Weiss, University of Chicago, who calls his firm Research Associates—may work with one or a few of his colleagues and do much of the field interviewing himself.

The social scientists in the research field give off an aura of refined techniques and close personal contact with their client's problems, and the king-size organizations are trying to emulate them in these respects. Politz Research, for example, services a core of eight to ten retainer accounts—most of them long-standing relationships—and builds up its

ELMO ROPER AND ASSOCIATES: SURVEY OF CIGARETTE MARKET SETS DIRECTION FOR REPACKAGING

Elmo Roper (*above*) *directed study of* 10,000 *families' smoking habits for Philip Morris Inc. in* 1953 *which revealed the need to change the Philip Morris package and guided later studies for Marlboro and Parliament packages. Word association test* (*included in questionnaires*) *revealed underlying image of old Philip Morris pack to be old-fashioned; designer Egmont Arens developed* 2,000 *labels before new image was agreed on. Confirmation included shelf visibility test by Container Corp.'s Design Laboratory, store interviews by Philip Morris staff, follow-up interviews by Roper Associates. Research gave Arens direct guidance on Parliament pack: questionnaire indicated preference for red-and-white design, but taste test showed preference for* (*same*) *cigarettes in blue-and-white pack.*

Philip Morris: *when research indicated negative qualities of old pack, designers had to evolve new brand image.*



Marlboro: *direct questions indicated* 3 *to* 1 *preference for flip-top box, which started new trend in cigarette industry.*

Parliament: *word-association test of smokers showed blue package meant "higher quality tobacco" than red pack.*

intimacy with the client's problem by maintaining working groups with project directors for each. The advantage of the large organization is that it can weld people with a variety of backgrounds—statistics, psychology, sociology, economics, business administration—into the inter-disciplinary science that is market research at its most highly developed stage. But besides integrating specialists in the modern social sciences, Politz Research has built up a reputation for strict scientific methods and ingenious questionnaire procedures. Much of this public notice stems directly from the dynamic personality of Alfred Politz himself, who has published widely his ideas of the standards for adequate research, and has engaged in debates on the validity of other methods (most notably in recent years with Dr. Ernest Dichter on the subject of motivational research.)

Politz on questionnaire design

Politz has been rigorous in defining the goal of his work, and has written an article (with W. Edwards Deming) "On the Necessity to Present Consumer Preferences as Predictions." "If marketing research is to perform a useful function," he says, "it must be put finally in the form of predictions for the use of management. The form of the prediction may be, for example, the likely increases or decreases in sales that would result *under certain circumstances* from certain changes in quality, style, package, color or price of a particular product, or from some particular method of advertising it. Put in symbolic form: Under condition C1, action A1 will lead to result R1, and action A2 will lead to result R2. Under condition C2, action A3 will lead to result R3, and action A4 will lead to result R4."

The goal is admirably exacting, and whether or not it can be realized in every case is still a matter of discussion in research circles, but the standard has its effects in Politz's survey methods. "The survey, to be useful," he says, "must be laid out in advance so that it will provide information on which to base predictions of the kind that management will need. The first step, the discovery in advance of the relevant causes and conditions, is the foundation of the survey. The research man must dig into the problems of the management, to be in a position to know them." This approach implies that the problems must be formulated from already-acquired knowledge, but another method is to set up diagnostic surveys to get new ideas on what the problems are; sometimes this is done through fixed-questionnaire research, and some firms use depth probing to uncover critical areas.

Politz's predictive surveys are based on a healthy distrust of the "truth" of answers to his questions. He believes that what the respondent says may be true of what she really thinks, but will not correspond to what she will do in the buying situation. But his way of predicting what she will do is not by getting at what she "really" believes. Instead, he has written, "to predict reactions one must study reactions, and these are not the same as opinions, attitudes, motives; the latter are of interest only to the extent that they happen to reveal reactions." The questions that Politz's interviewers will ask, therefore, may have very little to do with the problem explicitly; the consumer's reactions are predicted from answers to a combination of questions that border on the issue but do not ask what the respondent thinks about it.

ALFRED POLITZ RESEARCH: TESTING FOR RE-IDENTIFICATION PROGRAM THROUGHOUT DESIGN PROCESS

Alfred Politz's *(above) studies paved the way for Socony-Mobil Oil Co.'s name change, led to redesign of station identification. Continuing survey of gasoline market indicated poor identity value of old "Mobilgas" logo and Flying Red Horse trademark among Mobilgas users. Old Socony-Vacuum shield was isolated as one source of confusion, by Politz test of typical road conditions* (1). *Peter Schladermundt Associates made new design proposals* (2) *guided by Politz tests of relative identity strengths of variations on logotype and symbols* (3). *Confirmation of new sign's greater recognition value was made by Politz visibility test* (4); *designers extended new logotype in wide corporate re-identity program.*

1

Research: *test of old sign was movie of typical driving scenes with equal exposure of all companies' station signs; consumers remembered fewer Mobilgas signs than two competitors'. Goals set for new sign included trim shape for modern stations, better visibility for high-speed motoring, simplification for stronger identity.*

4

Research *confirmed increased visibility of new sign by lab tests; logotypes were jumbled to restrict study to lettering, without allowing consumers to guess familiar word. Angle and distance of visibility were both tested, showing readability in an area seven times as large as old sign.*

A questionnaire that looks dull, harmless, unrevealing, even irrelevant, may be a web to catch the consumer in the act —or, at least, to predict what the act will be.

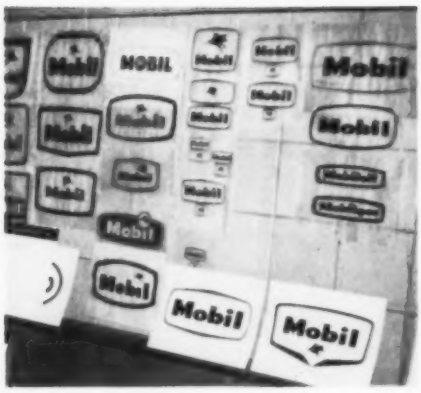
In Politz's continuous survey work for Chrysler Corporation, for example, the question of "pickup" or acceleration came up. What could the company do about the known fact that customers wanted more of it? Preliminary investigation showed that though people want powerful pickup, they hardly know whether or not a car has it. Politz's staff theorized that the motorist estimates differences by comparing his own sensations; they guessed it was the difference in his own bodily sensation of pressing down the accelerator, that creates the feeling of acceleration. Formulating this theory into a testable hypothesis, the researchers came up with a rather bold idea: if the actual acceleration of two cars is equal, the motorist tends to give more credit for acceleration to the car with the softer accelerator spring. The test of this notion had to be indirect, for people with any pride in their driving ability or knowledge would tend to resist such an aspersion. Therefore the "irrelevant" questions: the respondent is asked whether his car has good pickup, and in another part of the interview the ease of handling the car is discussed, with the accelerator only one of a number of items talked about. Researchers feel that each reply is meaningless in itself, but when they are all cross-referenced, the results might be revealing. In their Chrysler study, Politz Research found that among motorists who report difficulty in pushing and keeping their accelerators down, 26% gave their cars credit for good pickup, while among motorists who report that it is easy to press and keep their accelerators down, 61% gave their cars credit for good pickup. The Politz test tried to suggest actual driving conditions like pressing down the gas pedal and having the feeling of acceleration; it studied the relation of these reactions in people's minds without depending on them to introspect the relation. Politz claims his procedure delves into motivation without asking "why": standardized questions that can be quantified and evaluated show what really happens in the buying or using act.

Simulating the market: consumer choice tests

Other research firms apply the idea of simulating reality more literally—an approach with which Politz himself is in agreement, but which he thinks too costly on a large scale. Opinion Research Corporation of Princeton, New Jersey, has experimented for almost twenty years with the techniques of interviewing the consumer *with* the actual product, and uses a variety of ways to present the product at different stages of its development. In fact, ORC makes a specialty of research on *new* product development, providing a wide range of services to estimate the acceptance of basic changes in merchandise.

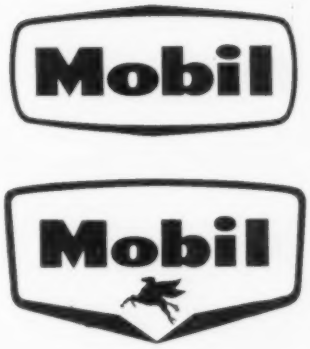
Style and design testing at ORC lets respondents make choices among possible variations of a product, relates these to the price they are willing to pay, then pre-tests the resulting revised version of the product after the sale of a limited number of models, to check out its total acceptability and iron out any "bugs." To make these tests it employs a widespread interviewer force of 1300 to back up its office staff of 110, providing them with sketches (by its own art department) of the proposed product or photos of the fin-

2



Design: *studies examined relative advantages of various shapes, colors, and combinations of logotype and trademark. Manufacturing and materials research by design firm established optimum size of new sign for production from single sheet of steel, and for production in plastic of internally illuminated signs.*

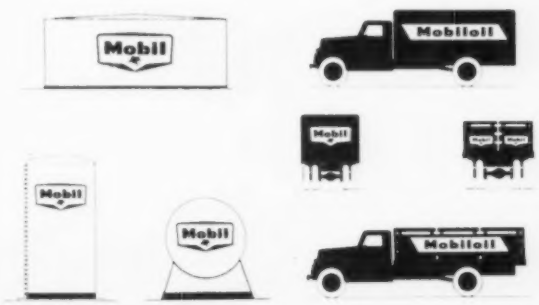
3



Research *evaluated two design proposals: oval without symbol, and modified shield with reduced symbol. Opinion test showed oval was preferred to shield when symbol was removed, but shield was preferred when it had any kind of symbol at all; sign with Flying Red Horse got highest vote. Formula was evolved for optimum division of space between logo and symbol.*

5

Design: *applying sign to trucks, gas tanks, stations and other products, designers had to create variants of new sign on design principles alone, in absence of research criteria. Some applications to tanks and trucks use sign form directly, others modify sign elements in wide bands down length of truck or around tank.*



ished model. Not content with even this elaborate approach, the firm has available to it at Hopewell, New Jersey, a product demonstration center called the "Mirror of America." Here large audiences from a file of ten thousand in New Jersey and Pennsylvania can be presented with stimuli under controlled conditions. Products can be seen in the round and can be examined and manipulated by the respondent, and small groups can be probed for deeper reactions (see "Experimental Techniques," page 41). The equipment at the "mirror" may sometimes include six kitchens of different types; an instructor and a home economist are on hand to conduct in-use tests.

Since it is part of the Princeton community of public opinion pollsters that followed George Gallup there, Opinion Research does much of its work in conducting attitude measurements on such intangible areas as industrial and public relations. But its merchandising studies, rooted in the product itself, examine the functional elements in relation to the user.

A typical project at ORC is the study made for a manufacturer who wanted to produce a single unit containing storage, sink, and work-surface facilities for kitchens. An ORC researcher, the company's design engineer, and a home economics consultant studied consumer reactions to kitchens available on the market while other researchers conducted wide-scale investigations of the available kitchen space in new homes. Finding that women felt there wasn't enough room in specific areas of their kitchens, and that new homes were providing no improvement relative to the size of kitchen units being manufactured, the committee proposed new arrangements of existing facilities fitted to typical spaces. By showing sketches of the new designs to housewives, ORC learned which of them were most acceptable. The company then built working models of the most popular designs, and ORC persuaded families that had just bought new kitchen equipment to substitute the test models. Housewives were instructed in the most efficient use of the equipment and, after three weeks, interviewed for their reactions. In addition, subjects invited friends and neighbors in for a kitchen-examination party, and these guests were interviewed a week later. The survey resulted not only in pruning down the design to what women were actually willing to pay for, but indicated that, in terms of the present market, the large single-unit piece was unacceptable. The research process, even though limited to a relatively small sample, was costly; but it enabled the manufacturer to adjust his product line to include the models that showed greatest acceptance.

ORC sticks close to the merchandising situation, gathers opinions at all stages of product development, treats them as the basis for design and marketing proposals. At a greater remove from examining the effects of the product is the attention some survey firms are giving to the make-up of the consumer who may, or may not, buy it.

Status images under survey

Marketers have long realized that certain brands of products, while quite similar in actual constitution or performance, differed markedly in their appeal to various social groups. These differences were ascribed by social scientists to the fact that the sale of certain types of products (e.g. beer, cigarettes, cars) is greatly influenced by "reference groups"—the people with whom one likes to compare himself, tries to emulate. This assumes that what matters to a consumer when he buys is not necessarily the objective reality of his position, but this in relation to the image he strives to attain. Against this picture of what goes on in the market, marketers, packagers, and advertisers can see that their brands are bought or rejected in large measure on the basis of the *social image* their combined effort has produced over the years. Research has increasingly come to be used to find out what status images various groups attach to certain products, in order to indicate what new images will be required to capture new markets without losing the established ones.

OPINION RESEARCH CORP. TESTS CONSUMER REACTIONS TO PRODUCTS DURING DEVELOPMENT STAGES

Dilman M. K. Smith *(left) ORC's Vice Chairman of the Board, directs a product pre-testing program with large consumer groups at "Mirror of America" demonstration center (below). Merchandise evaluation by consumers (right) reveals reactions to quality, style, function, price, features—on wide range of products from clothing to kitchen equipment. Product pre-testing allows ORC to guide design modifications from sketch stage to trial sales tests, establishing consumer acceptance of each new element before commitment to tooling and production. When research requires wider field survey, photos of product proposals are included in questionnaire.*

Classification of consumer groups—once based entirely on income—gradually came to include the criteria of education and occupation. In their efforts to classify more dependably the consumers most likely to buy a given product, survey researchers have heightened their understanding of people and learned to relate their economic behavior to the larger patterns of their lives.

Status symbols and broad images are not confined to depth probing, although they have come to be identified with it through books like Vance Packard's *The Hidden Persuaders*. Even the "hard-facts" survey research firms are using sociological and psychological theories and methods in an attempt to put motivation on a measurable basis. Typical of the trend is the kind of work done by W. R. Simmons and Associates Research, Inc., of New York. President Willard Simmons and Vice-President Richard Brumbach both came out of the Politz organization still committed to rigid, though highly refined, statistical sampling, and fairly direct questionnaire surveys. But in dealing with such clients as a beer manufacturer who showed good sales in some districts and poor sales in other districts of the same economic class, Simmons has broadened its methods to meet problems that standard marketing procedures failed to solve.

Simmons began this study with depth interviews indicating—in two otherwise comparable groups—a marked difference in attitude: one accepted its low status; the other thought of itself as having a much higher status. The resultant questionnaire asked a wider sample of respondents to project their feelings about beer in relation to status (e.g. Imagine a longshoreman buying beer; which brand would he buy?). By correlating group brand images with actual class status, Simmons was able to determine precisely which market segment was reacting adversely to the product's status connotations. As predictive researchers, they went on to isolate the elements—package, distribution, advertising—that contributed to the status image, and weighed the effect change would have on the group to whom the image already appealed, in order not to lose in the very act of broadening it, the acceptance it already had.

The Simmons approach not only requires a quantification of the subjective responses, but implies that these responses are meaningful only when correlated with the objective class positions of the respondents. In order to accurately classify market groups, Simmons employs the Index of Social Position, developed by Yale's August B. Hollingshead, to organize its data on consumers into an estimate of their social status in the community. The Hollingshead index is a weighted multi-factor rating that estimates residential position (neighborhood), power position (occupation) and taste level (education). The score is said to reflect a family's actual place in the community instead of a subjective judgment of it by the interviewer.

Other market researchers have been conscious of the need for measuring who the consumer is by what he wants to be, but have approached it through psychological rather than sociological techniques. In the next section, depth probing is discussed as one of the directions such "motivational" research is taking

W. R. SIMMONS AND ASSOCIATES MOVES FROM STATISTICAL ANALYSIS INTO MOTIVATIONAL ANALYSIS

W. R. Simmons (*left*) *specializes in precise statistical sampling techniques. His firm maintains microfilm maps of all U.S. residential areas as the basis of pre-listing survey interviews (a technique of sampling described on page 31). But the firm is currently moving into psychological studies, as part of survey research trend toward using "projective" techniques in questionnaires.*

To discover brand images held by different social classes, respondents are asked to give associations with drawings. In test below for gasoline study, respondent is asked to fill in name on gas pump, revealing association of brand with types of service and status factors. Association of a brand with the large, modern station may indicate image of gas company as impersonal and forbidding, or as reliable and efficient, depending on class position and attitudes of different consumers.

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"Would you look over these ads and compacts and just tell me any ideas that may pass through your mind? I once had a compact like that . . . got it as a gift from a boy friend . . . that was many years ago . . . I was very flattered . . . because I considered it an expensive gift. What do you think of its shape? (She handles compact.) Feels comfortable in the hands . . . I mean something round would be less easy to handle . . ."

Today nearly all parties agree that it's not enough to describe merely "what" takes place in the market; to do something about it requires knowing "why" it takes place. Since "motivational research" may be approached objectively or subjectively, a new field has grown up using "unstructured" interviews for

DEPTH RESEARCH

The depth interview is a psychological technique for getting at consumer feelings and attitudes: few direct questions are asked by the interviewer, who encourages the respondent to talk about his experiences and thoughts. Unlike a survey questionnaire, the interview is loosely framed and involves a much smaller sample of the population, in order to probe each respondent intensively. The greatest value of this method, which has been carried over from the psychiatric clinic into a wide variety of marketing problems, is that it brings to the surface the deeper motives in people's personalities that affect their purchase, brand selection and use of a product.

What makes this method attractive to a growing number of businessmen who never before used a psychoanalytic term in their lives is partly a matter of content: depth studies traffic in frankly emotional responses to ads and fads that no other research can touch—the all-too-human but ever-present psychic needs, conflicts and fears. But many an unprejudiced marketer's eye has been caught by certain advantages of method that depth research can claim: it's the only kind of survey that doesn't assume it knows the right questions to ask from the start, but tries to formulate them in the process of finding out what's important to each individual it interviews. So suggestive have the depth probers been in giving their clients a fresh look at hide-bound marketing formulas, that many in the "hard-facts" school of questionnaire researchers have brought in depth interviewers to help generate working hypotheses—especially in advertising symbolic images, with which the depth probers have had their most notable, and most notorious, success.

Criticisms of depth research have, of course, included both its content and its form. Books like *The Hidden Persuaders* and magazines like *The Nation* have been indignant about its intrusions into the private properties of the mind in order to manipulate people's weaknesses by non-rational means. Many traditionalists in business still hold out against its symbolic—often sexual—explanations of everyday behavior. But the most withering objections have been on grounds of methodology. Quantitative researchers have scorned the small sample studies that depth probing necessarily employs, and have scored unstructured interviews as "free-wheeling." Further, its subjectivity of interpretation leaves the depth field open to invasion by glib but untrained Johnny-come-latelies who can *sell* their notions but cannot base them on scientific principles.

Much of the argument on both sides of the fence overstresses the depth of probing involved. Although initial interviews may take the form of an open discussion, subsequent interviews follow a "guide" or outline of the key areas involved, as indicated by available marketing data and previous psychological experience. Sticking to the subject and at the same time maintaining the friendly rapport that encourages intimate self-revelation demands a relatively high level of interview skill, and much of the field force is drawn from students and teachers of social science and psychology. But the interviewer's primary—and hardest—task is to report exactly what went on in the session, without injecting his own feelings or interpretations. Thus the typical depth interview report (see top) contains page after page of rambling conversation; the job of interpretation is something else again.

Interpretations of depth interviews seldom go into the ultimate psychoanalytic roots of the consumer's motivations —like the now-famous discussion of baking a cake as a reenactment of the birth of a child. Most reports to the client seek to describe the consumer's emotional response to the product, or to other "personalities" in the marketing situation—the consumer's images of the dealer, the advertisements, the company itself. This pattern of charged associations is derived from the interview reports by a small staff of psychologists and other specialists.

Since it implies the inductive method of construct-formation, interpretation is probably best done with an eclectic approach rather than a rigid deduction along the lines of one or another of the psychological schools of thought. The importance of a factor under study is measured not only by the number of mentions it receives but by how well it fits into an overall picture of the marketing process. It is at this point that depth research is able to answer the question "why?": it puts together facts a designer might have ob-

served for himself or a marketer might have noted in sound objective data, and points out unlooked-for relationships between them.

Because interpretation is descriptive and qualitative, it encourages a tendency in the depth field to plead exemption from some standard scientific controls—a tendency that doesn't enhance either its reputation of its usefulness. Depth reports require an explicit statement about their methods and the scope of the survey they are based on; management needs to evaluate depth findings against the known facts of the market, to judge how well they shape the interview material in terms of psychological principles and marketing experience.

But within the business community, there is still some resistance to any research that does not present its findings in formulas and figures, as a hard-and-fast guide to decision-making. Another comparison the marketer is bound to make is one of cost: he may find that the charges for depth research seem unreasonably high compared with the expense of questionnaire surveys of much larger numbers of people. But the qualitative approach doesn't lend itself easily to standardized coding and mechanical correlation of data; each respondent's words must be gathered by well-trained interviewers and interpreted by highly skilled theoreticians. In its costs and in its returns, depth research can be looked at as a craftsmanship operation—not as efficient as mechanization, but using individual skills to create a qualitatively unique result.

Dichter's Institute in transition

Probably the most controversial figure in the field of depth research is Ernest Dichter, director of the Institute for Motivational Research, Inc. No one who has observed his career doubts his ability to turn psychological insights into marketing inspirations, but many in the research field and outside it are wary of his lingo, his evidence and his influence. The history of his firm shows not only how he has accommodated his specialty to the demands of American business, but also suggests that depth research is still in transition toward a closer relevance to practical matters of marketing and design.

Dichter, a Ph.D. with experience as a psychoanalyst, came to this country with a strongly Freudian orientation toward the vagaries of human behavior. His acceptance by American businessmen was painfully slow, as they first opened one ear and then the other to a viewpoint that was not only unprecedented for them but seemed somehow "imported." For many years he did his own field interviewing, and it was only as recently as 1951 that he founded the Institute with a staff of five. Today his staff of seventy is housed at Croton-on-Hudson, N. Y., while branch offices in half a dozen cities in Canada, Europe and Africa conduct a lively "export" business in motivations.

Much of the Institute's success can be attributed directly to the resourcefulness and ingenuity of Dr. Dichter, who is often asked to sit in on marketing problem-solving sessions

INSTITUTE FOR MOTIVATIONAL RESEARCH: IMAGE STUDY GIVES DESIGN A LEAD IN VISUAL THEME

Ernest Dichter *(left) director of Institute at Croton-on-Hudson, N. Y. (below) provided Jim Nash Associates with imagery theme for 1957 redesign of old Snowdrift shortening package (1); depth probing revealed that women reacted with favorable emotions to fresh, creamy surface of a newly opened shortening can. Dichter recommended that Wesson Oil & Snowdrift Sales Co. put swirl in product to suggest traditional hand-packing, and that label express creaminess of "home-made" product. Designers introduced wooden spoon on label to further traditional associations. Alternative proposals of product in creamy swirl (2) or in S-shape to convey brand identity (3) were both put on sale in limited runs; latter was bought by more purchasers. Final version (4) modifies S-shape to express emotional appeal of product's texture as well as trademark value.*

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at a fee of $500 per day (his price for research ranges from $500 for a "creative memo" to $30,000 for a full-scale study). Another reason is that the Institute is modifying its theories and adjusting them to the facts of the consumer's life; in psychology, it is now interested in recent theories that revise orthodox Freudianism in terms of the conditions of living in society—especially American society. The Institute is also trying to protect itself from charges of non-statistical jockeying of interview returns, and is purchasing IBM data processing equipment to handle larger samples and quantify its deductions from evidence.

The Institute also is exercising sharper controls over its probing and interpreting procedures. In a typical large-scale study that required careful proof as well as explanatory insights, the firm enlarged its interview samples from a first wave of thirty-six, using free association methods to enlarge its perspective, to a second wave of ninety-three, using a semi-structured interview guide. For this client, the Institute also gave a fixed questionnaire to two hundred respondents to gain statistical evidence on the external details of consumer practices, and to check out some hypotheses with projective tests (see page 40). In addition, 128 taste tests were administered for this particular product, and breakdowns of the sample were made to cover geographical, age, class and other differences. As a final control in interpreting the results, Institute reports are labelled to distinguish between creative suggestions, substantiated insights, and conclusive findings.

While much of the Institute's work makes use of its special skill in uncovering unconscious feelings toward brand imagery—and therefore finds greatest application in packaging and advertising with the psychologically "right" image—another part is directed toward the wider social meanings of buying and using a product. For example, the Dichter firm recommended that a New Holland Co. hay baler (which had been functionally designed to appeal to the "rational" farmer's instincts of economy and efficiency) be painted in autumn colors to appeal to his deeper feelings of pride—the colors suggesting the rich harvest the farmer aims for, and expressing his underlying attitude toward the machine as a success-symbol. By delving into people's images of themselves in relation to the products they use and the social influences upon them, the Institute for Motivational Research is aiming to broaden its explanations of the consumer's mental make-up and market behavior.

Probing the peculiarly American consumer

Another firm that uses depth research techniques primarily, Social Research, Inc. of Chicago, is (as its name implies) strongly interested in contemporary American social behavior as a key to the consumer's acts in the marketplace. Headed by former University of Chicago social anthropologist Burleigh B. Gardner, and influenced by its sociological consultant W. Lloyd Warner (widely known for his studies of America's class structure and status beliefs), the firm probes the influence of family, neighborhood and community environments on the consumer types in the market.

Social Research examines products, advertisements and the other elements that make up brand images as complex symbols that communicate a variety of ideas to different strata of the population. Using a social class index similar to the Hollingshead method of classifying the consuming public, the firm interprets its depth interviewes and projective tests in the light of the respondent's socially formed attitudes about himself and the products he buys.

A study at Social Research is usually a series of successive waves of depth interviews, using progressively modified interview guides to narrow down the problem to the precise area for marketing action. The firm's rationale for using small samples to find the basic motivations of each group is that people are "social informants"—they live in groups and relate the ideas of their group when they talk about themselves. But Social Research is also aware of the multiplicity of factors involved in the seemingly simple act of brand choice, and will use larger samples in trying to weigh people's personal differences against their group attitudes.

Depth research on product problems

Some research firms that rely heavily on depth interviews also conduct more conventional market studies to relate psychic motivations to the economic facts of buying. At Nowland and Company, Inc. of Greenwich, Connecticut, for example, a modified form of depth interview is often held with "experts" in the field under study—retailers, distributors and functional specialists—as well as with consumers. Their opinions are tied together with the market statistics on sales and other developments, then measured against the consumer's expressions of his wants and needs, to determine the potentialities of a new product or the modification of an established one.

Nowland and Co.'s staff of almost one hundred is organized to handle the various stages and types of product problems. An industrial division staffed with engineers as well as researchers handles the more "rational" motivations in the market for commercial products; a management division tackles problems of corporate image-building; and a consumer division specializes in the "intangible" motives of the mass market for products.

The firm's founder, Roger Nowland, has a long history of involvement with industrial design, going back to his association with Norman Bel Geddes in 1941 and his partnership in the firm of Van Doren, Nowland and Schladermundt in the mid-Forties. He formed his own firm to do research independent of design in 1951, believing that a partnership with designers limited wider investigation of marketing.

Nowland's experience with design is closely applied to product problems: in a recent study of small trucks for one of the "Big Three" auto makers, research discosed that most owners thought of their trucks as an auxiliary car for light deliveries, and the report initiated a new approach to styling as well as promotion. In this case, the client wanted a quantitative basis for the decision to redesign its trucks, and the research firm followed up its program of two hundred depth interviews with a questionnaire survey of 2,500 small truck owners. But the standard procedure at Nowland and Co. in validating its findings is to stage successive waves of fifty depth interviews until the incidence of the basic motivations it discovers are the same in each sample.

Another form of depth research is James Vicary's method of personally investigating a market or product. Vicary, now famous as the inventor of subliminal advertising (ID News, Oct. 1957), is still the principal of a small market research firm—specializing in studies on naming products, firms and services. But when Vicary was asked by Ox Fibre Brush

Company in 1956 to review the findings of an earlier questionnaire survey of its market, he felt that his own contribution could best be made not in duplicating the formal survey but in personally informing himself on the brush industry to develop an original point of view on it.

Vicary's investigation led him to libraries in three cities, to depth interviews with dealers, salespeople, and shoppers for brushes, and to direct observations of brush manufacturing and distribution. He gathered his sources up into a re-examination of the consumer's manipulation of brushes and purposes in using them, set against the background of the underlying cultural attitudes toward cleaning and brushing that tend to color unconscious feelings in buying and handling them. Although specific applications of the picture he drew were not carried by the client into redesign of his line, the study implies that designers can find stimulation for re-thinking their product assignments in studies that bring together an eclectic assortment of ideas from anthropology, sociology and the many schools of psychology. Vicary's research was not a systematic test by scientific standards, but "research" in the sense of a thesis—an imaginative set of hypotheses and conclusions growing out of his training and experience with the social sciences and with market problems.

As material categorized and counted for decisions with predictable results, depth research is bound to seem disappointing, but taken for what it is—evidence of the complex patterns of human reactions to the subtler sides of market situations—it is likely to prove fruitful in setting the general direction for integrated marketing activities. When an executive group is willing to study and think about a motivational study in the full scope of its product's existence, basic principles and often specific steps in advertising, merchandising and design are likely to grow out of it.

JAMES M. VICARY CO.: PERSONAL STUDY DEVELOPS NEW PERSPECTIVES ON A FAMILIAR PRODUCT

James Vicary *(left) surveyed brush marketing and manufacturing to develop merchandising approaches for Ox Fibre Brush Co. in* 1956. *From depth interviews and anthropological research, he described negative associations of brushes to explain industry's poor merchandising and dispersed organization. Theorizing that brushes express positive values as well, Vicary proposed more aggressive steps to promote brushes. Recommendations in his study gave go-ahead on widening product line with special-purpose brushes, but were not carried into specific design proposals—although data for re-examining use and meaning of brushes were presented. In the excerpts from Vicary's report below, left page represents typical generalized descriptions, right page shows how they wind up as merchandising and design suggestions.*

little available in print by comparison with other traditional products. Likewise at the consumer level people are quite unaware of the number of brushes they have in their home, and for some reason keep their brushes and brooms hidden from view.

3. Dirt, contamination and hard work are associated with the use of the household brush and broom. The pig and bristles from swine symbolize the manufacture of brushes traditionally. By contrast with the paint brush, the household brush does not produce a product in any form, but rather gets rid of something undesirable.

4. A magical, superstitious, and ominous quality is also associated with this product. The most stereotyped example is the witch on a broom. In many indirect references in literature the broom or brush is used in some ritual of exorcism. Where our Bible strangely avoids any mention of brush or broom, the earlier word, "besom" is used once in Isaiha XIV 23, ".....I will sweep (Babylon) with the besom of destruction, saith the lord of hosts."

5. The brush is a unique extension of the hand. The original instrument for brushing things is the human hand. Where many other tools are sometimes regarded as logical extensions of the hand, in the case of the brush the smallest bundle of bristles are referred to as "fingers"i

JAMES M. VICARY COMPANY

3. It is our belief that as many different kinds of brushes can be sold to the public as you can find (a) a suitable name which calls to mind a specific use, plus (b) a specific and unique shape which clearly fits the name and use in the consumer's mind. This will call for some simple consumer research to match the names to shapes. Since the symbolism can be expected to be very basic, relatively small numbers of consumers can be used in developing new brushes.

4. Old brush catalogues might be a helpful starting point for distinctive shapes, and even for an occasional name, perhaps.

5. It is not recommended that brushes have prominent stock numbers on them for consumer use. Such numbers reflect standardized design, which the consumer resists. The stock number is for the convenience of the trade and should be inconspicuous.

6. Where the name of the brush and trademark are commonly stamped into the wooden handles of brushes today, it is recommended that the information for the consumer be put on hang tags and easily rubbed off decal-type labels. The housewife buys most of her brushes on impulse, for reasons of which she may be only half aware. The brush needs no name after it is sold. In fact, it might find a novel use

JAMES M. VICARY COMPANY

Though market research doesn't approach exact science in providing absolute results, it is busy refining its techniques of gathering and interpreting information. Original methods are being tried out in an effort to tap new sources and handle more problems in design and marketing by **EXPERIMENTAL RESEARCH**

Predicting how the consumer will react involves getting him to come out of himself in response to stimuli approximately like those he will encounter in the marketplace, but interviewing the shopper in the store doesn't allow tests for the precise elements that control his decisions. A test situation has to be constructed to measure each of the consumer's reactions independently, and this has often been done by means of questionnaires, but some survey firms are finding questions alone insufficient to simulate real experiences and are experimenting with new techniques.

Projectives: drawing the consumer out of himself

"Projective techniques" are harmless-looking, seemingly meaningless tests designed to bring out the consumer's unconscious responses to market situations. From the devious Rorschach personality tests to the familiar sentence-completion questions on standard questionnaires, what is common to "projectives" is the presentation of an ambiguous and incomplete stimulus. When the respondent is asked to complete it he can only use his own feelings to fill it out—in other words, he must read his own feelings into it, according to the personal meaning it has for him. This kind of response follows the widely-held psychological theory of "projection": the unconscious imputation to other's of one's own feelings and motives. Projectives therefore can reveal the respondent's attitudes toward advertising symbols and toward using the product, and also tell a good deal about the respondent himself, so that various attitudes that turn up can be understood in the light of various personality types in the market.

Some of the more widely used projectives are word-association, cartoons (*Fill in the balloon.*), description of others (*What kind of person do you think would buy this?*), narrative projection (*Finish the story.*—a modification of the clinical Thematic Apperception Test or "TAT"), unusual purposes (*What would this product be good for?*), and figure drawing (*Draw a man's whiskey bottle*). In each case, what is asked for is not an articulate statement by the respondent either about himself or his preferences, but only his first thoughts—the keys to his unconscious feelings.

Special applications of projective techniques are sometimes used for more specific tests in marketing. Even many non-depth firms create a projective situation around the product under study, in order to get at values and associations. Advertising situations and symbols are often made the basis of the ambiguous stimulus, and sometimes (as in the case study described below) the brand name and product type are the key elements for the respondent's reactions.

PROJECTIVE TEST IS DESIGNED TO REVEAL A PRODUCT'S EMOTIONAL MEANING FOR HOUSEWIVES

Mason Haire of the University of California (Berkeley) asked two groups of 50 each to describe the woman who used each shopping list. 48% described the woman who used List I as lazy; 4% thought the List II woman lazy. Follow-up study revealed that women who view Nescafe buyer as lazy are less likely to use instant coffee than those who don't, indicating that personality image was motive in buying choice.

SHOPPING LIST I

Pound and a half of hamburger
2 loaves of Wonder Bread
bunch of carrots
1 can Rumford's Baking Powder
Nescafe instant coffee
2 cans Del Monte peaches
5 lbs. potatoes

SHOPPING LIST II

Pound and a half of hamburger
2 loaves Wonder Bread
bunch of carrots
1 can Rumford's Baking Powder
1 lb. Maxwell House Coffee (Drip Ground)
2 cans Del Monte peaches
5 lbs. potatoes

Groups: getting consumers together

Depth researchers have applied another technique of clinical psychology, group interviewing, to their methods of learning about the individual and the influence of other people on his acts in the marketplace. The first group method resource to be tapped was its ability to bring people out of themselves, to reveal their feelings and reactions in social interchanges. Naturally, public situations don't allow the researcher to probe as intimately as in personal interviews, but many inhibitions are broken down by the respondents themselves, as they discover their similarities to others and as they become emotionally involved in the discussion. Group sessions are therefore valuable supplements to depth interviews in forming profiles of the people who go a-marketing.

Two further potentials of the group situation are being used to close in on the consumer's relationship with the product—the "snowball effect" and "role-playing." The snowball image refers to the cumulative effect of each participant's statements on the next, which often results in expressions of conscious opinion (as distinguished from unconscious revelations) of greater relevance to the product problem than might be gotten from individual interviews. As used at the Center for Research in Package Marketing, Inc., the group discussion becomes a "Consumer Creative Conference" —brainstorming the problem much as a creative advertising or design group does. Designers are also brought into the discussion and present ideas and sketches based on the consumer's responses, then hear them evaluated and modified by the consumers. The Center sees this as a meeting-ground for designers to work out their approaches *with* the consumer, and for the consumer to think in more precise visual terms of what he really wants.

Another extension of group techniques is the acting out of buying and using the product, so as to reveal the underlying attitudes of the consumer in action. As practiced at the Institute for Motivational Research, "Motivational Theater" is akin to the clinical technique of "psychodrama," with overtones of the social psychological study of "role-playing." What is common to these techniques is that putting oneself in another's position—or in one's own position under certain circumstances, like shopping or homemaking—stimulates the expression of underlying attitudes, both in what the subject says as he acts and in how he does it. The technique is still an unknown quantity in market research, but as a supplement to depth interviewing it may help reveal the consumer's response *in action*, rather than in merely thinking about the product.

Perception: measuring seeing and believing

Perception research instruments provide—in the limited terms of visual effects—some of the most definite answers to a marketer's or designer's questions about package or advertising effectiveness. But though visual measurement can determine whether one package can be seen from further away than another, and what pattern the eye will follow in looking at it, it can't by itself tell how effective the total package will be in stimulating a purchase. There are so many levels of reaction to anything presented in the marketplace that even the leading practitioners of visual testing, like Louis Cheskin's Color Research Institute, have been led to study the consumer's underlying associations with what he sees. Color, for example, becomes in Cheskin's studies not only a matter

GROUP DISCUSSIONS ALLOW A LOOK AT SOCIAL INFLUENCES ON CONSUMERS' ATTITUDES

Group discussions are being used to draw out personal attitudes in social interchanges. At Opinion Research Corp. discussions are held in front of one-way mirror, through which researchers observe actions as well as words that reveal emotions. At Center for Research in Package Marketing, group discussions are used to stimulate designers, allow panel reactions to designers' interpretations of package preferences. Institute for Motivational Research is experimenting with acting-out buying and using the product, on theory that people reveal emotions in "role-playing."

Institute's "Motivational Theater"

Opinion Research's hidden observers

Center's "Consumer Creative Conference"

of making the package attract attention and be remembered, but also a subject of meanings and psychological effects. In the design laboratory at Container Corporation, perception and other forms of research are integrated in a massive design operation that relates visual effects to the total merchandising goal of each package, as developed in terms of motivational and other marketing data. The effectiveness of the package and its elements are determined by specially designed optical and mechanical testing equipment.

Experimentation with new techniques at the Center for Research in Package Marketing applies perceptual studies to underlying motivational factors. Using a modification of a laboratory measuring device known as the "tachistoscope," which exposes stimuli for short and precise lengths of time, the Center tests the speed and impact with which package elements are identified. The firm is also using its "flash room" to expose the package at speeds too great for clear recognition, to get at non-conscious responses. Working on the psychological theory of "subception" (the basis of subliminal advertising), these researchers believe that anything exposed to the eye makes an impression, whether conscious or not. By asking for word associations at the same time a package is flashed too fast to be seen, the unconscious associations of the package can be recorded in isolation from conscious attitudes.

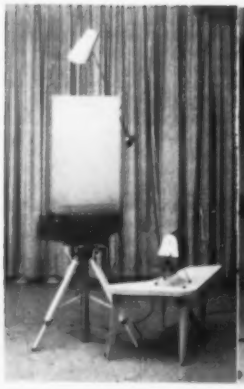
Perception research has also stimulated at least one designer, Seymour Robins, to experiment in new areas of visual communication which may find applications in design and marketing. As design consultant for experiments at Princeton University on the complex of factors that go into visual responses, Robins has applied the psychological theory that motives, experience and environment—much more than the actual characteristics of external objects—are the guiding lights on what we see. The door-markings "push" and "pull," for example, can be designed for maximum visibility by following standard perception measurements, yet people are bound to make mistakes because their response to the posted words is influenced by their state of motion, purposes of action, prior experiences with other doors, and a host of other motivations and attitudes—not necessarily of the psychoanalytic variety. Experiments with distorted rooms and other constructions indicate some of the possible ways to compensate for such influences in design. The "architect's room," for example, consists of a scale model of a long, narrow room which, when viewed from one end, appears to be almost a square. The arrangement of windows, floor, and ceiling is distorted to compensate for the extreme length of the room, and the viewer thus picks up cues to fill out his preconception of a normally proportioned room. Where unfavorable "distortions" exist in reality, such as in the predominantly horizontal lines along the highways, Robins suggests that planning the use of verticals along the roadside would make it possible for the driver to orient himself better to the road. Such research on the connection between motivational and perceptual elements implies that basic research may come to prove as valuable for marketing and design as it has been for technology.

PERCEPTION MEASUREMENTS INDICATE UNCONSCIOUS RESPONSES, PROVIDE DATA ON MOTIVATIONS

Center for Research in Package Marketing, headed by William Capitman, uses perception studies to test flash impressions of packages. Two methods are used: in one, the speed at which package can be identified is determined; in the other, package is shown too fast to be identified, but respondent is asked to give associations with list of words, revealing unconscious reactions to what she has seen subceptually (below perception threshold).

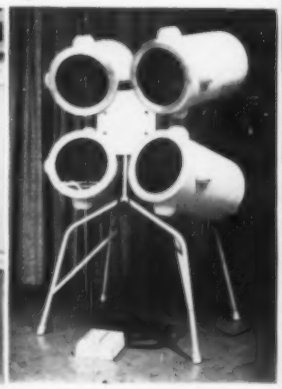
Container Corp.'s Design Laboratory includes a research department that uses preception instruments as part of wider study of package responses and motivations. "Anglemeter" (1) measures angle at which package can be identified, simulates supermarket aisle view of shelved merchandise. "Ocular camera" (2) takes motion picture of respondent's eye-movements on package design to indicate impact points and layout effectiveness. "Flashmeter" (3) shows slides of packages at high speeds to reveal which design most quickly conveys message.

1



2

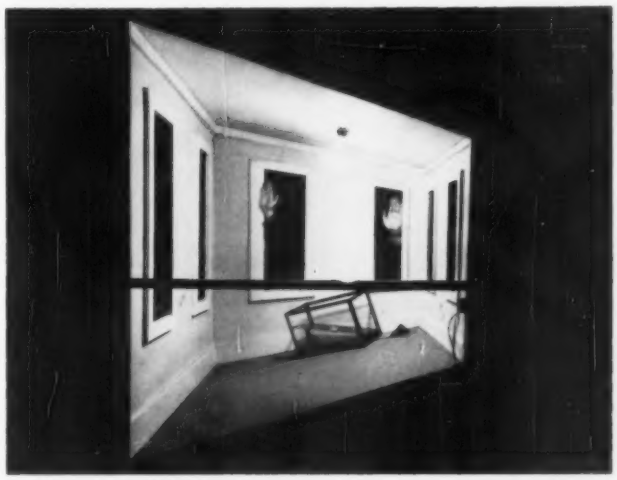
3

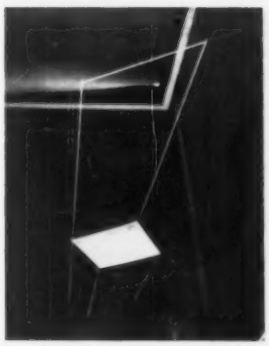


EXPERIMENTAL RESEARCH INTO BASIC THEORIES OF PERCEPTION PROMISES NEW INSIGHTS FOR DESIGN

Seymour Robins, *industrial and graphic designer with a strong curiosity about the assumptions of his craft, is design consultant to the Psychology Research Center, at Princeton University. He designed the Perception Demonstration Center there—a bewildering array of experimental equipment that challenges assumptions about how we see. It is based on Dr. Adelbert Ames, Jr.'s theory that our sense of external objects reflects not only the physiological stimuli they send out but also the interpretations we attach to them.*

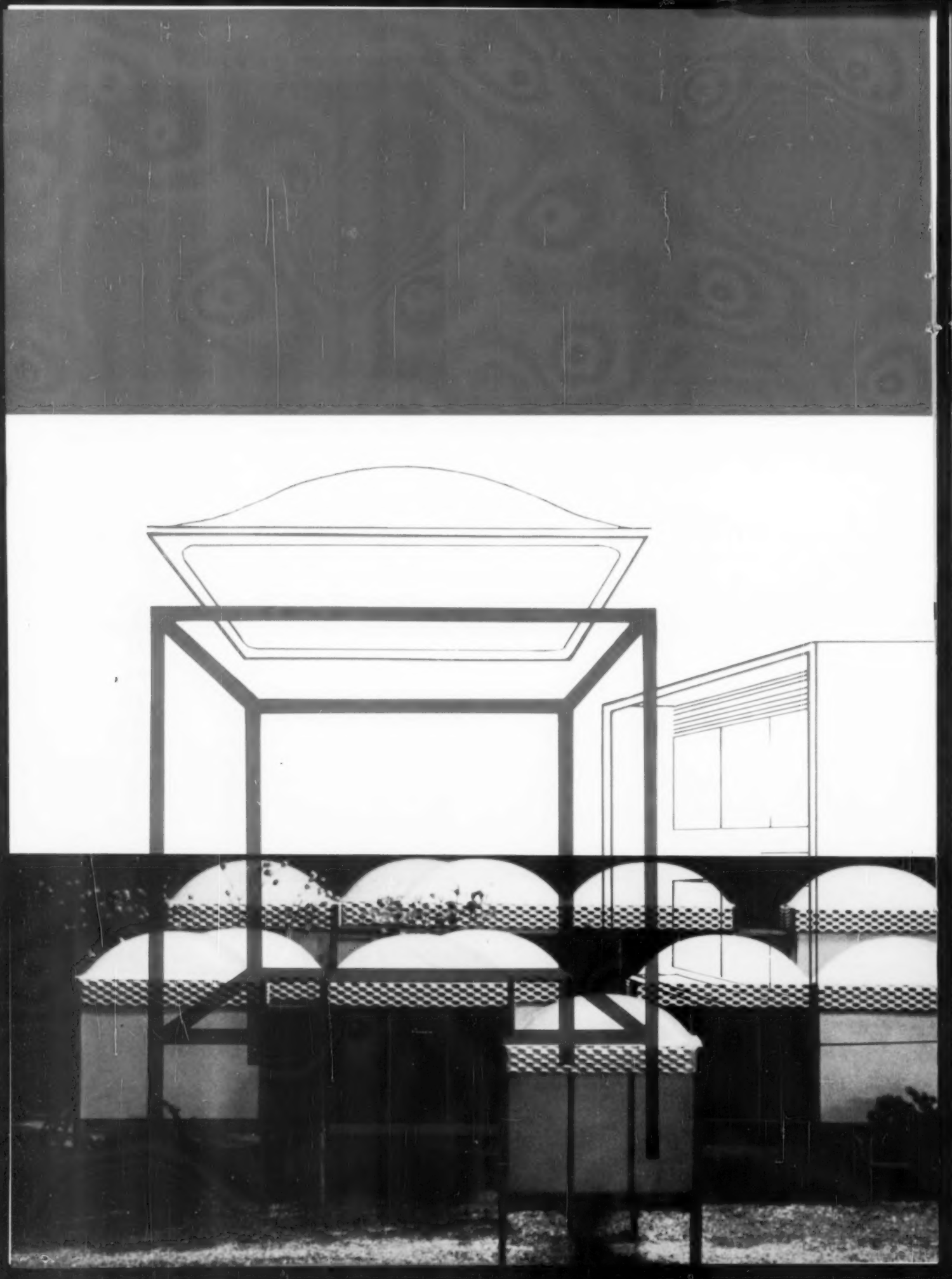
The distorted rooms (one of them at top right) are so shaped that preconceptions of perspective make us see them as rectangular, when given special conditions; normal objects in them appear distorted due to our tendency to see things in relation to their surroundings—using cues of brightness, size, overlay and parallax (observer's position). The chair demonstration (right) consists of three arrangements of white strings that are seen with one eye as identical objects; one eye will organize its cues to make up for missing "binocular" cues, and may over-compensate to form a pattern where none exists. This implies that many designs are possible to the same effect.



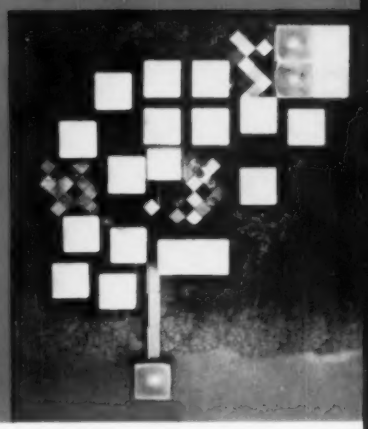


Though the number of creative designers and product planners who rely on some form of market research is growing daily, few of its users or practitioners would claim that it is a perfected or wholly dependable science. Many of the researchers are busy sharpening its reliability and extending its reach to new problems; yet it is already useful when properly suited to the problem and used within the framework of its limitations. For an overall understanding of their consumer, their product and their market, the designer and marketer should find depth research valuable in generating fresh hypotheses; in measuring the importance of each element in the total problem, large-scale surveys can provide greater assurance. These methods are especially good for placing design problems in their larger marketing context, while for guiding the designer "at the boards," the experimental methods of perception testing and consumer reaction groups may have greater relevance to creative evaluation. What design firms are doing to choose the right method for the unique problem will be reported. . . .

In I D next month: USING MR-- where and how staff and consultant designers employ research

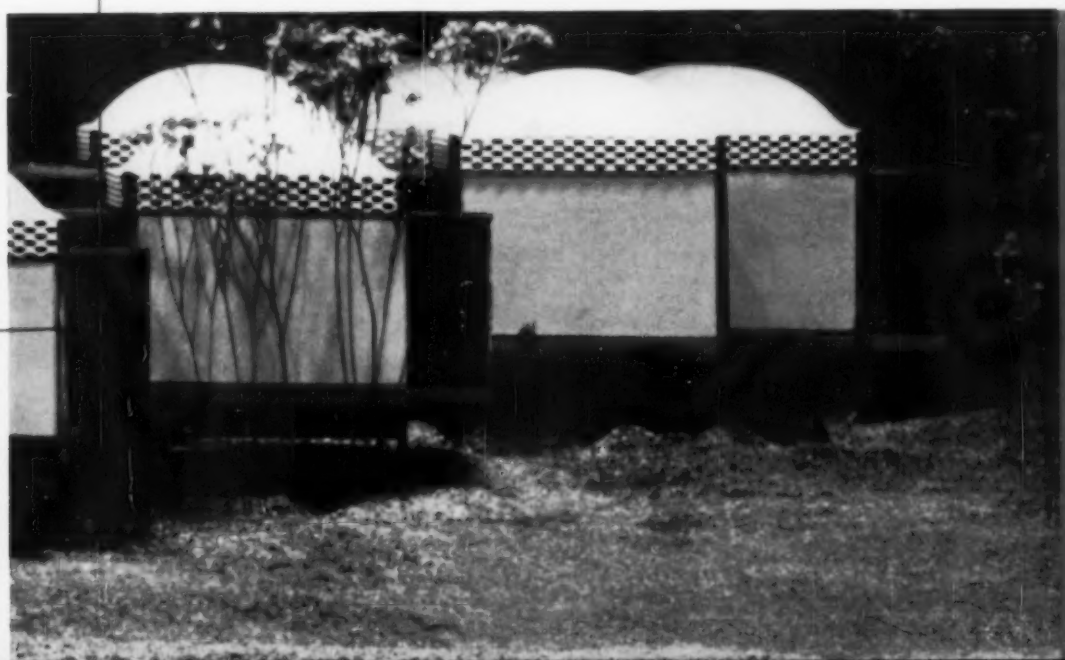


THE INDUSTRIALIZED HOUSE: AN EXPERIMENT



Two years ago, a group of men planning a large development of demonstration houses in Grand Rapids, Michigan, gave grants to three leading architectural firms for the purpose of developing experimental houses. One of these, the George Nelson office, accepted the assignment with a strong interest in investigating the house not as architecture but as a problem in industrial design. A group of designers in the Nelson office, combining architectural and product design experience, launched into an extensive program of basic research into ways of bringing all the advantages of mass production to the most antiquated of modern structures, the private dwelling, and to improve its "human qualities" in the process.

When plans for the Grand Rapids Home Style Center dissolved, the Nelson group continued independently the research in which it was by then deeply engrossed, bringing the experimental house up to the point of final engineering. Because the implications of this experiment are so important not only for the building industry but for all American industry, we present on the next eight pages a complete research report on the planning and thinking that lie behind this new concept of the house. It has minimum inventory, is packaged, and uses simplified components that combine in a variety of ways—all characteristic features of a twentieth century product, which it is.



George Nelson and Company, design research
George Nelson and Gordon Chadwick, architects

To approach the house as an industrial problem, designers first made ground rules

The idea of prefabricated housing is not really new. In 1876 "The Manufacturer and Builder" was advertising that dollars could be saved with ready-made sectional buildings of "any style or size."


Ready-Made Houses.
Col. DERROM'S PATENT.
The great want of our day is CHEAP HOMES for the people. These can be made of fire-resisting materials if desired, with little extra cost.
Particularly adapted for Camp Grounds, Seaside and Summer Resorts, Pioneer Settlements, the West Indies, Etc. Etc.
The most simple mode yet produced of Sectional Portable Buildings.
Neat, Effective, and Cheap.
THE BEST SECTIONAL BUILDINGS EXTANT.
Neat, Convenient, and Cheap; used for Residences, Temporary or Permanent.
For particulars, address A. DERROM,
NEW YORK.

Figure 11. Prefabricated Houses as Advertised in 1876.

The house is the last of the great universal products to resist and withstand the transforming effects of the industrial process. It stands today as a most remarkable anachronism in a society which no longer has the means to cope with the limitations of handicraft production. The house, viewed as a product, presents an incredibly complex and difficult set of problems, not the least of which is the home buyer's persistent refusal to view it as a product.

Being rooted in the earth, the house is subject to all the ancient attitudes, laws, ordinances, codes and restrictions which have attached themselves to land and its uses. Much too big to wrap up and ship in one piece, it encourages all the haphazard methods of site fabrication and assembly. By the same token it fosters all of the local featherbedding and obstructionism for which the building trades unions are notorious, and because it can be moved off its site only with extreme difficulty, its value is determined not solely by its intrinsic worth, but also by whatever may happen in its immediate neighborhood. It is thus—quite literally—a sitting duck for whatever brand of political or financial chicanery might be fashionable in a given locality.

There is no industry in the U.S. capable, at the present moment, of *manufacturing* a house in the industrial sense. Too many people have seen the problem of the house primarily as one of suitable design. In a way, to be sure, it is. But there is also the problem of distributing so sluggish and cumbersome an object. Lack of answers to distribution problems discourages the formation of central design programs and controls which, in the automotive and aircraft industries, permit manufacture and/or assembly in highly fluid production patterns. There is also the interesting problem of the trade-in. And somewhere within this partially listed constellation of difficulties there is the highly charged emotional atmosphere, loaded with irrationalities of all kinds, which traditionally envelops people's attitudes towards the home.

Nevertheless, there is no doubt at all that the house will presently be an industrial product. It will have to be.

There have been many efforts. As far back as the post-Civil War period attempts were made to carry out the fabrication of house shells in factories. These failed ingloriously, although at the same time the engineers were producing some startlingly radical innovations in the art of enclosing space.

The design of shelter in general—particularly when detached from fixed foundations and family needs—has been steady and impressive. Truck trailers, roadside diners, buses, industrial buildings and military enclosures have all shown a susceptibility to changing times and a readiness to accept the blessings of an improved technology. However, if such categories have outstripped the family dwelling in terms of design and product performance, it is not because their designers and producers are brighter or better: the problems are infinitely simpler.

While the public accepts the highly complex Talgo, produced by General Motors, as the last word in modernity, it balks at equally up-to-date techniques in housing.

Because of military necessity, the public has no difficulty accepting startling designs in prefabricated building, such as the Fuller dome, which it would be hesitant to use domestically.

Self-imposed rules

When handed the assignment to design an "experimental" house, the office of George Nelson & Co. decided they were basically interested in the house not as architecture but as a problem of industrial design. They were unusually well equipped to tackle it in this way. One part of the organization—George Nelson and Gordon Chadwick—is a functioning architectural partnership with experience in both custom work and prefabrication. The other and larger part is engaged in industrial design and consultation and is thus heavily product-oriented. The combination made it possible for the group to approach the problem with an acute awareness of both pitfalls and possibilities. For example, it knew from the beginning that any answer it came up with could not be a solution in any complete sense, that such a project could only be research of a thoroughly basic kind. It had nothing to do with design for a market.

With this approach, at once coldly critical and highly enthusiastic, the group came very close to the attitudes and procedures of a research group in the natural sciences. Instead of seeking the "freedom" usually so highly prized by designers, they set up the most rigid possible limitations and embodied them in a set of rules, all designed to keep the project from running off the rails. The first of these had to do with a statement of the problem. An experiment has meaning only when connected to an objective. In this instance, the chosen objective was to find out "the possible nature of a true production house." Implicit in the question was the assumption of a big producer, such as a Boeing, Ford or General Dynamics, with full access to the resources of modern technology.

The rules that the group established for itself include some to which many designers may take exception:

* Absolutely no "originality." (Reason: "The problem of the house at the present time is not one of invention, but of assimilation." Also, "nobody can wreck a project faster than a designer hell-bent on being original.")

* No "personal expression." (Reason: "A good industrial product is anonymous.")

* No concern about cost. ("Cost is not the problem at the research level; in fact, a preoccupation with cost at this stage could cancel out the value of the research.")

* No consideration must be given to market acceptance. ("This is a real trap. Start thinking about acceptance and you will come out with last year's bestseller.")

* Visibly improved performance. ("In the building field today, this one is wide open.")

* No natural materials. ("The problem is design for production, not romance.")

* Design for minimum inventory.

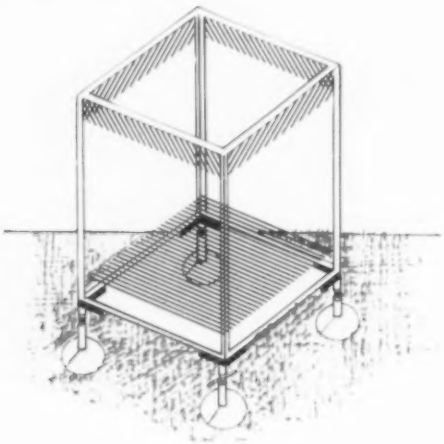
* Design for maximum flexibility of consumer choice.

The great diversity in mass-produced trailer-truck components turned out by a single company suggests that standardization of basic parts is the first step toward true industrialization.

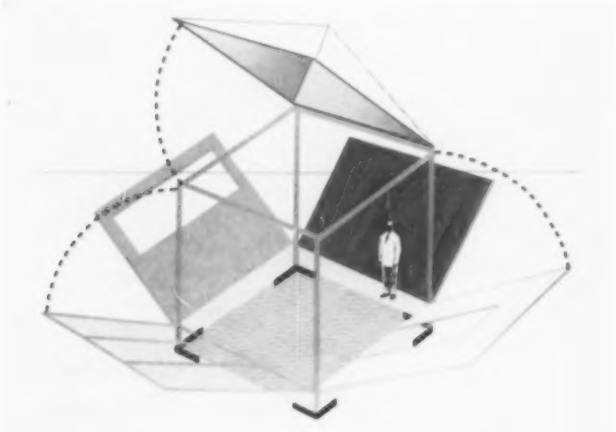
Packaged services for economy and practicality, decentralization for privacy and sound-proofing, little site preparation, lighting for the human organism . . . these are some of the features the Nelson office built into their house as they looked at all parts of the problem.

Given the rules already stated, the Nelson group asked, how do you equip the industrial house with a structure? In many areas of building, outside the dwelling, the steel skeleton is standard. They decided to accept the skeleton. Dimensions? A check of dozens of house plans indicated that a 12-foot module would work. So, they settled on a cube with a 12 by 12 horizontal dimension, vertical dimension variable. Then they asked themselves, is steel necessary for so short a span? Also, what about maintenance problems with exposed steel? Aluminum (anodized preferably) looked like a better answer.

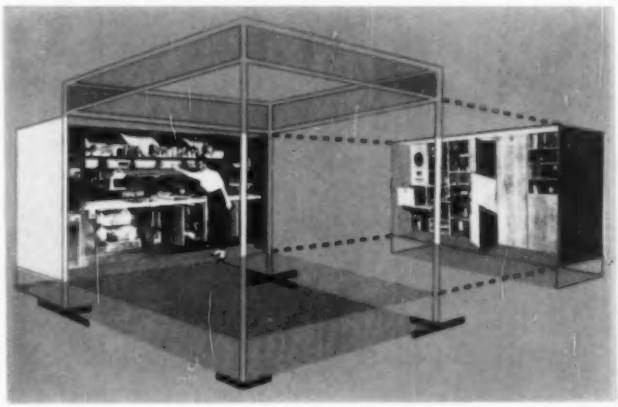
What about the foundation? An interesting fact emerged: the bulk of the builder's investment in equipment is placed in earth-manipulating machinery. Answer: leave the site alone as much as possible.



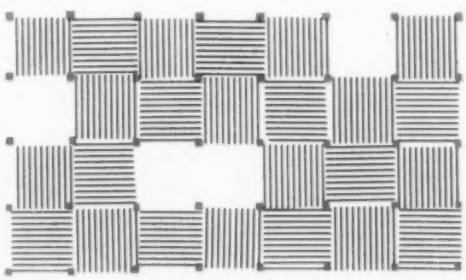
A cage structure, no matter how fine, does not keep the rain out. The house needs standard roofs of various kinds, walls, floors, insulation, and the rest (a sizable research project presented itself right here.)

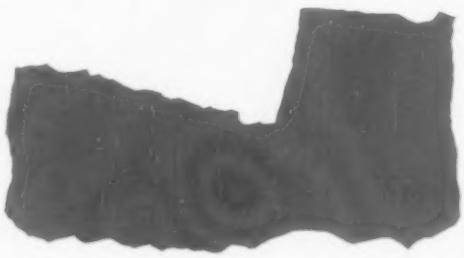


Given a metal cage, enclosure elements of various descriptions, there remained the question of services: heating, air-conditioning, plumbing fixtures, kitchen equipment, lighting, controls, wiring, ductwork, etc. At this point a basic decision was easy enough to make in view of the history of the past ten years: arrange everything in packages. So they added to the problems of structure and enclosure, the problem of packaged services.

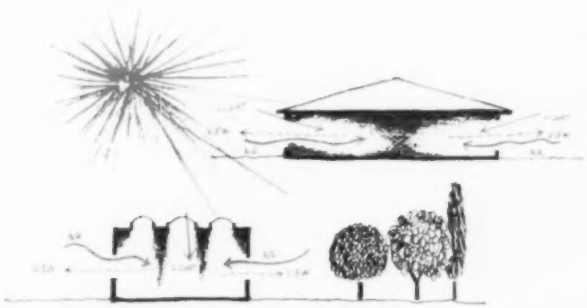


At this stage, theoretically, it would be possible to take everything that had been done and assemble it into the squat, rectangular-plan package the big builders consider the best package—most economical, most saleable, most practical. But one of the rules said, "better performance." Better performance for whom? In the case of the house, people. Who are people?

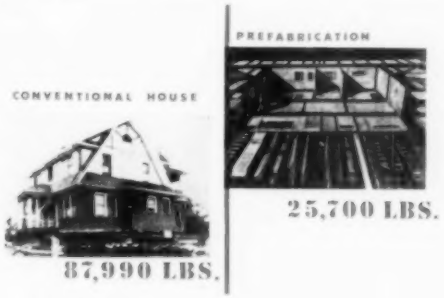




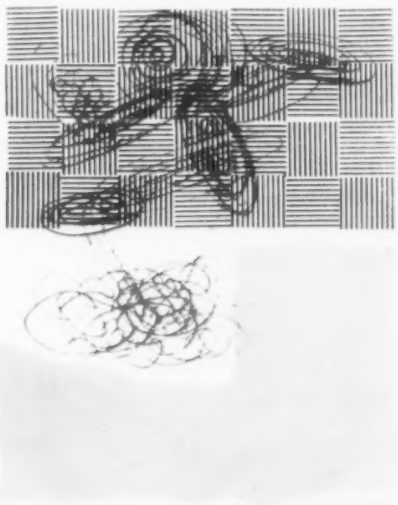
People are—among other things—organisms, conditioned through evolution to respond to certain situations in a psychological way, for example to the impact of light waves on the retina. How does one design a house for improved performance in this situation? Answer: use top light. Data? Mountainous. Windows? Excellent for view in or out, not for natural daylighting. Useless for ventilation if air conditioning is available, the designers concluded.



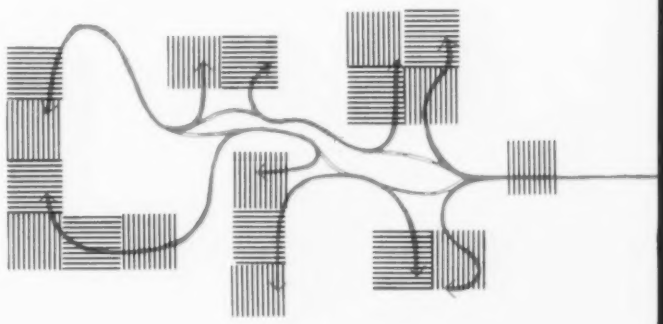
Having considered human fact, they next considered technological fact: apply technology to the house and it will do more with less weight. Why? Technology does this to everything. Today's prefab weighs less than the house of the 1920's.



Industry's house will weigh less than the prefab. Problem: how do you cope with increased noise transmission in the featherweight house?



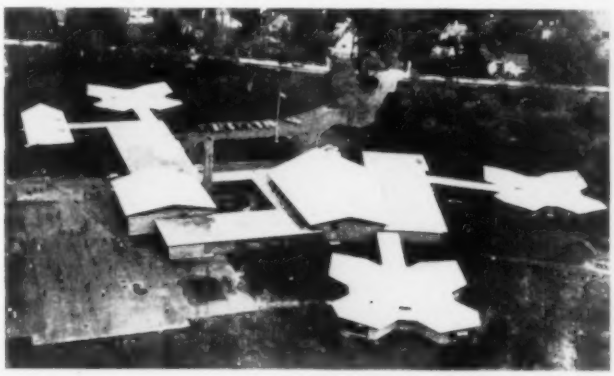
Mass (e.g., a 3-ft. concrete wall) will stop sound transmission—but this is not compatible with high-level production or natural distribution. Possible answer: decentralization, disintegration, fission of sound-producing areas.



It seemed possible to let the air and physical separation do the work of noise isolation. Cost: the resulting diagram looks like the plan for a millionaire's plaything. Question: are there any practical examples of decentralization in today's building?

1928

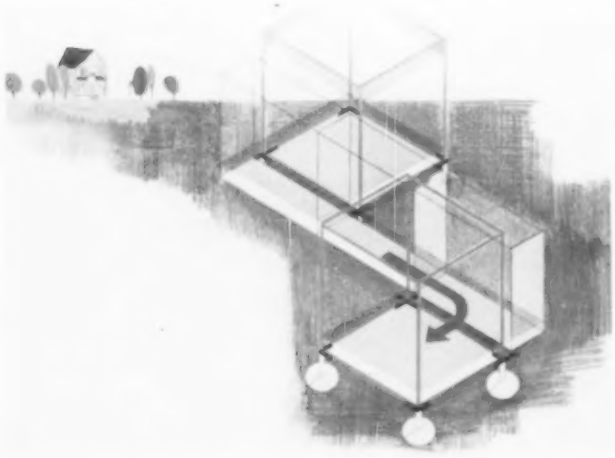
Answer: the school of the '20's, like today's house, was a tight economical two-story lump. Today's school, even with greatly increased building costs, contradicts this answer. Possibility: if decentralization works economically for the school, perhaps it can do the same for the house. While decentralization solved some problems for the Nelson designers, it created new ones at the same time. Most important: by what means could the separated units be connected to one another?



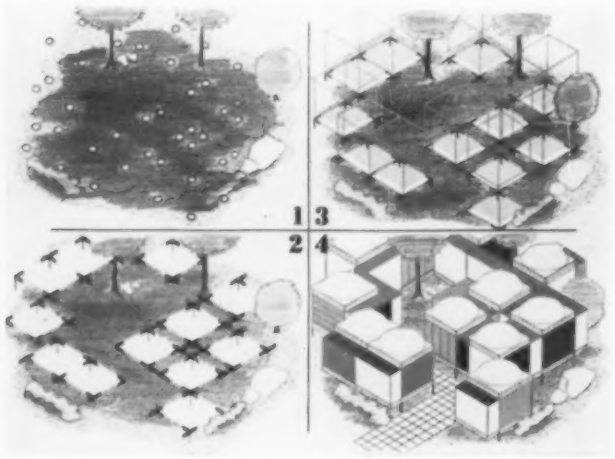
1954

Building components reduced to two rectangular units simplify fabrication

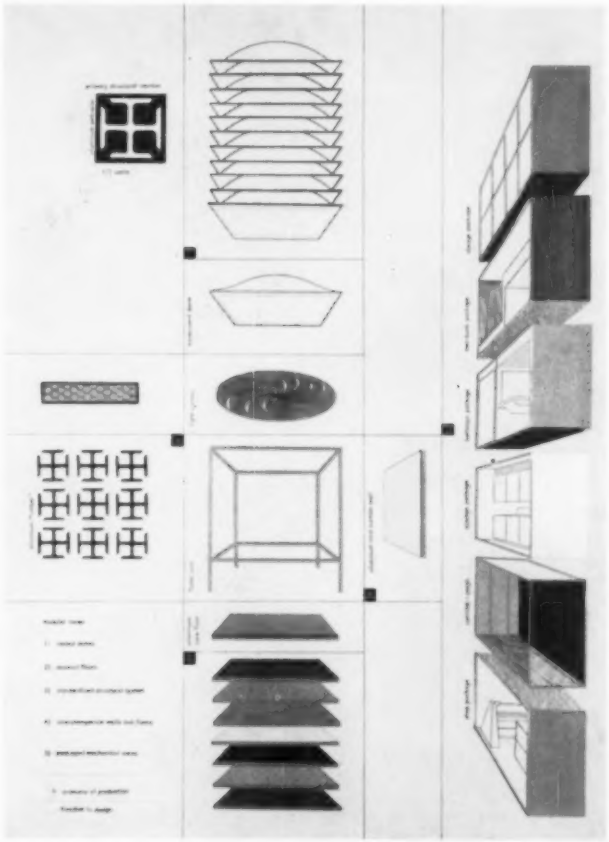
The experimental house was conceived as a minimum-inventory affair, consisting of a 12 by 12-foot unit. But when the designers decentralized the original plan, in order to create more privacy, they had to make a major addition to their inventory: a 4 by 12-foot connector, which turned out to be the answer to the problem of flexibility. This element serves not only as a corridor between living spaces but as a room extender, storage area, and space for packaged mechanical services.



Based on the two modular units described above, the site assembly process, expressed graphically, looks like this:



At this stage, the designers found they had far fewer answers than new questions to confront.

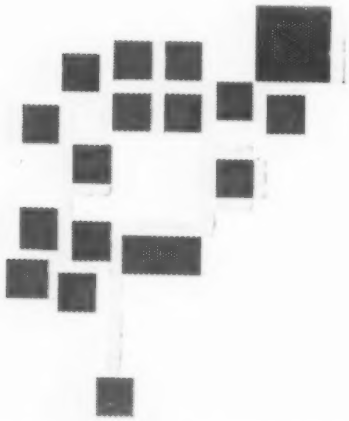


The "specification sheet," normally a bulky typed document, in the case of the experimental house comes out looking like a page in a hardware catalog. This suggested that the prefabricated house no longer needs to be viewed as a flexible box made of large, cumbersome panels, but that it lends itself to the kinds of organization currently used by industry (manageable components that go together in a large variety of combinations).

Cage plus extender packages equal luxury interiors from mass-produced parts

The proof of a house, from the user's point of view, is in the living. The only real test is to do it, but preliminary checks were possible. When the designs had reached a point where they seemed to make a reasonable amount of sense, the study turned to interiors. There were many possibilities of trouble: a house made entirely of synthetic materials might be "practical" but not "livable" in any conventional sense; the system of exposed metal columns at 12-foot intervals imposed special limitations on the interior design, and so on. The Nelson group studies were made as a series of interior models, some showing a single unit with extenders (below), others using two units attached. What this suggested was that trends already under way in the contemporary interior, such as the building-in of furniture, both for storage and seating, were reinforced by the concept of the experimental house. The studies also made it abundantly clear that an atmosphere of extreme luxury was by no means incompatible with factory production of dwelling components, such as desks, benches, shelves, hi-fi units.

The industrialized house creates a means of bringing technology to the housing industry . . .



The proof of a design for a production house is in the producing, just as the proof of a plane design is in the flying. This does not mean in either case that preliminary tests cannot be run off. One type of check that the Nelson designers used is illustrated here. The plan for such a house (above) can be set up as a simple arrangement of squares and rectangles: the conventional architect's plan (below) is not needed.

The experimental house in its present stage stands as a highly developed, clearly expressed concept. It is not yet an engineered product, nor could it be on the basis of the original budget. For all its emphasis on avoiding "originality" it comes out as a completely fresh approach to an old problem, exciting in its suggestions of logical organization for large-scale production, and promsing in its hints of improved livability. The two basic building blocks appear to permit the resident an unlimited choice of size and plan, and if the open version illustrated here were applied on a neighborhood scale, it could completely transform the present miserable pattern of land use. However, there is more to transforming residential neighborhoods than the design of an industrial house.

And there are other obstacles to the achievement of an industrial house besides the complexity of the problem itself. One that is very important is the general wariness of many U. S. industries toward research that is not geared toward an immediate competitive situation. The history of this project suggests a typical example. After the fund supply of the sponsoring foundation ran dry, a number of major U. S. companies were approached for help. The benefits, medium and long-term, which might reasonably be anticipated were carefully presented. The research nature of the project was stressed. In every instance, top management had two questions: (1) Do you really think a mass market would accept this design? and (2) Could it be produced for the same square foot price as a Levitt house? Neither question, in the designers' view had any connection with either the project's intent or its possible ultimate value.

The most fundamental problem goes even deeper than the timidity of U. S. manufacturers toward experiment: it lies in the fact already mentioned, that the house as a product is nobody's baby. Its many bits and pieces are scattered all over the manufacturing landscape, and the needed coordination is no overnight affair.

In the meantime this experimental house awaits realization, and points clearly to a new kind of answer for residential building, as a way for that field to catch up with the technology of our time.

. . . and promises the home builder the speed and economy of mass production

A scale model of the house shows one of many variations possible when working only with the basic cage and corridor modules. The cage unit has been combined with other cage or corridor units to form rooms of varying sizes and shapes. Because each unit is set off the ground on an adjustable anodized aluminum skeleton (eliminating extensive site preparation) it is possible to vary the height of the units in relation to one another and to the ground.

The model below suggests one solution to the problem of illumination: a double plastic shell into which non-staining fluids of appropriate densities can be pumped. Daylight is governed by height of fluid in dome.

plus the flexibility of a custom design.

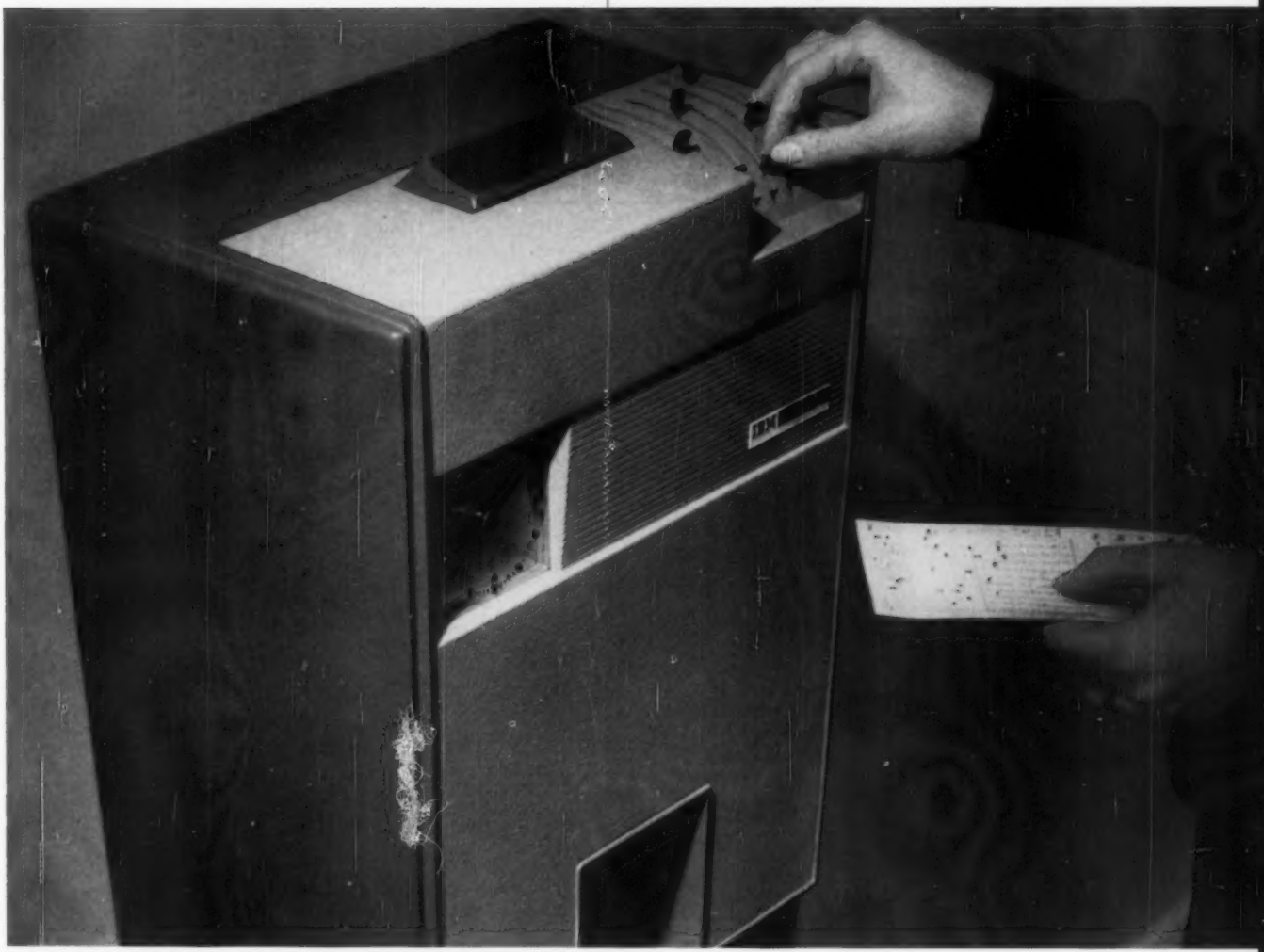
1915: *Time clock by Simplex Time Recorder Co.*

TIME CLOCKS

Yesterday's simple attendance recorders have become a vital part of today's data recording and processing systems.

Time-check systems have varied through the years from the Army's roll call to the positioning of beads and pegs on boards. The efficiency and accuracy of these systems has been almost as varied. By the end of the 19th Century, office and factory personnel had become so numerous that hand-checking systems were too inefficient: employees wasted company time waiting in line and walking long distances from the check-in point to their machines or offices. The time clock—a mechanism that stamps the specific hour and minute on a card or sheet—saw rapid and widespread application soon after its development as an efficient means of checking large numbers of workers. It replaced the fallible foreman, who was susceptible to favoritism, bribery and inaccuracy. But the thump of cards being stamped in machines every morning and afternoon—which came to be as familiar an industrial sound as

1958: *Time-Data Punch by International Business Machines Corp.*



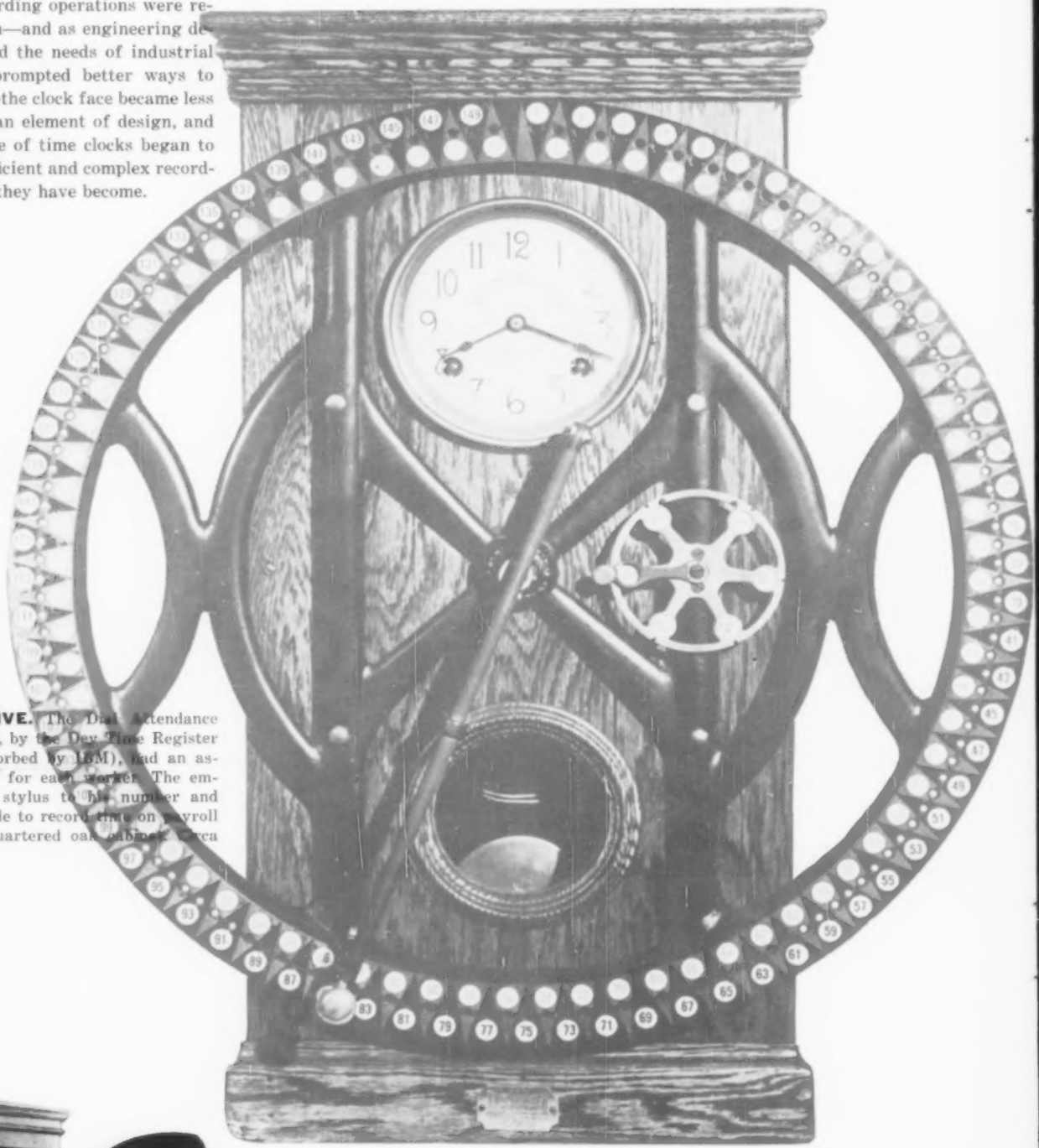
the five o'clock whistle—was only the beginning of time clock development.

Today, companies need to know more than just when worker Aardvark or Zuzz comes in or goes out. In order to fulfill contracts for the government and other clients, they must keep records of each employee's progress through the day's work load. And the mills of time-motion and productivity studies need grist, which can be at least partially supplied by the time clock. As more versatile performance was demanded of them, time clocks became more complex mechanically, a response made possible by several developments. The revolution probably came in 1916 when the stabilization of alternating current on a national scale made practical a synchronous clock motor, timed by the electric cycles. The bulkiness of early time clocks went out with the elimination of cumbersome pendulum escapement movements; accuracy increased and a dependable tie-in with a master clock system, actuated by electro-magnets, became possible. Operational efficiency improved with the switch from sheet recording to cards, a refinement that was recently taken a step further with the substitution of computer cards.

The timeclock has evolved from a mere attendance marker to a component in the complex of modern data recording and processing equipment. The recently designed IBM Time-Data Punch (above) carries this trend to what is probably its most highly developed form—its appearance (as well as its performance) relates it directly to the family of IBM computers. Simplex and Cincinnati, two other major time recording machine manufacturers, have also begun to redesign their time clocks (pages 58-59) for their contemporary role as multi-purpose business machines.

Time clocks have shrunk in size as their function has grown and their performance

The ancestors of contemporary time clocks were truly "grandfathers," with design emphasis strongly placed on creating elaborate time-pieces to which a new function was appended. As more and more recording operations were required of them—and as engineering developments and the needs of industrial bookkeeping prompted better ways to keep records—the clock face became less important as an element of design, and the appearance of time clocks began to suggest the efficient and complex recording machines they have become.

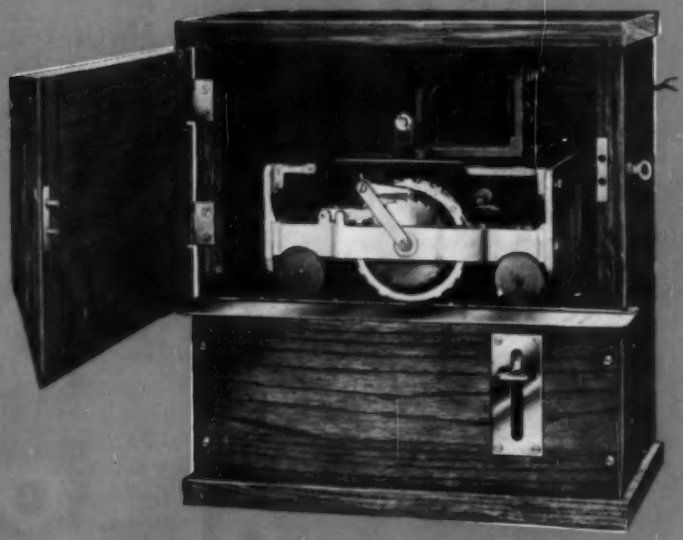


SPRING DRIVE. The Dial Attendance Time Recorder, by the Dey Time Register Co. (later absorbed by IBM), had an assigned number for each worker. The employee swung stylus to his number and pushed into hole to record time on payroll sheet inside quartered oak cabinet. Circa 1880.

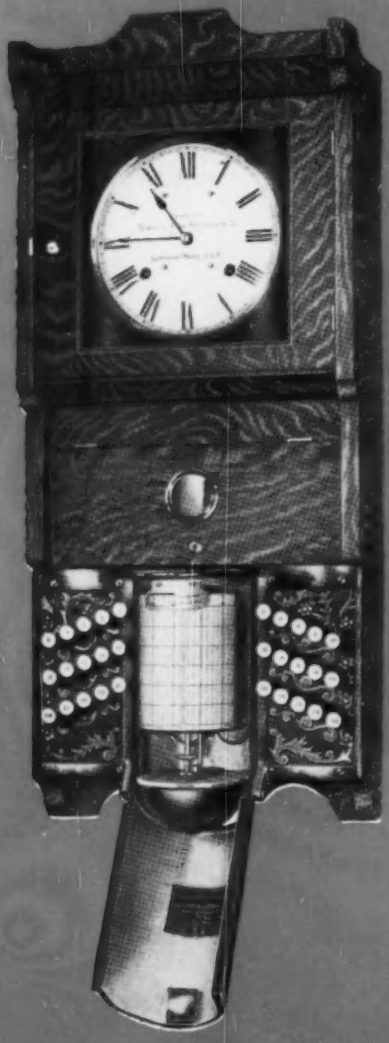
CARD MODEL. There were no dials or wheels to set in the Payroll Recorder of the Cincinnati Time Recorder Co. Cards had replaced sheets for recording. Larger shifts of workers could be handled than by previous methods. The spring drive 27 FA had an eight-day, hand-wound 100 beat power movement.

become more versatile

STABLE A.C. Power companies synchronized their alternating current cycles in 1916 with signals from the National Observatory in order to swap current during periods of peak or low loads, making possible synchronous clock motors timed by the cycles. The Simplex Recorder was run by electro-magnets from a central master clock.



SHEET MODEL. The time record was kept on a ruled sheet of paper, wrapped around the cylinder, in an early Simplex Time Recorder Co. model which was "tastefully constructed of quartered oak, grandfather clock style, with a lower panel of cast iron embellished with flowers."



COMPACT MOTOR. A cumbersome pendulum escapement movement had been replaced by an electric clock motor in this Seth Thomas-style Simplex Time Recorder Co. time clock of the 1930's. Solenoids replaced the hand lever in 1937 for more even, legible printing.

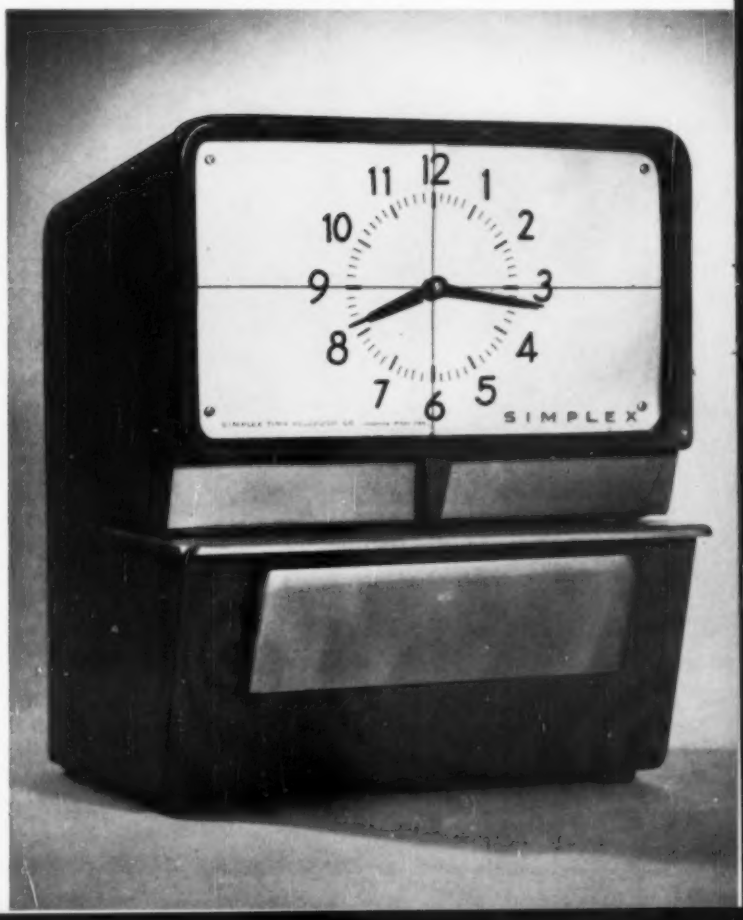
AUTOGRAPH STYLE. This Cincinnati Time Recorder Co. spring-driven clock gave proof positive of worker attendance but caused traffic jams in large waiting lines. Circa 1910.

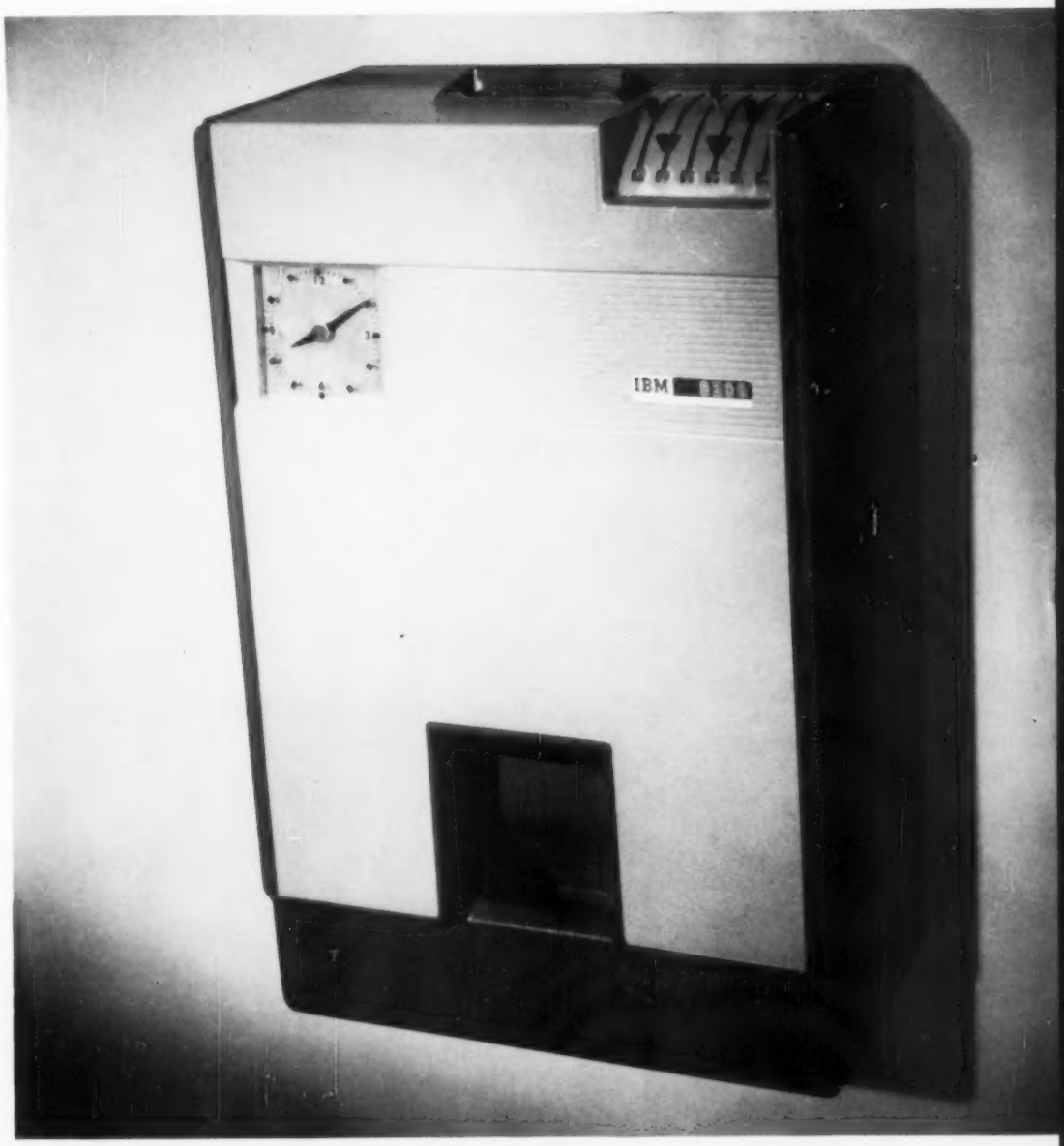
Today's time clocks express their kinship to other automatic data machines in new

The contemporary time clocks on this page and the next —one from each of three major time clock makers—show a sharp visual departure from the antique models shown on the previous two pages: heavy quartered oak and cast iron case elements have given way to lighter sheet steel, aluminum, and Fiberglas. Bulky shapes have slimmed to more compact forms despite increased mechanical complexity. The size of the clock face, which has varied through the years, shrinks in the newest model, the IBM Time-Data Punch, and the psychological implication seems to be that the worker's punctuality is assumed. There is no longer any attempt to suggest a living room clock, for time clocks are now frankly business machines. In this breaking from traditional forms they pose a challenging design problem that is yet to be comprehensively solved: to find new forms that are at once humane, understandable, and expressive of their kinship to other automatic data machines.

DUAL RECORDING. In order to record both payroll and job cost data, the company-designed Jobmaster, Cincinnati Time Recorder Co., provides for multiple data inscription. For more legible type, solenoids are used to actuate the printing mechanism. A new Sherwin-Williams formula wrinkle finish coats the sheet-steel case with a smoother and tighter wrinkle than an earlier formula did. The machine can be operated as a single unit with synchronous motor drive, or in a system controlled by a master clock. There is automatic hour, minute, and AM-PM change.

SYNCHRONIZED SYSTEM. Where many departments or offices have time clocks, it is possible to link them to a central master clock and actuate them by electro-magnets in a synchronized system. After mechanical updating, the TCF Payroll Clock, Simplex Time Recorder Co., was able to function in such a system. Samuel Ayres Jr. Associates designed a brake-formed sheet-steel case and large-size brushed aluminum clock face to bring the Payroll into visual relation with the Master Clock and Programming Machine which they had previously redesigned.





PUNCHED CARDS. In early machines it was necessary to transcribe manually data printed on a time clock card into a form that modern computers could handle. The alternative was a lengthy manual computation. To save processing time, IBM has fitted its Time-Data Punch (above) to standard IBM computer cards. These cards are punched (rather than printed) and fed directly into a computer for processing. A six-lever panel makes it possible to punch variable digital information into the cards —usually this information pertains to job cost. Given a fixed mechanism, IBM's Industrial Design Department organized a one-piece Fiberglas cover—lighter than conventional sheet steel—with a textured vinyl finish. To lower costs, a two-color finish and a recessed panel of grooves linking face and nameplate, replace possible brightwork. The unit tapers toward the bottom to lessen a boxy look. A molded groove demarks paint edges.

new mold for FOSTORIA:

Fostoria dinnerware line, consisting of basic 5-piece place setting, plus optional bowls and cream and sugar set, come decorated in white, blue, yellow and beige. Plates may be had with four decorative patterns (opposite page) in a variety of moods and in colors keyed to basic body colors for mix-match assortments. Three patterns add only one color to basic body color; "Blue Meadow" (right) adds blue and white for two-tone effect.

Kismet

Ring of Roses

Plain and Fancy

unique method shapes company's first plastic dinnerware

Fostoria Glass Company, manufacturer of quality glassware, decided last year to diversify. Management was interested in developing a line of melamine dinnerware that could be marketed through its established channels in gift and department stores, and market studies confirmed the idea that plastic dinnerware could be sold next to fine china and glass—providing it appealed to customers as an additional purchase, not as a substitute.

Fostoria took the design problem to Latham-Tyler-Jensen of Chicago, who first requested further data on the acceptance of existing dinnerware. They learned that purchasers of a "second set" in plastic wanted it for informal use; they required something durable yet graceful, and much preferred patterns to plain colors. L-T-J also found there could be such a thing as too much elegance: consumers distrusted a china-thin edge in plastic just by sheer association.

Working with Fostoria's design director, Martin Yutzey, and Charles Franz, production specialist for Chicago Molded Products, which was to produce the line for Fostoria, L-T-J set out to create forms that were light and crisp, yet clearly chip-proof. Franz, deeply interested in the problem, was willing to devise new molding and decorating methods to achieve the unique shapes that the designers evolved. Two results of the collaboration, seen in the line recently introduced, are particularly notable — the decoration of the plate surfaces, and the shape of the cup and pitcher handle.

The simple key to the plate forms is a beveled rim. It permits a crisp profile backed by practical thickness, and is designed so that the curved inner surface may be decorated in one or more colors to harmonize with solid-tone cups and bowls, using the rim to create a two-toned effect. The two-tone decoration, usually obtainable only by complex molding operations, is accomplished by some original uses of foil inserts. For the "Blue Meadow" pattern, an opaque white melamine-impregnated "foil" is placed over a partially cured blue plate, overlapping the rim; a transparent melamine foil decorated with a blue floral pattern is laid over that. When the die is closed again, heat and pressure bonds the foils to the melamine surface, producing a blue plate with a white ground under a blue pattern. The flash and excess foil is easily and cleanly ground off the rim, exposing the body in a decorative blue band.

The cup handle shows the result of painstaking development of a mold that would produce a graceful line, rising—not dropping, as many plastic handles do to avoid crude flash marks—from a tapered bowl. Although exact details of the mold design cannot be published, the finished piece reveals that the main flash line goes down the body and down the center of the handle, instead of around the rim—leaving an unusually smooth and even rim. The line along the handle is incorporated in the design by a slight bevel on either side, and the remaining finishing, while possibly more than usually is required, is carefully done to support the sense of precise workmanship established by the design.

Student project:

OPERATION SCRAMBLE *an experiment*

in design teaching at the Institute of Design awakes students with crash program

In the U.S. Air Force, the command "Operation scramble" sends fighter pilots into their waiting planes "on the double" to intercept enemy planes just spotted by radar. The same command given last spring at Illinois Institute of Technology's Institute of Design, sent the entire student body to work on fourteen design projects with the same sense of urgency; with the exception of freshmen, who had no single definite goal, students had just three and a half weeks to outline a problem, sketch a solution, make a finished item that could go on exhibition.

The root of Operation Scramble was an idea held for some time by Jay Doblin, Director of the Institute, that foundation-year students should get a chance to work with advanced instructors. He had in mind particularly associate professors Misch Kohn and Richard Koppe of the Visual Design department, for two reasons. First, they teach an accelerated foundation course to graduate students in the summer which accomplishes in six weeks what the undergraduate course does in a semester, and are therefore crack foundation course instructors. Second, as members of the visual design department, they would kindle an interest in this field of study for freshmen about to choose their majors.

But if these two were taken out of their regular classes, who would fill the gaps? The answer seemed to be to extend the essentials of the program to the whole school. It was decided to suspend regular classes for a short time and reorganize students into small groups—the freshmen in two sections working with Kohn and Koppe, the others choosing a project and working full-time on it.

This proved a happy solution on many counts. Watching students divide their day between two or three projects and academic bookwork, Doblin had thought it a difficult schedule for producing the best work. If professional designers complain they can't work with interruptions, how much harder must it be for beginners? Scramble would put them to working and thinking on only one workshop project. (It was not possible to do away entirely with academic studies, but exams were withheld during the program.)

As an antidote to the slow-moving, atomized student day, Scramble emphasized speed and continuity, plunging students into projects which they had to finish fast. There was no time for putting off, thinking without action. The exhibition, scheduled for a week after the operation ended, helped to expedite the program for it ruled out any unfinished work.

To have a choice of problems was to have a choice of professors as well. Here was a chance for students to study with someone outside their major field as well as to try some different facets of design. They also learned from their fellow students, for each group contained sophomores, juniors and seniors.

It was a field day for the professors, too. They could work full time with a small, interested band of students on pet projects which had never before seemed appropriate for class work. The head of the foundation year, Assistant Professor Eugene Dana, was free to make a movie—something he had always wanted to do—on the purposes and operation of the foundation year.

Scramble was carefully staged near the end of the second semester, when students would benefit most from a change in pace and routine. While teachers chose their projects and assembled material, students had no inkling of what was to come. On a Thursday afternoon they were all called together, and the program sprung. Students had a weekend to make their choices; on Monday morning Operation Scramble began.

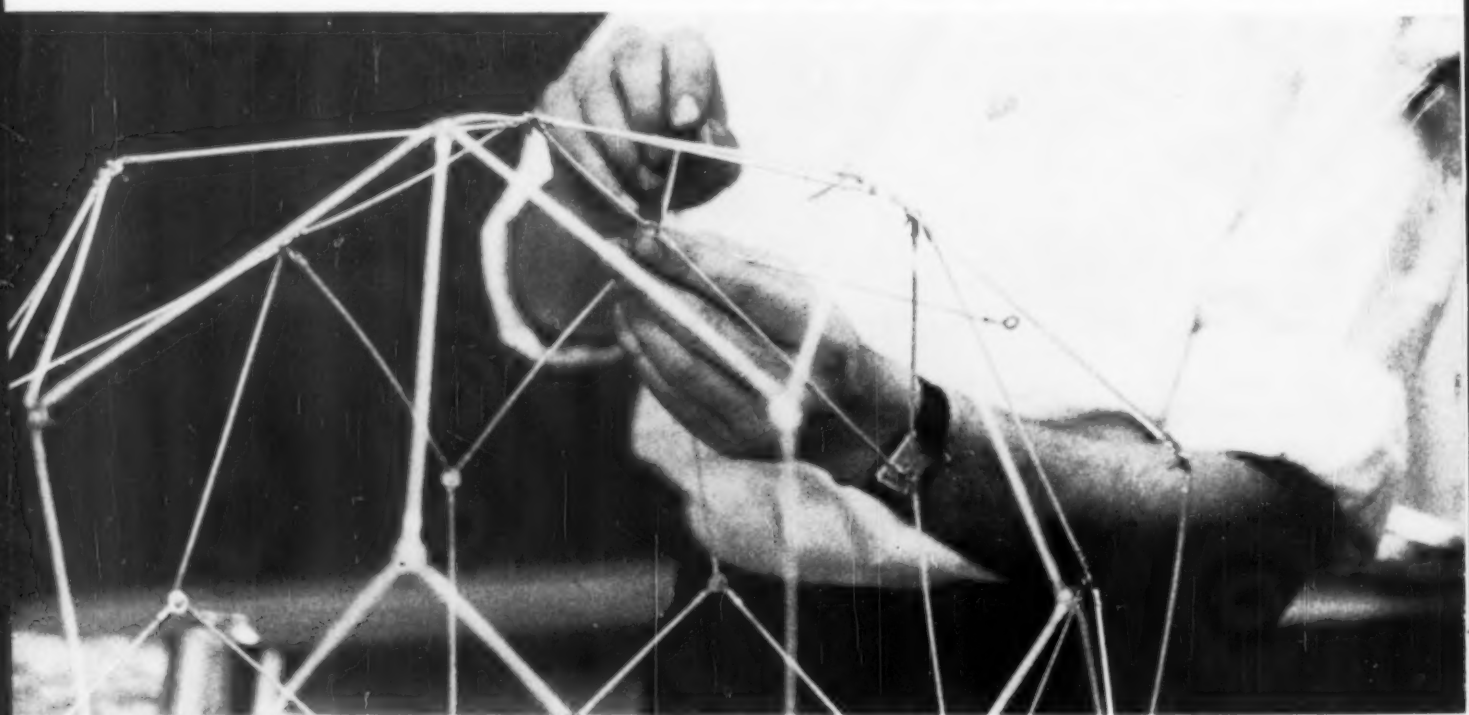
What students managed to do with this experiment in intensive, fast-paced design is shown on the following pages.—*i. w.*

Students learned to function as an effective creative unit

One of the most creative and hard working units was the group of eight students, under Assistant Professor Richard E. Baringer, who explored the possible uses of vinyl cocooning. In only twenty-four days they came up with the staggering total of ten pieces of furniture, five abstract sculptures, and two full-size buildings.

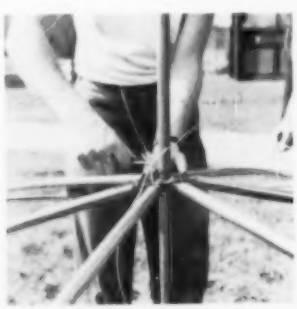
Professor Baringer first thought of cocooning (the material used to mothball the U.S. fleet) as a possible skin for buildings and other equipment when working on YMCA camp shelters two years ago. The project, while not appropriate for regular class work, was ideal for Scramble; it required only a few students in the creative phase (when the problem was to design a structure that would not flap or flutter), and it called for intensive work to a completed product to get a better estimation of the material.

Two students, Morley Markson with Thomas Cannon assisting, designed the structure and jointing, raised the frame of the dome-shaped building; three, led by Maureen Strug, the designer, put up the vaulted structure (lower right corner photo) in some fifty minutes. Once these were up, however, many more hours were spent and more hands enlisted to spray on the cocooning which completed the job.



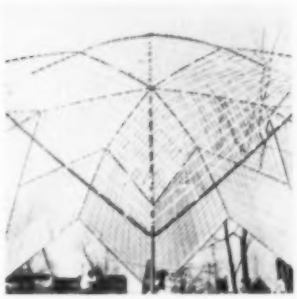
Details of structure, joints, taping and actual cocooning for domed building were first worked out in small scale model.

At center of dome, 7/8" steel tubing was bolted to round washer. Joints were loose since frame, once up, is in compression.



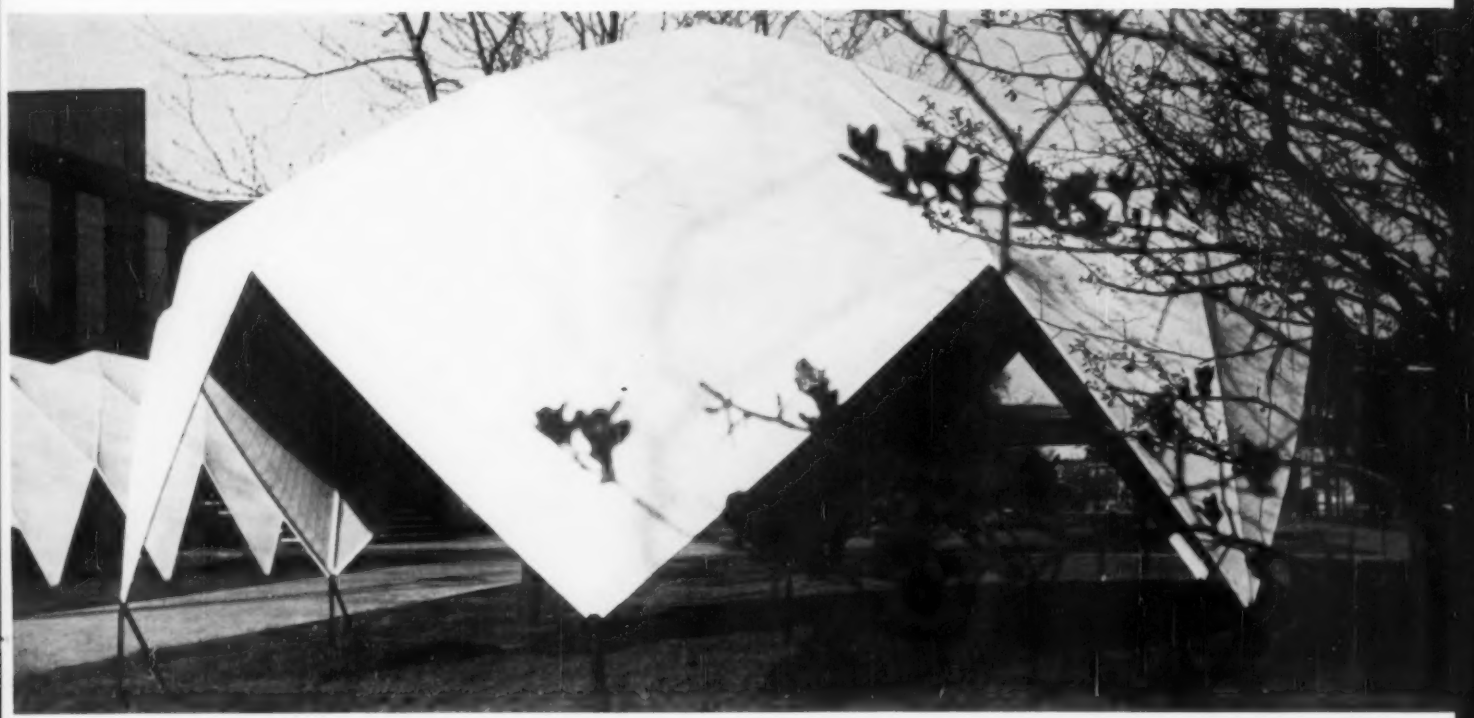
Raising loosely strung structure proved a problem. Center post was added temporarily, dome lifted like umbrella.

Although cocooning will span 20" squares, dome was taped to make 9" or 10" units in order to get job done quickly.



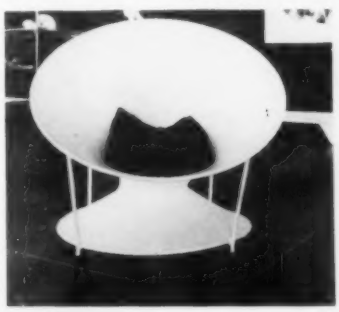
Vinyl is applied under 70 lbs. pressure, 100 c.f.m. of air, by spray gun which whips fibers across open space to form cocoon-like surface.

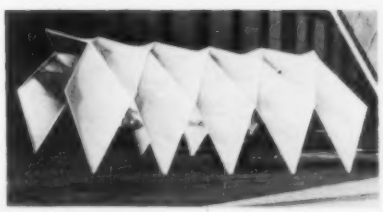
Both sides were sprayed with cocooning, then layer of pure vinyl as plasticizer, to depth of 60 mils. White pigment was added to give opacity and to cut out ultraviolet rays which cause migration of plasticizer.



Finished 25-foot high dome was part of exhibition area, held wire sculpture of foundation course.

Cocooning also lent itself to experimental furniture, although sitter left temporary impress on chair, solved, in this case, with cushion.





Vaulted structure, 20' x 18', used tubing of the same length, identically plugged together; was put up in record time, can be continued indefinitely.

Scramble helped students to broaden their knowledge of the arts

There were fourteen distinct projects in Operation Scramble. For the freshmen, divided into two groups of twenty each, it meant experiments in drawing, using wire and a brayer as well as usual instruments, from Associate Professors Misch Kohn and Richard Koppe.

For sophomores, juniors and seniors, there was a choice of a number of photographic, product design and exhibition planning projects. Five students under Assistant Professor Eugene Dana made a color and sound film documenting the foundation year; four, working with Associate Professor Harry Callahan, organized an exhibit of the photography course from a vast file of past work; five under Aaron Siskind did the photographic documentation of Operation Scramble which is seen on these pages.

In addition to groups working on cocooning, lighting, adult games and *The Student Independent*, six students under Jay Doblin evolved some unique writing instruments; three groups of six students each, directed by Elmer R. Pearson, Raymond Fink and Cosmo Campoli, designed special play sculpture for disturbed children of the Orthogenic School. The final exhibition was the work of another group directed by Jay Doblin and Herbert Pinzke.

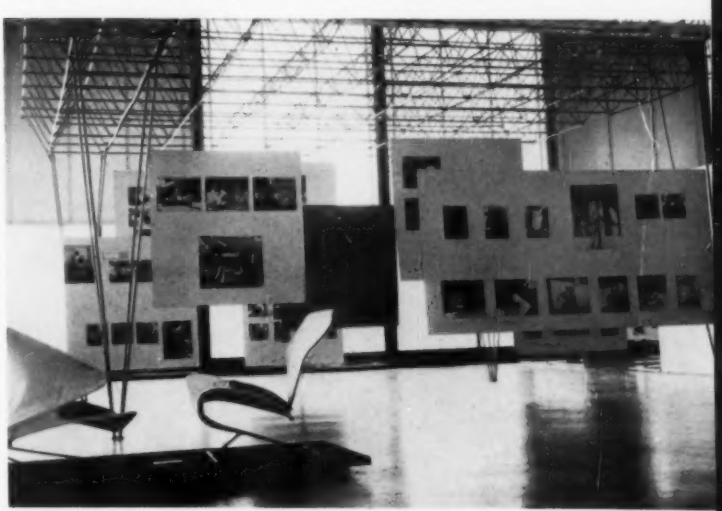
Birdseye bulb with integral shade was best of experimental lighting fixtures designed and built by six students directed by Stowe Myers.

Students from William Sherman's group of six play "Strategy," one of the largest games developed for the enjoyment of adults. Others of interest were a football game with moving players, set of stencils for making doodles.

Team of seven students working with Raymond Martin designed and printed by hand (below) 500 copies of a 28-page pictorial portfolio, "The Student Independent." Financed completely by the group, copies were put on sale and sold out immediately. The portfolio won an award from the American Institute of Graphic Arts.

Space frame was yet another product of cocooning group. Developed as a backbone for a cocoon structure, it was not covered; but used as one part of mammoth exhibition of student work.

Exhibition day marked not only the end of the program but the beginning of summing up. With the student work on display in Crown Hall and in the two cocoon buildings, the most obvious benefits were quickly perceived. It was agreed that the amount and caliber of student work done under these conditions went beyond expectations, that students had become more interested in their work when concentrating on one goal, that sophomores and juniors especially gained from working with more advanced students. The price was high: hard physical labor for teacher and student alike, some run-down workshops as a result of professors leaving them to teach elsewhere. The conclusions came slowly over the summer: by all means more Scramble, but not the whole school at once, and definitely not all the teachers. For the immediate future, plans are underway to establish designers-in-residence for short courses with scrambled groups. By this method small groups may have the benefits of the program without its disrupting the entire school.




REDPRUF
WHITE
PAINT

A close look at Dave Chapman's

627 VARIATIONS ON A THEME

shows how a design team joined management in coming to grips with an enormous job: packaging Montgomery Ward's entire paint line

As merchandising policies increasingly emphasize "lines" rather than "items," the package designer's job becomes increasingly complex, for in creating a line-package program he must stress both the individual appeal of the product, and its family relationship. When gigantic Montgomery Ward retained designer Dave Chapman to implement a long-range company design program, it was clear (see ID, October, 1956) that the toughest part of the problem was its complexity. That complexity—rooted in the intricate and highly diversified operation of one of the world's largest merchandisers—is reflected in one of the first projects undertaken: packaging the entire paint line and related accessories.

Generally a line packaging program is either "vertical" or "horizontal." A vertical program is concerned with the design of packages for many products of various types, sizes, and shapes. Such a program stresses brand identity. A horizontal program provides for the packaging of a *single* product in a variety of sizes, models, colors.

The Chapman designers found themselves in a situation that was doubly challenging: within the "high" vertical merchandising program for paints, thinners, brushes, stains, dry powders and the like, was a broad horizontal pattern of many colors and sizes for each item. In other words, this was a *big* problem—make no mistake about it.

In order to make no mistake about it, the designers spent nearly two years in close collaboration with M-W merchandising, design, and paint production executives. The result is one of the most comprehensive packaging programs ever undertaken in a major merchandising field. It already includes more than 627 sizes, shapes and colors, but it won't stop there. The program is based on basic design controls flexible enough to be adapted to future packaging needs, and there is no limit to the number of items in the Montgomery Ward paint line that will eventually carry the new "family line" identification.

Initial meeting on design program includes Dave Chapman; M-W bureau of design head F. W. Priess; and M-W vice president L. O. Naylor.

Previous M-W paint containers (above) had "too much line unity." All packages used same blue and white color scheme. Copy on can was only indication of contents.

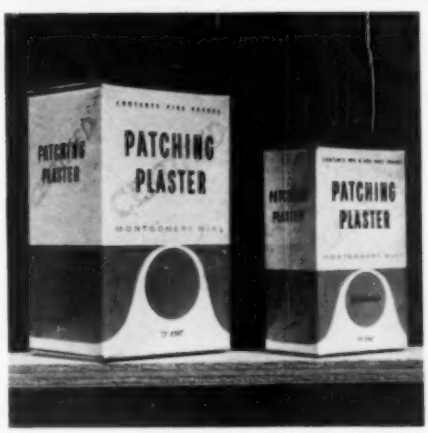
INITIAL STUDY: By February of 1956, when Chapman initiated study on the program, Montgomery Ward's own bureau of design was already considering a "color dot" approach. The idea was to put on the outside of the can a sample of the paint found inside. A label applied around the can would have a die-cut area to expose the paint.

The color dot concept had one outstanding virtue. Since it would offer for inspection an actual sample of the paint for sale, it would materially reduce the need for point-of-sale color cards. The package would literally sell from the shelf.

This was good, but it wasn't enough. In a meeting with M-W Vice President and General Merchandising Manager L. O. Naylor and Fred W. Priess, director of Ward's bureau of design, Chapman argued that the basic design should be one that was effective even without the die-cut color dot. This was important because the merchandise included a number of items—stains, varnishes, thinners—in which color was not the point. Other Chapman suggestions also stressed adaptability as the most important single consideration. The design had to provide maximum visual impact regardless of the shape or type of container used, since boxes and cans, drum labels and paper wraparounds would all appear cheek by jowl on the dealer's shelves. Furthermore the design had to be applicable to such paint accessories as rollers and brushes, and to sales and merchandising aids like counter and wall displays, color cards, and shipping cartons.

With those aims in mind, the design team studied lighting, display methods, traffic conditions, and future display plans in Montgomery Ward's main store in Chicago. They also studied parallel management reports on other outlets, and methods of catalog display. They conducted research into the company's policies, merchandising aims, and quality requirements. It was only then that design planning was begun at the drawing boards.

"Design comprehensive" — dummies made for study purposes — were reviewed by management personnel, who stated their reactions and made recommendations.



Hand-lettered design comprehensives above show new brand notation "Certified." Chart at left shows design scope of all packaging groups. Detail sheets were prepared for production quality control.

COMPREHENSIVE PACKAGING PROGRAM — MONTGOMERY WARD PAINT LINE
Design Character Chart for 627 Products Packaged in Varying Colors, Sizes and Shapes

Group Label-Color Dot	EXTERIOR PAINTS		4	62	53	34				
Group Label-Color Dot	INTERIOR PAINTS			87	75					
Group Label-Color Dot	FLOOR PAINTS			13	13					
Group Label-Group Color	VARNISHES	20	15	29	9					
Group Label-Color Dot	ENAMELS	17	29	21	8					
Group Label-Grained Dot	THINNER & MISC.		3	7	11	2				
Group Label-Anchor Dot	MARINE FINISHES	2	20	19	14					
Group Label-Group Color	POWDER PAINTS						2	17	14	
Basic Line Design Character	SHIPPING CARTONS	1	1	1	1					
		1"	3 1/8"	8"	3 1/8"	1"	3 1/8"	4"	6"	
Line Design-Group Color	BRUSHES	3	4	8	6	8	2	5	2	
Basic Line Design Character	COLOR CARDS				4					

Detail of Nu-Purpose paint and varnish thinner can (at right) shows placement of copy on both front and rear surfaces.

Brush jackets ranging in size from 1" to 6" illustrate wide variation in sizes to be accommodated by basic design.

Paint can at left has the label slit open to show how color card chip is applied under the die-cut color dot label. Rough drawing below represents the production process for color chip and color dot label application. Combined efforts of engineering and production departments resulted in the method illustrated below. Two automatic labeling machines are placed end to end. The first one lines up cans and spot-glues color swatch to surface; the second (a discarded machine that had been about to be sold for junk) applies label with the die-cut portion overlaying the swatch in the exact position.

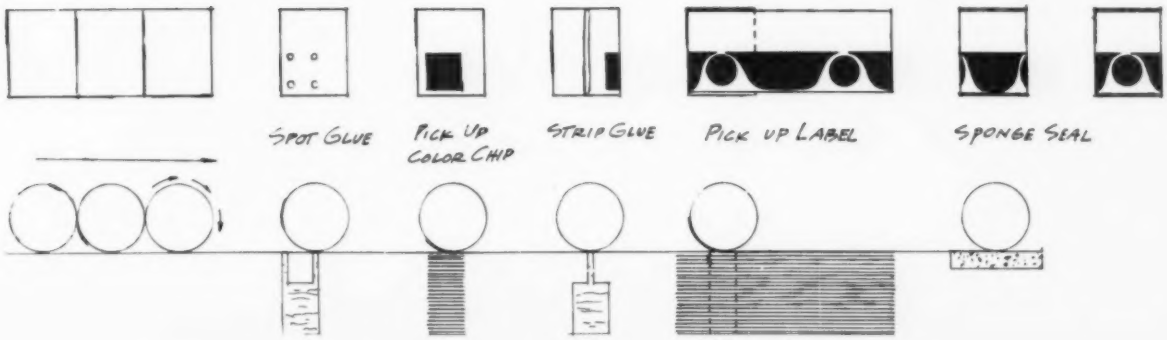


DIAGRAM OF MECHANIZED APPLICATION OF COLOR CHIP AND LABEL

Two units in comprehensive packaging program—4" brush jacket and 1-gal. color dot can—show application of Chapman's basic design.

SOLUTION: In their preliminary sketches the Chapman designers tried to anticipate all possible variations, and each design plan was tested on a variety of package sizes and shapes, and in a variety of colors. Several versions of the final solution were worked into "design comprehensives"—dummies made in sufficient quantities to permit their being studied on the shelf during normal lighting conditions. After the master design plan represented on page 73 was drawn up, a complete set of hand-finished samples was prepared for management review and for production control use.

To ensure the design's accurate interpretation, some production control was needed, since for any single paint label there might be as many as four package sizes, as many as fifty-three variations in color. To fill the need, the Chapman office made control charts for each basic label, showing copy and positioning standards, type size, spacing and other details.

Meanwhile, back at the paint factory, a team including plant manager E. J. Murphy, production superintendent L. M. Dutell, and packaging and labeling supervisor Howard Smith, worked on the problem of applying and exposing the color swatch. It wasn't easy. They tried painting the cans with the actual product inside, but drying time was prohibitive. Special fast-drying paints could overcome that, but left a forbidding inventory of empty painted cans. Colored pressure-sensitive tape was tried, but rejected for lack of good color control. Conventional color card materials were automatically die-cut and applied to double-backed pressure-sensitive tape, but this was too costly. Four-color process printing was considered but rejected on the basis of color control and label inventory cost. Finally the team arrived at a solution combining cost reduction and the truest possible color: a conventional color card paper applied underneath the die-cut label. Next problem: how to apply it without expensive hand labor. The solution shown on page 71 came from the combined efforts of the engineering and production departments.

Chapman's basic design plan has now been effected throughout Ward's huge paint line, and the company, anticipating a substantial increase in paint sales, has recently increased its budget allocation for packaging—a giant merchandiser's testimony to the efficacy of large-scale, long-range design.

Details of shipping carton design are reviewed by principals of Chapman design team: Mas Nakagawa; Eliegey T. Frasier, program art director; William Goldsmith, director of graphic design.

Introducing new line packaging at store levels was responsibility of M-W management team: D. R. Hatchell, program supervisor; L. T. Dorsey, program detail coordinator; D. G. France, division manager.

Morrow
BecVar
Breckenridge
Rappaport

ASID panelists delve into research and product planning,

Hershey
Fahnestock
Birnie

free design services by suppliers of basic materials,

Gallion
Maguire
Merendino
Jergenson
Doblin

goals and techniques in training industrial designers,

Bonner
Brown
Weir

and the nature, variety, and complexity of the problems to be faced in

In his celebrated Nobel prize address in 1949, novelist William Faulkner said he was tired of hearing that man would endure. Man, Faulkner declared, would not merely endure; he would prevail. Sharing this faith in "the prevalence of man," and confident that they will be instrumental in effecting it, the members of the American Society of Industrial Designers who met late in October for their 13th annual meeting and design conference chose an ambitious, and optimistic, theme: Designing the Next Hundred Years.

The conference, at California's almost embarrassingly lush Ojai Valley Inn, was the first national meeting to be held on the West Coast, and was hosted by the Southern California chapter under the direction of chairman Harry R. Greene, program chairman Hunt Lewis, and treasurer Peter Augusztiny. In an atmosphere zestfully designed for pleasure, they managed to provide a program given over chiefly to serious business; their triumph was to organize a broad and intellectually stimulating convention, relieved by such characteristically western delights as a pool-side display of Rose Marie Reid bathing suits, and shopping trips to a self-consciously quaint mission town. It was in this atmosphere that the designers present grappled with the sober problems of their profession. If, between sessions, they also grappled with oversized cocktails in the sun, it was not surprising.

"Today's meeting could be the forerunner of long-range planning to change our pattern of living, our way of life," said moderator Frank Breckenridge describing the first panel, which proposed to take "A New Look at Consumers, Marketing and Product Planning." Whether or not the event proves as significant as all that, it was a provocative session —particularly in the question-and-answer period. When panelist Anthony Morrow referred to James Vicary's famous thesis that the process of baking a cake was a symbolic re-enactment of the process of having a baby, panelist Maurice Rappaport dismissed it as "nonsense." This set off a round of questions (mostly rhetorical) on Freud's place in the kitchen, and, more seriously, on the need for discriminating interpretation of research. Since probably no member of the panel had ever baked a cake, and since certainly none of them had ever had a baby, their authority was suspect. Although no one really won the argument, to many of the forty-five wives present it was clearly a case of Vicary at sea.

The elaborately printed program—designed, produced and contributed by the Art Center School—modestly announced that Friday morning's discussion would be "a lively session." It was. The panel, assisted by a vigorously involved audience explored—in the first semi-public hearing on the subject—an increasingly controversial issue: free design services supplied by basic materials companies.

Moderated by Jay Doblin, the panel consisted of representatives of the three major aluminum companies: Alcoa's Samuel Fahnestock, Kaiser's Frank Hershey, and Reynolds' James Birnie. While Fahnestock (whose company offers design aid but no design service) sat back in enviable comfort, Hershey and Birnie, accused of offering direct competition to independent designers, were attacked from the floor and elsewhere with a single-mindedness reminiscent of Louis in the second Schmelling fight.

Their defense was that they were selling not design but aluminum, that they were interested only in promoting a wider and more effective use of aluminum, and that the design research programs they conducted were ultimately of great benefit to the field of industrial design generally.

The discussion established one thing clearly: the problem was intricate enough to require calm investigation. Speaking from the audience, Dave Chapman brought the heated debate to a fairly quiet conclusion by suggesting the formation of a joint committee of basic materials companies, the ASID, the Package Design Council, and other concerned groups to work out a policy of common understanding for practices in design work.

The spirit of controversy was not permitted to flag, however, for the following panel on "Training a Designer" rattled some old bones of contention: theory versus practice. It was resolved with the recognition that both were important, and that there may be more than one valid way to skin a cat, or to educate one.

Saturday's all-day session got to the heart of the conference theme: The Next 100 Years. Leading the event were three Cal-Tech scientists who know more about the future than anyone since Nostradamus. Their presence at Ojai, and their prominence on the program, had a special significance. It dramatized the way this convention—more than any that preceded it—reflected ASID's increasing tendency to deepen the content of its meetings by including other professions, other areas of knowledge. This in turn served to emphasize the broadness of the design picture today. The Ojai meetings included on the program a movie producer, an architect, a manufacturer, an art professor, two psychologists, a geochemist, a biologist, and four fashion models. The variety suggests the industrial designer's growing realization that designing the next 100 years is everybody's business—*r.s.c.*

designing the next **100** *years*

PANELISTS

DR. MAURICE RAPPAPORT
Head of Behavioral Science Research
Stanford Research Institute

ARTHUR N. BECVAR
Manager Industrial Design
Appliance and Television Receiver Division
General Electric Co.

ANTHONY MORROW
Design Research, Inc.
Chicago

FRANK BRECKENRIDGE
Vice President and General Manager
O'Keefe & Merritt Co., Los Angeles

FRANKLIN Q. HERSHEY
Head of Industrial Design Department
Kaiser Aluminum Co.

SAMUEL FAHNESTOCK
Assistant to Manager of Product Development
Aluminum Corporation of America

JAMES BIRNIE
General Director of Styling and Design
Reynolds Metals Co.

JAY DOBLIN
Director of Design
Illinois Institute of Technology

ARTHUR B. GALLION
Dean of School of Architecture and Industrial Design
University of Southern California

SALVATORE MERENDINO
Industrial Design Department
University of Southern California

JOHN MAGUIRE
Head of Industrial Design, U.C.L.A.

GEORGE JERGENSON
Industrial Design Department
Art Center School, Los Angeles

ALBERT RUDDOCK
President, Southwestern Development Co.

HARRISON BROWN
Professor of Geochemistry
California Institute of Technology

JAMES BONNER
Professor of Biology
California Institute of Technology

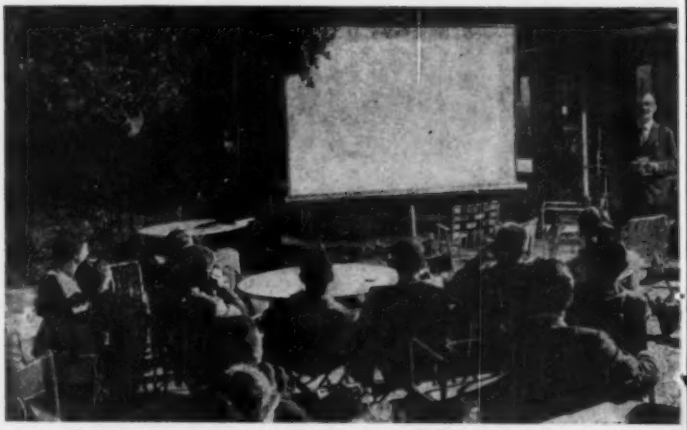
JOHN R. WEIR
Associate Professor of Psychology
California Institute of Technology

SPEAKERS

STEPHEN BOSUSTOW
President, UPA Pictures, Inc.

CHARLES LUCKMAN
Pereira & Luckman, architects

KARL WITH
Professor of Art, U.C.L.A.



A colored slide film report on the 1957 *Milan* Triennale *was accompanied by first-hand commentaries from Dave Chapman (shown in action, above), Walter Dorwin Teague, and Jay Doblin. Many of the pictures were by Paul McCobb.*

RESEARCH AND PLANNING

Morrow, BecVar, Breckenridge, Rappaport

Dr. Rappaport

Essentially, motivation research tries to assess the needs of people, their values and desires. If you can find out what people really want and need, you are in a pretty good position to provide a product with a good chance of acceptance.

But we must ask: how reliable *are* the methods of motivation research? What does it really buy you? And, since it leads to statistics, do we have to bear in mind Mark Twain's statement that there are lies, damn lies, and statistics? Mark Twain was right. But he didn't say—probably because he didn't know—that damn lies *come from* statistics because people don't know how to use them. You just can't go out and count noses and hope to come up with a sophisticated answer which tells you which product the public wants.

We need other methods of obtaining this information, and one of these is the depth interview. I think you cannot say categorically that depth interviewing—the qualitative approach—is better or worse than the quantitative approach. Both approaches often fail to meet the scientific criteria of good research, but often this is the fault of the person buying the research: he simply wants to get some information quickly, invests a limited amount in research and, consequently, doesn't get much.

Mr. Morrow

Most designers, or at least very many of them, are afraid of the term "motivational research." They have the erroneous opinion that motivation dictates to them, takes away their creative ability. It doesn't. It's just another working tool that we have, and it certainly does not dictate the shape of products or what they will eventually look like. The basic case for motivation research as it applies to design is that its results can be interpreted into a working formula for a product or a package that will help create a buying response.

Mr. BecVar

Business is always a gamble. In small companies, forty-nine out of fifty products produced are withdrawn in the first two years of sale. In large companies, with know-how and experience, only one out of five products is successful. There are no small risks in big business.

With an automated factory, you spend at least a million dollars just tooling up for a new product. This is just the beginning. How many times can you afford to be wrong at this price? The best odds on that gamble means the right product, at the right place, at the right time, at the right price. What methods are there of improving the odds? They go all the way from sales results warranty cards to depth interviews. Consumers can't design, they only reject. They can't tell us what they want; they can only reject an undesirable product.

One might ask, however, whether surveys tend to water down good designs. In other words, are the results merely a compromise that will offend nobody? One of the keys, we've found, is the quality of interpretation of survey results. Most surveys can be read in a number of ways. The closer the test to the actual situation, the more valid the data. Actually, of course, the most valid results, are the *sales* of products. Industry should be extremely inquisitive about the research it buys. Many companies get mediocre or poor results, especially on small budgets. Watch out for the quick and dirty research study.

FREE DESIGN SERVICES

Hershey, Fahnestock, Birnie

Mr. Fahnestock

Alcoa believes the industrial designer is a person we want to cultivate. We aren't interested in giving anything away free. We're interested in good design and finishes. In many cases we realize we haven't exploited new ideas as far as we could, but we know things are being done now that five years ago couldn't be done. We want you to give us new ideas in developing our ability to create new products and new outlets for our materials.

Mr. Hershey

We are not quite so simon-pure as Alcoa, because we do sell design service, but only for the purpose of selling aluminum.

Mr. Birnie

Our company is so 'sold' on design that we have our own staff of nearly fifty professional designers, not to speak of scores of architects and engineers, all working full-time with aluminum. We are anxious that our own products, packages, literature, buildings and exhibits be well-designed. And we stand ready to assist our customers and their designers in solving any problems posed by aluminum. For that matter, we offer this same assistance to any manufacturer or independent designer.

We are delighted when a designer comes up with something really fine done in aluminum, and credit independent designers in our advertising. The designers at Reynolds feel that our company, by making it possible for us to experiment, to explore, to develop aluminum design-wise, performs a valuable service for the design profession.

Some of you gentlemen have told me that you feel we are competing with you. In a sense, this is true, the sense in which, say, in medicine, the research specialist competes with the general practitioner, or even the practicing specialist. For the most part, we confine our activities to special problems, the solution of which will open up new areas of design activity with respect to aluminum and redound to the benefit of designers everywhere.

The basic principle of operation, the raison d'être for all our design activity, is not to sell design, but simply to sell aluminum. We are concerned only with two things—that the object, whatever it is, be well designed, and that it be designed in aluminum where aluminum can do the job best. We don't care who does the designing. We care very much who provides the aluminum.

Mr. Teague

However you attempt to disguise it, Kaiser and Reynolds offer direct competition. As far as I know Alcoa has never undercut us. The speculative offers don't fool the sensible business man. He knows he's not getting anything free. The cost of the service comes with the cost of aluminum, and you violate the code (ASID code of ethics) in offering speculative services.

Mr. Hershey

We have nothing to hide. We are not engaging in double talk, and I don't think we're in competition with any designer. A great deal of our trouble is from misunderstanding. Our department is set up to help sell aluminum, make experiments for future applications of design in aluminum. Most of our effort is to develop new products, and to stimulate aluminum sales. This is the reason for our design service.

EDUCATION OF A DESIGNER

Gallion, Maguire, Merendino, Jergenson, Doblin

Mr. Gallion

I sense that a new Victorianism is upon us, and seeing some of the new car models makes me feel that education is more important than ever—if only to teach common sense. This—as Mr. Hershey remarked—is an economic world; but isn't it time to make it a cultural world as well?

Mr. Doblin

It occurs to me that we have a large area of deficiency in product design: we lack appreciation of the symbols we are creating. How do we clearly re-evaluate the rotten symbol-slapping of products? How do we keep people from doing perversions of design?

We are trying at the Institute of Design to give students an appreciation of all the elements of good design. At our school we try to present an idea of basic esthetics. And we also include in the offering a judicious use of the American cliché as exemplified in slick drawings. If we could turn out a cultured person who has all the professional skills and the inquiring intelligence that equip him for good problem solving, we would have the complete designer, unhampered by the clichés of our time.

Mr. Jergenson

It's pretty hard for me to talk about the philosophy of the Art Center School. I don't recall ever having heard anybody spend as much as five minutes discussing the philosophy of the school. We do believe that the student must practice the kind of problem solving he will later be called on to do in industry. And we believe that, logically, the best teacher of design is a good designer.

To achieve creativity the student must have a problem to solve, and it ought to be one he is not prejudiced about. Human nature tends to be imitative rather than creative, and a beginning designer tends to imitate what he likes. This is perfectly natural, but it presents a temptation to student and teacher alike. An instructor should not train disciples. At Art Center we try to give the student the ability to evaluate his own thinking; we want to train him to analyze and evaluate his own work and ideas. This develops his personal responsibility.

Mr. Maguire

At U.C.L.A. we try to provide students with the maximum breadth of training —maximum exposure to many fields; we are concerned with enriching both his personal and professional experience.

The designer has to fulfill an economic function, of course, and students can't be trained to design products that won't meet a market. We encourage them to study business administration, sales, research, hoping that they won't blindly follow the dictates of motivation research and distribution policies. The designer must understand these things. To do this he needs to be educated broadly.

We admit that our students are not as highly skilled at putting their ideas on paper as they would be if they went to a technical school. Rarely do we get a high level of rendering, but we do try to get students to define their own problems and solve them.

Mr. Merendino

We are trying to develop intelligent persons who will be happy in this life, happy as designers. We want to develop common sense, the ability to think and to question, and, above all, a self-starting energy.

Charles Luckman

Stephen Bosustow

TRIBUTE AND TALK

Between panel discussions, the Ojai delegates took time to pay tribute and to hear after-dinner speakers. Tribute took the form of a ceremony in which Henry Dreyfuss, on behalf of ASID membership, honored Walter Dorwin Teague for "distinguished contributions to the profession of industrial design."

Animated-cartoon producer Stephen Bosustow spoke animatedly after dinner, and presented, with the help of his colleague Mr. Magoo (not shown), an evening of experimental films.

Speaking at the final dinner meeting, architect Charles Luckman took issue with the conference theme, insisting that "Our problem is not the next hundred years. Our problem is tomorrow. I view with alarm the primeval urge to look ahead." Luckman also lamented the free-design-service controversy, telling delegates that if basic suppliers offer free design "it is none of your business. Our job is to develop the ABC's of success so it is unnecessary to promote restrictive clauses against competition." Describing "the unrestricted use of modular design" in architecture as "sheer stupidity," Luckman warned that "the tendency to have modular thinking follow modular design is an even greater danger."

THE NEXT 100 YEARS

Professors Bonner, Brown, Weir

Dr. Brown

Over half the population of Ireland once depended on the potato for survival. A blight occurred in Ireland and half the country was dead. We have become as dependent on our machines today as the Irish were on the potato. Should anything happen to this technology we would have the same result as the Irish. If we are to keep going ahead supported by industrial civilization we must think ahead to the kinds of things that can happen.

In the industrial West we are fortunately able to exhume huge quantities of raw material for goods. Few appreciate the enormous quantity of materials it takes to support a single individual: nine tons of steel are in use today per person, and hundreds of pounds of other metals, including about eight tons of coal per person.

To what extent can we expect demands for raw materials to increase? Well, at the turn of the century we were mining copper ores with high copper content, and that has decreased to one-half of one per cent of copper in ores. We are now drilling wells five miles deep to get oil, taking a fantastic amount of energy to do it. In the next few years the demand will be for fifteen tons of steel per person and will someday become 100 tons per person. The resultant consumption of energy will require up to 100 tons of coal, or more.

If we take an optimistic view, there is no chance that the population of the world can level off at less than seven billion, and it will probably go over ten billion. How much material is there to supply this demand? I believe the limit on raw materials will be approached before too long. We can process ordinary rocks if we have the energy to do it. Clearly, our resources are viewed in terms of energy, the key to supply.

I can see major changes, some of them to come in our lifetime. We have a pretty good idea of the limits of petroleum production, and in the U.S. during the next decade there will be a major change: we will pass through the peak of petroleum production and have to look elsewhere for liquid fuels: imports, hydrogenation of coals, or squeezing out of oil shale. It will have a major impact on our way of life. We're headed toward a major shift from petroleum economy to a coal economy. We have enough coal to last quite a while, but coal is not equitably distributed over the earth.

When coal runs out, we'll be living on atomic energy and solar energy. The price of coal and gas won't have to go up very much more to make this possible. The shift will take place at different times in different places: in England it is taking place already; in Japan, where coal resources are low, it is even now economical to shift to atomic energy. It is ironical that in the United States, one of the two leading atomic energy nations, we have the least use of it. In California, atomic energy will be competitive with coal if we have to shift to importing coal from Pennsylvania.

The earth's crust is endowed with enough material to allow a highly industrialized society for a long time. I can visualize copper and iron ores disappearing, and our industry will feed on rocks, on sea weed. As time goes on, however, the industrial society becomes more vulnerable to disruption, and we approach the Irish potato condition.

More countries will be in a position to wage war, since more of them will be capable of producing the materials of war. In about fifteen years there will be about fifteen countries able to produce atomic energy for this purpose. Thus—even though we have the ability to perpetuate ourselves—the probability of disruption of our society increases. And recovery from such a disaster may be completely impossible because at that time there will be no iron ores. We in the United States underestimate how easily this can happen.

Dr. Bonner

One person is born every second, and we believe this process of population increase can't be allowed to continue. The number of people that can be supported by the world's resources is finite, and it raises the question of how much food is needed. Most people on the earth are now hungry. Each person needs 3,000 calories per day, and less than 30% of the world's population now get that. About 25% exist on a marginal diet.

Part of the problem is that our vast resources are not used. Half of the plant materials on land are in forests; but we don't eat forests. We use half of the material in cultivated areas to feed animals, then we eat the animals—a tasty but extremely inefficient process, for we have spent most of the plant energy in just keeping the animal alive. Animals themselves are very efficient for they take their nourishment directly, without any nutritional middleman.

If we apply new principles, food productivity can be stepped up by as much as 4% per year. But it would be difficult to increase food productivity as fast as the population increases. Food will be scarce the world over unless population increases slow down. One hundred years from now the world would have to support itself on a diet comparable to that of Japan.

Dr. Weir

We are faced with an increasing shortage of brain power. By the year 2000 we will have twice as many scientists and engineers as we now have, if we turn them out at the present rate. However, we will *need* twice as many scientists and engineers as will be available by that time.

Half of the capable, and one-third of the exceptionally talented, people are lost to higher education. Factors in loss of intellectual talent include: a) failure to identify talents early enough; b) insufficient motivation—competing interests and activities; c) watered down education systems which suppress some intellectual development; d) problems in providing adequate vocational guidance; e) increasing shortage of high school teachers.

If all these sources of educational attrition are eliminated, we'd have all the intellects we need, and double the number of graduates. The world as a whole has brains to burn. There is no barrier to developing the technically advanced world described by Dr. Bonner and Dr. Brown, provided we have time to develop it.

In 100 years we could increase the effectiveness of intellectual brain power as much as in all of history before us —if the boat isn't rocked.

We may eventually achieve communications without the stumbling blocks of semantics and language. We may be able to communicate our feelings to other people by generating feelings within ourselves—non-verbal communications. If we can eliminate the brakes on our cortex by eliminating fears, and learn how to keep our system at the peak of operation, or to induce enthusiasm, we could double our productive efficiency.

Having made reasonably sure of the next century, the ASID confidently went about installing new officers for this year. They are, left to right, President William M. Goldsmith (secretary-treasurer of Dave Chapman Industrial Design, Chicago), Vice-President Francis F. Braun (president of Product Presentation, Inc., Cincinnati), Secretary F. Eugene Smith (Smith, Scherr & McDermott, Akron), Treasurer Milton Immerman (vice-president of Walter Dorwin Teague Associates, New York). Jay Doblin spoke briefly.

IDEA: educators in lively session vote to exchange theories and

After several years of discussion and planning for better liaison among all major centers of design education, more than thirty educators voted, late in October, to discuss and plan within the framework of a permanent organization: IDEA. The Industrial Design Education Association, IDEA is "dedicated to the development of industrial design education through strengthening the lines of communication between individuals, educational institutions, and professional organizations."

Meeting at Syracuse University, the group elected Joseph Carreiro (chairman, industrial design department, Philadelphia Museum School of Art), president; James Shipley (University of Illinois) vice president; and Arthur Pulos (chairman, industrial design department, Syracuse University), secretary-treasurer. They also agreed upon a constitution which opens membership to those engaged or interested in industrial design and, *ex officio*, to the educational chairmen of professional design societies.

The story behind the birth of IDEA—the first such move in the active quarter-century of industrial design teaching, and similar to the development of legal or medical education groups—was reviewed for conference members by John Alcott, chairman, industrial design department, Rhode Island School of Design. He traced it to June, 1955 when INDUSTRIAL DESIGN published a review of current teaching approaches in ten established design schools, appraising some of

the problems confronting students, educators, and professionals seeking to employ young designers. Because the article raised many critical problems and provoked lively controversy among educators, INDUSTRIAL DESIGN and the Philadelphia Museum School, led by design head Joseph Carreiro, invited twenty-five educators to air the issues at a symposium (ID, February, 1956). This proved to be the first of a series of meetings whose growing momentum made it evident that the educators needed a permanent framework for exchanging views and information.

From the Syracuse IDEA conference came several practical proposals that may prove significant. Because of the current difficulty of transferring course credits, Joseph Carreiro proposed that a standardized core curriculum, based on an analysis of many design school curricula, be developed. Arthur Pulos said that design terms as well as the meaning of course designations could be clarified if teachers would simply exchange outlines of the programs which their respective schools offer. Hin Bredendieck, of the Georgia Institute of Technology, proposed a survey to determine the national demand for industrial designers five or ten years hence. The group discussed how to direct more industrial design information toward the high schools, where many students and teachers are not even familiar with the term; and the need for centralized collections of slides, design school catalogs and information was also considered.

At a dinner meeting following the first day's activities statements were read from George Beck, president of IDI, Francis Blod, president of PDC, and Jane Fiske McCullough, editor of INDUSTRIAL DESIGN. Mr. Beck emphasized that the relationship between professional groups, such as IDI, and the schools should parallel the bond between colleges and the professional law or medical associations which advise them on their programs. Mr. Blod stressed that the need for more package designers makes deficiencies in current educational programs additionally critical. Mrs. McCullough pledged INDUSTRIAL DESIGN's support to the teachers in their new venture.

Before adjournment, IDEA elected chairmen for three national regions: John Alcott, East Coast; Aarre Lahti (University of Michigan) Mid-West; George Jergenson (Art Center School) West Coast (temporary). Georgia Institute of Technology emerged as the site most widely favored for next year's conference, and Hin Bredendieck argued that meeting there would encourage the use of designers in the South, where need for them keeps pace with the region's spreading industrialization.

To students, IDEA can come to mean more uniform teaching, easier transfers, and a broader learning picture. And industry and practicing professionals should find that the benefits of a broader exchange of ideas and information among design schools will be reflected in the work of future graduates.

course materials through an industrial design education association

There's no business like hi-fi business

The hi-fi business, taking its pulse at the annual show in New York, found itself in a healthy state: sales of components accounted for some $200 million last year out of a total of $900 million spent for records and all sound reproducing equipment. And prospects for this year, based on an expanding market and a new development on the horizon—stereophonic discs—are still brighter.

In this era of mass production, the appeal of hi-fi has always been expensive and exclusive, and components manufacturers have talked to their customers in technical terms long since abandoned by every other industry. Since the advent of the $33\frac{1}{3}$ record, its market has widened perceptibly each year and its appeal has broadened accordingly. Amplifiers and tuners are continuing to be designed with an eye on seeing them in the living room, speaker enclosures are also getting visual appeal. However, although exteriors may be more refined and controls better ordered, every design decision leading to simplification or synthesis is rigidly limited by the demands of the incredibly complex science of sonics. Because few manufacturers make the whole range of audio equipment, design has had a spotty influence, strong on some components, non-existent on others.

Stereophonic sound (reproduction of sound fed from two sources through a two-channel system to two separated speakers) from a phonograph disc is viewed as a second revolution in the industry, comparable to the upheaval created by microgroove records. In 1950 when stereophonic sound (then called binaural) was introduced it came on both discs and tape. For the tape machine, with its dual-playing head, it was a natural; the disc, with two separate sound tracks and tone arms, was unwieldy. What is reviving this once dead subject is the possibility of putting both sound tracks in one microgroove channel. It can be done by either of two systems—the 45/45 Westrex, developed by this subsidiary of Western Electric; and the London system from Decca of England. The major difference lies in placement of the two tracks; the Westrex has the advantage of being able to feed both into a monaural system. Before disc manufacture begins, the industry wants agreement on one or the other; Fairchild and Pickering have already put their bets on Westrex with cartridges designed for that system.

Why should stereo discs make such a big splash when anyone interested in stereo can buy a tape machine? Since most consumers are familiar with discs, know how to handle them, and can use their current equipment, with some additions, to play stereo, they hold the promise of eventually becoming a mass development. But, there's still a lot to be done technically before the stereo disc is on the record shelf.

Tape Recorders: Each year the cost of tape is effectively cut by halving its speed. This year's speed is 1⅞ ips; only some four years ago 15 ips was standard. The Norelco (A) is equipped to handle three speeds—7½, 3¾, 1⅞ ips, has 5" twin-cone speaker.

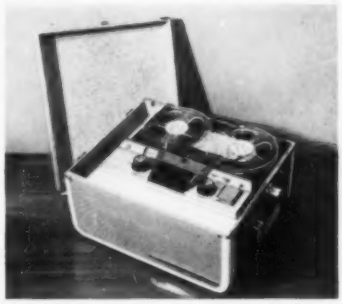
Tape cartridges which eliminate rewinding are being made by RCA Victor and Minnesota Mining & Manufacturing, but are not yet part of models on the market. Special tape magazine with spring mechanism which helps unwind tape is feature of Sony Babycorder (D) from Japan, which is transistorized miniature (about 7½" x 6" x 2½") run on dry batteries.

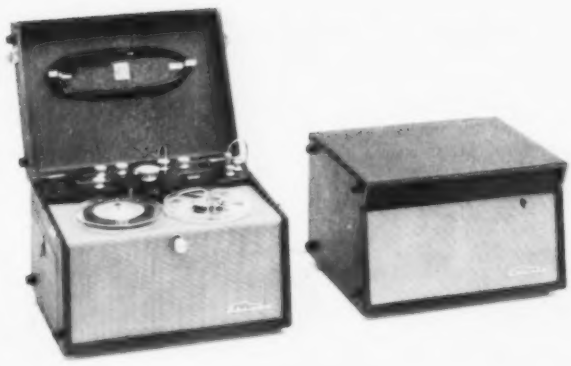
A stereophonic player, Ekotape 290 (C) has additional 8-watt amplifier, needs only separate second speaker. Exterior design is by Brooks Stevens.

RCA's new Diplomat (B) has piano key controls, luggage casing, the first a new, the latter traditional part of tape recorder design.

A

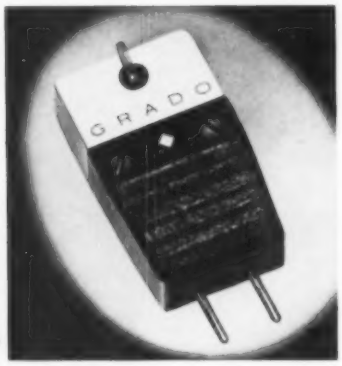
B





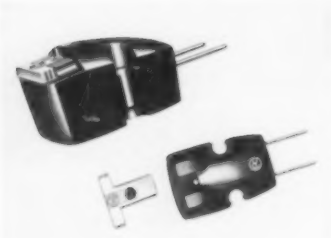
C

D



A

B



C

The cartridge, keystone of a record playing system, translates movement of the stylus to an electrical signal; with stereo sound this job will be doubled. First stereo cartridge ready for production, Fairchild XP-4 (D), has two magnetic coils mounted at right angles to each other to do the job according to the Westrex system (p. 78).

Both GE (B) and Pickering (C) magnetic cartridges simplify the tricky job of fitting the stylus into pickup; one with clip-in stylus assembly for line of seven dual and single pickups; the other with T-guard assembly for single cartridge.

New Grado dynamic pickup (A) has moving coil which will not pass on vertical movement of stylus, thus decreasing distortion.

Tone arms should, ideally, retrace exact path of recording stylus. A recent development, the BJ double tone arm (E) which always holds stylus tangential to disc, has new compensating devices to accommodate it to larger variety of cartridges and turntables.

Turntables have only one basic job: to carry the record around steadily at a constant speed. This is made more complex when three and possibly four different speeds are required. New electronic Fairchild (G) is driven by power oscillator whose frequency is varied to change speed, can utilize many different power sources. Metzner (F) is ready for new disc speeds with continuously variable speed from 16 to 83 rpm. Stroboscope helps listener set standard speeds exactly.

D

E

F

G

H

Amplifiers, preamplifiers and tuners, as hi fi gets a wider audience, are becoming more compact, more finely finished and helping the non-technical with ingenious control devices that simplify operation.

The new Bell AM-FM tuner (H), designed by Ira W. Simon, has a logging scale to ease relocation of station. Separate AM and FM sections in Scott stereo tuner (I) make it possible to tune both on to receive stereo broadcasts. Designed by Victor H. Pomper. Indicator of Eico tuner kit (J) blooms into exclamation point when tuned exactly.

Of technical interest are first transistorized preamplifier - equalizer by Regency (M) and Dynakit preamplifier (N) with printed circuit, styled by R. Ibarguen, engineered by D. Hafler. As transistor performance at high frequencies improves, more components will benefit from their small size and quieter operation.

Pilot's integrated tuner, (L) preamp and 12-watt amplifier has indicator which narrows to show exact point of maximum signal intensity. Design by F. Bowen, engineering by H. Shottenfeld.

Fischer Master Audio Control (K) has plethora of controls to compensate for less than hi-fi parts at either end of audio system.

I

J

K

L

M N

A

B

C

D

Speaker design, definitely the realm of the audio engineer, touches the designer when it comes to putting a cabinet around the works. The engineer's problems hinge on the nature of sound waves: high frequency waves are short, low frequency waves long and diffuse. The designer's job depends on the engineer's solutions: usually, a division of the speaker's function among two or more specialized cones, sometimes an intricate baffling system to sustain the lowest frequencies.

New polymerized paper is used in full-range Hartley 217 (B) to get stiffer and stronger cone which promises cleaner response. Conceived by H. A. Hartley, the process was worked out by Harold Luth, industrial chemist.

Altec-Lansing 601B (A), 12¼" coaxial speaker with high frequency tweeter mounted inside woofer, has heavy cast frame to give rigid suspension for bass cone. Tweeter's many cells distribute sound 90° horizontally and 40° vertically high frequency.

Separate GE woofer (C) and tweeter (D) can be used together in one system. Woofer, with built-in crossover filter, has deep convolution cone which improves compliance. Grill protects tweeter cone which distributes sound 100° in both directions.

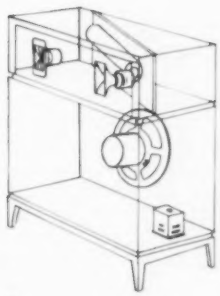
Speaker cabinets, with the notable exception of Eames' work for Stephens Trusonic, are impassive wooden boxes, faced with grille cloth that reveals nothing of their contents. Articulation has not been furthered this year, but shapes have changed.

Most radical shape is the Ellipson Amphora (F) whose Grecian urn styling springs from the unique sound system (see diagram) of French engineer J. Leon. Frequencies above 800 cps are collected and directed by a concave reflector; bass response is improved by double resonating cavity.

Electro-Voice phase-loaded speaker system (G) was developed to approximate the quality of a corner system in an along-the-wall set preferred as a living room piece. With woofer facing wall (see diagram), to use both wall and floor as reflector, grill cloth is needed only for upper section of cabinet. Designer was Robert Fuldner.

To match famed Janszen electrostatic high frequency speaker, Neshaminy Corp., has designed a new dynamic woofer (E, housed in lower cabinet). High-impact Fiberglas is used to hold speaker. Upper frequency response was extended to get smoother blending and crossover network eliminated.

E



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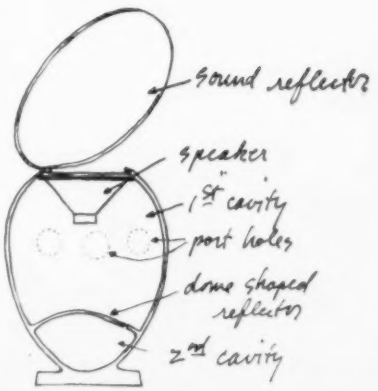

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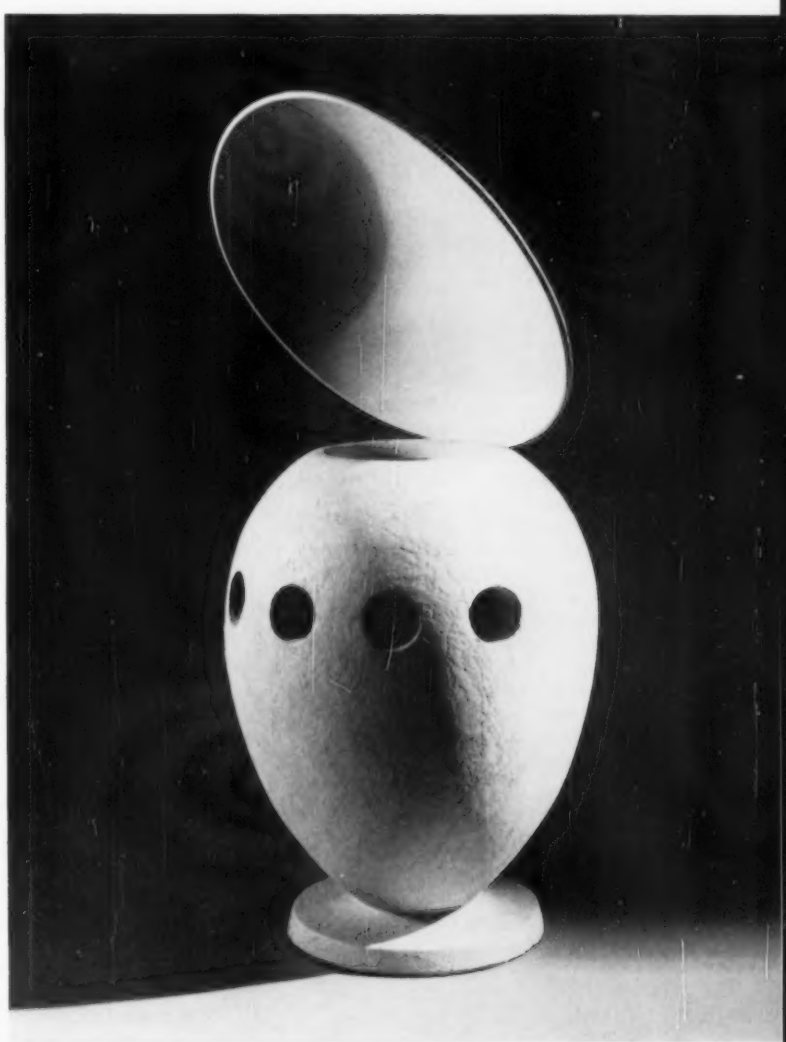
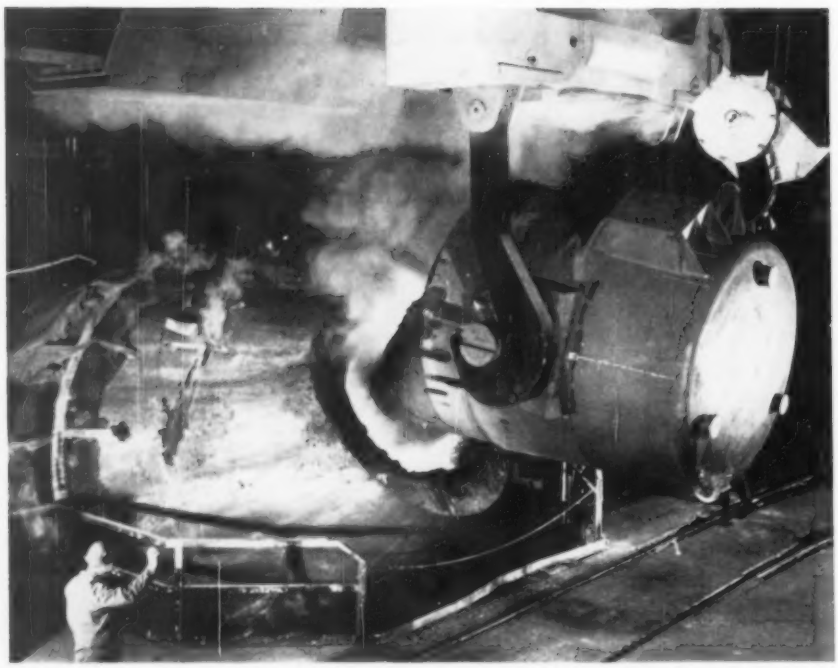


TECHNICS *a catalog of new products, materials, processes and finishes*



The Aliquippa basic oxygen steel plant of Jones and Laughlin was designed and built by Kaiser Engineers, Oakland, Cal. The Kaiser Steel Corporation is installing equipment for the new process at their Fontana, Cal. plant. It is expected that other steel companies will use the new process.
Source: Jones and Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30.

Lower-cost steel now possible

A new steel-making process, the basic oxygen, is reputed to combine so many assets of traditional processes that it can rightly be called a major technological step in steelmaking, one that should have a great influence on the future expansion of the steel industry. Of the two traditional processes, the open hearth is better known for the low cost of its operation, and the Bessemer method for the high quality of its steel. The basic oxygen process is said to produce high-quality steel, but its facilities can be constructed at a lower cost than either of those for the two conventional steelmaking methods.

The basic oxygen furnaces now being installed at the Aliquippa, Pa. works of the Jones and Laughlin Steel Corporation, involve a capital investment of only $15 per annual ingot ton as compared with at least $40 per annual ingot ton for new open-hearth facilities. The cost of the complete installation is about $11 million with a total annual rated capacity of 750,000 tons.

The basic oxygen steelmaking process is relatively simple: it is carried out in a cylindrical furnace lined with basic refractories. The furnace is charged with scrap, molten iron, and slag-forming materials. A water-cooled lance is lowered to a predetermined position above the surface of the molten metal. From the tip of the lance, a jet of high-purity oxygen is directed vertically at the surface of the molten bath, initiating the thermo-chemical reactions that refine the iron into steel.

The furnaces will produce 54 tons of steel per heat, a period of about 37 minutes. Production will approximate 40 heats in 24 hours, and the life of the lining is estimated at between 300 and 400 heats. While one furnace is in operation, the other will be cooled and relined, a process that will take about five days.

Steel made by the basic oxygen process, will, it is said, be low in nitrogen, phosphorous and sulphur content, making for purity and ductility. The steel produced at Aliquippa will be applied to the production of welded pipe, cold heading wire, welding rods and light structurals.

An Austrian development, the basic oxygen process was brought to America in 1954 by the McLouth Steel Corporation.

On-the-spot film development

The Industrial Camera Division of Fairchild Camera and Instrument Corporation recently announced the development of their Mini-Rapid 16, a portable, self-feeding rapid film processor, said to develop an ordinary 100′ roll of black and white film ready for projection on a screen within twenty minutes after shooting. Film lengths as short as 1′ or as long as 400′ can be processed without changing or replenishing the chemical solutions.

Cameras with film-developing units are not new but the new application of such a unit to a movie camera promises to affect the design of movie cameras generally.

Major element in the tiny processor, about file drawer size, are interchangeable film transport plastic inserts containing a high speed developer, a rapid fixer, a hypo eliminating agent and a static rinse. Drying is carried out by a high-velocity air jet in the emulsion side of the film. The resultant film is said to be of commercial quality. A more permanent quality can be obtained by running the film through auxiliary tanks filled only with water.

The Mini-Rapid is the first of a family of film and paper processing equipment to be developed as shelf items by Fairchild.

It is the result of research and development in the design of miniaturized airborne processors for the U.S. Air Force, compact portable units for the U.S. Army Signal Engineering Labs, as well as units with wide-range capabilities for the U.S. Navy.

The unit is ordinarily operated on a table top with no fasteners required. Construction is of welded stainless steel with an aluminum rear housing for light weight, rigidity, and economy.
Manufacturer: Fairchild Camera and Instrument Corp., Robbins Lane, Syosset, L. I., N. Y.

New laminates possible

A new Eastman Chemical Products adhesive, Eastman 910, is reported to combine rapid set time with high strength in a bond that makes possible various combinations of metals, glass, wood, ceramics, rubber, plastics, cork, felt, leather, cardboard, and porcelain. It permits the satisfactory joining of materials heretofore considered impractical or impossible to bond by adhesive.

Eastman 910 is now being produced only in experimental quantities, but Eastman anticipates that industrial applications will develop in three broad areas: 1) where extreme speed of setting and curing is needed, 2) where there is a necessity for bonding materials not normally responding to conventional adhesives or cements, 3) where high bonding strengths are required within the confines of small joining surfaces such as miniature assemblies of intricate design.

Among the plastics to which the adhesive has been successfully applied are cellulose acetate, cellulose acetate butyrate, styrene, polyester glass laminates, phenolics, epoxies, acrylates, urethanes, and vinyl. Among the metals tested were combinations of steel, aluminum, copper, magnesium, bronze, and brass.

The nature of the materials determines the set time of the bond. Tests have shown glass-to-glass bonds to be unbreakable within five to fifteen minutes. Wood-to-wood bonds require from three to five minutes to set, and two to three hours before the bond can withstand rough handling. Steel-to-steel bonds set in fifteen to twenty seconds, develop 2000 pounds per square inch tensile strength within thirty minutes and 5000 pounds after forty-eight hours.

The bond formed by Eastman 910 is weakened or destroyed by prolonged exposure to high temperatures or to high humidity. The bond is destroyed by exposure to temperatures above 212°F for more than twenty-four hours.
Manufacturer: Eastman Chemical Products, Inc., 260 Madison Ave., New York 16.

Concrete that floats

Some of the assets of both wood and concrete are combined in Calsi-Crete, a new lightweight cellular concrete which promises to lower the cost of house construction. Calsi-Crete combines the workability of

wood (it can be nailed, sawed, chopped, chiseled) with the fire resistance, dimensional stability, vermin-and-rot proofness of conventional concrete. It is said to have good insulation and acoustical properties, and is light enough to float.

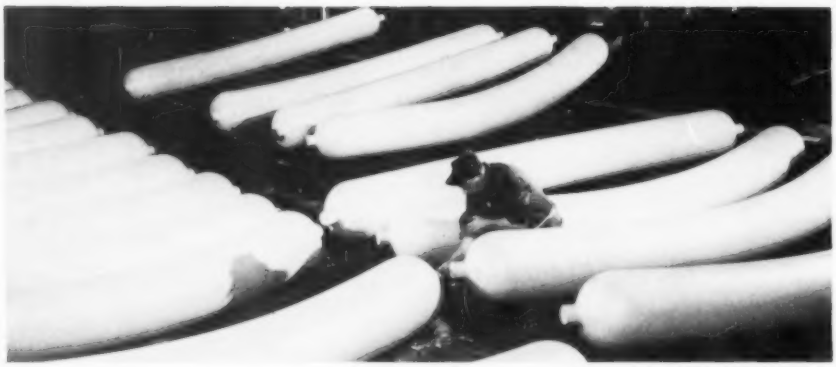
Initially, Calsi-Crete will be marketed in the form of planks measuring 3½" x 20" x 80" for use in commercial roofing installations. The roof decking can be used on any building, but its greatest value will be in structures with large roof areas, such as industrial buildings.

Since its composition and properties can be varied, Calsi-Crete can be compounded with high or low load-bearing and insulating properties, depending upon its proposed application.

The heaviest version of the new material is less than one-third as heavy as normal concrete. When the density is lower, the difference in weight between the two materials becomes even more pronounced. The light weight allows easier erection, simpler building design, and lower cost. According to Continental Materials, an integrated modular house could be erected in 40 percent less time and at as much as 20 percent lower cost than with traditional materials. The cost reduction is made possible by the fact that the material itself is less expensive to produce than standard concrete, and its lighter weight reduces costs.
Manufacturer: Continental Materials Corp., 4401 W. North Ave., Chicago 39, Illinois.

Temporary protection

Many plated sheet metals are susceptible to scratches and die marks during drawing and forming operations. A growing list of temporary strippable plastic coatings has been developed to protect the surface of the sheets while they are undergoing the rougher stages of the fabrication process. Mar-Not, by the American Nickeloid Co., is such a protective coating and it is said to permit Nickeloid Metals to meet severe fabricating and handling conditions without harm to their plated finishes. It is available as a pressure-sensitive paper which adheres to the metal sheet by a special adhesive, and in the form of a conventional strippable plastic film which stretches as the metal is formed.
Manufacturer: American Nickeloid Co., Peru, Illinois.



Design solves space problem

Looking like giant sausages (above), new steel cylinders are solving the problem of how to store and transport gases and chemicals under pressures of up to 10,000 pounds per square inch. Until a few years ago, cylinder-wall thicknesses of ½", capable of withstanding 2200 pounds of pressure per square inch, were considered adequate for the storage of the few gases then on the market. Today, new gases and new uses for the commonly known ones require cylinders that withstand pressures from 500 pounds per square inch up to 10,000 pounds per square inch with wall thicknesses up to 3'.

The cylinders are produced from white-hot billets which are pierced into a hollow forging under great pressure to form the rough cylinder or plates which are cupped and drawn. The ends are hot-formed by spinning, swagging, or forging.

The cylinders make maximum use of shipboard space by being slightly curved to fit the contour of the hull.

Manufacturer: National Tube Division, United States Steel Corp., 525 Penn Place, Pittsburgh, Pa.

Computer shrinks to fit jet

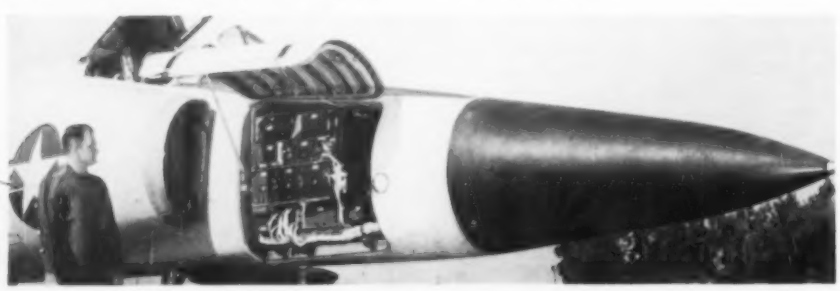
The number, variety, and complexity of rapid mathematical calculations necessary to keep a modern jet interceptor plane in the air, have reached a point where the pilot's freedom to make the all-important tactical decisions has been seriously impaired. One answer has been to equip the jets with analog computers that perform many operations for the pilot automatically. What was needed, however, was the greater versatility and capacity of a digital computer. The digital computer, normally a room-size giant, has now been reduced in size to fit a jet. The new version, about the size of a 21-inch tv set, is called the Digitair.

The Digitair can perform all necessary computing functions associated with flight, navigation, search and attack in an interceptor mission, enabling the pilot to concentrate on tactical decisions.

New advances in miniaturization techniques made it possible to reduce the computer system weight to 120 pounds. The inner workings of the Digitair are top-secret for the time being but two hints have been given about how it saves space: the computer contains four thousand match-head size diodes in place of the various types of tubes which normally would be used, and 75 per cent of its wiring is etched circuitry.

The computer is not restricted to airborne military use but could be adapted to supersonic jet transports where it could automatically navigate and continuously compute speed and altitude for best performance. It could program fuel consumption from take-off to landing, meanwhile considering varying flight conditions. With navigation data automatically processed and displayed, the pilot would be enabled to insert alternate position, destination and altitude information, and automatically control communications between traffic and automatic control.

Manufacturer: Hughes Aircraft Co., El Segundo, California.



Flame-retardant laminates

The Continental-Diamond Fibre Corp. has developed a new line of plastic laminates which is said to have high resistance to flame and heat. Called Dilecto laminates, they comprise nine different grades of varying characteristics for a wide variety of industrial applications. They are manufactured in a wide range of thicknesses, sheet sizes, tube and rod diameters. In addition to the phenolic, polyester, or epoxy resin impregnation normally used in laminates, the Dilecto laminates contain special chemical additives that dampen and extinguish flames started by electric arcs or other sources. It is likely that one important application of the new laminates will be in components used where electrical fire hazards exist.

Manufacturer: Continental-Diamond Fibre Corp., Newark, Del.

Low-cost sandwich

Plyweb, a new low-cost structural sandwich construction by Zahorski Engineering, Inc., has a unique design that fits it for use in aircraft and missile primary structures, wings and fuselage, as well as for a wide variety of elevated-temperature commercial and industrial applications. It is said that the new sandwich can be manufactured easily, and at very low-cost compared to existing elevated-temperature sandwich constructions.

The Plyweb design consists of two separate structural halves which, when they are joined, form a complete sandwich plate. The manufacture of each separate half-section is accomplished with production line equipment and standard equipment. To produce a half-section, the sandwich core is fastened to its facing plate, by seam-welding, spot-welding, riveting or other standard fastening methods. Bonding of the half-sections to form the complete sandwich plate is done metallurgically, chemically, or mechanically. Blind riveting or fastening is virtually eliminated since necessary splices, joints and fastenings are made prior to joining the half-sections. The completed sandwich is capable of carrying both compression and bending loads in two directions. The plate girder and truss type of construction in this design also enable it to carry shear loads.

The Plyweb sandwich can be manufactured in a variety of materials such as stainless steel, titanium, aluminum, magnesium, or any combination of materials necessary to maintain structural integrity at a given temperature range.

The individual ducts that make up the Plyweb core can be sealed and used to insulate the sandwich, to circulate coolants, or to pre-heat fuels and fluids.

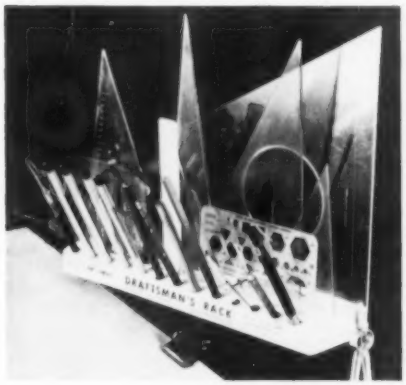
Manufacturer: Zahorski Engineering, Inc., Santa Barbara, Cal.

Aid for the drafting room

The following four items are aimed at improving procedures in drafting rooms.

An improved artist's fixative called Acrolite both sprays and dries without producing any odor. Its other properties are those of a conventional fixative.
Manufacturer: Graphic Arts Div., Acrolite Products, Inc., 106 Ashland Ave., West Orange, New Jersey.

The draftsman's rack (below) clamps to the side of a drafting board and has a place for twelve pencils, as well as for triangles, eraser pads, and templates. The rack swivels so it is level even on a sloping board.
Manufacturer: F. H. Dougherty, 405 Atkind Ave., Lancaster, Pa.



The Contoura-Matic photocopier (above) is said to be the smallest and lightest photocopier on the market. It measures 15" x 6", takes up about half the space of a standard typewriter. A plastic cartridge of premixed processing liquid snaps into place to pour automatically, eliminating mixing and pouring.
Manufacturer: F. G. Ludwig, Inc., 102 Coulter St., Old Saybrook, Conn.

The Designmaster drawing table and drafting machine (right, center) is an adjustable counter-balanced table allowing the draftsman to bring his drawing to any desired working level and angular position. The drafting machine, a crane neck parallelogram type, eliminates band adjustment and allows the machine to return to zero base line. Smudging is eliminated since the machine, held by two cone pivots at the top of the anchor, can be completely lifted away from the board.

The drafting head of the machine is equipped with scale and vernier.
Manufacturer: Ozalid Div., General Aniline and Film Corp., 3 Corliss Lane, Johnson City, N. Y.

Foam-in-place solves design problem

The special ability of urethane foam to be foamed-in-place is now being employed to simplify the incorporation of buoyancy chambers into some Adirondack guide boats. Rigid plastic foams have been used as flotation aids in boats, docks, and floats for some time but they have usually been expanded polystyrene blocks. Urethane foam, foamed into the uneven contours of the bow and stern of the boats, provides a net buoyancy force of 120 pounds per one cubic foot of foam.

The Allcock Manufacturing Co. (Ossining, N. Y.), makers of the boats, give four reasons for their switch from polystyrene foam to urethane: The combined cost of the new material and of the time required to foam it in place (about 30 minutes) is less than the cost of cutting blocks of polystyrene to fit the given space. Urethane achieves a perfect, uniform fit, adding strength and rigidity to both bow and stern. Since the entire flotation chamber is filled by the foam without any crevices, water cannot seep into the chamber as it could between separate blocks of foam. Urethane foam can form a strong bond with polyester resin as part of a hull laminate which includes the resin.
Manufacturer: The urethane foam used by Allcock is based on ingredients produced by Allied Chemical and Dye Corp., 61 Broadway, New York 6, N. Y.

Built-in defroster

Uskon blankets, a line of electrically conductive rubber blankets by the U. S. Rubber Co., promise to relieve one of the major headaches of home refrigerator operation —defrosting. Extremely flexible, the blankets produce an even heating surface which means they could be incorporated into a refrigerator case as a defrosting component. They are now in use as a defrosting unit in ice cube vending machines, frozen food and ice cream display units, and ice cream and frozen food delivery trucks.

Compounded of vinyl plastic and Paracril oil-resistant synthetic rubber, the blankets can be used flat, wrapped around corners, and stuck into crevices. They can be glued to a surface, nailed or stapled along their edges. They are hermetically sealed, and can be operated when wet, even under water.
Manufacturer: United States Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y.

Biggest impact extrusion

What is said to be the world's largest impact extrusion was produced recently by the Harvey Aluminum Co. for a missile body section. Extruded on a production basis, the impact measures 32" in length and 14" in diameter, has a wall of .875", weighs 112 pounds, and is stepped at one end. The alloy is 2014-T6; the finish is RMS 125 or better.

The use of the impact extrusion technique for missile and rocket bodies and structural parts is viewed by Harvey as representing a new manufacturing concept. Using the same technique, they are impact extruding other aluminum missile components, such as oxidizing chambers, liners, and motor parts.
Manufacturer: Harvey Aluminum Co., 19200 S. Western Ave., Torrance, Cal.

Manufacturers' Literature

Alloys. Harvey Aluminum Co., 19200 S. Western Ave., Torrance, Cal. 12 pp. color ill. This technical brochure reviews in detail mill products in aluminum, titanium, and other metals, covering a range of shapes, sizes, and alloys.

Bolts. Hi-Shear Rivet Tool Co., 2600 W. 247th St., Torrance, Cal. 8 pp. ill. A selection of case histories for applications of blind bolts.

Castings. Buckeye Brass and Mfg. Co., 203-231 Central Ave., Mansfield, Ohio. 6 pp. The folder describes ferrous and non-ferrous castings.

Displays. Copeland Displays Inc., 537 West 53rd St., New York 19, N. Y. 8 pp. The planning and value of point-of-purchase displays is described.

Fasteners. Allmetal Screw Products Co., Inc., Garden City, N. Y. 48 pp. ill. A complete stock list and data book.

Laminates. Lunn Laminates, Inc., Huntington Station, N. Y. 12 pp. The booklet is designed to help in estimating the cost of reinforced plastic moldings.

Magnets. Stackpole Carbon Co., St. Marys, Pa., 12 pp. ill. The bulletin describes Ceramagnets, the high coercive force permanent magnets that are molded from ceramic powders.

Non-woven fabrics. E. I. du Pont de Nemours and Co., Wilmington 98, Del. 14 pp. ill. This detailed report covers the properties and uses of non-woven fabrics.

Nuts. National Machine Products Co., 510 Maccabees Bldg., Utica, Michigan. 24 pp. ill. This is the Standard Hexagon Nut Section of the company's complete Catalog. Dimensions and list prices are included.

Nylon molding. Nylon Molded Products Corp., Garrettsville 1, Ohio. 4 pp. A new process for short-run nylon parts is described.

Plastic. Barrett Div., Allied Chemical and Dye Corp., 40 Rector St., New York 6, N. Y. 4 pp. ill. Some of the properties and applications of Plaskon Urea, Melamine and Alkyd molding compounds are listed and illustrated.

Plastic. Chemical Dev. Dept., General Electric Co., 1 Plastics Ave., Pittsfield, Mass. This chart gives comparative properties of Lexan polycarbonate resin and other thermoplastic molding materials.

Plexiglas. Rohm and Haas Co., Washington Sq., Philadelphia 5, Pa. 4 pp. Case study number 10 in the company's product design series: three-dimensional molding for a steering wheel in acrylic.

Stainless steels. Armco Steel Corp. 2557 Curtis St., Middletown, Ohio. 4 pp. ill. The bulletin briefly describes the properties and applications of two stainless steels: 17-4 PH and 17-7 PH.

Wall system. E. F. Hauserman Co., 7516 Grant Ave., Cleveland 5, Ohio. 6 pp. ill. The firm's Horizon movable interior wall system for offices is described.

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For Your Calendar

January 18-April 6. An exhibition of the design of Louis Comfort Tiffany at the Museum of Contemporary Crafts of The American Craftsmen's Council in New York.

January 19-February 9. The Smithsonian Institute will present "German Architecture Today" at Vassar College, Poughkeepsie, N. Y.

January 27-30. The 1958 Plant Maintenance and Engineering Show and Conference will be held at the International Amphitheatre, Chicago.

February 2-23. The Smithsonian Institute traveling exhibition, "American Craftsmen, 1957", will be shown at the Mulvane Art Center, Topeka, Kansas.

February 3-4. The ISA Chemical and Petroleum Industry Symposium at the Hotel Du Pont, Wilmington, Delaware on "Progress and Trends". (Deadline for advance registration: January 17).

February 3-5. The American Management Association's conference on the European Common Market at the Biltmore Hotel in New York.

February 4-6. The Society of the Plastics Industry, Inc., is sponsoring the Thirteenth SPI Reinforced Plastics Division Conference at the Edgewater Beach Hotel, Chicago.

February 7-23. A display of modern Swedish furniture, demonstrating its compatibility with modern art, at the Contemporary Arts Center in Cincinnati.

February 27-March 1. IDI's first Product Information Show at the Hotel Statler in Detroit.

March 3. The 15th annual All-Day Machine Design Conference of the Cleveland Engineering Society: "Putting Machine Controls on Trial" at the Society's headquarters.

March 7-April 6. A selection of industrial products from the city's metalworking industries at the Contemporary Arts Center in Cincinnati.

March 9-12. The First National Lighting Exposition at the Coliseum in New York, sponsored by the Lighting, Lamps, and Electrical Manufacturers Salesmen's Association, Inc.

March 17-18. The Steel Founders' Society of America will gather for its 56th annual meeting at the Drake Hotel, Chicago.

March 17-19. The American Management Association's seminar on "Setting Up an Over-All Program for Product Line Planning" at the La Salle Hotel in Chicago.

March 17-21. The 1958 Nuclear Congress ("Industrializing the Atom") at the International Amphitheatre in Chicago, accompanied by the 1958 trade show of the atomic industry.

March 28-31. The twelfth annual convention-exhibit of the National Office Furniture Association will be held in Convention Hall, Philadelphia.

April 14-18. An annual technical meeting of the American Welding Society will be held at the Hotel Statler, St. Louis.

April 15-17. The American Welding Society will gather in St. Louis for its annual show at the Kiel Auditorium.

April 17-October 19. "The Unity of Mankind: a world view—a new humanism" is the theme of the Brussels exhibition, the first World's Fair of the atomic era. It will feature exhibits by fifty nations and seven international organizations.

April 18-June 1. A survey of decorative art and design by recipients of Fulbright grants, at the Museum of Contemporary Crafts in New York.

May 26-28. The American Management Association's 27th National Packaging Conference at the Hotel Statler in New York.

May 26-30. The 27th National Packaging Exposition at the Coliseum in New York.

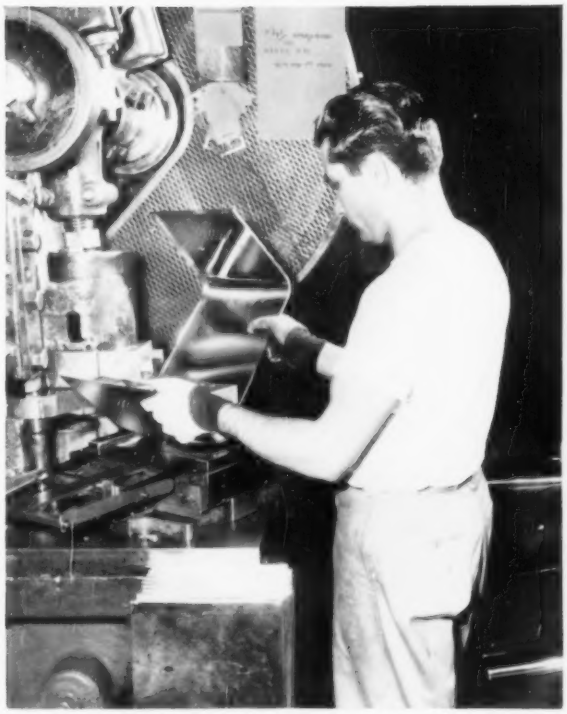
Production Takes A Short-Cut

With Pre-Plated NICKELOID METALS

Sheet of Nickeloid chrome-steel that will be used for breadbox is blanked, with punch-out perforations for ventilation and indented shelf supports. Uniform pre-plated finish reduces rejects.

Edges of Nickeloid chrome-steel sheet are turned up 1/2" in forming press. Nickeloid is easily worked with standard methods.

Breadbox body frame is spot welded to the preformed bottom and back pieces, with no visible oxidation. Parts then move to assembly.



Two bends are made on press to give the breadbox its rectangular shape. Operation causes no marring of surface or dulling of finish.

No Cleaning or Post-Plating — Easily Worked With Standard Production Methods

No cleaning solutions, plating tanks or polishing wheels on the production line at Lincoln Metal Products Co., Brooklyn, N.Y., manufacturer of fine pantryware. Lincoln eliminates these costly intermediate steps by using Nickeloid pre-plated chrome-steel and copper-steel. These versatile design materials speed trouble-free production, reduce rejects, prolong tool life. They are readily worked with standard production methods, as shown here. Parts move from fabrication — to assembly — to packing, with no dulling or marring of the pre-plated finish, since Mar-Not protective covering is used. No cleaning, plating, polishing is needed. Nickeloid Metals are available in pre-plated finishes of chrome, nickel, copper or brass on steel, zinc, copper, brass and aluminum. Sheets, strips, coils — a wide range of finishes and patterns.

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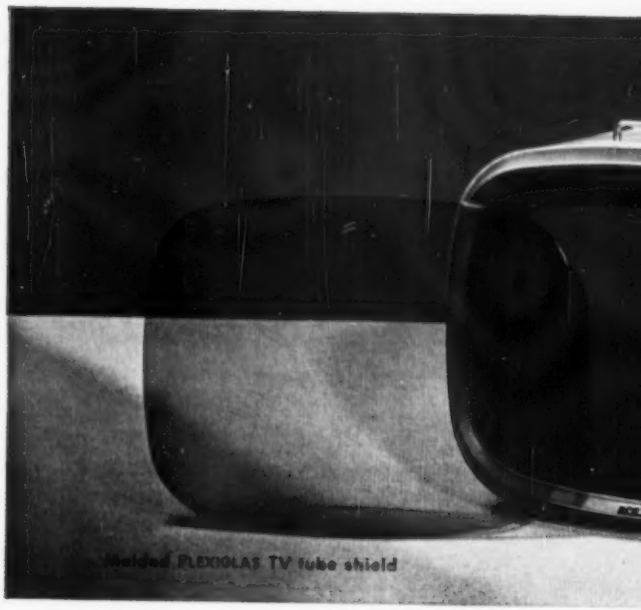
AMERICAN NICKELOID COMPANY

Peru 7, Illinois



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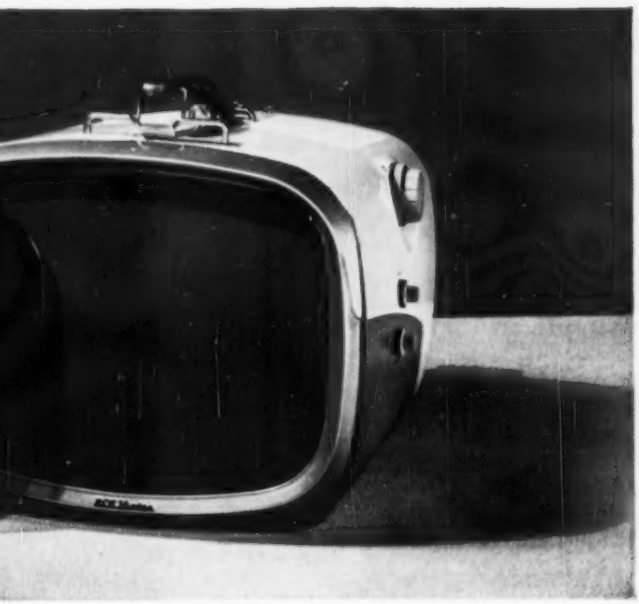

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